On the whole, both the potential number of species and that of the individuals collected seems to be lower compared to the previous campaign. This can likely be explained by the fact that many samples have been collected in disturbed areas (iceberg scour marks) and yielded a reduced number of taxa. Furthermore, in many of the samples a large amount of big stones and boulders caused damage to the benthos, especially of fragile taxa such as polychaetes.

Regarding the reproductive features, it is interesting to note that several specimens belonging to different species (*Harmothoe spinosa*, light form), and a few other *Harmothoe*-like species), have been observed bearing mature eggs on their backs, under the elytra. The eggs in *H. spinosa* were included in a thin membrane and grouped in single oval masses (approx. two masses for each parapodium). The eggs of the other polynoids were also enveloped in a thin membrane but had the shape of flat cylindrical, rope-like lines located on both sides of the worm. Mean egg diameter for the specimens observed (both *H. spinosa* and the other polynoids) was 150 µm. This fact is quite interesting because until now no polynoids have been reported to brood eggs in Antarctica. However, egg dimension and the fact that the elytra are very delicate organs suggest that the external brooding of the eggs is short and that larvae hatching from these eggs are most probably pelagic and planktotrophic.

2.4.7 Structural and Ecofunctional Biodiversity of the Benthic Amphipod Taxocoenoses (C. De Broyer, M. Rauschert, Y. Scailteur)

Introduction

In the Antarctic benthic communities, the peracarid crustaceans (Amphipoda, Isopoda, Tanaidacea, Cumacea, Mysidacea) are by far the most speciose group and probably the most "ecologically" diversified, at least in terms of life styles, trophic types, habitats and size spectra (De Broyer and Jazdzewski 1996). The peracarid crustaceans, and in particular the most numerous group, the amphipods, despite their low biomass, constitute a dominant group in terms of energy fluxes in the High Antarctic shelf ecosystem (Weddell Sea: Jarre-Teichmann *et al.* 1997) and they can show high densities e.g. in the maritime Antarctic sublittoral communities. Peracarids provide, on the other hand, an important food resource to many Antarctic demersal and benthic fishes.

The assessment of the biodiversity of the very rich fauna of Antarctic amphipods living in the Antarctic Coastal and Shelf Ecosystem has to be pursued and, in the future, extended to the nearly totally unknown Antarctic deep sea. On the other hand, the various ecological roles played by the diverse amphipod species remain to be more thoroughly investigated. Indeed, one promising approach of the role of biodiversity in ecosystem functioning – which is of some significance in the evaluation of the potential stability and resilience of ecosystems facing environmental changes - is the study of the functional role(s) of species or species groups in key ecological processes. The ecofunctional role, and in particular the trophodynamic role, of most of the Antarctic peracarids (in particular amphipods) is still poorly known, despite notable contributions this last decade. The preferential or exclusive trophic types have been studied in less than 10% of amphipod species, with extremely few quantitative approaches so far. On the other hand, among the most important families of Antarctic amphipods, the feeding type cannot be deduced with certainty from the morphology of feeding appendages. A qualitative and quantitative characterisation of the trophic roles of amphipods and peracarids in general, at the level of the key-species and of the whole taxocoenoses, could significantly contribute to a more accurate image of the trophic structure and fluxes in Antarctic benthic communities.

Objectives

- Structural biodiversity
  - To document the faunistical, zoogeographical and ecological traits of the amphipod taxocoenoses on a latitudinal scale (southeastern Weddell Sea, West Antarctic, in comparison with the Magellanic region) and to pursue

taxonomical and phylogenetical studies of particular families (e.g., Lysianassidae s.l., Stenothoidae).

- To contribute by taxonomical material and distributional and ecological data to the preparation of the "Synopses of Antarctic Amphipods" (De Broyer, Andres, Bellan-Santini, Coleman, Jazdzewski, Rauschert, Takeuchi, Vader, Wakabara, in prep.) and the development of the first "Antarctic Biodiversity Reference Centre" (focussing on amphipod Crustacea) in the framework of the EASIZ, Diversitas, and Systematics Agenda 2000 programmes.

- Ecofunctional biodiversity
  - To continue the trophodynamic approach undertaken in the southeastern Weddell Sea region during the EASIZ I campaign *i.e.*, to characterize and to quantify the trophodynamic role of the amphipod taxocoenoses and to compare it on a latitudinal scale with the West Antarctic region. Particular topics to investigate are: diet composition, food consumption and assimilation efficiency, characterisation and functional role of the amphipod trophic guilds, significance of amphipods as preys for other macrobenthos and demersal fish.

Work at sea

Samples for stomach content analysis, life history, growth and fecundity studies, and for SEM studies as well as data on amphipod predators were systematically collected. Selected species have been collected for DNA analysis. Living specimens of more than 40 species were kept in aquaria in cool container for ethological observations and feeding experiments on board and for further feeding, ethological and growth studies in the cool laboratory at IRScNB, Brussels. The amphipod material was sorted on board to the species level (except the EBS and MG material and part of the dredge material), and when possible identified. Peracarid crustaceans from the stomach contents of demersal and benthic fish have been identified in the framework of the fish biology investigations.

Preliminary results

Faunistics. On the different sites investigated (Kapp Norvegia, Vestkapp, Drescher Inlet, Halley Bay, about 60.000 specimens of at least 179 species of gammaridean amphipods, 2 species of Caprellidea, and 4 species of pelagic Hyperidea (3 Hyperiidae, 1 Phrosinidae) have been collected. Three genera and 38 species are presumably new to science (1 family indet., 1 Ampeliscidae, 1 Amphilochidae, 1 Clarenciidae, 1 Dexaminidae, 2 Epimeriidae, 1 Gammaridae s.l., 2 Liljeborgiidae, 4 Lysianassidae s.l., 1 Melitidae, 1 Melphidippidae, 3 Podoceridae, 15 Stenothoidae, 1 Synopiidae, 3 Urothoidae). Eighteen dredge samples (D) provided a good number of small-sized amphipods and other peracarids usually in good condition, and together with the EBS samples (see 2.4.3) very usefully complemented the larger mesh-sized Agassiz trawl catches. The following families of Gammaridea were found in the different trawl, dredge, trap and corer samples: Ampeliscidae, Amphilochidae, Clarenciidae, Colomastigiidae, Corophiidae *s.l.*, Dexaminidae, Epimeriidae, Eusiridae *s.l.*, Gammaridae *s.l.*, Iphimediidae, Ischyroceridae, Leucothoidae, Liljeborgiidae, Lysianassidae *s.l.*, Melitidae, Melphidippidae, Odiidae, Oedicerotidae, Pardaliscidae, Phoxocephalidae, Podoceridae, Sebidae, Stenothoidae, Synopiidae, Urothoidae, as well as Caprellidae for the Caprellidea and Hyperiidae and Phrosinidae for the Hyperidea. A preliminary list of amphipod species collected by AGT, BPN, GSN, D, Traps and TVG is given in the Annex (Table 50). In addition to Amphipoda, two species of Leptostraca (*Nebalia* sp. and *Nebaliella* sp.) were found in the dredge samples and one (*Nebaliella* sp.) was also caught in a baited trap.

Zoogeography. Among the 130 identified species recorded, 46 species were known from the West Antarctic and only 12 from the Magellan area. The family Clarenciidae was detected in the East Antarctic for the first time. The leptostracan *Nebaliella* sp. had been previously collected in Maxwell Bay, King George Island (Rauschert unpubl.). In addition to trawl samples, systematic trap sampling at approx. 200, 400, 600, 800, 1200 and 1500 m allowed to document

Table 50: Preliminary list of amphipod species collected by AGT, BPN, D, GSN, Traps and TVG.

No	Family	Genus	Species	E-Ant	W-Ant	Mag
1	Ampeliscidae	*Ampelisca*	*richardsoni*	X	X	
2	Ampeliscidae	*Ampelisca*	sp.n.	X		
3	Amphilochidae	gen.	sp. 1 (nov.?)	X		
4	Amphilochidae	gen.	sp. 2	X		
5	Amphilochidae	gen.	sp. 3	X		
6	Amphilochidae	gen.	sp. 4	X		
7	Clarenciidae	*Clarencia*	*chelata*	X	X	
8	Clarenciidae	*Clarencia*	sp.n.	X		
9	Colomastigidae	*Colomastix*	*fissilingua*	X	X	X
10	Colomastigidae	*Colomastix*	sp.	X		
11	Corophiidae	*Gammaropsis*	sp.	X		
12	Corophiidae *s.l.*	*Haplocheira*	sp. (*plumosa*?)	X		
13	Corophiidae *s.l.*	gen.	sp.	X		
14	Corophiidae *s.l.*	*Kuphocheira*	*setimanus*	X	X	
15	Corophiidae *s.l.*	*Pseudericthonius*	sp.	X		
16	Dexaminidae	*Lepechinella*	sp.	X		
17	Dexaminidae	*Polycheria*	*antarctica*	X	X	
18	Dexaminidae	*Polycheria*	sp.n.	X		
19	Epimeriidae	*Epimeria*	*georgiana*	X	X	
20	Epimeriidae	*Epimeria*	*grandirostris*	X	X	
21	Epimeriidae	*Epimeria*	*macrodonta*	X	X	
22	Epimeriidae	*Epimeria*	*robusta*	X		
23	Epimeriidae	*Epimeria*	*rubrieques*	X		
24	Epimeriidae	*Epimeria*	*similis*	X	X	
25	Epimeriidae	*Epimeria*	sp.n.	X		
26	Epimeriidae	*Epimeria*	sp.n.?	X		
27	Epimeriidae	*Epimeriella*	sp. A	X		
28	Epimeriidae	*Epimeriella*	sp. B	X		
29	Epimeriidae	*Epimeriella*	sp. C	X		
30	Eusiridae *s.l.*	*Atyloella*	*quadridens*	X	X	
31	Eusiridae *s.l.*	*Atylopsis*	*megalops*	X	X	X
32	Eusiridae *s.l.*	*Atylopsis*	sp.	X		
33	Eusiridae *s.l.*	*Eusirus*	*perdentatus*	X	X	
34	Eusiridae *s.l.*	*Eusirus*	sp. A	X		
35	Eusiridae *s.l.*	*Eusirus*	sp. B	X		
36	Eusiridae *s.l.*	*Eusirus*	sp. C	X		
37	Eusiridae *s.l.*	*Liouvillea*	*oculata*	X	X	
38	Eusiridae *s.l.*	*Oradarea*	*edentata*	X	X	
39	Eusiridae *s.l.*	*Oradarea*	sp.	X		
40	Eusiridae *s.l.*	*Paramoera*	*fissicauda*	X	X	X
41	Eusiridae *s.l.*	*Paramoera*	*hurleyi*	X	X	
42	Eusiridae *s.l.*	*Prostebbingia*	*gracilis*	X	X	X
43	Eusiridae *s.l.*	*Rhachotropis*	*antarctica*	X	X	X
44	Eusiridae *s.l.*	*Schraderia*	*gracilis*	X	X	
45	Gammaridae *s.l.*	*Paraceradocus*	*gibber*	X	X	

Table 50 continued.

No	Family	Genus	Species	E-Ant	W-Ant	Mag
46	Gammaridae *s.l.*	*Paraceradocus*	*miersii*	X	X	
47	Gammaridae *s.l.* (fam.	gen.	sp.n.?	X		
48	Iphimediidae	*Echiniphimedia*	*hodgsoni*	X		
49	Iphimediidae	*Echiniphimedia*	sp. A	X		
50	Iphimediidae	*Echiniphimedia*	sp. B	X		
51	Iphimediidae	*Gnathiphimedia*	*mandibularis*	X	X	
52	Iphimediidae	*Gnathiphimedia*	*sexdentata*	X	X	
53	Iphimediidae	*Gnathiphimedia*	sp. A	X		
54	Iphimediidae	*Gnathiphimedia*	sp. B	X		
55	Iphimediidae	gen.	sp. 1	X		
56	Iphimediidae	gen.	sp. 2	X		
57	Iphimediidae	gen.	sp. 3	X		
58	Iphimediidae	*Iphimediella*	sp. A	X		
59	Iphimediidae	*Iphimediella*	sp. B	X		
60	Iphimediidae	gen.	spp.	X		
61	Ischyroceridae	*Jassa*	sp. A	X		
62	Ischyroceridae	*Jassa*	sp. B	X		
63	Ischyroceridae	*Jassa*	sp. C	X		
64	Ischyroceridae	gen.	sp. 1	X		
65	Ischyroceridae	gen.	sp. 2	X		
66	Leucothoidae	*Leucothoe*	sp.	X		
67	Leucothoidae	*Leucothoe*	*spinicarpa*	X	X	X
68	Liljeborgiidae	gen.	sp.n. ?	X		
69	Liljeborgiidae	gen.	sp.n.	X		
70	Lysianassidae *s.l.*	*Abyssorchomene*	*nodimanus*	X	X	
71	Lysianassidae *s.l.*	*Abyssorchomene*	*plebs*	X	X	
72	Lysianassidae *s.l.*	*Abyssorchomene*	*rossi*	X	X	
73	Lysianassidae *s.l.*	*Abyssorchomene*	*scotianensis*	X	X	
74	Lysianassidae *s.l.*	*Aristias*	*antarcticus*	X	X	X
75	Lysianassidae *s.l.*	*Eurythenes*	*gryllus*	X	X	X
76	Lysianassidae *s.l.*	*Hippomedon*	cf. *kergueleni*	X	X	
77	Lysianassidae *s.l.*	*Hippomedon*	sp.	X		
78	Lysianassidae *s.l.*	*Hirondellea*	*antarctica*	X		
79	Lysianassidae *s.l.*	*Lepidepecreella* (cf.)	sp. A	X		
80	Lysianassidae *s.l.*	*Lepidepecreum* (cf.)	sp. A	X		
81	Lysianassidae *s.l.*	*Lepidepecreum* (cf.)	sp.n.	X		
82	Lysianassidae *s.l.*	*Opisa* (cf.)	sp.n.	X		
83	Lysianassidae *s.l.*	*Orchomenopsis*	sp. A	X		
84	Lysianassidae *s.l.*	*Orchomenopsis*	sp. B	X		
85	Lysianassidae *s.l.*	*Orchomenopsis*	sp. D	X		
86	Lysianassidae *s.l.*	*Orchomenopsis*	sp. E	X		
87	Lysianassidae *s.l.*	*Orchomenopsis*	sp. F (sp.n.?)	X		
88	Lysianassidae *s.l.*	*Orchomenopsis*	spp.	X		
89	Lysianassidae *s.l.*	*Parschisturella*	*carinata*	X	X	
90	Lysianassidae *s.l.*	*Parschisturella*	sp.	X		
91	Lysianassidae *s.l.*	*Pseudorchomene*	*coatsi*	X	X	
92	Lysianassidae *s.l.*	*Pseudorchomene*	sp.n.	X		

Table 50 continued.

No	Family	Genus	Species	E-Ant	W-Ant	Mag
93	Lysianassidae *s.l.*	*Socarnoides* (cf.)	sp. A	X		
94	Lysianassidae *s.l.*	*Socarnoides* (cf.)	sp. B	X		
95	Lysianassidae *s.l.*	*Shackletonia*	sp.	X		
96	Lysianassidae *s.l.*	*Tryphosella*	*murrayi*	X	X	
97	Lysianassidae *s.l.*	*Tryphosella*	sp. A	X		
98	Lysianassidae *s.l.*	*Tryphosella*	sp. B	X		
99	Lysianassidae *s.l.*	*Tryphosella*	sp. C	X		
100	Lysianassidae *s.l.*	*Tryphosella*	sp. D	X		
101	Lysianassidae *s.l.*	*Tryphosella*	sp. E	X		
102	Lysianassidae *s.l.*	*Tryphosella*	sp. F	X		
103	Lysianassidae *s.l.*	*Tryphosella*	sp. G	X		
104	Lysianassidae *s.l.*	*Tryphosella*	sp. H	X		
105	Lysianassidae *s.l.*	*Tryphosella*	sp. I	X		
106	Lysianassidae *s.l.*	*Uristes*	*gigas*	X	X	X
107	Lysianassidae *s.l.*	*Uristes*	sp. A	X		
108	Lysianassidae *s.l.*	*Uristes*	sp. B	X		
109	Lysianassidae *s.l.*	*Uristes*	sp. C	X		
110	Lysianassidae *s.l.*	*Uristes*	sp. D	X		
111	Lysianassidae *s.l.*	*Uristes*	sp. E	X		
112	Lysianassidae *s.l.*	*Uristes*	sp. F	X		
113	Lysianassidae *s.l.*	*Waldeckia*	*obesa*	X	X	
114	Lysianassidae *s.l.*	gen.	sp.n. A	X		
115	Lysianassidae *s.l.*	gen.	sp.n. B	X		
116	Lysianassidae *s.l.*	gen.	spp.	X		
117	Melphidippidae	*Melphidippa*	*antarctica*	X	X	
118	Melphidippidae	*Melphidippa*	sp.	X		
119	Melphidippidae	*Melphidippa*	sp.n.	X		
120	Melitidae	gen. nov.	sp.n.	X		
121	Odiidae	*Odius*	sp.	X		
122	Oedicerotidae	*Oediceroides*	*calmani*	X	X	
123	Oedicerotidae	*Oediceroides*	*emarginatus*	X		
124	Oedicerotidae	gen.	spp.	X		
125	Pardaliscidae	*Halicella*	cf. *parasitica*	X		
126	Pardaliscidae	*Pardalisca*	sp.4(cf. *cuspidata*)	X		
127	Pardaliscidae	*Pardalisca*	sp. 1	X		
128	Pardaliscidae	*Pardalisca*	sp. 2	X		
129	Pardaliscidae	*Pardalisca*	sp. 3	X		
130	Phoxocephalidae	*Heterophoxus*	*videns*	X	X	X
131	Phoxocephalidae	gen.	spp.	X		
132	Podoceridae	*Podocerus*	sp.n.	X		
133	Podoceridae	*Pseudodulichia*	sp.n. 1	X		
134	Podoceridae	*Pseudodulichia*	sp.n. 2	X		
135	Sebidae	*Seba*	*antarctica*	X	X	
136	Sebidae	*Seba*	sp.	X		
137	Stegocephalidae	gen.	sp. A	X		
138	Stegocephalidae	gen.	sp. B	X		
139	Stegocephalidae	gen.	sp. C	X		

Table 50 continued.

No	Family	Genus	Species	E-Ant	W-Ant	Mag
140	Stenothoidae	*Antatelson*	*walkeri*	X	X	
141	Stenothoidae	*Metopoides*	sp.n. 1	X		
142	Stenothoidae	*Metopoides*	sp.n. 2	X		
143	Stenothoidae	*Metopoides*	sp.n. 3	X		
144	Stenothoidae	*Metopoides*	sp.n. 4	X		
145	Stenothoidae	*Probolisca*	*ovata*	X	X	X
146	Stenothoidae	*Scaphodactylus*	sp.	X		
147	Stenothoidae	*Scaphodactylus*	sp.n. 1	X		
148	Stenothoidae	*Scaphodactylus*	sp.n. 2	X		
149	Stenothoidae	*Thaumatelson*	*herdmani*	X	X	
150	Stenothoidae	*Thaumatelson*	sp.n.	X		
151	Stenothoidae	*Torometopa*	*antarctica*	X	X	
152	Stenothoidae	*Torometopa*	sp.n. 1	X		
153	Stenothoidae	*Torometopa*	sp.n. 2	X		
154	Stenothoidae	*Torometopa*	sp.n. 3	X		
155	Stenothoidae	*Torometopa*	sp.n. 4	X		
156	Stenothoidae	*Torometopa*	sp.n. 5	X		
157	Stenothoidae	*Torometopa*	sp.n. 6	X		
158	Stenothoidae	gen. nov. 1	sp.n.	X		
159	Stenothoidae	gen. nov. 2	sp.n.	X		
160	Stenothoidae	gen. 1	sp.	X		
161	Stenothoidae	gen. 2	sp.	X		
162	Stenothoidae	gen. 3	sp.	X		
163	Stenothoidae	gen. 4	sp.	X		
164	Stenothoidae	gen. 5	sp.	X		
165	Stenothoidae	gen. 6	sp.	X		
166	Stilipedidae	gen.	sp. A	X		
167	Stilipedidae	gen.	sp. B	X		
168	Stilipedidae	gen.	sp. C	X		
169	Stilipedidae	gen.	sp. D	X		
170	Synopiidae	gen.	sp. 1	X		
171	Synopiidae	gen.	sp. 2	X		
172	Synopiidae	gen.	sp. 3	X		
173	Synopiidae	gen.	sp.n.	X		
174	Urothoidae	gen. 1	sp.n.	X		
175	Urothoidae	gen. 2	sp.n.	X		
176	Urothoidae	gen. 3	sp.	X		
177	Urothoidae	gen. 4	sp.n.	X		
178	indet.	gen.	sp.n.	X		
179	Caprellidae	*Aeginoides*	*gaussi*	X	X	X
180	Caprellidae	gen.	sp.	X		
181	Hyperiidae	*Hyperiella*	*dilatata*	X	X	X
182	Hyperiidae	*Themisto*	*gaudichaudi*	X	X	X
183	Hyperiidae	gen.	sp.	X		
184	Phrosinidae	*Primno*	*macropa*	X	X	X

the bathymetric distribution of the shelf and slope scavenger species (Table 51). Four specimens (up to 13 cm long) of the cosmopolitan abyssal species *Eurythenes gryllus* have been collected in traps at 1200 and 1500 m.

Table 51: Trap samples. Bathymetric distribution of the shelf and slope species.

Station	area	Depth (m)	Duration (h)	Amphipoda spp (ind)	Isopoda spp (ind)	Mysidacea spp (ind)	Leptostraca spp (ind)	Ostracoda spp (ind)	Fish spp (ind)
T1 (011/025)	DI	377	38	7 (24 883)	2 (482)				
T2 (028/076)	N/KN	171	103	5 (10 527)	1 (1)				
T3 (038/075)	N/KN	389	82	8 (727)	2 (38)				
T4 (094/119)	S/VK	813	50	7 (760)	3 (28)				
T5 (102/122)	S/VK	396	46	8 (507)	1 (9)				
T6 (138/155)	HB	798	39	12 (3434)					1 (2)
T7 (160/179)	HB	403	38	16 (3907)	2 (281)			1 (4)	
T8 (202/233)	KN	808	58	14 (374)	2 (26)		1 (1)	1 (4002)	
T9 (203/234)	KN	442	58	14 (697)	2 (90)	1 (6)			
T10 (251/267)	DI	895	66	10 (1820)				1 (6)	
T11 (255/268)	DI	1453	58	12 (1566)	2 (76)			1 (4)	
T12 (279/283)	AB	1136	48	7 (58)	2 (16)				1 (1)
T13 (280/284)	AB	550	48	10 (1534)	2 (547)			1 (6)	2 (4)
Total				33 (50 794)	3 (1594)	1 (6)	1 (1)	1 (4022)	3 (7)

Habitats and microhabitats. The natural habitats have been documented for a few species e.g. by means of observations of undisturbed box corer samples and of behaviour in aquaria (Table 52a). Commensal amphipods (lysianassids, stegocephalids or stenothoids) were found in some living ascidians (mostly *Ascidia challengeri*). One single specimen of ascidian usually hosts only one amphipod species but in a few cases, lysianassids and stenothoids were found together. Few species of particular genera of Stenothoidae were found associated with Hydrozoa or Gorgoniacea (as *Primnoella* sp.), mostly from assemblages colonizing large stones. These stone assemblages from stn 035 and 210 provided 353 adults and juveniles of Stenothoidae, 2 Ischyroceridae and 1 Eusiridae (*Atylopsis* sp.).

Quantitative distribution. Density and biomass data will be obtained from the MG corer samples from this cruise and other recent Weddell sea cruises (EASIZ I, EPOS) and compared with the expected EBS quantitative data (see 2.4.3).

Selection and maintenance of live specimens for long-term studies. About 10,000 specimens of more than 40 species have been kept alive onboard in aquaria, to allow feeding experiments and general behaviour observations on board. Samples of 25 species have been selected for long-term studies of life history and growth, and to continue feeding biology studies in the cool laboratory of IRScNB, Brussels, after transportation by air.

Ecofunctional biodiversity: trophodynamics. To identify the trophic type of the most common species, stomach contents were analyzed on board. In addition, observations of the feeding behaviour in aquaria were made, allowing a.o. to compare the different modes of detection and prehension of the food items (Table 52b). Baited trap results indicated 33 species of amphipods to be regular scavengers (Table 53). Traps provided 30 species of lysianassoids, 2 eusirids, and 1 epimeriid, represented by more than 50,000 specimens. In order to characterize amphipod trophic guilds, systematic observations in aquarium were also made of the different modes of life and general behavioural traits e.g., attitude, position on or above the bottom, on sessile benthos, swimming capacity, burrowing and other locomotory activity, etc. (Tables 52a, b). To evaluate the importance of the amphipods as preys for demersal and benthic fishes, stomach contents of selected fish species were analyzed in co-operation with the fish biology team (see 2.4.1) and amphipods identified (Table 53).

Table 52a: Natural habitats and food preferences of amphipods.
Position on the bottom: epibenthic = directly on the sediment, 1st level = on substrate or lower strata of epibenthos, 2nd level = on the upper strata of epibenthos (cnidarians, sponge...); Feeding experiments: L. + item means living prey.

Family	Species	Usual position	Food ingested (aquarium)
AMPE	*Ampelisca richardsoni*	endobenthic in a "cell"	amphipod "juice"
EPIM	*Epimeria georgiana*	epibenthic (1st level)	Cnidaria, Hydrozoa, Polychaeta, squid
EPIM	*Epimeria grandirostris*		
EPIM	*Epimeria macrodonta*	epibenthic (1st and 2nd level)	squid, L.gorgonacea, L.bryozoa, Amphipoda, pieces of Polychaeta
EPIM	*Epimeria robusta*	epibenthic (1st and 2nd level)	pieces of Amphipoda, pieces of Polychaeta
EPIM	*Epimeria rubriceques*	epibenthic (1st level)	pieces of Amphipoda, pieces of Polychaeta
EPIM	*Epimeria similis*	epibenthic (1st and 2nd level)	pieces of Amphipoda, pieces of Polychaeta,fish
EPIM	*Epimeriella* cf *walkeri*	epibenthic (2nd level)	none
EUSO	*Eusirus antarcticus*	epibenthic up to several meters	L.Amphipoda (by forceps)
EUSO	*Eusirus perdentatus*	epibenthic on the bottom	L.Amphipoda (by forceps)
EUSO	*Rhachotropis antarctica*		
GAM	*Paraceradocus gibber*	epibenthic or in cracks	L. Amphipoda (by forceps)
IPHI	*Echiniphimedia hodgsoni*	epibenthic on sponge	Porifera ?
IPHI	*Echiniphimedia* sp. 2	epibenthic on sponge	Porifera ?
IPHI	*Iphimediella* sp. A	epibenthic (1st and 2nd level)	none
IPHI	*Gnathiphimedia mandibularis*	epibenthic on bryozoa	Bryozoa
IPHI	*Iphimediella* sp. B	epibenthic (1st and 2nd level)	
ISCH	*Jassa* sp. A	hung on the bottom or on 1st level	L.plankton , fragments of Amphipoda
LILJ	*Liljeborgia georgiana*	epibenthic on the bottom	pieces of Polychaeta
LYSO	*Abyssorchomene nodimanus*	burrowed in the sediment	L.fish, squid, L.octopod, L.mysid, Amphipoda
LYSO	*Abyssorchomene plebs*	epibenthic or in the water-column	L.fish, squid, L.octopod, L.mysid, Amphipoda
LYSO	*Abyssorchomene rossi*	epibenthic	
LYSO	*Aristias antarcticus*		
LYSO	*Hirondellea antarctica*	epibenthic	none
LYSO	*Lepidepecreella* sp.	epibenthic on the bottom	
LYSO	*Orchomenopsis* sp. E	epibenthic	squid, Amphipoda, fish
LYSO	*Pseudorchomene coatsi*	epibenthic or burrowed in the sediment	squid, fish, Amphipoda, L.Polychaeta
LYSO	*Tryphosella murrayi*	epibenthic	fish, Amphipoda, squid
LYSO	*Tryphosella* sp. 2		
LYSO	*Uristes* cf *adarei*	epibenthic on the bottom	
LYSO	*Uristes gigas*	epibenthic on the bottom	fish, Amphipoda, squid
LYSO	*Waldeckia obesa*	epibenthic on the bottom	fish, Amphipoda, squid, L.Holothuridea (part of it)
MELI	*Antamelita* sp.	epibenthic on the sediment	none
MELP	*Melphidippa antarctica*	epibenthic on the bottom	L.plankton , fragments of Amphipoda
OEDI	*Oediceroides calmani*	endobenthic, half buried in sediment	L.Amphipoda (one observation)
OEDI	*Oediceroides emarginatus*	endobenthic, half buried in sediment	none
PHOX	*Heterophoxus* cf *videns*	endobenthic , in the sediment	?
STIL	*Stilipedidae* gen sp. A	epibenthic (1st and 2nd level)	

Table 52a continued.

Family	Species	Usual position	Food refused (aquarium)
AMPE	*Ampelisca richardsoni*	endobenthic in a "cell"	Amphipoda macroscopic fragments
EPIM	*Epimeria georgiana*	epibenthic (1st level)	Living animals (?)
EPIM	*Epimeria grandirostris*		
EPIM	*Epimeria macrodonta*	epibenthic (1st and 2nd level)	L.Asteroidea, L.Amphipoda
EPIM	*Epimeria robusta*	epibenthic (1st and 2nd level)	L.Holothuridea, L.Polychaeta, L. mysis
EPIM	*Epimeria rubrieques*	epibenthic (1st level)	L.Holothuridea, L.Polychaeta, L. mysid, squid
EPIM	*Epimeria similis*	epibenthic (1st and 2nd level)	L.echinoderms,L.Polychaeta,L.Amphipoda
EPIM	*Epimeriella* cf *walkeri*	epibenthic (2nd level)	L.echinoderms,L.Polychaeta,L.Amphipoda
EUSO	*Eusirus antarcticus*	epibenthic up to several meters	L.Polychaeta, Amphipoda, squid
EUSO	*Eusirus perdentatus*	epibenthic on the bottom	L.Polychaeta, Amphipoda, squid
EUSO	*Rhachotropis antarctica*		
GAM	*Paraceradocus gibber*	epibenthic or in cracks	L.Amphipoda, L.Polychaeta, pieces of Polychaeta, squid, pieces of Amphipoda
IPHI	*Echiniphimedia hodgsoni*	epibenthic on sponge	4 different species of L. sponge
IPHI	*Echiniphimedia* sp. 2	epibenthic on sponge	4 different species of L. sponge
IPHI	*Iphimediella* sp. A	epibenthic (1st and 2nd level)	pieces of Amphipoda, L.Holothuroidea, L.Polychaeta
IPHI	*Gnathiphimedia mandibularis*	epibenthic on bryozoa	squid, pieces of Amphipoda
IPHI	*Iphimediella* sp. B	epibenthic (1st and 2nd level)	
ISCH	*Jassa* sp. A	hung on the bottom or on 1st level	
LILJ	*Liljeborgia georgiana*	epibenthic on the bottom	L.Polychaeta, L.Holothuridea, L.and dead Amphipoda, squid
LYSO	*Abyssorchomene nodimanus*	burrowed in the sediment	L.echinoderms
LYSO	*Abyssorchomene plebs*	epibenthic or in the water-column	L.Amphipoda, L.Polychaeta
LYSO	*Abyssorchomene rossi*	epibenthic	
LYSO	*Aristias antarcticus*		
LYSO	*Hirondellea antarctica*	epibenthic	L.gorgonaria, L.Hydrozoa, L.Polychaeta, L.Holothuroidea, squid
LYSO	*Lepidepecreella* sp.	epibenthic on the bottom	
LYSO	*Orchomenopsis* sp. E	epibenthic	L.Amphipoda, L.Polychaeta, L.Holothuroidea
LYSO	*Pseudorchomene coatsi*	epibenthic or burrowed in the sediment	
LYSO	*Tryphosella murrayi*	epibenthic	L.Polychaeta, L.Amphipoda
LYSO	*Tryphosella* sp. 2		
LYSO	*Uristes* cf *adarei*	epibenthic on the bottom	
LYSO	*Uristes gigas*	epibenthic on the bottom	L.Polychaeta, L.Amphipoda
LYSO	*Waldeckia obesa*	epibenthic on the bottom	
MELI	*Antamelita* sp.	epibenthic on the sediment	Polychaeta, Amphipoda, squid, echinoderms, o.m from sediment
MELP	*Melphidippa antarctica*	epibenthic on the bottom	
OEDI	*Oediceroides calmani*	endobenthic, half buried in sediment	L.Amphipoda, L.Polychaeta, pieces of Polychaeta, squid, pieces of Amphipoda
OEDI	*Oediceroides emarginatus*	endobenthic, half buried in sediment	L.Amphipoda, L.Polychaeta, pieces of Polychaeta, squid, pieces of Amphipoda
PHOX	*Heterophoxus* cf *videns*	endobenthic , in the sediment	every items dead or alive present in aquarium
STIL	*Stilipedidae* gen sp. A	epibenthic (1st and 2nd level)	L.Bryozoa, L.Polychaeta, Amphipoda, pieces of Polychaeta

Table 52b: Feeding types, gut content and feeding behaviour of amphipods.

Family	Species	Feeding type	Main items in gut	Motility related to feeding	Locomotion type
AMPE	*Ampelisca richardsoni*	suspension feeder	organic matter, plankton	weak	swimmer
EPIM	*Epimeria georgiana*	opportunist, deposit feeder	Holothuridea,Cnidaria, Crustacea.	weak	walker
EPIM	*Epimeria macrodonta*	micropredatory grazer	Hydroidea, Porifera,Gorgonacea	weak	walker/swimmer
EPIM	*Epimeria robusta*	predatory grazer/scavenger	Crustacea,Cnidaria,Polychaeta	weak	walker/swimmer
EPIM	*Epimeria rubrieques*	predatory grazer/scavenger	Crustacea,Holothuroidea,Cnidaria	weak	walker
EPIM	*Epimeria similis*	micropredatory grazer	Cnidaria,Polychaeta,Porifera	weak	walker/swimmer
EPIM	*Epimeriella* cf *walkeri*	predator(?)	Ophiuoridea	high	swimmer
EUSO	*Eusirus* sp. B	macropredator	Crustacea (mainly amphipoda)	moderate	walker/swimmer
EUSO	*Eusirus perdentatus*	macropredator	Crustacea	weak	walker/swimmer
EUSO	*Rhachotropis antarctica*	selective predator, scavenger	Crustacea, Polychaeta	high	swimmer
GAM	*Paraceradocus gibber*	suspension feeder macrophag. (?)	organic matter, plankton,Amphipoda	weak	crawler
IPHI	*Echiniphimedia hodgsoni*	micropredatory grazer	Porifera	weak	walker
IPHI	*Echiniphimedia* sp. B	micropredatory grazer	Porifera	weak	walker
IPHI	*Iphimediella* sp. A *"white"*	deposit feeder/scavenger	org. matter, plankton, Crustacea, Ophiuoridea	weak	walker
IPHI	*Gnathiphimedia mandibularis*	micropredatory grazer	Bryozoa, Porifera	weak	walker
IPHI	*Iphimediella* sp. B	micropredatory grazer	Cnidaria	weak	walker
ISCH	*Jassa* sp. A	suspension feeder	organic matter, plankton	weak	swimmer
LILJ	*Liljeborgia georgiana*	predator/scavenger	Amphipoda, Polychaeta, Cnidaria	weak	crawler
LYSO	*Abyssorchomene nodimanus*	scavenger	fish, Crustacea	high	swimmer
LYSO	*Abyssorchomene plebs*	scavenger	fish, Crustacea, Polychaeta	high	swimmer
LYSO	*Abyssorchomene rossi*	scavenger	fish, Crustacea, Polychaeta	high	swimmer
LYSO	*Hirondellea antarctica*	micropredatory grazer	Cnidaria	high	swimmer
LYSO	*Lepidepecreella* sp.	scavenger		high	swimmer
LYSO	*Orchomenopsis* sp. E	scavenger/deposit feeder	Crustacea, organic matter	high	swimmer
LYSO	*Pseudorchomene coatsi*	scavenger	fish, Crustacea, Polychaeta	high	swimmer
LYSO	*Tryphosella murrayi*	scavenger and predator	fish, Polychaeta, Crustacea	high	swimmer
LYSO	*Tryphosella* sp. 2	scavenger	Amphipoda, fish, Porifera	high	swimmer
LYSO	*Uristes adarei*	predator, deposit feeder	Amphipoda, organic matter	high	swimmer
LYSO	*Uristes gigas*	predator/scavenger	Crustacea	high	swimmer
LYSO	*Waldeckia obesa*	scavenger	fish, Crustacea,...	moderate	swimmer
MELI	*"Antamelita"* sp.	deposit feeder	Crustacea, Polychaeta	weak	walker
MELP	*Melphidippa antarctica*	suspension feeder	plankton, Crustacea	weak	
OEDI	*Oediceroides calmani*	opportunist, deposit feeder	Amphipoda,organic matter	weak	swimmer
OEDI	*Oediceroides emarginatus*	predator	Crustacea, Polychaeta	weak	swimmer
PHOX	*Heterophoxus* cf *videns*	predator(?), scavenger	Polychaeta, Nematoda, Crustacea	moderate	swimmer
STEG	*Bathypanoploea schellenbergi*	micropredatory grazer	Gorgonacea, Holothuroidea, Bryozoa?	weak	
STILI	*Stilipedidae* gen sp. A	predator (?)	Ophiuroidea	weak	swimmer

Table 53: Amphipods found in fish stomach contents (in cooperation with I. Olaso)

Family	Species	Fish	Station
Ampeliscidae	*Ampelisca richardsoni*	*Trematomus lepidorhinus*	154
		Artedidraco skottsbergi	34, 49, 189, 277
	Ampeliscidae *indet.*	*Artedidraco skottsbergi*	277
Corophiidae s.l.	Corophiidae *indet.*	*Artedidraco skottsbergi*	194
Epimeriidae	*Epimeria georgiana*	*Trematomus pennellii*	123
		Trematomus lepidorhinus	194
		Artedidraco orianae	58,77,150, 222
		Pogonophryne marmorata	97
	Epimeria grandirostris	*Artedidraco skottsbergi*	277
	Epimeria macrodonta	*Artedidraco orianae*	77
	Epimeria sp.	*Trematomus scotti*	165
		Artedidraco orianae	78
		Pogonophryne marmorata	
		Pogonophryne phyllopogon	77
	Epimeriidae indet.	*Artedidraco orianae*	77
Eusiridae s.l.	*Atyloella magellanica*	*Trematomus lepidorhinus*	154
		Dolloidraco longedorsalis	
	Atylopsis sp.	*Prionodraco evansii*	194
	Eusirus perdentatus	*Chaenodraco wilsoni*	123
	Liouvillea oculata	*Cygnodraco mawsoni*	62, 277
	Paramoera sp.	*Trematomus pennellii*	277
		Pogonophryne marmorta	263
	Prostebingia gracilis	*Dolloidraco longedorsalis*	154
	Rachotropis sp.	*Artedidraco skottsbergi*	189
		Artedidraco orianae	222
	Eusiridae indet.	*Trematomus pennellii*	222
		Pleurogramma antarcticum	206, 277
Gammaridae s.l.	Gammaridae indet.	*Dolloidraco longedorsalis*	154
		Pogonophryne barsukovi	
Iphimediidae	Iphimediidae indet.	*Trematomus lepidorhinus*	168
		Bathydraco marri	206
		Artedidraco orianae	222
Ischyroceridae	Ischyroceridae indet.	*Trematomus pennellii*	222
	Pseudericthonius sp.	*Artedidraco orianae*	194
Leucothoidae	*Leucothoe spinicarpa*	*Chaenodraco wilsoni*	123
		Artedidraco orianae	78
Liljeborgiidae	Liljeborgiidae indet.	*Artedidraco orianae*	220
		Pogonophryne marmorata	263
Lysianassidae s.l.	*Hippomedon kergueleni*	*Bathydraco marri*	206
	Lysianassidae indet.	*Trematomus lepidorhinus*	206
		Artedidraco loennbergi	197
		Prionodraco evansii	220
		Dolloidraco longedorsalis	197
	Uristes gigas	*Trematomus lepidorhinus*	154
		Dolloidraco longedorsalis	263

Table 53 continued.

Family	Species	Fish	Station
	Waldeckia obesa	*Pogonophryne marmorata*	82
	Tryphosella murrayi	*Dolloidraco longedorsalis*	100
	Tryphosella sp.	*Artedidraco orianae*	222
		Dolloidraco longedorsalis	263
		Pogonophryne marmorata	222
		Artedidraco skottsbergi	189
Oedicerotidae	Oedicerotidae indet.	*Artedidraco skottsbergi*	189
Phoxocephalidae	Phoxocephalidae indet.	*Artedidraco skottsbergi*	44
		Artedidraco orianae	222
		Dolloidraco longedorsalis	78
Podoceridae	Podoceridae indet.	*Artedidraco orianae*	222
	Podocerus sp.	*Prionodraco evansii*	194
Stenothoidae	Stenothoidae indet.	*Artedidraco orianae*	206
	Torometopa sp.	*Artedidraco skottsbergi*	194
		Artedidraco orianae	220
Synopiidae	Synopiidae indet.	*Bathydraco macrolepis*	134
		Artedidraco skottsbergi	189
Caprellidae	Caprellidae indet.	*Pleuragramma antarcticum*	245
Phtisicidae	*Aeginoides gaussi*	*Artedidraco orianae*	220, 222
Hyperiidae	Hyperiidae indet.	*Trematomus pennellii*	71
	Themisto gaudichaudii	*Pleuragramma antarcticum*	13, 84
		Trematomus lepidorhinus	154
		Cygnodraco mawsoni	194
		Artedidraco skottsbergi	194
		Artedidraco orianae	194
		Trematomus eulepidotus	167
Phrosinidae	*Primno macropa*	*Pleuragramma antarcticum*	245
Amphipoda	Amphipoda indet.	*Pleuragramma antarcticum*	78, 97
		Trematomus pennellii	71, 123, 194, 222
		Cygnodraco mawsoni	194
		Trematomus scotti	128
		Bathydraco marri	167
		Bathydraco marri	120, 206
		Bathydraco macrolepis	88
		Artedidraco loennbergi	82, 84, 100, 197, 263
		Artedidraco skottsbergi	44, 71, 194
		Racovitzia glacialis	71
		Artedidraco orianae	58, 71, 77, 78, 194, 220
		Dolloidraco longedorsalis	167, 220
		Pogonophryne lanceobarbata	71, 77
		Pogonophryne marmorata	77, 78, 82, 84