

ARE GAETANUS AND GAIDIUS (COPEPODA, CALANOIDA,  
AETIDEIDAE) A SINGLE GENUS?\*

ANTONIO FREDERICO CAMPANER

Departamento de Zoologia. Instituto de  
Biociências. Universidade de São Paulo  
(USP) C. P. 20.520. 01498, São Paulo-SP  
Brasil. (recebido em 14.X.1985).

**RESUMO** - Discute-se a união dos gêneros *Gaetanus* e *Gaidius*, proposta por Park (1975), com base no estudo morfológico dos copepoditos V (machos e fêmeas) de *Gaetanus minor*, coletados ao largo do Brasil. Conclui-se pela manutenção de *Gaetanus* separado de *Gaidius* pela presença de um processo cefálico nos copepoditos V de ambos os sexos e nas fêmeas adultas. Este processo está pouco ou muito reduzido, ou mesmo ausente nos machos adultos.

**ABSTRACT** - The union of the genera *Gaetanus* and *Gaidius* proposed by Park (1975) is discussed here based on morphological study of male and female copepodites V of *Gaetanus minor* collected off Brazil. It is concluded that *Gaetanus* should be maintained apart from *Gaidius* by having a cephalic process in the copepodites V of both sexes and in adult females. This process is reduced in different degrees or even absent in the adult males.

In his revision of the genera *Gaetanus* Giesbrecht, 1888, and *Gaidius* Giesbrecht, 1895, Park (1975) proposed their union based on the absence of a cephalic process in the male of *Gaetanus minor* Farran, 1905, which he described for the first time.

*Gaetanus minor* was collected in the night tows from the oceanic epipelagial off southern Brazil (Campaner, 1985). Among my specimens, only adult females and copepodites V of both sexes were found. Morphological examination of these copepodites showed some features which ought to be considered with respect to Park's view.

The male copepodite V (Fig. 1a) measures along the mid-dorsal line, cephalic process and furcal setae excluded

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\* Dedicated to Dr Eveline B. R. Marcus on her 85th birthday.

1.73-1.86 mm (N = 10), average 1.80 mm; the prosome 1.40-1.54 mm, average 1.48 mm, and the urosome 0.25-0.37 mm, average 0.32 mm. The pointed cephalic process is present. The number of spines and setae on the maxillary segments and lobes (Fig. 1b) is 14 on Lil, 4 on Li2, 4 on Li3, 5 on Ba2, 12 on Ri, 10 on Re, and 9 on Le1; 4 among the 14 elements on Lil are on its posterior surface. The lamella on the first basipodal segment of the maxilliped (Fig. 1c, cl) is present. The outer spine on the first exopodal segment (Rel) of the first leg (Fig. 1d) is ca. half the length of the outer terminal one. The fifth pair of legs (Fig. 1e) is almost symmetrical; the outer apical spine is articulated on the right leg and unarticulated on the left one, each preceded by one minute inner spinelike emargination.

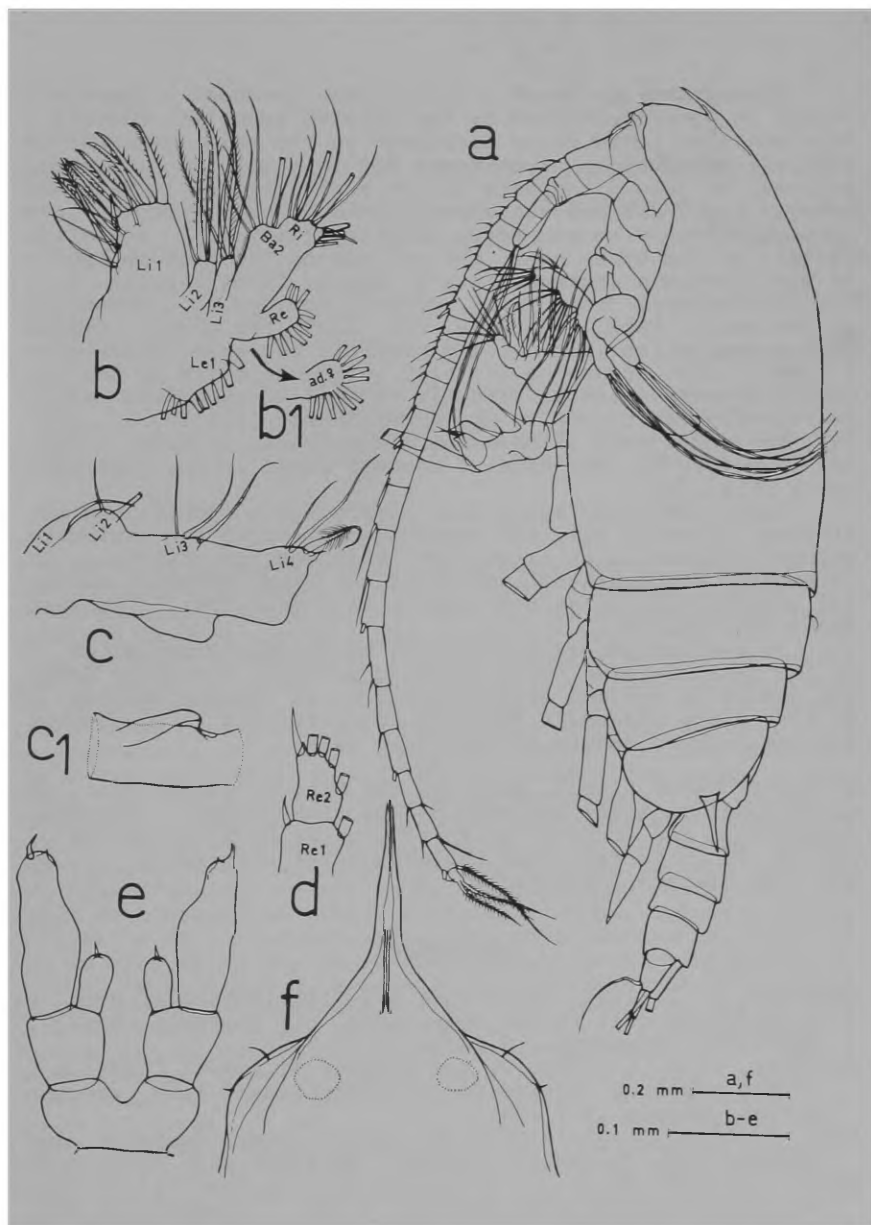
Apart from the male's fifth legs, the male and female copepodites V and the adult female have all the appendages structurally similar. The adult female differs from the copepodites V by having 11 setae on the maxillary exopodite (Fig. 1bl); this had been already noticed by Sewell (1929: 105) in copepodites V of *Gaetanus pileatus*. On the other hand, I did not find any differences observed by With (1915) and confirmed by Sewell (op. cit.) in the basipodal lamella on the maxillipeds of both copepodites (male and female) and adult females.

Therefore, the male and female copepodites V possess almost all the specific and generic characteristics which remain unchanged or little altered in the adult female. The pointed cephalic and metasomal processes, e.g., are practically the same in these stages.

This situation is completely different regarding the adult male. As occurs in several other genera (see, e.g., Matthews, 1964) the moult into the adult (fifth into sixth copepodite) involves not only morphological but also biological changes. As far as one can deduce from Park's (1975) descriptions of the *Gaetanus* adult males, some segments are fused and many others have aesthetascs in the antennula; the endopodite and inner lobes of the maxillula are strongly reduced; the first three lobes and the lamella on the first basipodite of the maxilliped disappear; and, the outer spine on 1st exopodal segment of leg 1 is strongly reduced. Although not described by Park (op. cit.), other reductions might also occur in the mandible and maxilla.

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Fig. 1 - *Gaetanus minor* Farran, 1905, male copepodite V. a, Habitus, lateral; b, Maxillula; bl, Maxillary exopodite of an adult female; c, Basipodal segment 1 of the maxilliped, displaced to the left from its position in Fig. 1a; cl, Lamella on 1st basipodite of the maxilliped seen from below; d, Exopodite of leg 1, posterior; e, Fifth pair of legs *Gaetanus miles* Giesbrecht, 1888, adult female (FINEP/IOUSP collection, St. L-2773, SW Atlantic, Brazil) f, Forehead, dorsal.



Concerning the generic definition, the most important change is however related to the pointed cephalic process. It seems that it is fully developed in the male copepodites V of all the species of *Gaetanus* and is little or strongly reduced, or even disappears in the adult males. In *Gaetanus kruppi*, e.g., the process seems to change very little from the copepodite V to the adult (With, 1915:99-101, text-fig. 25c-d). On the other hand, the process on the male copepodite V of *Gaetanus armingeri* (see T. Scott, 1894:71-2, pl. 8 : fig. 17) becomes "very small, closely applied to forehead" in the adult (Park, 1975:27-8, fig. 11c). The adult female of *Gaetanus miles* (Fig. 1f) and probably the male copepodite V have a crest advancing medially up to one third of the cephalic process which is strongly reduced in the adult male, practically restricted to the crest (Park, 1975:19, fig. 4k). The adult male of *Gaetanus minor* (Park, 1975:25, fig. 9c) is devoid of the cephalic process found in the copepodites V (Fig. 1a).

Such a modified adult male represents a specialized individual in which only the appendages involved in swimming movements practically retain the basic generic structure. In this case, a comparative morphological study involving adults and copepodites is the best way to elucidate the kinship among the species.

In conclusion, as none of the known male copepodites V of the genus *Gaidius* has a cephalic process, the genus *Gaetanus* should be defined by possessing it in the copepodites V of both sexes and adult females, being reduced in different degrees or even absent in the adult males.

ACKNOWLEDGMENTS - Dr Y. Matsuura and Miss K. Suzuki put at my disposal material and data of the FINEP/IOUSP plankton collection, and Dr T. K. S. Björnberg, Dr E. B. R. Marcus and Dr F. D. Ferrari read the manuscript critically. To all I am sincerely grateful.

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