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## New records to Chile of the Family Paraonidae (Annelida: Polychaeta)

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**Abstract** The Paraonidae are a polychaete family of small body size which have not been reported for Chile until recently. Mainly due to improved sample-processing methods, research campaigns carried out in 1994 and 1996 on three areas off southern Chile have yielded numerous records. Several species proved to be new to the Chilean polychaete fauna, including species that have been known previously only from Antarctic areas. These new records and range extensions are reported in this paper.

**Keywords** Polychaeta · Paraonidae · New records · Chile

### Introduction

The Paraonidae of Chile have only very recently been reported; Rozbaczylo (1985) listed six species in three genera, recorded for Chile between 1965 and 1978. Maurer and Williams (1988) and Mariani et al. (1996) provided a few additional records of paraonids sampled off the Chilean coast, but they did not provide exact data on the collection sites. Recent analyses of benthic corer samples taken between 1994 and 1996 in three areas off southern Chile have yielded numerous paraonids, including several species that have been reported from adjacent

areas along the Chilean coast and Antarctica but not for the Magellan area, and some species that, until now, have not been found off Chile at all. The new records for Chile and range extensions of some additional species are presented here. The systematics follow Strelzov (1973) and Hartley (1981, 1984).

### Methods

The specimens were collected in the Magellan Region with a Reineck corer (Reineck 1958) and multibox corer (Gerdes 1990), respectively, during the Joint Chilean–German–Italian campaign of RV Victor Hensen in 1994 (Arntz and Gorny 1996), expedition ANT XIII/4 of RV Polarstern in 1996 (Fahrbach and Gerdes 1997), and the Chilean expedition aboard AGOR Vidal Gormaz (Mutschke et al. 1996). The three areas sampled included the Strait of Magellan and Beagle Channel, the channels and fiords off the South Patagonian Icefield, and the continental shelf and slope south of Tierra del Fuego (Table 1, Fig. 1).

### Results

*Aricidea (Allia) albatrossae* Pettibone, 1957

Sta. PS 108a (1), Sta. PS 108b (1).

Both specimens incomplete, 6.0 and 13.0 mm long, respectively, both 0.5 mm wide and consisting of 66 and 78 segments, respectively (Fig. 2a–b). Branchiae 19 pairs, not meeting along dorsomedian line of body; modified setae present from setiger 37 onwards.

Previous records for Chile: none.

Previous records for the Magellan Region: none.

Distribution outside of Chile: northwest Atlantic: Massachusetts to Chesapeake Bay (Pettibone 1957); South Africa (Day 1963, as *Aedicira belgicae*); northeast Atlantic: Great Britain (Hartley 1984); Pacific: Caroline Islands.

This new record of *A. albatrossae* for the southern hemisphere may reopen the discussion about the possible synonymy of *A. albatrossae* and *Paraonis belgicae* Fauvel, 1936, a species described from Antarctica. Monro (1939) redescribed the species and referred it to *Aricidea* based on three specimens from Antarctica, which

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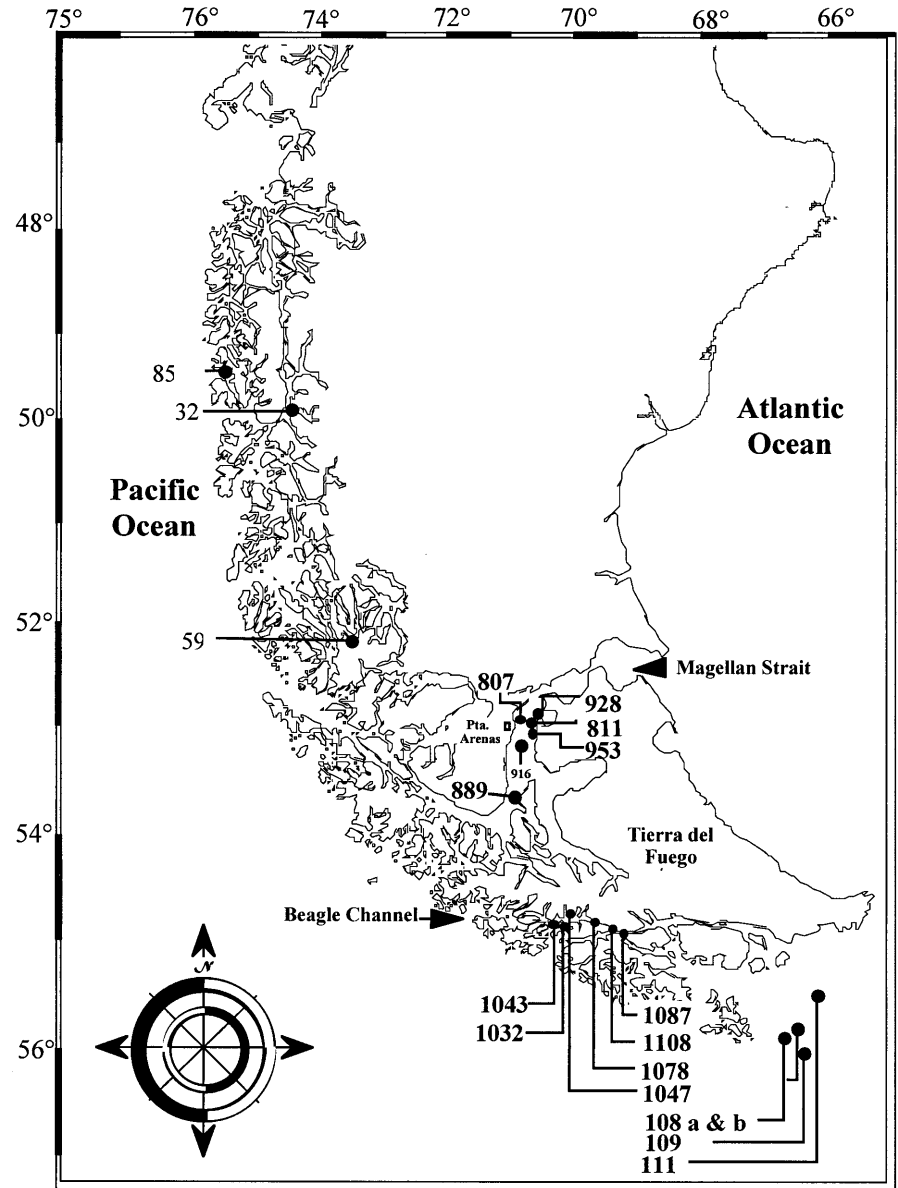
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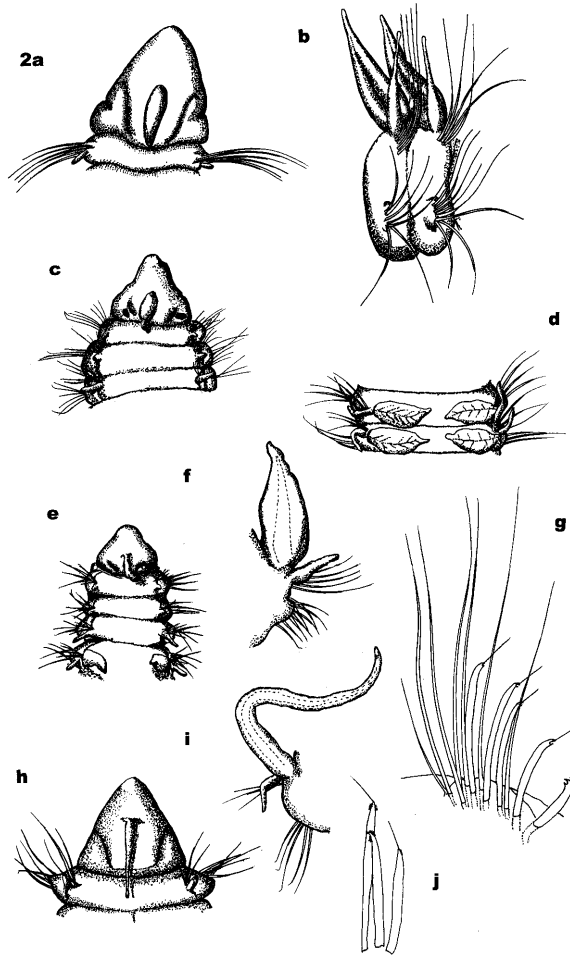
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**Fig. 1** Study area and stations sampled



**Table 1** List of stations from which new records or range extensions of Paraonidae are reported. VG: Vidal Gormaz, VH: Victor Hensen, PS: Polarstern. ND = no data

Cruise, Station	Location	Position	Depth(m)	Sediment
VG 32	South Patagonian Icefield, Seno Penguin	49°54.3'S, 74°18.6'W	711	ND
VG 59	South Patagonian Icefield, Canal Kirke	52°10.3'S, 73°21.7'W	238	ND
VG 85	South Patagonian Icefield, Canal Picton	49°28.9'S, 75°25.2'W	98	ND
VH 807	Strait of Magellan, Laredo	52°57.9'S, 70°47.2'W	14	ND
VH 811	Strait of Magellan, Laredo	52°58.4'S, 70°42.2'W	122	ND
VH 889	Strait of Magellan, Bahia Voces	53°42.7'S, 70°57.3'W	114	ND
VH 916	Strait of Magellan, off Punta Arenas	53°10.2'S, 70°52.3'W	26	Sand and shell hash
VH 928	Strait of Magellan, Laredo	52°57.8'S, 70°25.6'W	44	Sand and gravel
VH 953	Strait of Magellan, Paso Ancho	52°59.8'S, 70°33.0'W	80	Sand and gravel
VH 1032	Beagle Channel, Garibaldi	54°52.7'S, 69°54.5'W	330	Sand and gravel
VH 1043	Beagle Channel, Garibaldi	54°51.9'S, 69°55.2'W	216	Sand and gravel
VH 1047	Beagle Channel, Garibaldi	54°50.1'S, 69°56.6'W	101	Sand and gravel
VH 1078	Beagle Channel, Romanche	54°53.5'S, 69°31.0'W	348	silt and sand
VH 1087	Beagle Channel, Francia	54°55.3'S, 69°19.7'W	169	Sand and silt
VH 1108	Beagle Channel, Francia	54°55.0'S, 69°19.5'W	100	Sand and gravel
PS 108a	Continental shelf off Tierra del Fuego	55°44.1'S, 66°16.7'W	202	ND
PS 108b	Continental shelf off Tierra del Fuego	55°44.1'S, 66°16.7'W	204	ND
PS 109	Continental shelf off Tierra del Fuego	55°44.7'S, 66°15.3'W	382	ND
PS 111	Continental slope off Tierra del Fuego	55°28.8'S, 66°04.4'W	1162	ND



**Fig. 2** a–b *Aricidea albatrossae*: a anterior end, dorsal view; b branchial segments, lateral view; c–d *Aricidea antarctica* (after Hartmann-Schröder and Rosenfeldt 1988): c anterior end, dorsal view; d branchial segments, dorsal view; e–g *Aricidea catherinae* (after Strelzov 1973): e anterior end, dorsal view; f branchial segments, lateral view; g neuropodium with modified setae, view from above; h–j *Aricidea finitima* (after Strelzov 1973): h anterior end, dorsal view; i branchiferous parapodium, posterior view; j modified setae

were later determined by Hartley (1984) to re-present two species. In that same paper, Hartley (1984) redescribed the type of *P. belgicae* and returned the species to its original genus, although he indicated that further revision might result in a different generic assignment. The occurrence of *A. albatrossae* in the Magellan region may strengthen Hartman's (1959, 1965) position that *A. albatrossae* Pettibone and *P. belgicae* Fauvel are the same species.

#### *Aricidea (Allia) antarctica*

Hartmann-Schröder & Rosenfeldt, 1988

Sta. PS 111 (1)

Single specimen incomplete, 3.0 mm long, 0.5 mm wide and with 40 setigers (Fig. 2c–d). Branchiae of similar length throughout, with wide base and acute tip, 10 pairs. Modified setae of similar thickness to other neuro-

setae but shorter, more strongly bent, and tapering to very fine, hairlike tip, beginning on setiger 22. Specimen ovigerous; eggs large, two per segment, of creamy color, filling body cavity from segment 25.

Previous records for Chile: none.

Previous records for the Magellan Region: none.

Distribution outside of Chile: Antarctic: Bransfield Strait (type locality), Elephant Island.

*Aricidea antarctica* has not been reported in the literature since its original description, but is likely to have a wider Antarctic distribution (B. Hilbig, unpublished data). The single specimen found just south of Tierra del Fuego indicates that the northern boundary of this species lies outside of Antarctica.

#### *Aricidea (Acmira) catherinae* Laubier, 1967

Sta. VH 916 (2), Sta. VH 953 (1), Sta. VH 1047 (7), Sta. VH 1087 (3), Sta. VH 1108 (4).

All specimens incomplete, 3.5–10.0 mm long, 0.3–0.6 mm wide; segment numbers varied between 38 and 68 (Fig. 2e–g). Antenna reaching back to segment 3–5 where present. Twelve to 18 pairs of branchiae; modified setae first present on setiger 20, occasionally not until setiger 28–32.

Previous records for Chile: none.

Previous records for the Magellan Region: none.

Distribution outside of Chile: Arctic: Kurile Islands, Barents Sea (Strelzov 1968, as *Aricidea zelenzovi*); northeast Atlantic: Gulf of St. Lawrence to Chesapeake Bay (Pettibone 1963, as *Aricidea jeffreysii*); Uruguay; northeast Pacific: California; Mediterranean Sea (type locality) (Laubier 1967).

The specimens found in the Strait of Magellan and Beagle Channel are the first recorded from the southern hemisphere. *Aricidea catherinae* may have a much wider southern distribution, which may have remained undetected because one of the most important diagnostic characters for this species, the antenna, easily breaks off if specimens are not handled carefully during sample processing.

#### *Aricidea (Acmira) finitima* Strelzov, 1973

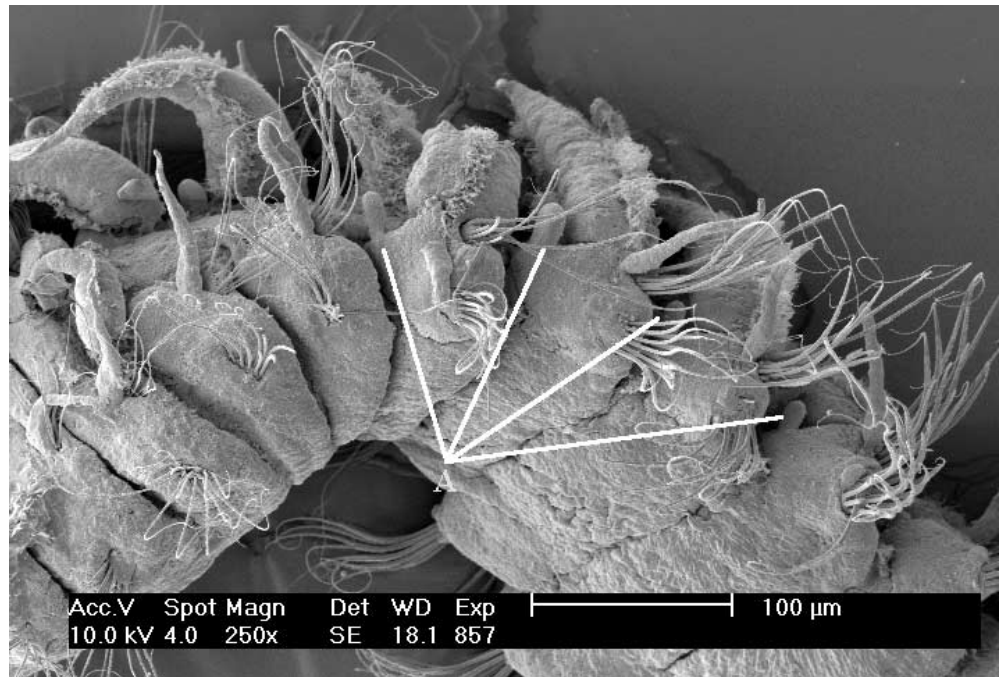
Sta. VH 807 (5), Sta. VH 820 (1), Sta. VH 928 (1), Sta. VH 953 (1).

All specimens incomplete, 1.5–6.0 mm long, 0.15–0.4 mm wide, the largest has 45 segments (Fig. 2h–j, Fig. 3). Branchiae 8–15 pairs, increasing in length from anterior to posterior, last two pairs much shorter than preceding ones. Modified setae first present from setiger 23–27, terminal spine not observed. Up to four pairs of dorsal papillae, located posterior to dorsal postsetal lobes, present between setigers 11 and 15. One specimen with eggs from segment 10.

Previous records for Chile: none.

Previous records for the Magellan Region: none.

**Fig. 3** *Aricidea finitima*, scanning electron microscopy photograph of branchiferous setigers bearing dorsal papillae (A)



Distribution outside of Chile: eastern Pacific: California (Hartman 1957, as *Aricidea neosuecica*); western Pacific: Japan; western Atlantic: Uruguay; South Africa (Day 1963, as *Aricidea longobranchiata*); Antarctica: Scotia Sea (type locality).

This species may have a wide distribution but may never be abundant, which may account for its scattered occurrence. Moreover, the morphological feature that is the most characteristic for *A. finitima*, the papillae behind the dorsal postsetal lobes, can only be detected by careful examination of the specimens under a microscope and may have been overlooked in the past. The sea off the South Patagonian Icefield is fairly close to the type locality so that additional records can be expected from this area.

*Aricidea (Allia) ramosa* Annenkova, 1934

Sta. VG 32 (1), Sta. VG 59 (1), Sta. VH 889 (1), Sta. VH 1078 (6), Sta. VH 1087 (3), Sta. PS 108a (1).

Single complete specimen 4.0 mm long, 0.5 mm wide with 58 segments, other specimens incomplete, 3.0–12.0 mm long, 0.4–0.9 mm wide; segments numbers varied between 27 and 100 (Fig. 4a–c). Antenna with 3–13 terminal branches; 13–20 pairs of branchiae present; modified setae starting on setiger 35.

Previous records for Chile: questionably Maurer and Williams (1988, as *Aedicira* nr. *ramosa*),

Previous records for the Magellan Region: see above,

Distribution outside of Chile: Arctic: Gulf of Peter the Great, Bering Island (type locality) (Annenkova 1934); western Pacific: Japan (Annenkova 1937); eastern Pacific: Washington to California (Hartman 1957; Banse

and Hobson 1968); possibly (?) Peru and Ecuador (Maurer and Williams 1988).

The occurrence of *A. ramosa* on the continental shelf south of Tierra del Fuego represents a range extension of this species to the south, and a bipolar distribution is here established for this species. If *Aedicira* nr. *ramosa sensu* Maurer and Williams (1988) is a different species, the present records are the first for the southern hemisphere.

*Aricidea (Acмира) strelzovi*

Hartmann-Schröder & Rosenfeldt, 1990

Sta. VG 85 (2), Sta. VG 93 (2), Sta. VH 807 (112), Sta. VH 811 (32), Sta. VH 916 (11), Sta. VH 953 (1), Sta. PS 109 (2).

Complete specimens about 4.0–13.0 mm long (coiled), 0.2–0.5 mm wide; segments numbers varied between 68 and 141 (Fig. 4d–f). Branchiae 13–15 pairs, occasionally 17 pairs, continuously lengthening from anterior to posterior segments, last few pairs with long slender tips. Modified setae first present on setigers 20–29, conspicuous, with short arista. Many specimens with dorsolateral brown pigment spots and sometimes also with narrow segmental bands.

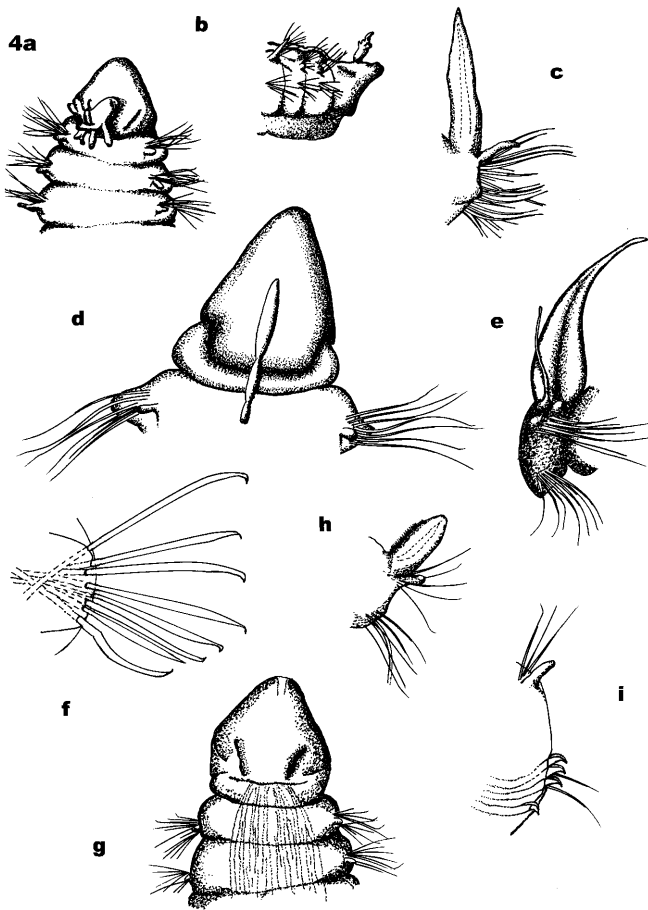
Previous records for Chile: none.

Previous records for the Magellan Region: none.

Distribution outside of Chile: Antarctica: Elephant Island (type locality).

There are no records in the literature of this species except for the original description, and the specimens collected off the South Patagonian Icefield and the Strait of Magellan represent a range extension for *A. strelzovi* into waters north of the Antarctic Convergence.





**Fig. 4** a–c *Aricidea ramosa* (after Strelzov 1973): a anterior end, dorsal view; b lateral view; c branchiferous parapodium, posterior view; d–f *Aricidea strelzovi*: d anterior end, dorsal view; e branchial segment, lateral view; f fascicle of modified setae, lateral view; g–i *Levinsenia antarctica* (after Strelzov 1973): g anterior end, dorsal view; h branchial segment, posterior view; i posterior segment with modified setae

#### *Levinsenia antarctica* (Strelzov, 1973)

Sta. VH 1032 (1), Sta. VH 1043 (1), Sta. VH 1047 (4), Sta. VH 1078 (9), Sta. VH 1087 (5), Sta. PS 111 (2).

All specimens incomplete, 3–18 mm long, 0.15–0.3 mm wide, the largest has 99 setigers and the smallest has 32 setigers (Fig. 4g–i). Branchiae about twice as long as wide, starting on setiger 7 or 8, 3–5 pairs.

Previous records for Chile: none.

Previous records for the Magellan Region: none.

Distribution outside of Chile: Antarctica: Kemp coast (type locality) (Strelzov 1973); Weddell Sea, King George Island (B. Hilbig, unpublished data).

This species may have a more northerly distribution outside of Antarctic waters; but because of its small size, it may not have been sampled in the past or may have remained undetermined.

## Discussion

The main taxonomical information for the Magellan region is based on often inadequately treated qualitative or quantitative samples which generally did not cover the whole size range of polychaetes.

The number of recorded from Chilean shelf areas has increased in the recent years because exploration has increased in this area (Bremec et al. 2000; Arntz and Ríos 1999), and fine mesh screens (0.5 or 0.3 mm) were used (Blake 1996).

Seven genera are currently accepted: *Sabidius*, *Paraonis*, *Paraonella*, *Paradoneis*, *Levinsenia*, *Cirrophorus*, and *Aricidea*, with four subgenera (Blake 1996). The last three genera from the Southwest Pacific and six species from the Chilean coast have been recorded by Rozbaczylo (1985). Including those records, the number of paraonid species described from Chilean waters increased to 17. The occurrence of two species of *Aricidea* and one species of *Levinsenia* which were only known from the Antarctic until now may point to faunistic affinities between Antarctica and the Magellan region.

Our results suggest that the influence of intensified sampling and finer sieves, rather than ecological changes, increased the reported species number in these areas.

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