



**Fig. 9.** *Ciocalypta vansoesti*: **A**, preserved paratype specimen (QM G303450); **B**, light microphotograph showing choanosomal skeleton at fistule. Scale bars: A, 20 mm; B, 500  $\mu$ m.

now referred to *Ciocalypta* under the revised concept of Halichondriidae (Erpenbeck & Van Soest 2002).

As mentioned by Hooper *et al.* (1997) and above, *Ciocalypta vansoesti* is closely related to *C. stalagmites*, both with similar growth form, skeletal organisation and type of spicules. Both species have fistules projecting from a buried-semiburied mass, but in the case of *C. vansoesti* the fistules are translucent-white with the surface regularly conulose and subectosomal tracts and central column visible beneath (Figs 11, 9A). However, the skeleton in the fistules, when compared to *C. stalagmites*, is denser and slightly disorganised; the central column is not as condensed and the extra axial reticulation is vague (Fig. 9B, Hooper *et al.* 1997, figs. 22a, 23a). The dimensions of the oxeas are similar and overlap with those of *C. stalagmites*, but in *C. vansoesti* there is not a clear difference in size categories, with the two classes of spicules overlapping both in length and in width (Table 7).

*Ciocalypta vansoesti* is also similar in some of the field characteristics to *Axinyssa mertoni*, indicating once again that fistule-like growth forms are common among halichondriids and so are not useful to differentiate species unless they are used in combination with other skeletal characters.

**Distribution.** *Ciocalypta vansoesti* is common in Darwin Harbour and Bynoe Harbour. It is also recorded from Cobourg Peninsula and the Gulf of Carpentaria. It is found intertidally and subtidally to 40 m depth.

**Remarks on *Ciocalypta*.** Burton (1959) considered many species of halichondriid genera with a fistulose

habit conspecific with *Ciocalypta penicillus* (type species of *Ciocalypta*). These synonyms were not properly substantiated and some of them have been rejected by Hooper *et al.* (1997) and the present revision, i.e. *Ciocalypta heterostyla*, *C. stalagmites*, *C. tyleri*, *C. oculata maxima* (referred here to *Amorphinopsis fenestrata*), and *C. mertoni* (referred here to *Axinyssa mertoni*).

Additional species of *Ciocalypta* recorded from the Sahul Shelf Province and adjacent areas besides the three revised here (i.e. *C. heterostyla*, *C. stalagmites* and *C. vansoesti*) are *C. rutila gracilis* Hentschel, 1912 (see below), *C. digitata* (Dendy, 1905, as *Collocalypta*), *C. melichlora* Sollas, 1902, *C. rutila* Sollas, 1902, and *C. simplex* Thiele, 1900: 76.

One of the syntypes of *Ciocalypta rutila gracilis* Hentschel, 1912 (SMF 1566, examined) belongs in *Axinyssa*. Both the external morphology (based on Hentschel's description) and the arrangement of skeleton agree with the concept of that genus. The skeleton of the material examined is formed by two classes of oxeas: straight 480.8–706.4  $\mu$ m (601.6 $\pm$ 76.7)  $\times$  9–24  $\mu$ m (17 $\pm$ 3.1) and vermicular, crooked sinuous, relatively thinner, and often bent up to a 90 degree angle, 193–600.7  $\mu$ m (406.7 $\pm$ 110.6)  $\times$  5.3–16  $\mu$ m (10.6 $\pm$ 3) [18]; less often styles are also present. Specimens recorded for Northeast Australian Shelf and Indonesia correspond with the type examined (Alvarez & Hooper unpublished data; Alvarez & De Voogd unpublished data) and will be redescribed under the name of *Axinyssa gracilis* in forthcoming publications.

*Ciocalypta digitata* (Dendy, 1905) resembles *Ciocalypta stalagmites* and *C. vansoesti* in habit but differs in skeletal

**Table 7.** Comparison of spicule dimensions between specimens of *Ciocalypta vansoesti*.

Specimen	Locality	Oxea type I	Oxea type II
NTM Z.2648	Darwin Harbour, East Point	185.3–459.7 $\mu$ m (320 $\pm$ 60.9) $\times$ 6.4–9.5 $\mu$ m (8 $\pm$ 0.9)	475.2–616.4 $\mu$ m (546.2 $\pm$ 38.3) $\times$ 14–21.6 $\mu$ m (17.9 $\pm$ 2.3)
QM G303450	Bynoe Harbour	194.1–361.7 $\mu$ m (275.3 $\pm$ 45.6) $\times$ 2.1–9.8 $\mu$ m (6.8 $\pm$ 1.8)	382–662.1 $\mu$ m (536.1 $\pm$ 78.2) $\times$ 6.8–30.8 $\mu$ m (16.8 $\pm$ 6)
QM G303524	Gulf of Carpentaria	237.5–429.2 $\mu$ m (314.9 $\pm$ 56.5) $\times$ 6.4–11.9 $\mu$ m (8.4 $\pm$ 1.3)	432.8–677.3 $\mu$ m (541.2 $\pm$ 58.7) $\times$ 8.2–31.9 $\mu$ m (17.5 $\pm$ 4.8)