OPHIUROIDS OF SOUTH SHETLAND ISLANDS AND ANTARCTIC PENINSULA (ANTARCTICA)

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Introduction

Since the voyage of the *Belgica* (1897-1899), many expeditions have gathered Ophiuroids in the Southern Ocean, specifically, in the South Shetlands and Antarctic Peninsula zones. Since the beginning of the present century, Ludwig (1903), Koehler (1906, 1912, 1923), Grieg (1929), Fisher (1940), Clark (1950) and Bernasconi (1959, 1970), among others, have all described the material collected during expeditions carried out in this area.

Reviews of Ophiuroids have been published by Fell (1961), Bernasconi & D'Agostino (1971), Mortensen (1936) and Branch et al. (1993)

During Spain's BENTART 95 Survey, the benthos off northern and southern Livingston Island, Deception Island and Bransfield Strait was sampled using different methods (Ramos 1995, Sáiz-Salinas et al. 1997, San Vicente et al. 1997, Arnaud et al.1998). The Ophiuroids specimens which provided data for the present cominication (Figure 1) were collected in 24 localities around South Shetland Islands

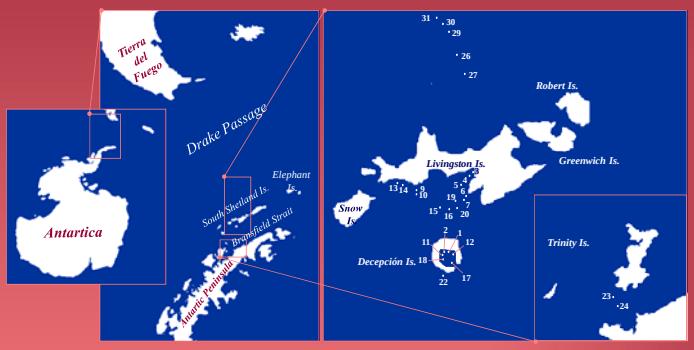

Figure 1: Location of the BENTART95`Cruise study zone with the position of Agassiz trawl stations (Localities numbers are indicated)

Table I: Agassiz trawl stations list

• Discarded samples

Station	Date(1995)	Latitude S	Longitude W	Depth	Bottom type
1	23.01	62°55.01'	60°36.44	40	Gravel
2	16.01	62°56.39	60°38.71	148	Mud
3	17.01	62°37.70	60°22.81	92	Mud
4	17.01	62°38.45	60°24.18	173	Mud
5	23.01	62°41.68	60°31.81	256	Mud
6	18.01	62°43.58	60°36.96	49	Mud
7	18.01	62°44.12	60°27.70	80	Mud
9	19.01	62°39.56	60°38.62	182	Gravel and mud
10•	21.01	62°40.53	60°38.95	220	Mud
11	20.01	62°56.86	60°38.34	167	Mud
12	20.01	62°57.67	60°38.00	167	Mud
15•	22.01	62°45.79	60°35.70	335	Mud
16•	24.01	62°45.17	60°33.10	429	Mud
17	23.01	62°59.36	60°33.85	107	Sand
18	24.01	62°58.10	60°40.24	114	Sand
19	25.01	62°43.73	60°31.46	235	Mud
22	31.01	63°03.55	60°38.54	330	Gravel
23	29.01	63°57.14	60°59.73	141	Gravel
24	30.01	63°58.52	60°52.60	233	Gravel
27	02.02	62°20.41	60°19.67	70	Mud and gravel
28	02.02	62°12.12	60°23.18	126	Mud
29	03.02	62°05.16	60°25.94	237	Mud
30	03.02	62°01.41	60°36.26	710	Mud and gravel
31	04.02	62°01.40	60°28.84	1019	Mud

Material and Methods

Field sampling

During the BENTART 95 campaign, epifauna were sampled at 24 stations ranging from north of Livingston (Drake Passage) to the Antarctic Peninsula, at depths of 40 - 1 019 m (Figure 1). Table I is a stations list, with location and characteristics.

Sampling was carried out mainly using Agassiz trawl gear with 2.01 m and 1.12 m horizontal and vertical openings, and 10 mm mesh. Trawls lasted 5 minutes, at 2.5 knots (Ramos 1995).

At each station, a subsampling of 50 litres was collected following the semi-quantitative method developed during the EPOS Program on board *Polarstern* (Arnaud et al. 1990). This sampling was sieved through three mesh sizes - 10, 5 and 1 mm -and asteroids retained in the 10 mm sieve were counted and weighted in order to estimate the relative abundance of their group in the total macrofauna. Specimens of the rest of catch were also collected. All material was preserved in 70% alcohol and dried for further study, constituting these data the basis for the present paper.

Laboratory work

Once on land, asteroids were checked and transferred to flasks with a new 70% alcohol solution. For taxonomic determination based on external morphological characters, we used a Wild 308700 magnifying glass, with an Olympus Highlight 3001 to illuminate optical fibres, and consulted the works of Fell (1961), Bernasconi & D'Agostino (1971) and Branch et al. (1993).

Results and Discusion

Table II: Semicuantitave data of Ophiuroids species in Agassiz trawls. **D**: Deception Island, **SL**: South Livingston, **NL**: North Livingston, **B**: Bransfield Strait. **Discared samples are absent.**

	D	D	SL	SL	SL	SL	D	D	D	D	SL	B	B	B	NL	NL	NL		
	A-1	A-2	A-3	A-4	A-5	A-7	A-11	A-12	A-17	A-18	A-19	A-22	A-23	A-24	A-29	A-30	A-31	S	N
Astrohamma tuberculatum				1								1		6		1		4	9
Ophiacantha vivipara				20									1	4				3	25
Ophiacantha cosmica				14							171		1		3	3	6	6	198
Ophiacantha pentactis													1	12			5	3	18
Amphiura sp					12	16					30				200	5	6	6	269
Amphiodia joubini				2	2	51					66					7		5	128
Ophionotus victoriae	15	25	239	148	81		37	157	592	252	40	2	25	135		32	8	15	1788
Ophiurolepis				80	2	4					2	2	36	4	6	15	62	10	213
Ophiosteira antartica															3			1	3
Ophiuroglypha carnifera				2								1						2	3
Ophiura ambigua						3					12				5	4		4	24
Ohiogona döderleini																2	1	2	3
Ohiogona sp.																9	1	2	10
Ophioperla koehleri					1						41	10			4	8	13	6	77
Ophioceres incipiens													2		2	1	7	4	12
S	1	1	1	7	5	4	1	1	1	1	7	5	6	5	7	11	9		
N	15	25	239	267	98	74	37	157	592	252	362	16	66	161	223	87	109		2780

Class Asterozoa

Order Ophiurida Müller & Troschel, 1840.

Suborder Euryalina Müller & Troschel, 1840.

Family Gorgonocephalidae Ljungman, 1867.

Astrohamma Döderlein, 1930.

Astrohamma tuberculatum (Köehler, 1923)

Suborder Ophiurina

Family Ophicanthidae Perrier, 1891.

Ophiodaces Koehler, 1922.

Ophiodaces inanis Koehler, 1922.

Ophiacantha Müller & Troschel, 1842.

Ophiacantha vivipara Ljungman, 1870.

Ophiacantha cosmica Lyman

Ophiacantha pentactis Mortensen, 1936.

Family Amphiuridae Ljungman, 1867.

Amphiura Forbes, 1942.

Amphiura belgicae Koehler, 1900.

Amphiura antartica Studer,1876

Amphiodia Verrill, 1899.

Amphiodia joubini (Koheler, 1912)

Family Ophiuridae Lyman, 1865.

Subfamily Ophiurinae Lyman, 1865.

Ophionotus Bell, 1902.

Ophionotus victoriae Bell, 1902.

Ophiurolepis Matsumoto, 1915.

Ophiurolepis martensi Studer, 1885.

Ophiurolepis tuberosa Mortensen, 1936.

Ophiurolepis gelida Koelher, 1900.

Ophiurolepis brevirima Mortensen, 1936.

Ophiuroglypha Hertz, 1926.

Ophiuroglypha carnifera Koehler, 1901.

Ophiura Studer, 1876.

Ophiura ambigua Lyman, 1878.

Ophiogona Studer, 1876.

Ohiogona döderleini (Koehler, 1901).

Ophioperla Koehler, 1912.

Ophioperla koehleri Bell, 1908.

Subfamily Ophiolepidinae Matsumoto, 1915.

Ophioceres Koehler, 1922.

Ophioceres incipiens Koehler, 1922.

Taking as a basis the semi-quantitative data obtained from 24 Agassiz trawls carried out during the BENTART 95 Survey in the South Shetlans zone, frecuency and distribution of Ophiuridea are analysed.

Ophiuroids were collected in 17 of the stations (Table II), on all types of bottoms(Table I). Although, due to taxonomic difficulty, some genera are at the present in review, the 2,780 examined ophiuroids belonged to 12 genera. *Ophionotus victoriae* Bell, 1902 was clearly dominant with more than 1,788 individuals (64.31%). This species was in addition present in almost all stations, which would indicative of its big versatility and survival capacity under very different environmental conditions (depth, granulometry, etc.). The species of *Ophiurolepis* genera, also belonging to Ophiuridae Family, occupated the second place by its abundance and constancy.

The global analysis show that the specific richness was low and remain constant in the most part of the study zone ranging from 1 to 11 species per station. At the deepest stations, northern of the Livingston Island and at the Bransfield Strait the highest number of species was found (9-11).

The most abundance values are presented at stations located in the inner sea of Deception Island, even thoug they was due almost exclusively to only one species, *O. victoriae*. As in other work based in benthic data collected during BENTART 95 Survey have been pointed out the Deception Island benthos seem characterised by low taxonomic richness and high relative mass.

A slight substitution of *Ophionotus* by *Amphiuras* seem to observe in some stations in which, though, *O. victoriae* remain being in considerable abundance, this species loss its dominance.

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