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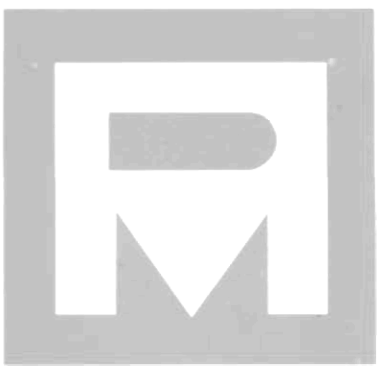
PETER W. GLYNN



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EXOSPHAEROMA CRENULATUM (RICHARDSON), A JUNIOR SYNONYM OF *DYNAMENELLA PERFORATA* (MOORE) (CRUSTACEA: ISOPODA)

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ABSTRACT

Dynamenella perforata (Moore), a tropical western Atlantic sphaeromatid isopod commonly associated commensally with chitons, is shown on the basis of evidence from morphology and host preference studies to be a senior synonym of *Exosphaeroma crenulatum* (Richardson).

INTRODUCTION

The purpose of this note is to clarify the identity of *Exosphaeroma crenulatum* (Richardson, 1902), long regarded as a valid hemibranchiate sphaeromatid species from the Bermuda Islands (Richardson, 1905; Menzies and Frankenberg, 1966; Schultz, 1969). I will present evidence that *E. crenulatum* is a junior synonym of the wide-ranging and well known tropical western Atlantic species *Dynamenella perforata* (Moore, 1901). This evidence is derived from (a) comparison of the type-material with several collections of *D. perforata* from the type locality and elsewhere, and (b) study of sphaeromatid isopod commensals on chiton hosts from numerous localities in the western Atlantic region. The species in question is first shown to belong to Hansen's (1905) Eubranchiatae within the subfamily Sphaerominae.

ASSIGNMENT TO EUBRANCHIATAE

The type-specimens of *E. crenulatum* clearly show both rami of Plp^4 ($Pleopod^4$) with strongly developed transverse folds, thus demonstrating their affinity with the sphaeromatid Eubranchiatae of Hansen (1905). Moreover, the condition of other characters in the single syntypic male (pleotelson, penes, stylet) shows that it is immature. An adult male in this group has a pleotelson with at least an emarginate terminal border. It is also possible to establish an unequivocal generic assignment of the *E. crenulatum* types to *Dynamenella* Hansen, 1905, within the Eubranchiatae. The incorrect assignment of *E. crenulatum* to the Hemibranchiatae and the resulting generic confusion was probably due in part to inadequate study of the pleopods (these appendages were not mentioned in the description) and examination by Richardson of only female and immature male specimens.

SYNONYMS

Dynamene perforata Moore, 1901, p. 173, pl. 10, figs. 9–19. *Sphaeroma crenulatum* Richardson, 1902, p. 292, pl. 39, fig. 40. *Exosphaeroma crenulatum* (Richardson). Richardson, 1905, p. 298, figs. 317 and 318. *Dynamene moorei* Richardson, 1905, p. 303, figs. 325–326.

MATERIAL EXAMINED

Exosphaeroma crenulatum (Richardson): type lot, no holotype designated, 10 syntypes (1 male, 8 females, 1 undetermined sex), Bermuda, G. B. Goode, 1876–1877, Yale Peabody Museum No. 3250. *Dynamenella perforata* (Moore): 6 mature males, Bermuda, G. B. Goode, 1876–1877, Yale Peabody Museum No. 3204; 63 assorted male, female and juvenile specimens, Sue Wood Bay, Bermuda, D. M. Devaney, 19 September 1969, from crevices in splash pools on eolianite rock and from *Chiton tuberculatus* Linné, author's collection (Smithsonian Tropical Research Institute); 35 assorted female and juvenile specimens, Laurel Reef, La Parguera, Puerto Rico, P. W. Glynn, 19 January 1966, from *Acanthopleura granulata* Gmelin on coral boulders at seaward edge of reef flat, author's collection (Smithsonian Tropical Research Institute); 74 assorted mature male, female and juvenile specimens, Holandés Reef (west end), San Blas, Panamá, P. W. Glynn, 24 November 1967, from *A. granulata* on *Acropora* coral rubble, author's collection (Smithsonian Tropical Research Institute); 100+ assorted mature male, female and juvenile specimens, West Bull, Discovery Bay, Jamaica, P. W. Glynn, 4 September 1969, from *A. granulata* on Pleistocene reef rock, specimens examined in field and subsequently released.

MORPHOLOGICAL COMPARISON

The following account is based on a comparison of the type-lot of *E. crenulatum* (containing only female, and one immature male, specimens) with a series of females and immature males of *D. perforata* from Bermuda, Puerto Rico and Panamá. While the type-collection of *E. crenulatum* is in poor condition–the bodies of most animals are either distorted or partly broken–the material does permit critical study of the morphological features included in Richardson's (1902) description of the species. Examination of the type-collection was largely confined to these characters in order not to damage the material further.

Body surface smooth, but pleotelson minutely tuberculate in all specimens. Faint pigmentation still visible on pereonites and pleotelson of some specimens, corresponding in position to that present in *D. perforata*.

Cephalon, location of eyes, and Ant^1 ($Antenna^1$) and Ant^2 as in *D. perforata*.

Pereonites of *E. crenulatum* are not subequal in size (contra Richardson, 1902). Pereonite 1 is longer than pereonites 2–7 which are subequal. This size difference is, however, evident in Richardson's illustration of *E. crenulatum*. Three specimens in the type-lot of *E. crenulatum* showed Pereonite 1 to be 1.3x length of Pereonite 2, as in *D. perforata*. Other size

dimensions of pereonites in *D. perforata* (see p. 60 in Menzies and Glynn, 1968) are in essential agreement with *E. crenulatum*.

Contrary to Richardson (1902), Pleonite 1 is not longer than any of the pereonites. In all specimens Pereonite 1 and Pleonite 1 are subequal in length; pleonal suture lines are also identical. Pleotelson shows a minute cleft or indentation (best observed ventrally) at midline of terminal border in some females from all collections. This feature is illustrated in Richardson (1905), fig. 325 for *Dynamene moorei* Richardson and in Menzies and Glynn (1968), fig. 27L for *Dynamenella perforata*.

Uropods and pereopods show no significant differences.

Further comparison, supplementing Richardson's description of *E. crenulatum*, follows. Penes in immature male of *E. crenulatum* short with blunt tips and erect, as in comparable growth stage of *D. perforata* (see fig. 2 in Glynn, 1968). Stylet in *E. crenulatum* broad and blunt apically, exceeding slightly length of endopod. Plp^3 exopod jointed. Plp^4 and Plp^5 show comparable development in all material examined with prominent branchiae on both rami.

COMMENSAL ASSOCIATION

Recent knowledge of the various associations of commensal sphaeromatids with chiton species also supports the proposed synonymy. This problem first came about in an attempt to trace the identity of *E. crenulatum*, reported to live in association with an unidentified chiton on the north coast of Jamaica (Richardson, 1912) and with *Chiton tuberculatus* in Bermuda (Arey and Crozier, 1919). Study of the kinds of chiton-sphaeromatid associations present in the tropical western Atlantic region has disclosed five different such partnerships involving three chiton species and three isopods, two in the genus *Dynamenella* and one species of *Exosphaeroma* (Menzies and Glynn, 1968; Glynn, 1968). One of the most common partnerships is that between *Acanthopleura granulata* and *Dynamenella perforata*. *Dynamenella perforata* is the only sphaeromatid known to live with *Acanthopleura* and it is sometimes found on *Chiton tuberculatus*. Examination of *Acanthopleura* with its isopod commensals at Discovery Bay and *D. perforata* collected from an unidentified chiton at Montego Bay (see table 6 in Glynn, 1968) confirmed the presence of this particular association in Jamaica. A recent collection of *D. perforata* from *Chiton tuberculatus* at Sue Wood Bay also establishes the occurrence of this particular partnership in Bermuda.

DISCUSSION

It is highly probable that the *Acanthopleura–Dynamene* spp. association described in the Bahamas (Brattegard, 1968) involves the single sphaeromatid species *Dynamenella perforata*, since *Dynamene moorei* Richardson was synonymized with *D. perforata* by Glynn (1968). The Bermuda material studied by Richardson (1902), including *E. crenulatum* and *D. perforata*, was collected by G. B. Goode in 1876–1877 and quite possibly represented a single collection. Because Richardson (1905) also named *D. moorei* from Moore's (1901) collection, which formed the basis for his description of *D. perforata*, it appears that Richardson did not always pay careful attention to the sexual dimorphic condition so usual in this group of isopods.

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