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A New Species of *Sphenocarcinus* A. Milne Edwards, 1875 from Tasmantid Guyots, *S. lowryi* n.sp. (Crustacea: Decapoda: Brachyura) with Notes on the Taxonomic Status of the Genus

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ABSTRACT. A new species of *Sphenocarcinus* with a bifid rostrum, *S. lowryi*, is described from the Tasman Sea. This brings to 17 the number of species of the genus *Sphenocarcinus*.

RÉSUMÉ. Une nouvelle espèce de *Sphenocarcinus* à rostre bifide, *S. lowryi,* est décrite de la mer de Tasman. Cela porte à 17 le nombre des espèces du genre *Sphenocarcinus*.

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In May 1989, an expedition organised by the Australian Museum, Sydney on board the RV *Franklin* explored the Tasman Sea (Lowry, 1989). One aim of this expedition was the sampling of the benthic fauna living on the summit of the guyots. In the Tasman Sea, these guyots form several alignments parallel from north to south between 21°and 38°S (Kroenke *et al.*, 1983). These reliefs are the signs of a volcanic activity linked to a "Hot-spot" and to the movement south-north of the Indian-Australian plate (Slater & Goodwin, 1973; Rigolot, 1988).

The summits of these structures are relatively flat and can be worked by dredges and trawls; they reach heights between 90 and 900 m in depth, forming small islands of bathyal fauna, isolated from each other by abyssal depths (Fig.1).

Despite the difficulties encountered in working these hard bottoms with gears which were too fragile, 21 species of crabs belonging to 11 families were collected. From this collection, a series of specimens of the genus *Sphenocarcinus* A. Milne Edwards, 1875 are described as a new species.

This genus currently contains 16 species: four have a single rostrum composed of two spines of varying lengths and shapes. It has been recently been enriched by three new species, originating in New Caledonia (*S. orbiculatus, S. stuckiae*) and in the Philippines (*S. bipartitus*), described by Guinot & Richer de Forges

(1986a). Shortly afterwards, another new species was described from the north of New Caledonia: *S. mammatus* Guinot & Richer de Forges, 1986b.

Sphenocarcinus lowryi n.sp.

Fig.2A-C

Type material. HOLOTYPE: male, 14.6 x 13.8 mm (length without rostrum), Pacific Ocean, east coast of Australia, western Tasman Sea, Britannia Seamount, 28°17.04'S 155°36.46'E, 425 m, RV *Franklin*, 05-89, stn 46, 10 May 1989, coll. J.K. Lowry *et al.* (AM P39430).

PARATYPES: male 13.6 x 12.2 mm, female 9.7 x 8.3 mm, 9 juveniles 3.7 to 5.6 mm length, RV *Franklin*, 05-89, stn 46.

Ovigerous female 14 x 12.5 mm, female 8.6 x 7.5 mm, 2 juveniles 5.5 x 4.6 mm, 5 x 4 mm, RV *Franklin*, 05-89, stn 47, 10 May 1989, Britannia Seamount, western Tasman Sea, 28°17.47'S 158°37.89'E, 419 m, coll. J.K. Lowry *et al.* (AM P39431).

Etymology. This species is dedicated to Dr J.K. Lowry who directed the expedition.

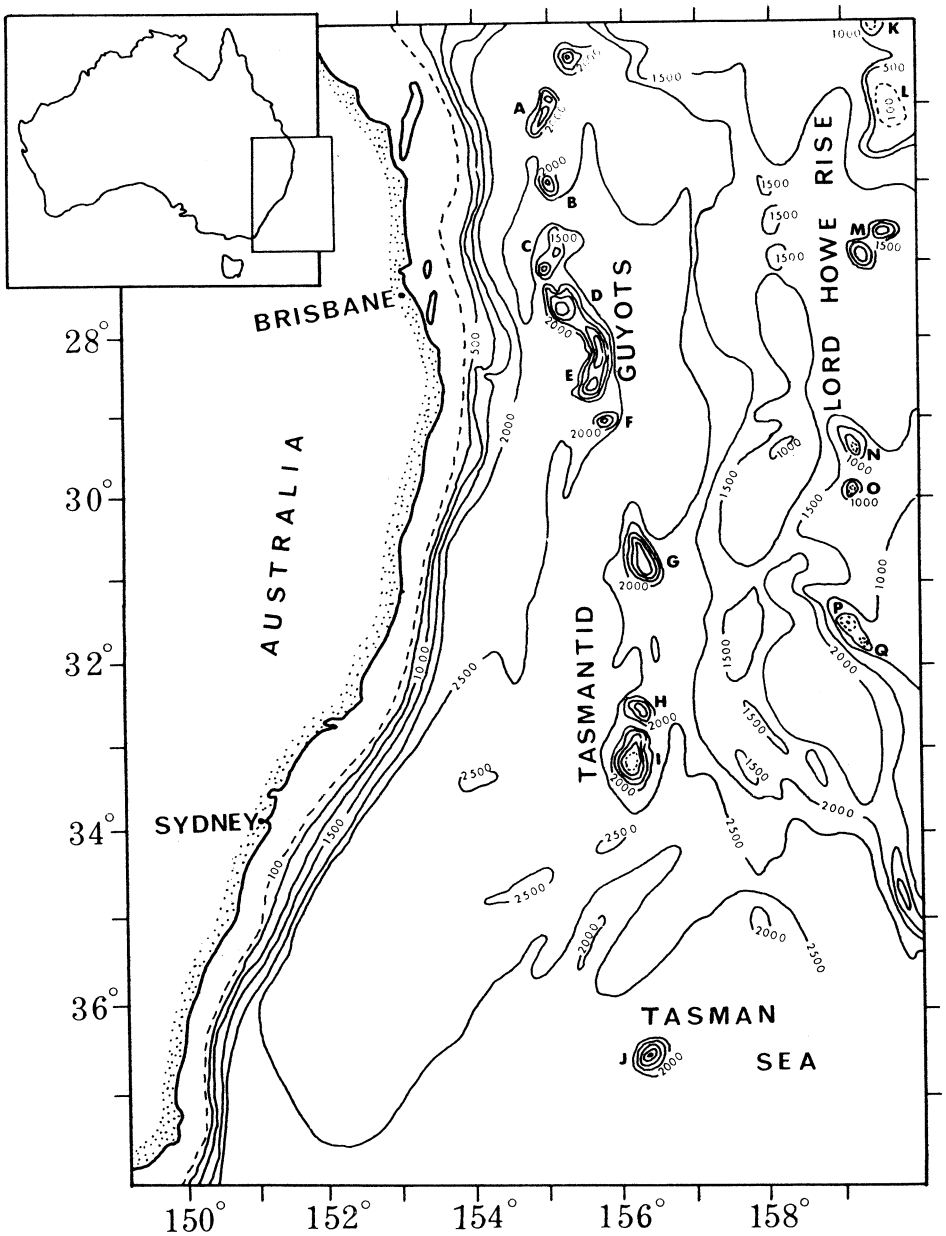

Fig.1. Bathymetric map of the Tasman Sea showing the alignments of guyots (from Slater & Goodwin, 1973). A: Recorder guyot: B: Moreton seamount; C: Brisbane guyot; D: Queensland guyot; E: Britannia guyots; F: Stradbroke seamount; G: Derwent Hunter guyot; H: Barcoo guyot; I: Taupo guyot; J: Gascoyne guyot; K: Kelso guyot; L: Capel guyot; M: Gifford guyot; N: Middleton Reef; O: Elizabeth Reef; P: Lord Howe Island; Q: Balls Pyramid.

Description. Pyriform carapace. Rostrum formed of 2 long divergent spines (left spine broken on holotype). Dorsal face bearing raised plates in relation to surface of carapace. A short but dense pubescence covers the carapace, including plates.

Dorsal plates disposed as follows: 1 uneven gastric plate, subcircular, whose lower edge rises to form a point; in front of and surrounding this plate, 3 tubercules; 1 circular plate, bearing, in the middle, a tubercle giving it the appearance of a cap, this plate being flanked laterally by 2 tubercules; on each side, a pair of branchial plates, the posterior pair pointing to the outside like a spine and the anterior pair set obliquely; these 2 branchial plates offer a concave surface in the shape of a saddle; a large L-shaped hepatic plate whose lower part serves as an edge for the orbit, with the posterior part ending in a spine which points towards the top of the carapace (it is in fact the point of the hepatic and postorbitary plates); 1 lengthened sub-hepatic plate, touching the edge of the buccal margin; back edge of the carapace widening in its middle section to form a spine facing posteriorly.

At the base of the 2 big rostral spines, 2 strong supraocular spines facing towards the outside. Short ocular peduncles. Wide basal antennal article and joined to the base of the rostrum. Smooth sternal plastron.

Individual variations. In the female, the pubescence is more marked, with long hooked setae here and there on the gastric plate and with long setae on the sides of the branchial areas.

In the juvenile, the plates are not as clearly differentiated, and are more like spines, especially the branchial and hepatic spines which are sharper than those of the adult. In a series, increasing in size from a juvenile (3.7 mm in length) to the an adult (14.6 mm in length), the transformation of spines into calcified plates can be observed.

Remarks. In the genus *Sphenocarcinus, S. lowryi* n.sp. is part of a group of species which has very developed plates, and, in particular, branchial plates which point laterally. In this group, the closest species are: *S. velutinus* Miers, 1886, *S. luzonicus* Rathbun, 1916, *S. coralliophilus* Takeda, 1980, *S. bipartitus* and *S. stuckiae* Guinot & Richer de Forges, 1986a.

Sphenocarcinus lowryi n.sp. is easily distinguished from *S. velutinus* by the absence of raised nodules forming plates characteristic of the latter. *Sphenocarcinus luzonicus* has plates which are rounder and smoother than those of *S. lowryi* n.sp., and the hepatic plate does not form a spine as does that of *S. lowryi*. Furthermore, with *S. luzonicus* all the plates show a convex bulge, while the branchial and hepatic plates have a concave curve in *S. lowryi* n.sp.

The species described by Takeda (1980) from Midway Island under the name of *S. coralliophilus* has branchial plates which are very sharp and which point laterally,

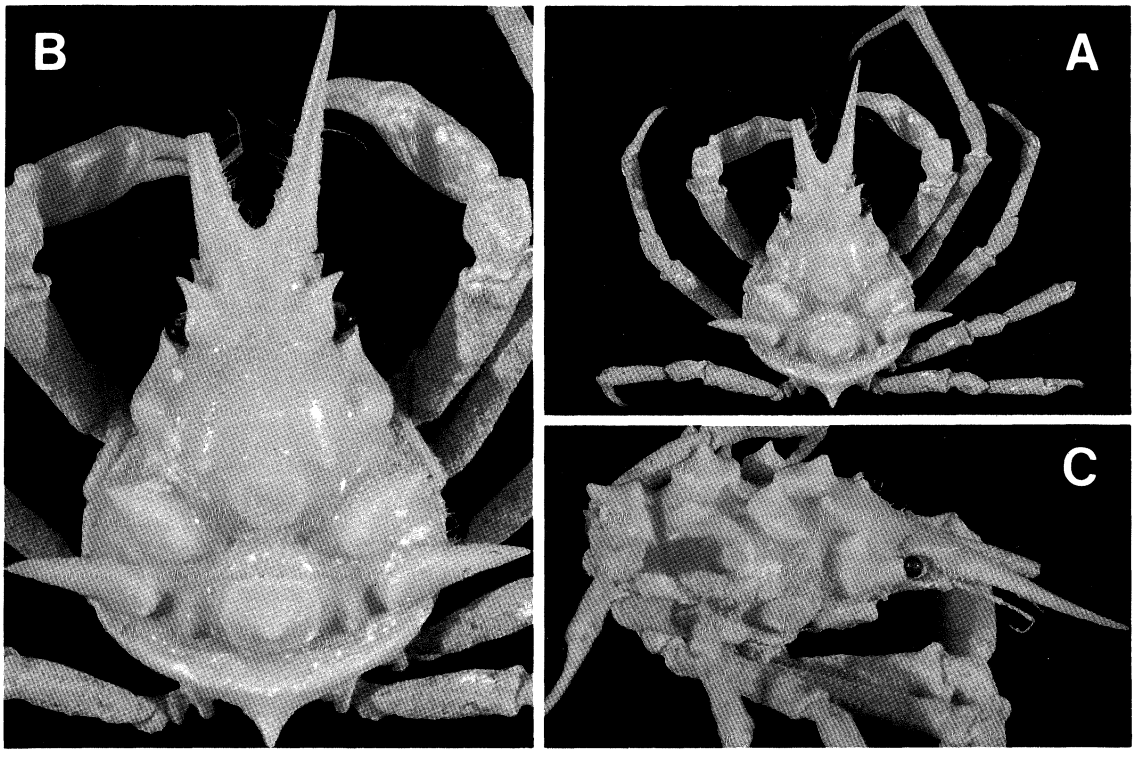

Fig.2. *Sphenocarcinus lowryi* n.sp., holotype, male, 14.6 x 13.8 mm, east coast of Australia, Tasman seamount, 28°17.04'S 155°36.46'E, 425 m, RV *Franklin*, 05-89, Stn 46, 10 May 1989, coll J.K. Lowry *et al.* (AM P39430). A: full view; B: close-up of carapace; C: profile.

comparable with those observed in *S. lowryi* n.sp. However, it is distinguished from it by the absence of a supraocular spine and by the present of very sharp hepatic spines pointing laterally, while those of *S. lowryi* n.sp. are not at all sharp and point upwards. Finally, *S. coralliophilus* carries a posterior plate, below the cardiac plate, which is absent in *S. lowryi* n.sp.

Sphenocarcinus lowryi n.sp. exhibits a certain resemblance to *S. stuckiae*, described from New Caledonia, by the presence of a posterior edge of the carapace forming a spine and by its long rostral spines. *Sphenocarcinus lowryi* is easily distinguished by the presence of supraocular spines, which are absent in *S. stuckiae*.

Sphenocarcinus bipartitus, described from the Philippines, has pointed branchial plates which are slightly concave, similar to those of *S. lowryi* n.sp., and also has supraocular spines. This species is distinguished from *S. lowryi* n.sp. by the reduction of cardiac and gastric plates, which are replaced by protuberances bearing setae. To sum up, *Sphenocarcinus lowryi* n.sp. can be distinguished from all other species by the simultaneous presence of concave spines, a cardiac plate topped by a cap, supraocular spines, and a posterior spine.

Using the diagnoses proposed by Garth (1958) and Griffin & Tranter (1986) the genus *Sphenocarcinus* A. Milne Edwards, 1875, is considered synonymous with *Rochinia* A. Milne Edwards, 1875. After the description of *S. mammatus*, Guinot & Richer de Forges (1986) checked the species attributed to this genus, and had noted its difficult separation from the genus *Rochinia*.

Although these considerations go beyond the aim of this article, it seems nevertheless that the genus *Sphenocarcinus* is justified by a single character: the presence of calcified plates on the carapace. It is true that the 'frontier' with the genus *Rochinia* is often poorly defined: for example, *S. nodosus* Rathbun, 1916, which has no plates, seems distant from other species of this genus.

I note that with *S. lowryi* n.sp. the calcified plates are former spines modified during the growth period. I have not observed this phenomenon in *S. orbiculatus*, for which an abundant amount of material, including juveniles, has been examined.

Arguments which use the male pleopod to separate the genera do not seem adequate, and the criterion of sexual appendices is generally little used with the Majidae.

In the *Sphenocarcinus* group of the Indo-Pacific species, as it is currently understood, three types of rostrum can be distinguished: a bifid rostrum but with parallel jointed spines (*S. auritus*); an uneven rostrum, but bifid at the end (*S. cuneus, S. aurorae, S. difficilis, S. pinocchio*), these species all having strong calcified plates; a clearly bifid rostrum starting from the base with divergent spines. In this group (*S. stimpsoni, S. velutinus, S. bipartitus, S. stuckiae, S. mammatus, S. orbiculatus, S. nodosus, S. luzonicus, S. sphenocarcinoides, S. carbunculus, S. bidens, S. coralliophilus* and *S. lowryi*) two species possess carapace plates different from that of the others: *S. velutinus* and *S. nodosus*.

Sphenocarcinus velutinus (Miers, 1886) has a carapace covered with a strong pubescence masking the outline, the nodosities are rounded and do not form plates except in the branchial zone. The only rough patches really comparable to the plates of the other species are the two flat plates on the lateroventral edge. This species, originally placed in the genus *Pugettia*, was moved to *Sphenocarcinus* by Griffin (1976) after examining unstudied specimens from the *Albatross*. This material was later described as a new species, *S. bipartitus* Guinot & Richer de Forges, 1986. Sakai, 1976, suggested placing this species in the genus *Rochinia*.

Sphenocarcinus nodosus Rathbun, 1916, whose holotype we have studied, has on the cephalothorax, rounded nodosities covered with a tomentum but not true plates, the rostral spines are very short and the carapace is rounded. The combination of these characters states isolates it from the genus *Sphenocarcinus*.

In conclusion, it appears that the genus *Sphenocarcinus* is heterogenous and that it should be divided into two or three taxonomic categories. However, it contains a group of species which, regardless of their size, show strong calcified plates on the dorsal face. It is this group which constitutes the true *Sphenocarcinus, sensu stricto* distinct from *Rochinia*.

Distribution. *Sphenocarcinus lowryi* was collected on the tops of submarine mountains in the Tasman Sea, off the east coast of Australia, on hard bottoms, at depths of 419 to 425 m.

Although very close to the Chesterfield Islands (2100 km), and to New Caledonia (2700 km), the Britannia guyot seems to possess a particular benthic fauna.

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Addendum

When this paper was in press, Tavares (1991) proposed a new classification of this group. He limited the genus *Sphenocarcinus* for the two American species, placed the *Sphenocarcinus* with bifid rostrum and short chelipeds under *Rochinia* and those with long chelipeds under *Oxypleurodon,* and created a new genus *Nasutocarcinus* for the single rostrum species.

In the Tavares view, our *S. lowryi* n.sp. would be placed under *Rochinia.*

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