

*NOTIAX SANTARITA*, A NEW SPECIES OF THE CALLIANASSIDAE  
(DECAPODA, THALASSINIDEA) FROM THE BEAGLE CHANNEL,  
SOUTHERNMOST AMERICA<sup>1)</sup>

BY

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ABSTRACT

Seventeen specimens of *Notiax santarita* sp. nov. were collected in the Beagle Channel in southernmost Chile during the Joint Chilean-German-Italian "Victor Hensen" Campaign in 1994 and the Chilean expedition "Cimar Fiordo III" in 1997. These specimens are the first Callianassidae that are recorded south of 46° S in Chile and represent the second species of the genus *Notiax* found in America. This callianassid, herein described as a new species, has been compared with the second species of the genus, *Notiax brachyophthalma*, known from the Chilean and Argentine coasts.

RESUMEN

Se recolectaron 17 ejemplares de *Notiax santarita* sp. nov. en el Canal Beagle durante la Campaña Conjunta Chileno-Alemana-Italiana "Victor Hensen" y la campaña Chilena "Cimar Fiordo III" en 1994 y 1997, respectivamente. Estos ejemplares representan los primeros Callianassidae del género *Notiax* citados al sur de 46° S en Chile, siendo la segunda especie encontrada en América. Los ejemplares, descritos como nueva especie, se compararon con la segunda especie conocida del género, *Notiax brachyophthalma*, procedente de las costas chilenas y argentinas.

INTRODUCTION

Over the last years, several expeditions to southern Chile have tried to extend the scant knowledge about the benthic regime of the Magellan region, which at present is still limited (Thatje & Mutschke, 1999). *Notiax santarita* sp. nov. was caught at seven stations in the Beagle Channel and the adjacent Seno Ponsonby (fig. 1) with

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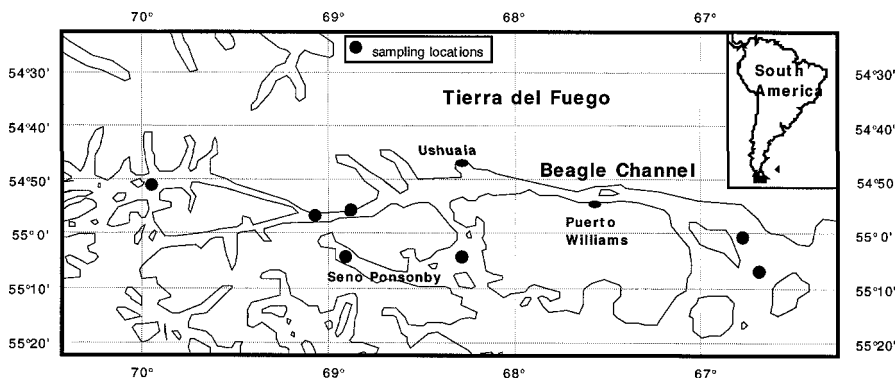


Fig. 1. Occurrence of *Notiax santarita* sp. nov. in the Beagle Channel.

a Reineck- and a multibox-corer (Reineck, 1963; Gerdes, 1990) during the “Victor-Hensen” Cruise in 1994 (Arntz & Gorny, 1996) and the Chilean expedition “Cimar Fiordo III” in 1997.

The Beagle Channel stretches about 300 km in a mainly east-west direction from the Pacific to the Atlantic coast (Colizza, 1991). Both entrances are characterized by a geomorphological shoal, separating the channel from the Atlantic and Pacific oceans. The wider parts of the Beagle Channel are deposition zones with high amounts of very fine mud and clay (Brambati et al., 1991). The coasts of Tierra del Fuego are low and sandy, those of the islands, which constitute the southern boundary of the channel, are mostly rocky and high. In the sublittoral, the depth ranges from 50 m to 600 m in front of the Pacific shoal (see Colizza, 1991).

Until now it was assumed that Thalassinidea are absent south of 46° S in Chile. They were never found in the Polar regions and from Antarctica we only know fossil records of Callianassidae (Rodney et al., 1984). Five species were known to occur along the southern part of South America, four species in Chile, and two in Argentina, one of which, *Notiax brachyophthalma* (A. Milne-Edwards, 1870), is distributed in both areas (table I). *Notiax santarita* sp. nov. is the second species recorded of the genus *Notiax* Manning & Felder, 1991, and therefore differences with the only other species, *Notiax brachyophthalma* are presented.

#### SYSTEMATIC PART

#### *Notiax santarita* sp. nov. (figs. 1-6)

Specimens of *Notiax santarita* sp. nov. were compared with Thalassinidea of the Crustacea collection of the Humboldt University (Zoological Museum, Berlin) and additionally with descriptions of Biffar (1971), Manning & Felder (1991), and redescrptions of Ferrari (1981). The material studied is deposited in the

TABLE I

Comparison of the Chilean and Argentine Callianassidae. Data obtained from the literature (Biffar, 1971; Ferrari, 1981; Boschi et al., 1992; Manning & Felder, 1991; Retamal, 1981, 1994; Spivak, 1997) and the present investigation; former generic placing in parentheses, where applicable

Species	Distribution	Total length	Bathymetric depth
<i>Neotrypea uncinata</i> (H. Milne Edwards, 1837) ( <i>Callianassa</i> )	Chile: Península de Taitao, Capon, Peru and Mexico	25-90 mm	0-1 m
<i>Callichirus garthi</i> (Retamal, 1975) ( <i>Callianassa</i> )	Chile: Arica, Golfo de Arauco to Constitución	90-130 mm	0.5-5 m
<i>Notiiax santarita</i> sp. nov.	Chile: Beagle Channel	28-71 mm	65-246 m
<i>Notiiax brachyophthalma</i> (A. Milne-Edwards, 1870) ( <i>Callianassa</i> )	Chile: Chiloé, northern Chile; Argentina: Puerto Deseado and Golfo San Jorge	8-42 mm	0-6 m
<i>Anacalliax argentinensis</i> Biffar, 1971	Argentina: Provincia de Buenos Aires to Puerto Deseado, Provincia de Santa Cruz	50-65 mm	shallow, subtidal, to 50 m
<i>Neocallichirus mirim</i> Rodríguez, 1971 ( <i>Callianassa</i> )	Brazil: Santos, San Sebastián, San Pablo, Río Grande; Uruguay: Argentina: Buenos Aires	45-75 mm	intertidal, nearshore

Zoological Museum of the Humboldt-Universität, Berlin, Germany (holotype, Ref.-No. 27250) and the Instituto de la Patagonia, Universidad de Magallanes, Punta Arenas, Chile (paratypes, Ref.-Nos. 1005, 1006).

Holotype, male, 65 mm; Chile, Seno Ponsonby, 55° 12.0' S 68° 87.03' W, sublittoral, 65 m, mud to sandy-mud, 11.x.1997, RV "Vidal Gormaz".

Paratypes: 14 males, 24-75 mm, 2 females, 19-22 mm, 1 male (TL: 47 mm, 246 m depth) and 1 female (TL: 19 mm, 65 m depth), Seno Ponsonby, 55° 08.3' S 68° 23.0' W and 55° 12.0' S 68° 87.03' W, 10 and 11.x.1997, RV "Vidal Gormaz".

2 males (TL: 54 and 75 mm) and 1 female (TL: 22 mm) at 54° 50.1' S 69° 56.6' W, 101 m, 4.xi.1994, RV "Victor Hensen"; 3 males (TL: 37, 47, and 53 mm) at 54° 55.0' S 69° 019.5' W, 100 m, 6.xi.1994, RV "Victor Hensen"; 2 males (TL: 24 and 42 mm) at 54° 57.9' S 68° 49.4' W, 245 m, 7.xi.1994, RV "Victor Hensen"; 3 males (TL: 42, 44, and 52 mm) at 55° 57.9' S 66° 53.7' W, 100 m, 18.xi.1994, RV "Victor Hensen"; 3 males (TL: 47, 57, and 62 mm) at 55° 07.5' S 66° 53.6' W, 33 m, 15.xi.1994, RV "Victor Hensen".

Description of male holotype. — Carapace with rostral spine (fig. 2A). Cornea dorsal, subterminal, disc-shaped; anterior margin of carapace with 3 spines, median one extending to form a rostral spine; lateral spines not flattened as is the case in *N. brachyophthalma* (fig. 3E, F). Carapace as long as abdominal somites 1 and 2 combined. Linea thalassinica complete from anterior to posterior margin and parallel on both sides of carapace. Eyestalk twice as long as wide, flattened dorsoventrally, subacute tip reaching distal margin of antennular article 1; central area pigmented. A1 peduncle not longer and stouter than peduncle of A2.

Relative length of abdominal somites 1-6 and telson 1 : 2 : 1 : 1.2 : 1.2 : 1.5 : 1.2. Abdominal somite 1 subtriangular dorsally; pleuron extending posterolaterally to protopod of pleopod 1. Abdominal somite 6 broader than long, broadened anteriorly with rounded lateral margins. One tuft of setae at each rounded lateral margin of abdominal somite 6, one tuft of setae left and right posterior part of mid-dorsal line. Telson (fig. 3A) 2.5 times as broad as long; 1 mid-dorsal tuft of setae on telson, absent in *N. brachyophthalma* (fig. 3C, D); 2 tufts on posterolateral margin of telson (fig. 3A, B). Telson with fringe of setae on posterior margin. Margin of uropods with thin, dense fringe of setae.

Mandible (fig. 5A) with three-segmented palp; mandible with toothed medial rim on incisor process (14 to 18 teeth); palp with setal brush. Maxilla 1 (fig. 4D) with biarticulate palp, distal segment deflexed from proximal one. Coxopodite and basipodite with setal margin; coxopodite as broad as base of basipodite. Maxilla 2 (fig. 5B) with slender, simple palp, scaphognathite broad. Maxilliped 1 (fig. 5E), basipodite with 2 rows of setae, coxopodite anvil-like; exopodite 2 times as long as broad, endopodite attached. Mxp 2 (fig. 5C), basis with joining exopodite and meropodite; meropodite with row of long setae (reaching end of dactylopodite); dactylopodite with bundles of long setae. Mxp 3 (fig. 5F) without

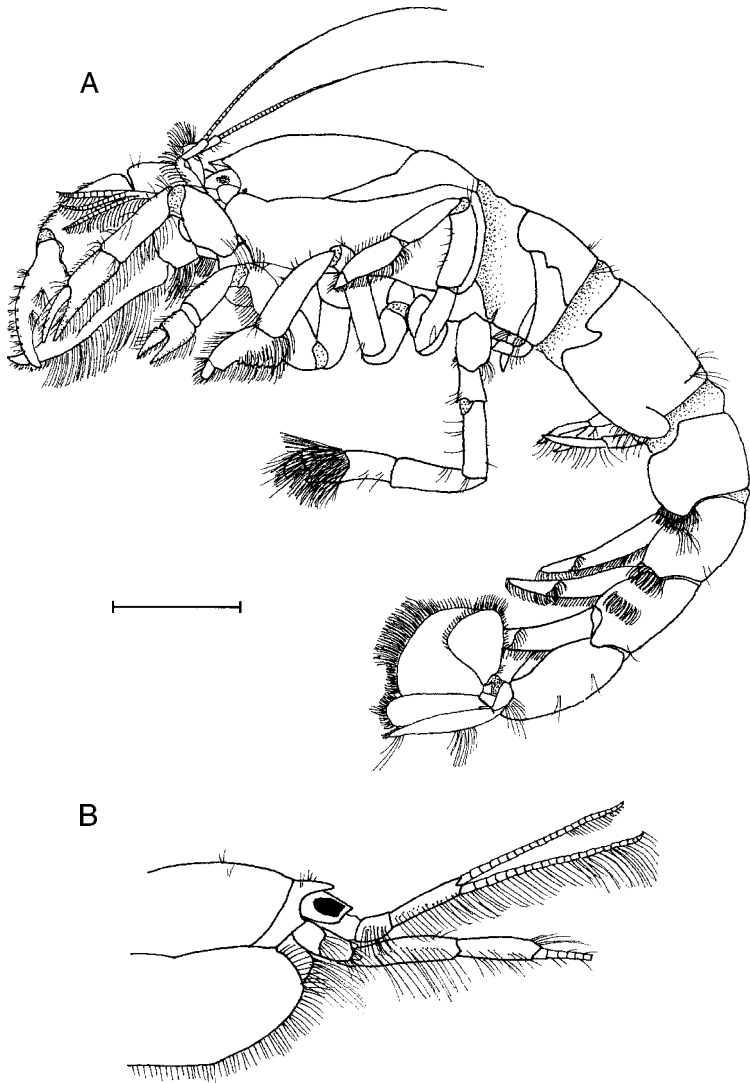


Fig. 2. *Notiax santarita* sp. nov. A, holotype male, lateral view; B, paratype male, anterior part of carapace, lateral view. Scale bars: A, 0.5 cm; B, 0.25 cm.

exopod, ischium-merus operculiform; merus not projecting beyond articulation with carpus. Dactylus 0.7 times as long as propodus, crista dentata with brushes of setae only, dense setae on distolateral part of dactylus and propodus.

Pereopod 1 chelate, unequal. Larger cheliped with strong proximo-ventral hook on merus (fig. 4A, B). Chela about three times as long as carpus, palm about 1.3 times as long as broad, cutting edge armed with square proximal tooth, with large concavity subproximally, and irregularly denticulate in its distal half.

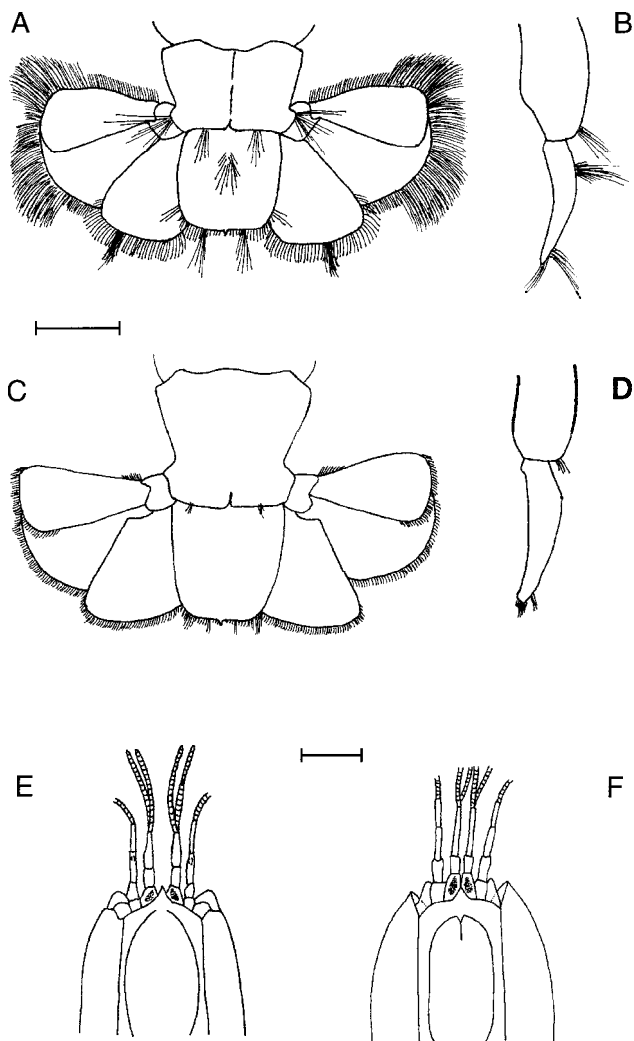


Fig. 3. *Notiax santarita* sp. nov., A, B, F, male; and *Notiax brachyophthalma* (A. Milne-Edwards, 1870), C, D, E, male. A, part of abdominal somite 6 and tailfan, dorsal view; B, lateral profile of telson; C, part of abdominal somite 6 and tailfan, dorsal view; D, lateral profile of telson; E, anterior part of carapace, dorsal view; F, do. Scale bars: 0.25 cm.

Dactylus as long as palm; lateral and dorsal margins of cutting edge with setal tufts. Smaller cheliped without meral hook (fig. 4C). Pereiopod 2 (fig. 4D) chelate. Pereiopod 3 (fig. 4E) simple. Carpus triangular, broadest distally. Propodus about 0.4 times length of carpus, dorsal margin largely rounded, and ventral margins with rounded proximal heels, bevelled distally towards dactylus. Pereiopod 4 (fig. 4F) simple. Propodus 0.6 times length of carpus, 1.5 times as long as broad, setose on lateral surface. Pereiopod 5 (fig. 4G) subchelate. Propodus about 0.6 times

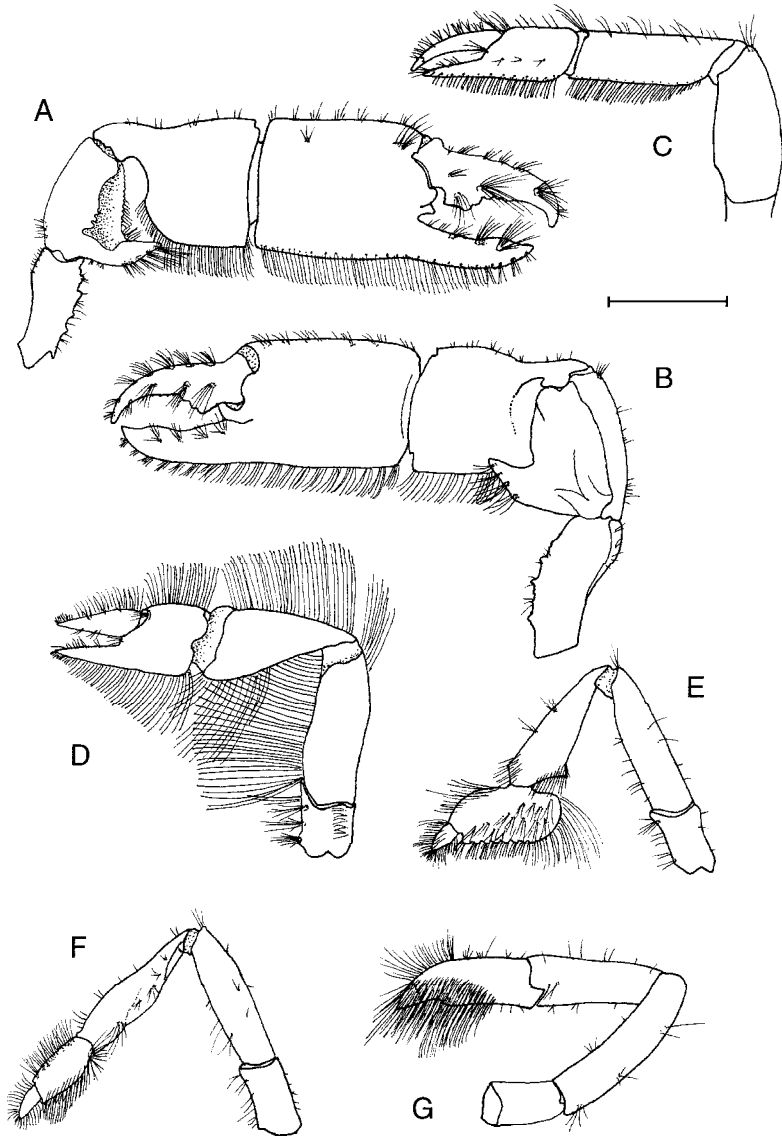


Fig. 4. *Notiax santarita* sp. nov., male. A, major cheliped, lateral view; B, major cheliped, mesial view; C, smaller cheliped, lateral view; D, pereopod 2, lateral view; E, pereopod 3, lateral view; F, pereopod 4, lateral view; G, pereopod 5, lateral view. Scale bar: 0.5 cm.

length of carpus, largely convex on dorsodistal margin with ventrodistal projection. Dactylus 0.3 times as long as propodus; ventral margin with subterminal hook.

Pleopod 1 slender and uniramous (fig. 6C), proximal segment as long as distal one, Plp 2 absent (differing in this respect from *N. brachyophthalma*), Plp 3-5 foliaceous with stubby, projecting appendices internae in both sexes, typical for

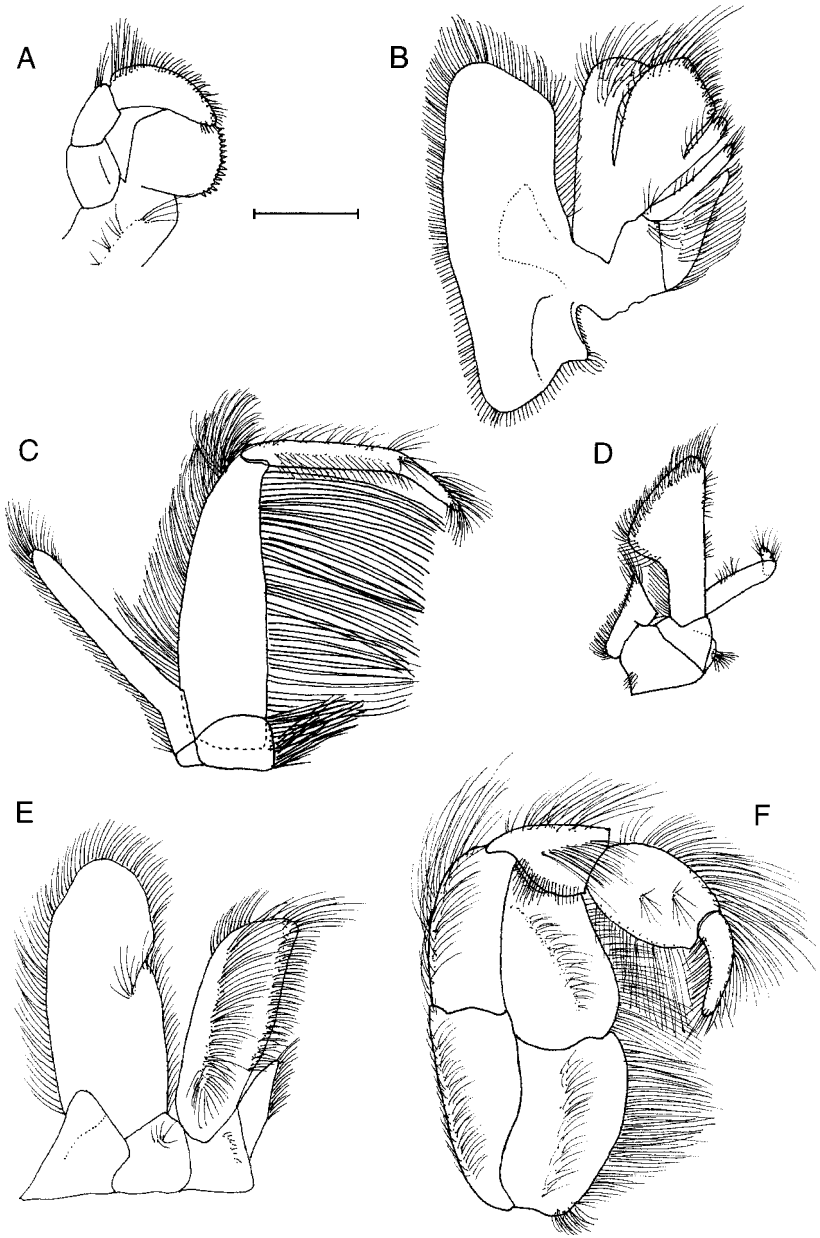


Fig. 5. *Notiax santarita* sp. nov., male. A, mandible, lateral view; B, maxilla 2, lateral view; C, maxilliped 2, lateral view; D, maxilla 1, aboral view; E, maxilliped 1, lateral view; F, maxilliped 3, lateral view. Scale bar: 0.1 cm.



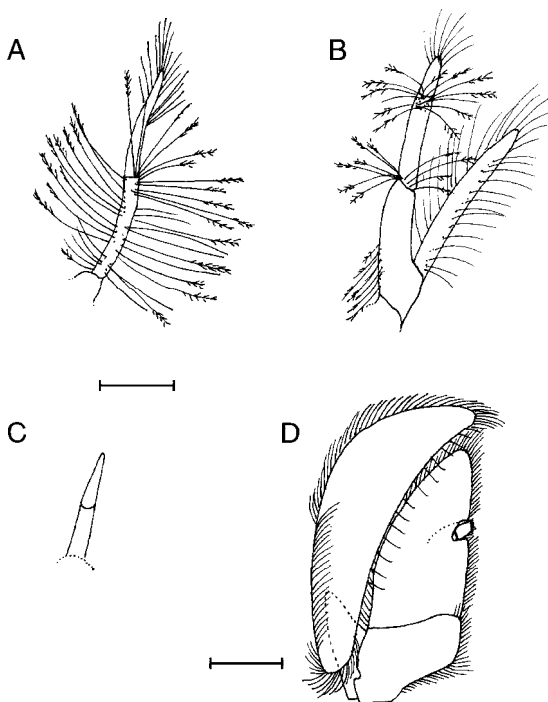


Fig. 6. *Notiax santarita* sp. nov., A, B, female; C, D, male. A, left pleopod 1, lateral view; B, left pleopod 2, lateral view; C, left pleopod 1, lateral view; D, left pleopod 3, anterior view. Scale bars: A, B, 0.2 cm; C, D, 0.3 cm.

this genus (fig. 6D), endopod triangular, 1.8 times as long as broad; exopod slender, 3.5 times as long as broad. Uropodal endopod 1.3 times as long as broad (fig. 3A), extending beyond telson.

Description of female. — The general features of females are similar to those of the males. Major cheliped smaller than in males, with less pronounced meral hook, variable in size. Pleopod 1 (fig. 6A) uniramous, biarticulate, proximal part of segment with feathered setae, distal part bending posteriorly. Pleopod 2 (fig. 6B) biramous, endopod and exopod convex mesially, endopod longer than exopod. Pleopods 3-5 foliaceous as in male (fig. 6D).

Colouration. — Variable, from dark pink to light brown. Pereiopods 1 light, from pink to greyish-white; carapace sometimes that same colour.

#### DISCUSSION

During the last years, several investigations yielded data on macrobenthos from the South Patagonian Ice-Field to Cape Horn, using different types of grabs (Thatje & Mutschke, 1999). The only finds of callianassids are those presented in this

work, which again leads to a discussion on environmental parameters restrictive for Thalassinidea.

Thalassinidea were assumed to be absent in southernmost Chile (cf. Retamal, 1981; Spivak, 1997) and the highest latitude occurrences were noted for *Notiax brachyophthalma* around the island of Chiloé (Retamal, 1981). Thalassinidea are known to be absent from the Polar regions, but have a great tolerance concerning high temperatures (up to 80°C) as found around hot springs (see Türkay & Sakai, 1995). This was taken into account for the assumed absence of this group, which was thought to be influenced by the South Patagonian Ice-Field, the largest ice-sheet in the region.

Next to low temperatures, high deposition rates of mud and detritus may influence the occurrence of the deep-burrowing Callianassidae as was observed for *Callianassa subterranea* (Montagu, 1808) in the German Bight (Thatje et al., 1999). This could be one important reason for the absence of callianassids in the Strait of Magellan's adjacent fjords and bays (e.g., Bahía Inutil, Seno Almirantazgo) which are also influenced by glacier rub-down. Another reason might be the low catching performance of the grabs, which only rarely allow quantitative sampling of callianassids due to the limited penetration of this gear in the sediment and to the gear's shock wave, causing escape attempts of the ghost shrimps.

Stations made in southern Chile with different types of gear in the early and late nineties, are only able to represent a rough picture of macrozoobenthos distribution in this heterogeneous area (Gerdes & Montiel, in press; Thatje & Mutschke, 1999). There are almost no data available on macrozoobenthos distribution from the sublittoral of the Argentine side of Tierra del Fuego, which could be reason to assume a generally more extended distribution of callianassids, especially those of the genus *Notiax*, than that known at present.

Samples obtained from the Beagle Channel also included one specimen of the Upogebiidae, a family not recorded from Chile before, and only two species of which are known to occur in the southwestern Atlantic Ocean (< 30°S, Williams, 1993; Spivak, 1997; Gorny, in press). This is another indication for assuming a wider distribution of the Thalassinidea in the southernmost part of America.

#### ACKNOWLEDGEMENTS

My thanks are due to the crews of the RV's "Victor Hensen" and "Vidal Gormaz" for assistance at sea and to Thomas Brey for critically reading the manuscript. This work was supported by the International Bureau of the German Ministry of Research (BMBF).

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First received 3 November 1998.

Final version accepted 30 March 1999.