

THE ROMANIAN ICHTHYOLOGICAL RESEARCHES ON THE CONTINENTAL SHELF OF U.S.A. IN 1978

Ionel Staicu

Romanian Marine Research Institute - Constanța

ABSTRACT:

The work presents the results of the observations on the Romanian fishing on the continental shelf of U.S.A. in October-December 1978, including data on the catches, composition by species, structure by length class, weight, sexes and age of the main species that have been caught.

The observations about the Romanian fishing on the continental shelf of U.S.A. were carried out in October-December 1978, on board a trawler type B₂₂. The fish length taken for calculation was as follows: the total length for silver hake; the length up to the bifurcation for the round herring, mackerel, dollar fish; the mantle length for squids (1). The weight was measured with a precision of 5 grams. The otoliths have been used to determine the age. The pelagic trawl was used, having the mesh size $2 a = 45$ mm.

FISHING ACTIVITY

The fishing activity was carried out between the parallels of $37^{\circ}00'N$ and $42^{\circ}00'N$ within the divisions 5 Ze - 5 Zw

(Georges Bank), 6 A (Long Island) and 6 B (Chesapeake Gulf), at depths between 80 and 180 m (Fig.1). The results are listed in Annex 1. The most intense fishing activity was carried out within the divisions 5 Zw and 6 B at depths of 9-110-140 m (Table 1).

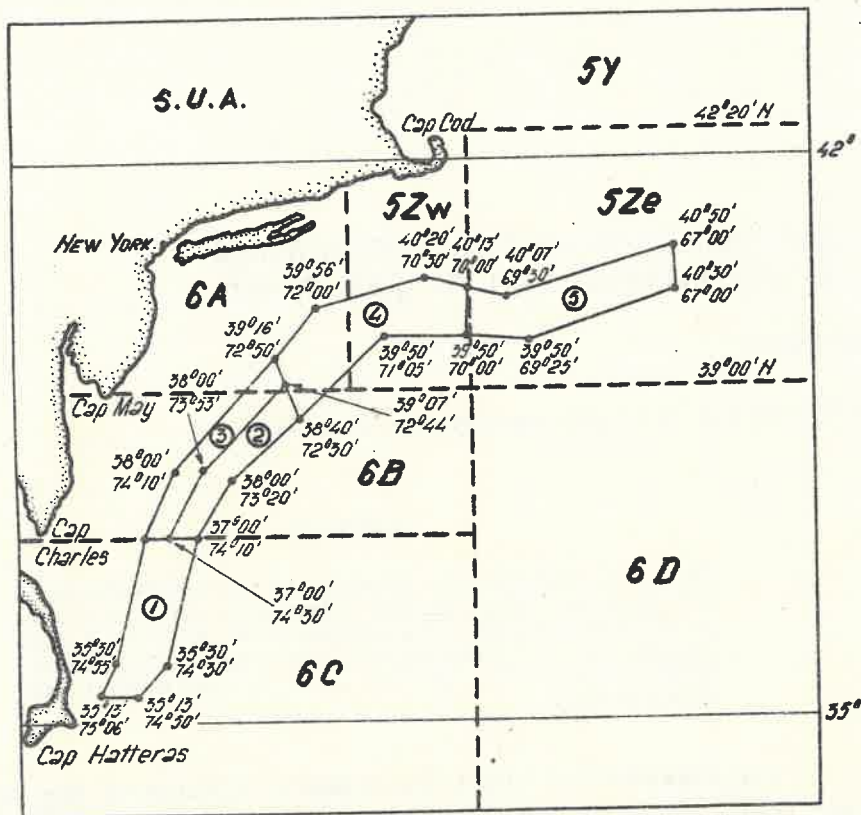


Fig. 1 - The zone of activity of the Romanian fishery on the continental shelf of U.S.A., between October and December 1978

Table 1
The dynamics of the Romanian fishing effort in October - December 1978, on the continental shelf of U.S.A.

Months	October			November			December		
	No. days	Hauling hours	No. of hauls	No. days	Hauling hours	No. of hauls	No. days	Hauling hours	No. of hauls
5 Ze	2	10	5	4	40	20	-	4	2
5 Zw	2	21	6	7	83	29	3	24	9
6 A	1	6	3	2	11	4	1	17	4
6 B	2	15	5	17	209	83	15	201	57
TOTAL	7	52	19	30	343	136	19	246	72

For the whole period, the best results were recorded in November, in the divisions 5 Ze and 5 Zw, when the c.u.e. was 6 - 9 tons/day (Table 2).

CATCH COMPOSITION BY SPECIES

The prevailing species in the catches were the following: dollar fish, round herring, mackerel, silver hake and the two species of squids (Table 3).

Table 3
The composition by the main species (tons and %) of the catches of the Romanian trawler in October-December 1978 on the continental shelf of U.S.A.

Species	Tons	%
TOTAL	224,6	100,0
<u>Loligo pealei</u> LESUER	16,7	7,4
<u>Illex illecebrosus</u> LESUER	59,2	26,3
<u>Peprilus triacanthus</u> (FECK)	83,1	37,0
<u>Merluccius bilinearis</u> (MITCHILL)	16,6	7,4
<u>Scomber scombrus</u> L.	18,8	8,4
<u>Etrumeus sadina</u> (MITCHILL)	25,8	11,4
<u>Thunnus obesus</u> (LOWE)	1,0	0,4
<u>Squalus acanthias</u> L.	1,2	0,5
<u>Xiphias gladius</u> L.	0,5	0,2
<u>Stenotomus chrysops</u> L.	2,1	0,9
<u>Pomatomus saltatrix</u> L.	0,4	0,1

The squid Illex illecebrosus was the basis of the squid catch within the divisions 5 Ze and 6 B in October and November and so was the squid Loligo pealei within the division 6 A in December. The dollar fish (Peprilus triacanthus) represented 70-80% of the catch in the division 5 Zw in November and December. The silver hake (Merluccius bilinearis) and the mackerel (Scomber scombrus) appeared in smaller quantities but frequently found in the divisions 6 A and 6 B (Table 4).

The situation of the Romanian fishing

Month	October					November			
	5 Ze	5 Zw	6 A	6 B	Total	5 Ze	5 Zw	6 A	6 B
A. Fishing effort									
No. of vessels	1	1	1	1	1	1	1	1	1
No. effective days	2	2	1	2	7	4	7	2	17
No. of hauls	5	6	3	5	19	20	29	4	83
No. of hauling hours	10	21	6	15	52	40	83	11	209
B. C.U.E.									
Tons/day	0,35	5,80	0,60	0,20	1,85	6,45	9,28	0,50	4,03
Tons/hour	0,07	0,55	0,10	0,02	0,25	0,64	0,78	0,09	0,33
Tons/haul	0,14	1,93	0,20	0,80	0,70	1,29	2,24	0,25	0,82
C. Catch (tons)									
<u>Loligo pealei</u>	-	0,3	0,1	-	0,4	0,2	2,1	0,5	-
<u>Illex illecebrosus</u>	0,7	0,3	-	-	1,0	13,4	14,6	-	30,1
<u>Peprilus triacanthus</u>	-	3,6	-	-	3,6	11,0	46,8	-	-
<u>Merluccius bilinearis</u>	-	-	-	0,2	0,2	-	-	0,2	14,8
<u>Scomber scombrus</u>	-	0,1	0,1	-	0,2	-	1,1	-	4,7
<u>Etrumeus sadina</u>	-	7,0	-	-	7,0	-	-	-	18,8
<u>Thunnus obesus</u>	-	0,2	0,4	-	0,6	-	0,4	-	-
<u>Squalus acanthias</u>	-	-	-	-	-	1,2	-	-	-
<u>Xiphias gladius</u>	-	-	-	0,2	0,2	-	-	0,3	-
<u>Stenotomus chrysops</u>	-	-	-	-	-	-	-	-	-
<u>Pomatomus saltatrix</u>	-	0,1	-	-	0,1	-	-	-	0,2

on the continental of U.S.A. in 1978

Annex 1

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December						Total				
Total	5 Ze	5 Zw	6 A	6 B	Total	5 Ze	5 Zw	6 A	6 B	Total
1	1	1	1	1	1	1	1	1	1	1
30	-	3	1	15	19	6	12	4	34	56
136	2	9	4	57	72	27	44	11	145	227
343	4	24	17	201	246	54	128	34	425	641
5,34	-	1,20	0,50	3,00	2,67	4,70	6,68	0,52	3,35	4,01
0,46	0,42	0,15	0,03	0,22	0,21	0,52	0,62	0,09	0,27	0,35
1,17	0,85	0,40	0,12	0,79	0,70	1,04	1,82	0,19	0,78	0,99
160,4	1,7	3,6	0,5	45,1	50,9	28,2	80,2	2,1	114,1	224,6
2,8	0,4	0,3	0,3	12,5	13,5	0,6	2,7	0,9	12,5	16,7
58,1	-	0,1	-	-	0,1	14,1	15,0	-	30,1	59,2
57,8	-	2,9	0,1	18,7	21,7	11,0	53,3	0,1	18,7	83,1
15,0	-	0,3	0,1	1,0	1,4	-	0,3	0,3	16,0	16,6
5,8	-	-	-	12,0	12,0	-	1,2	0,1	16,7	18,0
18,8	-	-	-	-	-	-	7,0	-	18,8	25,8
0,4	-	-	-	-	-	-	0,6	0,4	-	1,0
1,2	-	-	-	-	-	1,2	-	-	-	1,2
0,3	-	-	-	-	-	-	-	0,3	0,2	0,5
-	1,3	-	-	0,8	2,1	1,3	-	-	0,8	2,1
0,2	-	-	-	0,1	0,1	-	0,1	-	0,3	0,4
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Table 2

The dynamics of the catches and the productivities achieved by the Romanian trawler
in October-December 1978 on the continental shelf of U.S.A.

Month	October					November					December				
	5 Ze	5 Zw	6 A	6 B	Total	5 Ze	5 Zw	6 A	6 B	Total	5 Ze	5 Zw	6 A	6 B	Total
Catch (tons)	0,7	11,6	0,6	0,4	13,3	25,8	65,0	1,0	68,6	160,4	1,7	3,6	0,5	45,1	50,9
Tons/day	0,35	5,80	0,60	0,20	1,85	6,45	9,28	0,50	4,03	5,34	-	1,20	0,50	3,00	2,67
Tons/hour	0,07	0,55	0,10	0,02	0,25	0,64	0,78	0,09	0,33	0,46	0,42	0,15	0,03	0,22	0,21
Tons/haul	0,14	1,93	0,20	0,80	0,70	1,29	2,24	0,25	0,82	1,17	0,85	0,40	0,12	0,79	0,70

Table 4

The prevailing ratio (%) of the main species in the catch of the Romanian trawler
in October-December 1978, on the continental shelf of U.S.A.

Species / Month	October				November				December			
	5 Ze	5 Zw	6 A	6 B	5 Ze	5 Zw	6 A	6 B	5 Ze	5 Zw	6 A	6 B
<u>Loligo pealei</u>	-	2,8	16,7	-	0,8	3,2	50,0	-	23,5	8,3	60,0	27,7
<u>Illex illecebrosus</u>	100,0	2,8	-	-	51,9	22,5	-	43,9	-	2,8	-	-
<u>Peprilus triacanthus</u>	-	31,0	-	-	42,7	72,0	-	-	-	80,6	20,0	41,5
<u>Merluccius bilinearis</u>	-	-	-	50,0	-	-	20,0	21,6	-	8,3	20,0	2,2
<u>Scomber scombrus</u>	-	0,8	16,7	-	-	1,7	-	6,9	-	-	-	26,6
<u>Etrumeus sadina</u>	-	60,2	-	-	-	-	-	27,4	-	-	-	-

THE REPARTITION AND QUALITATIVE COMPOSITION OF THE POPULATIONS BY SPECIES OF FISHES AND INVERTEBRATES THAT HAVE BEEN CAUGHT

Peprilus triacanthus (PECK)

The dollar fish was one of the basic species of the Romanian fishing within this area in October and November, appearing in larger shoals in the divisions 5 Zw and 6 A, at depths of 160-180 m, and in much less shoals in December but present in all haulings at depths of 80 - 90 - 110 m.

The shoals were homogeneous including individuals with the same length. The composition by length classes shows the individuals of 2 years old clearly dominant (g. 1976). In the sex ratio, the females are prevailing (Figs. 2 and 3).

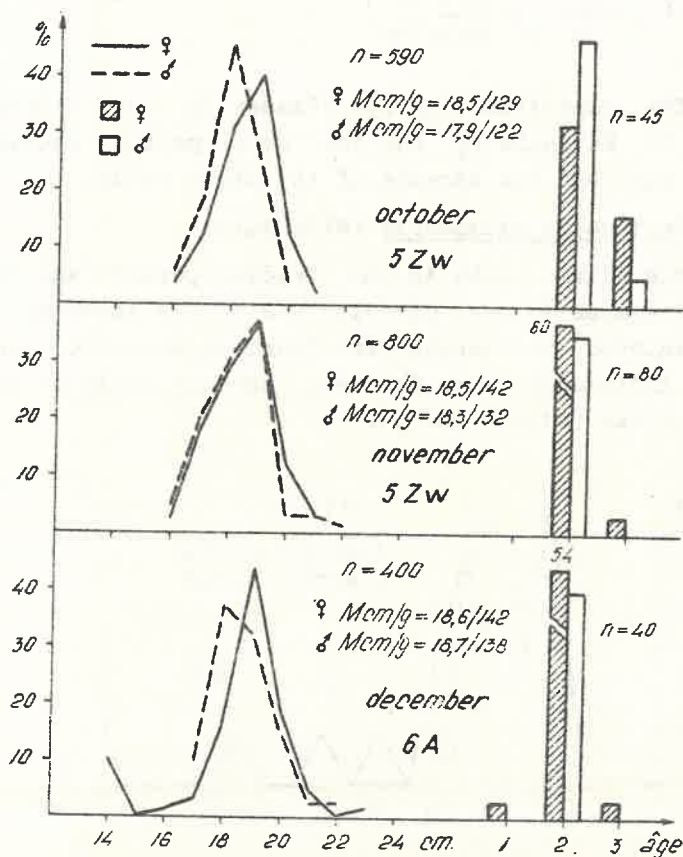


Fig. 2 - Monthly distribution curves of the size frequencies and age classes of Peprilus triacanthus in 1978

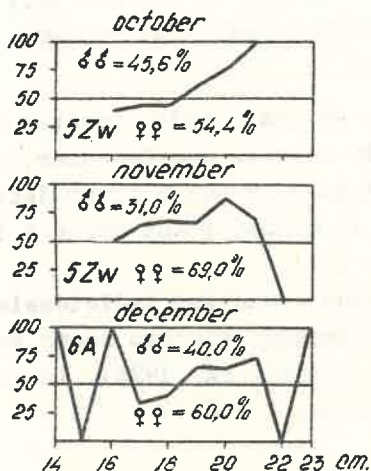


Fig. 3 - Sex ratio by length classes of Peprilus triacanthus in 1978

The composition by age classes is much different from that found by KAWAHARA (2) for the same period because of the trawl mesh size and not because of the stock value.

Merluccius bilinearis (MITCHILL)

The silver hake in the feeding period was frequently found in November in the division 6 B at the depth of 110-120 m and only isolated individuals were found in the other months. The small size individuals were dominant, and the ratio between sexes was almost equal (Figs. 4 and 5).

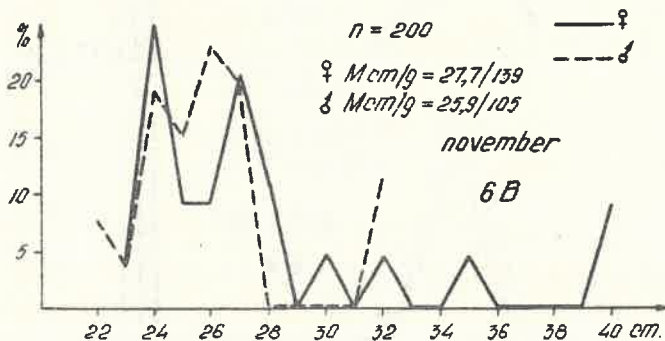


Fig. 4 - Monthly distribution curves of the size frequencies of Merluccius bilinearis in 1978

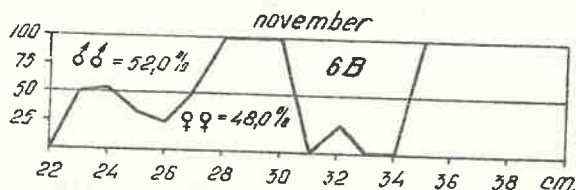


Fig. 5 - Sex ratio by length classes of Merluccius bilinearis in 1978

Although the stock is good, the catches were small, owing to unfavourable hydrometeorological conditions in this period. The water temperature conditions the formation of the fishing agglomerations of silver hake, the largest agglomerations are found when the water temperature is 8-12°C (3), and this depends on the winds regime. If the prevailing winds are those from S-W, S and S-E, these favourable conditions are created on the continental shelf at depths of 100-200 m. The prevailing winds from opposite directions as during this fishing trip (Table 5) made these favourable conditions at depths exceeding 200 m, where no fishing was carried out.

Table 5

The direction and frequency of the wind on the continental shelf of U.S.A. between October and December 1978 (monthly averages)

Month	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	N	Calm
Oct.	3	16	13	0	6	0	4	2	26	0	1	5	0	3	6	4	11
Nov.	10	20	3	8	7	2	0	2	5	4	0	4	2	8	12	9	4
Dec.	4	6	0	3	0	3	1	5	1	23	2	5	10	23	1	6	7

Scomber scombrus L.

In October only isolated individuals of mackerel were found, and beginning with the third decade of November, the first agglomerations of this species appeared in the division 6 B at depths of 85-130 m. Only big individuals were prevailing in the catches, of 6 - 7 - 8 years old, belonging to the generations of 1972, 1971, 1970 (Fig.6). The sex ratio was favourable to the females (Fig.7).

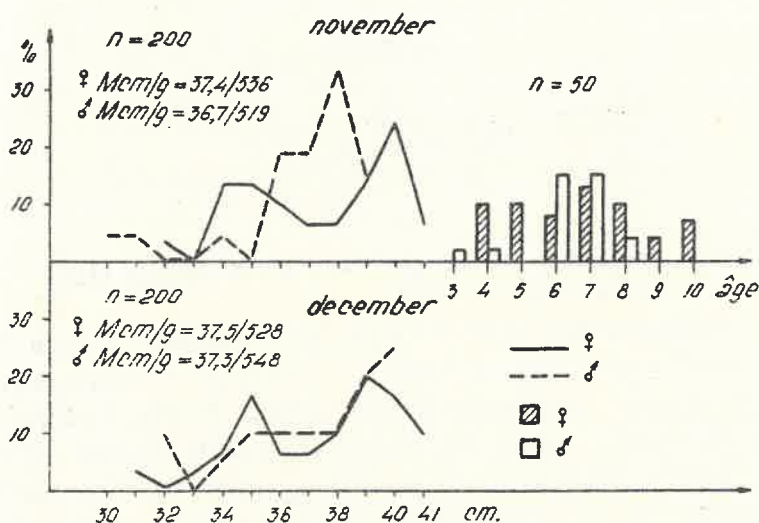


Fig. 6 - Monthly distribution curves of size frequencies and age classes of Scomber scombrus in 1978

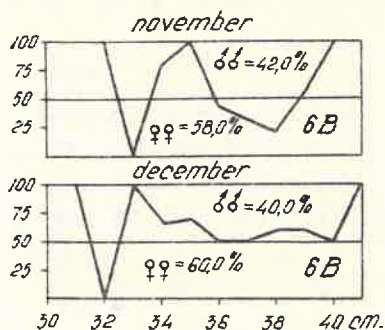


Fig. 7 - Sex ratio by length classes of Scomber scombrus in 1978

Etrumeus sadina MITCHILL

In October and November, the round herring constitutes large agglomerations during day, at depth of 100-130 m in the divisions 5 Zw and 6 B and in December only isolated individuals appeared in the catches. The shoals included only individuals of 15-20 cm, those of 16-17 cm being the prevailing ones (Fig.8). In the sex ratio, the females were prevailing (Fig.9).

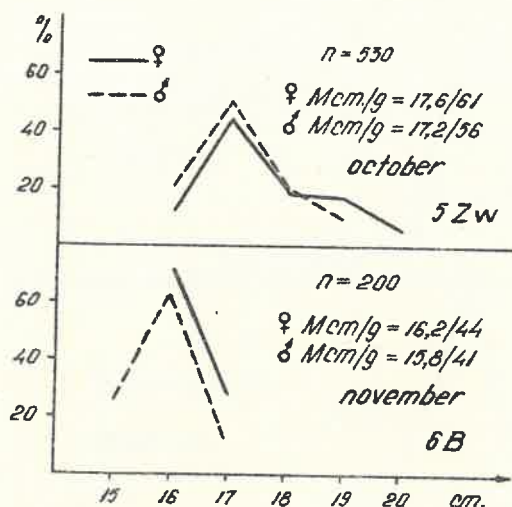


Fig. 8 - Monthly distribution curves of size frequencies of Etrumeus sadina in 1978

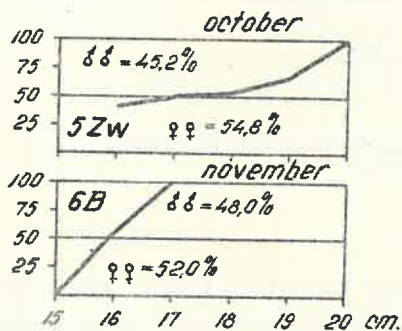


Fig. 9 - Sex ratio by length classes of Etrumeus sadina in 1978

Loligo pealei LESUER

It appeared in November in the divisions 6 A and 5 Zw, in the day catches, 50-500 kg per haul at depths of 140-160-175 m and in the division 6 B at depth of 110 m. In December it was frequently found in the divisions 6 A and 5 Zw at the depth of 80-110 m. The small size individuals were prevailing (Fig.10).

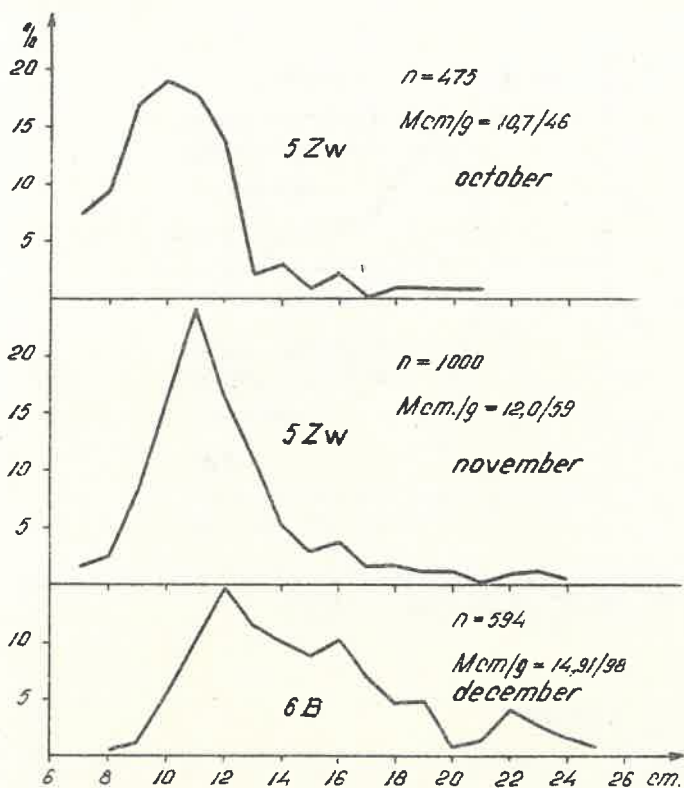


Fig. 10 - Monthly distribution curves of size frequencies of Loligo pealei in 1978

Illex illecebrosus LESUER

While in October and November it constituted the basis of the squid fishing, either in day and night catches, in December it almost disappeared, because of its migration to the high sea in view of spawning. The most frequent apparitions were in the divisions 5 Zw, 6 A and 6 B at depths of 140-180 m, which are the traditional places for the fishing of this species (4). Its shoals included big size individuals (20-23 cm), those of 22-25 cm being dominant (Fig. 11). The sex ratio was equal (Fig. 12).

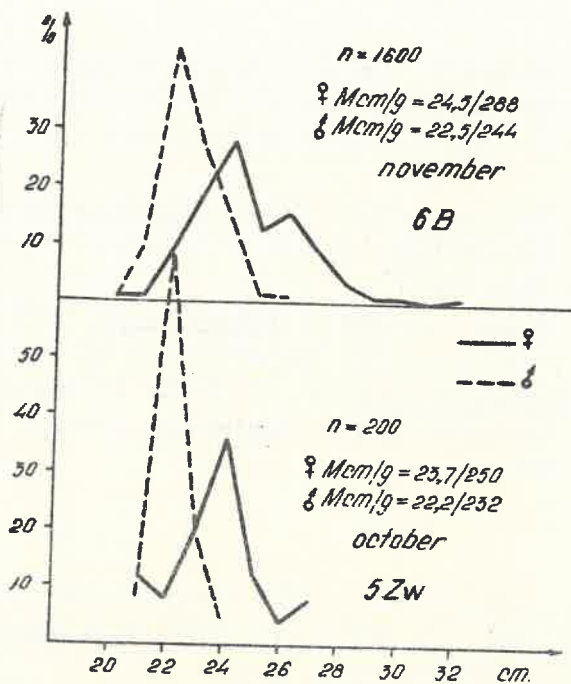


Fig. 11 - Monthly distribution curves of size frequencies of Illex illecebrosus in 1978

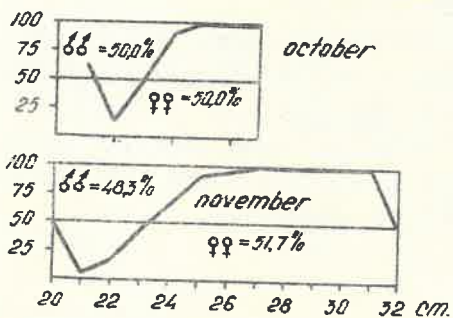


Fig. 12 - Sex ratio by length classes of Illex illecebrosus in 1978

CONCLUSIONS

- The best results were recorded in November in the divisions 5 Ze and 5 Zw.
- The dollar fish, round herring, mackerel, silver hake and the two species of squid were prevailing in the catches.
- The largest shoals of Peprilus triacanthus were found.

in October and November, in the divisions 5 Zw and 6 A at depths of 160 - 180 m.

- The catches of Merluccius bilinearis were small because no favourable conditions for its agglomerations (water temperature of 8-12°C) were at depths of 100-200 m where the fishing was carried out.

- The first agglomerations of Scomber scombrus appeared only beginning with the third decade of November, in the division 6 B at depths of 85 - 130 m.

- The largest catches of Loligo pealei were in November at depths of 80 - 110 m, in the divisions 6 A and 5 Zw.

- Illex illecebrosus was the basis of the squid catches in October and November in the divisions 5 Zw, 6 A and 6 B at depths of 140 - 180 m.

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