

***Kroyeria brasiliense* sp. nov. (Copepoda, Kroyeriidae) a gill parasite of the shark, *Galeorhinus vitaminicus* de Buen, in Rio Grande do Sul State, Brazil ¹**

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ABSTRACT. *Kroyeria brasiliense* sp. nov. from the shark, *Galeorhinus vitaminicus* de Buen, 1950, from Rio Grande do Sul, State, Brazil, is described on the basis of 14 adult females. The new species is superficially similar to *Kroyeria deetsi* Dippenaar, Benz & Olivier, 2000, but differs from it in the following characters. The maxillipeds of the new species are large and project well beyond the lateral margins of the cephalothorax. Those of *K. deetsi* are much smaller. The third endopodal segments of *K. deetsi* are twice as long as the second endopodal segments and are provided with prominent marginal denticles. The second and third endopodal segments of the new species are rounded, of similar length and lack teeth.

KEY WORDS. Copepod parasite; kroyeriid; Southern Brazil; South Atlantic.

RESUMO. *Kroyeria brasiliense* sp. nov. (Copepoda, Kroyeriidae) um parasito de guelras do tubarão, *Galeorhinus vitaminicus* de Buen, no Rio Grande do Sul, Brasil. *Kroyeria brasiliense* sp. nov. proveniente de guelras de *G. vitaminicus* de Buen, 1950 do Rio Grande do Sul, é descrita baseada em 14 fêmeas adultas. A nova espécie aproxima-se de *Kroyeria deetsi* Dippenaar, Benz & Oliver, 2000, mas a nova espécie se distingue por apresentar os maxilípedes grandes e estendendo-se bem além das margens do cefalotorax. Os terceiros segmentos dos endopoditos de *K. deetsi* são duas vezes mais cumpridos que os segundos e têm denticulos marginais proeminentes. Os segundos e terceiros segmentos dos endopoditos da nova espécie são arredondados, de tamanhos parecidos e carecem de denticulos.

PALAVRAS-CHAVE. Copépodo parasito; kroyerideo; Sul do Brasil; Atlântico Sul.

Species of Kroyeriidae have only been found on the gills or in the nasal fossae of chondrichthyan fishes, mainly sharks. YAMAGUTI (1963) placed *Kroyeria* van Beneden, 1853 as one of nine genera in his family, Eudactylinidae, and listed 13 species for that genus. KABATA (1979) proposed the family Kroyeriidae to contain three genera. Of these, *Kroyeria* 1853, was considered to have 13 valid species. Since then, DEETS (1994) added five species and DIPPENAAR *et al.* (2000) one more species. According to DIPPENAAR *et al.* (2001) of these 19 species, five occur along the coast of Southern Africa. As for Brazilian waters, no member of Kroyeriidae has previously been reported here, according to BOXSHALL & MONTU (1997). The present paper describes a new species of *Kroyeria* found in a shark, *Galeorhinus vitaminicus* de Buen, 1950 on the coast of Rio Grande do Sul State, Brazil.

MATERIAL AND METHODS

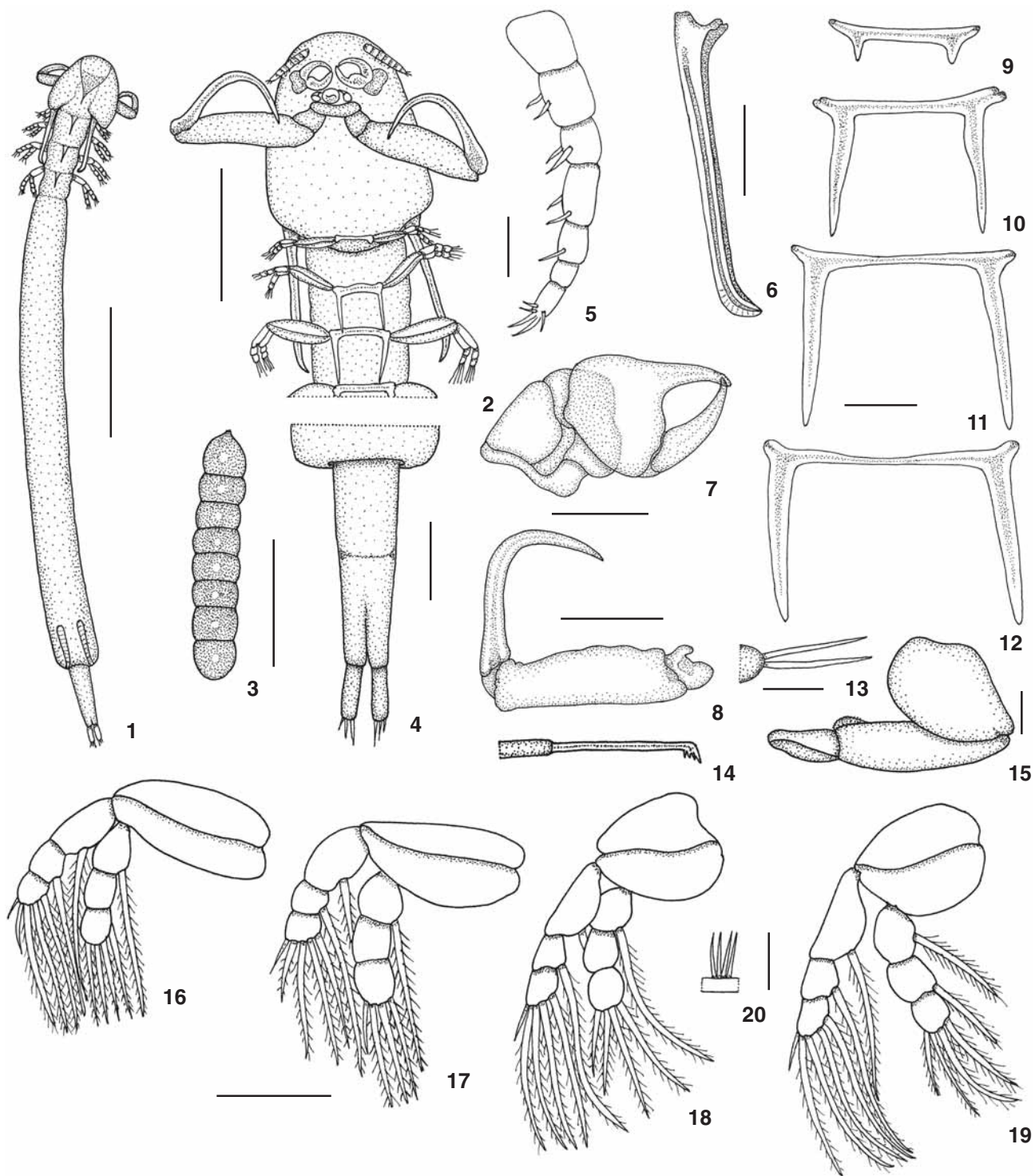
Shark hosts were netted using bottom drag in the South Atlantic ocean near Rio Grande in Rio Grande do Sul, Brazil as described by VOREN *et al.* (1991). The copepods were removed

from the gills with dissecting needles and fixed in 70% ethanol. The specimens were cleared in pure phenol for study. Digital photographs taken through a light microscope were used to make the drawings. Measurements were made with a measuring ocular and are expressed in micrometers (μm) unless designated as millimeters (mm). Extremes are followed by the means in parentheses.

***Kroyeria brasiliense* sp. nov.**

Figs 1-20

With the characters of the genus. Female (14 specimens studied, 10 measured): body elongate, consisting of a cephalothorax, thorax of three free segments, a genital segment, an abdomen of two segments and uropods; measures 3.08-5.08 (3.96) mm in total length, widest at posterior margin of cephalothorax (Figs 1-2). Cephalothorax subtriangular, measures 462-616 (532) long by 339-462 (411) wide; long postero-lateral retrostylets present dorsally, extend beyond leg 3, measure 410-465 (436) in length (Fig. 6). Ventrally, the cephalothorax is



Figures 1-20. *Kroyeria brasiliense* sp. nov., female: (1) entire, dorsal; (2) anterior extremity, ventral; (3) egg sac; (4) posterior extremity, ventral; (5) antennule; (6) dorsal sylet; (7) antenna; (8) maxilliped; (9-12) interpodal bars 1-4; (13) maxillule; (14) mandible; (15) maxilla; (16-20) legs 1-5. Scale bars: (1) = 1000, (2) = 500, (3) = 500, (4, 8) = 200, (6, 7, 9-12, 16-19), (100, 5) = 50, (13-15, 20) = 20.

provided with antennae and mouthparts, as follows. Antennules of 7 segments, measuring 150-205 (171) in length (Fig. 5); antennae 4-segmented, chelate, measure 100-215 (152) long and 55-115 (86) wide (Fig. 7). Mouth tube similar to that of other siphonostomatoids. Mandible (Fig. 14) with 4-5 teeth, projects into mouth tube; maxillule (Fig. 13) with basal segment and two simple setae; maxilla of three segments (Fig. 15); maxilliped (Fig. 8) large extending well beyond lateral borders of cephalothorax, measures 630-710 (679) long. Thorax of 3 free segments, measures 447-493 (478) long and 200-308 (268) wide. First pair of legs on cephalothorax, 2-4 on free thoracic segments; all rami of legs 1-4 3-segmented (Figs 16-19); leg 5 vestigial, reduced to four simple setae, occur midway on genital segment. Setation similar on all legs except that leg 4 has a seta on second endopodal segment that the others lack. Interpodal bars provided with retrospines, short on one and increasing in length to four (Figs 9-12). Genital segment elongate, cylindrical, with nearly parallel sides (Fig. 1), measures 2.31-2.96 (2.64) mm long and 231-354 (290) in diameter; represents 58-75 (67)% of body length: egg sac (Fig. 3) with single row of eggs, measures 231-1478 (855) long by 139 in diameter. Abdomen tapered, 2-segmented (Fig. 4), measures 300-400 (349) long and 77-140 (113) in maximum diameter. Uropods with three terminal setae, measure 80-105 (96) long and 15-25 (23) in diameter. Male: Unknown.

Host. *Galeorhinus vitaminicus*.

Site. Gill filaments.

Locality. Atlantic Ocean near Rio Grande, Rio Grande do Sul, Brazil.

Type material. Holotype female and 10 paratype females

Deposited in the Crustacean collection of the Instituto Nacional de Pesquisas da Amazônia (INPA), Manaus, Amazonas, Brazil.

Etymology. Since this is the first species of the family known from Brazil, the name of the country was used to form the specific designation.

DISCUSSION

Kroyeria brasiliense sp. nov. has a simple, cylindrical genital segment which serves to separate it from several of the species in which that segment is narrowed or expanded, for ex-

ample: *K. acanthias-vulgaris* Hesse, 1878; *K. carchariae-glauci* Hesse, 1878; *Kroyeria galei-vulgaris* Hesse, 1883; *K. scyllii-caniculi* Hesse, 1878; and *K. echinata* Rangnekar, 1956. Three known species have simple cylindrical genital segments, namely: *K. lineata* van Beneden, 1853; *K. sublineata* Yamaguti & Yamasu, 1959 and *K. deetsi* Dippenaar Benz & Olivier, 2000. The first two of these species have very short dorsal stylets unlike those of the new species. As for *K. deetsi*, it has a long, slender, 3-segmented abdomen; small maxillipeds; the third endopodal segments are twice as long as the second endopodal segments and both are provided with medial, prominent denticles. The new species has a shorter, 2-segmented abdomen; large maxillipeds; the second and third endopodal segments are rounded, of similar length and lack denticles.

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