

PELAGIC FISH COMMITTEE

by

O. J. Østvedt

1979

Belgium

(P.Hovart)

Herring and sprat

No marked sampling of pelagic fish had been carried out in 1979. Research vessel surveys on the two juvenile species were continued as given in the table below.

Research vessel surveys

<u>Area</u>	<u>Season</u>	<u>Objective</u>
Belgian coast	Whole year, monthly intervals	Recording densities of immature herring and sprat

Canada

(G.H. Winters)

All research relevant to this committee has been reported to ICNAF/NAFO

Denmark  
(K. Popp Madsen)

HERRING.

Area	Season	Type of fish	No of samples		No of fish		
			Research vessel	Market	Measured	Aged	Examined racially
North Sea	1	Mixed	26	6	1103	1103	-
	2	"	-	7	47	47	-
	3	"	-	38	588	588	121
	4	"	-	22	456	456	-
Skager-rak	1	Mixed	-	10	50	50	-
	2	"	-	10	340	340	264
	3	"	-	27	1770	1033	563
	4	"	-	34	1369	1165	305
Katte-gat	1	Mixed	-	18	954	954	-
	2	"	-	24	1718	1056	870
	3	"	-	8	292	292	100
	4	"	-	38	887	886	539
Danish Fiords The Bealt Sea	1	Mixed	-	-	-	-	-
	2	"	-	7	1246	1246	1246
	3	"	-	-	-	-	-
	4	"	-	7	548	548	548
Kattegat + Skagerrak	1	Mixed	-	-	-	-	-
	2	"	-	-	-	-	-
	3	"	21	-	5908	5908	2091
	4						

The RV "Jens Chr. Svabo" participated in the International Young Herring Surveys in Februar - March 1979.

SPRAT. Denmark 1979

Area	Season	Type of fish	No of samples		No of fish		
			Research vessel	Market	Measured	Aged	Examined racially
North Sea	1	Mixed	20	30	6490	4282	-
	2	"	-	8	240	238	-
	3	"	-	68	7243	4828	-
	4	"	-	27	2759	1987	-
Skagerrak	1	Mixed	-	9	1039	1039	-
	2	"	-	12	3838	3236	-
	3	"	-	14	1408	1314	-
	4	"	-	18	1533	1532	-
Lattegat	1	Mixed	-	12	1524	1524	-
	2	"	-	8	945	945	-
	3	"	-	6	707	707	-
	4	"	-	16	1535	1535	-

BLUEWHITING.

Area	Season	Type of fish	No of samples		No of fish		
			Research vessel	Market	Measured	Aged	Examined racially
North Sea	1	Mixed	-	45	2288	1318	-
	2	"	-	13	1005	561	-
	3	"	-	-	-	-	-
	4	"	-	7	104	70	-
Skagerrak	1	Mixed	-	2	10	10	-
	2	"	-	6	296	257	-
	3	"	-	5	91	89	-
	4	"	-	1	12	12	-
West of 4° W	1	Mixed	-	-	-	-	-
	2	"	-	5	259	138	-
	3	"	-	-	-	-	-
	4	"	-	14	494	103	-

Finland

(V.Sjøblom and R.Parmanne)

No work done on pelagic fish other than that reported to the Baltic Fish Committee.

France

(G.Kurc)

Ce rapport regroupe les activités des trois organismes qui conduisent des programmes de recherches sur les poissons pélagiques, à savoir l'Institut scientifique et technique des Pêches maritimes (ISTPM), le Centre national pour l'Exploitation des Océans (CNEXO-COB), l'Office de la Recherche scientifique et technique Outre-Mer (ORSTOM).

En ce qui concerne les petits pélagiques des eaux tempérées ou froides, les travaux sont menés par l'ISTPM. Dans l'Atlantique nord, les thons sont étudiés par l'ISTPM sur le plan de la biologie et de la pêche et par le CNEXO-COB en ce qui concerne l'évaluation des stocks.

1. Eaux tempérées.

1.0. Petits pélagiques.

En 1979, l'ISTPM a commencé un travail d'évaluation par écho-intégration (hareng), tout en poursuivant des travaux d'étalonnage à partir d'anchois et de chinchards, en fonction du nombre et de la taille des individus

Sardine (Sardina pilchardus)

Laboratoire ISTPM de Nantes

Les apports sont en hausse par rapport à 1978, grâce à de bonnes captures effectuées dans le secteur VIII b. La baisse de production du secteur VIII a. est imputable à l'absence de débouché pour les grosses sardines.

Production.

Espèce	Région	Saison	Tonnage	Total (tonnes)
Sardine	VIII a	janvier à octobre	5 156	5 528
		novembre à décembre	372	
	VIII b	janvier à octobre	1 042	1 042
				6 570

Echantillonnage.

Saison	Région	Nbre échantil.		Nbre de poissons	
		Btx recher.	marché	mesurés	âge détermi.
4ème trim.	VII c	1		41	

Les travaux de recherche consacrés à la sardine ont porté sur la synthèse et l'analyse des données collectées au cours des années antérieures.

Anchois (Engraulis encrasicolus)

Laboratoire ISTPM de Nantes

En 1979, les apports d'anchois ont baissé, une partie de la production (193 t) a été transformée en sous-produits.

Production.

Espèce	Région	Saison	Tonnage (tonne)
Anchois	VIII a	janvier à octobre	54
	VIII b	janvier à octobre	700
Total			754

Aucun échantillonnage n'a été effectué sur l'anchois au cours de l'année 1979.

Sprat (Sprattus sprattus)

Laboratoires ISTPM de Boulogne/Mer, Lorient et Nantes.

Aucun échantillonnage en 1979. Par ailleurs, il existe des possibilités de capture dans le secteur VIII a, mais cette espèce n'est toujours pas exploitée par suite de l'absence d'un débouché régional.

Aucun échantillonnage dans le golfe de Gascogne.

Hareng (Clupea harengus)

Echantillonnage Mer du Nord.

Laboratoire ISTPM de Boulogne/Mer

	IV a	IV b	IVc+VIId	VI a	
Echantillonnage (pêche)		122	240		
Mensuration (pêche)		445	1 595		
Echantillonnage (N.O.)	436	100	-	93	
Mensurations	2 291	533		585	
Total échantillonnages	436	222	240	93	991
Total mensurations	2 291	978	1 595	585	5 449

Cet échantillonnage porte essentiellement sur du poisson adulte.

Activité du navire de recherche :

n/o "Thalassa" Y.H.S. 11 février-10 mars 1979

n/o "Thalassa" Echo Survey 9-21 juillet 1979

Echantillonnage golfe de Gascogne

Laboratoires ISTPM de Lorient et de Nantes

Aucun échantillonnage important n'a été effectué en 1979. Cette pêche reste très accessoire dans la région VIIa compte tenu du peu d'importance du stock et surtout de l'absence d'un circuit commercial structuré.

Les échantillons collectés en 1975 sont actuellement en cours d'étude.

Saison	Région	Nbre échantillons		Nbre de poissons	
		Btx recher.	marché	mesurés	âge détermin.
4ème trim.	VIIe	1		15	

Maquereau (Scomber scombrus)

Laboratoire ISTPM de Boulogne/Mer

Echantillonnage.

	IVa	IVb	VIa	VIIId	VIIe	VIIIf	
Mensurations (Boulogne)				1 583	1 091	84	
Mensurations (N.O.)	156	30	230				
TOTAL	156	30	230	1 583	1 091	84	3 474

L'échantillonnage effectué à Boulogne/Mer est communiqué au responsable du groupe de travail concerné du CIEM (J.GUEGUEN).

Echantillonnage golfe de Gascogne

Laboratoire de Lorient

Saison	Région	Nbre échantillons		Nbre de poissons	
		Bateaux de recherche	marché	mesurés	dont âge déterminé
1er trim.	VI a		3	448	
	VII b		3	394	
	VII e		6	1 363	60
	VII f		2	410	42
	VII h		5	1 180	92
	VII j		2	532	30
	VIIIa		3	439	54
	VIIIb		1	128	
2me trim.	VI a		2	548	41
	VII b		2	333	
	VII e		3	790	
	VII f		1	72	
	VII g		3	313	43
	VII h		5	1 014	84
	VII j		1	177	
	VIIIa	1	5	997	138
3ème trim.	VI a		1	76	
	VII a		1	181	
	VII e		2	256	
	VII f		2	182	
	VII g		4	641	66
	VIIIa		6	1 049	74
4ème trim.	VIa		4	551	67
	VII a	1	2	289	39
	VII e	1		46	23
	VII f		1	209	26
	VII g		7	1 446	134
	VIIIa		3	203	34

Le travail a porté sur l'estimation de la structure démographique des captures françaises de maquereau.



Laboratoire ISTPM de La Rochelle

Echantillonnage

navires artisans pélagiques

Saison	Région	Nbre de poissons mesurés	Origine
1er trimestre	VIII a	94	marché
	VIII b	231	
		97	
2ème trimestre	-	-	-
3ème trimestre	VIII a - VIII b	36	marché
		40	
		41	
4ème trimestre	VIII a - VIII b	94	marché
		231	
		97	

navires hauturiers

Saison	Région	Nbre de poissons mesurés	Origine
1er trimestre	VII g	45	marché
		42	
		46	
2ème trimestre	VII f	45	marché
		39	
		41	

Merlan bleu (Gadus poutassou)

Aucun échantillonnage en 1979.

Thonidés

Germon (Thunnus alalunga)

Laboratoire ISTPM de Nantes

Echantillonnage ISTPM

Au cours de l'année 1979, deux campagnes thonières ont été effectuées, l'une dans le golfe de Gascogne, l'autre dans le NW de l'archipel açorien entre 30°W et 46°W. Des marquages ont été effectués. La production métropolitaine est voisine de 6 000 t.

Espèce	Région	Saison	Stade	Nbre mesuré sur Btx	marqués
T. alalunga	NW Açores	3 trimest.	adulte	99	77
	VIIj, VIII j	3 trimest.	immature	151	51
	VIIh, VIII a				

Echantillonnage du CNEXO

Espèce	Région CIEM	Saison	Lieu	Nombre
T. alalunga	VII J	juin-octobre	débarquem. )	2 437
	VII K	juin-octobre	débarquem. )	
	VIII	juin-octobre	débarquem. )	
	IX b	juin-octobre	débarquem. )	
	X	juin-octobre	débarquem. )	

Les échantillonnages ont consisté en des mensurations de poissons au cours du débarquement. Aucun marquage n'a été effectué. 378 fiches de pêche remplies par des capitaines sont en cours de traitement; elles permettront de cartographier la répartition des captures et d'en estimer l'âge.

.../...

Thon rouge (Thunnus thynnus)

Laboratoire du Centre Océanologique de Bretagne (COB-CNEXO)

Echantillonnage

Région	Saison	Lieu	Nombre mesuré
VIII	juin-octobre	débarquement	99

23 fiches de pêche remplies par les patrons sont en cours de traitement.

Listao (Kalsuwonus pelamis)

Laboratoire ISTPM de Nantes

Espèce	Région	Saison	Lieu	N. mesurés	Echant. biologiques
Listao	NW Açores	3 trimest.	navire de recherche	34	34

Au cours de la campagne "Atlantion 79", des listaos ont été capturés dans les parages des accores du Grand Banc de Terre Neuve.

Les données collectées ont été transmises au spécialiste concerné pour étude dans le cadre de l'année internationale du listao (CICTA-ICCAT).

2. Eaux tropicales.

A l'exception du Centre ORSTOM de Pointe Noire (Congo), les centres ORSTOM de Côte d'Ivoire et du Sénégal sont maintenant des Centres nationaux. Il convient donc de préciser que les travaux (études sur les thonidés) effectués dans ces centres de Côte d'Ivoire et du Sénégal sont des travaux nationaux effectués avec une coopération française.

2.0. Petits pélagiques.

Sardinelle (Sardinella aurita)

Centre ORSTOM, Pointe Noire (Congo)

Région	Saison	Nbre échant.	Nbre pois.mesurés
Congo Pointe-Noire	1er trimestre	12	695
	2ème trimestre	12	660
	3ème trimestre	13	635
	4ème trimestre	10	215
	TOTAL	47	2 205

Sardinelle (Sardinella maderensis)

Centre ORSTOM, Pointe Noire (Congo)

Région	Saison	Nbre échant.	Nbre pois.mesurés
Congo Pointe-Noire	1er trimestre	16	2 657
	2ème trimestre	11	1 793
	3ème trimestre	12	878
	4ème trimestre	16	1 985
	TOTAL	55	7 313

2.1. Thons tropicaux.

Les prises de la flottille thonière française tropicale en 1979 ont été les suivantes :

Albacores : 35 100 tonnes  
 Listaos : 15 400 "  
 Patudos : 2 793 "  
 Germons : 40 "

TOTAL 53 333 tonnes

En 1979, la France a été le premier pays avec l'Espagne pour la capture des thons tropicaux. 95 % de la pêche de la flottille française est couverte statistiquement par les chercheurs de l'ORSTOM détachés auprès des centres ivoiriens et sénégalais et les fréquences de tailles portent sur plus de 1 % au poids des captures de toutes espèces réalisées dans la zone intertropicale.

German Democratic Republic  
(H. Schultz)

Sampling

Blue Whiting

Area	Season	Type of fish	No. of Samples			No. of Fish		
			Research vessel	Com- mercial vessel	Market	Measured	Aged	Examined racially
S-Spitsbergen	III	Adults	2	-	-	203	100	-
	IV	"	-	3	-	691	-	-
NE-Norwegian	II	"	2	-	-	368	200	-
	III	"	1	-	-	33	33	-
Kopytov	II	"	-	5	-	1013	-	-
	III	"	-	1	-	269	-	-
Central Norwegian	III	"	10	-	-	3763	400	225 <sup>1)</sup> /150 <sup>2)</sup>
Sea (Northern)	IV	"	-	-	1	113	99	20 <sup>1)</sup> -
Jan Mayen	II	"	3	-	-	948	250	-
	III	"	9	-	-	3326	700	250 <sup>1)</sup> /150
	III	"	-	20	-	5432	400	-
Central Norwegian Sea (Southern)	III	Adults, Juveniles	8	-	-	3264	300	290 <sup>1)</sup> /50 <sup>2)</sup>
SO-Norwegian Sea	II	Adults	3	-	-	1431	300	-
Farøer	II	Adults, Juveniles	-	-	1	100	100	100 <sup>1)</sup> / -
Norwegian Deep	III	Juveniles, Adults	7	-	-	5556	360	249 <sup>1)</sup> /50 <sup>2)</sup>

1) parasitologically  
2) biochemically

Research vessel surveys

Blue Whiting

Area	Date	Objectives
Norwegian Sea	23.7.-30.8.	Acoustic survey midwater trawling, hydrography
Norwegian Deep	31.8.- 2.9.	Acoustic survey midwater trawling
Norwegian Sea	11. -29.5.	midwater trawling

Sampling

Mackerel

Area	Season	Type of Fish	No. of Samples			No. of Fish		
			Research Vessel	Com-mercial Vessel	Market	Measured	Aged	Examined racially
Norwegian Sea	III	Adults	10	-	-	956	100	-
Northern North Sea	III	"	1	-	-	67	-	-

Germany, Federal Republic of

(D.Sahrhage)

Sampling Herring

Area	Season	Type* of Fish	No of Samples		No of Fish		
			Research Vessel	Market	Measured	Aged	Examined racially
Hebrides (01)	I	8	2	-	722	200	100
NW-North Sea (03)	I	1,2,3,4,5,8	6	-	1078	414	200
South Buchan (08)	I	1,2	7	-	1229	200	-
Central North Sea (09)	I	1	9	-	1311	400	-
	I		5	-	323	-	-
	II		2	-	195	-	-
	III		3	-	247	-	-
	IV		2	-	157	-	-
South of Ireland (13)	III	2,3,4,5,6,8	4	-	1006	346	200

\* Stages of maturity

Research Vessel Surveys

Area	Date	Objectives
Hebrides (01)	01.02.-02.03.79	Blue whiting
NW-North Sea (03) South Buchan (08) Central North Sea (09)	01.03.-22.03.79	International Young Herring Survey
Central North Sea (09)	04.01.-24.01.79	Groundfish Surveys
	07.06.-20.06.79	
	09.08.-22.08.79	
	24.09.-08.10.79	
South of Ireland (13)	15.09.-05.10.79	Gear research

Sampling Sprat

Area	Season	Type of Fish	No of Samples		No of Fish		
			Research Vessel	Market	Measured	Aged	Examined racially
IV b	I		40	-	4651	-	-
	I		3	-	191	-	-
	II		11	-	81	-	-
	III		4	-	312	-	-
	IV		2	-	410	-	-



Research Vessel Surveys

Area	Date	Objectives
IV b	01.03.-22.03.79	International Young Herring Survey
	04.01.-24.01-79	
	07.06.-20.06-79	Groundfish Surveys
	09.08.-22.8.79	
	24.09.-08.10.79	

Sampling Mackerel

Area	Season	Type* of Fish	No of Samples		No of Fish		Examined racially
			Research Vessel	Market	Measured	Aged	
IV b	III	-	1	-	243	-	-
VII g-k	III	1,8	9	-	2281	75	-

\* Stages of maturity

Research Vessel Surveys

Area	Date	Objectives
IV b	09.08.-22.08.79	Groundfish Survey
VII g-k	15.09.-05.10.79	Gear research

Sampling Blue whiting

Area	Season	Type of Fish	No of Samples		No of Fish		
			Research Vessel	Market	Measured	Aged	Examined racially
IV a	II		2	-	93	-	
IV a	I		10	-	3080	141	
V a	I		1	-	207	-	
V b	I		22	-	6279	218	
VI a	I		31	-	5936	1210	
VI b	I		10	-	2896	173	
VII b,c	I		3	-	2199	283	
VII g-k	I		5	-	3047	499	
V a	II		8	-	2967	357	
XIV	II		5	-	839	244	
V b	II		1	-	1556	99	
VI a	II		3	-	652	-	
VI b	II		2	-	513	-	
VII b,c	II		1	-	121	-	
VII g-k	II		11	-	1823	106	
VIII	II		9	-	2436	147	
VII g-k	III		10	-	1930	-	

Research Vessel Surveys

Area	Date	Objectives
IV a	07.06.-20.06.79	Groundfish survey
IVa; Va; Vb; VIa; VIb; VIIbc; VIIg-k	01.02.-30.03.79	Blue whiting and Gear research
V a, XIV	18.04-23.05.79	Groundfish survey
V a; VI a; VI b; VII b,c; VII g-k; VIII	06.06.-27.06.79	Deep sea fishery
VII g-k	15.09-05.10.79	Gear research

Iceland  
(Jakob Jakobsson)

Sampling BLUE WHITING

Area	Season	Type of fish	No. of samples	No. of fish measured	aged
E-NE Iceland	June	adult	6	188	
" "	July	adult mainly	3	167	167
" "	Nov	" "	2	200	200
S-SW Iceland	May	immat.	5	474	200
S-E Iceland	June	mixed	3	350	200
E Greenland	August	adult	1	88	88

Research Vessel Surveys

Area	Date	Objectives
Icelandic waters	27 May - 15 June	Environmental and pel.fish survey
E-Iceland	28 June- 10 July	Blue Whiting Survey
E-Iceland	18 July- 2 Aug	" " "
E-Iceland	12 - 31 July	Experimental fishing
E-SE Iceland	2 - 16 Nov.	" "
W-Iceland		
Dohrnbank		

Sampling HERRING

Area	Season	Type of fish	No. of samples		No. of fish		
			Research vessel	Fishing vessel	measured	aged	examined racially
W, S and SE of Iceland	June - Dec.	mixed	9	65	6.771	5.965	5.965
S,W,N " E " "	Feb. - Sept.	adults	2	8	794	794	794
W and N " "	Jan. - Mar, Aug. - Dec.	immat.	17	5	2.124	1.174	2.124

Research Vessel Surveys

Area	Date	Objectives
SW Iceland	22. - 28. June	Spawning Grounds Survey
SW Iceland	28.Sept.-10.Okt.	Herring Survey
SW, S, SE Iceland	3. Nov. -13.Nov.	Herring Survey
S. SE Iceland	1. Dec. -11.Dec.	Abundance Estimates, Hydrography.

Sampling CAPELIN

Area	Season	Type of fish	No. of samples Res. and Fish vessels	No. of fish		Examined racially
				Measured	Aged	
NW-, N-, E-Iceland	Jan. - Feb.	Mixed	19	1900	1900	600
NW-, N-, E-, S-, SW- Icel.	Jan. - Mar.	Adult	46	4592	4592	1100
Icel.- E.Greenl.- Jan Mayen	Jul. - Nov.	Mixed	59	5590	4165	800
Icel.- E.Greenland	aug. - Sept.	0 -gr.	150	7254		

Tagging

Area	Season	Type of tags	No tagged	Type of fish	Recoveries	
					Season	Number
N of Iceland	Jul.-Aug. '78	Internal	11.750	adults	Jan.Mar. '79	183
W of Jan Mayen	Sept. '78	"	5.114	"	"	17
NW of Iceland	Oct. '78	"	1.441	"	"	7
NW of Iceland	Aug.-Sept. '79	"	5.573	mixed	Sept.-Oct.79	143

Research vessel and other Surveys

Area	Date	Objective
NW, N Iceland	4/1 - 22/1	Capelin Survey
E, NW Iceland	28/1 - 10/2	Abundance Estimates
NW, N, E, SE Iceland	13/2 - 3/3	Abundance Estimates, Hydrography.
W Iceland	28/2 - 7/3	Capelin Survey.
S, W Iceland	18/4 - 9/5	Larval and Environmental Survey Capelin and other Species.
S, W Iceland	27/5 - 15/6	" " " "
Icel., E-Greenl., Jan Mayen	27/7 - 14/8	Abundance Estimates
Iceland, East Greenland	8/8 - 10/9	0-gr., Capelin and Other species.
NW Iceland	17/8 - 8/9	Tagging of capelin
Iceland, E-Greenl., Jan Mayen	25/9 - 7/10	Abundance Estimates
N, NW Icel. - E-Greenl.	13/10- 28/10	" "
NW, N Iceland	7/12- 20/12	Capelin Survey.

Ireland  
(J. Molloy)

Area	Season	Type of fish	No. of samples (market)	No. of fish measured	No. of fish aged	No. of fish examined racially
------	--------	--------------	-------------------------	----------------------	------------------	-------------------------------

Species: Herring

Div. VI a	i,ii,iii,iv,v,vi,vii,viii,x,xi,xii,	Adult	26	6830	1293	1293
Div. VII b-c	i,ii,iii,vii,x,xi,xii	Adult	16	4270	800	800
Div. VII j	i,ii,iii,iv,viii,ix,x,xi,xii	Adult	18	3783	870	870
Div. VII a	i,vii,viii,ix,x,xi	Juvenile Adult	29RV 14	2400 4774	701 704	701 704
Celtic Sea	i, xii	Adult	16	3823	789	789

Species: Mackerel

Div. VI a	v,x,xi,xii	Adult	8	908	508	
Div. VII j	iv,v,x,xi	Adult	5	644	502	

Species: Sprat

Div. VII g	i,ii,iii,	Adult	9	1571	269	-
Div. VII j	ii,iii	Adult	2	251	60	-
Div. VII a	i	Adult	1	141	30	

Research Vessel Surveys

Area	Time	Objective
Celtic Sea	ii,iii,iv,v,vi	Egg and larval survey to obtain estimates of abundance of sprat population
Celtic Sea	i,ii,iii,x,xi,xii	Larval survey to obtain estimate of abundance of herring populations
Irish Sea	VII	Young herring survey

Netherlands

(A.Corten)

Sampling HERRING

Area	Quarter of year	Type of fish	No. of samples		No. of fish		
			research vessel	market	measured	aged	examined racially
01 Hebrides	4	adults	-	3	410	150	-
03 N.W. North Sea	2	"	-	2	299	100	-
" " " "	3	"	9	-	1,065	450	450
04 N.E. North Sea	1	"	-	1	90	50	-
05 Skagerrak	3	"	-	3*	342	150	-
06 N.W. of Ireland	2	"	-	1	207	50	-
" " " "	3	"	-	2	219	100	-
" " " "	4	"	-	3	452	150	-
08 Buchan	3	"	2	-	341	100	-
09 Central North Sea	3	"	1	-	89	50	-
10 West of Ireland	2	"	-	1	135	50	-
" " " "	3	"	-	2	136	95	-
12 Southern North Sea	2	"	-	1	190	50	-
" " " "	4	"	-	1	107	50	-
13 South of Ireland	2	"	-	1	129	50	-
" " " "	3	"	-	5	649	250	-
" " " "	4	"	-	2	207	99	-
14 Bristol Channel	1	"	-	2	314	100	-
" " "	2	"	-	4	692	200	-
" " "	3	"	-	1	96	50	-
15 West Channel	2	"	-	1	183	50	-
" " "	4	"	-	1	87	50	-
Total			12	37	6,439	2,444	450

\* From import Denmark

Sampling MACKEREL

Area	Quarter of year	Type of fish	No. of samples		No. of fish	
			research vessel	market	measured	aged
IVa Northern North Sea	2	adult	-	4	207	100
" " " "	3	"	-	2	178	100
IVb Central North Sea	2	"	-	2	157	50
" " " "	3	"	-	7	346	100
" " " "	4	"	-	9	315	50
IVc Southern North Sea	2	"	-	21	960	100
" " " "	3	"	-	17	709	100
" " " "	4	"	-	9	395	150
VIa West of Scotland	2	"	-	4	226	148
" " " "	3	"	-	2	159	100
" " " "	4	"	-	5	215	100
VII South of Ireland	1	"	-	17	1,662	500
" " " "	2	"	-	12	1,310	398
" " " "	3	"	-	16	1,651	450
" " " "	4	"	-	20	2,106	350

Research vessel surveys

Area	Dates	Objectives
IVc + VIIId Southern North Sea	02/01 - 11/01	ICES herring larval survey
IVa,b,c North Sea	29/01 - 24/02	ICES Young Fish Survey
IVc Southern North Sea	05/03 - 21/04	Monitoring influx o-group herring
IVa,b Northern North Sea	16/07 - 04/08	ICES Echosurvey
IVa " " "	03/09 - 17/09	ICES herring larval survey
IVb Central North Sea	17/09 - 13/10	" " " "
IVc + VIIId Southern North Sea	10/12 - 22/12	" " " "



Norway

(I. Røttingen, O. Dahl)

Herring (Clupea harengus) North of 62°N

Sampling

Area	Season	Type of fish	No. of samples		No. of fish measured	No. of fish aged	No. of fish exam. rac.
			Research vessels	Market			
Norw. coast,	I	Mixed	2		2	2	
Bar. Sea	III	" "	21		55		
I	IV	" "	1		100	40	
Norw. coast,	I	Mixed	15		1483	1090	892
IIa	II	" "	9		995	719	
	III	" "	4		8	1	
	IV	" "	51		4229	2494	1775
Norw. Sea,	III	Mixed	8		281		
northern							
IIb							

Research vessel surveys

Area	Date	Objectives
Stad/Troms	January/March	Spawning migration, experimental fishing
Norwegian coast	January-Febr.	Fish behaviour
North. Norway	March	Fish behaviour
Stad/Troms	March-April	Distribution of herring larvae
- " -	April-May	- " - - " - - " -
- " -	April-May	Tagging
Bar. Sea/Norw. Sea	August-Sept.	0-group survey
Stad/Troms	October-Nov.	Distribution, experim. fishing
Stad/Lofoten	Nov.-Dec.	0-group distrib. and abundance
Norw. coast	Dec.	Fish behaviour

Tagging

Area		Season	Type of Tags	No Tagged	Type of fish	Recov.
Code no.	Name					
IIa	Stad-Troms	II	Internal	35981	adult/spawn.	114

Herring (Clupea harengus) North Sea

Sampling

Area	Season	Type of fish	No. of samples		No. of fish measured	No. of fish aged	No. of fish exam. rac.
			Research vessels	market			
Central	I	immature	3		240	240	50
North Sea	III	adults	8		250	105	96
IVb	IV	immature	6		231	230	97
Northern	I	adults	1		82	82	-
North Sea	II	"		3	267	267	35
IVa	III	"	3	6	492	492	420
	IV	immature	1		13	13	
Skagerrak	II	immature/ adults		3	217	217	217
IIIa	IV	immature	11		348	348	-

Research vessel surveys

Area	Season	Objectives
North Sea	Jan/Mar	ICES Young Fish Survey
North Sea	October	Larval survey, herring

Sprat (sprattus sprattus)

Sampling

Area	Season	Type of fish	No of samples		No of fish measured	No of fish aged
			Research vessel	market		
Central North Sea, IVb	I	adult	2	254	20827	200
Central North Sea, IVb, IVa	II	"		3	198	-
Central North Sea, IVb, IVa	IV	"		162	15031	189
Skagerrak, III	IV	"		1		-
South North Sea, IVc	I	"		4	1443	-
South North Sea, IVc	II	"		1	108	-

Research vessel surveys

Area	Season	Objectives
North Sea/Skagerrak	January	Fish survey, 0-group sprat
North Sea/Skagerrak	Nov/Dec	Fish survey, 0-group sprat
Kattegat/Skagerrak/ North Sea	November	Fish survey, sprat

Sampling

Area	Season	Type of fish	No. of samples		No. of fish measured	No. of fish aged	No. of fish exam. rec.
			Research vessels	market			
Barents Sea	I	Mixed	64	1672	178002	3307	
	II	"-	11	34	4492	614	
I	III	"-	197	2	15891	2803	
	IV	"-		2	209		
Norw. coast,	I	Mixed	22	400	43389	1405	
IIa	II	"-	3		228	103	
	III	"-	8		456	80	
	IV	"-	6		403	85	
Norw. Sea,	I	Mixed	2		113	110	
Jan Mayen	II	"-	3		221	21	
IIa	III	"-		67	7446		
	IV	"-	6		361	233	
Norw. Sea,	I	Mixed	14		1400	472	
northern	II	"-	3		300	128	
IIb	III	"-	30	611	65791	676	
	IV	"-		467	48663		
Jan Mayen,	III	Mixed	9		511	154	
Iceland	IV	"-	1		100	34	
Va							
Jan Mayen,	III	Mixed	21	155	18495	580	
Greenland	IV	"-	7	2	861	225	
XIV							

Research vessel surveys

Area	Date	Objectives
Barents Sea	January <sup>+) )</sup>	Distribution, spawning migr.
Barents Sea	Febr.-March	Distribution
Jan Mayen	March-April	Spawning capelin
Finnmark coast	March-April	Distrib. of spawning grounds
Barents Sea	June-July	Distrib. of larvae. Distrib. and abundance of older capelin
Jan Mayen-Iceland	July-August	Distrib. and abundance
Barents Sea	August-Sept. <sup>+) )</sup>	0-group survey. Distrib. and abundance of older capelin
Jan Mayen-Iceland	Sept.-October	Distribution and abundance

<sup>+) )</sup> Two vessels

Blue whiting (Micromesistius poutassou)

Sampling

Area	Season	Type of fish	No. of samples		No. of fish measured	No. of fish aged	No. of fish exam. rec.
			Research vessels	market			
Barents Sea I	III	Mixed	1		100	100	
Norw. Sea, central IIa	II	Mixed	13		1238	1238	
	III	" - "	30		658	292	
	IV	" - "	5		110	110	
Norw. Sea, northern IIb	II	Mixed	2		142	142	
	III	" - "	3		249	150	
Skagerrak IIIa	IV	Mixed	3		140	140	
North Sea, northern IVa	II	Mixed	11		1100	1100	
	III	" - "	6		267	83	
	IV	" - "	12		265	265	
Iceland Va	III	Mixed	5		315	200	
Faroes Vb1	II	Mixed	3		282	282	
	III	" - "	1		41	41	
W. of Ireland VIIbc	I	Mixed	1		100	100	
Iceland, Greenland XIV	III	Mixed	3		300	300	
	IV	" - "	1		100	100	

Research vessel surveys

BLUE WHITING

Area	Date	Objectives
W.of British Isl/Faroes	March	Survey spawning grounds/fishing
- " - " - " -	April-May	Distribution and abundance
Western Barents Sea	April-May	Distribution
Norwegian Sea	June	Distribution
Northern North Sea	June-July	0-group distribution
Norw.Sea/Norw.coast	July-August	- " - " - " - " -
Bear Island-Svalbard	Oct.-Nov.	Distribution
North Sea	Oct.-Nov.	0-group distribution
Northern North Sea	Nov.-Dec.	- " - " - " - " -

Tagging

None

Mackerel (Scomber scombrus)

Sampling

Area	Season	Type of fish	No. of samples		No. of fish measured <sup>xx)</sup>	No. of fish aged
			Research vessels	market <sup>x)</sup>		
N. North Sea	II	Adult	-	3	199	61
IVa E	III	"	21	2	1895	283
N. North Sea						
IVa W	III	"	1	11	1095	380
Skagerrak						
IIIa	II	"	3	3	494	207
West of Shetland	I	"		4	393	169
IVa						
SW of Ireland						
VIIg-k	II	"	3	-	300	124
North Sea,	I	"	-	87	3966	-
Shetland,	II	"	-	5	305	-
Channel	III	"	-	536	22813	-
IV, VIa, VIIe-j	IV	"	-	8	245	-

x) Samples from meal and oil factories

xx) In addition all tagged fish are measured

Tagging

Area	Season	Type of tags	No. tagged	Type of fish	Total recoveries 1979 <sup>x)</sup>
SW of Ireland	May	int. steel	20183	mackerel	913
Off SW coast Norway/Skagerrak	Jul/Aug		11991	"	

x)

In order to obtain recoveries of tagged mackerel from catches landed for human consumption, a tag-detector was placed at a processing plant - (fillet-bait) south of Bergen.

Research vessel surveys

Area	Season	Objectives
North Sea	June	Possible recoveries of tagged mackerel by a tag-detector
North Sea	Jun/Jul	Egg and larval survey, mackerel
W.coast Norway, IIa	Jul/Aug	Fish survey, mackerel
North Sea/Skagerrak	August	Fish survey, 0-group mackerel
West of 4°W, ICES area VIa	November	Fish survey, mackerel

Horse mackerel (Trachurus trachurus L.)

In connection with the Norwegian purse seine fishery for mackerel a total of about 1071 tons horse mackerel were landed.

Sampling

Area	Season	Type of fish	No. of samples		No. of fish measured	No. of fish aged
			Research vessels	market		
English Channel VIIe, j	I	Adult/ immature		4	198	
N. North Sea IVa	I	Adult		2	50	
West of Sheltand, VIa	I	Adult		1	50	

Bluefin tuna (Thynnus thynnus L.)

The total catch of bluefin tuna in Norwegian waters in 1979 was ca. 60 tons. The tuna investigations have been limited to estimate the size composition in weight (kg). These data are included in the Bluefin Tuna Working Group Report.



Spurdog (Squalus acanthias L.)

Sampling

Biological data were obtained both from commercial landings (long line) (5) and from tagging experiments. These data comprise fish-length and sex.

Tagging

Area	Season	Type of tags	No. tagged	Type of fish	Total recoveries 1979
West of the Orkneys	January	Petersen disc.	1038	Dogfish	194
East of the Orkneys	January	"	69	"	

Poland  
(J. Elwertowski and J. Popiel)

Blue whiting

Area	Season	Type of fish	No of samples		No of fish measured	No of fish aged	No of fish racially	R e m a r k s		
			Research	vessel market				extra samples for:		
								gonads develop- ment	stomach full- ness	infestation of larvae Anisakis sp. in meat of fish
VII b-c	I quarter	adults spawners	3	-	555	308	-	3	3	1
	II quarter	spawners	12	-	4 567	440	-	4	4	6
VI a	II quarter	adults	3	-	496	95	-	1	1	1
V b	II quarter	adults	59	-	26 912	1 255	-	10	10	10
V b	III quarter	adults	34	-	8 176	379	-	4	4	-
II a	III quarter	adults	31	-	12 656	816	-	12	12	-

Sardinella, Horse mackerel, Mackerel

Area	Species	Type of Fish	Quar- ters	No of Samples		No of Fish	
				Rese- arch Vessel	Commer- cial Vessel	measured	aged
34.3.1. CECAF Area /Senegal water/	<u>Sardinella</u> <u>aurita</u>	adult	I	-	34	7.508	620
			II	-	26	4.526	400
			III	-	8	1.714	200
			IV	-	51	9.386	950
			Total	-	119	23.134	2.170
	<u>Sardinella</u> <u>eba</u>	adult	I	-	23	5.380	450
			II	-	12	1.599	150
			III	-	12	2.769	200
			IV	-	57	11.848	1150
			Total	-	104	21.156	1950
	<u>Caranx</u> <u>rhonchus</u>	adult	I	-	5	957	100
			II	1	17	3.647	236
			III	-	2	452	50
			IV	-	3	715	50
			Total	1	27	5.771	436
	<u>Trachurus</u> <u>trecae</u>	adult	I	-	3	967	-
			II	2	2	1.091	200
			III	-	-	-	-
			IV	-	-	-	-
			Total	2	5	2.058	200
<u>Scomber</u> <u>colias</u>	adult	I	-	3	489	-	
		II	-	3	753	-	
		III	-	-	-	-	
		IV	-	-	-	-	
		Total	-	6	1.242	-	
<u>Trachurus</u> <u>trachurus</u>	adult	II	2	-	395	200	

Portugal  
(I.Ferreira Barraca)

Sardine (Sardina pilchardus)

Region	Saison	N.echantillons		N.de poissons		
		Marché	Navire de recherches	Mesurés	dont age déterminé écailles	otolithes
IX	I	93	-	15541	339	497
IX	II	120	4	19696	292	553
IX	III	117	-	17366	169	274
IX	IV	127	6	21717	374	532
	Totaux	457	10	74320	1174	1856

Chinchards (Trachurus trachurus)

Region	Saison	N. échantillons		N. le poissons	
		Marché		Mesurés	
IX	I		65		5960
IX	II		79		5722
IX	III		81		6064
IX	IV		83		6233
	Totaux		308		23976

Spain

(O. Cendrero & M. A. Rodríguez)

Les Clupéiformes

Sardine, *Sardina pilchardus* (Walb.)

L'étude de la pêcherie de sardine se déroule à deux régions: la côte nord-ouest péninsulaire (Galice) et le banc canario-africain.

Les travaux sur la sardine galicienne ont compris les échantillonnages biologiques, les observations sur l'âge, le sexe et la maturation sexuelle, et la préparation d'une corrélation taille /âge. La composition, l'effort et les prises de la flottille qui exploite cette espèce ont aussi été l'objet des recherches. Compte tenu que le stock galicien et celui du nord du Portugal ne sont qu'un seul stock, les chercheurs espagnols et les portugais ont eu une réunion de travail pour unifier leurs systèmes de travail et établir un programme d'activités communes pour l'étude de cette pêcherie. Les premiers résultats ont été communiqués au Comité lors de la 67ème réunion statutaire du Conseil (document C.M.1979/H:29).

En ce qui concerne la pêche au banc canario-africain, la flottille locale n'a pas pu travailler jusqu'à mai 1979 à cause des circonstances politiques de la région. C'est pour ça que les observations sur la pêcherie ont été nulles pendant cinq mois. L'activité des bateaux ayant recommencé, des carnets de pêche ont été distribués aux patrons pour récupérer des données d'effort et de capture. Cette méthode a rendu des résultats satisfaisants. D'ailleurs, les échantillonnages routiniers ont continué, et on a fait la revision des lectures de 4 382 otolithes et 2 363 écailles à fin de mettre au point les méthodes qui seraient discutées à la réunion du groupe de travail pour la standardisation des techniques de détermination d'âge de la sardine. Un échange d'otolithes a été commencé entre le Maroc, la Pologne et l'Espagne.

Finalement, les chercheurs du Laboratoire Océanographique de Tenerife ont récupéré les données de capture de la flottille en 1978 pour faire une analyse de la population virtuelle.

Échantillonnages pour la sardine

Région	Trimestre	Nº des échantillons		Nº de poissons		
		Bateau	Marché	Mesurés	âgés	race
IXa	1	-	11	1 488	113	-
	2	-	26	4 189	235	-
	3	-	38	4 669	150	-
	4	-	24	2 554	-	-
XI	1	-	5	1 007	245	-
	2	-	11	5 841	212	-
	3	-	25	16 529	524	-
	4	-	29	20 024	571	-

Anchois, *Engraulis encrasicolus* (L.)

La saison de pêche à l'anchois de la flottille espagnole dans le golfe de Gascogne n'a pas commencé jusqu'à la moitié d'avril. Bien que quelques bateaux ont obtenu de captures accidentelles en février ou mars dans la ZEE espagnole, le début de la saison a eu lieu pendant la semaine de Pâques. Les mauvaises conditions météorologiques ont fait perdre plusieurs journées de pêche en avril et mai. Le résultat final a été une saison plus courte que celles des années précédentes dont les apports sont aussi plus faibles (23 500 tonnes environ).

Les observations des chercheurs de l'Institut Espagnol d'Océanographie ont continué sur le marché et à bord de bateaux des ports cantabriques pour l'étude des paramètres biologiques de la population et de l'effort de pêche de la flottille. Outre, les conditions thermiques aux endroits de pêche ont été étudiées. Il a été constaté qu'une grande partie des apports consistait à vieux poissons, et par la première fois depuis que nous avons commencé l'étude de cette population en 1974, on a observé des anchois à quatre ans d'âge.

Échantillonnages pour l'anchois

Région	Trimestre	N° des échantillons		N° de poissons		
		Bateau	Marché	Mesurés	Agés	Race
	1	-	2	193	82	-
VIII	2	11	3	1 395	295	-
b,c	3	1	3	400	162	-

Les Thonidés  
====

Thon rouge, *Thunnus thynnus* (L.)

Les recherches sur le thon rouge ont compris les points suivants:

- Évaluation du stock de jeunes thons par analyse de cohortes.
- Étude de la composition des groupes d'âge du thon rouge dans le golfe de Gascogne.
- Parasitologie comme méthode d'identification des stocks.
- Régulation de la température interne chez le thon.
- Comportement du thon dans le golfe de Gascogne.
- Statistiques de captures et d'effort.

Une campagne de marquage a eu lieu en août, en utilisant par la première fois l'appât vivant pour capturer les thons à marquer; ce système a donné de résultats acceptables (101 thons rouges et 31 germons marqués), mais il faut plus d'expérience avant l'adopter en substitution de la capture à la traine traditionnelle pour le marquage de thonidés.

Échantillonnage pour le thon rouge

Région	Trimestre	N° des échantillons		N° de poissons		
		Bateau	Marché	Mesurés	Agés	Race
VIII	3	-	34	2 610	120	-
b,c	1	-	9	70	-	-
XI	2	-	1	2	-	-
	4	-	2	57	-	-

Thon blanc ou germon, Thunnus alalunga (Bonn.)

La saison de pêche au thon blanc par la flottille thonière espagnole a subi de difficultés dérivées de la mise en vigueur de la ZEE de plusieurs pays. À cause de cela, les apports ont été moins importants que les années précédentes, pourtant on n'a pas observé une diminution de la CPUE. Le programme d'échantillonnage des gros germons açoriens a du être annulé. Les échantillonnages des germons pris dans le golfe de Gascogne, au nord de la Galice et aux Iles Canaries ont eu lieu normalement, aussi que la récupération de données de capture et d'effort des thoniers.

Échantillonnage pour le thon blanc

Région	Trimestre	Nº des échantillons		Nº de poissons		
		Bateau	Marché	Mesurés	Agés	Race
VIII	3	-	130	13 645	-	-
	4	-	18	1 845	-	-
XI	1	-	5	138	-	-

Petits thonidés

Les recherches sur les petits thonidés n'ont compris que deux campagnes de marquage, l'une en juin et l'autre en octobre, à la madrague de Ceuta, pour obtenir des informations préliminaires sur les migrations de quelques espèces à travers du détroit de Gibraltar, notamment Sarda sarda (Bloch) et Euthynnus alleteratus (Raf.). Un total de 543 exemplaires des deux espèces ont été marqués.

Thonidés tropicaux et de la région canarienne

Les travaux sur ces pêcheries ont eu comme but la récupération de données statistiques des flottilles espagnoles pêchant à ces régions là, dont la couverture n'est pas encore suffisante. Ces statistiques sont communiquées à l'ICCAT. Des campagnes de marquage et de prospection aérienne ont aussi été faites par les chercheurs du Laboratoire Océanographique de Tenerife.

Échantillonnage pour les thonidés tropicaux

Région	Trimestre	<u>Thunnus albacares</u>		<u>Th. obesus</u>		<u>Katsuwonus pelamis</u>	
		Échant.	Poissons	Éch.	Poiss.	Échant.	Poissons
XI	1	-	-	3	163	-	-
	2	3	13	5	137	-	-
	3	-	-	-	-	4	154
	4	-	-	1	24	-	-

Autres espèces

Espadon, Xiphias gladius (L.)

La pêche de cette espèce n'est pratiquée que par quelques bateaux du NW de l'Espagne qui pêchent à la palangre et dont les captures moyennes des dernières années sont 3 000 tonnes. Le control statistique de cette flottille, la détermination de la corrélation taille/âge et l'étude des parasites des poissons capturés ont été les principales questions dont les chercheurs espagnols s'ont occupés par rapport à cette espèce.

Échantillonnage pour l'espardon

Région	Trimestre	N° des échantillons		N° de poissons		
		Bateau	Marché	Mesurés	Âgés	Race
VIII	3	-	6	130	10	-
	4	-	40	914	90	-

Merlan bleu, *Micromesistius poutassou* (Risso)

Les programmes sur le merlan bleu ont continué comme ceux de 1978, avec un réseau d'échantillonnage plus ample, ce qui a permis obtenir un nombre d'échantillons plus représentatif du total de merlan bleu débarqué.

Échantillonnages pour le merlan bleu

Région	Trimestre	N° des échantillons		N° de poissons mesurés	
		Bateau recherche	Marché	Bateau recherche	Marché
VIIIc	1	-	7	-	728
	2	25	11	3 034	1 708
	3	-	9	-	1 216
	4	-	10	-	1 324
	1	-	11	-	1 834
	2	-	6	-	1 242
	3	73	7	10 266	873
	4	-	7	-	1 404



Sweden  
(R. Rosenberg)

Herring

Sampling data

Area	Season	Type of Fish	No of Samples		No of Fish		No of Fish examined racially	
			Research vessel	Market	Measured only	Aged		
Kattegat	I	Imm.ad		4	1631	363	363	
	II	" " ,spawners		7	1890	428	428	
	III	" " "	9	17	4017	1100	1100	
	IV	" " "		8	1609	357	357	
	V	" " "		1	161	97	97	
	VIII	" " "		11	2455	634	634	
	IX	" " "	2	16	2217	634	634	
	X	" " "		40	8831	433	433	
	XI	" " "		7	1524	546	546	
	Skagerrak	I	Imm.ad		5	271	100	100
		II	" "		1	6		
III		" " ,spawners	9	7	303	303	303	
IV		" " "		2	86	100	100	
IX		" " "	6	1	522	641	641	

Research Vessel Survey

Area	Season	Objectives
Kattegat, Skagerrak	III	Investigation on young herring and herring larvae.
" "	IX	Investigation on herring, herring larvae Echointegrations.

United Kingdom

1. England and Wales

(A.C. Burd)

1. Sampling

HERRING

Area		No. of samples		No. of fish		
		Research vessel	Market	Measured	Aged	Racial invest.
North Sea	104A	9	-	687	682	190
	104B	11	3	1 225	789	-
	104C	-	2	74	74	-
W. Scotland	106A	1	-	42	42	-
Irish Sea	107A	-	29	4 500+	2 370	-
W. English Channel	107E	2	-	140	109	-
S. Ireland	107G	1	-	28	28	-

SPRAT

Area		No. of samples		No. of fish	
		Research vessel	Market	Measured	Aged
North Sea	104B	-	42	5 137	> 500
W. English Channel	107E	2	16	2 177	> 200

MACKEREL

Area		No. of samples		No. of fish	
		Research vessel	Market	Measured	Aged
North Sea	104A	1	-	159	-
W. Scotland	106A	1	1	178	178
W. English Channel	107E )	9	641	56 928	4 179
Bristol Channel	107F )				
S. of Ireland	107G	2	1	36	36

PILCHARD

Area	No. of samples		No. of fish	
	Research vessel	Market	Measured	Aged
W. English Channel 107E	-	14	1 225	-

SCAD (HORSE MACKEREL)

Area	No. of samples		No. of fish	
	Research vessel	Market	Measured	Aged
W. English Channel 107E	-	1	117	-

2. Research vessel surveys

<u>Area</u>	<u>Month</u>	<u>Objective</u>
W. English Channel	January	Acoustic survey
North Sea " "	February "	International young fish survey Acoustic survey for sprats
North Sea and Western Approaches	May	Mackerel eggs and larvae
North Sea " "	July August/September	0-group herring Herring larvae survey
W. English Channel	August	Target strength of mackerel
North Sea (Thames)	October/November	Herring survey of Thames Estuary
Celtic Sea	November	0-group mackerel
North Sea (Thames)	January/February	Herring survey of Thames Estuary

2. Scotland  
(R.S. Bailey)

HERRING SAMPLING

Area	Season	Type of herring	No of samples		No of fish		
			Research vessel	Market	measured	aged	examined racially
<u>IVa Northern North Sea</u>							
West of Shetland (02)	Jan-Mar	adult	1	-	148	148	148
	Apr-Jun	adult	3	-	492	200	200
NW North Sea (03)	Jan-Mar	immat.	6	-	824	241	0
	Apr-Jun	adult	6	-	1116	148	148
	Apr-Jun	immat.	1	-	539	0	0
	Oct-Dec	adult	10	-	501	282	234
<u>IVb Central North Sea</u>	Jan-Mar	immat.	16	-	35	34	0
South Buchan (08)	Apr-Jun	adult	2	-	342	250	250
	Apr-Jun	immat.	1	-	478	40	0
	Jul-Sept	adult	4	-	2342	550	501
	Oct-Dec	adult	1	-	19	0	0
Central North Sea (09)	Jan-Mar	immat.	20	-	1947	443	0
	Apr-Jun	adult	2	-	500	450	400
	Jul-Sept	mixed	11	-	12255	2123	855
<u>VIa West of Britain</u>							
Hebrides (01)	Jan-Mar	mixed	3	-	884	566	389
	Apr-Jun	adult	2	-	107	0	0
	Jul-Sept	adult	3	-	136	107	81
NW Ireland (06)	Apr-Jun	adult	2	-	233	200	200
North & South Minch (07a and b)	Jan-Mar	mixed	11	-	2322	1061	551
	Apr-Jun	adult	2	-	928	400	400
	Jul-Sept	adult	2	-	1306	381	9
	Jul-Sept	immat.	1	-	1118	50	7
	Oct-Dec	mixed	27	-	3712	562	115
Clyde (07c)	Jan-Mar	mixed	13	-	3347	864	676
	Jan-Mar	adult	-	1	191	191	191
	Apr-Jun	adult	-	20	3362	1699	1253
	Jul-Sept	adult	-	56	6652	2747	2246
	Oct-Dec	mixed	33	-	3337	544	544
	Oct-Dec	adult	-	5	509	399	399

Tagging

Area	Season	Type of Tag	No Tagged	Type of Fish	Recoveries
Clyde	April-June	Flag	701	Mixed	83
Clyde	April-June	Snap Spaghetti	474	Mixed	68
Clyde	April-June	Thin Spaghetti	472	Mixed	53
Clyde	April-June	Thick Spaghetti	1798	Mixed	318
Minch	Oct-Dec	Flag	838	Mixed	Nil
Minch	Oct-Dec	Snap Spaghetti	701	Mixed	Nil
Minch	Oct-Dec	Thin Spaghetti	840	Mixed	Nil
Minch	Oct-Dec	Thick Spaghetti	1128	Mixed	Nil

Research Vessel Surveys

<u>Area</u>	<u>Season</u>	<u>Objectives</u>
North Sea	February	International Young Herring Survey
Minch	Feb-March	1-group herring acoustic and trawling survey
Clyde	March-April	Trawling and larval survey of spawning ground
North Sea	August	Acoustic and trawling survey
North Sea and west coast of Shetland	July-August	Acoustic and trawling survey
West coast of Scotland	August-October	Larval surveys
North Sea	Sept-October	Larval surveys
West coast of Scotland	August-September	0-group trawling survey
Clyde	November	1-group trawling survey

Other Research Activities

Experimental studies continued on the development, growth and survival of herring eggs and larvae in water varying in the intensity of contamination by industrial pollutants.

Immature and mature herring from the Firth of Clyde and the northern Irish Sea were examined for tag parasites which might help to clarify the stock situation in these areas. Examination of both adult and juvenile Minch herring were continued whenever samples were available to obtain further information to quantify the proportion of recruitment from Bløden and other nursery areas at each age to the Minch.

Histological work was carried out to investigate the maturation stages of adult Clyde herring as a further aid to racial classification.

SPRAT SAMPLING

Area	Season	Number of samples		Number of fish	
		research vessel	market	measured	aged
IVa Northern North Sea	Jan-Mar	6	6	2873	279
	Jun-Sept	10	-	1992	-
	Oct-Dec	-	17	3262	737
IVb Central North Sea	Jan-Mar	34	11	2088	297
	Apr-Jun	-	2	578	69
	Oct-Dec	-	1	201	53
VIa West of Scotland	Jan-Mar	-	3	454	111
	Jul-Sept	5	-	747	31
	Oct-Dec	35	7	6763	391

Research vessel surveys

<u>Area</u>	<u>Date</u>	<u>Objectives</u>
East coast of Scotland	Feb 1979	Acoustic abundance survey

Blue whiting

Sampling

Area	Season	Type of fish	No. of samples		No. of fish	
			research vessel	market	measured	aged
IVa Northern North Sea	Jul-Sept	mixed	7	-	953	16
VIa West of Scotland	Apr-Jun	mixed	29	-	8315	1124
	Apr-Jun	mixed	-	2	358	358

Research vessel surveys

VIa West of Scotland	April	Acoustic abundance survey and midwater trawling
----------------------	-------	---

Spurdog Squalus acanthias

SAMPLING

Area	Season	Type of fish	Number of samples		Number of fish	
			research vessels	market	measured	aged
IVa Northern North Sea	Jan-Mar	All	10	8	1213	123
	Apr-Jun	All	-	41	3490	37
	July-Sept	All	4	6	588	-
	Oct-Dec	All	38	1	1242	236
IVb Central North Sea	Jan-Mar	All	13	6	1017	82
	Apr-Jun	All	-	13	1617	65
	July-Sept	All	11	2	675	92
	Oct-Dec	All	7	8	888	-
V <sup>T</sup> a West of Scotland	Jan-Mar	All	7	9	1368	262
	Apr-Jun	All	10	19	2669	116
	July-Sept	All	4	4	246	-
	Oct-Dec	All	17	35	7228	646

Of 121 samples taken by research vessels, 53 consisted of less than 10 fish.

TAGGING

Area	Month	Type of fish	Number Tagged	Types of Tag	Recoveries
VIa North Minch	Jan	Juvs.	50	*Swiftachment + buttons	0
VIa North Minch	Mar	Juvs.	10	1 x Swiftachment	0
VIa Sulisker	Apr	Juvs. + Adults	329	2 x Swiftachment	8
V <sup>T</sup> a North Minch/North Coast	Dec	Juvs. + Adults	809	1 x Swiftachment + buttons	1

\*Swiftachment tag is a new combination of nylon fastener plus plastic flag tag, fish double tagged where indicated.

Research Vessel Surveys

<u>Area</u>	<u>Month</u>	<u>Objectives</u>
VIa North Minch	March )	Estimate stock size and distribution, identify migration routes and combination of stocks from tagging.
VIa North and West Scotland	December)	

Other Research Activities

Maturity and fecundity investigations were carried out on spurdogs (reported in ICES, 1979). Over 1978-1979, 5115 spurdog stomachs have been examined to identify prey species.

Further tests on the Swiftachment tag were carried out both in the aquaria and in

MACKEREL SAMPLING

Area	Season	Number of samples		Number of Fish		Type of Fish
		Research vessel	Market	Measured	Aged	
IVa Northern North Sea	Apr-June	0	6	546	378	} Adult
	July-Sept	0	27	2618	191	
	Oct-Dec	0	13	1304	138	
IVb Central North Sea	July-Sept	0	4	459	215	} Adult
	Oct-Dec	0	5	561	63	
VIa West of Scotland	Jan-Mar	1	1	105	69	} Adult
	Apr-June	6	6	833	582	
	July-Sept	24	40	4521	1862	
	Oct-Dec	7	15	1267	595	
Tagging Area	Months	Type of Tag		Number of Fish Tagged   Recvd.		Type of Fish
VIa West of Scotland (North Minch)	July-Sept	Internal		1925	9	} Adult
		External-Flag		2010	28	
<u>Research Vessel Surveys</u>		<u>Date</u>	<u>Objectives</u>			
<u>Area</u> Minch		July-Aug	Mackerel Tagging			
Minch		Aug-Sept	Mackerel Tagging			

Other Research Activities

Examination of mackerel stomachs was continued as part of an ongoing study into mackerel feeding.

A short experiment to investigate survival after tagging was carried out during the tagging experiment in the autumn.



USA

(Richard C. Hennemuth  
Edward D. Houde)

Herring

The Northeast Fisheries Center (NEFC) in cooperation with scientists from the State of Maine's Department of Marine Resources and the New England Regional Fishery Management Council conducted the annual assessment of sea herring. The results of this work served in formulating the 1979-1980 fishing season catch advice for the Northwest Atlantic herring fisheries under US jurisdiction.

Bottom trawl surveys were conducted in the area between Georges Bank and western Long Island to determine relative abundance and distribution of herring during February-March by the FRG R/V ANTON DOHRN and in April-May by the GDR R/V EISBAR. During October the FRG R/V ANTON DOHRN surveyed the Georges Bank region and adjacent waters in conjunction with a remote aerial surveillance program conducted by Zapata Corporation designed to locate concentrations of spawning herring.

NEFC continued studies on larval herring through its plankton monitoring cruises (MARMAP) conducted at least six times a year from Cape Hatteras to the Gulf of Maine. Also summary and analysis of the ICNAF larval herring time series and patch studies in the Georges Bank area were continued. More than 20 reports on the patch study are completed or in preparation and several papers on the 1971-1977 time series were presented at the ICES larval fish symposium in April 1979. A general review of the total data base and research completed to date on larval herring in the New England area will be held at a NAFO Workshop in Woods Hole in April 1980.

Remote Sensing for Herring Schools

A study of the applicability of low-light-level TV systems (LLLTV) for night aerial detection of herring schools off New England was undertaken in October 1979. The camera system detects bioluminescence associated with fish movement, amplifies it, and converts it to a video signal. The camera is carried in a pod beneath the aircraft. Dark nights and clear atmospheric conditions are necessary for good detection. Transects over the Gulf of Maine, Georges Bank, and the southern New England shelf were flown at altitudes of up to 2,400 m. The scan path was about twice the altitude. A total of 23 flights (133 hours) were made.

Mackere1

NEFC assessed the status of the Atlantic mackerel stock (Cape Hatteras to Newfoundland) with results serving as input to fishery management plans.

An estimate was made of the 1977 egg production and spawning population of Atlantic mackerel in the southern area (Gulf of Maine to Mid-Atlantic) based on egg collections from several ichthyoplankton surveys.

Length and age samples of Atlantic mackerel were collected from the spring 1979 recreational fishery in the New Jersey-New York area.

Commercial, recreational, and research samples of Atlantic mackerel otoliths were aged for use in the assessment.

NEFC continued monitoring distribution and abundance of eggs and larvae on its MARMAP plankton surveys. Estimates of spawning populations in New England waters derived from these surveys were presented at the ICES larval fish symposium in April 1979.

### Bluefish

NEFC prepared an initial assessment of the status of bluefish along the Atlantic coast of the United States, the results of which provided input in a fishery management plan.

### Butterfish

NEFC produced an assessment of butterfish which was used in a fishery management plan.

### Bluefin tuna

The Southeast Fisheries Center (SEFC) of the National Marine Fisheries Service (NMFS) studies Atlantic bluefin tuna in order to provide scientific information on the status of stocks of the species for US Commissioners of the International Commission for the Conservation of Atlantic Tunas (ICCAT) and others. Bluefin tuna research is directed at tagging, ageing, larval distribution and abundance, spawning-stock size estimates, catch effort, stock assessment, and catch-composition studies of the US fisheries.

The University of Miami is conducting research in the application of remote sensing techniques to Atlantic bluefin tuna resource utilization and management. Objectives are to identify ocean fronts and their dynamics and satellite data and to relate these front characteristics to distribution, movements, availability, and spawning success of bluefin tuna.

### Billfish and Swordfish

SEFC is conducting research on the population dynamics, biology, and ecology of Atlantic billfishes. Of particular emphasis is the evaluation of status of stocks of blue marlin, white marlin, and sailfish prepared for the annual meetings of ICCAT. Research on the US recreational fishery involves the collection and analysis of catch and effort data and an evaluation of its usefulness in detecting trends in abundance.

Research on the biology of billfishes is centered on an evaluation of age and growth using hard parts. At present, dorsal fin spines are being examined for annular growth rings.

Scientists at the University of Miami continue their research on the biology and ecology of swordfish off the southeast Florida coast.

### Sharks

The NEFC Apex Predator Investigation is directed toward understanding the migrations, distribution, age, growth, food, and reproductive habits of large oceanic fishes with special emphasis on several species of large sharks. In 1979, 5,310 sharks representing 34 species were tagged and released under the NMFS Cooperative Shark-Tagging Program. Volunteer fishermen accounted for about 97% of all releases which also included 65 swordfish and 34 miscellaneous teleosts. During the same period, 166 fish were recaptured from 15 species of sharks.

Research cruises in 1979 were conducted by staff biologists aboard the Polish R/V WIECZNO, and the R/V GERONIMO from the St. Georges School in Newport, Rhode Island. Cruises ranged from Georges Bank to Cape Hatteras. Activities included longlining to obtain samples to complete the food-habits data base for blue and mako sharks. The little known white shark was studied opportunistically when six to eight large individuals were attracted to a floating fin whale carcass last July. A 2,075-lb harpooned male white was dissected, and another of similar size was tracked using telemetry in cooperation with Dr. Frank Carey of the Woods Hole Oceanographic Institution. The complex sexual cycle and unusual anatomy of the blue shark was described in a report by H. L. Pratt published in the Fisheries Bulletin.

Data and analyses relating to the harvest of large pelagic sharks in the Atlantic and Gulf of Mexico were generated by NEFC with cooperation by SEFC at Miami. Specific analyses were completed which estimated by-catch in the distant-water-fleet trawl fishery in US waters of the Northwest Atlantic in 1978, in the Japanese longline fishery in US waters of the Atlantic and Gulf of Mexico in 1978, and in the US and Canadian swordfish longline fisheries since 1962. Recreational catches of sharks from marine-angler surveys, particularly the 1977-1978 NMFS Recreational Billfish and Shark Survey, were analyzed. These various estimates of catch, together with reported domestic and foreign commercial catch, were evaluated in an attempt to determine the overall level of harvest in US waters for use in a fishery management plan.

A research project on sharks was initiated at SEFC in late February 1979. The purpose of this project is to provide a data base for the management of the shark fishery within the US Fishery Conservation Zone along the Gulf and Atlantic seaboard. In addition to the preparation of a field guide for shark identification, sampling at taxidermy shops and during shark tournaments has proceeded on a regular basis. A total of 1,097 specimens comprising 26 species has been sampled to date. There are 35 species involved in the recreational and commercial shark fishery.

#### Pelagic fish in general

NEFC continued work on food webs for fish and on the development of a multispecies fish production model for Georges Bank. A first-approximation energy budget for Georges Bank indicates that, with the exception of pelagic fish, productivity is higher at all trophic levels on Georges Bank than in the North Sea. Comparative studies of the structure of these two ecosystems are underway to help clarify our understanding of energy flow in such systems.

SEFC is attempting to develop the capabilities of satellite data to measure chlorophyll and primary production by a program of sea-truthing shipboard measurements with those obtained from the satellite. Ultimately, the satellite data may be related to the reproductive success of various fishery stocks including the bluefin tuna and shrimp stocks.

#### Pelagic fish research on the Pacific Coast of the United States

The Northwest and Alaska Fisheries Center, the State of Alaska, and the North Pacific Fishery Management Council prepared a fishery management plan for herring in the Bering and Chukchi Seas during 1979. Aerial survey methods were used to directly estimate the spawning-stock size which has increased in recent years. This is a new fishery for the US except for subsistence fishing. Japan and the USSR have fished this stock for many years.

Hydroacoustic surveys were conducted off the Washington and Alaska (southeast area) coasts in 1979 to estimate herring stock size for these two stocks.

USSR  
(V.A.Sokolov)

In 1979 the specialists of PINRO laboratory of pelagic fishes continued to investigate the biology of herring and blue whiting in the Norwegian Sea, polar cod and Pacific herring in the Barents Sea, capelin of the North-West Atlantic.

On the basis of analysis of age-length composition of stocks, results of observations on distribution, stock surveys data, obtained during the cruises of research vessels "Gemma", "Poisk", "Fridtjof Nansen" and "Suloy" condition of fish stocks, distribution peculiarities, conditions and factors favouring the formation of commercial fish concentrations were studied.

In June 1979 a combined oceanographic survey in the Norwegian and Greenland Seas was conducted by the specialists of the laboratory in collaboration with Icelandic colleagues. In May-June the hydrological acoustic survey of blue whiting stocks in the Faroe economic zone was carried out by the scientific research vessel "Artemida".

In August-September the 0-group survey of the Barents Sea commercial fishes was undertaken jointly with the scientists of Norway, in September-October an assessment of capelin was made.

In 1979 the collection and processing of the materials on biology and environmental conditions of blue whiting, mackerel and horse mackerel was continued. The materials on distribution and abundance of the North Sea sprat eggs were processed. The age composition of blue whiting was monitored during the fishing season which lasted from May to November. About 3 000 otolith pairs were taken and over 80 thous.sp. of this fish were measured. In 1980 the amount of work to be done will be similar to that in 1979.

SPECIES BLUE WHITING

SAMPLING

Area	Season Month	Type of Fish	No. of Samples		No. of Fish measured	No. of Fish aged	No. of Fish examine raciall	
			Research vessel	Market				
I	2	3	4	5	6	7	8	
IIb	II	IV Adult						
		y "	3		6674	300		
		VI "	3		8516	300		
			Σ	6		15190	600	
	III	yII Adult	2		5076	200		
		yIII "			1897			
		IX "	1		3208	100		
			Σ	3		10181	300	
	IV	X Adult	3		12246	300		
		XI "						
XII "								
		Σ	3		12246	300		
Total			12		37617	1200		
IIa	I	I Adult	9		23628	900		
		II "	2		11129	200		
		III "						
			Σ	11		34757	1100	
	II	IV Adult	4		15660	400		
		y "	5		19092	500		
		yI "	9		46401	900		
			Σ	18		81153	1800	
	III	yII Adult	12		30042	1200		
		yIII "	7		21254	900		
IX "		3		8994	300			
		Σ	22		60290	2400		
IV	X Adult	9		31430	900			
	XI "	5		25125	500			
	XII "			4302				
		Σ	14		60857	1400		
Total			65		237057	6700		
Va	II	y Adult			1988			
Vb	I	I Adult						
		II Adult						
		III post-spawner			200			
		Σ			200			
II	IV post-spawner	I		4045	100			
	y Adult							
	yI "			548				
		Σ	I		4593,	100		
Total			I		4793	100		

SPECIES POLAR COD

SAMPLING

Area	Season month	Age of Fish	No. of samples		No. of Fish measured	No. of Fish aged	No. of Fish examined racially
			Research vessel	Market			
I	I	I	immature		3367		
		II	"		909		
		III	adult	I	2726	100	
		Σ		I	7002	100	
	II	IV	adult	I	2673	100	
		V	"		51		
		VI	"				
		Σ		I	2724	100	
	III	VII	adult		617		
		VIII	"		838		
		IX	"		298		
		Σ			1753		
	IV	X	adult	4	6788	400	
		XI	pre-spawner	2	5738	200	
		XII	"	I	5531	100	
Σ			7	18057	700		
Total			9	29536	900		
II <sup>b</sup>	I	I	immature		610		
		II	"		1139		
		III	adult				
		Σ			1749		
	II	IV	adult		216		
		V	"				
		VI	"		61		
		Σ			277		
	III	VII	adult				
		VIII	"				
		IX	"	3	4758	280	
		Σ		3	4758	280	
	IV	X	adult		2901		
		XI	pre-spawner	I	1921	100	
		XII	"				
Σ			I	4822	100		
Total			4	11606	380		

SPECIES CAPELIN

SAMPLING

Area	Season month	Type of Fish	No. of samples		No. of Fish measured	No. of Fish aged	No. of Fish examined racially	
			Research	Vessel ; Market				
I	I	I pre-spawner	3		5193	300		
		II "	17		22175	1585		
		III spawner	12		29229	1200		
		$\Sigma$		32		56597	3085	
	II	IV spawner	8		14383	800		
		V Adult			740			
		VI "						
		$\Sigma$		8		15123	800	
	I	III	VII Adult			665		
			VIII "			715		
			IX "					
			$\Sigma$				1380	
IV		X Adult						
		XI immature	I		920	100		
	XII "			195				
	$\Sigma$		I		1115	100		
	Total		41		74215	3985		
II <sup>b</sup>	I	I pre-spawner	4		8831	400		
		II "	1		2028	100		
		III spawner			651			
		$\Sigma$		5		11510	500	
	II	IV spawner			869			
		V Adult						
		VI "			166			
		$\Sigma$				1035		
	III	VII Adult						
		VIII "	9		26939	900		
		IX "	13		20234	1154		
		$\Sigma$	22		47173	2054		
IV	X Adult	5		20959	500			
	XI immature	4		17294	400			
	XII "	I		6428	100			
	$\Sigma$	10		44681	1000			
	Total		37		104399	3554		
III <sup>a</sup>	I	I pre-spawner						
		II pre-spawner			353			
		III spawner			237			
	Total				590			

SPECIES HERRING

SAMPLING

Area	Season month	Type of Fish	No. of Samples Research		No. of Fish measured	No. of Fish aged	No. of Fish examined racially	
			Vessel	Market				
I	I	adult	3		252	4		
		"	2			3		
		"	7		456	79		
		Σ		12		708	86	
	II	IV	adult	3		988	225	
			"	17		1103	71	
		VI	pre-spawner	1		96	1	
		Σ		21		2187	297	
	III	VII	spawner					
			post-spawner			427		
			post-spawner	3		4065	150	
		Σ		3		4492	150	
IV	X	post-spawner	3		1490	162		
		"						
	XII	adult			481			
	Σ		3		1971	162		
Total			39		9358	695		

In 1979 eight cruises were made to different areas of the Central-East Atlantic.

Area	Month	Objective
Morocco	January-February	Acoustic survey
Morocco	January-February	Ichthyoplankton, oceanographic and shrimp survey
Morocco	May-June	Trawl, oceanographic and ichthyoplankton survey
Guinea-Bissau	February-March	Trawl survey on abundance
Guinea-Bissau	February-March	Ichthyoplankton and oceanographic surveys
Sao-Tome, Principe, Republic of Equatorial Guinea	May-June	Research activities on tuna yielding with purse-seine
Sierra-Leone	June-July	Trawl survey on abundance and hydrological survey, research activities
Morocco	December	Oceanographic and ichthyoplankton surveys

▲ total of 714 haulings was made and 951 hydrological stations occupied.



The data on the major fish species are given in the table:

Area	Species (pelagic)	No. of samples collected		No. of samples collected		
		from vessels	from market	Massive measurements	Age determination	Race analyses
Morocco	Trachurus trachurus	15 130	-	14 355	475	300
	Scomber colias	9 218	-	8 083	225	910
	Sardina pilchardus	12 852		10 402	650	1 800
Sahara	Trachurus trachurus	9 600		9 600	-	-
	Scomber colias	12 000		12 000	-	-
	Sardina pilchardus	12 000		12 000	-	-
	Trachurus trecae	5 100		5 100	-	-
	Sardinella aurita	1 500		1 500	-	-
Guinea-Bissau	Sardinella aurita	1 950		1 800	150	-
	Trachurus trecae	1 550		1 500	50	-
Sierra-Leone	Sardinella aurita	1 900		1 800	100	
	Trachurus trecae	1 495		1 445	50	
By all areas	OTHERS:	12 490		11 450	1 040	
	TOTAL:	96 785		91 035	2 740	3 010

The minimum abundance and biomass of 6 fish species were estimated. Trachurus trachurus, Trachurus trecae, Sardina pilchardus, etc. were predominant pelagic fishes.