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Report on a Commercial Trial Fishery for shrimp

(*Pandalus borealis*) off Southwest, Southeast and East Greenland

by

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INTRODUCTION

In October 1989, a trial fishery for shrimp was carried out on three different locations outside the commercially exploited fishing grounds in the Greenland economic zone. The fishery was planned to take place in new unexploited shrimp fishing areas in search for commercially exploitable concentrations of shrimp.

MATERIAL AND METHODS

The fishery was carried out by the 651 GRT Greenland shrimp trawler M/T 'AUVEQ'. The trawl used was a 'SKJERVOY' 3000 meshes (20 mm) shrimp trawl equipped with bobbingear and a double-bag with 60 mm meshes in the codend.

The fishing period was October 1st to October 13th, and the scientific staff was Ingvar Bundgaard Jensen.

The three trial fishing areas were (Fig. 1):

- Area 1: Julianehaab Bay, Div. 1B.
- Area 2: Off Lindenow Fjord north east of Cape Farewell.
- Area 3: Off Angmassalik in the 'Redfish Box' in Denmark Strait.

A total of 35 hauls was taken, 9 in area 1, 4 in Area 2 and 20 in Area 3. A list of trawl stations and catches are given in Table 1. Shrimp samples were taken from selected hauls and frozen for later measuring: 3 samples from Area 1, 2 from Area 2, and 6 from Area 3. From one haul in Area 3 a length sample of redfish was taken.

RESULTS AND DISCUSSION

A summary table including trawling time, catch and catch/effort for shrimp and redfish is given in Table 2. The mean catch rate for shrimp was very low as compared to catch rates in traditionally exploited areas. The lowest catch rate for shrimp was found in Area 2, and a low number of trawling hours indicates that the condition for bottom trawling was very bad, and few places were found suitable for trawling.

The shrimp samples were sorted by sex and measured. The samples for each area were pooled, and the combined relative length distribution is shown in Table 3 and Figure 3. The sample from Area 1 was dominated by females with a mode of 27.5 mm carapace length, but some males with modes of 19.5 and 22 mm carapace length also occurred. A smaller fraction of the females in Area 1 was carrying roe than in Areas 2 and 3. In Area 2 the samples were dominated by males with mode at 20 mm carapace length. Relatively few females were found. In Area 3 the males and females occurred in about the same numbers, but the males were much larger than the males in Areas 1 and 2.

The weight of redfish catches relative to the weight of shrimp catches are given in Table 2. The 'redfish box' was expected to give the highest ratio, but showed up with the lowest. However, in catches from Area 1 and 2 the mean size of the redfish was much larger than in Area 3 (Personal information from Ingvar Bundgaard Jensen, who was biologist on board), so ratios based on catch by numbers should be very different from those given in Table 2. The length distribution of redfish from Area 2 in Fig. 2 with a mode at 17 to 20 cm confirms that the 'Redfish box' is a nursery area.

CONCLUSIONS

The catch rates of shrimp being less than 40 kg per hour in these areas and at that period were too low to be of commercial interest. The bad bottom in Area 2 off Lindenow Fjord made trawling nearly impossible. By-catch of great numbers of small redfish confirms that the 'Redfish box' still can be regarded as a nursery area for redfish.

Table 1. List of trawl hauls. Catches are given in kg.

Station-Identific.	Position N W	Depth m	Trawl time min	SHR	COD	GHL	RED	CAP	MIX	TOTAL
AREA 1 'Julianehåb Bugt'										
aul00201	60 21 46 37	515	170	124	50	-	100	-	-	274
aul00202	60 21 46 51	518	240	191	50	25	100	0	10	376
aul00203	60 22 46 42	509	stuck in the bottom							
aul00204	60 17 46 51	558	180	0	20	5	100	0	10	135
aul00205	60 22 47 04	456	160	0	20	5	100	0	10	135
aul00206	60 17 46 43	328	75	167	5	3	5	0	2	182
aul00207	60 21 46 32	252	135	149	10	-	30	-	-	189
aul00301	60 19 46 42	372	190	70	20	-	80	-	-	170
aul00302	60 23 46 32	340	85	85	10	-	40	-	-	135
aul00303	60 24 46 09	432	70	4	0	3	20	0	5	32
aul00304	60 21 46 39	465	trawl torn							
AREA 2 off 'Lindenow Fjord'										
aul00401	60 17 42 40	287	125	50	2	0	10	0	0	62
aul00402	60 14 42 46	265	95	8	20	0	20	0	20	68
aul00501	60 05 42 11	221	75	4	5	1	5	2	5	22
aul00502	61 06 42 13	182	75	2	-	-	-	-	-	2
AREA 3 off 'Angmassaliq' in the 'Redfish Box'										
aul00702	65 47 32 01	264	55	22	10	15	2	20	28	97
aul00703	65 53 32 01	272	180	22	2	1	5	10	2	42
aul00704	65 59 32 02	305	200	132	15	15	50	0	2	214
aul00801	66 08 32 01	307	190	44	2	20	50	10	20	146
aul00802	66 15 32 01	288	trawl torn							
aul00803	66 19 32 08	329	180	5	0	4	2	2	22	35
aul00804	66 35 32 03	317	190	48	0	8	80	1	3	140
aul00805	66 40 32 18	331	30	53	0	0	0	0	0	53
aul00901	66 08 32 02	307	190	84	-	-	-	-	-	84
aul00902	66 02 31 44	344	120	2	1	40	10	0	6	59
aul00903	66 06 31 21	419	160	5	0	35	2	2	3	47
aul00904	65 58 31 50	274	155	87	-	-	-	-	-	87
aul01001	66 02 31 49	277	180	83	0	20	50	300	0	454
aul01002	65 56 31 58	291	240	4	2	0	0	0	0	3
aul01003	65 54 31 54	281	95	178	5	20	20	30	25	278
aul01004	65 55 31 58	285	250	591	-	-	-	-	-	591
aul01101	65 56 31 59	285	210	159	30	0	10	0	0	199
aul01102	65 55 32 03	276	75	290	-	-	-	-	-	290
aul01103	65 56 32 00	275	75	9	30	20	5	5	15	84
aul01104	65 51 31 58	271	205	38	5	10	5	5	5	68

'-': bycatch not measured

Table 2. Effort, catch, catch/effort, and catch of redfish relative to catch of shrimp by area in the trial fishery.

	Sum of trawling hours	Catch of SHR		Catch of RED		kg RED per kg of SHR
		kg	kg/hour	kg	kg/hour	
AREA 1 Juliane- haab Bay	22	790	36	575	26	0.73
AREA 2 off Lindenow Fjord	6	64	10	35	6	0.55
AREA 3 'Redfish Box'	52	1855	36	816	16	0.44

Tabel 3. Distribution of shrimp numbers by sex groups for the three trial fishing areas.

		Males & Juv.	Transitio- nals	Females, no roe	Females with roe
AREA 1 Juliane- haab Bay	Distr.	26%	8%	38%	29%
	Mean length	21.3mm	26.4mm	27.8mm	26.9mm
AREA 2 off Lindenow Fjord'	Distr.	60%	1%	7%	30%
	Mean length	20.9mm	24.2mm	26.9mm	27.0mm
AREA 3 'Redfish Box'	Distr.	45%	1%	11%	42%
	Mean length	25.8mm	28.6mm	31.3mm	30.9mm

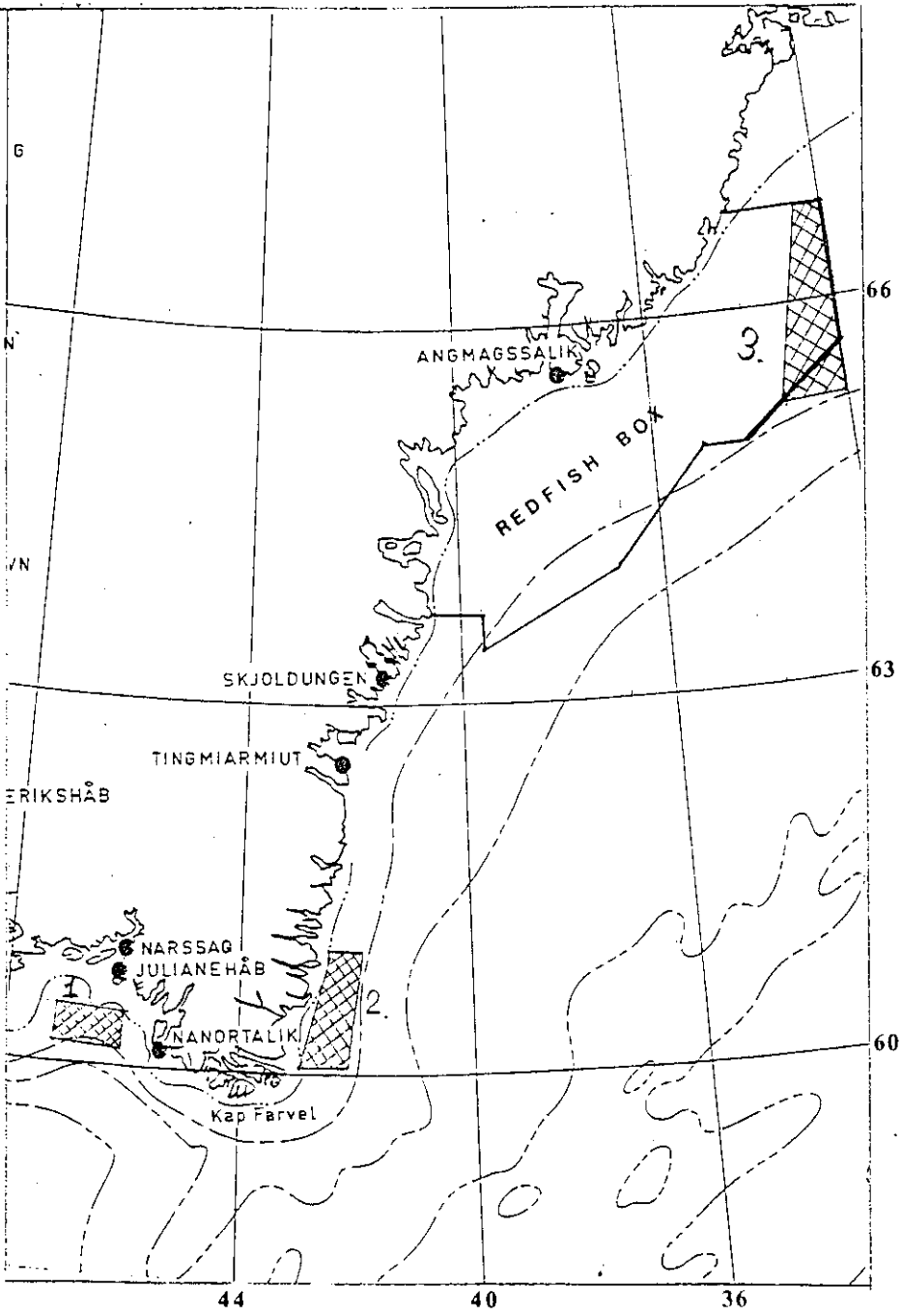


Fig. 1. Trial fishing areas for 'M/T AUVEQ' 1989

- Area 1 Julianehåb Bay
- Area 2: Off Lindenow Fjord
- Area 3: Off Angmagssalik in the 'Redfish Box'

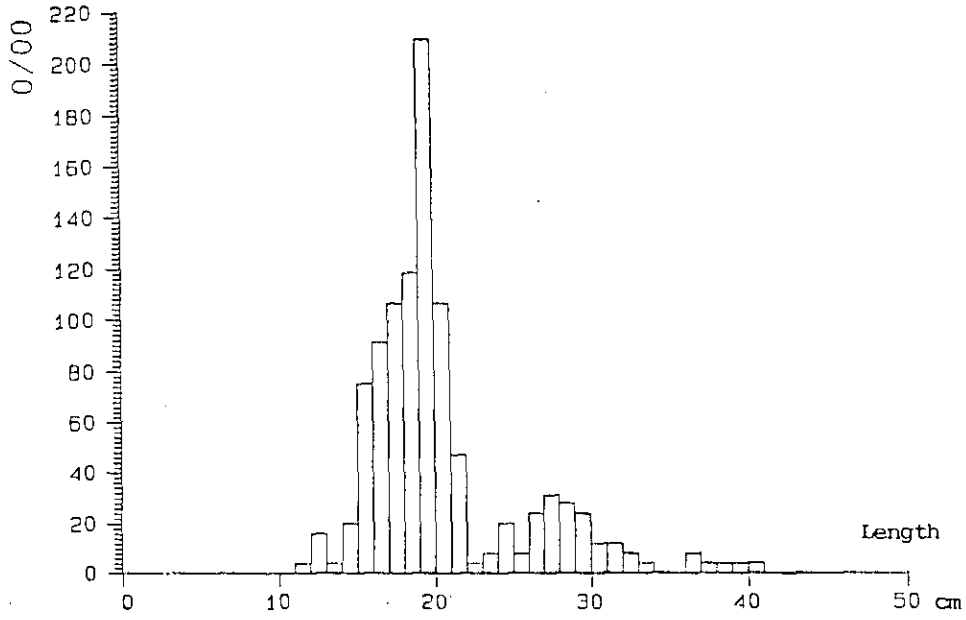


Figure 2. Relative length distribution of redfish from area 3, the 'Redfish Box' a redfish nursery area.

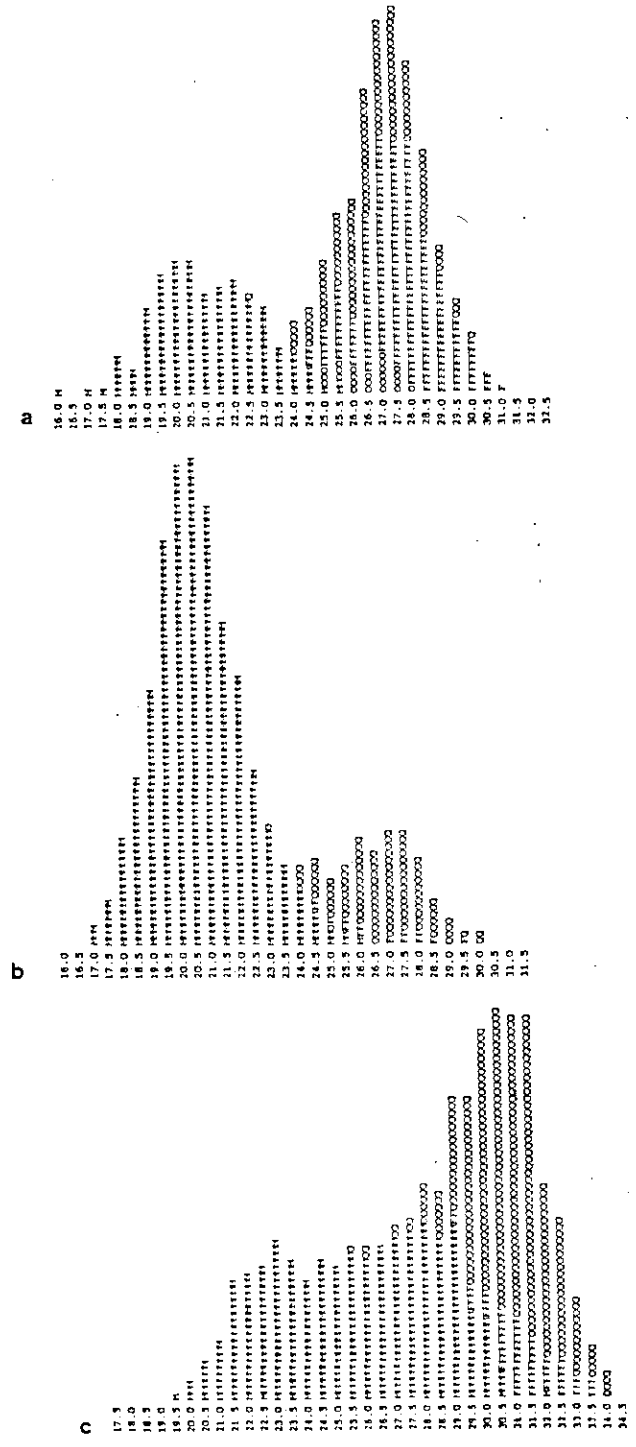


Figure 3. Relative length distribution of shrimp by sex for three areas.
 a: Area 1, Julianehaab Bay,
 b: Area 2, Off Lindenow Fjord,
 c: Area 3, Off Angmagssalik in the 'Redfish box'.
 Legend for the sex groups: M: Juveniles & males,
 O: Transitionals, F: Females without roe, Q: Females with roe.