

The genus *Calastacus* Faxon, 1893 in France with a new species from off Brittany (Crustacea, Decapoda, Axiidae)

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ABSTRACT

Calastacus laurentae n. sp. is the second species of *Calastacus* from France and Europe besides *C. laevis* de Saint Laurent, 1972. The description is based on two small specimens collected on the continental slope of the Bay of Biscay, off Brittany (France). The holotype is nearly complete while the second specimen is much damaged with a missing carapace; it is not considered a paratype. *Calastacus laurentae* n. sp. differs from all known *Calastacus* species by having a pair of large distal spines on the rostrum and spinules on lateral borders of the telson. It can be distinguished from *C. laevis* by the pereopod 1 bearing a small subdistal spine on both the upper and lower borders of the merus along with a fine longitudinal upper carina on the propodus; by contrast in *C. laevis*, there are one large upper spine and five large lower spines on the pereopod 1 merus and no upper carina on the propodus. Also in the new species, the terminal suture on the uropodal exopod is faint and unarmed while it is well defined and bears spinules in *C. laevis*.

KEY WORDS

Crustacea,
Decapoda,
Axiidae,
Calastacus laurentae n. sp.,
France,
new species.

RÉSUMÉ

Le genre Calastacus Faxon, 1893 en France avec une nouvelle espèce provenant du large de la Bretagne (Crustacea, Decapoda, Axiidae).

Calastacus laurentae n. sp. est la deuxième espèce de *Calastacus* de France et d'Europe après *C. laevis* de Saint Laurent, 1972. La description est fondée sur deux petits spécimens capturés dans le Golfe de Gascogne, au large de la Bretagne (France), dont le premier, l'holotype, est presque complet alors que le second est endommagé et dépourvu de carapace; il n'est pas considéré comme un paratype. *Calastacus laurentae* n. sp. diffère des autres espèces de *Calastacus* par la présence d'une paire de fortes épines latérales distales sur le rostre et des spinules aux bords latéraux du telson. Elle se distingue de *C. laevis* de Saint Laurent, 1972 par le péréiopode 1 muni d'une petite épine subdistale à la fois aux bords supérieur et inférieur du mérus et d'une fine carène longitudinale supérieure au propode; par contre chez *C. laevis*, le péréiopode 1 a une forte épine au bord supérieur et cinq fortes épines au bord inférieur du mérus alors que la carène supérieure est absente au propode. D'autre part, la suture terminale de l'exopodite des uropodes est très faible et inerme chez la nouvelle espèce alors qu'elle est distincte et garnie de spinules chez *C. laevis*.

MOTS CLÉS

Crustacea,
Decapoda,
Axiidae,
Calastacus laurentae n. sp.,
France,
espèce nouvelle.

INTRODUCTION

Despite the long history of biodiversity exploration in European seas, new species of benthic macroinvertebrates continue to be discovered off the French coasts (e.g., Salvini-Plawen 2008; Aguirrezabalaga & Gil 2009; Di Geronimo 2009). The new species of *Calastacus* Faxon, 1893 presented in this work was identified by Michèle de Saint Laurent and reported by Ngoc-Ho (2003: 440).

WoRMS (World Register of Marine Species) lists 11 species for the genus but several axiids that have been described in the genus or subgenus *Calastacus* are now placed in other genera.

The genus *Calastacus* Faxon was most recently diagnosed and discussed by Poore & Collins (2009: 247). Seven species were listed: *C. stilirostris* Faxon, 1893 (type species) from off Mexico, *C. laevis* de Saint Laurent, 1972 from the Bay of Biscay, north of Spain, *C. colpos* Kensley, 1996 and *C. mexicanus* Kensley, 1996 from the Gulf of Mexico, *C. crosnieri* Kensley & Chan, 1998 as well as *C. formosus* Komai, Lin & Chan, 2010 from Taiwan, western Pacific, and *C. inflatus* Komai & Lin & Chan, 2009 from Pratas Island, southern China sea. A species

was added: *C. myalup* Poore & Collins, 2009 from western Australia, but three species were missing from the list: *C. angulatus* Coelho, 1973, *C. spinosus* Coelho, 1973, *C. vicina* Coelho & Ramos-Porto, 1985, all briefly diagnosed from Brazil.

With *C. laevis* de Saint Laurent, 1972, the new taxon, *C. laurentae* n. sp. is the second species of the genus in Europe.

The description is based on two specimens collected during a RV *Thalassa* expedition led by Dr Louis Cabioch (station biologique de Roscoff), in October 1973.

MATERIALS AND METHOD

The first specimen, the holotype, is almost complete while the second specimen, with similar data, is much damaged and with a missing carapace. This specimen can presumably be assigned to the same species as the holotype but as the carapace is missing, this cannot be confirmed. It is figured but not considered a paratype.

The material studied is deposited in the collections of the Muséum national d'Histoire naturelle,

Paris (MNHN). The measurements given in the description are the carapace length (cl.) and the total length (tl.).

Specimens and appendages were stained with a weak solution of chlorazol black. The anterior part of the carapace, the telson and uropods are figured in dorsal view, the whole specimen and appendages are figured in lateral view.

SYSTEMATICS

Family AXIIDAE Huxley, 1879
Genus *Calastacus* Faxon, 1893

Calastacus laurentae n. sp.
(Figs 1; 2)

TYPE MATERIAL. — Holotype: Continental slope south of La Chapelle Bank, France, *Thalassa*, 1973, stn Z400, 47°33,4'N, 07°19'W, 1175 m, 22.X.1973, 13h-15.35h, muddy sand and rocks: hermaphrodite, lc. 8 mm, lt. 18 mm (MNHN Th 346), right pereopod 4, right uropods, left pereopods 2-4 missing.

OTHER MATERIAL EXAMINED. — Continental slope south of Little Sole [Petite Sole] Bank, off Brittany, France, *Thalassa* 1973, stn Z412, 48°1,6'N, 08°26'W, 1250 m, 24.X.1973, 1.15h-3.05h, clayey mud; broken specimen without carapace, abdomen (length 14 mm) present along with right pereopods 1, 2, 4 and a few dissected mouth appendages (MNHN Th 349).

ETYMOLOGY. — The species is named for Michèle de Saint Laurent who had recognized it as a new species of *Calastacus*.

DESCRIPTION

Carapace (Fig. 1A) slightly shorter than abdomen, laterally compressed, upper border rounded. Cervical groove weakly defined dorsally, very faint laterally. Rostrum (Fig. 1B) as long as antennular peduncle, with pointed tip, slightly depressed on upper side, bearing two pairs of large spines, one at base, the other distally on either side of rostral tip. Fine median gastric carina extending approximately from base of rostrum to halfway to cervical groove; two short carinae on either side and linked to it by two oblique branches.

Abdomen (Fig. 1G) 1.2 times longer than carapace, pleura 1 pointed ventrally, those of segments

3, 4, and 5 with lower-distal spinule in holotype (Fig. 1A) as in specimen MNHN Th 349.

Telson approximately 1.5 times as long as wide in specimen MNHN Th 349 (Fig. 1G), 1.70 times as long as wide in holotype (Fig. 1C); lateral borders with spinules similarly arranged but more numerous in holotype and a pair of lateral distal spines in both specimens; posterior border rounded.

Eyes (Fig. 1B) globulous, hardly mobile.

Second article of antennal peduncle (Fig. 1A, B) terminating distally in a point, with a lower distal spine; scaphocerite long, styliiform, nearly reaching distal third of penultimate article of peduncle.

Maxilliped 1 (Fig. 2A) with large epipod.

Maxilliped 2 (Fig. 2B) with exopod, epipod partly broken.

Maxilliped 3 (Fig. 2C, D) ischium of endopod with crista dentata bearing 11 teeth; merus with two lateral distal spines on lower border; exopod broken.

Pereopods 1 (Fig. 1A, D) subequal in holotype, only right pereopod 1 present in specimen MNHN Th 349. Merus with small upper distal spinule and a spine at distal third of lower border, latter being more distinct in holotype; propodus with fine longitudinal upper carina terminating in distal spinule in holotype, spinule absent in specimen MNHN Th 349; fixed finger nearly as long or slightly longer than palm with curved tip, cutting edge bearing three or four conical teeth; dactylus with curved tip and large rounded proximal tooth on cutting edge.

Pereopod 2 (Fig. 1E) much smaller than pereopod 1, unarmed, fixed finger and dactylus with small pectiniform setae on cutting edge.

Pereopods 3, 4, 5 (Figs 1A; 2F) all unarmed, dactylus stout and short in pereopod 3, longer and slender in pereopods 4 and 5.

Branchial formula of *C. laevis* was presented by de Saint Laurent (1972: 350). In the present species, except for the gills of maxilliped 1 (Fig. 2A) and pereopod 1 (Fig. 1D) those of other appendages were not examined.

Female and male gonopores open on coxae of pereopods 3 and 5.

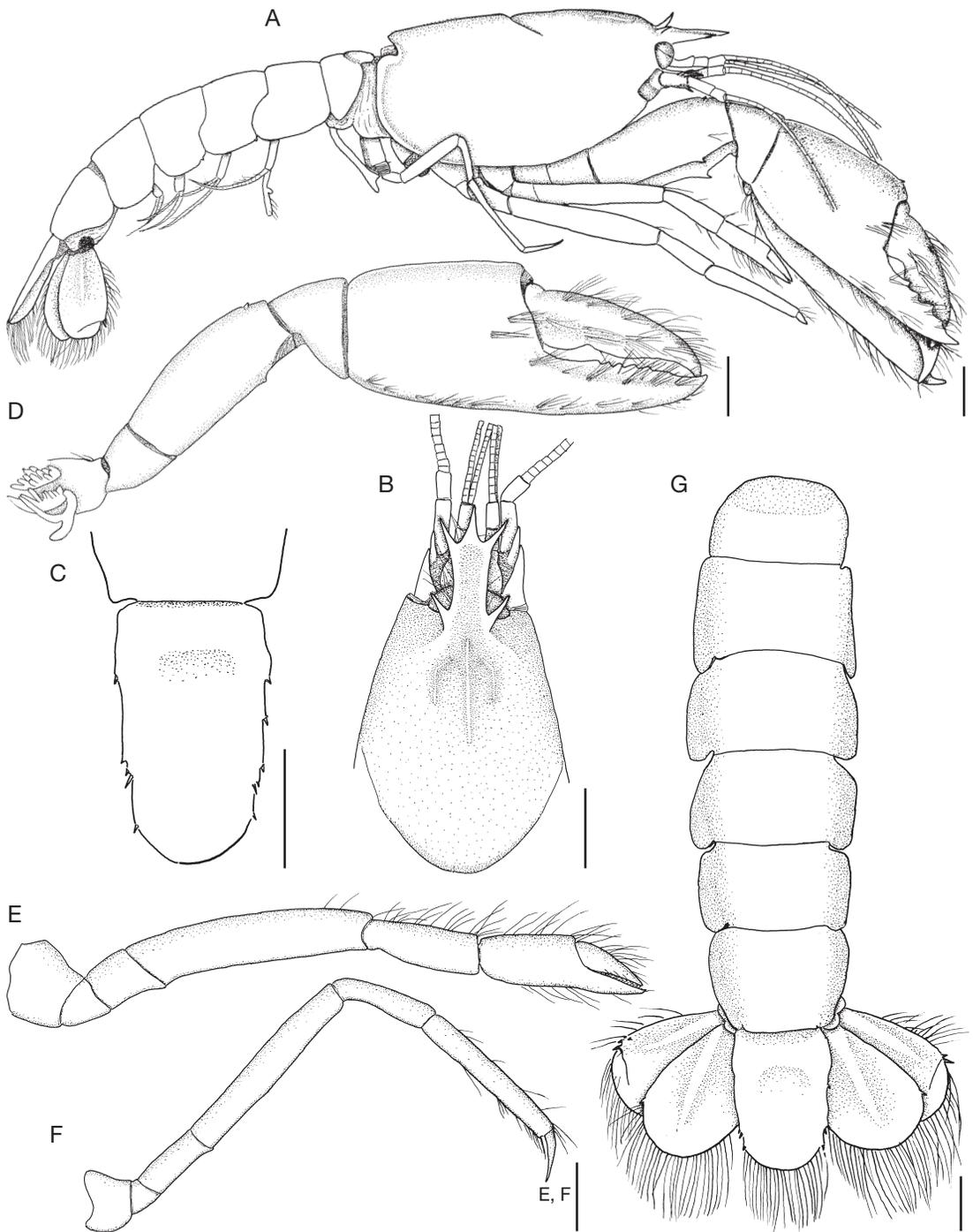


FIG. 1. — *Calastacus laurentae* n. sp.: **A**, lateral view; **B**, anterior part of carapace; **C**, telson; **D**, pereopod 1; **E**, pereopod 2; **F**, pereopod 4; **G**, abdomen, telson and uropods. **A-C**, holotype (MNHN Th 346); **D-G**, specimen MNHN Th 349. Scale bars: 1 mm.

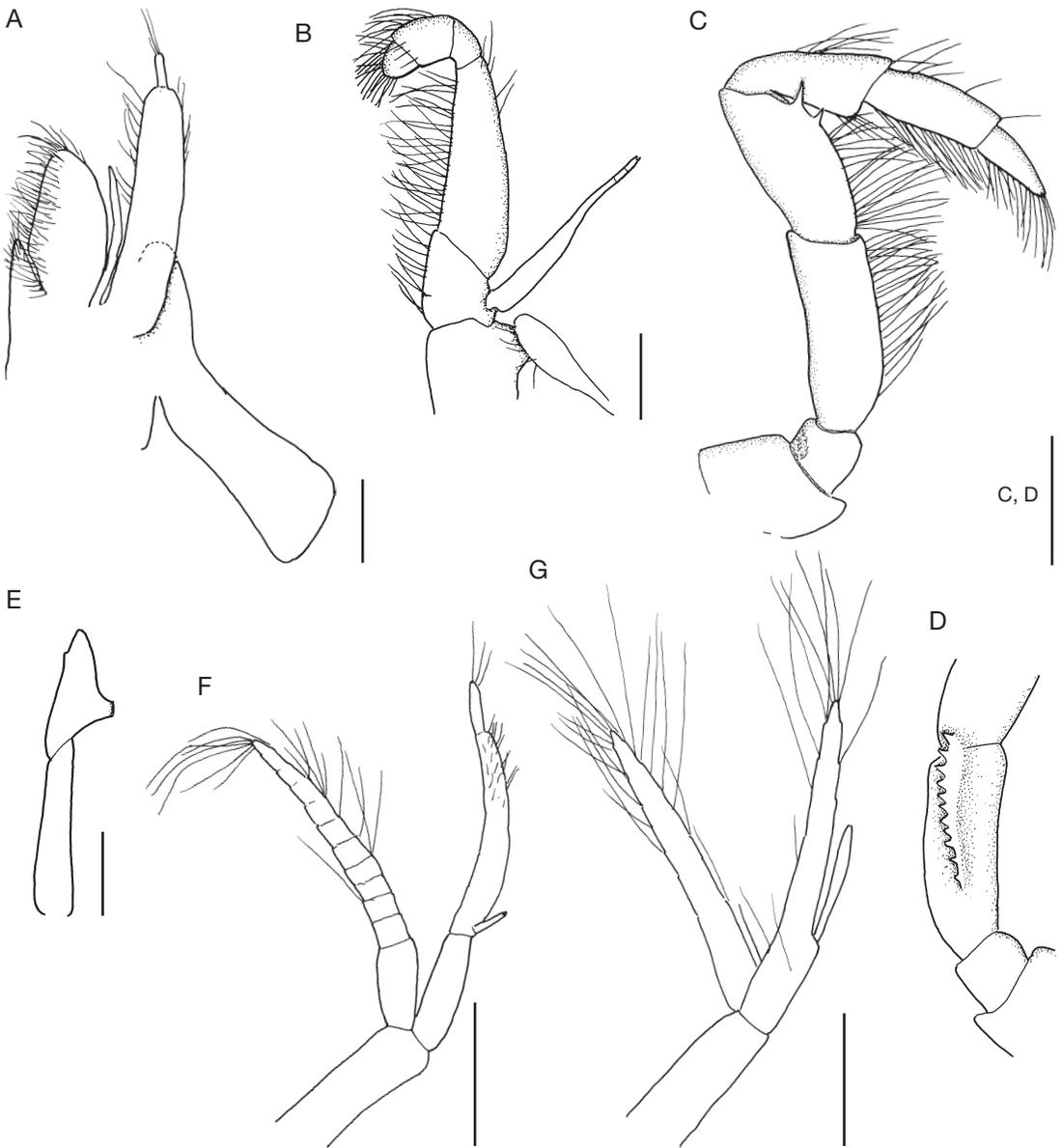


FIG. 2. — *Calastacus laurentae* n. sp.: **A-C**, maxilliped 1, 2 and 3; **D**, ischium of maxilliped 3, mesial view; **E**, pleopod 1; **F, G**, pleopod 2 and 3. **A-D, F, G**, specimen MNHN Th 349; **E**, holotype (MNHN Th 346); Scale bars: 1 mm.

Pleopod 1 (Fig. 2E) two-articulated, proximal article long and slender, distal article larger with a small internal projection, no visible *appendix interna*.

Pleopod 2 (Fig. 2F) biramous, exopod slender, endopod divided into a basal article and a *appendix*

masculina of two faintly separated articles carrying tiny setae; short *appendix interna* fused to base of *appendix masculina*.

Pleopods 3-5 (Fig. 2G) biramous, exopod and endopod slender with long *appendix interna*.

Uropods (Fig. 1G) about as long as telson, posterior border rounded, endopod with one external distal spine, exopod with two external distal spines; very faint and unarmed suture on distal part of exopod.

DISCUSSION

The new taxon differs essentially from known *Calastacus* species by having: 1) a pair of large lateral distal spines on the rostrum besides the supraoculars; and 2) spinules on lateral borders of the telson.

Calastacus laurentae n. sp. resembles *C. laevis*, the other European *Calastacus* species (de Saint Laurent 1972: 352, fig. 9) and also *C. stilirostris*, type species (Faxon 1895: fig. 1e), by the *appendix masculina* of pleopod 2 bearing few setae while setae are dense on the *appendix masculina* of many other species, e.g., *C. crosnieri* (Kensley & Chan 1998: fig. 5F), *C. colpos* (Kensley 1996: fig. 2F), *C. mexicanus* (Kensley 1996: fig. 4E), *C. inflatus* (Komai *et al.* 2010: fig. 7G). Unlike the other species mentioned above with the pleopod 2 bearing an *appendix masculina* of two differentiated articles, in both European species of *Calastacus* the two articles are faintly separated (“incomplètement divisés”) in *C. laevis* (de Saint Laurent 1972: 350, fig. 9) as in *C. laurentae* n. sp. (Fig. 2F).

Calastacus laurentae n. sp. can be differentiated from *C. laevis* by: 1) the pereopod 1 bearing a small subdistal spine on the upper and lower border of merus whilst one upper subdistal spine and five lower spines are present on the merus in *C. laevis*; 2) the pereopod 1 propodus bearing a fine longitudinal upper carina, such carina is absent in *C. laevis*; and 3) the distal suture on uropodal exopod is faint and unarmed while it is well defined and armed with spinules in *C. laevis*.

It can be noted that the holotype of *C. laurentae* n. sp. (cl. 8 mm) is probably a young specimen that is smaller than the holotype of most known species, except for *C. formosus* (cl. 7.1 mm), and especially smaller than the holotype of *C. laevis* (cl. 14.5 mm).

On the other hand, with a single lower spine on the pereopod 1 merus and an unarmed distal suture on the uropod exopod, this species is similar to *C. inflatus* of the southern China sea.

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