

Actinaraeopsis ventosiana, A NEW SCLERACTINIAN SPECIES FROM THE LOWER CRETACEOUS OF PROVENCE (SE FRANCE)

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Abstract: *Actinaraeopsis ventosiana* is a new scleractinian coral species from the Lower Cretaceous shallow-water limestones of the Mont Ventoux (Provence, SE France). To date only two Late Jurassic species of this genus have been known, *i.e.* *Actinaraeopsis araneola* Roniewicz and *A. exilis* Roniewicz. The new species shows some similarity to the Jurassic species *A. araneola*, but differs in microstructure details and morphometric parameters.

Key words: Scleractinian corals, Haplaraeidae, *Actinaraeopsis ventosiana* sp. nov., Lower Cretaceous, France.

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INTRODUCTION

Actinaraeopsis, first described by Roniewicz (1968), was hitherto mainly documented from the Oxfordian–Kimmeridgian, whereas poorly defined species were mentioned from the “middle” and Lower Cretaceous; Löser; 1994, Baron-Szabo & González-León, 2003). The objective of the present paper is to describe an Early Cretaceous species of this genus, identified in the “Urgonian” limestones from Provence. The Lower Cretaceous scleractinian corals of this region are known from the literature for about 150 years (d’Orbigny, 1849; de Fromental, 1857; 1861) and have been reappraised during the last decade (Masse & Morycowa, 1994; Morycowa & Masse, 1998). Their taxonomic diversity is relatively high, the corresponding faunal assemblages rich, and their stratigraphic distribution range from the Valanginian to Aptian.

The specimen presented here is housed in the Geological Museum of the Institute of Geological Sciences, Jagiellonian University (coll.: UJ 137 P).

GEOGRAPHICAL AND GEOLOGICAL FRAMEWORK

The type locality of our new species is situated on the western flank of the Massif du Ventoux (Fig. 1) and is included in the so-called U1 Member that is the lower

bioclastic division of the “Urgonian trilogy” defined by Leenhardt (1883). The stratigraphic section in Figure 2 shows that the upper part of the U1 Member is marked by one coral-bearing bed with *Actinaraeopsis ventosiana* sp. nov., capped by a marly horizon (“C bed” in Leenhardt, 1883), in which an ammonite ascribed to *Martelites* sp. was found. This genus typifies the *Martelites sarasini* Zone, that is the uppermost part of the Upper Barremian (Hoedemaker

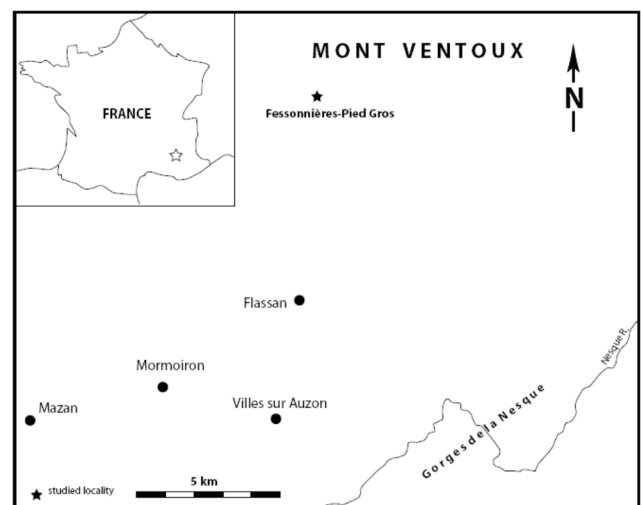


Fig. 1. Geographic map showing the locality with *Actinaraeopsis ventosiana* sp. nov. in the Mont-Ventoux area

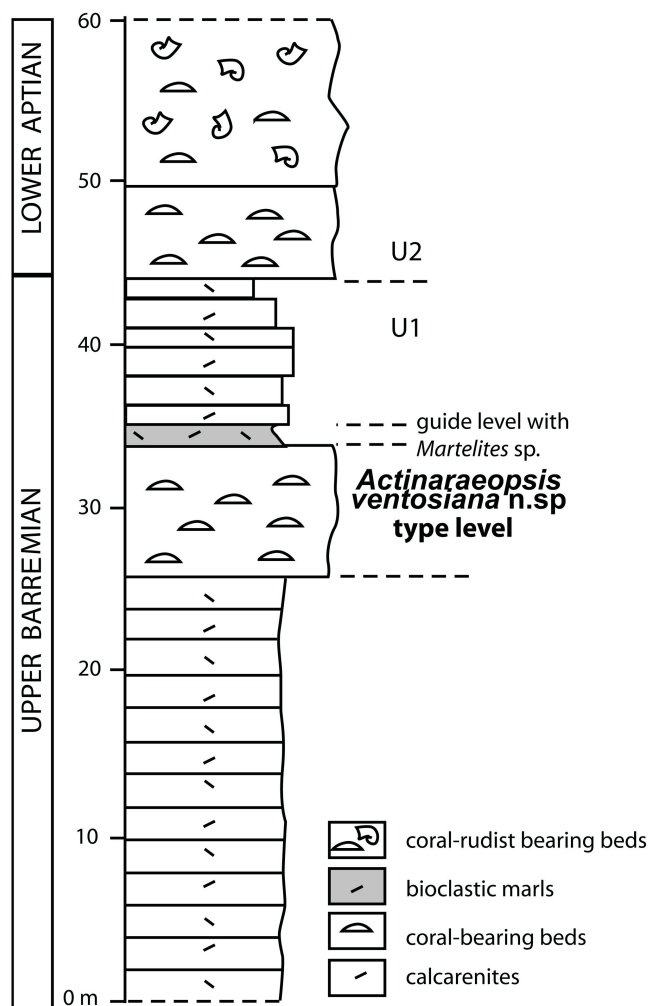


Fig. 2. Stratigraphic section of the western flank of the Mont-Ventoux Massif at Fessonières-Pied Gros, to show the position of the *Actinaraeopsis*-bearing coral bed. U1 and U2 represent the lower and median divisions of the regional "Urgonian trilogy"

et al., 2003). The micropaleontological assemblage identified in the underlying calcarenites: *Orbitolinopsis buccifer*, *Orbitolinopsis cuvillieri*, *Palorbitolina lenticularis* (Masse, 1976) has also a Upper Barremian stratigraphic significance. The structure of the upper coral bed closely resembles the lower, but grades upward to rudist bearing beds with Caprinidae, diagnostic of the Lower Aptian. *Actinaraeopsis ventosiana* sp. nov. is associated with other scleractinian corals, mainly colonial, of massive growth forms, including representatives of *Clausastrea*, *Hydnophoromeandraeae* and *Thamnasteria*, and stromatoporoids, with a subtidal, infralittoral significance.

SYSTEMATIC PALAEOLOGY

Abbreviations and terminology used in coral descriptions:
 D – corallum diameter (two perpendicular diameters; in mm);
 H – height of corallum (maximum; in mm);
 d cal – calice diameter;
 c-c – distance between centres of corallites;
 S – number of radial elements in corallite;
 S1, S2-n – septa (radial elements) of successive size orders;
 den s – density of radial elements per mm (measured in the outer zone of corallites);
 d tr – diameter of trabeculae measured along the septal plate;
 den tr (sect. trans.) – density of trabeculae measured along the septal plate, in transverse section;
 den pores (long. sect.) – density of pores per mm in longitudinal septal section;
 den end – density of endothelial elements per mm in longitudinal section;
 (...) – less frequent values are presented in brackets;
 trabecula (lat. pl – trabeculae): minitrabeculae (small trabeculae) – of diameters up to 50 µm; medium-sized trabeculae – from about 50 to 100 µm and thick trabeculae – over 100 µm, even to ca. 500 µm.

Family Haplaraeidae Vaughan et Wells, 1943

Genus *Actinaraeopsis* Roniewicz, 1968, emend. Roniewicz, 1976

Type species: *Actinaraeopsis araneola* Roniewicz, 1968

Roniewicz (1968) introduced into the literature a new genus *Actinaraeopsis* with two new species *Actinaraeopsis araneola* and *A. exilis* coming from the Upper Oxfordian of Świętokrzyskie Mts (Holy Cross Mts in Poland). The former species was also found in the Kimmeridgian of Dobrogea (Romania; Roniewicz, 1976) and in Iberic Mts. (Spain: Errenst, 1991). But Löser (1994) described a species from the Lower Cenomanian of Westphalia (Germany) close to *Actinaraeopsis araneola* as *Actinaraeopsis* cf. *araneola* and Baron-Szabo & González-León (2003) as *Actinaraeopsis* sp. cf. *A. araneola* Roniewicz from the Upper Aptian–Lower Albian of the Sonora (Mexico).

The new species described here has been included in the genus *Actinaraeopsis*, although its mode of budding differs from that given (intratentacular budding) in the diagnosis for the genus (Roniewicz, 1968). However, it seems that this single feature is not sufficient to create a new genus.

The species described here is noteworthy because it is the third species from this genus and first from the Cretaceous of Provence.

Actinaraeopsis ventosiana sp. nov.

Fig. 3A–G

Holotype: Prov. 4417/3, Fig. 3A–G

Type-level: Uppermost Barremian (Sarasini Zone).

Type-locality: Ventoux Massif-Fessonières-Pied Gros, Provence, France.

Etymology: From Mont-Ventoux, the highest mountain in western Provence.

Diagnosis: Thamnasterioid, subcerioid colony with distance between corallite centres from 4.5 to 6.5 mm; number of radial elements in corallites from about 40 to 50 and their density in peripheral corallite zone 4–5 per 2 mm and density of tabuloid ele-

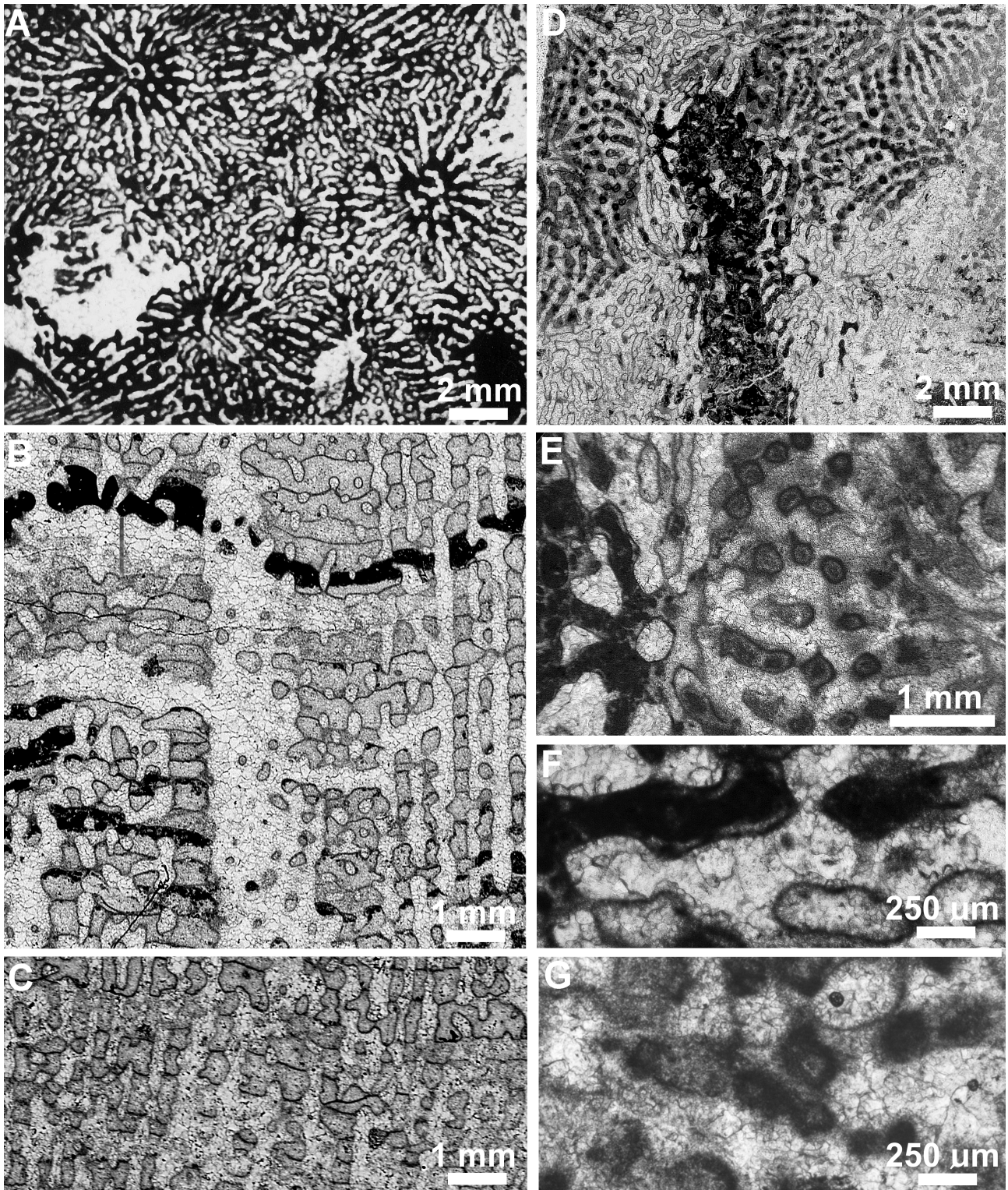


Fig. 3. *Actinaraeopsis ventosiana* sp. nov., Uppermost Barremian-Ventoux massif-Fessonières-Pied Gros: Holotype No. 4417/3: **A** – Transverse thin section (4417/3a) of corallites (skeleton white); **B** – longitudinal section of corallites (4417/3b), typical of haplaraeids. The porous septa and thin subtabuloid endothelial elements visible; **C** – Longitudinal section of radial elements (4417/3d); **D** – Transverse thin section of corallites (4417/3c; skeleton white); **E** – Part of Fig. 3D, magnified, showing internal septal edges with paliform projections and styliiform columella; **F**, **G** – Fragments of Fig. 3D showing traces of relatively thick septal trabeculae (4417/3c)

ments 13–15 per 5 mm. The diameter of septal trabeculae mainly 160–250 μm .

Material: Specimen: Prov. 4417/3; 4 thin sections: 4417/3a-d.

Dimensions (in mm):

	Prov. 4417/3
c-c	4.5-6.5
den s	4-5/2
S	ca. 40-50
S reach the centre	8-12
d tr	ca. 160-250 μm
den tr (sect. trans.)	3-4/1
den end	13-15
den pores (long. sect.)	3-4/2
D fragm.	45 \times 60
H	ca. 75

Description: Massive, thamnasterioid colony with slightly subpolygonal calice outlines. Costosepta confluent, subequal in thickness, porous, with frequent anastomosis, arranged mainly in three to four size orders. Eight to twelve septa S1 almost reach the corallite centre where their inner edges mainly dissociate to form paliform projections. Distal septal edges with regular round denticles and lateral septal faces covered by pointed granules. Columella trabecular, in places papillar in appearance (columella + paliform projections). Endotheca composed of thin subhorizontal tabuloid elements. Synapticules present, mainly in peripheral corallite zone. Budding intercalicinal.

Microstructure: The costosepta are formed of simple, relatively thick trabeculae (Figs E–G) arranged in an asymmetrical fan, with the septal part shorter than the costal one. Trabeculae subcircular with irregular lateral axes diverging from it. The trabecular diameters measured along the septal median plane are ca. 160–250 μm . The columella consists mainly of one trabecula.

Remarks: *Actinaraeopsis ventosiana* sp. nov. differs from the type specimen *A. araneola* from the Upper Oxfordian of Świętokrzyskie Mts (Holy Cross Mts, Poland; Roniewicz, 1968) in lesser density of radial and endothecal elements as well as in larger septal trabecula diameters (Tab. 1); moreover in type of budding (in *A. araneola* – intratentacular). Our new species differs from *Actinaraeopsis* cf. *araneola* described from the Lower Cenomanian of Westphalia (Germany; Löser, 1994) in considerably lesser density of radial elements and from *Actinaraeopsis* sp. cf. *A. araneola* Roniewicz (Upper Aptian–Lower Albian: Mexico, Sonora; Baron-Szabo & González-León, 2003) in slightly lesser septal density and smaller number of septa (Tab. 1). Unfortunately, neither the microstructure of the Cretaceous specimens mentioned above, nor their type of budding have been given in the literature. It should however, be remarked that if the microstructure of the Mexican species is like that of our new species, then *Actinaraeopsis* sp. cf. *A. araneola* is closer to the Cretaceous *A. ventosiana* sp. nov. than to the Jurassic *A. araneola* Roniewicz.

Occurrence: Uppermost Barremian – Ventoux massif, Fessonnères-Pied Gros: 4417/3.

Acknowledgements

Profesor Ewa Roniewicz and Doctor Boguław Kołodziej are cordially thanked for their helpful remarks. We also thank Prof.

Table 1

Dimensions of *Actinaraeopsis ventosiana* sp. nov. and similar species

	Early Cretaceous			Late Jurassic	
	<i>A. ventosiana</i> sp. nov.	<i>A. cf. araneola</i> Ron.	<i>A. sp. cf. A. araneola</i> Ron.	<i>A. araneola</i> Ron.	
	Prov. 4417/3	Löser, 1994	Baron-Szabo & González-León	Roniewicz, 1968	Roniewicz, 1976
d cal			3-4		3.5-4.5
c-c	4.5-6.5	4.5-5	4.5-6.5	3-6	3.3-6
den s	4-5/2	5-6/1	6-7/2	16/5	7-9/2*
S	ca. 40-50	ca 45	24-42	40-50	40-60
S reach the centre	8-12	12			
d tr	ca. 160-250 μm			100-140 μm	
den end	13-15			15-20/5	16/5

* – observations by E. Morycowa

Roniewicz for making available the collection of *Actinaraeopsis* from the Upper Jurassic of the Holy Cross Mts (Poland) and of Dobrogea (Romania).

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Streszczenie

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Actinaraeopsis ventosiana,
**NOWY GATUNEK KORALOWCA
 SZEŚCIOPROMIENNEGO (SCLERACTINIA)
 Z WCZESNEJ KREDY PROWANSJI
 (SE FRANCJA)**

W pracy opisano nowy gatunek koralowca kolonijnego *Actinaraeopsis ventosiana*, pochodzącego z płytkowodnych wapieni górnobarremskich Prowansji (SE Francja). Dotychczas tylko dwa gatunki tego rodzaju są znane z jury górnej, *A. araneola* Roniewicz i *A. exilis* Roniewicz. Nowy gatunek *Actinaraeopsis ventosiana* wykazuje pewne podobieństwo do jurajskiego gatunku *A. araneola*, ale różni się od niego parametrami morfometrycznymi i szczegółami budowy mikrostrukturalnej szkieletu.