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Survey Biomass and Abundance Estimates for Redfish (Sebastes marinus and Sebastes mentella) in Subarea 1

by

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Introduction

Since 1982 stratified random bottom trawl surveys have been conducted yearly in late autumn by the Federal Republic of Germany. Although the surveys are primarily designed for cod, catch data and at least length frequencies of all species obtained in the survey catches have been recorded. In view of apparent differences between the distribution patterns of cod and redfish the allocation of trawling positions was not optimal for redfish. Nevertheless valuable biological information on the redfish stocks can be obtained from the data records. Detailed analyses of the redfish data obtained over the survey time series (1982-87) including length and age compositions are in preparation. In this paper only biomass and abundance estimates derived from the most recent survey in October/November 1987 are given for Sebastes marinus and S. mentella separately.

Methods and Materials

Biomass and abundance estimates were calculated from mean catches per depth strata within each geographical stratum (Divisions 1B-F or parts thereof) separately by applying the swept area method and assuming a catchability coefficient of 1.0. Confidence intervals for the combined biomass and abundance estimates of the total survey area are given at the 95% level of significance. Trawl parameters and strata areas are the same as used for estimating cod biomass and abundance (SCR Doc. 88/45).

Results

Survey biomass and abundance estimates and corresponding mean weights for Sebastes marinus and Sebastes mentella are given in table 1 by NAFO Divisions or parts thereof and depth zones. A continuous increase in biomass and abundance as well as of the size (mean weights) of S. marinus is shown from north to south. Also inside each division fish sizes increase with depth. Corresponding survey estimates for S. mentella are highest in the most northern part of the survey area where almost exclusively small juvenile fish were abundant. Fish sizes are also increasing from north to south as well as with increasing depth.

Table 1. West Greenland (SA 1). Redfish biomass and abundance estimates and mean weights (w) from survey results obtained in October/November 1987.

Division/ Stratum	SEBASTES MARINUS Depth zone (m)	No. of sets	Biomass tons	Abundance nos. '000	$\bar{w}$ kg	SEBASTES MENTELLA Depth zone (m)	No. of sets	Biomass tons	Abundance nos. '000	$\bar{w}$ kg
						0-100	2	0	0	-
B/1+C/2	0-200	16	84	1,053	0.080	101-200	14	241	9,454	0.025
	201-400	6	110	255	0.431	201-400	6	4,663	97,457	0.048
	401-600	5	70	117	0.598	401-600	5	983	8,656	0.114
	TOTAL	27	264	1,425	0.185	TOTAL	27	5,887	115,567	0.051
						0-200	13	13	471	0.028
C/3+4	0-300	17	263	1,131	0.233	201-400	6	390	5,669	0.069
	301-600	6	177	161	1.099	401-600	4	2,314	4,381	0.528
	TOTAL	23	440	1,292	0.341	TOTAL	23	2,717	10,521	0.258
	0-100	10	5	22	0.227	0-100	10	0	0	-
D/5	101-400	19	1,243	3,001	0.414	101-200	12	5	27	0.185
	401-600	2	89	53	1.679	201-600	9	332	1,111	0.299
	TOTAL	31	1,337	3,076	0.435	TOTAL	31	337	1,138	0.296
	0-100	5	27	50	0.540	0-100	5	0	0	-
E/6	101-300	22	6,786	12,470	0.544	101-300	22	90	185	0.486
	301-600	5	425	431	0.986	301-600	5	1,889	3,672	0.514
	TOTAL	32	7,238	12,951	0.559	TOTAL	32	1,979	3,857	0.513
	0-200	21	438	659	0.665					
F/7	201-400	8	18,208	19,404	0.938	0-200	21	0	0	-
	401-600	2	380	225	1.689	201-600	10	1,381	3,844	0.359
	TOTAL	31	19,026	20,288	0.938	TOTAL	31	1,381	3,844	0.359
SA 1	TOTAL	144	28,305 ±73.7%	39,032 ±54.2%	0.725	TOTAL	144	12,302 ±61.5%	134,928 ±89.4%	0.091