

**GRALLATOTANAIS ANTIPAI, A NEW GENUS AND SPECIES
OF THE FAMILY LEPTOCHELIIDAE LANG, 1963
FROM A MARINE CAVE IN THE BAHAMAS
(CRUSTACEA: TANAIDACEA, TANAIDOMORPHA)**

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Abstract. *Grallatotanais antipai*, a new genus and species belonging to the suborder Tanaidomorpha (family Leptocheliidae), is described and illustrated. The main morphological features of the genus consist of the four-articled peduncle of the antennule and presence of a single seta on the maxillipedal basis in females, and the great length of the last three pairs of pereopods in males. *Grallatotanais antipai* n.g., n.sp. is the first record of Tanaidacea from marine caves in the Bahamas.

Résumé. On décrit *Grallatotanais antipai* n.g., n.sp., appartenant au sous-ordre Tanaidomorpha (famille Leptocheliidae). Les principaux caractères morphologiques du nouveau genre consistent, chez les femelles, dans le nombre de quatre articles du pédoncule de l'antenne et la présence d'une seule sète sur le basis du maxillipède, tandis que chez les mâles, dans la très grande longueur des trois dernières paires de péréiopodes. *Grallatotanais antipai* est la première mention sur la présence des Tanaïdacés dans les grottes marines de Bahamas.

Keywords: *Grallatotanais antipai* n.g., n.sp., Leptocheliidae, Marine Caves, Bahamas.

The study of the tanaidacean crustaceans from anchialine and marine caves (Băcescu, 1980; Guțu and Iliffe, 1989a, 1989b, 1997) has led to the description of five species, four belonging to the suborder Apseudomorpha (*Apseudes bermudeus* Băcescu, 1980, *A. bowmani* Guțu and Iliffe, 1989, *A. orghidani* Guțu and Iliffe, 1989 and *Pugiodactylus agarthus* Guțu and Iliffe, 1997) and only one (*Nesotanais maclaughlinae* Guțu and Iliffe, 1989) to the suborder Tanaidomorpha. Of these, only two apseudomorphs (*A. bermudeus* and *A. bowmani*) have features which could be considered characteristic to the species from the marine caves environment (Guțu and Iliffe, 1989b, 1997). A new species (and, concurrently, a new genus), belonging to the suborder Tanaidomorpha, is here added to the two above-mentioned apseudomorphs.

SUBORDER TANAIDOMORPHA Sieg, 1980

Family LEPTOCHELIIDAE Lang, 1973

Lang (1973) created a new family, the Leptocheliidae Lang, 1973 to include the new genera *Hargeria*, *Pseudoleptochelia* and *Pseudonototanais*, together with the previously described *Leptochelia* Dana, 1849 and *Heterotanais* G.O. Sars, 1886. Prior to this, the genera *Leptochelia* and *Heterotanais* had belonged to family Paratanaidae Lang, 1949. Later, Sieg and Heard (1989) rediagnosed the genus *Mesotanais* Dollfus, 1897 and established that it also belonged to the family Leptocheliidae. Subsequently, Guțu (1996) described and included the genus *Intermedichelia*.

The main differences between Paratanaidae and Leptocheliidae, as was established by Lang's diagnoses (op. cit.), are that males of the paratanais species

have the maxilliped normally developed, resembling that of females, while in the species of the family Leptocheliidae, males have a reduced maxilliped, and, always, the females have a small seta on the second article of the maxillipedal palpus, placed in the distalo-outer angle. In addition, in Leptocheliidae, pleopods are always well developed, and the uropod exopodites have more than two articles.

The above-mentioned morphological features also occur in the genera included later in the family Leptocheliidae (Guţu, op. cit.; Sieg and Heard, op. cit.), as well as in the new genus described in the present paper.

Grallatotanais new genus

Type species: Grallatotanais antipai n.sp.

Diagnosis: Body, more or less, cylindrical. Visual elements present, very accentuated in males. Antennule with four-articled peduncle and a short uni-articled flagellum in females, and two-articled peduncle and five-articled flagellum (each article with many aesthetascs) in males. Antenna with five-articled peduncle and a short uni-articled flagellum in females, and two-articled peduncle with a multi-articled flagellum, in males. Labium without lobe in females, and reduced in males. Mandible well developed in females, and absent in males. Maxillule with eleven spines (ten strong, and one thin and short); palpus, relatively short. Maxilliped in females, well developed, with only a long seta on basis, and three very small spiniform processes on the rostral side of endite; in males, reduced to a small basis and an uni-articled palp. Chelipeds relatively similar in both sexes. Pereiopods II-VII, in females, approximately equal in length but with thicker basis in the last three pairs; in males, all pereiopods are thin, the last three pairs being very long (at least two times than each of first three pairs). Pleopods well developed, in five pairs. Uropods, in both sexes, with two-articled exopodite and five-articled endopodite.

Etymology: From the Latin *grallator*, "which walks on stilts" (referring to length of the last three pairs of legs of males), and *tanais*, the name of the genus which gave the name of the order.

Gender: masculine.

Remarks: The main morphological features of the genus *Grallatotanais* n.g. consist of: (1) the number of the articles (four) of the antennule peduncle, (2) the presence of a single seta on the basis of the female's maxilliped, and (3) the very great length of the last three pairs of the pereiopods in males. The only other genus belonging to the family Leptocheliidae whose maxilliped basis has one seta is *Heterotanais*, a genus differentiated from *Grallatotanais* n.g. by the other two aforementioned features (1 and 3) as well by in males, the number of articles (three) of the antennule flagellum and the morphology of chelipeds (especially of the propodus finger). Rarely, species of the genus *Leptochelia* have a four-articled antennule peduncle as does *Grallatotanais*, but differ in the other two characteristics (mentioned in the items 2 and 3).

The great fragility of the last three pairs of legs in males (because of their thinness and great length) suggests that it is strongly bound by the environmental conditions, characteristic to the deep-sea and caves, especially by the absence of the violent marine currents. Under these circumstances, it is possible that species of the genus *Grallatotanais* inhabit the open sea, but only at great depths.

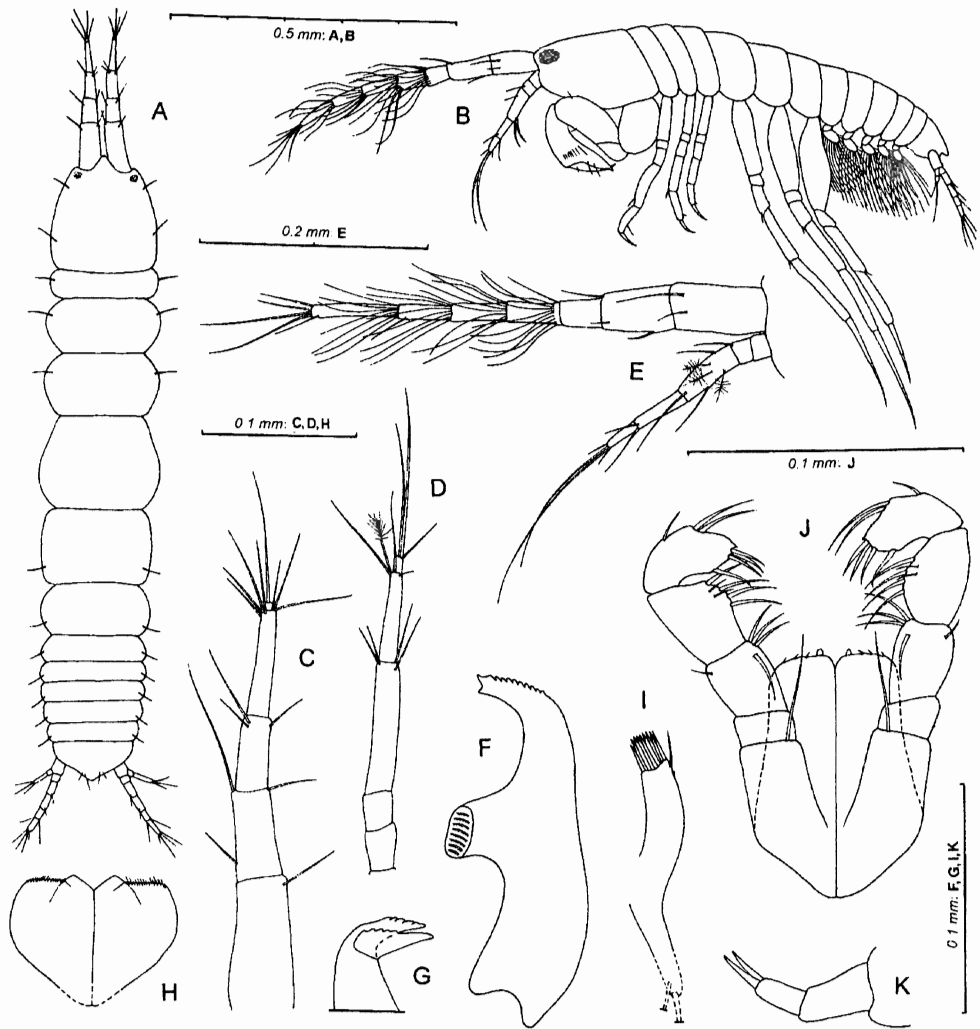


Fig. 1 – *Grallatotanaïs antipai* n.g., n.sp., female, holotype (A, C, D, F-J) and male, allotype (B, E, K): A, body, dorsal; B, body, lateral; C, antennule; D, antenna; E, antennule and antenna, lateral; F, mandible, right; G, pars incisiva and lacinia mobilis of left mandible; H, labium; I, maxillule; J, maxilliped, ventral; K, maxilliped, lateral.

Grallatotanaïs antipai n.sp.

(Figs 1-3)

Material: 2 specimens (1 female and 1 male) from South Bight #2 Blue Hole, South Bight, South Andros Island, Bahamas: St. 99-053, 4 October 1999. Specimens were collected with a plankton net and suction bottle from surface of silty bottom sediments at 40 m water depth.

Holotype, female (dissected) deposited in the Collections of Muzeul Național de Istorie Naturală “Grigore Antipa” (Bucharest), No. 250,178.

Allotype, male (dissected), in the same museum, No. 250,179.

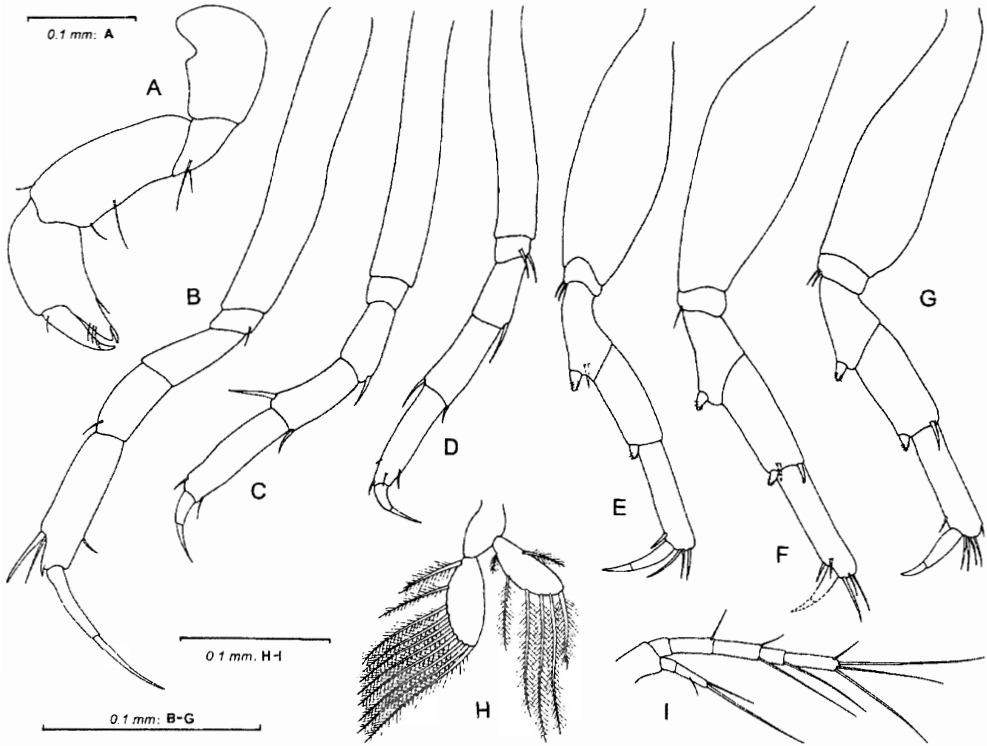


Fig. 2 – *Grallatotanaeis antipai* n.g., n.sp., female, holotype: A, cheliped; B-G, pereiopods II-VII; H, pleopod; I, uropod.

Description of the female (holotype)

Body (Fig. 1 A) relatively cylindrical, six times longer than wide. Standard length: 1.1 mm.

Carapace, little longer than wide, laterally with two small setae; rostrum prominent, rounded anteriorly; visual elements present.

Pereon approximately three times longer than the carapace. Each pereonite (except the fourth one) with a small seta, laterally. First free pereonite shortest; 50% as long as the second or the last one; 40, 25 and 33% as long as the third, the fourth and the fifth, respectively.

Pleon (longer than the carapace, and equal with the first free three pereonites, but shorter than the last two pereonites), with five short pleonites (each with a lateral short seta) and pleotelson, the last also short, triangular, and, terminally, with four small setae.

Antennule (Fig. 1 C), longer than the carapace, with four-articled peduncle and very short uni-articled flagellum. First peduncular article approximately two times longer than the third, and little longer than the fourth; the second peduncular article little longer than the following ones, but shorter than others two. The first three peduncular articles with 1-3 setae, and the fourth with 6-7 setae, terminally.

Antenna (Fig. 1 D), approximately equal with the length of the carapace, with four-articled peduncle and uni-articled flagellum. The first peduncular article 1.5 times longer than the fourth and 3 times longer than the first or second article.

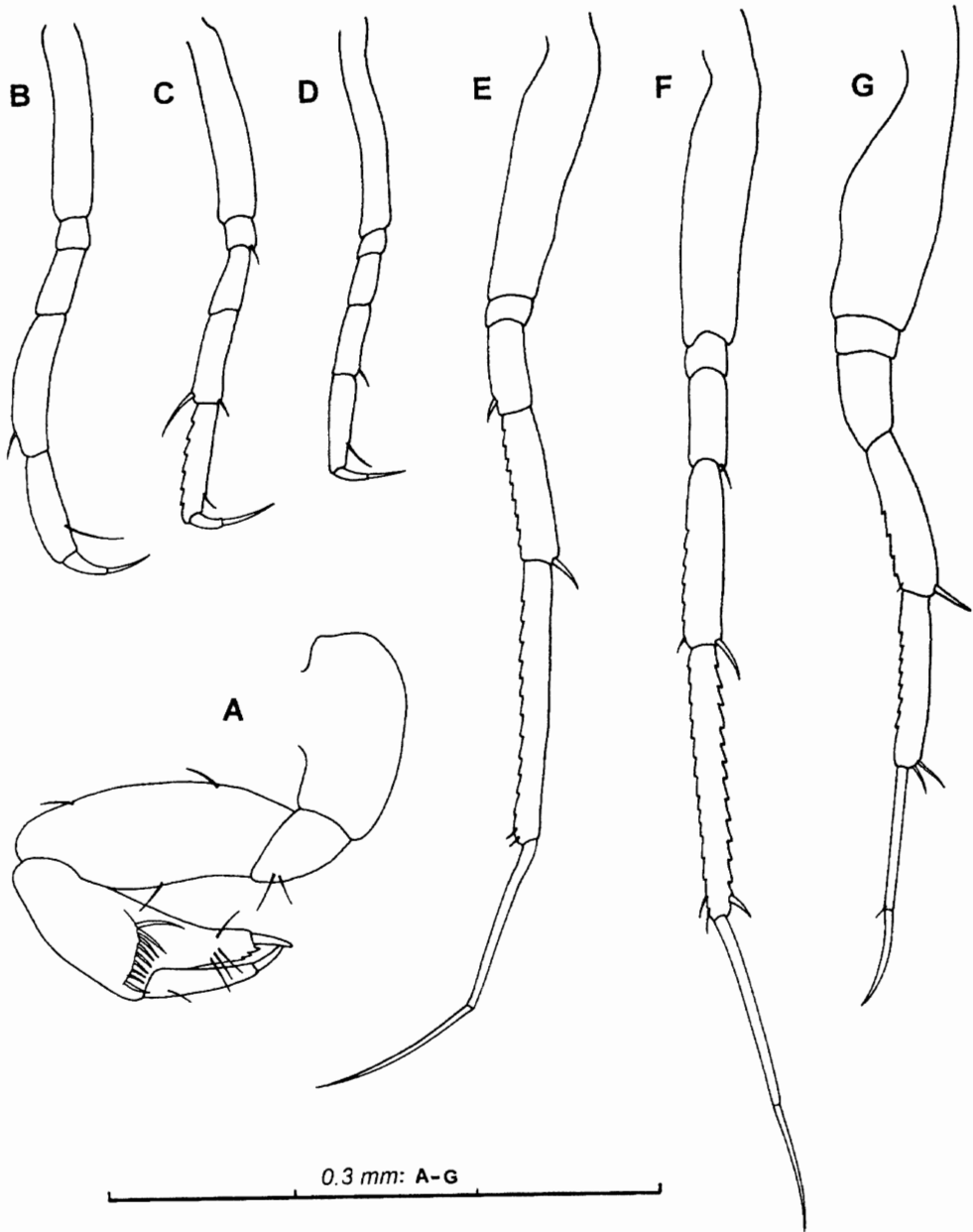


Fig. 3 – *Grallatotanaeis antipai* n.g., n.sp., male, allotype: A, cheliped; B-pereopods II-VII.

Mandibles (Fig. 1 F, G), typical of family, with well-developed pars incisiva, lacinia mobilis (of left mandible) and molar process, the last with grinding surface.

Labium (Fig. 1 H), relatively triangular, with fine hairs on the rostral side; palp absent.

Maxillule (Fig. 1 I) with 9 long spines and one thin (setiform); palp present.

Maxilliped (Fig. 1 J) with a long terminal seta on the basis; palp four-articled, with five, six, and seven setae on the second, third and, respectively, fourth article, as in figure; endite long (to half of the second article of the palp), with three very small spines on the rostral side.

Cheliped (Fig. 2 A) without special features. Merus and carpus with two sternal setae. Propodus (measured without its finger), little smaller than the basis. Dactylus slender. Claw of the fixed finger and dactylus, slightly curved.

Pereiopod II (Fig. 2 B) longer than the following. Basis slender and long, equal with ischium, merus, carpus and propodus, measured together. Ischium short, with a small sternal seta. Merus equal with carpus, each of them shorter than the propodus; carpus with a small tergal seta, terminally. Propodus with a strong spine and a seta, subterminally, on the tergal side; sternally, on the second half, with a small seta. Dactylus thin and long, with a very long spine; together, dactylus and its claw, are equal with merus and carpus, but longer than the propodus.

Pereiopod III (Fig. 2 C) relatively similar, but shorter than the previous one. Merus, terminally, with an acute and strong sternal spine. Carpus with a strong and acute spine on the tergal end, and one smaller on the sternal one. Propodus with two small terminal setae or spines. Dactylus and its claw shorter than those of the pereiopod II.

Pereiopod IV (Fig. 2 D), shorter but similar with first two pereiopods. Ischium, merus and carpus with two, one and, two spines, respectively, disposed as in the drawing. Propodus, terminally, with four small spines. Dactylus and its claw similar to those of the previous pereiopod.

Pereiopods V-VII (Fig. 2 E-G) little longer than pereiopod IV. Basis stronger than the same of previous pereiopods. Ischium with one-two fine spine. Merus and carpus with a short and very thick spine, rounded terminally, on the sternal end, and one-two acute spines, as in drawings. Propodus, terminally, with three-four setae and one-two small spines. Dactylus strong; claw acute, shorter than the dactylus.

Pleopods (Fig. 2 H) in five pairs, biramous, and well developed; exopodite with six long plumose setae on the caudal side, and one on the rostral margin; endopodite with ten long and plumose setae on the caudal margin.

Uropod (Fig. 2 I) short, biramous; exopodite two-articled, endopodite five-articled.

The male is characterized by a long antennule (with short two-articled peduncle and five-articled flagellum), and the great length of the last three pairs of pereiopods (Figs 1 B, E and 3 E-G). Maxilliped reduced (Fig. 1 K).

Etymology: the species is dedicated to the famous Romanian hydrobiologist Grigore Antipa, who modernized the National Museum of Zoology from Bucharest, which bears his name.

Type locality: South Bight #2 Blue Hole, South Bight, South Andros Island, Bahamas.

Habitat: South Bight #2 Blue Hole is one of a string of underwater cave entrances stretching perpendicularly across South Bight, a broad, saltwater, tidal creek separating South Andros Island from Mangrove Cay. These caves were first

explored by diver George Benjamin between 1958 and 1973 (Benjamin, 1970). They lie at the northern end of a 45 km long fault zone that parallels the deep water Tongue of the Ocean and the eastern edge of Andros Island. More than 50 blue holes (entrances to submerged cave systems) have been identified from this fault zone, with several reaching depths in excess of 100 m (Palmer, 1997). The main horizontal passages in the South Bight caves run NNW to SSE and are formed along the vertical plane of the fault between 35 and 60 m depth (Palmer, 1986).

South Bight #2 has a vertical shaft entrance that drops to 30 m depth. At the bottom of the entrance pit, passages extend in opposite directions. While the south passage is muddy, the north passage contains less mud but stronger currents. Tides in the cave are out of phase with those with those outside. Slack high tide in the cave occurs three and half hours after the corresponding tide on the surface, while slack low tide is delayed by four to five hours. Other specimens collected from the cave included cumaceans, copepods, amphipods, ostracods, mysids and the hippolytid shrimp *Janacia antiguensis*.

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GRALLATOTANAIS ANTIPAI UN NOU GEN ȘI SPECIE DIN FAMILIA LEPTOCHELIIDAE LANG, 1963 DINTR-O GROȚĂ MARINĂ DIN BAHAMAS (CRUSTACEA: TANAIDACEA, TANAIDOMORPHA)

REZUMAT

Este descris *Grallatotanais antipai* n.g., n.sp., aparținând tanaidaceelor din familia Leptocheliidae (subordinul Tanaidomorpha). Trăsăturile morfologice caracteristice ale noului gen (și implicit ale noii specii) constau, la femele, în numărul de (patru) articule din componența pedunculului antenulei și prezența unei singure sete pe bazisul maxilipedului, iar la masculi, prin lungimea foarte mare a ultimilor trei perechi de pereopode. *Grallatotanais antipai* este prima semnalare a prezenței tanaidaceelor în grottele marine din Bahamas.

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