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A new genus of Copepoda: Hatschekiidae parasitic on *Dicrolene nigra* off the Chilean coast

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Brachihatschekia lobulata a new genus and species of parasitic copepod, is described and illustrated. It was found on the gills of the fish *Dicrolene nigra* (Ophiididae). The new genus *Brachihatschekia* is characterized by the possession of three pairs of biramous thoracopods (the third pair being situated at the apex of a prominent, ventrolateral, brachiform projection) as well as by the position of the rami of the second thoracopod parallel to the interpodal bars. *B. lobulata* is the fourth member of Hatschekiidae reported from teleost fishes in the waters of Chile, South Pacific.

KEYWORDS: *Brachihatschekia* gen. nov., Copepoda, Fish parasite, Chile.

Introduction

The family Hatschekiidae Kabata, 1979, comprises six genera, all parasitic on gill filaments of teleost fishes. The principal diagnostic features of these genera are provided by their thoracopods. These appendages vary in number from two to four pairs, the first two pair typically being biramous. Posterior pairs are either similar to the first two or variously modified by reduction (sometimes a single small seta). A special case is *Bassettithia* Wilson, 1922, which has four pairs of simplified, bilobed thoracopods.

Only three species of Hatschekiidae have been so far recorded from the coast of Chile. They are: *Hatschekia conifera* Yamaguti, 1939, found on *Cubiceps caerulus* (Reagan) by Cressey (1968); *Hatschekia affluens* on *Pimelometopon maculatus* (Perez) and *H. amphiprocessa* on *Paralabrax humeralis* (Val.), found by Castro & Baeza (1986).

Continuing their search for parasitic copepods of fishes off the Chilean coast, the authors found some specimens evidently belonging to Hatschekiida (as indicated by general morphology and the lack of maxillipeds and form of the second maxilla) on *Dicrolene nigra* Garman, 1899. The structure of the third pair of thoracopods and the position of the second pair prevent these specimens from being included in any hitherto known genera of Hatschekiidae. The authors create for them a new genus, *Brachihatschekia* gen. nov. This paper describes and illustrates the new taxon.

Methods

In the course of the examination, dissected appendages were cleared in lactic acid, as necessary. All drawings were made with the aid of camera lucida. Measurements are in micrometers (μm) and terminology follows Kabata (1979).

Brachihatschekia gen. nov.

Female. Hatschekiidae. Cephalothorax subcircular (or transversally oval). Neck region distinctly two-segmented. Genital complex about four times longer than

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cephalothorax, oblong, without out growths or processes. Abdomen one-segmented, small, retractable into mid-posterior genital depression. First antenna uniramous, obscurely segmented, setiferous. Second antenna uniramous, two-segmented, subchelate. Mouth siphonostome. Mandible toothed. First maxilla biramous. Second maxilla brachiform, with bifid terminal claw. Three pairs of biramous thoracopods: first two with interpodal bars and sympods well-defined; third without interpodal bar, with ill-defined sympods, located on apices of large lobular projections. Fourth thoracopods simple, minute seta. Uropods present.

Male. Unknown.

Etymology. The name of the genus consist of Brachi (Latin *Brachium*, arm) referring to the processes of the third pedigerous segment, and *Hatschekia* the name of the type genus of the family.

Brachihatschekia lobulata sp. nov.

(Figs 1–12)

Host. Dicrolene nigra Garman, 1899.

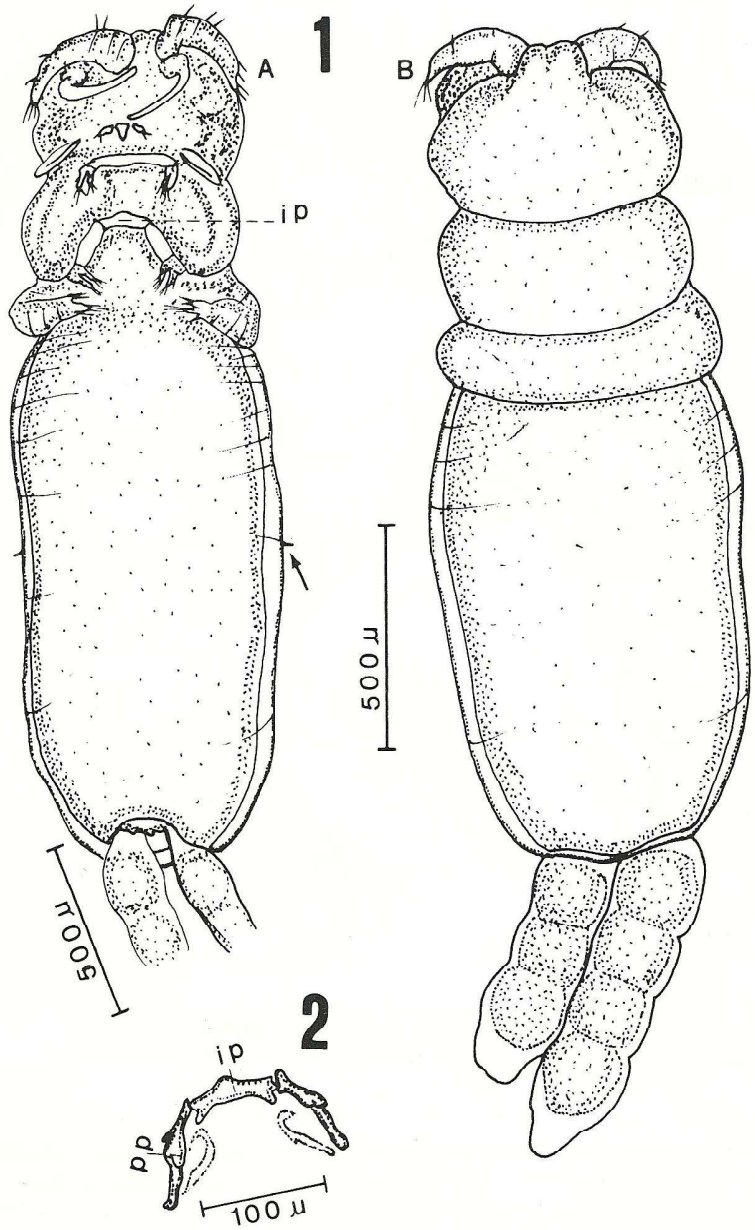
Locality. Bahía de Copiapó (27°15′S; 71°04′W), depth 800 m.

Specimens. Ten ovigerous females, collected on 17 February 1985. Type material deposited in Museo Nacional de Historia Natural de Chile: HOLOTYPE (female) reg. no. MNHN-CP 15064 and PARATYPES (3 females) reg. no. MNHN-CP 15082.

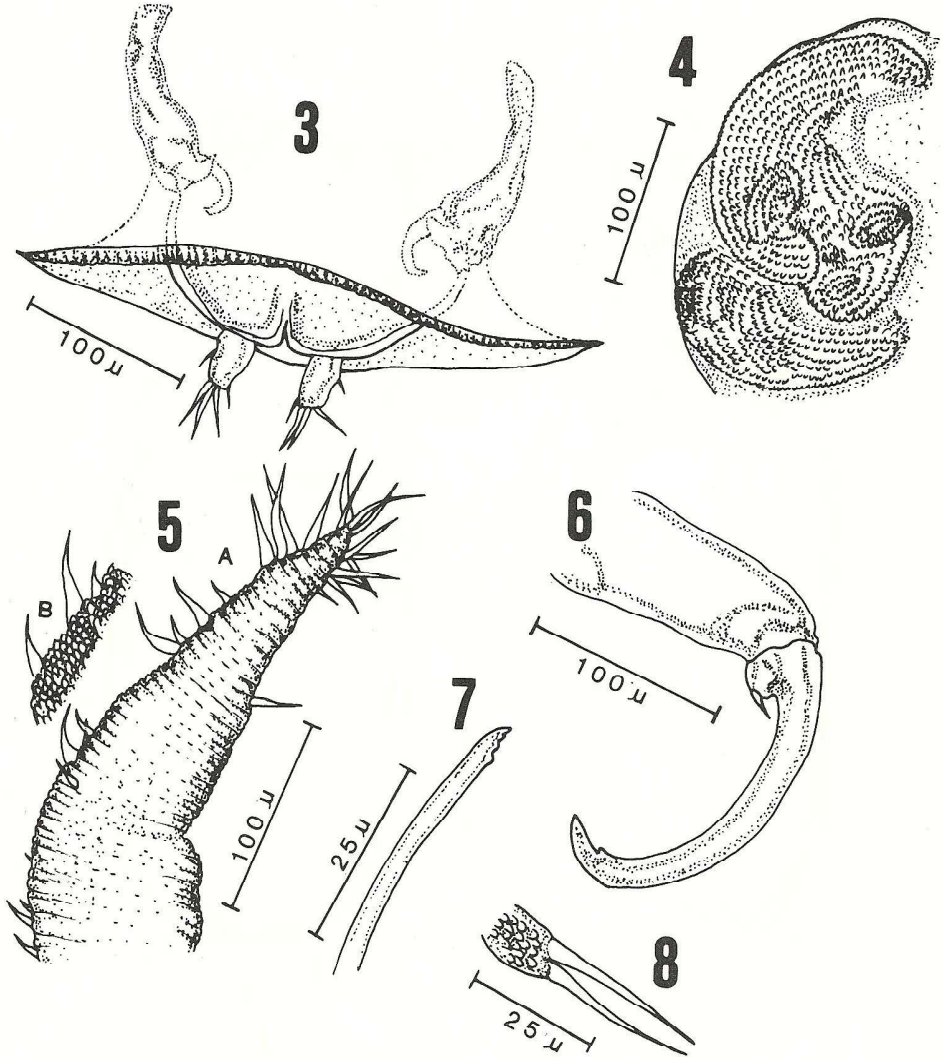
Description. Female (Fig. 1 (*a*, *b*)). Cephalothorax transversally oval, wider than long, with rostrum-like, subrectangular projection (sometimes obscured) between bases of the first antennae; ventrolateral margins forming conspicuous lobules (Fig. 4) covered by diminutive spines and tubercules. Ventral surface of cephalothorax with areas of fine, small tubercles. Junction between cephalothroax and genital complex forming distinctly two-segmented neck. First pedigerous segment fused with cephalothorax, second free, wider than long, with posterior border rounded. First interpodal bar in usual position, in contact with thoracopod sympods; second thoracopods near posterior margin of segment, with wide gaps between them and ends of interpodal bar. Third pedigerous segment shorter than preceding two, laterally protruding into prominent brachiform lobules, bearing thoracopods at apices. Fourth pedigerous segment (bearing a seta, vestiges of fourth thoracopods), fused with genital complex. Latter oblong. Abdomen one-segmented (retractable into mid-posterior depression of genital complex).

Dimensions (in μm) based on 10 specimens: Cephalothorax length 256 (range 225–306); width 446 (403–547). Second pedigerous segment length 171 (129–274); width 437 (370–499). Third pedigerous segment length 143 (129–193); width 481 (419–531). Genital complex length 1039 (805–1449); width 608 (531–708). Eggs-sacs (based on five specimens) length 1629 (1578–1868); diameter 161. Eggs number 31 (24–36). Total length 1620 (1353–2066).

First antenna (Fig. 5 (*a*)) obscurely segmented, with complex armature and wrinkled surface, covered with fine tubercles (Fig. 5 (*b*)), similar to those on ventral surface of cephalothorax and rostral area. Second antenna (Fig. 6) two-segmented, subchela curving distally, with seta at base and small secondary subterminal denticle. Mouth tube typical for Hatschekiidae. Mandible with four small teeth on dentiferous margin (Fig. 7). First maxilla (Fig. 8) covered with tubercles and bearing distally two subequal setae. Second maxilla (Fig. 9) with lacertus robust, unarmed; branchium slender, subcylindrical, with seta at base of terminal claw; latter bifid, with subequal tines.

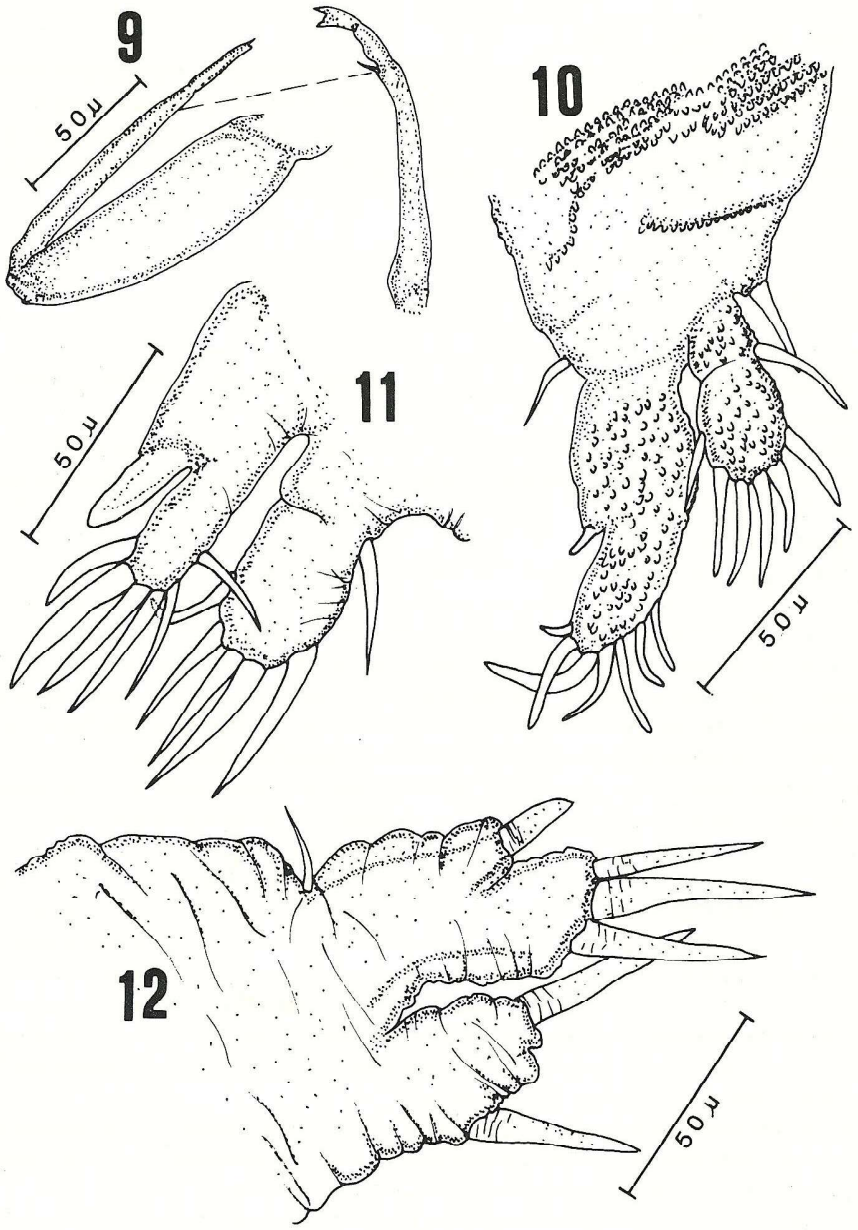


FIGS 1–2. *Brachihatschekia lobulata* gen. et sp. nov. Female. 1 (*a*) Female ventral view (arrow showing leg 4 remnant; Ip = Interpodal plate), (*b*) dorsal view. 2, Second thoracopod interpodal bar (Ip = Interpodal plate; pp = podal plate).



FIGS 3–8. *Brachihatschekia lobulata* gen. et sp. nov. Female. 3 Abdomen and uropod, ventral view. 4, Cephalothorax, lobule on ventral surface, detail, partial view. 5, (*a*) Second antenna, entire. (*b*) surface detail. 6, Second antenna. 7, Mandible. 8, First maxilla.

First thoracopod (Fig. 10) biramous, with interpodal bar present; sympod two-segmented (boundary between segments obscure), armed with spine on lateral margin and distally with seven naked setae; endopod half length of exopod, two-segmented, basal segment with single distomedial seta, apical segment with six setae. Second thoracopod (Fig. 11) biramous, interpodal bar present (Fig. 1 (*a*)) leg rami displaced near distal margin of segment by a long podal plate (Fig. 2), rami located about in front of the other and parallel to the interpodal plate, with stout lateral spine about equal in length to apical segment, latter with one medial and five distal setae (second seta from lateral margin noticeably wider than other); endopod two-segmented, first segment with long distomedial seta; second with one lateral and four distal setae. Third



FIGS 9–12. *Brachihatschekia lobulata* gen. et sp. nov. Female. 9, 10, First leg. 11, Second leg. 12, Third leg.

thoracopod (Fig. 12) biramous, without interpodal bar, situated at apex of prominent, brachiform lobe sympod ill-defined; exopod two-segmented, basal segment with one lateral spine, distal with three apical setae; endopod short (about half length of exopod), indistinctly two-segmented, both segments with one long seta. Fourth thoracopod represented by single small seta.

Rami of all thoracopods with poorly defined segmentation, boundaries between segments marked by tenuous lines and/or by spines on lateral or medial margins. First thoracopod with small tubercles on ventral surfaces (Fig. 10), resembling those on ventral surface of cephalothorax. Uropods (Fig. 3) with one medial, one distolateral and three distal setae.

Male. Unknown.

Etymology. The specific name *lobulata* (Greek *lobos* lobe) refers to the presence of numerous lobules on the ventral surface of cephalothorax.

Discussion. In order to establish the identity of the present specimens they must be confronted with Boxshall's key (1987) to the Hatschekiidae. The new taxon shares with *Wynnowenia* Boxshall, 1987 and *Prohatschekia* Nunes-Ruivo, 1954 the presence of biramous legs 1 to 3.

Wynnowenia is distinguished readily in bearing the fourth leg as a conical process (with two setae). Therefore, *Brachihatschekia* must be compared with *Prohatschekia*, since in both the fourth leg is absent or represented only by a seta (this last the condition in the new genus).

There are significant differences between these genera, particularly in the morphology of the second and third pedigerous segments and their appendages. In *Prohatschekia*, the third pair is 'normal' (i.e. has an interpodal bar and well developed sympods). In contrast, *Brachihakschekia* bears thoracopods at the apices of prominent, lobular, brachiform processes, and the interpodal bar is absent and sympods poorly developed. In this respect, these copepods represent an intermediate step between the 'normal' thoracopods (e.g. as occur in *Wynnowenia*) and those that have been simplified into bilobed vestiges (as the fourth thoracopods in *Congericola* and all pairs in *Bassettithia*). The second thoracopod also provides a characteristic distinction between *Prohatschekia* (and other genera of Hatschekiidae) on the one hand and *Brachihatschekia* on the other. Whereas in all Hatschekiidae hitherto known this leg is located near the centre of its segment and its rami are more or less at right angles to the long axis of the interpodal bar, in our material it is located near the lateral margins of the segments and its longitudinal axis in about parallel to that of the interpodal bar.

The presence of the lobiform process bearing the third thoracopod at its apex and the lack of the interpodal bar between the appendages of this pair prevent the inclusion of these specimens in any known genus of Hatschekiidae and justify the erection of the new genus, *Brachihatschekia*, for *B. lobulata*.

An additional distinguishing characteristic of the new species is the presence of densely crowded tubercles on the ventral surface of the cephalothorax, possibly serving to increase friction and prevent animals from being dislodged.

The discovery of the new taxon raises to four the hatschekiid species present off the coast of Chile. In contrast with the other species, which are all parasitic of teleosts of the family Labridae, the new hatschekiid lives on the gills of an ophiidid.

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References

BOXSHALL, G. A., 1987, A new species of parasitic copepod (Siphonostomatoida: Hatschekiidae) from an Australian conger eel. *Journal of Natural History* **21,** 191–197.

CASTRO, R., and BAEZA, H., 1986, Two new species of *Hatschekia* Poche, 1902 (Copepoda, Hatschekiidae) parasitic on two inshore fishes of Antofagasta, Chile. *Journal of Natural History* **20,** 439–444.

CRESSEY, R., 1968, A redescription of *Hatschekia conifera* Yamaguti, 1939 (Copepoda, Caligoida), including the first description of the male. *Proceedings of the Biological Society of Washington* **81,** 173–178.

KABATA, Z., 1979, *Parasitic Copepoda of British fishes.* (London: Ray Society) Pp. 1–468 Figs. 1–2031.