

SHORT NOTES

AREAS OF SEABED WITHIN THE 500 M ISOBATH AROUND ELEPHANT ISLAND (SUBAREA 48.1)

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Abstract

Areas of seabed within 50 m depth contours to a depth of 100 m, and within 100 m depth contours from 100 to 500 m, have been estimated from soundings obtained during plankton and bottom trawl surveys around Elephant Island (the northernmost island of the South Shetland Islands) from 1977/78 to 1992/93. The results are presented in table format.

Résumé

Les aires de fond marin ont été estimées à des intervalles de profondeur de 50 m jusqu'à l'isobathe 100 et à des intervalles de profondeur de 100 m jusqu'à l'isobathe 500, au moyen de sondages effectués au cours de campagnes par chalutages de fond autour de l'île Eléphant (qui est l'île la plus au nord de toutes les îles Shetland du Sud) de 1977/78 à 1992/93. Les résultats sont présentés sous forme de tableau.

Резюме

Площади морского дна в пределах 50-метровых изобат до глубины 100 м, а также в пределах 100-метровых изобат от 100 до 500 м, были определены по эхограммам, полученным в ходе планктонных и донных траловых съемок вокруг о-ва Элефант (крайне северный остров Южных Шетландских о-вов) за период с 1977/78 по 1992/93 гг. Результаты представлены в виде таблицы.

Resumen

Se han determinado las áreas de lecho marino cada 50 m de profundidad hasta la isóbata de 100 m y cada 100 m de profundidad hasta la isóbata de 500 m a partir del eco obtenido de los arrastres de plancton y de fondo realizados alrededor de isla Elefante (la isla más septentrional del archipiélago de las Shetland del Sur) desde 1977/78 a 1992/93. Los resultados se presentan resumidos en cuadros.

Keywords: bathymetry, Elephant Island, biomass estimates, CCAMLR

INTRODUCTION

Estimates of areas of seabed within selected depth ranges are crucial for the design and analysis of bottom trawl surveys to estimate standing stock biomass of demersal fish species. Estimates for the western Atlantic sector of the

Southern Ocean have been published by Everson (1987) based on work requested by the BIOMASS Program in the early 1980s. Refinements to estimates for the shelves of South Georgia and Elephant Island have been provided by Everson and Campbell (1990) and Kock (1986).

First estimates of areas of seabed around Elephant Island were based on nautical charts (Admiralty Charts) augmented by soundings obtained during research cruises of the Federal Republic of Germany to the area from 1977/78 to 1983/84 (Kock, 1986). In 1992 the CCAMLR Working Group on Fish Stock Assessment (WG-FSA) noted that current estimates in the Antarctic Peninsula region may not be very precise and more detailed bathymetric charts of the region have been prepared in some Member countries in the meantime. The Working Group recommended that these charts be submitted to CCAMLR (SC-CAMLR, 1992). In what follows we provide revised estimates of areas of seabed within the 500 m isobath around Elephant Island based on soundings obtained during surveys from 1977/78 to 1992/93.

RESULTS

A revised bathymetric chart of the Elephant Island shelf is shown in Figure 1. Areas of seabed, expressed as square nautical miles by a 15' latitude x 30' longitude grid within 50 m depth contours down to 100 m and within 100 m depth contours from 100 to 500 m are set out in Table 1. The previous estimate had erroneously included the easternmost section of the King George Island shelf and a seamount to the south of Clarence Island (see Kock, 1986 - Figure 4) for which no information on fish distribution and abundance was available from surveys. Those two areas were excluded in the recent estimate. Depth strata have been summed for the whole shelf area and are presented in Table 2 in comparison with the previous estimate (Kock, 1986).

Results in Table 2 show that all estimates of areas of seabed in the various depth strata were smaller than previously assumed (Kock, 1986). However, most of the substantial differences in the estimates for the depth strata 301 to 400 m and 401 to 500 m were due to the fact that the easternmost section of the King George Island shelf and the seamount to the south of Clarence Island were no longer included in the recent estimate.

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Table 1: Areas of seabed (n miles²) around Elephant Island by fine-scale grid of 15' latitude x 30' longitude.

		57°00' - 56°30'W	56°30' - 56°00'W	56°00' - 55°30'W	55°30' - 55°00'W	55°00' - 54°30'W	54°30' - 54°00'W
Land masses		-	-	-	0.43	-	-
0- 50 m		-	-	8.94	5.11	-	-
51-100 m		-	-	21.70	13.62	-	-
101-200 m	60°45' - 61°00'S	-	-	40.43	26.81	-	-
201-300 m		-	-	37.45	36.17	-	-
301-400 m		-	0.85	18.30	26.38	-	-
401-500 m		-	1.28	21.28	12.77	2.13	-
> 500 m		225.53	223.40	77.45	104.26	223.40	225.53
Land masses		-	-	-	88.09	29.79	21.28
0- 50 m		-	-	50.21	84.26	26.81	4.26
51-100 m		-	-	75.32	13.62	15.74	6.38
101-200 m	61°00' - 61°15'S	-	19.15	85.11	23.40	47.66	12.77
201-300 m		-	25.53	6.38	12.34	38.30	9.79
301-400 m		3.83	30.64	7.66	3.40	14.89	12.34
401-500 m		8.51	29.36	0.85	0.43	28.09	19.15
> 500 m		213.19	120.85	-	-	24.26	139.57
Land masses		-	-	12.77	0.43	-	14.89
0- 50 m		-	-	2.13	14.04	-	5.96
51-100 m		-	-	26.81	24.26	-	6.38
101-200 m	61°15' - 61°30'S	-	1.70	63.40	18.72	8.94	12.34
201-300 m		-	55.74	73.19	10.64	17.87	11.91
301-400 m		1.28	64.68	45.11	54.04	23.40	8.51
401-500 m		84.26	102.98	2.13	17.02	62.55	27.23
> 500 m		140.00	0.43	-	86.38	112.77	138.30
Land masses		-	-	-	-	-	-
0- 50 m		-	-	-	-	-	-
51-100 m		-	-	3.40	-	-	-
101-200 m	61°30' - 61°40'S	-	0.85	16.17	0.85	-	-
201-300 m		-	2.13	19.15	4.26	-	-
301-400 m		-	15.32	12.77	8.51	-	-
401-500 m		89.36	72.34	10.64	12.34	-	-
> 500 m		60.85	59.57	88.09	124.26	150.21	150.21

Table 2: Summary of areas of seabed (n miles²) around Elephant Island between 60°45'S and 61°40'S.

	Kock, 1986	This Study
Land masses	167.68	167.68
0- 50 m	226.33	201.72
51-100 m	232.47	207.23
101-200 m	461.50	378.30
201-300 m	500.00	360.85
301-400 m	736.50	351.91
401-500 m	1012.10	604.70

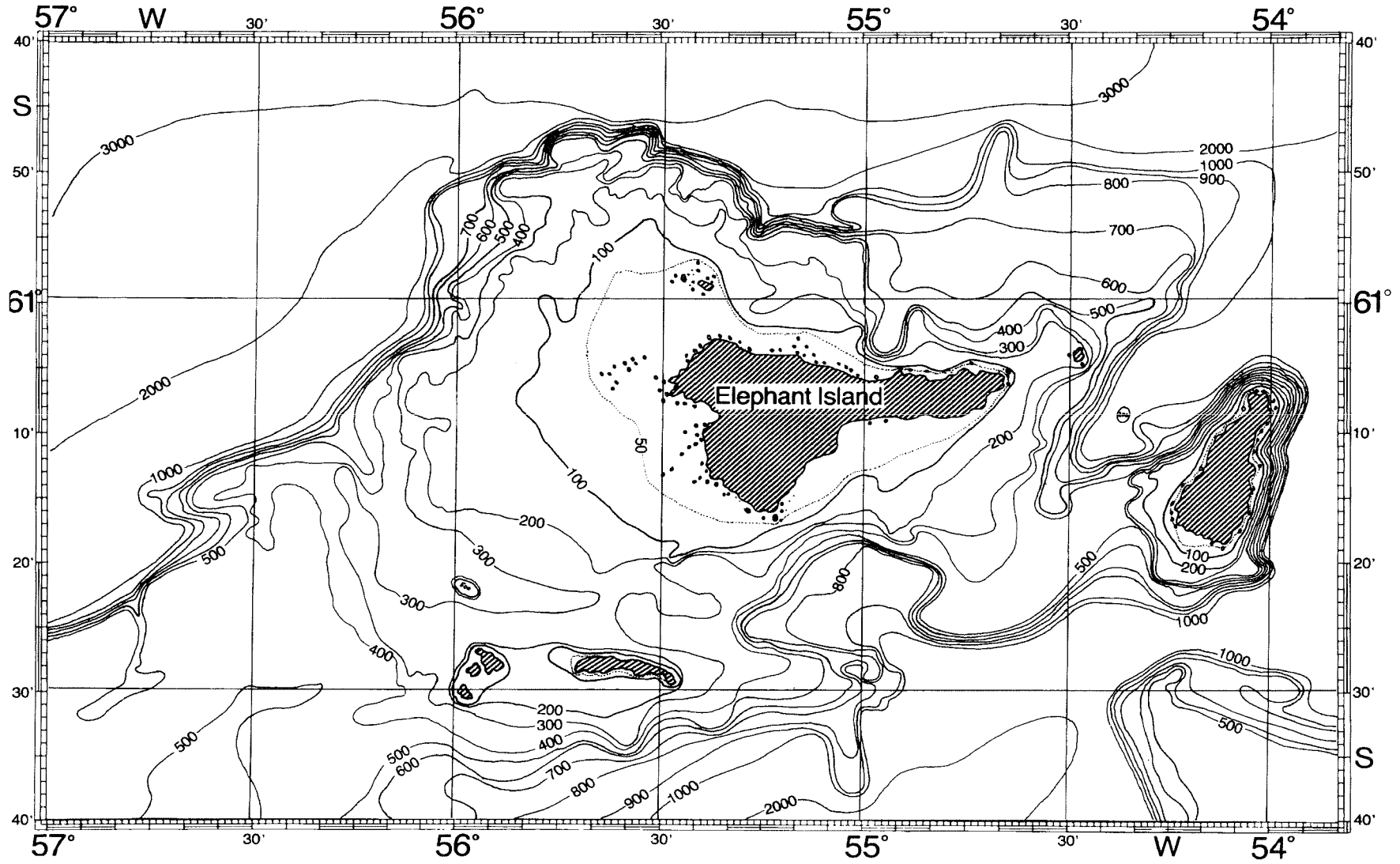


Figure 1: Bathymetric chart of the Elephant Island shelf within the 500 m isobath.

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