

DEMERSAL FISH (NORTHERN) COMMITTEE

by A. Meyer

1971

Belgium

(P. Hovart)

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Work at sea. The RV "Hinders" made monthly cruises off the Belgian coast on 10 stations to analyse the stocks of juvenile sole, plaice, dab, flounder, gadoids, shrimps and other organisms.

The joint programme with Holland, Germany and Denmark on the nurseries was continued by two cruises.

1 500 plaice were tagged off the Belgian coast.

1 000 plaice were tagged on board the RV "Tridens" in the Morecambe Bay.

500 cod were tagged off the Belgian coast.

Work on fish. The stock analysis by means of market sampling was continued. Age, length, weight, sex and stage of maturity of cod, whiting, plaice and sole were determined. The areas studied are as follows : Cod - North Sea; whiting - North Sea; plaice - North Sea, English Channel and Irish Sea; sole - North Sea, English Channel and Irish Sea.

A special study was started on the growth of the year class 1971 of sole on the Belgian coast. An analysis was made of the by-catches of the shrimp fishery.

Canada

(W. Templeman and F. D. McCracken)

In 1971 groundfish surveys, coordinated through ICNAF, in which the St Andrews and St. John's Station participated along with laboratories in St Pierre, USA and USSR covered the area from the Grand Bank to Cape Hatteras. Detailed comparison between research vessel results and those obtained from commercial sampling showed good agreement for most areas and species. There is now convincing evidence of the ability of research vessel surveys to measure groundfish abundance with sufficient accuracy to indicate major trends. The use of this new tool for stock assessment is important since reduction of stocks in some areas has markedly affected distribution of fishing effort and thus the catchability co-efficient which has been used in estimating populations.

Routine size, age and maturity sampling of landings from ICNAF Sub-areas 2-5 were continued in 1971.

## Cod

Research vessel cruises in April-May to ICNAF Division 2J and 3K showed the 1967 year class to be the most numerous, making up most of the catches. Older cod were scarce.

Recruitment of cod in the southern Gulf of St Lawrence (4T) has been quite stable for a number of years although the 1964 year class appears to have been relatively more abundant than usual and the 1966 year class somewhat less abundant. Peak size of fish landed in 1971 continued to be about 46 cm with most cod being of ages 4, 5 and 6. Research vessel surveys indicate continued recruitment stability.

Landings from offshore cod stock in Division 4X (Browns-LaHavre Banks region) declined 50% in 1970. Catch per hour (by weight) for commercial trawlers continued to decline and research vessel survey data show a marked reduction in stock abundance from 1965 through 1970. Indications are that strong new year classes will not enter the fishery over the next few years.

During August, September and October, with temperatures of about 10°C in Passamaquoddy Bay, 80 to 90% of yearling cod feed almost entirely on krill (*Meganyctiphanes*). Applying instantaneous rates of gastric emptying determined in the laboratory, it was estimated that yearling cod consumed 49 kilocalories of krill per kilogramme of cod per day during this period. As a check on whether this ration estimate was realistic, growth rate in energy equivalents for these cod in the bay, and rate of energy utilisation in maintenance requirements determined in the laboratory, were summed and the sum subtracted from the ration estimate to get an estimate of energy expenditure for swimming activity. The activity rate of 13 kilocalories per kilogramme per day, and the total metabolic rate of 25 kilocalories per kilogramme per day, compare well with published laboratory and field work for other species.

## Haddock

Research vessel cruises showed no significant quantities of adult or pre-recruit haddock in the ICNAF Division 3N and 3O and poor year classes of haddock throughout ICNAF Subarea 4 up to and including that of 1970. This indicates no significant improvement in recruitment to the fishery at least until 1975. Current attempts to improve population abundance in Subarea 4 include both quotas and closed seasons. Population assessments suggest that even more restrictive measures may be necessary for management of a recovering fishery if or when good year classes occur again.

## Food consumption and swimming activity (American plaice)

Laboratory food consumption and swimming activity of American plaice is positively correlated with food availability. Gross growth efficiency (G/R) increases with increasing food consumption and asymptotes at 0.25. Caloric determinations from fish in St Margaret's Bay indicate that a mature 35 cm female plaice begins with a total energy content of about 250 kcal and accumulates about 163 kcal during the 7-month feeding season. Of the 163, 51 kcal represent body growth and 21 ovary growth; 91 are stored in the body of which 20 are later transferred to the ovary and 71 used for metabolism during the overwintering period.



### Larval studies

Simultaneous sampling with an Isaacs-Kidd net for larvae and a ~~4~~5 mesh ring net for food species showed good correlation between the most abundant small plankton organisms and the species found in larval fish stomachs. The Cladoceran, Podon intermedius and such copepods as Temora longicornis, Calanus finmarchicus, Pseudocalanus minutus, etc. were abundant or dominant in the southern Gulf of St Lawrence plankton. The same species were also found to be most important as food for larval flatfish, cod, hake, etc.

### Denmark

(O. Bagge)

### Plaice

In July and August quantitative fishery for 0-group plaice was carried out in inshore waters. In the northern Kattegat, the catches were below the average for 1961-1970, in the southern Kattegat and the western Baltic they were above average, and in the Belt Sea the catches were of average size.

### Haddock, whiting and cod

On the "DANA" cruise in March-April length measurements were collected.

### Sole

The sampling in May continued and an age-length key was worked out. It was found that for otter-trawl the year class 1967 was dominating and constituted 37.56% of the total landings. For gill-nets it was found that the year class 1966 was dominating and constituted 34.37% of the total landings.

### Turbot and brill

Eightynine brill and 131 turbot have been tagged in the central Kattegat.

### Cod

Tagging of cod has been carried out in the Jutland bank area in January and April; 865 and 1 738 individuals were tagged respectively.

### France

(G. Lefranc)

### Travail en mer

En avril-mai 1971 une campagne de recherche a été réalisée par le navire océanographique "Thalassa", le long du Groënland oriental, sur les bancs de Heimland Rucken, Angmagsalik, Gauss Bank et Dohrnbank; elle a été suivie d'une étude des fonds chalutables situés au large des côtes N.W., S.W., S et S.E. de l'Islande. Cette campagne qui

s'inscrit dans le cadre de l'étude des stocks de poisson et de la prospection des fonds a permis de recueillir de nombreuses données biologiques et biométriques concernant une grande quantité d'espèces commerciales.

Une autre mission de prospection s'est déroulée en novembre 1971, aux accores ouest et nord des Shetlands, sur des fonds compris entre 400 et 600 m. La distribution et l'abondance des espèces démersales ont été appréciées en fonction des sondes. Cette campagne a débuté par des marquages de morue dans le sud de la Mer du Nord (477 morues marquées à Smiths) et en Mer du Nord septentrionale (295 morues marquées à Forty Miles) où nous continuons les expériences commencées les années précédentes.

#### Travail au laboratoire

Morue - Les relevés statistiques concernant les apports des bateaux travaillant dans le centre et le sud de la Mer du Nord sont poursuivis.

L'étude des premières recaptures obtenues à la suite des marquages effectués en Mer du Nord septentrionale est commencée.

Les 1 989 morues capturées au Groënland-est ont été l'objet d'une analyse concernant leur répartition selon les sondes, leurs croissances pondérale et linéaire, la composition en âges et en tailles.

Merlan - L'examen des captures en provenance du sud de la Mer du Nord est continué. Il permet de connaître la répartition des quantités de poissons pêchés en fonction des groupes de tailles. A la suite des diverses campagnes, les distributions en tailles et en âges ont été établis pour chaque secteur prospecté. Des corrélations taille/poids ont également été faites.

Eglefin - Les compositions en tailles et en âges des apports provenant de chacun des sous-secteurs de la Mer du Nord sont analysés mensuellement.

Lieu noir, sole et plie - Depuis 1971, les tonnages débarqués pour chacune de ces trois espèces sont relevés en fonction des groupes de tailles définis par l'association française de normalisation.

#### Germany

(A. Meyer)

Continuation of the biological studies at sea on research ships and factory trawlers and at the market with length measurements, collection of otoliths, maturity, food and tagging (see table next page).

Research trips : a) "Anton Dohrn" - January : North Sea (cod, haddock, whiting, plaice, dab). March/April : Norwegian Coast, Bear Island, Barents Sea (cod, haddock, saithe, redfish). April/May : Baltic Sea (cod, flounder). June/July: Iceland-East Greenland (O-group survey). October/November: North Sea (cod, haddock, whiting, plaice, dab).

b) Factory Trawler - August : Bear Island, Barents Sea, Iceland (cod, haddock, saithe).

Area	Species	landing tons round fresh	length-measurements fresh	otoliths	taggings	length-measurements 'per 1000 t landing round fresh
I	eod	2 440	59	59		24
IIa	eod	4 311	2 859	1 244		663
	haddock	878	2 495	831		2 842
	saithe	11 033	2 379	2 379		216
	redfish	1 114	2 946	190		2 645
IIb	cod	2 957	240	240		81
	redfish	2 667	225	40		84
IIIc,d	cod	14 332	71 821	15 009	1 348	5 011
	plaice	162	1 085	85	117	6 697
	flounder	318	2 170	970		6 824
IV	eod	46 267	27 245	3 997	1 954	589
	haddock	2 692	16 305	2 088		6 057
	saithe	744	251	251		337
	whiting	185	8 638	462		46 692
	hake	109	74	74		679
	plaice	3 290	20 005	3 958	1 899	6 096
	dab	48	5 843	0		121 729
Va	eod	27 347	11 265	4 147		412
	haddock	2 012	2 525	807		1 255
	saithe	40 852	19 216	7 260		470
	redfish	45 833	14 106	137		308
Vb	saithe	2 251	1 228	1 228		554
XIV	cod	28 571	7 407	2 870		259
	redfish	13 626	5 231	25		384



Iceland

(J. Jónsson)

As in previous years the main biological research was devoted to the most important commercial species. Otoliths, length, sex and maturity were recorded for 14 074 cod, 4 275 haddock, 3 173 redfish, 2 373 catfish, 1 162 plaice, 584 halibut, 521 Greenland halibut and 1 206 lumpsucker.

With regard to length only 34 562 cod, 9 487 haddock, 682 catfish, 2 526 plaice, 833 halibut, 3 279 Greenland halibut and 350 lumpsucker were measured. Further, length measurements, sex and maturity were determined for nearly 20 000 redfish, about the half taken in East-Greenland waters. Besides this, measurements and/or otoliths were taken from over 30 other species for further investigation.

A total of 4 816 cod were tagged, 740 of them at East-Greenland. At different localities in Icelandic waters 2 323 catfish, 1 862 plaice, 1 268 lumpsucker and at the north coast 2 110 Greenland halibut were tagged. During the spawning season, samples for blood analysis were taken from 60 cod and the egg size of 78 cod from East-Greenland waters was measured.

Ireland

(A.E.J. Went)

(D. de G. Griffith)

Cruises were made on the research vessel Cu Feasa for the purpose of a) determining the distribution and abundance of eggs and larvae of the plaice (Pleuronectes platessa) in the north-west Irish Sea and b) determining the relationship between length and weight of adults of the same species. Commercially landed material was also examined for this purpose.

Netherlands

(P. Korringa)

Work at sea

The RV "Tridens" made 17 cruises in the Committee's area of which 12 were mainly or partly devoted to work within the scope of the Demersal Fish (Northern) Committee.

The corresponding number of cruises by RV "Willem Beukelsz" were 22 and 19.

The RV "Tridens", "Willem Beukelsz", "Schollevaar" and "Waddenzee" made two joint cruises (in August and October) to analyse the stocks of juvenile sole, plaice, dab, flounder, gadoids, shrimps and other organisms in the nurseries of Belgium, Holland, Germany and part of Denmark in co-operation with the Belgian research cutter "Hinders" doing the Belgian coast, the German RV "Neptun" and "Sirius" working in the Niedersachsen area and the RV "Alcor" from the University of Kiel doing the Schleswig-Holstein coastal area.

Work on Fish

Plaice. The stock analysis by means of market sampling was continued.

Sole. The stock analysis by means of market sampling and racial investigations on sole from different localities in the North Sea, the Irish Sea and the Bristol Channel was continued. Four cruises were

made in the Irish Sea in which 5 100 soles were tagged (in March 2 100, May 1 000 and in November 2 000). In November 700 soles were tagged and released in the Bristol Channel.

An analysis of the catches of undersized sole in the Dutch, German and Danish coastal areas on a standard network of stations was made twice in order to be able to predict commercial catches.

Cod, haddock and whiting. The stock analysis by means of market sampling was continued.

Cod. Three egg and larvae surveys were made in the central (2) and southern (1) North Sea. 1 500 cod were tagged and released in the beginning of 1971 and in autumn in the Dutch coastal area.

#### Norway

(A. Hyleb)

#### Sampling

For stock assessment purposes the sampling of landings of cod, haddock, saithe, redfish and Greenland halibut from Subareas I, II, and IV continued. However, the main activity was diverted to cod, haddock and saithe from Subareas I and II. A total of 30 000 otoliths were sampled and 181 000 fish were measured. The market sampling was also supplied with data collected on board research vessels and some hired fishing vessels.

Tagging of 2 900 spawning cod were carried out during March/April in Lofoten and 1 300 immature saithe were tagged in Norwegian coastal waters from Stad to North Cape.

A pilot study of the species composition of landings from the Recommendation 4 fisheries in Subarea IV and the southern part of Division IIa was started in May. From September this study was followed by an extensive sampling programme. The species composition was also studied in February on a young herring survey with RV "G.O. Sars".

#### Research trips for demersal fish

Egg surveys were carried out during March/May with RV "Johan Hjort" (2-9 April and 29 April to 5 May) and RV "Asterias" (29 March-5 April and 2-5 May) in the main spawning area of Arctic cod.

RV "G.O. Sars" took part in the international O-group fish survey in East Greenland and Icelandic waters (7-20 August) and together with RV "Johan Hjort" in the international O-group fish survey in the Barents Sea and adjacent waters (20 August - 20 September).

Two trips were made with RV "Peder Rønnestad" along the Norwegian coast from Stad to Nordkyn (26 May - 6 June, 30 August - 10 October) for estimating the abundance of O-group saithe. A beach seine was used as sampling gear.

A young fish survey was made in June with RV "G.O. Sars" to the Barents Sea and adjacent waters for estimating the abundance of year class strength of cod, haddock and redfish.

The Lofoten area was echo-surveyed in March by RV "G.O. Sars" in order to estimate the number of cod within the main spawning area.



Poland  
(B. Draganik)

Cod. In 1971 samples were taken from the commercial catches in the Southern Baltic for determination of size, weight, sex, stage of maturity and age composition.

In total, 26 286 cod individuals were measured for length and the age of 5 592 cod was determined.

Quantitative catches of juvenile cod with standard trawl were made in two regions, in the Bay of Gdańsk and in the Southern part of Bornholm Basin. Together, 104 hauls were made and 6 143 fish were caught.

Age estimations were made on otoliths taken from 1 374 juvenile cod.

Flatfish. Data on landings of the Polish flatfish catches in the Baltic were collected. In 19 samples taken from the Bay of Gdańsk and 15 samples from the Bornholm Basin, the length of 4 466 flounder and 691 plaice was measured. 2 743 flounder and 691 plaice were investigated for weight, age composition and sexual maturity.

North Sea

Table 1

Species	Number of Fish	
	Length measured	Analysed
Blue whiting	547	200
Haddock	7 446	1 822
Saithe	2 946	800
Cod	230	200
Total	11 169	3 022

Celtic Shelf

Table 2

Species	Number of Fish	
	Length measured	Analysed
Blue whiting	894	200
Haddock	3 237	700
Saithe	220	100
Total	4 351	1 000



Iceland

Table 3

Species	Number of Fish	
	Length measured	Analysed
Cod	4 215	1 050
Greenland Halibut	4 787	720
Saithe	473	202
Redfish	3 850	398
Silver Smelt	1 176	201
Blue Whiting	1 338	300
Grenadier	200	100
Blue Ling	100	100
Total	16 139	3 071

Barents Sea

Table 4

Species	Number of Fish	
	Length measured	Analysed
Cod	2 387	470
Greenland Halibut	4 854	200
Saithe	2 690	500
Redfish	919	100
Blue Whiting	482	100
Total	11 332	1 370

Portugal

No report received.

Spain

No report received.

Sweden

(G. Otterlind)

The Swedish activity has, as in previous years, mainly been focussed on Baltic cod. The working up of the material from the international cod tagging programme and earlier Swedish tagging experiments has been continued. Samples of cod eggs and larvae have been collected and the abundance of young cod studied by using the Baltic standard trawl. Preliminarily, the recruitment seems to be very low in 1971 - probably a consequence of the low oxygen content of the deep water of the Baltic proper (south of the Åland sea).

United Kingdom

1. England and Wales

(D.J. Garrod)

NEAFC Region I fisheries

Stock assessment programmes have continued. The new RV "CIROLANA" has been fully operational during the whole year and in addition to cooperating in the international O-group survey at Iceland and in the Barents Sea, two cod blood serum surveys were carried out at Iceland during the first half of the year.

In June an intensive survey of the Faroe Bank was undertaken to evaluate the effectiveness of research ships' groundfish surveys and to assess the work load involved.

Ten freezer trawlers have now been fitted with automatic fishing time recorders which appear to function efficiently once initial installation problems have been overcome.

NEAFC Region II fisheries

The programme of sampling commercial landings at all the major fishing ports was maintained.

In the North Sea the dab research programme was completed at the end of 1971. Work on the plaice and cod fisheries continued. A cod tagging experiment to investigate the unity of cod stocks in boundary areas indicated by previous tagging work was carried out.

The egg and larval surveys in the early part of the year were continued in the Southern North Sea and extended into the English Channel. Studies of the biology of juvenile plaice were carried out along the south coast from Kent to Cornwall, and similar work continued in the North Sea off the Yorkshire coast.

In the Irish Sea egg and larval surveys of the cod spawning areas were carried out together with additional biological studies and tagging.

Fish tagged in connection with these various programmes were as follows:

Region IVB	672 Cod	508 Plaice	52 Spurdogs
Region VIIA1	493 Cod		
Region VIIF	15 Cod		

2. Scotland

(R. Jones)

Routine trawling surveys were carried out in the North Sea in May/June and October/November; off the Scottish west coast in December; and at Faroe in August 1971. These were used to determine the length



and age composition of the major demersal stocks, and to obtain pre-recruit estimates of the year class strengths of haddock, whiting and Norway pout. 0-group gadoids were sampled in the North Sea in July, using a pelagic trawl. Flatfish pre-recruit surveys were carried out off the Scottish east coast in June/July.

Cod, haddock, whiting, hake, saithe, plaice, lemon sole and megrims were sampled at the principal Scottish trawl and seine ports as in previous years. Samples were measured and otolith samples were taken for age determination. These data formed the basis of material supplied to Annales Biologiques and ICES Statistical News Letters and were also used to provide forecasts for the major Scottish fisheries.

Foreign landings of Norway pout in Scottish ports were monitored from landing statistics and samples were obtained when possible. In addition, samples were obtained from July to October from a new fishery in the North Minch.

Haddock, whiting, plaice and lemon sole were tagged in Scottish waters, and further attempts were made to improve fish condition, by using a modified canvas codend instead of a normal netting codend.

Further field work was carried out on the hearing sensitivity of cod and haddock with special reference to the effect of background sea noise, and the ability of the fish to determine the direction of sound sources.

Initial experiments have been made in the new Behaviour Unit on the swimming speeds and endurance of demersal fish. Aquarium studies have been continued on the efficiency of food conversion in gadoids, and studies have been commenced on the feeding behaviour of gadoids.

Analysis of demersal fish stomach contents has been continued, with particular reference to differences in stomach contents between species, and between different sized individuals of the same species.

The extensive survey of the occurrence of a tapeworm larva in the 1967 year class of North Sea whiting was continued, and investigations have been commenced on the occurrence of nematode larvae in the musculature of cod and whiting in Scottish waters.

U.S.S.R.

(G. V. Nikolsky)

In 1971, as well as in the previous years, material was collected on the abundance, size-age composition and distribution of cod, haddock, redfish, Greenland halibut and other demersal fish. The volume of the material collected by separate areas from research and scouting vessels is presented in Tables 1 and 2.

In 1971, work was carried out aiming at refinement of the estimation of the state of stocks of the main commercial fish and the conditions of survival of the young at different stages of their development were studied. Ichthyoplankton was collected and analysed. Fishery forecasts were worked out, the development of methods of forecasting were continued.

The investigations were conducted not only in the Barents Sea, but also at the north-western coast of Norway and the North Sea and in the area of Iceland and East Greenland.

In 1972 we intend to carry out investigations in the same areas and in accordance with the same programme.

The Atlant Research Institute of Marine Fisheries and Oceanography carried out investigations in the north-east Atlantic (North Sea and western part of the British Isles). Four research trips were made.

Objects of the investigations were :

Haddock, Whiting, Saithe, Blue Whiting and Norway Pout.

The following questions were studied in the investigated area : Hydrographical regime; seasonal dynamics of plankton of the North Sea; distribution and relative abundance of the main commercial demersal fish; age-size composition of the main commercial species.

The programme for 1972 provides for the continuation of research work in the north-east Atlantic in the following directions : Study of stocks and peculiarities of distribution of the demersal fish (haddock, whiting, saithe, cod, blue whiting, Norway pout); study of hydrographical regime and seasonal dynamics of plankton.

The Moscow State University was conducting investigations on dynamics of abundance of demersal fish of the Baltic and the White Seas. Development of some fish of the White Sea was also studied.

Baltic cod. The Baltic Institute of Fisheries made trips to record cod abundance of 0+ and I+ in the Ventspils, Liepaja and Gotland areas in the first and fourth quarters of 1971. Distribution, growth and feeding of immatures were studied. Based on the census of immatures the year class productivity was estimated as good for 1969 and poor for 1970 and 1971. These estimations coincide with those of the Polish scientists for the southern Baltic.

The investigations on state, composition and distribution of cod stocks in the Baltic were continued.

Hydrographical regime, distribution and fishery, catch per effort, size-age and sex composition of stocks, rate of growth and maturation of fish, food composition and intensity of cod feeding, effect of feeding migration conditions on distribution and maturation of fish, effect of cod on sprat and herring abundance were taken into account.



About 20 000 fish were investigated to determine size and age compositions, etc. Food composition of 2 000 fish was studied. Data for cod fecundity analysis were collected.

Regularities of cod distribution according to areas and depth zones depending on sea regime and stock size were checked as well as fish feeding conditions. Preliminary data of the effect of cod feeding conditions in the autumn-winter period on its behaviour, gonad maturation and spawning time were obtained. The estimation of cod stocks in 1971 and forecasts for 1972-1973 were made. It is expected that in 1973 the stock size will be 75% of that in 1971.

Flounder in the eastern Baltic. Studies of flounder distribution according to depth zones and areas depending on sea size and fish state were continued. 3 400 flounders were tagged and in some series the return was 30%. 10 000 flounder were caught for estimation of biological indices of fish state and stock characteristics.

Seasonal range, localisation and mixing rate of flounders of different populations in the eastern Baltic, as well as the main seasonal migrations were clarified. Data on natural and fishing mortality of flounder according to seasonal distribution changes were collected. In 1971 the state of the flounder stock and characteristics of the fishery were estimated as : 1967 year class good, 1968 and 1969 year classes poor, 1970 year class average, i.e. in 1973 the flounder stock will decrease as compared with 1970-1971, when average and good year classes were forming the stock.

Table 1 Biological material (in numbers) collected in the Barents Sea in 1971

Species	No. measured		Age determin.		Fatness determ.	Field Analysis of feeding	Tagged	Ichthyo- plankton No. of samples collected
	Adult	Young	Adult	Young				
	<u>Southern Barents Sea</u>							
Cod	72 260	20 338	9 112	5 164	3 519	19 745	1 021	
Haddock	56 353	12 195	4 365	2 523	1 839	9 386	-	
Halibut	7 936	-	961	-	-	3 831	-	
Redfish	22 773	-	594	2 450	-	3 902	-	
Others	50 967	-	3 549	-	-	10 008	200	
Total	210 289	32 533	18 581	10 137	5 358	46 872	1 221	225
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	<u>Bear Island - Spitsbergen Area</u>							
Cod	9 554	10 197	3 272	2 679	1 551	9 468	394	
Haddock	3 200	1 091	155	1 217	120	1 746	7	
Halibut	34 138	-	4 939	-	-	9 657	402	
Redfish	110 443	-	7 150	2 000	-	17 649	-	
Others	28 964	-	612	-	-	3 917	-	
Total	186 299	11 288	16 128	5 896	1 671	42 437	808	78

Table 2 Biological material (in numbers) collected in the Norwegian Sea and North-East Atlantic, 1971

Species	Number measured	Age determination	Fatness determ.	Field Analysis of feeding	Tagged	Ichthyoplankton No. of samples No. of specimens collected
<u>North-western Coast of Norway</u>						
Cod	5 244	1 179	1 020	1 951	164	
Haddock	2 154	1 368	1 331	1 207	10	
Halibut	99	-	-	58	-	
Redfish	9 000	1 455	-	2 883	-	
Others	10 069	1 408	-	2 150	12	
Total	26 566	5 410	2 351	8 249	186	2 282
<u>Iceland Area</u>						
Cod	12 706	1 166	400	1 813	732	
Haddock	417	261	100	186	-	
Halibut	45 730	3 301	-	5 562	1 299	
Redfish	6 685	915	-	2 532	-	
Others	5 146	333	-	1 125	1	
Total	70 684	5 976	500	11 218	2 032	
<u>East Greenland</u>						
Cod	5 410	300	100	720	145	
Halibut	7 221	-	-	1 725	-	
Redfish	681	219	-	50	-	
Total	13 312	519	100	2 495	145	
<u>North Sea</u>						
Cod	19	-	-	15		
Haddock	26 149	912	102	1 787		
Redfish	3	-	-	-		
Others	38 832	825	-	4 247		
Total	65 003	1 737	102	6 049		