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THE POPULATION STRUCTURE OF *Illex illecebrosus argentinus* (CASTELLANOS, 1960) CAUGHT ON THE FALKLAND ISLANDS SHELF

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ABSTRACT:

The paper presents the results of the observations carried out the species Illex illecebrosus argentinus catched in May 1978 in the Falkland Islands vicinity For samples, the structure on classes of length, weight, sex and stages of maturity was determined, as well as the length-weight key.

The data regarding the biology and the position in the systematic of the Argentine squid Illex illecebrosus argentinus, are rather numerous, due to the works carried out especially by CASTELLANOS (1, 2, 3).

A species characteristic for the South Atlantic, Illex i. argentinus belongs to Ommastrephidae Family, Illicinae subfamily, Illex genus.

This squid has been considered for a long time as Ommastrephes bartramii (LESUER, 1821) a species with an ample geographical distribution on the all Oceans.

On the basis of some detailed taxonomic studies and of some complete biological researches, this species could be rendered evident, with distinct features, compared to O. bartramii.

The distribution area of Illex i.argentinus extents between 37° South lat. - Buenos Aires sector - and the Tierra del Fuego, and between 55°- 61° West long., populating the waters of the continental shelf.

MATERIAL AND METHOD

In May 1978 a trial fishery was carried out in the North and the East part of the Falkland Islands, between 50°05'-51°57' South and 56°55' - 59°40' West, at depths between 120-220 m.

The trawlings were effected by means of the midwater-trawl, at speeds of 3.6-3.8 knots, usually in the immediate vicinity of the ground, with dominant winds from North, at sea-states between 0° and 3-4°Bf and surface water temperatures between 4-9.8°C (Table 1).

The working method consisted in biometric measurements. The mantle lengths were obtained by compass, the span of which was read on scale paper. The sex was determined after dissection, and the stages of maturity, according to the I-V scale. The weights were obtained in grams.

The readings of lengths were done to the multimetre, and the centralizations of the neanst centimetre.

The working out of data obtained by biometric measurements was done according to sexes, classes of length and stages of maturity.

For the length-weight key rekoning the method of the smallest squares was used, starting with the exponential equation: $W = a.L^b$, where W = individual weight in grams, L = individual length in centimetres; a,b = coefficients.

The total catch obtained in the 10 hauls was of 4790 kgs, of which 4000 kgs cephalopodes, the fishery being concentrated close to the parallel of 51°South (Fig.1).

In the great majority of the hauls the squids prevailed, those representing between 14 and 100% for each trawling, and per total catch 83.6% (Table 1).

The total squids catch was represented by the following species:

- Loligo gahi 83%

Table I

The distribution of the trawlings and catches carried out in the North and East part of the Falkland Islands in May, 1978

Trawling no.	Trawlings: Launched	Trawlings: Made Fast	Trawling hours (hrs)	Trawling speed (knots)	Trawling level (m)	Wind Direction	Surface water Temp. (°C)	Catches: Fish (kg)	Catches: Cephalopoda (kg)	Catches: Cephalopoda (% of)	Catches: Total (kg)
1.	51°37'S 57°09'W	51°30'S	215	3,8	145	N-NW	6	120	300	71	420
2.	51°25'S 57°00'W	51°37'S 57°07'W	2,30	3,8	65-135	N-NW	4	200	520	72	720
3.	51°32'S 57°30'W	51°21'S 57°40'W	2,30	3,8	-	NE	4,1	-	10	100	10
4.	51°21'S 57°20'W	51°05'S 56°58'W	3,50	3,8	110	NE	4,5	40	90	69	130
5.	51°50'S 57°05'W	51°57'S 57°10'W	2,30	3,8	100	N	5,8	35	15	30	50
6.	50°42'S 58°02'W	50°38'S 58°18'W	2,30	3,8	90-105	N	7,2	100	71	41	170
7.	50°30'S 58°37'W	50°40'S 58°41'W	2,30	3,8	90-105	N	8,5	100	80	44	180
8.	50°26'S 59°12'W	50°18'S 59°20'W	2,00	3,8	123	W-SW	9,8	40	400	91	440
9.	50°10'S 59°25'W	50°07'S 59°40'W	2,30	3,8	130	NW	9,2	95	15	14	110
10.	50°05'S 58°43'W	50°17'S 58°15'W	4,00	3,8	190-170	NE	7,8	60	2500	98	2560
	TOTAL (kg)							790	4000	83,6	4790

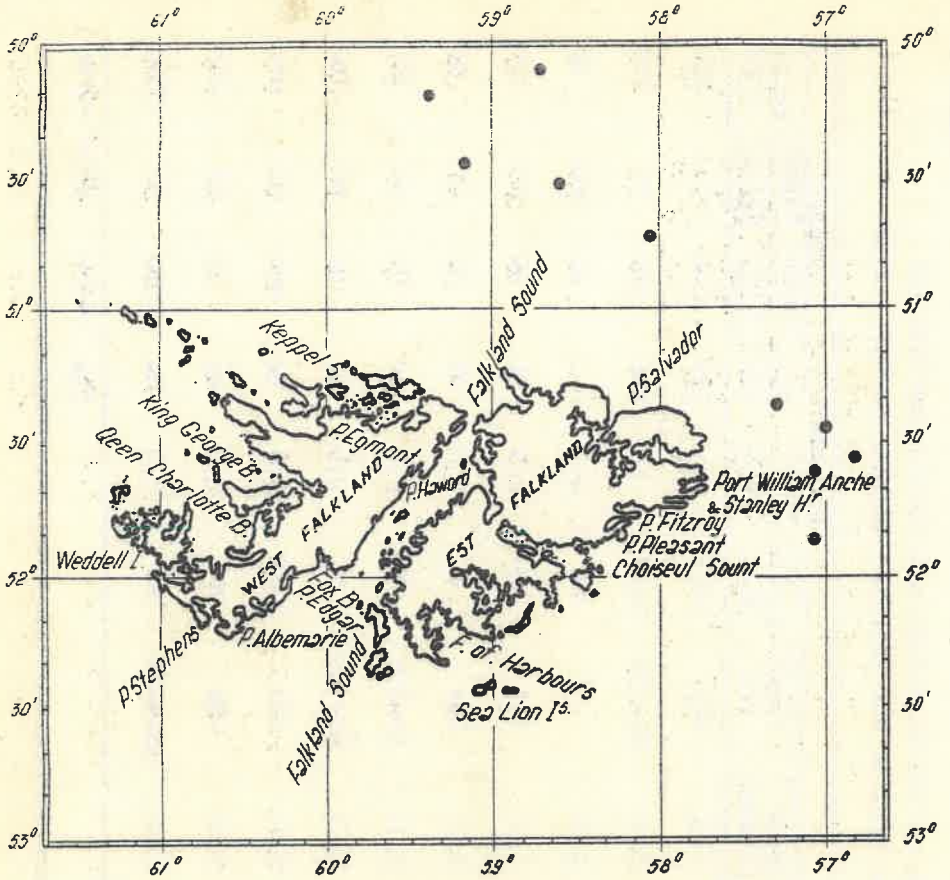

Fig.1 - Distribution of the trawlings carried out in the North and East of the Falkland Islands, in May 1978.

- Illex i.argentinus 12%,
- Todarodes angolensis 5%.

Besides these, species of fish were found in the catches, such as:

- Merluccius hubbsi, MARINI, 1963
- Merluccius polylepis, GINSBURG, 1954
- Brama rayi (BLOCH), 1971
- Macrouronus magelanicus, NORMAN, 1937
- Stromateus maculatus
- Genypterus blacodes, SCHNEIDER
- Charcharinus longimanus (POEY, 1861)

- Raja sp.

RESULTS

Population analysis. For the samples in study, the amplitude of length variation was included between 24-31 cms, the females generally having the mantle length longer than the males (Table 2, Fig.2).

According to sexes, for females, the length classes of 28-29 and 3o cms prevailed and for males, those of 25 and 26 cms.

Table 2

The structures on classes of length, sexes and weights, for Illex i.argentinus (Castellanus, 196o)

Mantle length (cms)	Sex ♀ No. measured	♀ W_m g	Sex ♂ No. measured	♂ W_m g	Total No. measured	Total W_m g
24	24		1	39o	1	39o
25	1	355	14	4o5	15	4o2
26	1	37o	17	41o	18	4o4
27	6	435	9	468	15	455
28	19	478	3	463	22	476
29	22	522	1	56o	23	523
31	5	626			5	62626
No. measured	68		45		113	
L_m	28,79		26,o4		27,69	
W_m	512,5o		425,11		477,76	

For the 113 measured squids, the length-weight key was reckoned, on sexes and total, under the following form:

$$W_{♀} = o,o59oo2396 \cdot L_{♀}^{2,697278831}$$

$$W_{♂} = 1,4427968 \cdot L_{♂}^{1,75o646696}$$

$$W_t = o,9673lo58 \cdot L_t^{1,87o548585}$$

where:

W = weight in grams

L = mantle length in cms

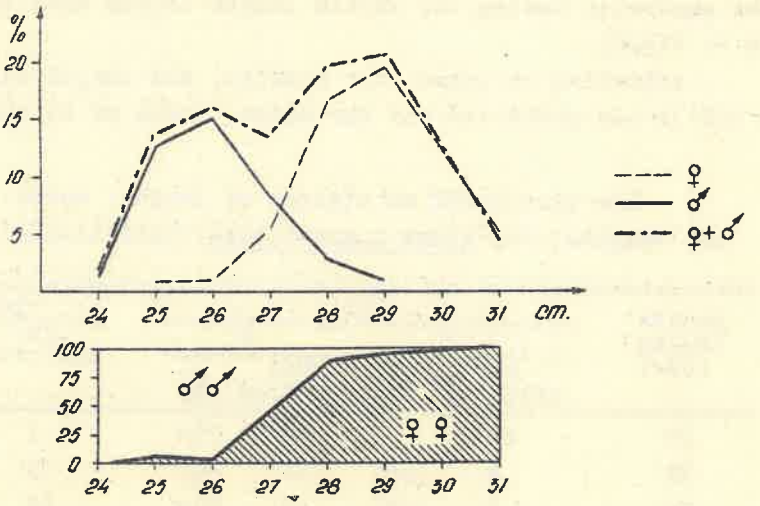

Fig.2 - The length frequencies for Illex i.argentinus, in May, 1978

Graphically, the length-weight key for the entire spectrum of lengths (24-31 cms) and weight amplitude (355-626 grs) for all measured squids in study, registers rather well among the medium values of weight, corresponding to each class of length (Fig.3).

Concerning the ratio between sexes, we can notice the prevalence of females, especially in the large classes, they representing 61% of the total catch.

The stage of maturity proved that the majority of the males of Illex i.argentinus had gonads in the 5th stage of maturation, close to the spawning moment.

The female gonads were much less advanced the male ones, the stages we found varying between II and V. The great majority was found in the 3rd stage of maturation (Table 3).

Table 3

The componence of sexes and stages of maturity for Illex i.argentinus, at the beginning of May, 1978 (%o)

Sex	Stages of maturity							Total squids measured
	II	II-III	III	III-IV	IV	IV-V	V	
♀	106	9	257	62	133	26	9	113
♂	-	-	-	-	18	-	380	

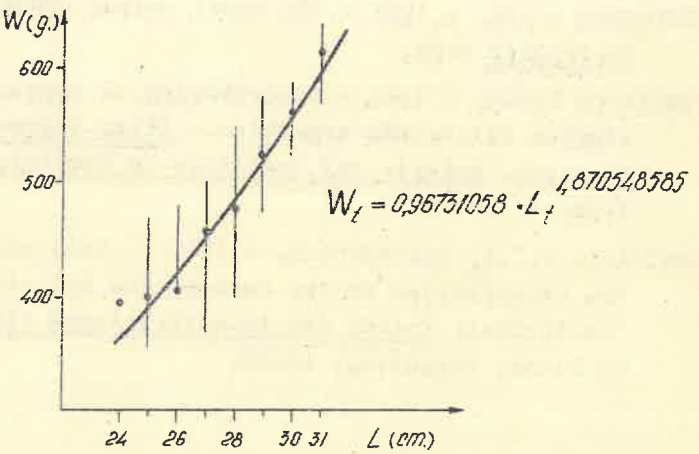

Fig.3 - The length-weight key for Illex i.argentinus

CONCLUSIONS

1. The trawlings carried out in the North and East of the Falkland Islands, close to 51°South lat.- 60°West long. pointed out the presence of the species Illex i.argentinus.

2. Out of the total catch of squids, this was present

in proportion of 12%, a normal result if we take into account the fact total the southern limit of its distribution area lies here.

3. According to sexes, greater lengths were found at females and within the same class of length, the males had greater medium weights.

4. The ratio between sexes favoured the females, these prevailing in proportion of 2:1.

5. The majority of the males had gonads in the 5th stage, while the stage of gonad maturation for females varied within large limits, most of them being in the 3rd stage.

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