

Distribution Patterns of Pelagic Polychaetes in the Bransfield Strait (January-February 1983)

(Pelagic polychaetes | Antarctica)

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INTRODUCTION

Pelagic polychaetes are a constant component of Antarctic zooplankton, though rarely found in high abundance. Considerable literature exists concerning their systematics and occurrence in this region (Tebble, 1960, 1970; Støp-Bowitz, 1977, 1981; Orensanz *et al.*, 1974; O'Sullivan, 1982; Lana & Blankensteyn, 1986), but little is known about their biology and ecology. Tebble (1960) was the first to investigate the distribution of this group in relation to the hydrography in the South Atlantic Ocean. Since then, only a few works have attempted to analyze the potential role of pelagic polychaetes as biological indicators of Antarctic water masses (Jażdżewski *et al.*, 1982; Rakusa-Suszczewski, 1983).

In this paper we describe the distribution patterns of pelagic polychaetes found in January-February, 1983, in the Bransfield Strait and scrutinize whether these patterns are related to the local hydrographic conditions at that time. Such analysis may contribute to a better biological characterization of local and contiguous water masses and to the knowledge of seasonal dynamics in Antarctic pelagic polychaete assemblages.

THE SURVEY AREA

The Bransfield Strait is bounded on the northwest by the South Shetland Islands and

on the southeast by the Antarctic Peninsula; it extends for approximately 500 km in a southwest-northeast direction, from Brabant to Clarence Island (Fig. 1). Its hydrography and circulation patterns were first studied by Clowes (1934) and more recently by Gordon & Nowlin (1978), Patterson & Sievers (1980), Sievers (1982), Stein (1983), Stein & Rakusa-Suszczewski (1983), First Post-FIBEX Hydrographic Data Interpretation Workshop (1983) and Ikeda *et al.*, (1985). Both phyto- and zooplankton biomasses, not including krill, appear to be rather low inside the strait as compared to adjacent water masses (Jażdżewski *et al.*, 1982; Koczyńska & Ligowski, 1982; Lipsky, 1982; Rakusa-Suszczewski, 1983; Brandini & Kutner, 1984). According to Rakusa-Suszczewski (1983), the distribution of plankton assemblages and individual species in the area might be largely associated with the intensity of water inflow from the Weddell Sea.

Information about polychaetes in this region was given by Mackintosh (1934), Orensanz *et al.*, (1974), Jażdżewski *et al.*, (1982), Mujica & Torres (1982) and Rakusa-Suszczewski (1983). Polychaetes were usually found in low concentrations in the central waters of the Strait, with the exception of *Pelagobia longicirrata* Greeff, which was considered by Jażdżewski *et al.*, (1982) a faunistic indicator of the subsurface layers (100-300 m depth).

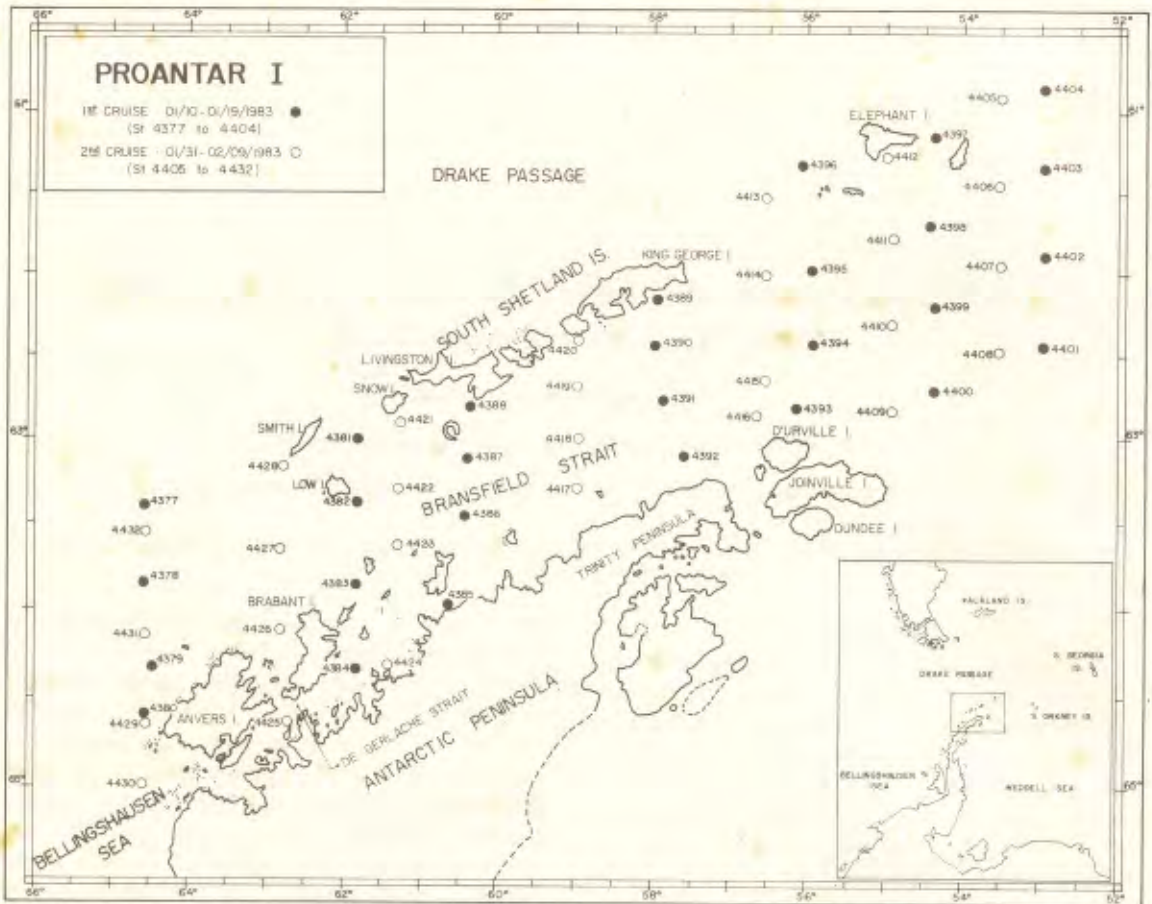


Fig. 1 - Hydrographic stations sampled during January and February 1983 in the Bransfield Strait and adjacent areas.

MATERIALS AND METHODS

As part of the First Brazilian Antarctic Expedition (PROANTAR I), the R/V "Professor Wladimir Besnard" operated in the Bransfield Strait in January-February 1983. Oceanographic data were obtained at 56 stations in two phases (Fig. 1). The first (from 10/01/83 to 19/01/83) involved stations 4377 to 4404, the second (31/01/83 to 09/02/83), stations 4405 to 4432. Most stations of the second cruise were shifted ca. 20 nautical miles west from those of the first cruise. Temperature and salinity data were obtained at standard depths, down to the bottom over the shelf and down to 600-1000 m outside the shelf, as presented in detail by Ikeda *et al.*, (1986). Data referring to both cruises were plotted in T/S diagrams for the Bransfield Strait and adjacent sectors (Figs. 2 and 3).

Zooplankton samples were collected at all stations, with the exception of stations

4395 and 441, due to bad weather conditions. A closing net (60 cm mouth diameter; 200 μm mesh) and an open Bongo net (60 cm mouth diameter; regular mesh 505 μm and fine mesh 330 μm) were used. The closing net was usually towed in two layers, from 0-150 m and 150-300 m, at ca. 1 m per second. Occasional hauls were made in the 300-500 m and 0-300 m layers. Oblique sampling was performed with the Bongo net, hauled twice from 150 m to the surface. Both nets were hauled through the entire water column at shallow stations. "General Oceanics" flowmeters were used to estimate the filtered water volume.

Samples were preserved in 4% formaldehyde, saturated with borax, and stored in plastic bags or bottles. Pelagic polychaetes were identified in accordance with Tebble (1960). For quantitative analysis, the samples were counted without subsampling. Numbers of polychaetes were

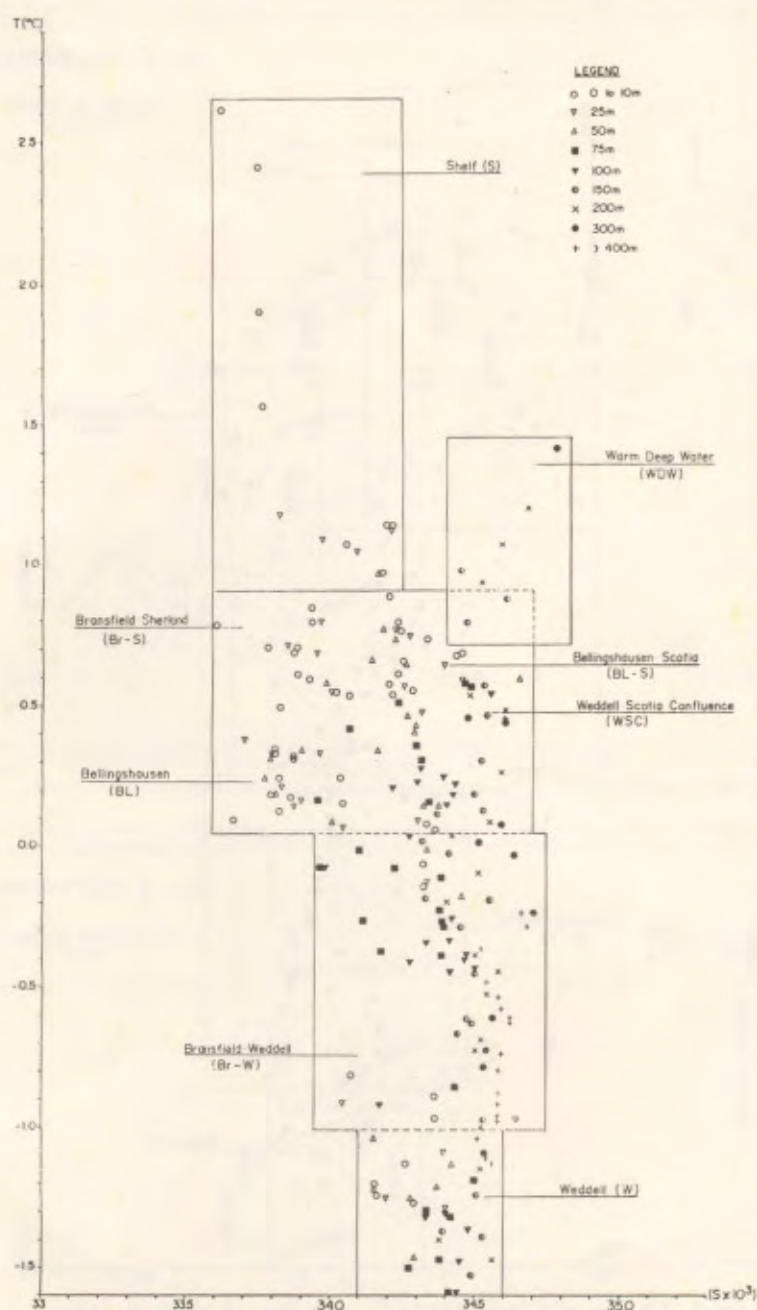


Fig. 2 - T/S diagram for Bransfield Strait and adjacent areas (January 1983).

expressed as highest density per station per 1,000 m³. Densities were expressed in logarithmic classes of abundance: class I - 1 to 3 individuals per 1,000 m³, class II - 4 to 18 individuals; class III - 19 to 80 individuals; class IV - 81 to 350 individuals; class V - 351 to 1500 individuals. The results were

pooled for surface (0 to 150 m) and subsurface layers (150 to 300 m).

RESULTS

Hydrographic conditions

Temperature and salinity data, from 0 to

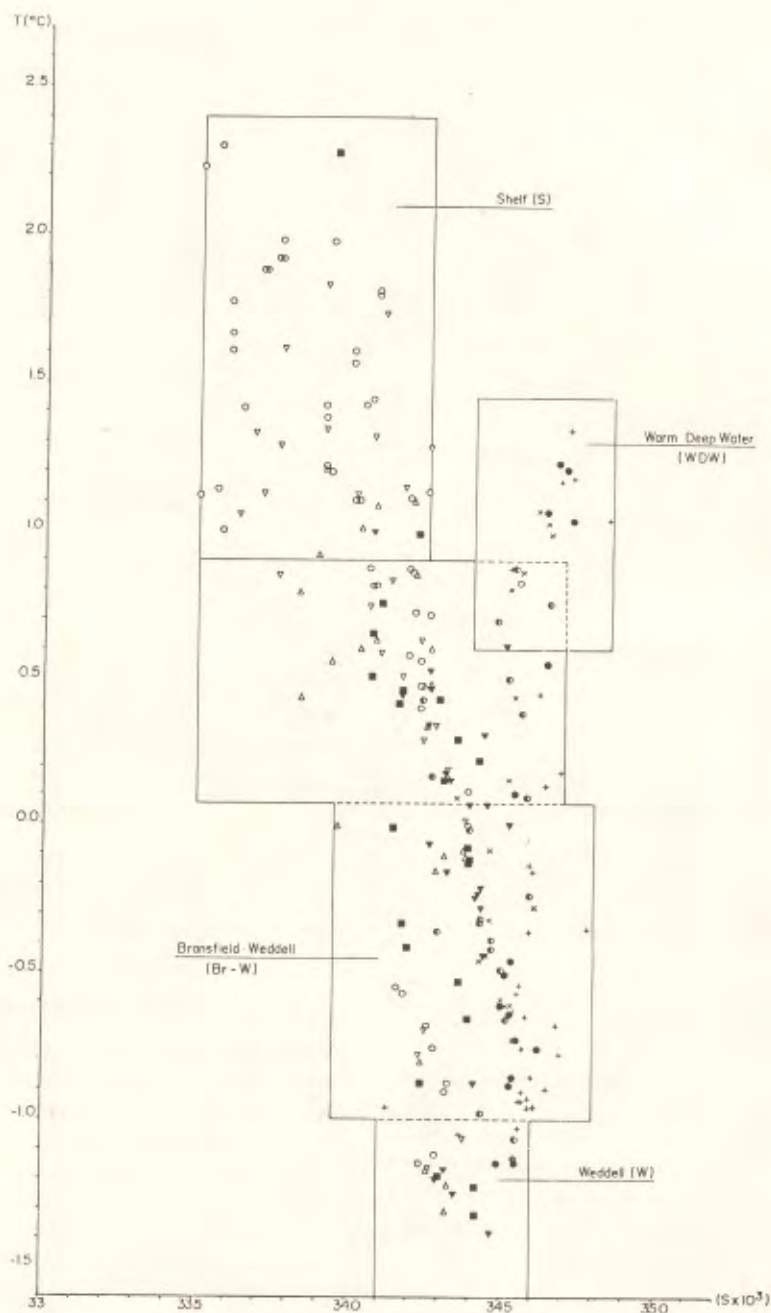


Fig. 3 - T/S diagram for Bransfield Strait and adjacent areas (February 1983).

800 meters depth, are summarized in T/S diagrams (Figs. 2 and 3). Names of local water masses were adopted, with some modifications, from the First Post-FIBEX Hydrographic Data Interpretation Workshop (1983).

Figure 2 indicates the influence of two distinct water masses along the Strait. The

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western entrance of the Bransfield Strait (Sts. 4377 to 4380) was characterized in January by waters of low salinities (33.60 to 34.40‰) and temperatures ranging from -0.20 to 0.86°C. This Antarctic Surface Water of Bellingshausen origin enters the Strait due to advective processes, and its surface strata are locally warmed during the summer months. At

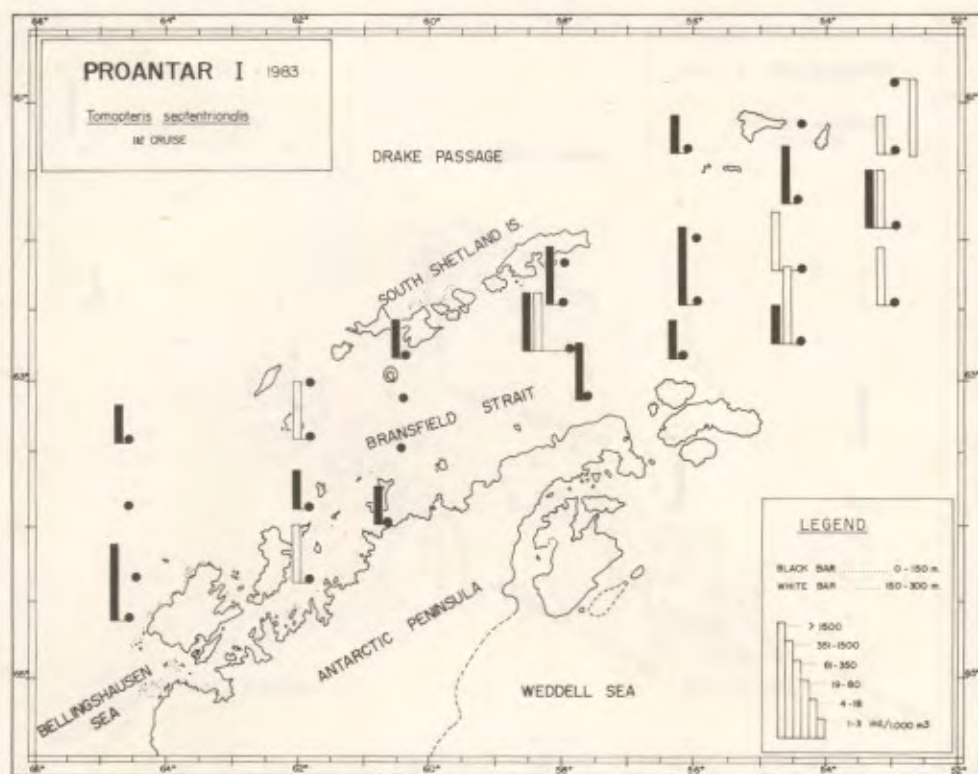


Fig. 4 - Distribution and abundance of *Tomopteris septentrionalis* (January 1983).

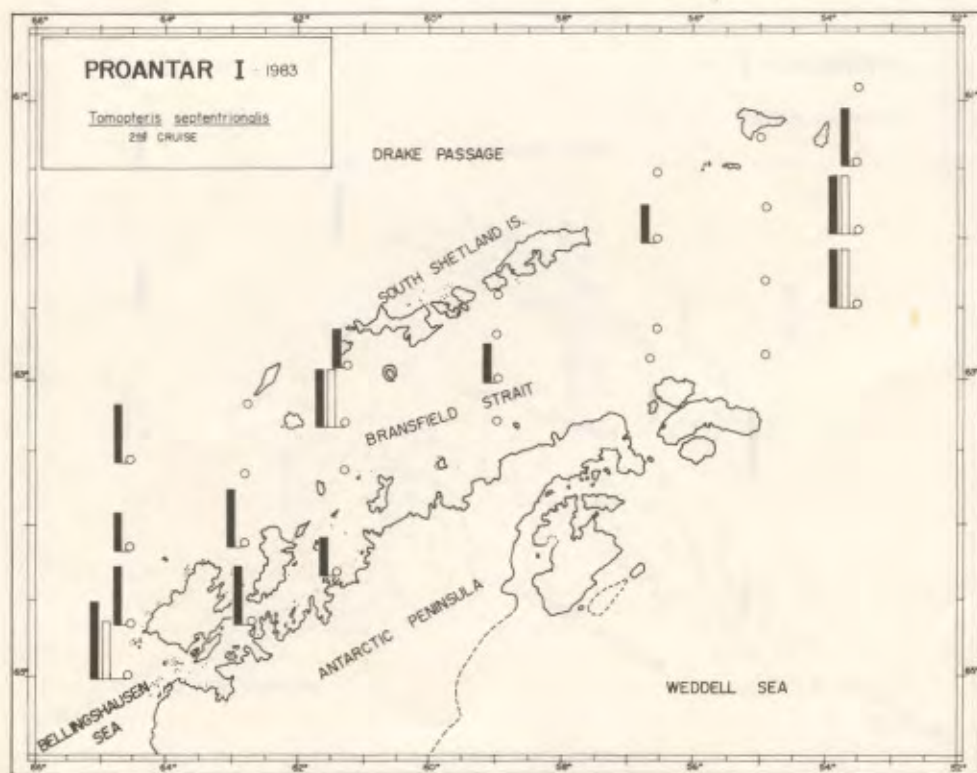


Fig. 5 - Distribution and abundance of *Tomopteris septentrionalis* (February 1983).

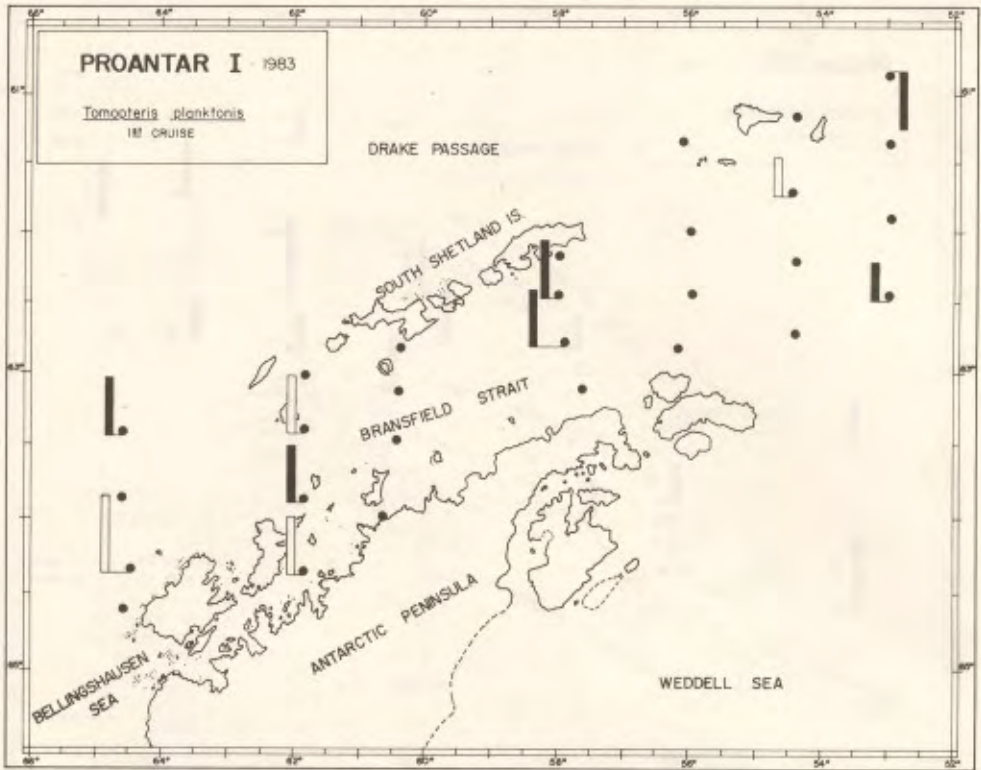


Fig. 6 - Distribution and abundance of *Tomopteris planktonis* (January 1983).

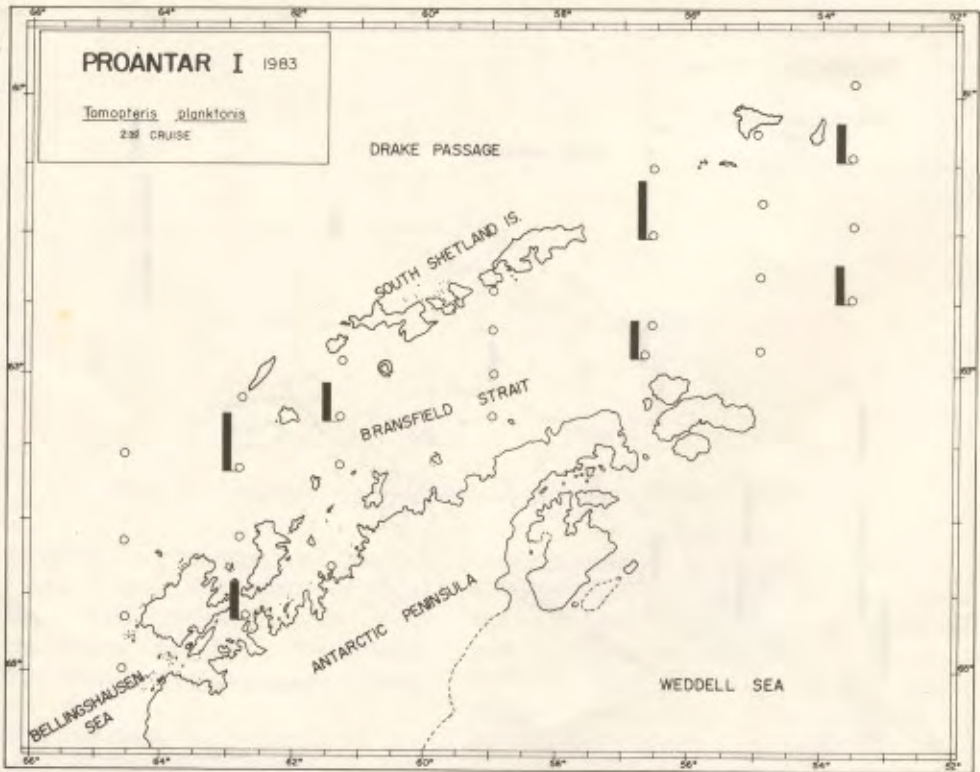


Fig. 7 - Distribution and abundance of *Tomopteris planktonis* (February 1983).

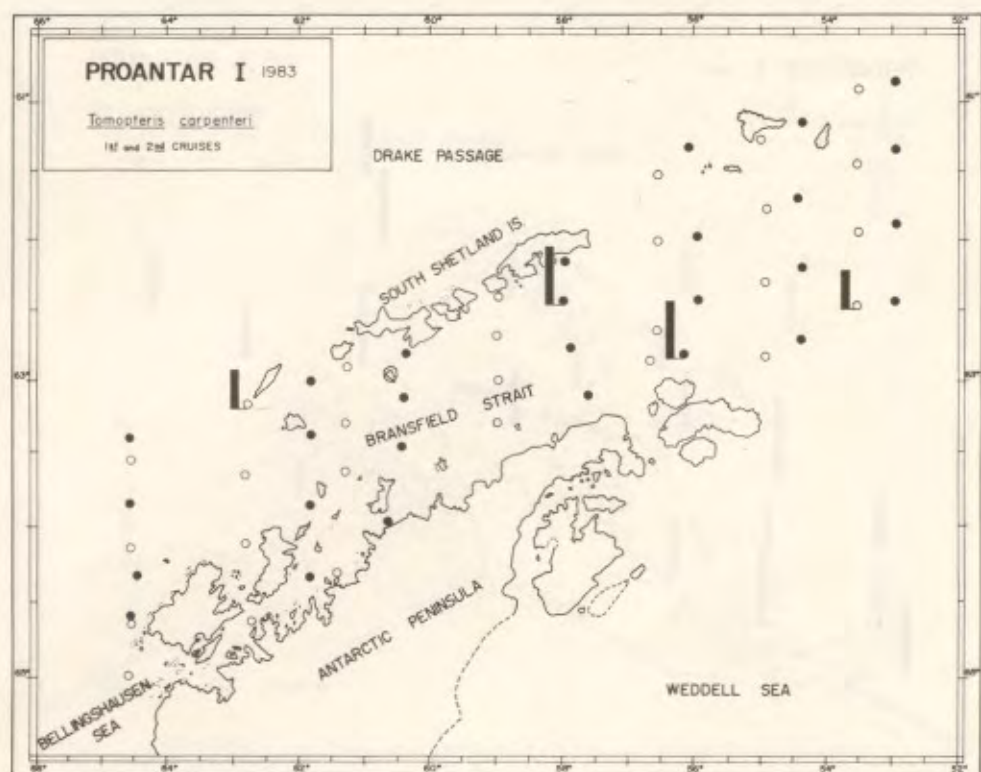


Fig. 8 - Distribution and abundance of *Tomopteris carpenteri* (Jan-February 1983).

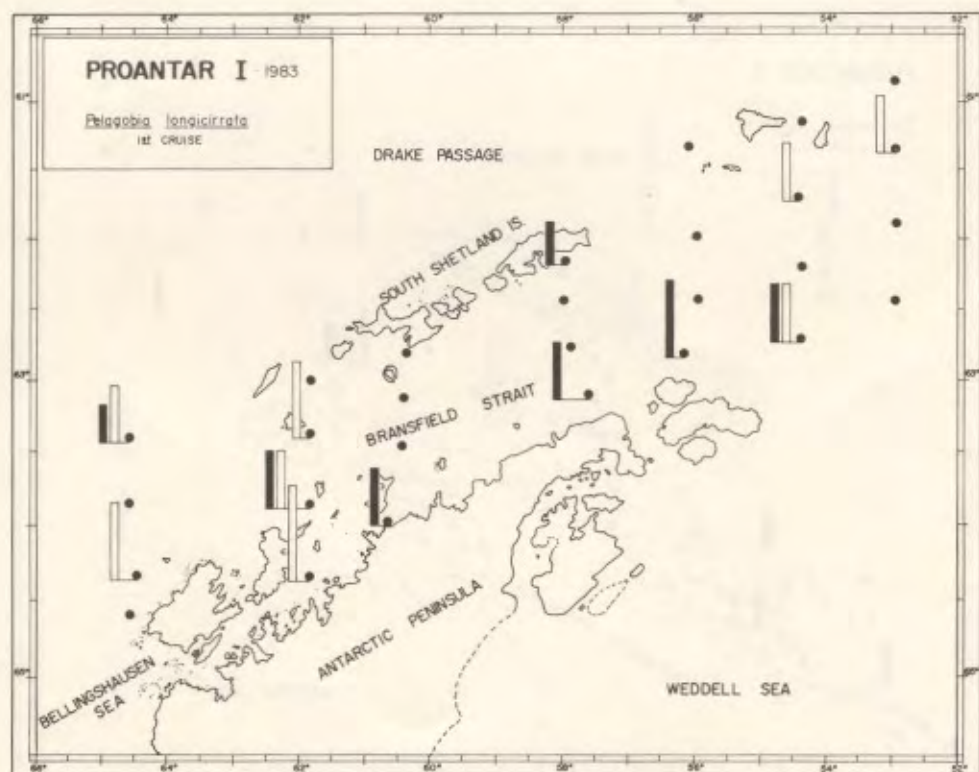


Fig. 9 - Distribution and abundance of *Pelagobia longicirrata* (January 1983).

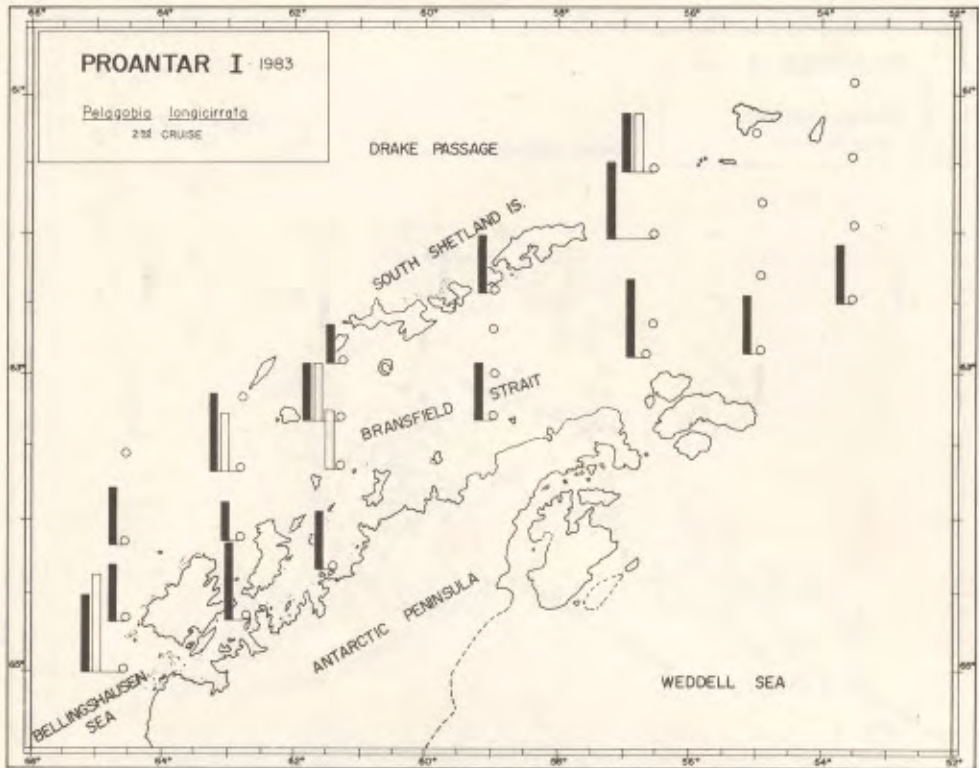


Fig. 10 - Distribution and abundance of *Pelagobia longicirrata* (February 1983).

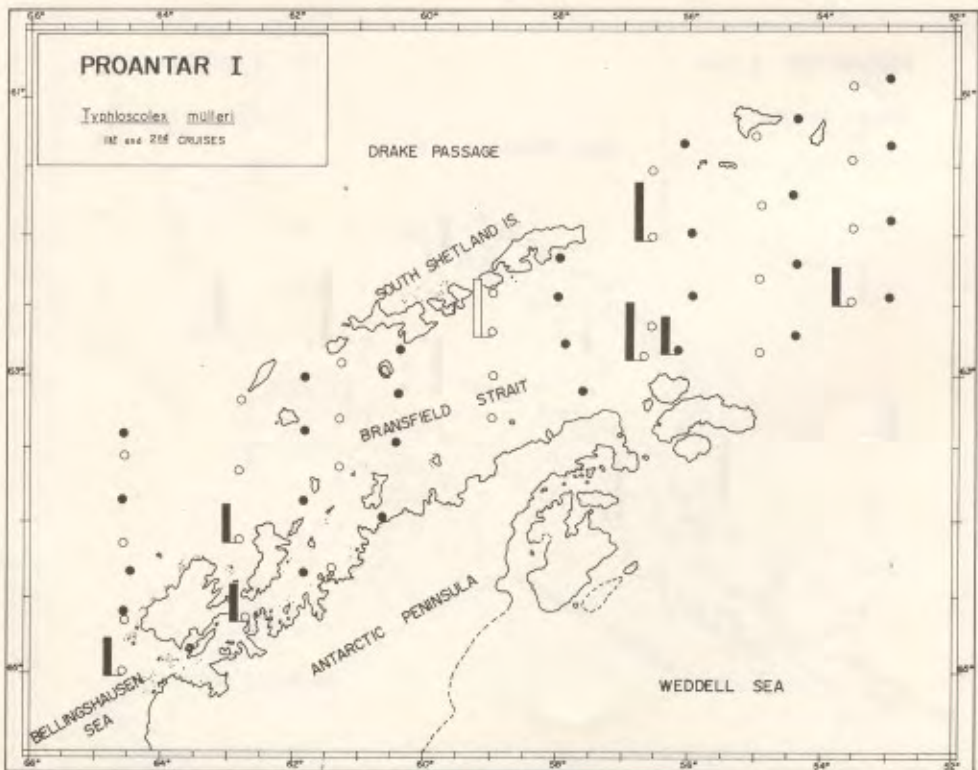


Fig. 11 - Distribution and abundance of *Typhloscolex mülleri* (Jan-February 1983).

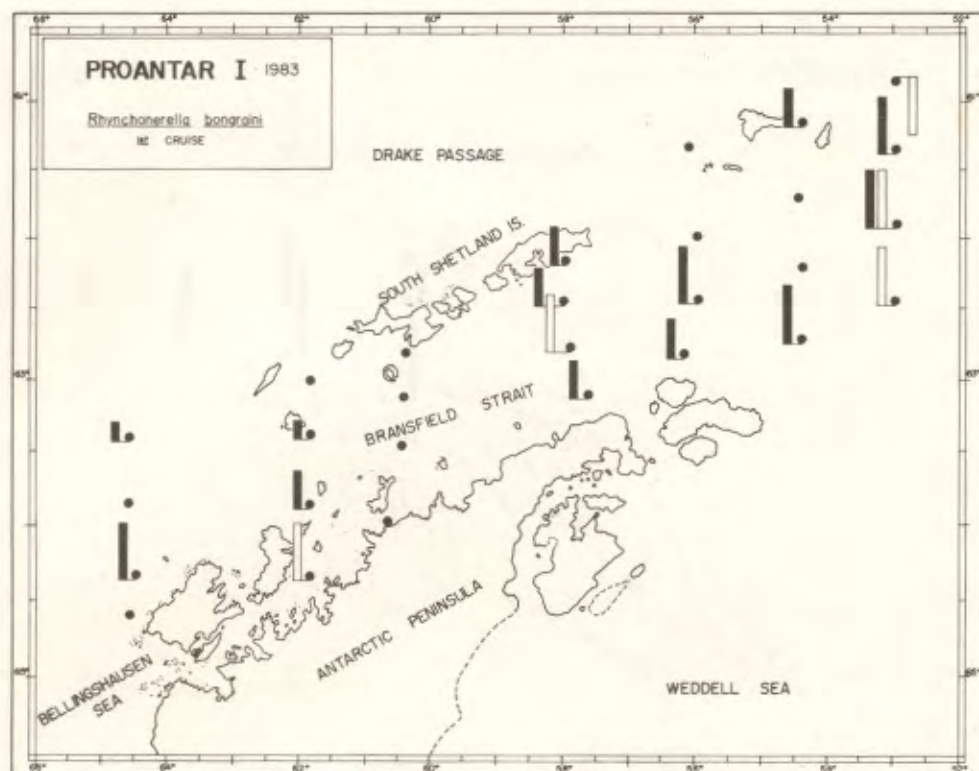


Fig. 12 - Distribution and abundance of *Rhynchonerella bongraini* (January 1983).

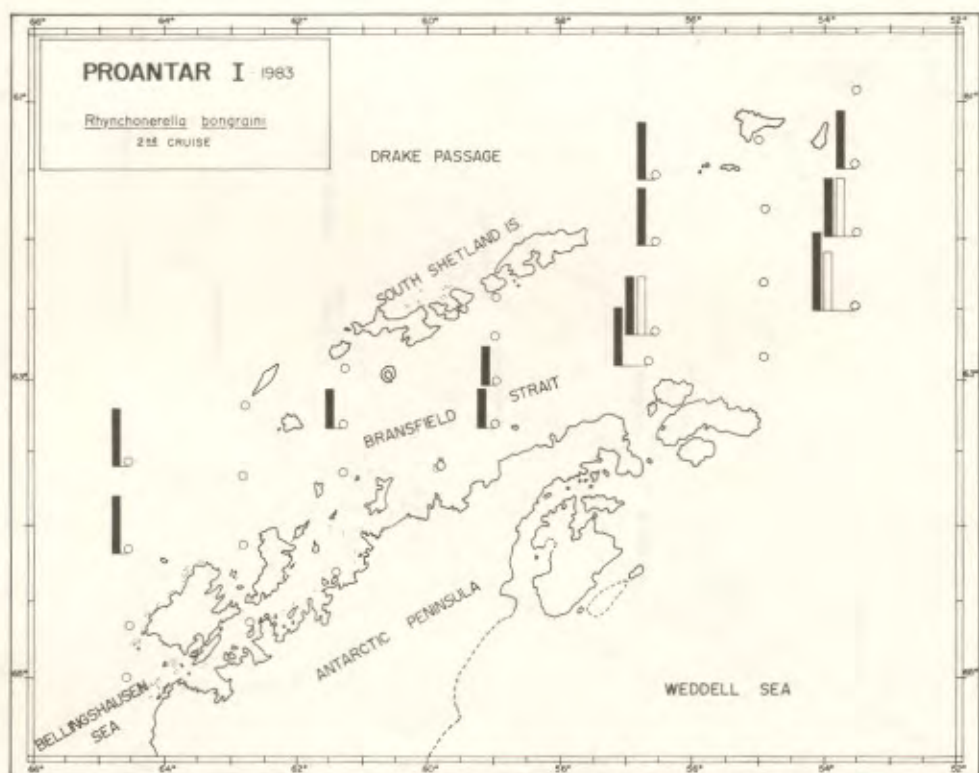


Fig. 13 - Distribution and abundance of *Rhynchonerella bongraini* (February 1983).

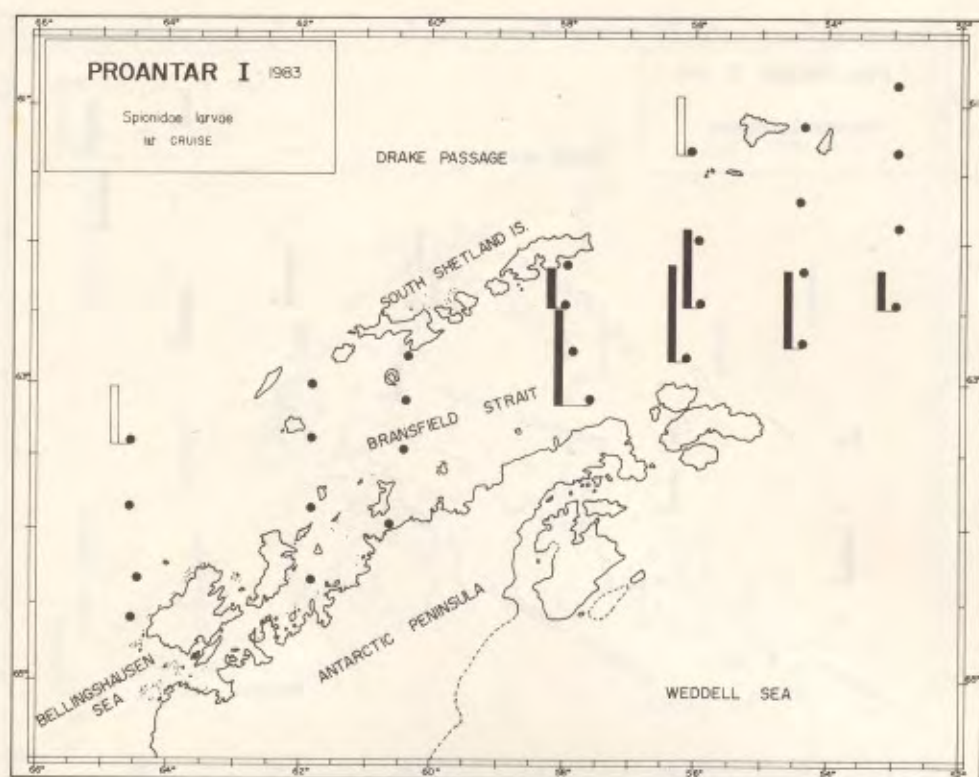


Fig. 14 - Distribution and abundance of Spionidae larvae (January 1983).

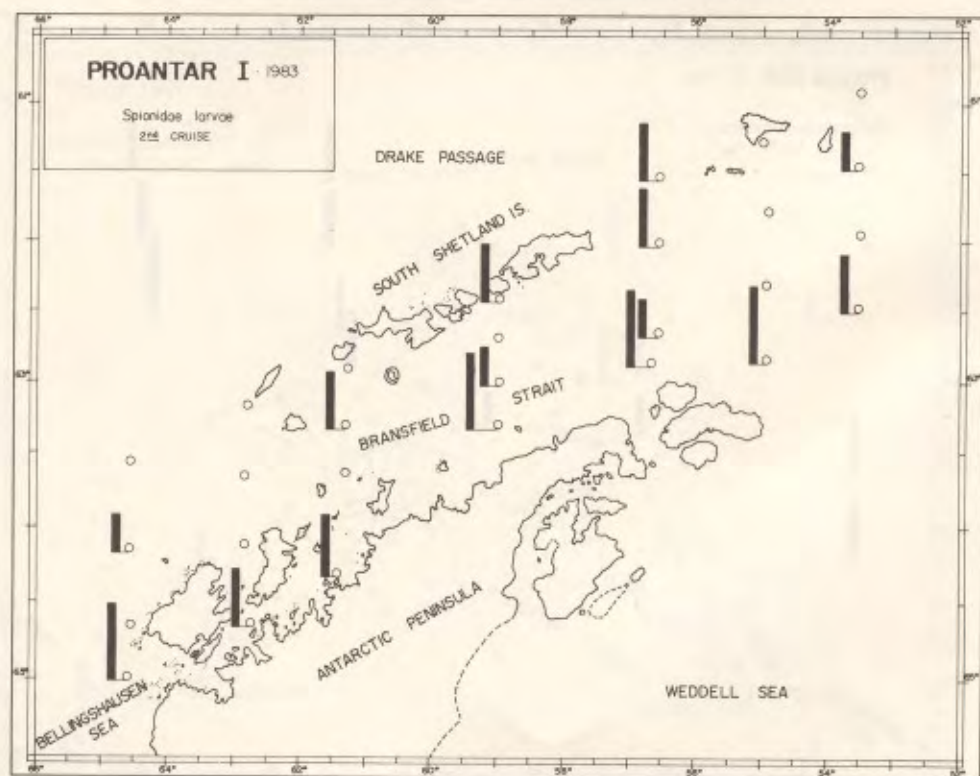


Fig. 15 - Distribution and abundance of Spionidae larvae (February 1983).

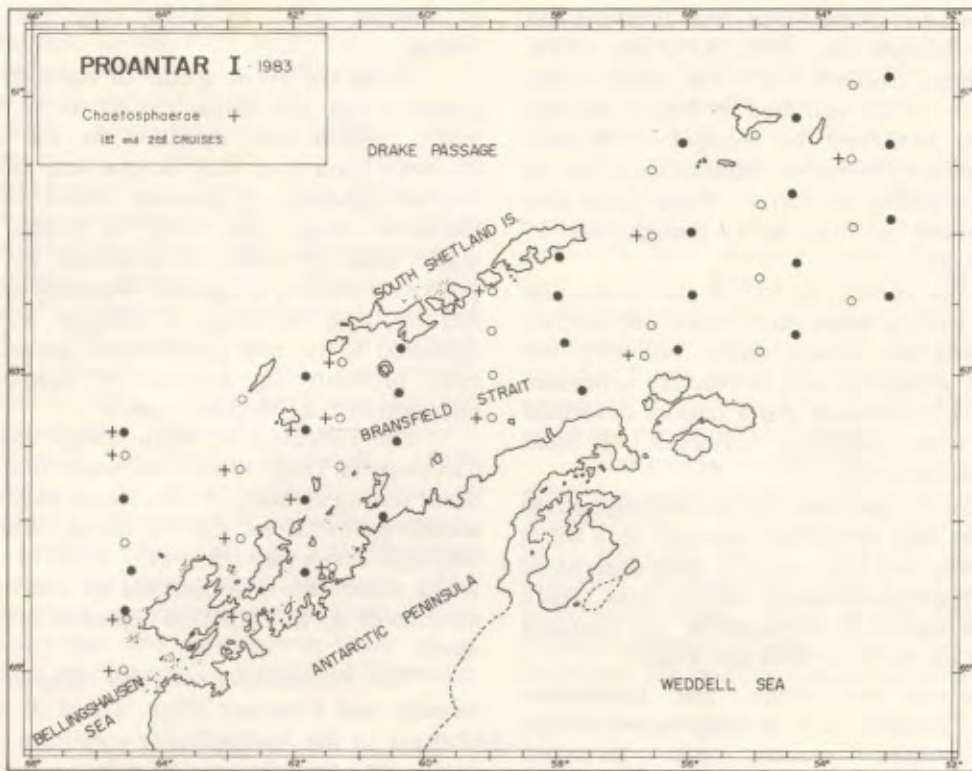


Fig. 16 - Distribution and abundance of *Chaetosphaerae* (January-February 1983).

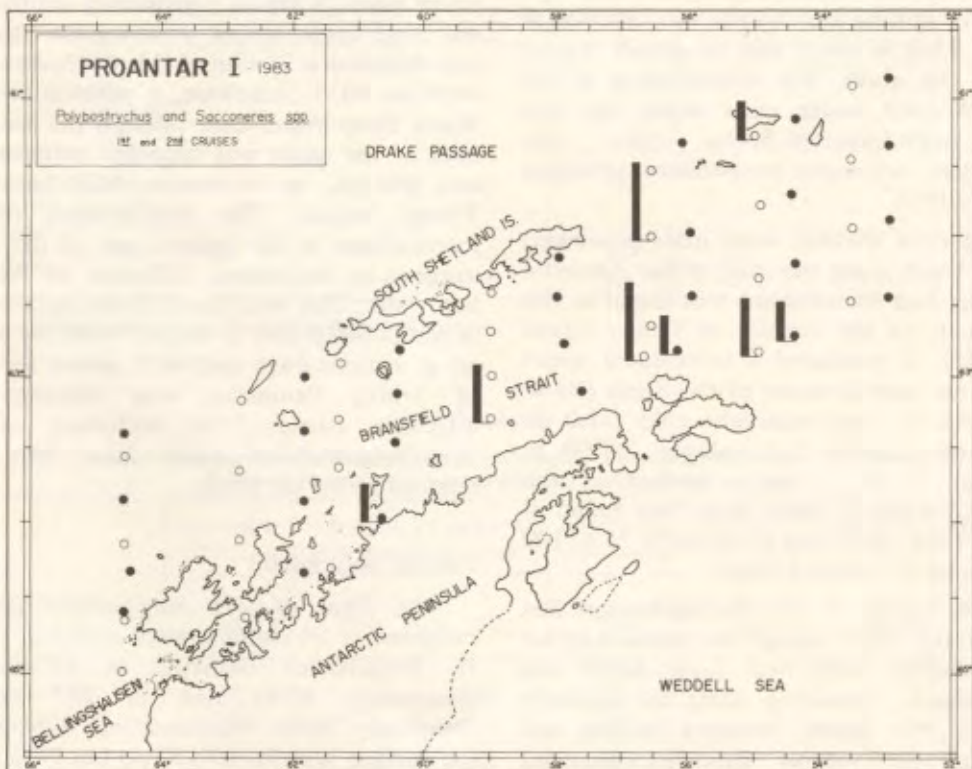


Fig. 17 - Distribution and abundance of *Polybostrychus* and *Sacconereis* spp. (January-February 1983).

the eastern end of the Strait, near Joinville and d'Urville Islands (Sts. 4392, 4393 and 4400), the Antarctic Surface Water was much colder (-2.0 to -1.0°C) and had a higher salinity (34.75 to 34.60‰), on account of Weddell Sea influence (W mass). Stratification due to summer warming of surface strata could also be observed in this area, though not so pronounced.

In the central sector of the Strait, the general hydrographic conditions, at surface and subsurface levels, were probably the result of advective and convective processes between the different water masses described above, with additional influence of local air-sea interactions.

Most of the water of the Bellingshausen Sea flows into the Drake Passage, as a warm water mass with high salinity, here designated the Bellingshausen-Scotia (BL-S) mass, which could be identified northeast of the Shetland Islands (Sts. 4395 to 4398 and 4404).

Towards the south, the interaction between Weddell and Bellingshausen-Scotia water masses creates the so-called Weddell-Scotia Confluence of Bellingshausen Front. Near the surface, this spatially and seasonally shifting Confluence was detected at stations 4398 to 4403 and in deeper waters more to the north. The displacement of the colder Weddell water mass under the less dense Bellingshausen-Scotia mass was indicated by horizontal temperature variations of up to 2.0°C .

The cold Weddell water mass penetrated into the Strait along the shelf of the Antarctic Peninsula, and its influence was found at 100 m depth up to the vicinity of Trinity Island (St. 4385). It produced a transitional water mass in the central sector of the Strait (Br-W mass), which was relatively cold (-1.0 to 0.1°C) and had a high salinity (34.00 to 34.50‰). At the surface, the Bransfield-Weddell water mass was found at stations 4391, 4392 and 4394 and at 75 to 100 m depths up to Trinity Island.

The waters of the Bellingshausen Sea flow into the Strait through the northern sector of its western inlet, near Low, Smith and Snow Islands, spreading along the southern shores of the South Shetland Islands and producing the warmer Bransfield-Shetland water mass (Br-S mass), which was identified

at stations 4387 to 4390, near the shelf bottom.

Inside the Strait, a core of warm (0.90 to 2.60°C) and less saline (33.60 to 34.30‰) water, which was confined to the upper 25-meter layer over shelf depths, was found in the surroundings of Brabant Island and the Gerlache Strait (Sts. 4383 to 4386). This water mass (S mass) is produced by local processes related to summer warming and ice melting. The influence of summer warming appeared to be less pronounced towards the east, probably on account of near-bottom intrusion of cold Weddell waters.

The influence of Warm Deep Water or Circumpolar Deep Water was weak inside the Strait during January. It was found only in the southwestern sector of the Strait, near the Bellingshausen Sea (Sts. 4377 to 4379). This warm water core was detected by temperature maxima of up to 1.41°C at depths of 200 m or more.

The comparison of T/S diagrams of January and February (Figs. 2 and 3) shows changes in the hydrographic condition of the Strait on account of progressive summer warming. The warm and less saline shelf water mass (S Mass), consistently confined to the 50-m layer, spread all along the Strait. It was detected at Stations 4411, 4413, 4414 and 4419 to 4431. Likewise, a penetration of a Warm Deep Water core through the western, inlet of the Strait was recorded between 150 and 400 m, up to Station 4422 (north of Trinity Island). The displacement of the thermoclines in the eastern part of the Strait suggests a decreasing influence of Weddell Sea water. This was found at the surface only at station 4409 and in deeper water (up to 150 m) at stations 4416 and 4417, above the shelf of Trinity Peninsula, near Joinville and d'Urville Islands. The influence of the Bransfield-Weddell water mass was also reduced inside the Strait.

Pelagic polychaetes

A total of 271 zooplankton samples collected at 54 stations were analyzed (Table I). Polychaetes occurred at 47 stations (frequency: 87%) and in 152 samples (frequency: 56%). Frequency was only 46% in the surface samples (0-150 m) but 71% in the 300-500 m layer with the closing net.

Intermediate values were recorded in Bongo net catches (54% in fine mesh and 62% in regular mesh samples, Table II).

Nine holoplanktonic species were determined, namely: *Tomopteris septentrionalis* Quatrefages, 1865, *Tomopteris planktonis* Apstein, 1900 and *Tomopteris carpenteri* Quatrefages, 1865 (Tomopteridae); *Pelagobia longicirrata* Greeff, 1879 (Lopadorrhynchidae); *Phalocrochorus pictus* Greeff, 1979 (Iospilidae); *Typhloscolex muelleri* Busch, 1851 and *Travisiopsis levinseni* Southern, 1910 (Typhloscolecidae); *Rhynchonereella bongraini* (Gravier, 1911) and *Vanadis antarctica* (McIntosh, 1885) (Alciopidae). Larval or epitokal forms of Polynoidae (*Herdmanella gracilis* Ehlers, 1908), Syllidae (*Exogone minuscula* Hartman, 1953, *Exogone heterosetosa* McIntosh, 1885 and *Exogone anomalochaeta* Benham, 1921; *Polybostrichus* and *Sacconereis* forms of at least two species of *Autolytus*) and Spionidae

were also recorded. Benthic forms accidentally collected from the bottom in shallower stations are treated elsewhere (Blankensteyn & Lana, 1986).

The abundance of pelagic polychaetes showed high local variation throughout the sampling period and in the entire study region. Densities were usually rather low, ranging from 3 (St. 4383) to 1330 (St. 4430) individuals per 1.000 m³. Distribution maps of holoplanktonic species and of larval and epitokal forms along the Bransfield Strait are presented in Figures 4 to 17. Symbols for all maps are presented in Figure 4.

Tomopteris septentrionalis was collected more frequently in the 0-150 m layer than in deeper layers. In January, higher densities were recorded east of Elephant Island and northeast of Joinville and d'Urville Islands, with intermediate values in the central and western waters of the Strait (Fig. 4). In February, the species was less common in the

TABLE I
Total Number of Samples Obtained with Oblique (Bongo Net) and Vertical (Closing Net) Hauls. Percentage Frequency in Parenthesis

	OBLIQUE (505 μ m)	OBLIQUE (330 μ m)	VERTICAL (0-150m)*	VERTICAL (150-300m)	VERTICAL (300-500m)	VERTICAL (0-300m)	TOTAL
FIRST PHASE (10/01/83-19/01/83)	48	48	21	16	7	5	145
SECOND PHASE (31/01/83-09/02/83)	43	43	22	18	-	-	126
TOTAL	91 (34)	91 (34)	43 (16)	34 (12)	7 (2.5)	5 (1.8)	271

* Including hauls reaching the bottom at shallow stations.

TABLE II
Frequency of Polychaetes in Oblique and Vertical Samples. Percentage Frequency in Parentheses Refers to Number of Analyzed Oblique and Vertical Samples

	OBLIQUE (505 μ m)	OBLIQUE (330 μ m)	VERTICAL (0-150m)*	VERTICAL (150-300m)	VERTICAL (300-500m)	VERTICAL (0-300m)	TOTAL
FIRST PHASE (10/01/83-19/01/83)	24 (50)	16 (33)	7 (33)	9 (56)	5 (71)	3 (60)	64 (44)
SECOND PHASE (31/01/83-09/02/83)	32 (74)	33 (77)	13 (59)	10 (56)	-	-	88 (70)
TOTAL	56 (62)	49 (54)	20 (16)	19 (56)	5 (71)	3 (60)	152 (56)

northeastern and central sectors and a single peak was recorded southwest of Anvers Island (Fig. 5). The highest concentration of *Tomopteris planktonis* was found in January northwest of Anvers Island, with low densities in the central and northeastern sectors of the Strait (Fig. 6). In February, the species was even scarcer and confined to the upper 150 m (Fig. 7). *Tomopteris carpenteri* was confined to surface layers and occurred in only small numbers (Fig. 8). Only juveniles were found in this survey.

Pelagobia longicirrata was the most abundant polychaete species in the study area throughout the sampling period. Both in January and February, peaks were recorded, independent of depth, near Anvers Island, in de Gerlache Strait. At the surface, smaller peaks were recorded north of d'Urville Island and east of King George Island (Figs. 9 and 10).

Typhloscolex muelleri was rare throughout the study area, being confined to the surface layer, with a single exception (St. 4419). It was almost absent in January (a single record at station 4493). In February, intermediate density values were recorded in the northeastern waters of the Strait and low values in the southwestern sector, near Anvers and Brabant Islands (Fig. 11). *Travisiopsis levinseni* was recorded only once, in the warmed surface layer of station 4426, northwest of Brabant Island.

Rhynchonereella bongraini was frequent in the surface layer, rare between 150 and 300 m, and almost absent below 300 m, with a single record at station 4384. Both in January and February, the highest concentrations were found in the northeastern waters of the Strait. The species was rare in the central waters and in the southwestern sector (Figs. 12 and 13). *Vanadis antarctica* was recorded twice, at stations 4404 and 4408, in the northeastern sector of the Strait.

Phalacrophorus pictus was recorded only once, in the surface layer of station 4430, southwest of Anvers Island.

Larval forms of *Herdmanella gracilis* were recorded at stations 4384 (300-500 m depth) and 4430 (0-150 m depth), at the southwestern sector of the Strait, near Anvers and Brabant Islands. Spionidae larvae, probably belonging to various species, were rather frequent, chiefly in surface layers. In

January, abundance peaks were recorded northeast of Trinity Peninsula, near Joinville and d'Urville Islands (Fig. 14). In February, another peak was recorded southwest of Anvers Island, with intermediate densities in the central sector of the Strait (Fig. 15). Chaetosphaera forms were not quantified. Nevertheless, an increase in their distribution area was noticed from January to February. In January, chaetosphaerae were mainly confined to the southwestern sector of the Strait, near Smith, Low and Brabant Islands, whereas in February they spread all over the central waters of the Strait, being rare on the northwestern sector. *Polybostrichus* and *Sacconereis* forms of at least two different *Autolytus* species were found north of d'Urville Island and in the neighboring water masses (Fig. 17).

DISCUSSION

The biological characterization of local water masses with distribution patterns of pelagic polychaetes is difficult due to the low abundance and patchy distribution of these organisms in the Bransfield Strait. Sometimes it is difficult to identify the exact origin of individuals, since the closing and Bongo nets, when operated in the 0-150 m layer, sampled both the upper warmed layers and the cooler winter layers of Antarctic Surface Water.

Higher densities of *Tomopteris septentrionalis* were apparently related to colder water masses, mainly of Weddell origin. Such a thermal affinity was suggested also by a decrease in abundance and in the distribution area during the summer, when a warming of the surface layers and a retreat of Weddell waters took place. Tebble (1960) referred both *Tomopteris planktonis* and *T. septentrionalis* to Warm Deep Water and Antarctic Surface Water. In the study area, *T. planktonis* was associated with warmer water masses with the highest density recorded in Warm Deep Water. *Tomopteris carpenteri* occurred in small numbers and its distribution, known to be patchy, could be attributed, at least in part, to avoidance reactions to conventional nets, on account of the large size and motility of adult specimens.

The maxima of *Pelagobia longicirrata* were in January related to Warm Deep Water, which was detected in the southwestern sector

of Bransfield Strait. In February, the species was more common in the warmed and less saline surface layer, spreading throughout the area. Its abundance appeared to decrease towards the Weddell-Scotia Confluence. Distribution patterns of this cosmopolitan species were previously discussed by Tebble (1960), Orensanz *et al.*, (1974) and Jażdżewski *et al.*, (1982). Tebble (1960) reported *P. longicirrata* from all Antarctic water masses explored, with higher concentrations found in surface layers during summer and migrations to greater depths in winter. Orensanz *et al.*, (1974) recorded its highest abundance in the warmer waters north of the Drake Passage, intermediate values in the Bransfield Strait and the Scotia Sea, and low densities in the colder waters of the Weddell Sea. Jażdżewski *et al.*, (1982) described *P. longicirrata* as a faunistic indicator of the deeper water layer (100-300 m) of the Bransfield Strait. This interpretation is not supported by the present findings; this species was collected both in surface and subsurface waters, and it was more frequent in the former layer of the central Bransfield Strait. It is plausible that summer populations can develop in the warmed summer layers of Antarctic Surface Water. This is suggested by its spreading in the surface layer over the whole southwestern sector during summer.

The cosmopolitan *Typhloscolex muelleri* is known to be favoured, in Antarctic waters, by Warm Deep Water (Tebble, 1960). Though never common, it became indeed more frequent in February, with summer warming of the upper layers of Antarctic Surface Water and the intrusion of Warm Deep Water. *Travislopsis levinseni* is also known as a Warm Water species in the Antarctic zone (Tebble, 1960). It was not recorded inside the Bransfield Strait by Orensanz *et al.*, (1974).

Rhynchonereella bongraini is endemic in Antarctic waters; its distribution pattern is known to be restricted to the Weddell Drift. According to Tebble (1960), *R. bongraini* is not found north of the Weddell-Scotia Confluence. During the present survey, it was less frequent in areas occupied by the warmed surface waters of Bellingshausen or shelf origin. The few records in the southwestern sector are probably related to the cooler subsurface layers of Antarctic Surface Water, detected between 50 and 100 m at stations

4377 to 4382 (January) and 4430 to 4432 (February). Tebble (1960) related *Rhynchonereella* to Antarctic Surface Water and to the upper layers of Warm Deep Water. This interpretation is only partially confirmed by the present findings, since this species was not recorded in Warm Deep Water. *Vanadis antarctica* was confined to the surface layers of the Weddell water mass and the Weddell-Scotia Confluence. Its patchy distribution in Antarctic Surface Water (McIntosh, 1934, Tebble, 1960) could be also attributed to avoidance reactions to conventional nets, taking into account its large size and motility.

The only record of *Phalacrophorus pictus* was in an area affected by Warm Deep Water. Tebble (1962) suggested that Antarctic populations of this cosmopolitan species are separated from tropical and subtropical stocks.

The distribution of spionid larvae appears to be mainly related to shallow waters of the Antarctic Peninsula shelf, in particular in the vicinity of Joinville and d'Urville Islands. A greater number both of holoplanktonic and meroplanktonic forms had been previously reported from this area (Mujica and Torres, 1982). This pattern is probably caused by the local prevalence of currents directed shoreward along the Antarctic Peninsula (Stein, 1983; Stein and Rakusa-Suszczewski, 1983), which might prevent larval dispersal to the central and northeastern sectors of the Strait. Like the spionid larvae, epitokal forms of syllid species are probably related to shallow water stocks of the Antarctic Peninsula and the colder Weddell water mass. The distribution of chaetosphaerae concurs with the warming to surface strata inside the Strait.

With the exception of *Rhynchonereella bongraini*, no species showed a clear preference for warmer or colder water masses during the summer period. *R. bongraini*, to a certain extent, could be considered an indicator of winter layers of Antarctic Surface Water, mainly of Weddell origin. The present results suggest that its presence or absence in the central sector of the Bransfield Strait is related to the intensity of the Weddell inflow, as can be seen from the distribution analysis of January and February.

A similar attempt to find consistent faunistic differences between different water

masses within the Bransfield Strait (Jażdżewski *et al.*, 1982) also failed. Nevertheless, two zones of higher polychaete concentrations were evident at the opposite entrances of the Strait. These zones corresponded, to a large extent, to areas affected by the warmer waters of Bellingshausen and the colder ones of the Weddell Sea, respectively. The central waters of the Strait, which are transitional in their physico-chemical properties, showed lower concentrations of pelagic polychaetes. This pattern might be attributed to the following factors: a) The Bransfield Strait is affected by the Weddell Drift or East Wind Drift, in the so-called Continental Zone (Whitworth, 1980); this area differs sharply in plankton abundance and composition from the Antarctic Zone, which is affected by the West Wind Drift (McIntosh, 1934; Rakusa-Suszczewski, 1983); b) Most of the sampling stations inside the Strait were located above the shallow zones of the continental shelf, where holoplanktonic polychaetes are known to be scarce; c) Shelf waters inside the Strait are also characterized by high krill biomass (Lillo and Guzmán, 1982; Guzmán, 1983; Rakusa-Suszczewski, 1983). Mujica and Torres (1982) suggested a trophic exclusion of other zooplanktonic group by krill. The feeding biology of pelagic polychaetes is poorly known. They are considered carnivores, more on account of the morphology of their buccal appendages rather than on direct evidence. Diatoms, like *Thalassionema nitzschioides* and *Coscinodiscus* spp., were the chief gut content of *Pelagobia longicirrata* individuals collected east of Elephant Island (St. 4397). It is difficult, however, to decide whether these were ingested directly or were already present in the gut of their actual prey.

In general, the abundance of pelagic polychaetes was lower in Weddell and related cold water masses, but tended to increase with summer warming and the intrusion of Warm Deep Water, chiefly in the southwestern sector. Higher polychaete species numbers resulted from the additional presence of cosmopolitan or rare warm-water species, mainly in the surface strata. It is likely that cosmopolitan pelagic polychaetes enter the Antarctic zone with the Warm Deep Water, as previously suggested by Tebble (1960). As summer progresses, these cosmopolitan stocks

migrate to the warmed upper layers of Antarctic Surface Water, where they can maintain high populational densities, as in the case of *Pelagobia longicirrata*. Reverse migrations to greater depths in winter are known in *Pelagobia longicirrata* and *Typhloscolex muelleri*.

The distribution patterns discussed here refer specifically to the austral summer. Additional sampling is needed in order to improve our knowledge of the distribution of pelagic polychaetes and to understand their populational dynamics in the winter months under the influence of large amounts of ice.

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SUMMARY

The analysis of distribution patterns of pelagic polychaetes in the Bransfield Strait, during January and February 1983, did not show sharp differences between occurrences of species or species combinations in local water masses. With the exception of *Rhynchonereella bongraini*, which could locally be considered a biological indicator of the winter layers of Antarctic Surface Water, chiefly of Weddell origin, none of the other polychaete species showed an exclusive preference for warmer or colder water masses. Two zones of higher polychaete concentrations were evident at the opposite entrances of the Strait. These areas are affected by the warmer water mass of the Bellingshausen Sea and the colder and saltier waters of Weddell origin, respectively. Lower polychaete concentrations occurred in the central sector of the Strait, probably on account of ice conditions and low temperatures, which may exclude warm-water forms. The frequency of cosmopolitan or rare warm-water species appeared to be highest in the southwestern sector of the Bransfield Strait, when, during summer, temperature increased due to warming of the upper layers of Antarctic Surface Water and the inflow of Warm Deep Water.

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