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A new species of stygobitic cirolanid (Isopoda: Cirolanidae) from an anchialine cave on Abaco, the Bahamas

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Abstract

A new species, the 6th known, is described in *Bahalana*, a genus of stygobitic and troglomorphic cirolanid isopods strictly endemic to anchialine habitats of the Bahamas and Turks and Caicos Islands.

Keywords: Isopoda: Cirolanidae, *Bahalana*, anchialine cave, Abaco (Bahamas).

Résumé

Une espèce nouvelle, la sixième connue, est décrite dans *Bahalana*, genre stygobie et troglomorphe d'isopodes cirolanides strictement endémique dans les habitats anchialins de Bahamas et des îles Turks et Caicos.

Mots-clés: Isopoda: Cirolanidae, *Bahalana*, grotte anchialine, Abaco (Bahamas).

Introduction

During exploration by diving of a large anchialine cave system on Abaco – one of the Bahamas – the 2nd author caught one male specimen of a new species of *Bahalana*, one of the numerous stygobitic crustaceans inhabiting this subterranean system.

Bahalana abacoana n.sp.
(Figs. 1-13)

Locality and material

Male holotype (deposited in the crustacean collection of the Institut Royal des Sciences Naturelles de Belgique, Brussels, n° IG 30599). Most appendages of the specimen are dissected and kept in small vials. Collected by Th. M. ILIFFE on 16 March 2006, by diving, in Dan's Cave, Abaco, Bahamas. This is the largest known anchialine cave on Abaco; the single entrance to the cave is a sinkhole in the pine forest of south-central Abaco that leads into a complex system of submerged passageways and large breakdown chambers with nearly fresh (0.4 ppt) and fully marine (33.5 ppt) waters separated by a distinct halocline extending from 12 to 17 m depths and containing wispy clouds of hydrogen sulfide. The specimen was collected by hand from below the halocline in 17-25 m depths where water temperature was 23.75°C and dissolved oxygen was 2 mg/l. Remarkably, numerous stygobitic crustacean species inhabit Dan's Cave, including the ostracods *Deeveya styrax* KORNICKER, 1990 and *D. hirpex* KORNICKER, 1990, the remipedes *Cryptocorynetes haptodiscus* YAGER, 1987, *Speleonectes benjamini* YAGER, 1987, *S. lucayensis* YAGER, 1981, *Pleomothra apletocheles* YAGER, 1989 and *Godzilligonomous frondosus* YAGER, 1989, the thermosbaenaceans *Tulumella bahamensis* YAGER, 1987 and *T. grandis* YAGER, 1987, and the amphipod *Bahadzia williamsi* HOLSINGER, 1985.

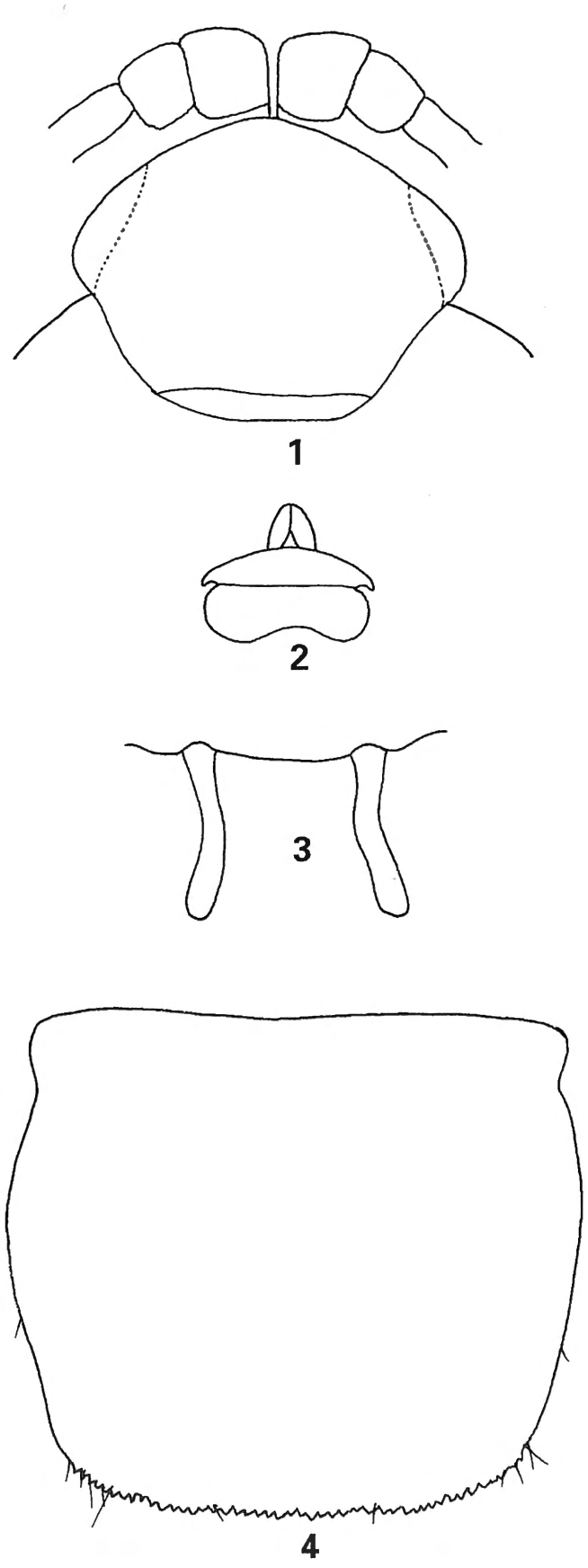
Description

A fragile crustacean, the specimen partly damaged. Total length: 7.5 mm. Of course, completely depigmented and anophtalmous.

Cephalon roughly rhombic in outline, but posterior limit straight; well built - in 1st pereionite; with lateral bulges corresponding to the lost functional eyes; no rostrum. Complex clypeo-labrum + lamina dorsalis like, for instance, in *Bahalana cardiopus* NOTENBOOM or in *B. caicosana* BOTOSANEANU & ILIFFE.

Peduncle of antennula without interesting characters, but its flagellum is highly interesting: with 47 or 48 articles, it is longer or much longer than in several described species of the genus, resembling *B. exumina* BOTOSANEANU & ILIFFE in which 50 articles were found; most interesting is its equipment of aesthetasks: if in its basal part only some articles support a very long aesthetask with very short petiole, in its distal 2/3, each article has a slender aesthetask whose length can equal or surpass that of 6 flagellar articles. Peduncle of antenna without interesting characters (flagellum damaged in the specimen).

Maxilla I: lateral lobe with 10 spines; endite: fig. 7. Maxilla II: median (well individualized) lobe with 4 glabrous setae; internal lobe with 3 glabrous setae of medium size, 2 very short ones also glabrous, and in the internal angle 2 very long and strong plumose setae. Maxillipedal endite, bilaterally



Figs. 1-4. *Bahalana abacoana*, ♂ holotype. Cephalon; clypeolabrum and lamina dorsalis; penes; and pleotelson. All similarly magnified.

with one retinaculum and 3 plumose setae.
Several peculiarities of the first three pereiopods deserve mention. The projection of PI merus is armed with only two widely distant spines (in the space between them, 2 or 3 setulae). PII: long projection of carpus (more than half of the propodus length); merus with rather well developed internal projection; ischium devoid of external projection (replaced by a minute setula). PIII: carpus with very long projection; ischium – like in PII – without external projection, and with a long internal spine reaching to apex of internal projection of merus (this may be called a seta, because it has an alveole, and seems to be movable).
Pereiopods IV-VII all with propodus 3.5-4 times longer than dactylus (a situation frequent in *Bahalana* species, the exception being *B. caicosana* BOTOSANEANU & ILIFFE). In all of them, the unguis is characteristic: distinctly falciform, devoid of armature of spines ("teeth"), and accompanied by a trident secondary unguis.
The penes are long, ribbon-like, with obtuse apex.
Pleopods without original traits (they are, for instance, practically identical with those of *B. geracei* CARPENTER); only detail worth mention: appendix masculina, quite basally rooted, reaches beyond apex of the endopodite with ca. half of its length, being thus longer than in any described *Bahalana*.
Uropods damaged, their details which could be observed do not seem characteristic; their exopodites are foliaceous.

Discussion

Bahalana CARPENTER, 1981 is a well characterized genus of stygobitic Cirolanidae, endemic in anchialine habitats of the Bahamas and Turks and Caicos. Before the new species here described, five had been described in *Bahalana*, each from different parts of the distribution area of the genus (list of species with distribution in BOTOSANEANU & ILIFFE 2003; other references: see list at end of this paper). *Bahalana abacoana* n.sp. differs from each of the already described species by a number of morphological details, some "strong", some less so. The following character combination allows clear distinction of the new species from all already described: AI flagellum from very high number of articles (nearly 50), most of them – and especially all in the distal 2/3 of the flagellum – equipped with a very long, slender aesthetask; projection of the pereiopod I merus armed with two widely distant spines; unguis of pereiopods IV-VII falciform, devoid of armature of spines ("teeth"), and with secondary unguis ending tridentate. Maybe the ribbon-like penes could be added to the list.

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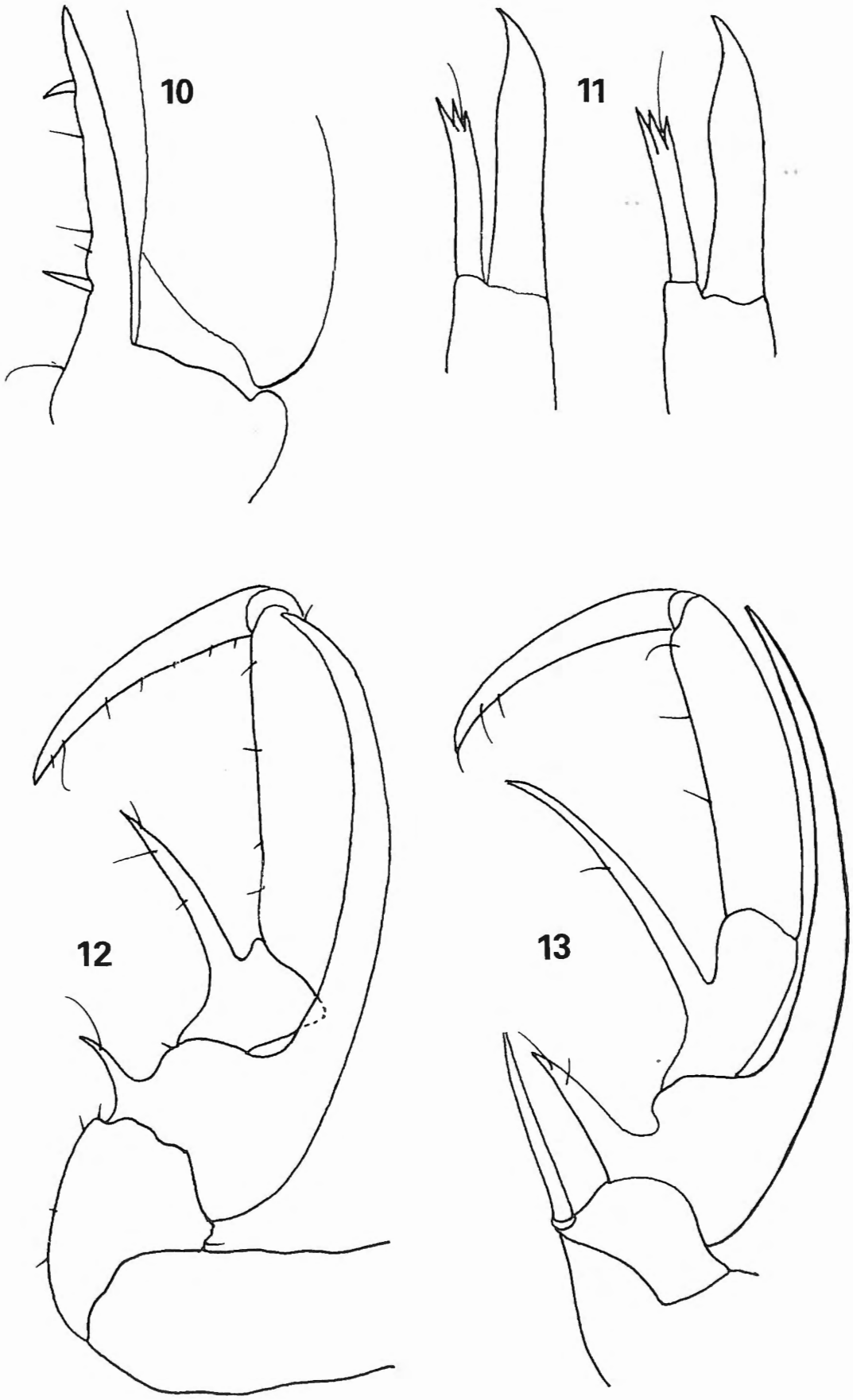
Figs. 5-9. *Bahalana abacoana*, ♂ holotype. Distal part of AI flagellum; peduncle of AII, without setation; endite of maxilla I; maxilla II; endite of right maxilliped.



Figs. 10-13. *Bahalana abacoana*, ♂ holotype. Projection of merus of right pereiopod I; unguis and secondary unguis, pereiopods IV and VII; right pereiopod II; right pereiopod III.

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