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## Diversity of Subantarctic Tanaidacea (Crustacea, Malacostraca) in and off the Beagle Channel

**ABSTRACT:** In November 1994 a first inventory of Tanaidacea from the Beagle Channel and at some stations of the Atlantic continental shelf was obtained using epibenthic sledge samples. In total, 2175 specimens from 27 species of eight families of Tanaidomorpha and two families of Apseudomorpha were collected. Two species, *Allotanais hirstutus* (Beddard, 1886) and *Apseudes heroae* Sieg, 1986, strongly dominated this area. Generally low diversity and abundances were recorded for the western area of the Beagle Channel, while substantially higher values were reported at the eastern entrance on the Atlantic side of the Beagle Channel. Abundances slightly varied with depths, but not significantly.

**Key words:** Beagle Channel, Tanaidacea, Peracarida, species numbers, abundances.

### Introduction

The Beagle Channel is the southernmost South American fjord and belongs to the Magellanic area. Due to its relative proximity to the Antarctic Peninsula and the geological history of Tierra del Fuego, the Scotia Arc and the Antarctic Peninsula, the Beagle Channel is an interesting geographic area for faunistic comparisons of South America and Antarctica.

Tanaidacea are an almost exclusively marine order with increasing diversity in the deep sea. The small size of these animals (2–3 mm length) is probably one reason why this taxon was often neglected or overlooked in the past; other sources of error might have been due to too large mesh sizes of trawled gear used. For that reason, until 1996 only single records of Tanaidacea from the Magellanic region were published, e.g., *Nototanais dimorphus* (Beddard, 1886) from the Belgian Antarctic

Expedition (Monod 1925), *Apseudes spectabilis* Studer, 1883 from the XXII Chilean-Italian Expedition to the Magellan Strait (Shiino 1970), and *Allotanaia hirsutus* from the Falkland Islands (Stebbing 1914). In the austral summers of 1989–90 and 1990–91 a Chilean-Italian expedition to the Magellan Strait and the Beagle Channel was carried out in order to investigate oceanographic, geologic and biological questions (Brambati *et al.* 1992).

A first taxonomic inventory of the Magellan Region was published by Sieg (1986) on the basis of qualitative samples from *r/v Hero*. A few years later, in November of 1994, the Chilean-Italian-German joint research project „Joint Magellan“ during the *r/v Victor Hensen* campaign took place in the Magellanic area. The aims of this project included faunistic comparisons of this area with the Antarctic and an investigation of the horizontal population structuring within the fjords. The present paper describes the tanaidacean fauna along a transect in the Beagle Channel in terms of composition and density against the background of sedimentological, hydrographical (salinity, depth), and biological factors. The Beagle Channel is interesting because it extends from the Pacific to the Atlantic, moreover the salinity in the channel is strongly influenced by fresh-water runoff due to melting glaciers (Antezana *et al.* 1996). Sediment type depends on currents and shellhash sediments were frequent, while in the middle of the channel soft-bottom sediments dominated due to terrigenous glacial influences.

## Study area

The Beagle Channel is situated at the southern tip of South America (Fig. 1). It extends from the eastern Atlantic entrance at 55°07'S, 66°52'W westwards to the Pacific at 54°46'S, 71°50'W. The northern border of the Beagle Channel is formed by Tierra del Fuego, the southern by Navarino and Hoste Islands. The Beagle Channel is characterised by many neighbouring islands and broad channel systems (Fig. 1). It extends about 300 km from west to east and marks, in its initial eastern section, the borders between Chile and Argentina. A number of islands are located in front of the eastern mouth of the Channel dividing it into different branches. The most prominent of these islands are Picton Island, and further offshore Lennox and Nueva Islands. West of Isla Picton the Channel narrows to an average width of 25 km (Colizza 1992). Further west Gordon Island (south of station 1257 in Fig. 1) divides the Channel into the Brazo del Suroeste, which flows southwards into the Pacific Ocean, and the Brazo del Noroeste, which extends to O'Brien Island (west of station 1263 on Fig. 1) westwards.

At its eastern entrance the channel measures only 50 m in depth on average (stations 1206, 1200, 1178, 1213). This is, in fact, a geomorphological shoal dividing the channel from the Drake Passage (Brandt *et al.* 1997). Near the islands the shoal is cut across by a series of deeper channels, which join offshore on the Pacific

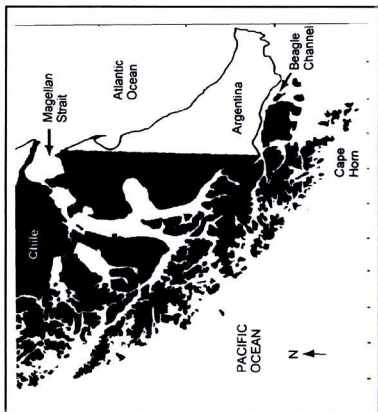


Fig. 1. Map of the study area with epibenthic sledge stations (pins). (I. = Island, Is. = Islands).

slope. The deepest of these channels (Paso Picton) reaches 130 m depth and is bordered by the western side of Picton Island and the eastern side of Navarino Island. Moving westwards, the depth averages 50 m as far as Gable Island, north of Navarino Island, which is a further structural shoal in the channel (Colizza 1992). In westward direction the channel becomes deeper and at station 1261, off Timbal Chico Island, it reaches its maximum depth with 665 m, which area is surrounded by much shallower depths (less than 150 m). In the channel, this depression forms a unique "hole" in which an old relict fauna may be expected since this depression must have been isolated for about 20 my.

The general sedimentology of the Magellanic area was described by Brambati *et al.* (1992). For the sampled stations, descriptions of the sediment based on epibenthic sledge (EBS) catches and the surfaces of corers are provided in Table 1.

The hydrography of the Beagle and Magellan Channels was given by Celio (1992) and by Panella *et al.* (1992).

## Materials and methods

Tanaidacea were sampled during the Chilean-Italian-German expedition "Joint Magellan" with *r/v Victor Hensen* in October/November 1994, at 18 stations sampled with an epibenthic sledge (EBS). Additional material came from 3 stations sampled with the same sledge in May 1996 from expedition ANT XIII/4 (*r/v Polarstern*), taken off the Atlantic continental slope. See Table 1 for exact locations and station data see Table 1. Fig. 1 (Microsoft Program ENCARTA) illustrates the position of stations in the sampling area. Additional data on these expeditions were published by Arntz and Gorny (1996) and Fahrbach and Gerdes (1997).

The EBS was constructed after Rothlisberg and Percy (1977) and later improved and modified and employed as described by Brandt and Barthel (1995). The sledge was equipped with an epibenthic net with a mesh size of 500  $\mu\text{m}$  and a 300  $\mu\text{m}$  cod end. The opening of the net was 1 m in width. When the sledge reached the deck of the vessel, samples were suspended, decanted through a 300  $\mu\text{m}$  mesh screen, and preserved in 4% buffered formaldehyde solution. Samples were washed and transferred into 70% ethanol 3 months after the expedition (on *r/v Polarstern* samples were washed after 2 days).

For comparison of the fauna from the 18 stations the complete samples were analysed, except for sample 40/110 which was very large and therefore only half of it was sorted and then the numbers were doubled. Sample 40/117 can only be considered as qualitative as it was taken with a small dredge with a different sampling efficiency (Rauschert, pers. comm.).

In order to be able to compare abundances among the stations, numbers of individuals were calculated and standardised for 1000 m trawled distance (Brattegard and Fosså 1991).

Table 1  
Stations list of *rv Victor Hensen* (= VH) and ANT XIII/4 *rv Polarstern* (= ANT). (EBS = epibenthic sledge, DRG = dredge, C. = channel, I. = Island, Pt = Point). (Information about sediments comes from the EBS samples (Linse 1997) and from multiplecorer samples (Brandt *et al.* 1997).

Station	Date	Position				Haul (m)	Depth (m)	Gear	Sediment	Station locality	Expedition
		S lat		W long							
		start	end	start	end						
1206	14.11.94	55°48,13	55°48,10	66°58,45	66°58,62	186	EBS	fine mollusc shell hash	off Barnevelt I.	VH	
1200	14.11.94	55°38,52	55°38,57	67°12,86	67°13,26	428	EBS	mollusc shell hash	Wollaston I.	VH	
1184	12.11.94	55°06,84	55°06,95	66°55,54	66°55,67	246	EBS	no sediment sampled	Picton I.	VH	
1194	13.11.94	55°08,48	55°08,19	66°57,81	66°58,08	608	EBS	fine mud	Picton I.	VH	
1197	13.11.94	55°07,92	55°08,00	66°58,28	66°58,31	152	EBS	fine mud	Picton I.	VH	
1178	12.11.94	55°07,30	55°07,28	66°52,78	66°52,90	132	EBS	red algae and Cirripedia shell hash	Pt Rico	VH	
1213	15.11.94	55°06,89	55°06,72	66°39,95	66°39,92	316	EBS	mollusc shell hash	southeast of Picton I.	VH	
1237	18.11.94	55°00,51	55°00,48	66°53,14	66°53,29	169	EBS	very fine mud	C. Beagle, Yendegaia	VH	
1246	19.11.94	54°58,00	54°57,85	68°49,31	68°49,04	400	EBS	very fine mud	C. Beagle	VH	
1247	19.11.94	54°59,43	54°59,51	69°04,64	64°04,28	410	EBS	fine mud, coarse stones, foraminifera	C. Beagle	VH	
1248	19.11.94	54°58,80	54°58,78	69°01,75	69°01,98	247	EBS	fine mud and sand	C. Beagle	VH	
1253	19.11.94	54°55,12	54°55,11	69°19,89	69°20,13	256	EBS	very fine mud	C. Beagle	VH	
1257	19.11.94	54°53,43	54°53,32	69°30,94	69°31,14	295	EBS	mud, foraminifera	C. Beagle, Romanche	VH	
1261	20.11.94	54°53,64	54°53,81	69°58,98	69°59,03	319	EBS	sponge spicules, mud	C. Beagle, Romanche	VH	
1263	20.11.94	54°54,04	54°54,00	70°12,76	70°12,52	266	EBS	mollusc shell hash	C. Beagle, Timbal Chico I.	VH	
1270	21.11.94	54°55,17	54°55,23	70°45,15	70°44,81	379	EBS	coarse stony sand, foraminifera, mud	C. Ballenero	VH	
1279	21.11.94	54°46,48	54°46,90	71°08,48	71°08,35	178	EBS	fine terrigenous sediment	C. Ballenero, of Pt Baja	VH	
1307	23.11.94	54°17,37	54°17,55	70°51,81	70°51,90	347	EBS	fine mud, sand, foraminifera	C. Magdalena, Pt Sánchez	VH	
40/110	16.05.96	55°26,5	55°26,4	66°15,0	66°15,3	293	EBS	mollusc shells, shallhash	Paso Richmond, southeast of Nueva I.	ANT	
40/111	17.05.96	55°28,8	55°28,8	66°03,4	66°03,5	155	EBS	loam, big clods of clay	Paso Richmond, southeast of Nueva I.	ANT	
40/117	18.05.96	55°24,6	55°24,1	66°15,6	66°15,3		DRG	no information	Southeast of Nueva I.	ANT	

## Results

2175 specimens of Tanaidacea were sampled in November 1994 and May 1996. 349 individuals were classified to Apseudomorpha and 1826 individuals to Tanaidomorpha. The representatives of suborder Neotanaidomorpha were not found. 27 species from 10 families could be discerned; not all species were identified to species level. Several are probably new to science. Table 2 summarises species and numbers of individuals at different stations. Specimens of Leptocheliidae were counted as one single species (Table 2), although we could discern morphotypes, which are most probably polymorphisms. A detailed taxonomic analysis of this species, which is in preparation (Kommritz, pers. comm.), will help to solve this problem.

The horizontal zonation of Tanaidacea is illustrated in Fig. 2 from west to east along the Beagle Channel. Maximal species numbers were noted at station 40/110 close to the Atlantic continental slope. At Stations 1307, 1263, 1261, 1197, and 1194 no Tanaidacea were observed (Table 1, Figs 2 and 3). In Canal Ballenero close to the western entrance of the Beagle Channel to the Pacific Ocean (stns 1279, 1270) only one species each was found. From the western entrance of the Beagle Channel to its middle, the numbers of species increased to five and decreased again to the east with the exception of stations 1213, where 6 species were identified. The most speciose station was 40/110 located in Atlantic Ocean Sector. At Station 40/111 on the continental slope, 4 species were identified.

Abundances of Tanaidacea were low at the western entrance of the Beagle Channel, with five to six individuals per 1000 m<sup>2</sup> (2 species). Comparable stations at the eastern entrance of the Beagle Channel (stns 1206 and 1200) yielded the highest abundances of 4758 ind. 1000 m<sup>-2</sup> and 2264 respectively. Even at station 40/110 close to the continental slope 650 ind. 1000 m<sup>-2</sup> were sampled, however, at station 40/111 off the continental slope we found only 26 ind. 1000 m<sup>-2</sup>. In the channel abundances generally increased from west to east from 3 to 32 ind. 1000 m<sup>-2</sup> at station 1247, and then decreased again to 13 ind. 1000 m<sup>-2</sup>.

Any species occurred at all stations (Table 2). *Allotanais hirsutus* was sampled at the most stations (5 stns) and was also most abundant (e.g. 4651 ind. 1000 m<sup>-2</sup> at stn 1206). The second most abundant species was *Apseudes heroae*, which occurred in 745 individuals at station 1200. However, it was sampled only in the eastern entrance area of the Beagle Channel (stn 1213) and south of Wollaston Island in the Atlantic (stns 1200 and 1206). *Araphura* sp. and *Meromonacantha macrocephala* (Hansen, 1913) were sampled only at 4 (stns 1257, 1247, 1248, 1246) and 3 (1253, 1247, 1248) stations, respectively, in the middle of the Beagle Channel. *Leptognathia armata* Hansen, 1913 was the only species recorded at the western entrance of the Beagle Channel (stns 1279, 1270). *Tanaella unisetosa* Sieg, 1986 was sampled at the Atlantic stations 1200, 1206, 40/110 and 40/117, however, this species was not recorded off the continental slope. *Heterotanoides meridionalis* Sieg, 1986 was collected at two stations at the eastern entrance (stns 1178 and 1213).



Table 2 - continued.

Species	Stations	1307	1279	1270	1263	1261	1257	1253	1247	1248	1246	1237	1184	1178	1197	1194	1213	1200	1206	40/110	40/111	40/117	Total	
<i>Peraeopinosus adipatus</i> (Tsareva, 1982)																				10(68)			10(68)	
<i>Akanthophoreus australis</i> (Beddard, 1886)								1(2)															1(2)	
<i>Araphura</i> sp.							1(3)	2(5)	2(8)	3(8)											1(6)		8(24)	
<i>Libinia monacanthus</i> (Vanhöffen, 1914)																						1(6)		1(6)
<i>Stenotanais</i> sp.																						1(6)		1(6)
<i>Tanaella unisetosa</i> Sieg. 1986																		15(35)	16(86)	2(14)			33(135)	
Anarthrininae sp.								1(4)															1(4)	
<i>Siphonolabrum fastigiatum</i> Sieg, 1986											1(3)												1(3)	
<i>Dimorphognathia hercae</i> Sieg, 1986														1(8)									20(101)	
<i>Leptognathia armata</i> Hansen, 1913			1(6)	2(5)																9(61)			3(11)	
<i>Leptognathia brevitremis</i> (Lilljeborg, 1864)								2(5)	1(4)														3(9)	
<i>Mirandotanais vorax</i> Kussakin & Tsareva, 1974																					1(6)		1(6)	
Paratanaoidea sp. 1																							1(3)	
Paratanaoidea sp. 2																					1(6)		1(6)	
Manca indet. 1 (Paratanaoidea)																						1(7)	1(7)	
Manca indet. 2 (Paratanaoidea)								1(2)															1(2)	
number of specimens		0	1(6)	2(5)	0	0	1(3)	2(8)	13 (31)	7(28)	5(14)	1(6)	1(4)	31 (236)	0	0	42 (132)	969 (2264)	885 (4758)	75 (650)	4(24)	118	2157 (8169)	
number of species		0	1	1	0	0	1	2	5	5	3	1	1	3	0	0	6	3	4	10	4	3	27	



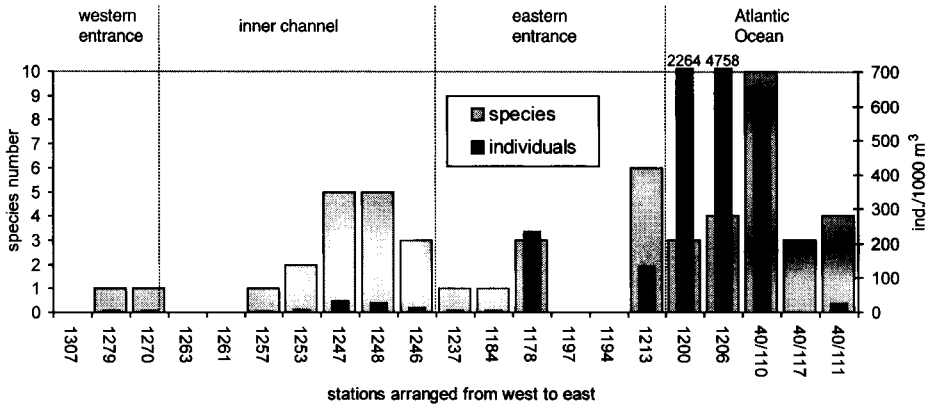


Fig. 2. Species numbers and abundances of Tanaidacea per station from West to East.

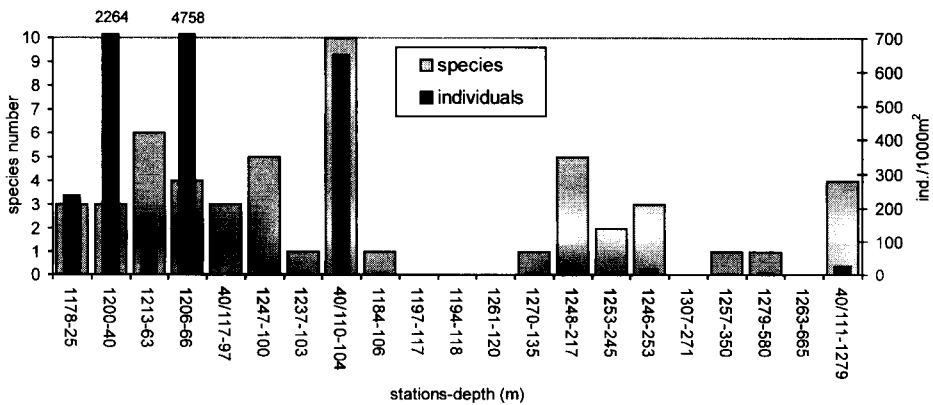


Fig. 3. Species numbers and abundances of Tanaidacea per station ordered by depth.

Stations in the inner channel showed no species similarities with stations in the Atlantic or Pacific. Station 40/111 off the continental slope at 1279 m depth showed no similarities with any other station.

Fig. 3 illustrates numbers of species and individuals per station as well as depth. Most species occurred at shallower stations in depths between 25 to 104 m. However, abundances do not show a clear pattern with depth (Fig. 3). In general at the areas of the eastern entrance of the Channel higher abundances were observed than at deeper stations (see Fig. 3). Fig. 4 shows the depth zonation of particular species in the study area.

For a further characterisation of stations, the diversity index  $H'$  after Shannon and Weaver (1949) and evenness (E) after Pielou (1977) were calculated. ( $H'$ ) varied from 0 to 0.7 among stations, while E ranged from 0 to 1.  $H'$  was highest at sta-

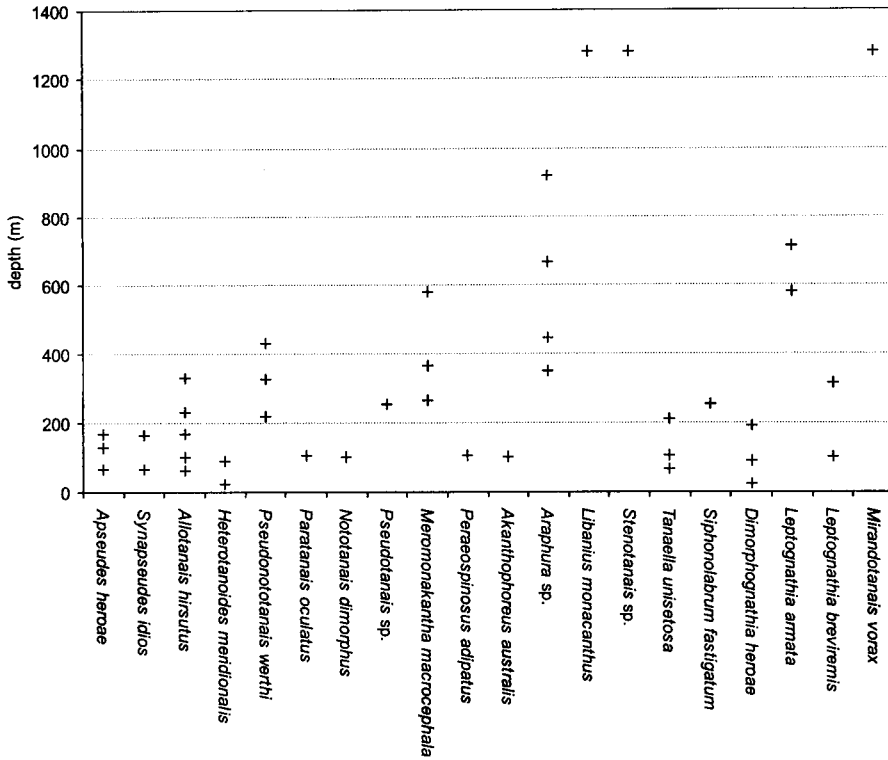


Fig. 4. Depth zonation of species of Tanaidacea in the study area.

tion 40/110 (0.72), where the sediment consisted of shellhash, E was highest at stations 40/111 and 1248, characterised by sediments of loam and clay or fine mud (Table 3).

Table 3  
Diversity indices ( $H'$ ) after Shannon and Weaver (1949) and evenness (E) after Pielou (1977) of Tanaidacea from stations of the Beagle Channel and off the Atlantic continental shelf and slope (stations with 0-values [= no tanaid records] were not included in this list).

Station	1253	1247	1248	1246	1178	1213	1200	1206	40/110	40/111	40/117
Diversity $H'$	0.3	0.64	0.67	0.43	0.13	0.55	0.31	0.05	0.72	0.6	0.21
Evenness E	1	0.91	0.96	0.89	0.27	0.71	0.64	0.09	0.76	1	0.44

Tables 4 and 5 present species and percentages of individuals present, along with and sediment structure. Stations 1178, 1206, 1200, 1213 and 40/110 were categorised as shellhash stations. Soft sediment (mud, fine silt) was present at stations 1247, 1257, 1263, 1270 and 1307. The sediment structure of station 1184 is

unknown. In the eastern entrance of the Beagle Channel shellhash was the dominating sediment structure, while the middle of the Beagle Channel was characterised by soft mud. Most species (40%) were found on shellhash, with 30% on soft bottom and a mixed sediment type. Any species was present at all sediment types. 98.5% of all individuals were sampled on shellhash (Table 4).

## Discussion

The horizontal and vertical distribution of Tanaidacea was investigated in the Beagle Channel against the background of abiotic and biotic factors. In general, the abundance and diversity of Tanaidacea was low in the Beagle Channel when compared with other peracarid taxa (Brandt *et al.* 1997). Fig. 2 illustrates the horizontal zonation of the Tanaidacea and reveals that species numbers and abundances varied considerably among stations. A possible explanation for this might be the lower salinity of the eastern entrance of the channel (Klöser 1996). The western entrance is characterised by more oceanic salinities. Other peracarid taxa also show a possible dependence on salinity in the Beagle Channel (Brandt *et al.* 1999). Mariani *et al.* (1996) documented that the Pacific sector of the Magellan Strait supported fewer species of isopods and polychaetes than the Atlantic sector. Klöser (1996) assumed that Navarino Island and Tierra del Fuego might serve as barriers to an exchange of water from the Beagle Channel. This barrier may explain the higher abundances of Peracarida in general off the eastern entrance of the Beagle Channel (Brandt *et al.* 1997).

At stations 1200 and 1206 peracarid abundances were highest (Brandt *et al.* 1997). This was also true for the Tanaidacea, with 2264 and 4758 individuals at these stations, dominated by the species *Allotanais hirsutus* and *Aapseudes heroeae*. Abundances of Mollusca were also high at these stations, but were even higher in the Beagle Channel (Linse and Brandt 1998). In the Beagle Channel species numbers of Tanaidacea were highest at station 1213 with 6 species in the eastern entrance region. Within the Peracarida, Isopoda were characterised by highest species numbers at this station (Brandt *et al.* 1997) and molluscs (Linse 1997) showed highest species numbers as well.

Like molluscs (Linse 1997), Tanaidacea share species of the eastern entrance region with oceanic stations 1200 and 1206, but not with western entrance stations. Any tanaid species was sampled both in the inner channel and at oceanic stations (1200, 1206, 40/110, 40/117). This could possibly be explained by differences in salinity. A few species of Isopoda and Cumacea occur in both regions (Brandt *et al.* 1997). These authors could not find a correlation of abundance or diversity of Peracarida with phaeopigments or chlorophyll equivalents; however, they indicated that the high abundances of detritivorous Peracarida might explain the low values of chlorophyll equivalents at stations 1200 and 1206. While Isopoda show a clear trend toward increasing diversity with depth (Brandt *et al.* 1997), this is not

Table 4

Presence of species on different bottom sediments  
(mix = mixed sediment, soft, soft mud).

Species	Sediment type	shell-hash	mix	soft	shell-hash & mix	shell-hash & soft	soft & mix	shellhash & soft & mix
<i>Apseudes heroae</i>		x						
<i>Synapseudes idios</i>		x						
<i>Allotanaeis hirsutus</i>		x						
<i>Heterotanoides meridionalis</i>		x						
<i>Pseudonototanaeis werthi</i>						x		
Leptocheliidae sp.1-6						x		
<i>Paratanaeis oculatus</i>		x						
Paratanaidae sp. 1		x						
Paratanaidae sp. 2		x						
<i>Nototanaeis dimorphus</i>				x				
Nototanaidae sp.			x					
<i>Pseudotanaeis</i> sp.				x				
<i>Meromonacantha macrocephala</i>							x	
<i>Peraeospinosus adipatus</i>		x						
<i>Akanthophoreus australis</i>			x					
<i>Araphura</i> sp.							x	
<i>Libanius monacanthus</i>				x				
<i>Stenotanaeis</i> sp.				x				
<i>Tanaella unisetosa</i>		x						
Anarthrurinae sp.				x				
<i>Siphonolabrum fastigatum</i>				x				
<i>Dimorphognathia heroae</i>		x						
<i>Leptognathia armata</i>							x	
<i>Leptognathia breviremis</i>							x	
<i>Mirandotanaeis vorax</i>				x				
Paratanaoidea sp. 1		x						
Paratanaoidea sp. 2				x				
Sum		11	2	8	0	2	4	0
%		40.0	7.5	30.0	0	7.5	15.0	0

Table 5

Presence of individuals on different bottom sediments, calculated for 1000 m<sup>2</sup> trawled distance.

Sediment type	soft	mix	shellhash			
	total	%	total	%	total	%
Individuals / 1000 m <sup>2</sup>	86	1.0	39	0.5	8044	98.5

obvious for Tanaidacea (Fig. 3). Most species were sampled at the shallower stations between 25 and 104 m depth. Abundances showed a clearer correlation with the highest values at the shallow stations. Abundances of Peracarida in the Beagle Channel are too low to allow for an interpretation on the background of hydrographic influences Channel (Brandt *et al.* 1999).

Some species of Tanaidacea need shellhash for the construction of their tubes, like *Allotanais hirsutus*, which uses shellhash of foraminiferans or molluscs. According to Kudinova-Pasternak 1991 many Tanaidacea do not feed only on detritus, but also on benthic Foraminifera, like some Isopoda (e.g. Gudmundsson *et al.* 2000). Brandt *et al.* (1997) also found a dependence of peracarid abundances on sediment composition. Based on the morphology of the mouthparts (compare Kudinova-Pasternak 1991) we can conclude that *Allotanais hirsutus* and *Apseudes heroae* feed on foraminiferans and detritus from the sediment surface. Delille *et al.* (1985) documented that the high abundances of *Allotanais hirsutus* at the Kerguelen Islands (up to 146.000 ind./m<sup>2</sup>) are directly correlated with bacterial densities. This finding explains why this species does not occur only on shellhash, but also shows high abundances on the soft bottom (Table 4). It is possible that this species does not occur in the Beagle because of the lower salinity or because of competition for food. *Nototanais dimorphis* (Beddard, 1886) was sampled with high abundances on soft bottom of the Ross Sea. This species is known as a predator and dominates (besides other small Crustacea) the species composition of the benthic soft-bottom infauna (Oliver and Slattery 1985). In the Beagle Channel this species was rare.

Epibenthic megafauna was also rare in the Beagle Channel (Gutt and Schickan 1996), in the nearby Magdalena Channel, however, these authors found very high abundances of large, sessile suspension feeders such as gorgonarians, ascidians, holothurians, and actinians. Linse (1997) assumed that this might be due to the absence of competition for food with small epibenthic taxa, like molluscs or peracarids.

At station 1261 the EBS was hauled over ground with 3 ts instead of 1 ts. This might have caused the EBS to loose ground contact at times, and thus it might not have sampled representatively. Maybe this is the reason why no Tanaidacea were sampled at this station. At station 1279 the net was slightly damaged, but the cod end was still intact (Linse 1997), which was another potential source for errors. Of the sample from station 40/110, only a 50 % aliquot was analysed and the data was mathematically doubled. This will probably also cause problems and thus these data can only be discussed with care.

It can be concluded that probably no single factor such as depth, sediment structure, food availability, or salinity influences abundances and species numbers of Tanaidacea in the area of the Beagle Channel, but rather a combination of several biotic and abiotic factors. It seems plausible that sediment structure and food availability are the most important factors influencing Tanaidacea, as these organisms showed a clear preference for sediments consisting of shellhash (Tables 3, 4, 5). Diversity was

highest at a shellhash station, at fine-mud stations tanaids were either absent (e.g. stations 1257, 1263, 1270, 1307) or evenness was very high (0.9 at station 1248). Abundances were highest at stations where values of chlorophyll equivalents were lower than in others; this was probably caused by high food uptake (Brandt *et al.* 1997).

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