Cretaceous faunas from Zululand and Natal, South Africa‡. The ammonite genus *Codazziceras* Etayo-Serna, 1979

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Received 6 August 2012. Accepted 22 October 2012

A new species of the Coniacian ammonite genus *Codazziceras* Etayo-Serna, 1979, previously known with certainty only from Colombia, is described from the St Lucia Formation of northern KwaZulu-Natal.

Keywords: Cretaceous, Coniacian, ammonite, *Codazziceras*, KwaZulu-Natal, South Africa.

INTRODUCTION

The collections of the Iziko South African Museum include a small ammonite, just over 50 mm in diameter, from the western shores of False Bay, Lake St Lucia, in northern KwaZulu-Natal. It is described below as a new species of the genus *Codazziceras* Etayo-Serna, 1979, known previously with certainty only from the type species *Codazziceras scheibei* (Riedel, 1938) (which is a junior synonym of *Ammonites ospinae* Karsten, 1858), and *C. fina* Etayo-Serna, 1979, from the Coniacian of Colombia. *Yubariceras gosavicum* Wiedmann, 1979, from the Coniacian of Austria may also belong to the genus. The present record is thus the first from the Southern Hemisphere.

SYSTEMATIC PALAEONTOLOGY

Suborder Ammonitina Hyatt, 1889
Superfamily Acanthoceratoidea de Grossouvre, 1894
Family Acanthoceratidae de Grossouvre, 1894
Subfamily Euomphaloceratinae Cooper, 1978

Genus *Codazziceras* Etayo-Serna, 1979

Type species

Lyelliceras scheibei Riedel, 1938, p. 55, pl. 9, figs 7, 8; pl. 13, fig. 17, by the original designation of Etayo-Serna (1979, p. 83) = *Ammonites ospinae* Karsten, 1858, p. 110, pl. 4, fig. 3.

Diagnosis

'Small, very evolute, serpenticone, whorl section square to rectangular on phragmocone, rounded on body chamber. Innermost whorls smooth and constricted, constrictions persist into early part of ribbed stage. Phragmocone and early body chamber with strong ribs branching from umbilical bullae or not or intercalated. Primary ribs with weak inner umbilical tubercles that may be indistinct at some stage and strong outer umbilicals; all ribs with inner and outer ventrolateral and siphonal tubercles. All tubercles and ribs weaken on body chamber which resembles inner whorls of *Pedioceras* Gerhardt, 1897 (Crioceratitinae)' (Wright *et al.*, 1983, p. 342).

Occurrence

The type species and *Codazziceras fina* Etayo-Serna, 1979 (p. 84, pl. 13, fig. 17, text-fig. 8M,N,Q,S) occur in the Lower Coniacian of Colombia. *Yubariceras gosavicum* Wiedmann, 1979 (p. 46, pl. 6, figs C,D) from the Coniacian of Brandenberg (Tirol, Austria) may also be a *Codazziceras*. The present record extends the geographic range to northern KwaZulu-Natal.

Codazziceras africanum sp. nov., Fig. 1

Derivation of name

Africanum: of Africa.

Type

The holotype is SAM-PCZ 022424 (formerly SAS Z1543), from the Middle or Upper Coniacian part of the St Lucia Formation close to locality 86 of Kennedy & Klinger, (1975), on the southwestern shores of False Bay, Lake St Lucia, northern KwaZulu-Natal, coordinates 28°01′45″S, 32°33′03″E approximately.

Diagnosis

A species of *Codazziceras* with inner umbilical bullae, inner and outer ventrolateral and siphonal tubercles on primary ribs alternating regularly with single shorter intercalated ribs with outer ventrolateral and siphonal clavi only.

Dimensions

	D	Wb	Wh	Wb:Wh	U
SAM-PCZ 022424 (ex Z1543)	At: 51.6 (100)	– (–)	20.2 (38.8)	–	14.9 (28.9)

‡In current geopolitical terminology Zululand and Pondoland now form parts of the provinces of KwaZulu-Natal and the Eastern Cape respectively. For the sake of continuity we retain the names Zululand and Natal in the title of our series of systematic descriptions of the invertebrate faunas from these regions from 1975 onwards.

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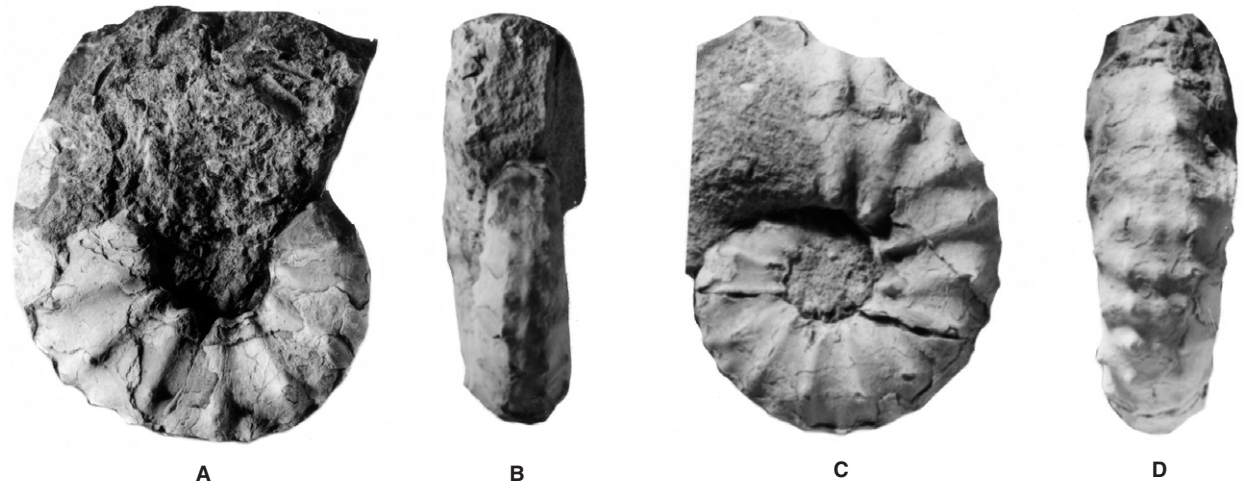

Figure 1. **A–D**, *Codazziceras africanum* sp. nov., the holotype, SAM-PCZ 022424 (formerly SAS Z1543), from the Middle or Upper Coniacian part of the St Lucia Formation close to locality 86 of Kennedy & Klinger (1975) on the southwestern shores of False Bay, Lake St Lucia, northern KwaZulu-Natal, coordinates 28°01′45″S, 32°33′03″E approximately. Figures are ×1.

Description

The specimen retains well-preserved iridescent nacreous shell. Coiling is moderately evolute, with a moderately wide, shallow umbilicus that comprises 29% of the diameter. The whorl section is slightly compressed in intercostal section, and only slightly wider than high in costal section, with the maximum breadth at the umbilical bullae. The umbilical wall is low and rounded, the flanks flattened and subparallel, with a narrow, flattened venter and rounded ventrolateral shoulder in intercostal section. The costal whorl section is octagonal. There are 12 small, sharp umbilical bullae on the outer whorl. They give rise to a single rib or a pair of distant, straight, narrow, prorsiradiate rounded primary ribs that bear small conical inner ventrolateral tubercles and outer ventrolateral clavi. Single intercalated ribs arise on the ventrolateral shoulder and bear outer ventrolateral clavi only. All ribs cross the venter and bear elongated siphonal clavi. One primary rib bifurcates at the inner ventrolateral tubercle. There are an estimated 28 ribs at the ventrolateral shoulder of the outer whorl. The sutures are not exposed.

Discussion

The presence of alternately long and short ribs, the former with umbilical, inner and outer ventrolateral and siphonal clavi, the latter with outer ventrolateral and siphonal clavi only, distinguish the species. *Codazziceras ospinae* (Karsten, 1858) (p. 110, pl. 4, fig. 3), as revised by Wright *et al*. 1983 (p. 343, figs 1–4) has inner and outer umbilical tubercles at the same diameter, and the intercalated ribs bear inner and outer ventrolateral tubercles. *Codazziceras fina* Etayo-Serna, 1979 (p. 84, pl. 123, fig. 17; text-figs 8M,N,Q,S) has an estimated 34–35 crowded ribs that are finer than those of the holotype of *africanum*, the ribs frequently arising in pairs, non-bullate primaries, and all ribs have inner and outer ventrolateral tubercles. *Yubariceras gosavicum* Wiedmann, 1979 (p. 46, pl. 6, figs C, D) may be a *Codazziceras*. It differs from the present species in having inner and outer umbilical tubercles on the primary ribs, inner and outer ventrolateral tubercles on both primary and intercalated ribs, and an incipient to weak outer lateral tubercle on some of the ribs.

Occurrence

As for type.

Kennedy acknowledges the support of the staff of the Geological Collections, Oxford University Museum of Natural History, and the Department of Earth Sciences, Oxford, and the financial assistance of the Oppenheimer Fund (Oxford). Klinger acknowledges the support of the staff of the Natural History Collections Department, Iziko South African Museum and financial support from the NRF (South Africa). Thanks are due to referees for their comments on the manuscript.

ABBREVIATIONS

D diameter (mm)
Wb whorl breadth (mm)
Wh whorl height (mm)
U umbilicus (mm)

REFERENCES

COOPER, M.R. 1978. Uppermost Cenomanian-basal Turonian ammonites from Salinas, Angola. *Annals of the South African Museum* **75**, 51–152.

ETAYO-SERNA, F. 1979. Zonation of the Cretaceous of central Columbia by Ammonites. *Publicaciones Geológicas Especiales del Ingeominas*, Bogota **2**, 1–186.

GERHARDT, K. 1897. Beiträge zur Kenntniss der Kreideformation in Columbien. *Neues Jahrbuch für Mineralogie, Geologie und Paläontologie* Beilage Band **11**, 118–208.

GROSSOUVRE, A. de 1894. Recherches sur la Craie supérieure, 2, Paléontologie. Les ammonites de la craie supérieure. *Mémoires du Service de la Carte Géologique détaillée de la France*, 1–264 (misdated 1893). Paris, Impremerie Nationale.

HYATT, A. 1889. Genesis of the Arietidae. *Smithsonian Contributions to Knowledge* **673**, xi + 1–239.

KARSTEN, H. 1858. Über die geognostischen Verhältnisse des westlichen Columbien, der heutigen Republiken Neu-Granada und Equador. *Amtlicher Bericht über die Versammlung Deutscher Naturforscher und Ärzte zu Wien* (for 1856), 80–117.

KENNEDY, W.J. & KLINGER, H.C. 1975. Cretaceous faunas from Zululand and Natal, South Africa. Introduction, stratigraphy. *Bulletin of the British Museum* (*Natural History*) *Geology* **25**, 263–315.

RIEDEL, L. 1938. Amonitas del Cretacico inferior de la Cordillera Oriental. **In**: *Estudios geológicos y paleontológicos sobre la Cordillera Oriental de Colombia* Bogóta **2**, 7–78. Bogota, Departamento de Minas y Petroleos, Ministerio de Industrias y Trabajo.

WIEDMANN, J. 1979. Ammonites. Pp. 41–49, **In**: Herm, D., KAUFFMAN, E.G. & Wiedmann, J. The age and depositional environment of the 'Gosau'-Group (Coniacian-Santonian), Brandenberg/Tirol, Austria. *Mitteilungen der Bayerischen Staatssammlung für Paläontologie und historische Geologie* **19**, 27–92.

WRIGHT, C.W., KENNEDY, W.J. & CHANCELLOR, G.R. 1983. The affinities of *Codazziceras* Etayo-Serna, 1979 (Cretaceous Ammonoidea). *Cretaceous Research* **4**, 341–348.