

**Table 20. Full Herring. Average Length and Average Value of  $L_1$  of each Year-Class.**

	Length of Year-Classes, cm.										$L_1$ of Year-Classes, in mm.								
	1948	1947	1946	1945	1944	1943	1942	1941			1948	1947	1946	1945	1944	1943	1942	1941	Mean
Born in:.....	3	4	5	6	7	8	9	10											
Age:.....	23.9	26.3	26.8	27.2	28.0	28.6	28.1	28.5			100	110	114	108	114	133	112	115	114
Northern.....	24.3	25.8	26.5	27.2	27.6	27.6	27.6	28.5			119	116	108	112	101	108	107	110	111
Central.....	24.2	25.9	26.6	27.2	27.9	28.2	27.8	28.5			114	115	109	110	109	123	109	113	112
Total.....																			

six-year-olds (year-class 1945) were well represented (16.3% and 18.0% respectively).

Relying upon the above-mentioned percentages, we may expect that the 1948 year-class will not be well represented in the next nor in the later concentrations, whereas the 1947, 1946 and 1945 year-classes will always assure a large share until they reach an old age.

However, to infer from this that the coming season will yield large catches, would be to judge prematurely.

As is being constantly pointed out, good catches do not depend solely on the density of the concentrations, but rather upon the weather and hydrological conditions, which occur during the campaign. Also, it would not be the first time that the exploitation of the concentrations was adversely affected by them and in this way belie the favourable forecasts of a campaign.

In consequence, it is only if the weather and the hydrological conditions affect the exploitation favourably that we may expect, in 1952, a satisfactory full-herring season.

CH. GILIS.

### Spent-Herring Concentrations on the Belgian and French Coasts, 1951—52.

#### A. Fishery.

##### I. Period, Fishing Grounds and Methods.

The spent-herring season 1951—52 was of longer duration than the previous one. The

first catches were landed on 12. December 1951 and the last on 29. February 1952. During this period there were 61 days of sale, viz., 18 in December, 21 in January and 22 in February. The previous campaign started 6 days earlier, but finished also a month sooner (from 6. Dec. till 27. Jan.) and counted only 42 days of sale.

As in 1950—51, it was only at the beginning of the season that dense spent-herring concentrations were to be found in the Belgian territorial waters. As from January, the spent-herring left once and for all the Belgian waters and from then onwards the Belgian trawlers were active in the areas between the light-vessels "Ruytingen" and "Dyck" as well as in areas further north.

Concerning the fishing methods, it must be mentioned, that in contrast with the previous season, the fishery with the "bull-net" again met with great success and this time both among the largest and the smallest trawlers.

#### II. Activity of the Herring Fleet and Catch.

A total of 52 trawlers took part in the spent-herring campaign 1951—52, or 15 less than during the previous season:—

Class	Number		Type	H.P.
	1950-51	1951-52		
I	13	6	shrimp boats.....	— 79
II	21	8	coastal trawlers.....	80—119
III	27	29	medium-sized trawlers .	120—239
IV	6	9	small deep-sea trawlers	240—300

**Table 21. Full Herring. Racial Characters. Percentage Distribution and Means.**

Origin	Number of Vertebrae <sup>1)</sup>						Number of $K_2$									
	55	56	57	58	59	Average	11	12	13	14	15	16	17	18	Average	
Northern...	2.3	41.9	47.7	7.9	0.2	56.62	—	0.2	5.8	35.5	44.5	11.5	2.3	0.2	14.69	
Central....	5.8	41.2	49.0	4.0	—	56.51	0.2	0.2	6.3	34.1	44.1	13.5	1.1	0.5	14.69	
Total.....	4.4	41.5	48.5	5.5	0.1	56.55	0.1	0.2	6.1	34.7	44.3	12.7	1.5	0.4	14.69	
1. group...	2.2	30.2	52.9	14.0	0.7	56.81	—	0.7	8.7	31.2	44.2	13.0	1.5	0.7	14.67	
2. group...	4.8	43.2	47.8	4.2	—	56.51	0.1	0.1	5.7	35.2	44.3	12.7	1.6	0.3	14.69	

<sup>1)</sup> The census for the vertebrae covered 1,044 spines, of which there were 27, or 2.59%, with one or more fused vertebrae. These spines have been eliminated from our material.

**Table 22. Spent Herring. Number of Voyages and Catch in 1950—51 and 1951—52 of Trawlers fishing individually<sup>1)</sup>.**

Class . . . . .	Number of Voyages					Total Weight landed in 1000 Kg.					%	Average Catch (Kg.) per fishing day/H.P.				
	I	II	III	IV	Total	I	II	III	IV	Total		I	II	III	IV	Total
1950—51																
December. . . . .	22	34	53	5	114	43	127	413	71	655	38	33.4	40.0	44.7	52.4	43.5
January. . . . .	8	42	139	38	227	22	100	714	215	1052	62	41.0	24.7	30.2	21.8	27.6
Total. . . . .	30	76	192	43	341	66	227	1127	286	1706	100	36.4	31.4	34.3	25.5	32.1
1951—52																
December. . . . .	9	19	59	13	100	26	40	287	54	406	44	38.8	19.8	28.5	16.3	25.3
January. . . . .	8	21	50	19	98	31	72	234	97	434	46	51.6	33.1	28.4	20.8	27.7
February. . . . .	4	12	5	6	27	24	32	11	22	89	10	78.7	25.9	11.8	15.3	22.8
Total. . . . .	21	52	114	38	225	80	144	532	173	930	100	51.6	26.5	27.6	18.4	26.1

<sup>1)</sup> Since some trawlers using the "bull-net" belonged to different classes of vessels, it is impossible to classify their catches according to class.

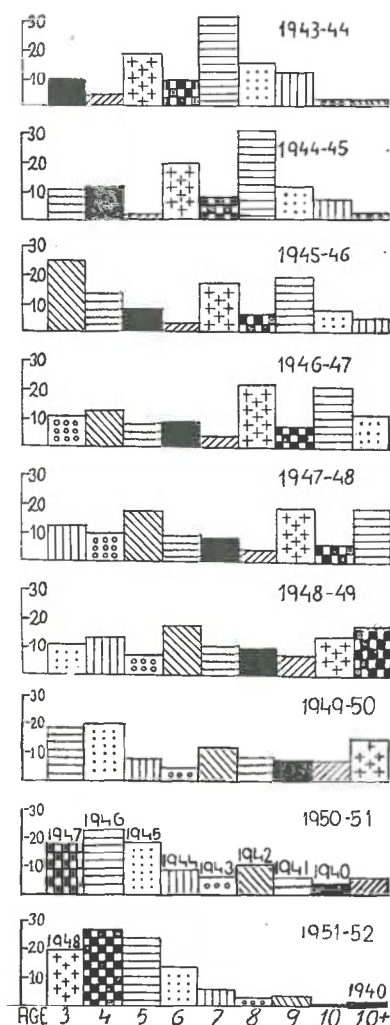


Figure 11. Biological Scale of the Spent-Herring Concentrations during the winters 1943/4 to 1951/2.

**Table 23. Number of Voyages and Catch in 1951—52 of Trawlers using the "Bull-Net"<sup>1)</sup> and total Catch of all Trawlers.**

	No. of voyages	Catch (1000 Kg.)		Aver. Catch (Kg.) per fishing-day H.P.
		in bull-net	all trawlers	
Dec. . . . .	6	93	449	53.8
Jan. . . . .	38	577	1011	50.6
Feb. . . . .	133	1875	1965	41.1
Total. . . . .	177	2545	3475	43.3

<sup>1)</sup> See foot-note to Table 22.

During December there were 28 trawlers fishing individually and 6 fishing with the "bull-net"; during January 26 and 22 respectively and during February 11 and 33.

402 voyages or catches were made, of which 225, or 56% by trawlers fishing individually and 177, or 44% by trawlers using the "bull-net". During the season 1950—51, the catches with the "bull-net" were so rare that they were not taken into account, viz. 18, or 5.3% of the total.

**Table 24. The Catch in the Seasons 1941/42—1951/52.**

Spent-Herring Season	Number of trawlers	Weight		Kg. per fishing day per 1 H. P.	Value Mill. fr.
		Total Mill. Kg.	indiv. trawlers		
1941—42	161	10.0	119	—	80.1
1942—43	290	51.9	164	—	352.5
1943—44	337	58.1	130	—	305.0
1944—45	280	31.4	160	—	167.0
1945—46	345	26.4	68	—	69.9
1946—47	346	22.1	50	—	40.8
1947—48	243	6.8	32	—	13.9
1948—49	258	9.5	26	—	17.2
1949—50	176	2.4	15	17	7.1
1950—51	67	1.7	32	44	4.9
1951—52	52	3.5	26	43	12.0

**Table 25. Percentage Distribution of Length, Maturity, Fat, Sex and Age.**

A. Centimetre Classes, mean Length and mean Weight.													
cm.	19	20	21	22	23	24	25	26	27	28	29	30	Mean, cm. Mean, gr.
Dec.....	—	—	—	4.4	8.4	17.2	25.2	<b>28.3</b>	12.8	2.8	0.4	—	25.6 114
Jan.....	—	—	0.5	4.8	15.5	17.2	22.5	<b>23.0</b>	12.8	3.2	0.5	—	25.4 109
Feb.....	—	0.3	0.3	4.3	15.0	18.7	<b>24.7</b>	22.3	12.3	1.6	0.3	—	25.3 104
Total 1951/52	—	0.1	0.3	4.5	13.5	17.7	23.9	<b>24.3</b>	12.6	2.6	0.4	—	25.4 109
— 1950/51	0.2	0.4	0.9	5.6	15.6	<b>19.7</b>	18.7	17.1	14.1	6.9	0.7	0.2	25.4 109

B. Stages of Maturity, Mesenteric Fat and % of Males.													
	Maturity Stages								Mesenteric Fat			Males	
	I	II	III	IV	V	VI	VII	VIII-II	0	1	+	M	%
Dec.....	0.4	—	—	—	—	0.4	2.4	<b>96.8</b>	9.2	<b>88.8</b>	2.0	—	—
Jan.....	—	1.0	—	—	0.2	1.2	1.8	<b>95.8</b>	16.8	<b>82.2</b>	1.0	—	—
Feb.....	—	1.7	—	—	—	—	1.0	<b>97.3</b>	15.7	<b>82.3</b>	1.7	0.3	—
Total 1951/52	0.1	1.0	—	—	0.1	0.6	1.7	<b>96.5</b>	14.4	<b>84.0</b>	1.5	0.1	48
1950/51	0.9	1.5	—	—	—	0.6	<b>97.1</b>	—	18.7	72.2	7.1	2.1	49

C. Year-Classes. (The number of herrings with readable scales: 493).											
Age (Years)	2	3	4	5	6	7	8	9	10	10+	Number of herrings invest.
Year-Class in Season 1951/52	1949	1948	1947	1946	1945	1944	1943	1942	1941	1941—	
Dec.....	—	10.4	<b>28.1</b>	19.8	20.8	10.4	5.2	3.1	—	2.1	250
Jan.....	—	20.6	<b>24.5</b>	<b>27.0</b>	10.8	4.9	4.4	4.9	1.0	2.0	400
Feb.....	1.0	23.3	<b>28.0</b>	<b>22.3</b>	14.0	6.2	1.0	3.1	—	1.0	292
Total 1951/52	0.4	19.7	<b>26.6</b>	23.7	14.0	6.5	3.2	3.8	0.4	1.6	942
— 1950/51	—	17.4	<b>22.2</b>	18.7	8.4	6.5	10.3	6.0	4.3	6.2	680

Classified according to fishing methods the landings were as follows:—

Trawlers fishing individually: 930 t., or 27%.

Trawlers using the "bull-net": 2,545 t., or 73%.

If we compare the average catch per fish-day for 1 H.P. developed obtained by the trawlers fishing individually with that of the season 1950—51, we find that the average catch of last season dropped from 32 Kg. to 26 Kg. and that the average catch of the trawlers using the "bull-net" dropped from 43.9 Kg. to 43.3 Kg., or only 0.6 Kg.

The total seasonal value reached 12.0 mill. fr. or an average price of 3.47 fr. per Kg.

The value of the landings made by the individual trawlers reached 3.5 mill. fr., or

29% and that of the "bull-net" trawlers 8.6 mill. fr., or 71%. The value of last season was 146% higher than that of the 1950—51 season.

3.5 mill. Kg. spent herring were landed, an increase of 103.5% against the previous season.

The average catch per voyage was 4,131 Kg. for the trawlers fishing individually against 5,203 Kg. in 1950—51, or a decrease of 1,072 Kg.

This decline can on the one side be ascribed to the fact that, contrary to the previous season, the smallest units formed the majority of the trawlers fishing individually and on the other side that the average catch for 1 H.P. developed per fish day also decreased.

The average catch for the trawlers fishing with the "bull-net" was 14,380 Kg. against 6,631 Kg., or an increase of 7,749 Kg.

**Table 26. Average Length and average Value of  $L_1$  of each Year-Class.**

Year-Class	Length of Year-Classes, mm.									$L_1$ of Year-Classes									
	1949	1948	1947	1946	1945	1944	1943	1942	1941	1949	1948	1947	1946	1945	1944	1943	1942	1941	Mean
Dec.....	—	237	253	261	265	270	275	278	—	—	104	106	108	95	104	113	104	—	—
Jan.....	—	235	248	260	264	266	275	273	277	—	102	104	105	96	78	106	99	106	—
Feb.....	216	235	251	259	266	274	280	273	—	126	98	105	98	95	95	102	98	—	—
1951/52...	216	235	251	260	265	270	276	274	277	126	100	105	103	95	93	108	100	106	101
1950/51...	—	—	236	245	257	264	269	274	277	—	—	115	105	104	101	100	103	112	108
Growth...	—	—	15	15	8	6	7	0	0	—	—	—	—	—	—	—	—	—	—

**Table 27. Racial Characters. Percentage Distribution and Mean.**

Month	54	Number of Vertebrae <sup>1)</sup>					Average	Number of Keeled Scales								Average
		55	56	57	58	59		13	14	15	16	17	18	19	20	
Dec.....	—	3.7	36.9	52.5	7.0	—	56.63	5.6	28.8	46.4	17.6	1.2	—	0.4	—	14.82
Jan.....	—	4.9	42.6	47.5	4.9	—	56.52	4.2	35.2	46.5	13.0	0.5	—	0.2	0.2	14.73
Feb.....	0.35	3.5	38.3	53.7	4.2	—	56.58	6.3	31.3	49.7	11.7	0.7	—	0.3	—	14.70
1951/52...	0.11	4.1	39.8	50.8	5.2	—	56.57	5.3	32.3	47.5	13.8	0.7	—	0.3	0.1	14.74
1950/51...	—	2.6	42.6	48.5	6.0	0.3	56.58	3.2	29.8	49.3	15.9	1.6	0.2	—	—	14.83

<sup>1)</sup> Among the 942 spines 30, or 3.18%, with one or more fused vertebrae and 2, or 0.21%, with damaged vertebrae. These 32 spines have been eliminated from our calculations.

This remarkable increase can be explained by the better rigging of the herring trawl and by the fact that during last season, the greater part of the largest trawlers were fishing with the "bull-net".

The average catch per fish day for 1 H.P. developed for a trawler fishing individually reached 26.1 Kg. and was 43.3 Kg. for a "bull-net" trawler, or 66% higher.

It is scarcely necessary to say that this good result will be a stimulation for those who up to now hesitated to use the "bull-net" and it may be expected that this fishing method will meet with still more success in the future.

#### B. Biology.

Twelve samples were investigated. The results are shown in Tables 25 to 27.

The average length of the herring was the same as in 1950—51, viz., 25.4 cm. During December this average reached its highest level with 25.6 cm. and its lowest in February with 25.3 cm. The average weight of the herring was 109 gr. It is also during December that the highest weight was recorded, viz. 114 gr.

Concerning the percentage distribution of the year-classes, we find that the three- to six-year-old herrings were never so well represented in the catches, viz. with 84.0%.

Year-Class	1948	1947	1946	1945
Age (Years).....	3	4	5	6
Percentage.....	19.7	26.6	23.7	14.0

The vertebral average was 56.57. Its maximum was during December with 56.63 and its minimum in January with 56.52. The high vertebral average observed during December, shows that the "Channel Herring" had then already penetrated into the southernmost area of the North Sea.

Among the 942 stomachs examined only 8, or 0.84%, were found to have some contents, which for the greater part consisted of remains of copepods.

#### C. Forecasts for the Campaign 1952—53.

Considering the exceptionally good representation of the youngest generations in the catches of last season, it may be expected that during the next season, they will also be very well represented and in this manner ensure dense herring concentrations.

In consequence, if the herring concentrations present themselves when favourable hydrological conditions prevail and the exploitation is not hindered through bad weather conditions, we may expect the spent-herring campaign 1952—53 to give satisfactory results.

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#### Hareng du Sud de la Mer du Nord et de la Manche Orientale.

##### Campagne de Pêche 1951—52.

#### I. Déplacement de la Pêcherie. Rendements.

##### a) Drifters.

Les premières captures faites à bord des unités artisanales armées au filet dérivant et basées au port de Boulogne eurent lieu au large d'Etaples, vers le 25 Octobre.

La pêche du hareng au filet dérivant se poursuivit en Novembre et Décembre: elle fut interrompue à la fin de ce dernier mois, en raison des fortes tempêtes et les bateaux désarmèrent dès le début de Janvier; ce désarmement s'effectua trop tôt, semble-t-il, car à la fin de Janvier on signalait encore la présence de bancs de harengs dans le Pas de Calais, au large de Boulogne; quelques drifters anglais à cette époque et dans cette région firent, en effet, des captures appréciables.

##### b) Chalutiers.

Ce n'est guère que vers le 6/7 Novembre que la flottille de chalutiers se concentra sur le