

A new species of *Caloxanthus* (Crustacea, Decapoda) from the Upper Santonian of southern France

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Abstract

A new species of crab, *Caloxanthus wrighti* sp. nov. (Crustacea, Decapoda) is described from the Upper Santonian of Aude, France. Comparisons are made with the hitherto, partially confused, *Caloxanthus formosus*. The carapace outline of *C. wrighti* is less regularly rounded than that of *C. formosus*; other immediate differences lay in the front of *C. formosus* which is narrower, more sinuous and visible from above, the orbits are more circular; the protogastric lobes are more tumid. The surface ornament, quite varied in *C. wrighti* is coarser and more regularly distributed in *C. formosus*.

Key words: New species, crab, Santonian, France

Résumé

Une nouvelle espèce de crabe, *Caloxanthus wrighti* sp. nov. (Crustacea, Decapoda) est décrite du Santonien supérieur du département de l'Aude (France). Des comparaisons sont établies avec *Caloxanthus formosus*, jusqu'ici partiellement méconnu. Le contour de la carapace de *C. wrighti* est moins régulièrement arrondi que celui de *C. formosus*. Les autres différences immédiatement visibles sont les suivantes. Le front de *C. formosus* est plus étroit, plus sinueux et visible de dessus, ses orbites sont plus circulaires, les lobes protogastriques sont plus tumides. L'ornementation de la surface dorsale est variée chez *C. wrighti*, et est beaucoup plus grossière et plus régulièrement répartie chez *C. formosus*.

Mots-clés: Nouvelle espèce, crabe, Santonien, France

Introduction

Now that our knowledge of *Caloxanthus formosus* Milne-Edwards, 1864, was increased by new irrefutable specimens from the Cenomanian of Pétreval, Normandy, France (Breton and Collins, in press), supported by MHN LM 2010-1-5 (fig. 1), or specimen MNHN B16572 from the type Cenomanian of Le Mans, showing cheliped associated with carapace (fig. 2), added to the syntype MNHN R03351 from the type Cenomanian of Le Mans, time is ripe for a reappraisal of specimen BMNH In. 61163 (fig. 3), from the Upper Santonian of the Montée des Croutets, Sougraigne, Aude, France. This was regarded by Wright and Collins (1972, p. 105, pl. 21, fig. 9), as “probably no more than subspecifically different from *Caloxanthus formosus* Milne-Edwards”. Critical examination revealed sufficient differences (see Discussion) to justify placing the specimen in a new species.

Location of specimens: MNH LM: Musée d'Histoire Naturelle “Musée Vert”, Le Mans, Sarthe, France; MNHN Muséum national d'Histoire naturelle, Paris, France; BMNH: The Natural History Museum, London, United Kingdom.

Stratigraphy

We do not know the precise place where Comte O. de Villoutreys found the specimen. Les Croutets (sometimes spelt Les Cloutets) is a small hamlet 1.4 km North West of Sougraigne (Aude, France). Along the path to Les Croutets, Sésesse (1947, p. 14) quoted three fossiliferous outcrops (Nrs.138–140) and Bilotte (1985, p. 202) says “The path from Sougraigne to Les Croutets has always been favourable to collecting fossils [...] Two important levels are frequently quoted: the *Marnes bleues de Sougraigne*, at the foot of the path to Les Croutets [Sésesse's outcrop Nr 138], and

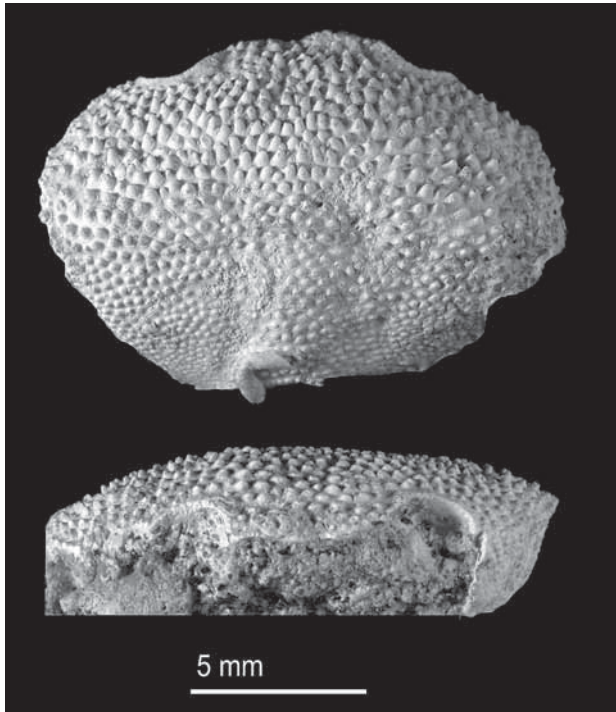


Fig. 1. *Caloxanthus formosus* A. Milne-Edwards, 1862. LM 2010.1.5, ex coll. Vincent Decombe. Craie glauconieuse Fm, lower Cenomanian, La Cour Beaumont, Coudehard (Orne, France). Dorsal and frontal views. Note the serpulid tube on the posterior margin. Scale bar: 5 mm.

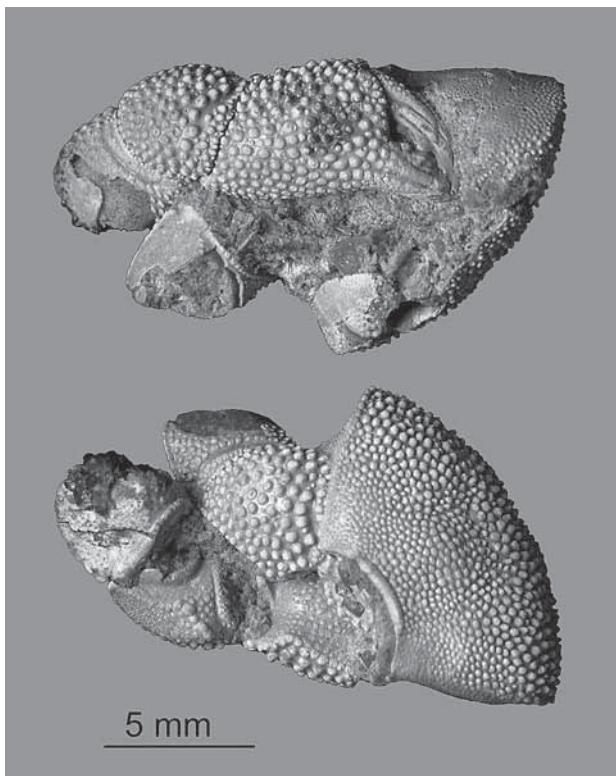


Fig. 2. *Caloxanthus formosus* A. Milne-Edwards, 1862. MNHN B16572. Sables du Perche Fm., middle–upper Cenomanian, Butte de Gazonfier Quarry, Le Mans (Sarthe, France). Oblique views showing the carapace associated with chelipeds. Scale bar: 5 mm.

the marly limestones with *Lima marticensis*". One of us (GB) had the recent opportunity to visit this outcrop (13/07/2010). The Marnes bleues de Sougraigne Formation provided 17 crustacean remains, including propodus of *Callianassa* sp., other fragments of decapod appendages, and a part of the carapace belonging to the same species as de Villoutrey's specimen. All are preserved in or as phosphatic nodules, made of a very hard black phosphate. The richest level is located 20 cm above the base of the formation. The other parts of the section only provided one badly preserved merus of Decapoda, not preserved in a phosphatic nodule (middle part of the section, Mosasaur level) and one propodus of *Callianassa* sp. (upper part). The original level of the specimen collected by O. de Villoutreys is thus most likely the Marnes bleues de Sougraigne Formation, Upper Santonian, *Placenticerus syrtale* biozone (= S2 biozone); level F5a (Bilotte, 1985, p. 203–205, figs. 58, 59).

Systematic palaeontology

Section Dromiacea De Haan, 1833

Superfamily Dromioidea De Haan, 1833

Family Dynomenidae Ortmann, 1892

Genus *Caloxanthus* Milne-Edwards, 1864

Type species: *Caloxanthus formosus* Milne-Edwards, 1864, by monotypy.

Caloxanthus wrighti sp. nov.

(Fig. 3)

1972 ? *Caloxanthus formosus* Milne-Edwards, Wright and Collins, p. 105, pl. 21, fig. 9.

Derivation of name: The species is named in honour of the late Claud Willy Wright, for his unsurpassed contribution to our knowledge of Cretaceous crabs and many other disciplines. He was also friend and mentor of JSHC.

Diagnosis: Carapace transversely ovate, orbitofrontal margin about two thirds carapace width, frontal margin much thickened; protogastric, cardiac, epi- and mesogastric lobes tumid, the former fused across the front, and the mesobranchial lobes embrace the cardiac region. Minute granules crowding the gastric region become almost obsolete posteriorly.

Material: Holotype. Carapace, BMNH In.61163, from the Marnes bleues de Sougraigne Formation, Upper Santonian of Montée des Crotets, Sougraigne, Aude, France. The other specimens formerly in O. de Villoutrey's collection (Wright and Collins, 1972, p. 105) have not been traced.

Paratype, incomplete carapace, MNHN A32695, same location, collected and donated by Daniel Vizcaïno, 13/07/2010.

Other material: two carpi, MNHN A32696, same location, collected by one of us (GB), 13/07/2010, probably belong to the same species.

Description: The carapace is ovate, the length is about three fourths of the width; strongly arched in longitudinal and slightly in transverse section. Broadly rounded anterolateral margins curve smoothly into the posterolateral margins, which bend into almost



Fig. 3. *Caloxanthus wrighti* sp. nov. Holotype. Carapace. In. 61163 Upper Santonian, Montée des Croutets, Sougraine (Aude, France). Dorsal and frontal views. Scale bar: 5 mm.

straight sections to rounded posterior angles. The posterior margin is about as wide as the front. The sides are turned down nearly at right angles to the dorsal surface. The orbitofrontal margin takes up about two thirds of the width; occupying the outer fourths, large, broadly ovate orbits deeply indent the margin in plan view and the lower margin is in advance of the upper. Thickened, granulated upper orbital margins abut a ridge divided by a broad V-shaped median notch obscuring the true weakly sinuous, ridged and granulated frontal margin divided by a narrow fissure-like notch. A pair of gastric pits about three fifths distant from the front are represented by narrow slits each embracing a granule. Barely discernable, the cervical furrow curves gently across the midline about half the distance from the front, broadening rapidly, it runs in two gentle arcs to the margin and is bounded behind by tumid epimesobranchial lobes, the mesobranchials turn back to embrace the anterior part of the broadly lingulate cardiac region. An undefined urogastric lobe and metabranchial lobes are depressed. Medial fusion of tumid epigastric lobes overlaps the depressed anterior part of the otherwise tumid mesogastric lobe. Minute granules crowding the dorsal surface are vaguely arranged in transverse rows; they are coarser anterolaterally, becoming finer and more densely crowded on the depressed lateral areas of the gastric region and almost obsolete posteriorly.

The paratype is an incomplete carapace, somewhat deformed,

but the preserved orbital region, the longitudinal and transversal sections, and the ornament compare very closely with the holotype. The two carpi MNHN A32696, found separately, are attributed, with a query mark, to the same species on the basis of their size and ornament, and of their shape, which is similar to that of the carpus of *Caloxanthus formosus*.

Discussion: The carapace outline of *C. wrighti* is less regularly rounded than that of *C. formosus*; other immediate differences lay in the front of *C. formosus* which is narrower, more sinuous and visible from above; also, as with the upper orbital margins, it is thinner and the orbits are more circular; the sides are slightly inclined inwards; protogastric, epi- and mesobranchial lobes are more tumid, the former not fused across the front. The surface ornament, quite varied in *C. wrighti*, is coarser and more regularly distributed in *C. formosus*.

The only other known species of possible similar age is *Caloxanthus purleyensis* (Withers, 1928), based on a single specimen from the *Micraster cortestudinarium* Zone (Coniacian or basal Santonian) of Surrey, England. The unique specimen is the largest known of the genus. It differs from *C. wrighti* in having a more circular outline; the orbitofrontal margin is relatively narrower in relation to width; the cervical furrow is obtusely V-shaped across the midline; there is a narrow, bisected urogastric lobe; the cardiac region is elliptical and the surface ornament is consistently coarser. The new species differs from the Maastrichtian *Caloxanthus kuyperse* Fraaye, 1996, in that the latter has a slightly produced front which affects the shape of the anterolateral margin.

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