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Codazziceras ospinae (Karsten, 1858) from the Turonian (Upper Cretaceous) of Colombia

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ABSTRACT

The ammonite *Codazziceras ospinae* (Karsten, 1858) is described from sections in the Upper Magdalena Valley and San Francisco, south and north-west of Bogotá, Colombia. Its co-occurrence with species of *Hoplitoides* von Koenen, 1898, and *Coilopoceras* Hyatt, 1903, places it stratigraphically in the lower to middle Turonian, in contrast to previous assignments to the upper Turonian to lower Coniacian. Three specimens come from the lower part of the Loma Gorda Formation (Turonian–Coniacian) and one specimen from the middle part of the La Frontera Formation (lower–middle Turonian).

The type species of the genus *Codazziceras* Etayo-Serna, 1979, is *Lyelliceras scheibei* Riedel, 1938, which is a junior synonym of *Ammonites Ospinae* Karsten, 1858. If a new type species is to be selected, *Codazziceras ospinae* will be the obvious choice.

1. Introduction

During field work with geology students of the Universidad Nacional de Colombia, specimens of *Codazziceras ospinae* (Karsten, 1858) were collected in the Upper Magdalena Valley near the towns of Aipe (Department of Huila, Fig. 1) and Girardot (Department of Cundinamarca, Fig. 2), and San Francisco (Department of Cundinamarca) in the Eastern cordillera (Fig. 3). *Codazziceras ospinae* was found at Aipe (Fig. 4) together with *Hoplitoides* cf. *lagiraldae* Etayo-Serna, 1979, and close to occurrences of *H. ingens* (von Koenen, 1897) (Patarroyo, 2011), at Girardot (Fig. 5) close to the occurrences of *H.* cf. *lagiraldae* and *Coilopoceras* sp. (Carvajal González and Patarroyo, 2007) in the lower–middle Turonian of the Loma Gorda Formation, and at San Francisco (Fig. 6) together with *Hoplitoides* sp., *H.* cf. *lagiraldae*, *Coilopoceras* cf. *newelli* (Benavides-Cáceres, 1956) and near *Kamerunoceras* sp. and *K.* cf. *turoniense* (d'Orbigny, 1850) in the lower–middle Turonian of the La Frontera Formation.

The Loma Gorda Formation of the Upper Magdalena Valley subbasin (Fig. 4, 5) consists of biomicrites, marlstones and "cherts" (silicified biomicrites) in the lower and middle parts of the formation, spanning the Turonian and Coniacian, as evidenced by ammonites and inoceramids (cf. Carvajal González and Patarroyo, 2007; Patarroyo, 2011). The La Frontera Formation of the Cundinamarca subbasin (Fig. 6) is characterized by shales, biomicrites and "cherts", with ammonites and inoceramids (cf. Patarroyo, 2016) that represent a lower to middle Turonian range.

When Etayo-Serna (1979) introduced the genus *Codazziceras*, he proposed *Lyelliceras scheibei* Riedel, 1938, as the type species (cf. Wright et al., 1983; Patarroyo, 2016), a junior synonym of "*Ammonites Ospinae*" Karsten, 1858 (fide Wright et al., 1983). The holotype of "*Ammonites Ospinae*" was collected from the La Luna Formation at Barbacoas, State of Lara, in the Mérida Andes of Venezuela, near the area where Karsten (1858) found *Benueites mosquerae* (Karsten, 1858) and *Vascoceras toroanus* (Karsten, 1858) of early Turonian age. For details on the locality and stratigraphy, see Renz (1968, pp. 618–625).

Etayo-Serna (1979) reported "*Codazziceras scheibei* (Riedel)" and "*C. fina* Etayo-Serna" (see synonymy in Wright et al., 1983) from the lower Coniacian that was collected from an undefined "road level" (Etayo-Serna, 1979, p. 11). Wright et al. (1983, p. 348) noted that the material was collected "midway between the base of the Turonian and base of Coniacian" and proposed an early Coniacian, possibly late Turonian age. Villamil (1998, p. 180) found "*C. fina*" associated with *Coilopoceras* sp. and considered it a typical upper Turonian fauna.

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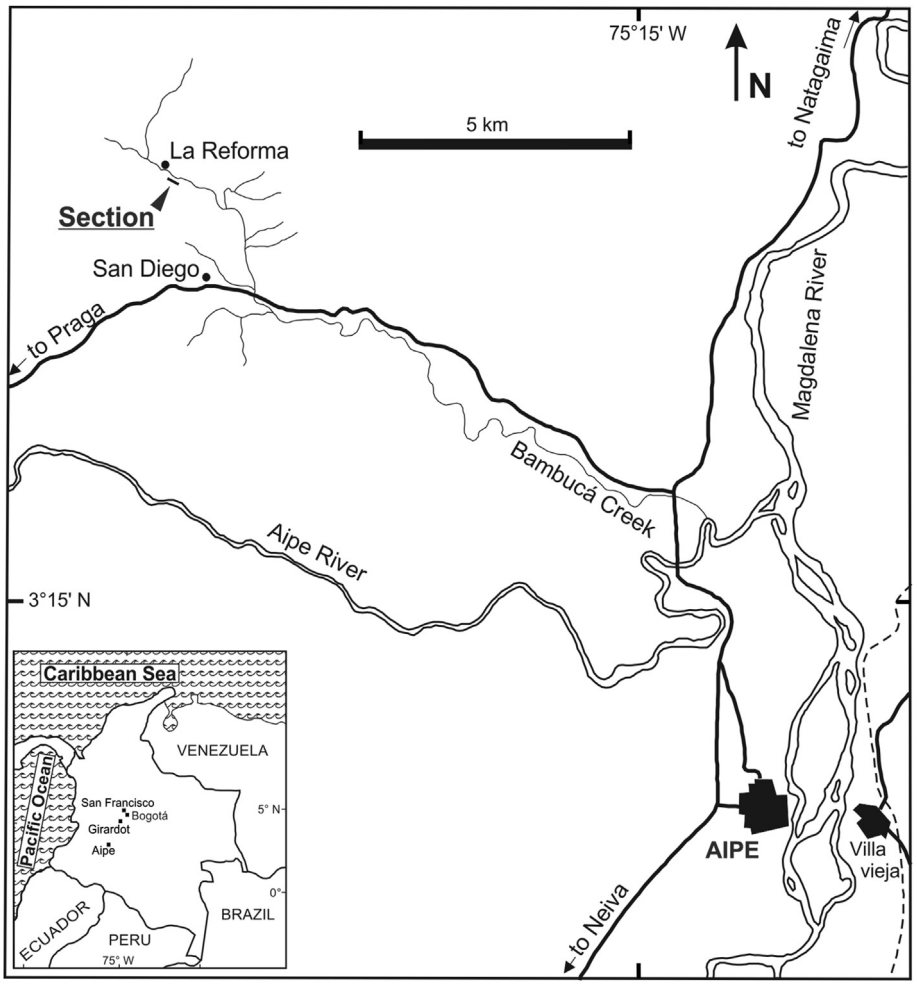

Fig. 1. Locality map of Aipe (Department of Huila); the Bambucá section is located at 3°19′42″N and 75°20′5″W.

2. Systematic palaeontology

The holotype of *Codazziceras ospinae* is kept in the Museum für Naturkunde, Humboldt-Universität zu Berlin, Germany. The Colombian specimens illustrated here are housed in the Palaeontological Collections, Departamento de Geociencias, Universidad Nacional de Colombia, Bogotá.

Abbreviations: Dimensions of specimens are given in millimetres, where D = diameter, Wh = whorl height, Wb = whorl breadth, Ud = umbilical diameter.

The morphological terminology follows Korn (2010), and signs and abbreviations used in the synonymy list follow Matthews (1973).

Order Ammonoidea Fisher, 1882
Suborder Ammonitina Fischer, 1882
Superfamily Acanthocerataceae 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 original designation (= junior synonym of *Ammonites Ospinae* Karsten, 1858, pp. 110–111, pl. IV, fig. 3, *fide* Wright et al., 1983).

Type locality of *A. Ospinae*: Barbacoas, Venezuela (Karsten, 1858, p. 110; 1886, p. 18), c. 28 km west of El Tocuyo, State of Lara; northern Mérida Andes, Maracaibo Basin, La Luna Formation.

Diagnosis. See Wright et al. (1983).
Remarks. Etayo-Serna (1979, p. 83) introduced *Codazziceras* to designate ammonites with very evolute shells, tubercles and strong ribs branching in V-form from periumbilical tubercles. According to Etayo-Serna (1979, p. 83), *Codazziceras* and *Lyelliceras* Spath, 1921, present some similarities, although, as noted by Wright et al. (1983, p. 342), this similarity is superficial. "*Lyelliceras scheibei*" Riedel (1938, pl. 9, fig. 7-8), designated by Etayo-Serna as the type species of *Codazziceras*, is a junior synonym of "*Ammonites Ospinae*" Karsten, 1858, (*fide* Wright et al., 1983). If a new type species is to be selected, *Codazziceras ospinae* (Karsten, 1858), will be the obvious choice.

The specimens of Riedel (1938) are kept in the Landesamt für Bergbau, Energie und Geologie, Hannover, Germany, and those of Etayo-Serna (1979) in the Colombian Geological Survey in Bogotá, Colombia.

Occurrence. Species of *Codazziceras* occur in Venezuela (Karsten, 1858, 1886); Colombia in the lower to middle Turonian (Carvajal González and Patarroyo, 2007; Patarroyo, 2011, 2016), and in the