Upogebia australis, a new species of the Upogebiidae (Crustacea, Decapoda, Thalassinidea) from the Beagle Channel (Magellan Region)

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With 4 figures

Abstract

Upogebia australis sp. nov. was caught with a multibox corer at one station in the Beagle Channel, southernmost America, during the 'Joint Chilean-German-Italian Victor Hensen Campaign' in October 1994. This is the first record of the Upogebiidae from Chilean and Argentine waters, and up to now only two species from southern Brazil were known as the southernmost occurrence of the Upogebiidae in America (<30° latitude).

Zusammenfassung

Upogebia australis sp. nov. wurde an einer Station im südamerikanischen Beagle Kanal während der „Chilenisch-Deutsch-Italienischen Victor Hensen Expedition" im Oktober 1994 mit Hilfe eines Mehrfachgreifers gefangen. Dies ist der erste Nachweis der Upogebiidae für Chile und Argentinien. Bis heute waren nur 2 Arten dieser Familie aus den Küstengewässern des südlichen Brasiliens als südlichstes Vorkommen der Upogebiidae in Amerika bekannt (<30° Lat).

Resumen

Upogebia australis sp. nov., fue capturada con un 'multibox corer' en una estación de muestreo en el Canal Beagle, durante la 'Campaña Conjunta Chileno-Alemana-Italiana Victor Hensen', en Octubre de 1994. Este es el primer registro para Chile y Argentina de una especie de Upogebiidae. Hasta hoy en la costa sur de Brasil, sólo se ha registrado la presencia de dos especies, como la distribución más sur de los Upogebiidos en América (<30° LS).

Key words: Thalassinidea, Upogebiidae, South America, Magellan Region, Beagle Channel.

Introduction

During recent years several expeditions in southern Chilean waters brought up large benthos data sets (e.g. Arntz & Gorny 1996, Mutschke et al. 1995, Thatje & Mutschke 1999). These data allowed the first insights into benthos distribution patterns, species richness and quantitative aspects. Only a few years ago the whole family of the Thalassinidea was thought to be absent from southernmost America (Thatje 2000). Up to now species of the Upogebiidae were assumed to be absent from coastal waters of Chile (see Retamal 1981, 1994, Gorny 2000) and Argentina. According to their assumed absence from the Polar regions this distribution was assumed to be influenced by low temperatures as found in the cold temperate southernmost part of America, too. The descriptions of Ferrari (1981) and Boschi et al. (1992) for the callianassid *Notiax brachyophthalma* on the Argentinean coast of 'Tierra del Fuego' and that of Thatje (2000) for *Notiax santarita* sp. nov. for the Beagle Channel extended the knowledge of the distribution of Callianassidae to include the southern tip of America.

One specimen of the upogebiid *Upogebia australis* sp. nov. was obtained from a benthos sample which was collected with a multibox corer (Gerdes 1990) at one station in the Beagle Channel (54°57,9′ S/68°49,4′ W; 255 m below sea-level) during the 'Joint Chilean-German-Italian Victor Hensen Campaign' in 1994 (Arntz & Gorny 1996; Fig. 1). This thalassinid is the first

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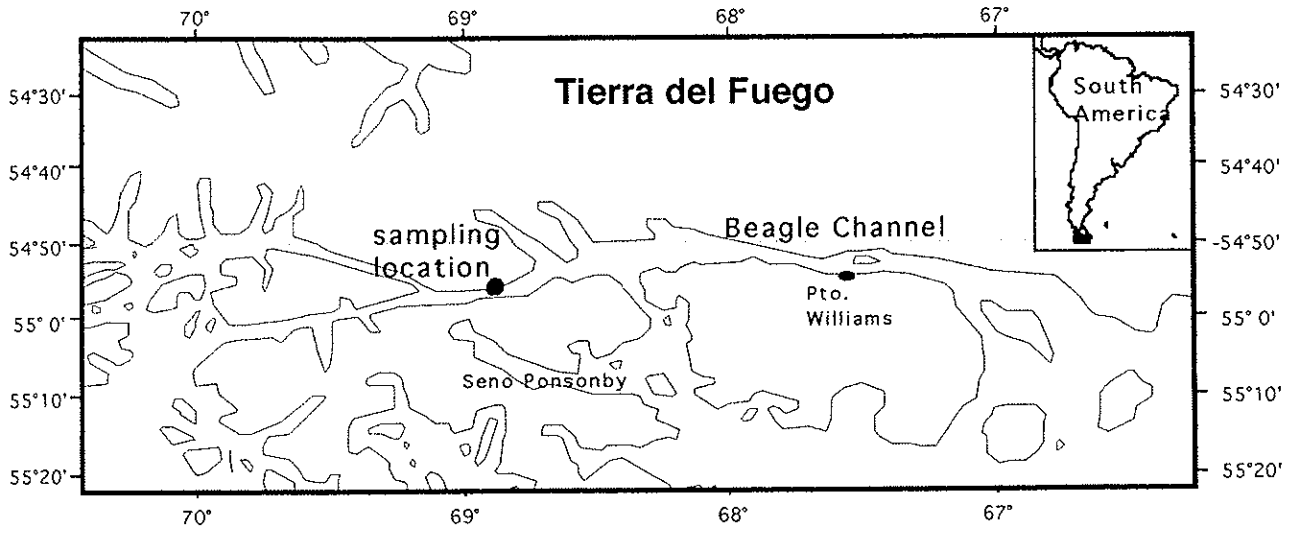

Fig. 1. Locus typicus of *Upogebia australis* sp. nov. in the Beagle Channel (South America).

species of the Upogebiidae reported for Chile and Argentina. Only two upogebiids (*Upogebia omissa*, *Upogebia brasiliensis*) were known to occur in the southern coastal waters of Brazil (<30° latitude; Spivak 1997, Williams 1993), which represented the former southernmost distribution of the Upogebiidae in South American waters.

The material studied is deposited in the Crustacea collection of the 'Museum für Naturkunde' of the Humboldt-University, Berlin, F.R. Germany (ZMB 27251).

Systematic Part

Upogebiidae, Borradaile 1903

Upogebia australis sp. nov.

Holotype: male, 26 mm; Chile, Beagle Channel, (54°57,9′ S/68°49,4′ W), 255 m depth; Oct. 1994, R.V. "Victor Hensen". Colour, greyish-white (ZMB 27251).

Etymology. From the Spanish, *austral*, southern.

Description of male holotype: Carapace with rostrum (Fig. 3: 3); rostrum with two major spines at the lateral margin; lateral margin of carapace with 15 spines (Fig. 3: 3, 4). Front of carapace including rostrum hairy above. Carapace as long as abdominal somites 4–6 combined (Fig. 2). Linea thalassinica incomplete, parallel on both sides of carapace. Eyestalk rounded about twice as long as wide, shorter as rostrum long. Cornea black pigmented.

Relative length of abdominal somite 1–6 and telson are 1:1.2:0.9:1.2:1.2:2:2 (Fig. 2). Abdominal somite 1 subtriangular dorsally; abdominal somite 2–5 subquadrate dorsally. Abdominal somite 6 broader than long (Fig. 3: 1). One tuft of setae left and right of anterior part of mid-dorsal line; three tufts of setae on posterior margin, one on each postero-lateral corner, third one central. Mandible with three segmented palp (Fig. 3: 9). Incisor process with tooth-shaped oral molar process (Fig. 3: 9); aborally rounded medial rim with three small tooth-shaped projections and one tooth-shaped hook. Three-segmented palp; terminal segment ends oral of the incisor process and inserts aborally in the central palp segment. Central and terminal segment orally covered with different types of brush-like setae. Maxilla 1 (Fig. 3: 10) with palp-like endopodite; coxopodite posteriorly attached to the basipodite, both with dense rows of setae. Maxilla 2 (Fig. 3: 5) with broad scaphognathite and slender, simple palp. Medial rims of all lobes of maxilla 2 are closely packed with setae. Maxilliped 1 with prominent exopodite and smaller basipodite (Fig. 3: 8), endopodite closely attached to basipodite. Exopodite with three-segmented palp, terminal segment with 8 feathered setae. Basis of maxilliped 2 with joining exopodite and meropodite. Meropodite with row of long setae (until end of dactylopodite, Fig. 3: 6). Exopodite ending in three-segmented tip. Dactylus 0.8 times as long as propodus, dense setae on distolateral part of dactylus. Third maxilliped bearing an exopodite (Fig. 3: 7); ischiopodite

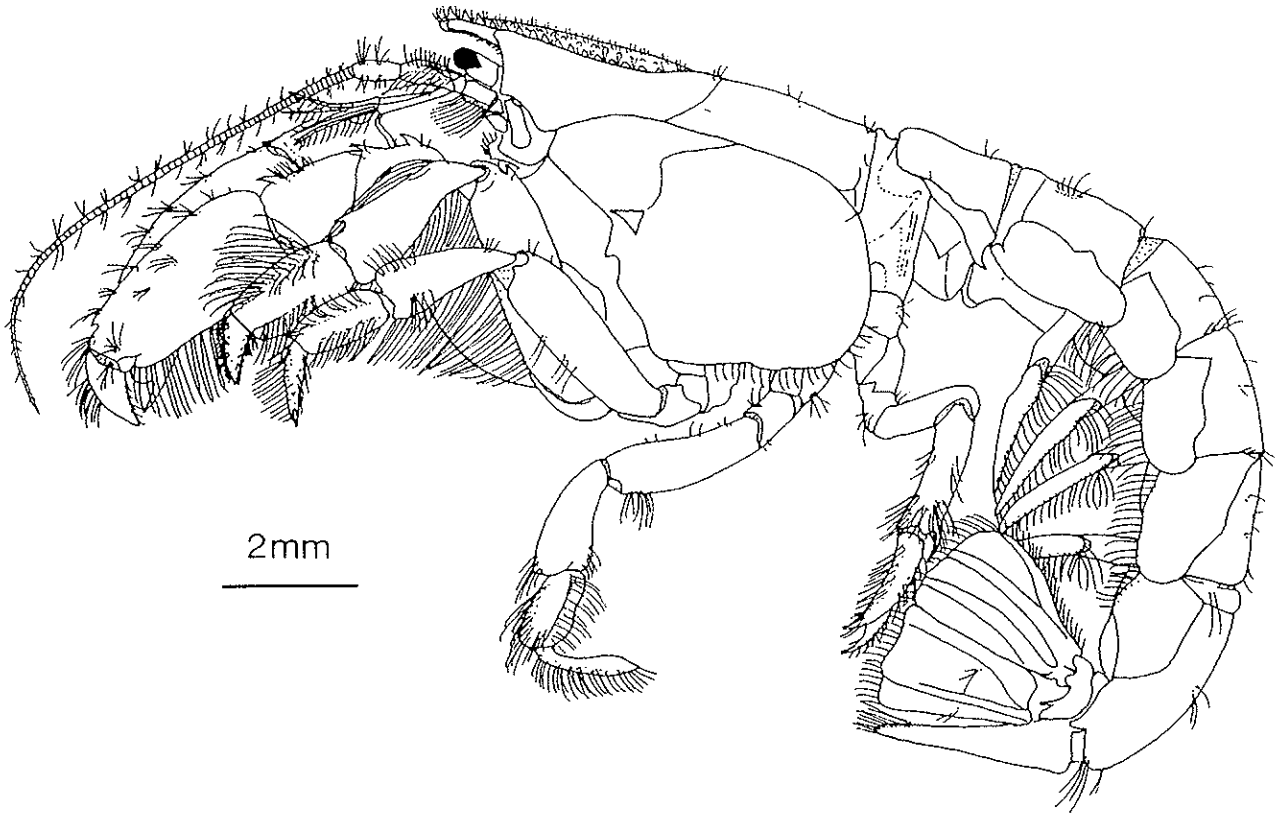

Fig. 2. *Upogebia australis* sp. nov., holotype, male (ZMB 27251), lateral view.

without crista dentata. Dactylus 0.7 times as long as propodite, propodite with densely packed setae pointing distally. Dactylopodite similar to maxilliped 2.

Pereiopods 1 chelate, symmetrical (Fig. 4: 1, 3). Merus four times as long as ischium; chela about 2.2 times as long as carpus. Dactylus longer than palm; cutting edge of palm and dactylus toothed. Medial rims of ischium, merus, carpus and chela with long, medially orientated setae. Carpus with dorsal and ventral spine. Ventral margin of chela with toothed medial rim (Fig. 4: 3). Pereiopod 2 simple (Fig. 4: 5). Dactylus 0.5 length of propodus; merus about twice as long as carpus. Spines of carpus and merus same as in pereiopod 1. Pereiopod 3 (Fig. 4: 4) simple, similar to pereiopod 1. Ventral margin of merus with setal tufts. Pereiopod 4 simple (Fig. 4: 6); dactylus 0.8 length of propodus, dactylus 6 times as long as broad; propodus as long as carpus. Pereiopod 5 (Fig. 4: 2) simple. Propodus largely convex on dorsodistal margin; as long as carpus. Dactylus four times as long as broad. Propodus with strong spine, 0.8 times as long as dactylus. Margins of tail fan and uropods surrounded by thin, dense wreath of setae. Tail fan with four mid-dorsal tufts of setae, symmetrical (Fig. 3: 1). Pleopod 1 absent; pleopods 2–5 biramous, foliaceous. Exopodite three times as long as broad; endopodite shorter, 2.5 times as long as broad (Fig. 2: 2).

Remarks

Upogebia australis sp. nov. can easily be distinguished from the other known American Upogebiidae (see Williams 1986, Williams 1993). Concerning its morphological features it seems to be closely related to *Upogebia brasiliensis* (Holthuis 1956). The main differences for the determination of both species are listed below (features of *Upogebia brasiliensis* in brackets):

Rostrum without lateral flanked spined ridge projecting into anterior process (with 2, rarely 3 lateral spines), rostrum twice as long as broad, slightly broadened at base (base twice as broad as rostrum length, triangular); chela of cheliped 1 with row of strong spines on ventral margin (absent), coxa of cheliped 1 on mesial side without spines on mesiodistal margin (with 3 strong spines); propodus of pereiopod 5 with strong proximal spine (absent).

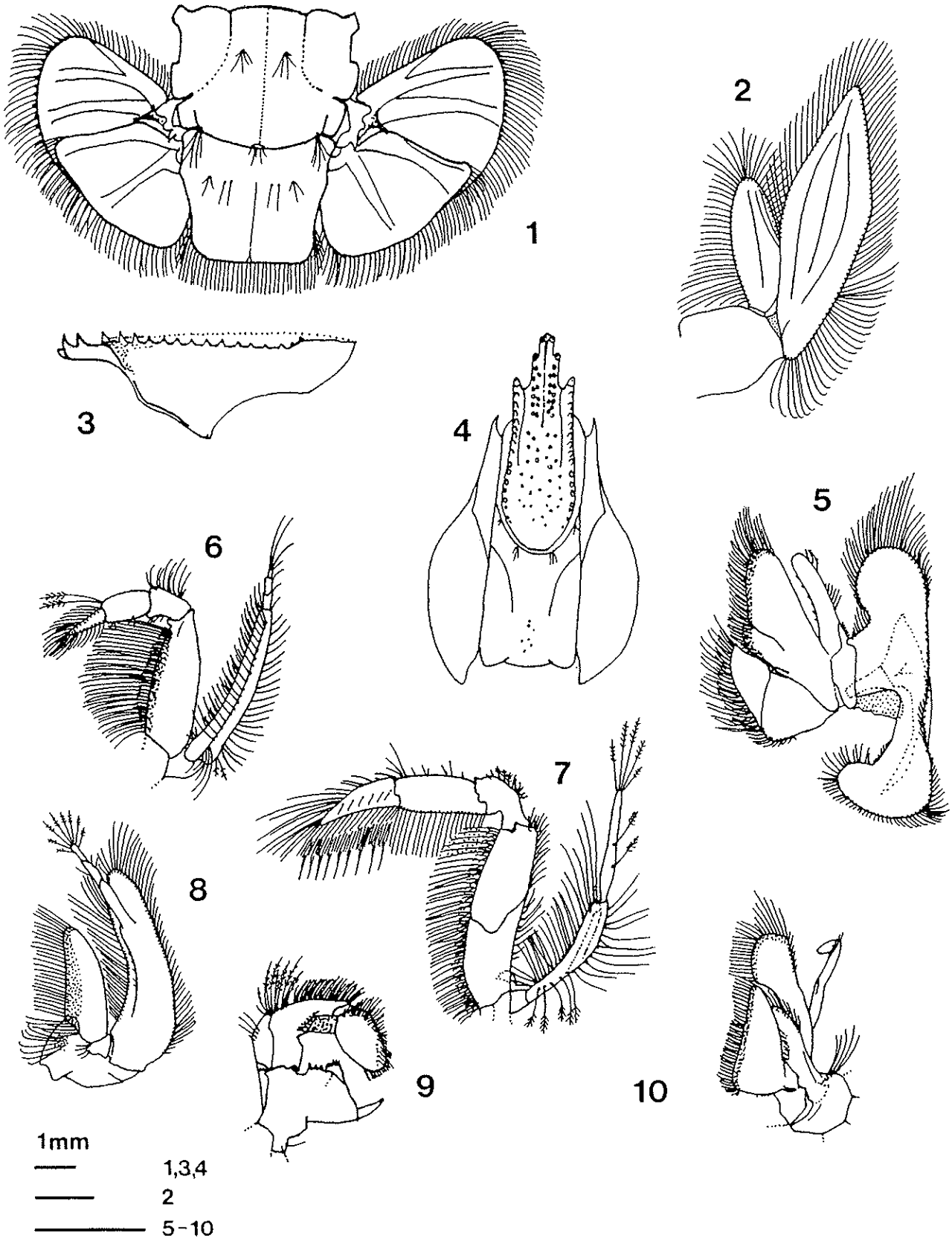

Fig. 3. *Upogebia australis* sp. nov. **1–10**, holotype, male (ZMB 27251). **1**. abdominal somite 6 and tail fan, dorsal view; **2**. left pleopod 2, lateral view; **3**. carapace, ventral view; **4**. carapace, dorsal view; **5**. maxilla 2, aboral view; **6**. maxilliped 2, aboral view; **7**. maxilliped 3, aboral view; **8**. maxilliped 1, aboral view; **9**. mandible, lateral view; **10**. maxilla 1, aboral view.

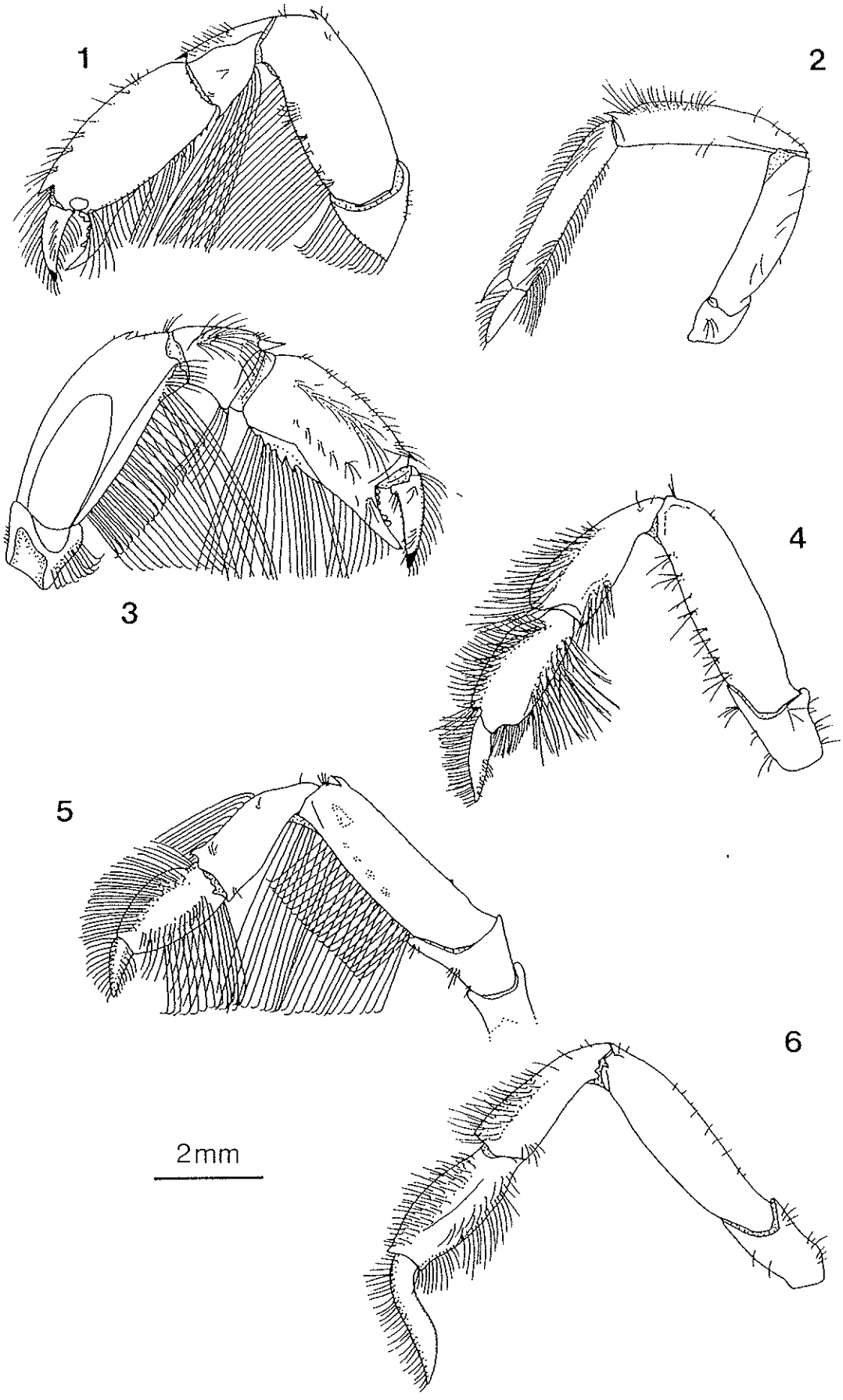

Fig. 4. *Upogebia australis* sp. nov. **1–6**, holotype, male (ZMB 27251). **1**, cheliped 1, lateral view; **2**, pereiopod 5, lateral view; **3**, cheliped 1, lateral view; **4**, pereiopod 3, lateral view; **5**, pereiopod 2, lateral view; **6**, pereiopod 4, lateral view.

Discussion

Thalassinidea have never been found in Polar regions and from Antarctica only fossil finds of Callianassidae are known (Rodney et al. 1984). Upogebiidae were never previously reported from the Chilean and Argentine coast (Retamal 1981, Spivak 1997). The question of restrictive parameters for the distribution of callianassids in general is of great scientific interest. Since Callianassidae were reported from the Beagle Channel (*Notiax santarita*, Thatje 2000) the question of more widely distributed Thalassinidea is especially interesting for southern Chilean waters, because thalassinids were previously never reported between the island of Chiloé (Retamal 1981, 1994) and the Beagle Channel (latitudinal range: 41°55′ S to 54°50′ S; Thatje 2000). Lower temperatures and ice impact as e.g. in the Chilean South Patagonian Ice-Field (latitudinal range: 48°20′ S to 51°30′ S, Aniya & Skvarca 1992) could be one hint for the absence of thalassinds there, which were also assumed to be the main reasons for the absence of brachyuran crabs in the high Antarctic (Gorny 2000). Strong currents causing sediment movements, as well as high sedimentation rates due to glacier rub-down were also assumed to restrict thalassinid distribution in the Magellan region (compare with Thatje et al. 1999). Physiological barriers could also be responsible for the distribution of Thalassinidea. In the case of the thalassinids in the cold-temperate Magellan region, one physiological adaptation could be the absence of planktonic larvae, avoiding energy loss, and allowing a rapid turnover in populations, as observed for callianassids from other sub-Polar regions (Forbes 1977). Until now thalassinid larvae were never recorded from the area under investigation.

Thalassinidea, however, are difficult to catch by normal sampling methods like Agassiz-trawls or grabs, because they live deeply burrowed in the sediment. Our catches in the Beagle Channel (see also Thatje 2000) were achieved with a heavy multibox corer (Gerdes 1990), which was deployed for the first time in South America and which allowed a deep penetration into soft bottom sediments. From this point of view we can assume that future investigations will extend the knowledge of the distribution of *Upogebia australis* sp. nov. and the general knowledge of Thalassinidea in Magellanic waters.

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