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ALBIONELLA KABATAI BENZ & IZAWA, 1993 (COPEPODA : LERNAEOPODIDAE) FROM *APRISTURUS PROFUNDORUM* (GOODE & BEAN, 1896) (CHONDRICHTHYES : SCYLIORHINIDAE) IN THE NORTHWEST ATLANTIC OCEAN

by

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SUMMARY

A specimen of *Albionella kabatai* found on the cat shark *Apristurus profundorum* collected on the continental shelf in the Northwest Atlantic is described in detail. The specimen constitutes a new host and geographical record. Comparison is made between *A. kabatai* from the Northwest Atlantic and the only other known specimen of this species collected from the spatulasnout cat shark *Apristurus platyrhynchus* in the Sea of Kumano, off Japan. Aspects of the biogeography, and host specificity of *Albionella* are discussed.

Keywords : Albionella kabatai, systematics, biogeography, host record, parasitic copepod.

INTRODUCTION

The genus *Albionella* was erected by KABATA (1979) to receive four species of *Lernaeopoda* BLAINVILLE, 1822. The creation of this genus was justified entirely by differences in morphology between *Albionella* and *Lernaeopoda* males (KABATA, 1979). In describing a fifth species of *Albionella*, RUBEC and HOGANS (1988) noted that *Albionella* could be separated from *Lernaeopoda* based on the setation pattern of the first maxilla and maxilliped of females. BENZ and IZAWA (1990) elevated to six the number of *Albionella* species with the description of *A. kabatai* collected from the spatulasnout cat shark, *Apristurus platyrhynchus* (TANAKA, 1909) captured off Japan. Biogeographic data and host records for species of *Albionella* are limited.

Our find of *A. kabatai* on *Apristurus profundorum* is the first record of *Albionella kabatai* from the Northwest Atlantic and is also a new host record for this parasite.

This paper presents a detailed description of *Albionella kabatai* from the cat shark *Apristurus profundorum.* A comparison between the two known specimens of *Albionella kabatai* is made and arguments are presented to justify the species assignment of the newly found specimen. Biogeographical and host records for *Albionella* are also discussed.

MATERIAL AND METHODS

The shark host, *Apristurus profundorum,* was caught at a depth of 1250 m, on the continental slope of the Scotian Shelf, off the southern end of Georges Bank in August 1981. The parasite and host were fixed in 10 % formalin and later transferred to 70 % ethanol for storage. After dissection from host tissues, gross morphology of the copepod was studied under a dissecting microscope at magnifications of up to 400 ×. The specimen was cleared and mounted whole in 85 % lactic acid ; fine structural details of appendages were studied at magnifications up to 950x under phase contrast microscopy. Terminology follows that of Kabata (1979). Measurements are in millimeters and drawings were made with the aid of a camera lucida.

Albionella kabatai Benz & Izawa, 1990

(Figs 1-2)

Host : *Apristurus profundorum* (Scyliorhinidae)

Site of infection : bulla embedded in host's skin at base of second dorsal fin.

Locality : Continental slope of Scotian Shelf, southern end of Georges Bank, Northwest Atlantic.

Material examined : Single ovigerous female ; British Museum (Natural History) Cat. No. 1987.72.

Description :

Lernaeopodidae : Cephalothorax (Fig. 1A) short, dorsoventrally flattened, subovoid, narrow anteriorly, broadly rounded posteriorly with distinct dorsal shield. Cephalothorax separated from trunk by narrow transverse constriction. Trunk subtriangular, slightly longer than wide, narrow anteriorly, becoming progressively wider posteriorly, with rounded posterolateral corners. Uropods (UR, Fig. 1A) near center of dorsal posterior margin. Uropods (Fig. 2E) poorly developed, armed with one long naked apical seta and two short naked lateral basal setae. Egg sac (one missing) long, broad, cylindrical with rounded posterior end ; ventrolateral to uropods. Eggs multiseriate. Dimensions of specimen : total length (exclusive of egg sac) 2.83 mm ; cephalothorax length 1.27 ; trunk length 1.56, width 1.54 ; egg sac length 1.80, width 0.58 ; second maxillae length 2.63.

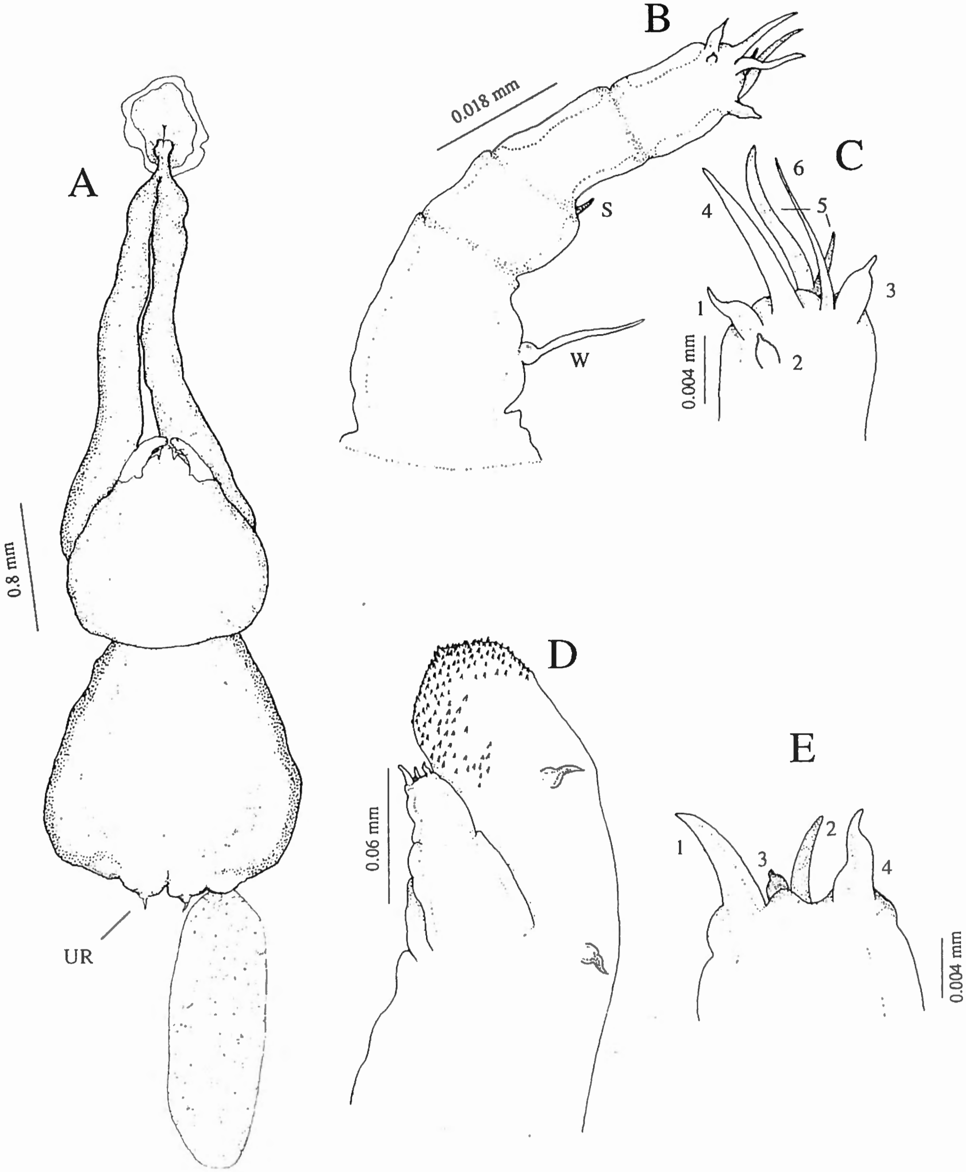

Fig. 1. — *Albionella kabatai* — (A) Habitus dorsal — (B) First antenna — (C) Same, tip — (D) Second antenna — (E) Same, tip.

First antenna (Fig. 1B and 1C) indistinctly four-segmented; basal segment inflated, whip and solus present (W and S, Fig. 1B); apical armature (Fig. 1C) comprising tubercles (1, 2, and 3), digitiform seta (4), slender seta (6), and complex (5) of two setae. Second antenna (Fig. 1D and 1E) sympod indistinctly segmented;

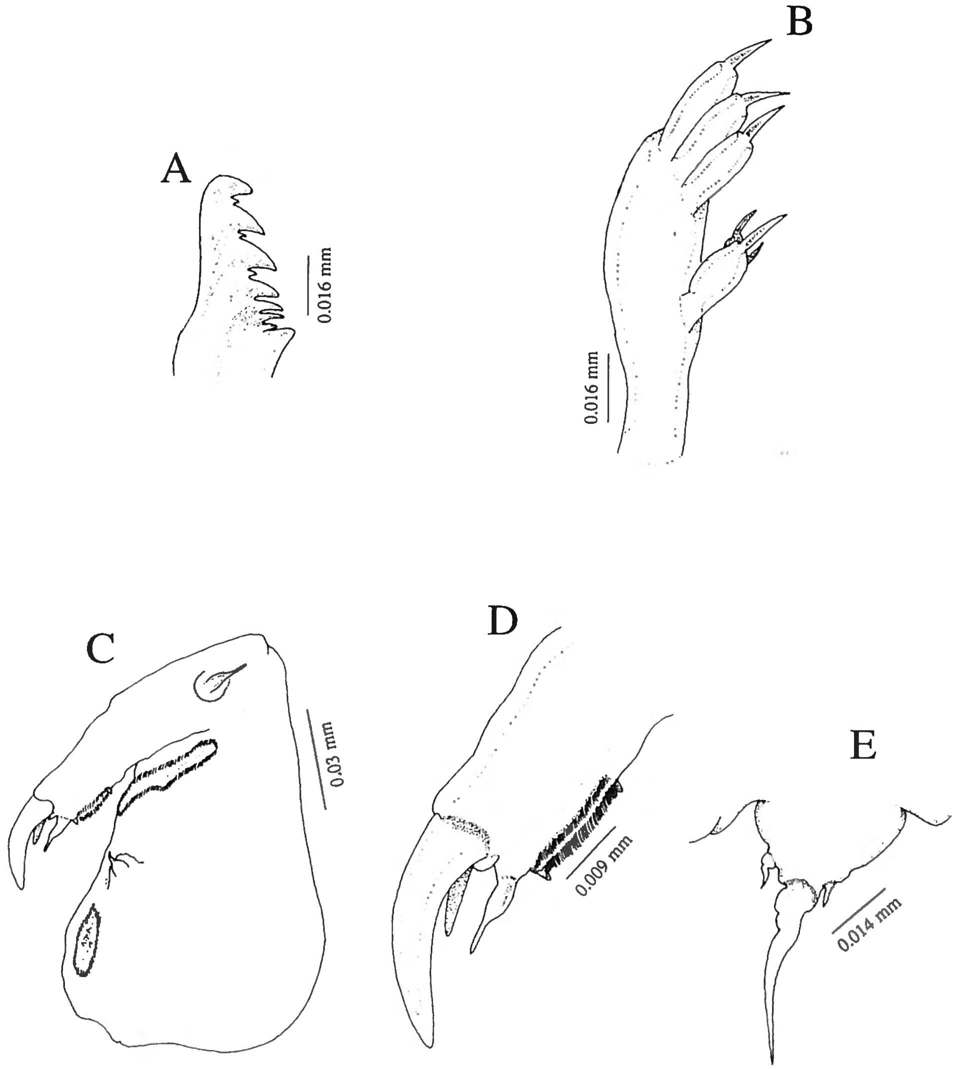

Fig. 2. — *Albionella kabatai* — (A) Mandible — (B) First maxilla — (C) Maxilliped — (D) Apex maxilliped shaft — (E) Caudal ramus.

exopod unsegmented, bulbous, much larger than endopod, bearing two prominent sensory papillae; apical and medial surfaces extensively spinulated. Endopod indistinctly two-segmented, apical armature (Fig. 1E) consisting of reduced hook (1), slender seta (2), dorsal tubercle (3), and ventral process (4). Labrum not viewed. Mandible (Fig. 2A) with narrow base and wide blade, dental formula P1, S1, P1, S1, P1, S1, B4. First maxilla (Fig. 2B) with lateral exopod carrying three naked setae, one long, two short; dorsolateral margin of exopod no spinulated;

endopod with three long, stout terminal papillae bearing short, stout setae. Second maxilla (Fig 1A) slender, cylindrical, much longer than trunk (second maxilla to trunk length ratio 1.7:1), separated from opposite second maxilla except where the inner margins are fused at apex. Bulla expanded distally into flattened subquadrangular plate (Fig. 1A). Manubrium slender. Maxilliped (Fig. 2C and 2D) with stout corpus; myxal area armed with two spinulated pads and a stout spiniform seta; subchela with long shaft bearing one long, stout seta on ventral surface; tip of subchela (Fig. 2D) with large recurved claw, two small processes at each end of two rows of finely arrayed denticles on inner margin; claw with one secondary barb at base.

DISCUSSION

As described by BENZ and IZAWA (1990), the exopod of the second antenna of *A. kabatai* displays a bluntly rounded denticulous apex with one truncated and one blunt lateral spine. In our specimen, no truncated spine was found; instead two sensory papillae were observed. BENZ and IZAWA (1990) also described the endopod of the second antenna as having a medial denticulous patch and apically bearing one robust and claw-like, and two thin spiniform elements. The Northwestern Atlantic specimen differs by lacking the medial denticulous patch and having an additional dorsal tubercle on the apical armature of the second antenna. The mandible of the specimen described from the Sea of Kumano exhibited the formula P1, S1, P1, S1, P1, S1, B3; whereas the Northwestern Atlantic specimen was characterized by the following formula : P1, S1, P1, S1, P1, S1, B4. However, as pointed out by KABATA (1964) and RUBEC and HOGANS (1988), the mandibular tooth formula of adult male and female lernaeopodids may vary intraspecifically. The exopod of the first maxilla in the Japanese *A. kabatai* specimen bears three apical setae : two long and one short. In our specimen, there is one long and two short setae.

The occurrence of *Albionella kabatai* in the Northwestern Atlantic on *A. profundorum*, does not suggest that the present specimen is a distinct species from that collected in Japanese waters on *A. platyrhynchus* since other species of *Albionella* display similar geographical distribution. For instance, *A. longicauda* (HANSEN, 1923) was found living on *Centrophorus squamosus* (BONNATERRE, 1988) in Iceland, whereas, in Japanese waters this species parasitizes *C. acus* GARMAN, 1906 and *C. granulosus* (BLOCH and SCHNEIDER, 1801). *A. etmopteri* (YAMAGUTI, 1939) was found on *Etmopterus lucifer* JORDAN and SNYDER, 1902 in Japan while found on an unknown species of *Etmopterus* in South Africa (KABATA, 1979). Alternatively, one species of host may be parasitized by more than one species of *Albionella*. For instance, *Centroscyllium fabricii* (REINHARDT, 1825) was found to be parasitized by *Albionella centroscyllii* (HANSEN, 1923) and *A. fabricii* RUBEC and HOGANS, 1988 (KABATA, 1979).

Deep-sea parasitic copepods are infrequently collected and many species are known only from single specimens (BENZ and IZAWA, 1990). At this moment, the differences observed between the two existing specimens either justify the erection of a species for the Northwestern Atlantic specimen or suggest intraspecific variability. We consider the present specimen as *Albionella kabatai* for two reasons : (*i*), host shifting is not uncommon within *Albionella* ; (*ii*), due to the lack of available specimens which would provide a range of intraspecific variability, we cannot assume that the differences found between two specimens are sufficient to erect a new species.

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