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REMARKS ON THE POPULATION OF THE SILVER
HAKE (*Merluccius hubbsi* MARINI, 1933)
FROM THE AREA TO THE NORTH AND EAST
OF FALKLAND ISLANDS

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ABSTRACT:

This work aims to present the dimension structure by classes, degree of maturation and sexes of the silver hake caught in the area to the North and East of Falkland Islands in May 1978.

Between the 5th and 8th of May 1978 the trawler "SINOX" carried out a research fishing in the area to the North and East of Falkland Islands in order to establish the proper condition for an industrial fishing in this area and period of the year and to identify the species in the catches. The catches were not too big but interesting owing to the species included, the squids and hake being dominant.

MATERIAL COLLECTING

The fishing activity was carried out in a relatively small area, between 50°50' - 51°07'S and 56°55' - 59°40' W at depths of 120 - 220 m (Fig.1).

The pelagic trawl was used, at the speed of 3.6 - 3.8 Knots, usually very near the bottom, with a duration of 2.05-4.00 hours. The prevailing wind was blowing from the North, the sea

having between 0 and 3-4 Beaufort degrees, and the water surface temperature of 4.0 - 9.8°C.

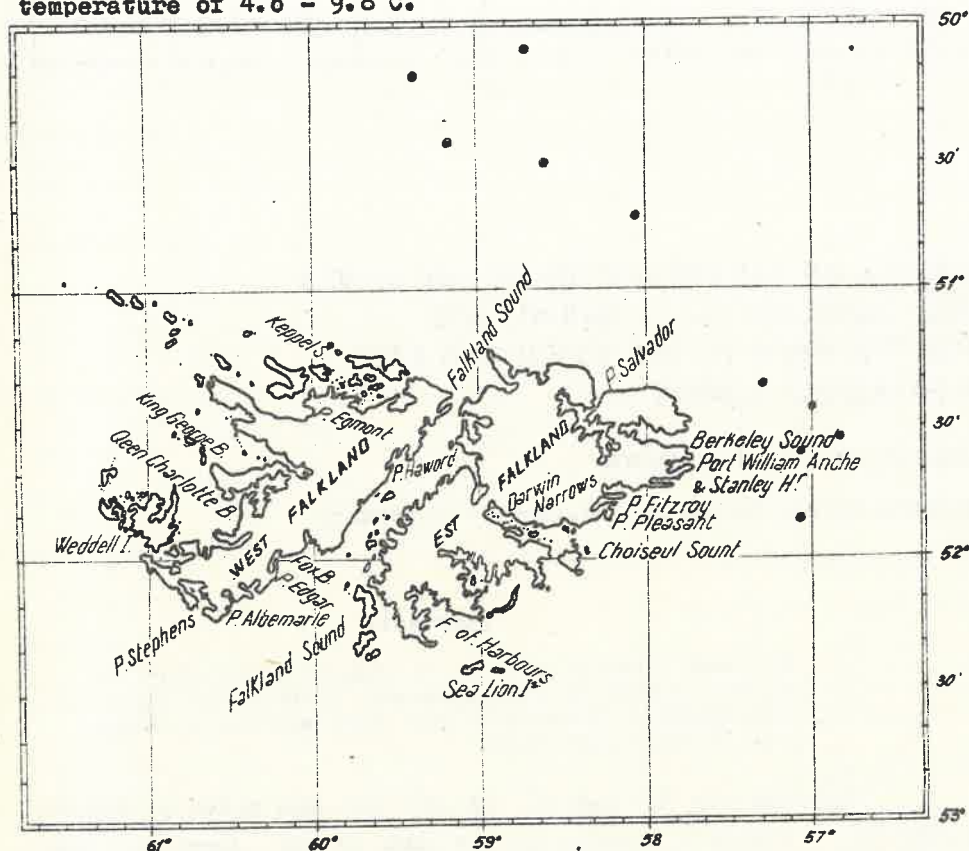


Fig. 1 - The repartition of the haulings in the area to the North and East of Falkland Islands, May 1978

The population of silver hake has been examined by measuring the total length which was read to near centimeter and centralized at intervals of 2 centimeters. The weighings were made at gram and the degree of maturation of both sexes was evaluated against the scale I - VI. The age was determined by reeding the otholits collected from the 137 individuals analysed.

RESULTS AND CONCLUSIONS

The catches were small, between 10 and 2585 kgs at each haul, including the following species:

- Loligo gahi	- 73%
- Todarodes angolensis	- 4%
- Macruronus magellanicus	- 5%
- Micromesistius australis	- 7%
- Stromateus maculatus	
- Brama rayi	
- Genypterus blacodes	
- Raja spp.	
- Carcharinus longimanus	
- Merluccius spp.	- 11%

So, the list of species is rather poor, the prevailing ones being the squids, austral grenadier and the two species of hake included in our catches, namely Merluccius hubbsi and Merluccius polylepis. The share of the two species of hake in the catches was clearly favourable to the former, while of the latter only insolated individuals appeared and not in all catches. There was a total of 14 individuals of M. polylepis caught, having the length between 84 and 111 cm.

The silver hake is one of the most interesting species of the Southwestern Atlantic Ocean, where it prefers the depths of 40-250 m along the coasts of Brasil, Uruguay and Argentina up to Tierra del Fuego (1, 2) where its length reaches 96 cm (4). Initially it was mistaken with M. gayi, then this species was described firstly by MARINI in 1932 on the basis of the detailed biometric analysis resulting in some distinct elements for M. gayi, namely a smaller eye diameter, shorter jaw, smaller teeth, longer pectoral fin.

Having a higher economic value and good stocks, the silver hake in the area of the Falkland Islands drew the attention of the countries with an expeditionary fishery in the recent years, the Polish Fishing fleet getting good results.

The individuals included in our catches had length between 42 and 85 cm, the females having the mean length (57.83cm) bigger than the males (51.33 cm). For both sexes the mean length was 56.97 cm (Fig.2).

The females had the variation amplitude of the total length (between 42 and 85 cm) bigger than the males (between 44 - 71 cm).

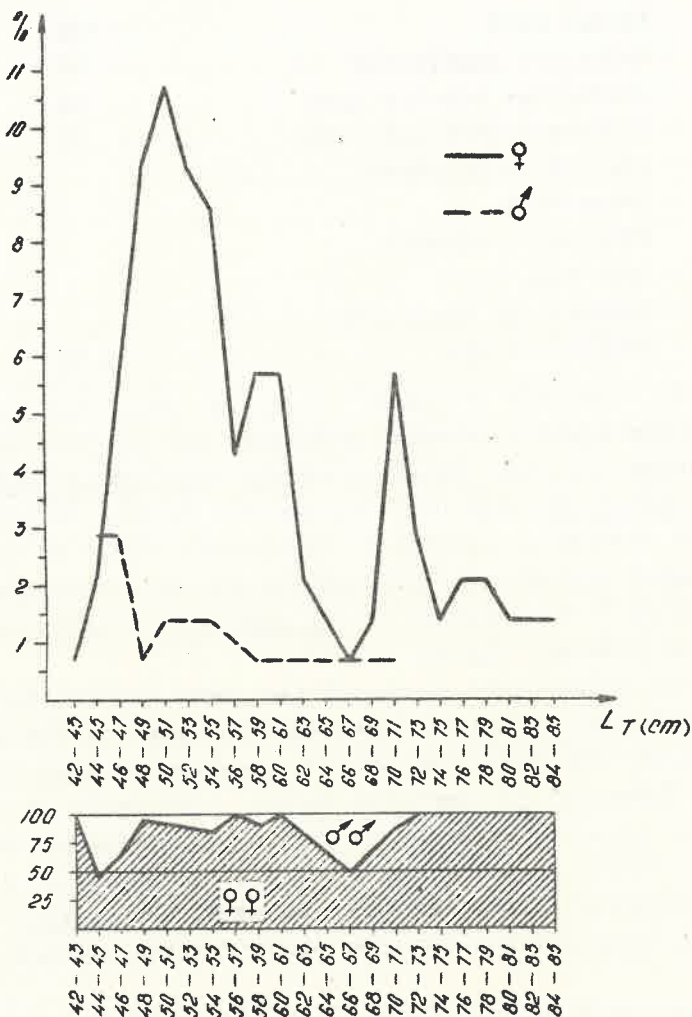


Fig. 2 - The length frequency by sexes of M. hubbsi caught in the area to the North and East of Falkland Islands.

The same as the lengths, the mean weights were bigger with the females for the most of the length and sex classes.

The ratio between sexes was favourable to the females, those assuring 87% of the total catch (Table 1).

Table 1

The mean weight on length classes by sexes of the M. hubbsi caught in the area to the North and East of Falkland Islands

Length class	Females		Males		Total	
	No. of indiv.	Mean weights	No. of indiv.	Mean weights	No. of indiv.	Mean weights
42 - 43	1	530			1	530
44 - 45	3	612	4	604	7	607
46 - 47	8	706	4	670	12	694
48 - 49	13	780	1	785	14	781
50 - 51	15	845	2	723	17	831
52 - 53	13	1018	2	900	15	1002
54 - 55	12	1104	2	1012	14	1091
56 - 57	6	1250	-	-	6	1250
58 - 59	8	1359	1	1510	9	1376
60 - 61	8	1729	-	-	8	1729
62 - 63	3	1882	-	-	3	1882
64 - 65	2	2880	-	-	2	2880
66 - 67	1	2265	1	2845	2	2550
68 - 69	2	2815	-	-	2	2815
70 - 71	8	2793	1	2370	9	2745
72 - 73	4	2849			4	2849
74 - 75	2	2695			2	2695
76 - 77	3	3305			3	3305
78 - 79	3	3863			3	3863
80 - 81	2	3665			2	3665
82 - 83	-	-			-	-
84 - 85	2	4445			2	4445
No. of Individ.	119		18		137	
Mean total length	57,83		51,33		56,97	
Mean weight		1560,1		993,1		1485,6

The structure by age classes shows a quick growing rythm during the first years of life, especially with the females (Table 2).

Table 2

Mean length of M. hubbsi by age

Sex	Age*							
	2	3	4	5	6	7	8	9
♀	$\frac{-}{34,3}$	$\frac{43,8}{44,5}$	$\frac{50,8}{52,2}$	$\frac{57,3}{58,6}$	$\frac{63,7}{63,6}$	$\frac{68,5}{68,9}$	$\frac{73,6}{-}$	$\frac{81,7}{-}$
♂	$\frac{-}{32,6}$	$\frac{-}{41,4}$	$\frac{46,3}{46,5}$	$\frac{52,5}{51,9}$	$\frac{58,5}{-}$	$\frac{-}{-}$	$\frac{68,5}{-}$	$\frac{-}{-}$
Total	$\frac{-}{33,5}$	$\frac{43,8}{43,1}$	$\frac{49,6}{51,0}$	$\frac{57,0}{57,7}$	$\frac{62,8}{63,6}$	$\frac{68,5}{68,9}$	$\frac{72,4}{-}$	$\frac{81,7}{-}$

* At numerator, our values; at denominator, the values of ANGELESCU, GNERI, NANI (1).

The age of the individuals analysed varied between 3 and 9 years with the females and between 4 and 6 years with the males; the difference between our readings and those of ANGELESCU, GNERI, NANI were very small, especially at small age classes.

The comparative analysis of the age composition between sexes shows the older individuals are females, due to a later maturation and longer life, so reaching bigger dimensions (Table 3)

Table 3

Age composition of M. hubbsi caught in the area to the North and East of Falkland Islands

Sex	Age						
	3	4	5	6	7	8	9
♀	7,6	35,5	16,8	16,8	7,6	11,8	4,2
♂	-	50,0	33,3	5,6	-	11,1	-
Total	6,6	37,2	19,0	15,3	6,6	11,7	3,6

We fished and carried out our remarks at the beginning of May, that is a period after spawning (between December and March, during the austral summer), when the most of the individuals caught had the gonades in the stage VI-II, the restoration stage. Only a few individuals had the gonades in the stage II - III and III, leading to the conclusion of their spawning taking place at

the beginning of the interval, so that at the beginning of May were already prepared to start a new spawning cycle.

When fished with the pelagic trawl, the silver hake was caught very near the bottom, it has never been recorded in the water mass by the hydroacoustical apparatus. Our haulings showed that more important agglomerations are at depths between 90 and 170 m, on the continental shelf, where this species is intensely feeding.

The dimensions of the individuals of silver hake caught show the possibility of mechanization of the processing of this species either by beheading - gutting and by filleting at Baader machines.

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