International Council for the
Exploration of the Sea

C.M. 1974/H:1
Administrative Report

PEALGIC FISH (NORTHERN) COMMITTEE

by Alan Saville

1973

Belgium

(P. Hovart)

Herring

Research Vessel Surveys

Area	Season	Objective
Belgian Coast (12)	Whole year Monthly intervals	Recording densities of immature ~~sprat~~ herring

Sprat

Research Vessel Surveys

Area	Season	Objective
Belgian Coast (12)	Whole year Monthly intervals	Recording densities of immature ~~herring~~ sprat

Canada

(J.S. Scott & G.H. Winters)

Herring

Preliminary figures indicate that total Canadian landings of herring in 1973 were about 220,000 metric tons, 20% less than in 1972 and about half of peak catches in the late 1960's. Reduced landings reflect inadequate recruitment and attrition of accumulated biomass. The decrease was due mainly to reduced mobile fleet landings in Newfoundland, down 40% to about 30,000 tons, New Brunswick, down 37% to 44,000 tons, and southwest Nova Scotia and Chedabucto Bay-Cape Breton, each down 10% to 50,000 and 22,000 tons respectively. Quota regulations were placed on nearly all mobile fleet landings from Canadian coastal waters to ensure rational yield levels. Special research studies continued on larval distribution and ecology, and stock discrimination, fecundity and feeding.

Mackerel

Canadian landings increased from 1972 level by 25% to about 18,000 tons mainly from the developing fishery in the Gulf of St. Lawrence. Studies were

initiated to investigate biological parameters including growth, age at sexual maturity, and recruitment to adult stock. Particularly important is recruitment of the so-called "northern" population of mackerel to the intensive mackerel fisheries off the New England coast during the fall-winter period. Tagging studies have been initiated to investigate the stock interrelationships of the "northern" and "southern" contingents of mackerel. Returns from the New England coast of mackerel tagged in Canadian waters indicate migration between the two areas and intermingling of the contingents.

Autoxidation of lipid in frozen mackerel held for reasonable periods (3-6 months) and kinetic changes in lipids and tocopherols associated with off-quality oxidative deterioration are being investigated.

Capelin

Landings of capelin in the Northwest Atlantic area increased substantially from less than 7,000 metric tons in 1971 to an estimated 260,000 metric tons in 1973. The fishery is based mainly on spawning concentrations of capelin on the southeast shoal area of Grand Bank in June-July and on prerecruits in the Hamilton Inlet Bank area during the Oct-Dec period. As a result of the rapid expansion of the capelin fishery, research studies on capelin were reactivated in 1973 after a lapse of several years and intensive sampling of commercial and research vessel catches was conducted. Special emphasis has been placed on the possible interactive effects of a capelin fishery on fisheries for its major predators and preliminary estimates of the annual consumption of capelin by its predators have been determined.

The similarity to herring oil in fatty acid composition indicates that Canadian capelin oils could be used interchangeably with herring oil as is done in Europe.

Sand Lance

Studies on the ecology and life history of sand lances continued as material became available.

Sampling:

Area	Type of Fish	No. of Samples		No. of Fish	
		Research	Commercial	Measured	Aged
Mackerel					
Eastern Nfld	Adults	-	11	550	550
Southeast Nfld	Adults	10	13	1 350	1 150
Western Nfld	Adults	-	2	100	100
Northern Nfld	Adults	-	9	450	450
Gulf of St Lawrence	Adults	-	50	6 100	1 978
Chedabucto Bay	Adults		61	9 031	1 744
Southwest Nova Scotia	Mixed*		43	4 698	661
Bay of Fundy-Gulf of Maine	Mixed*		3	341	95
Herring					
Eastern Nfld	Adults	3	21	2 000	1 200
Southeast Nfld	Adults	5	58	4 250	3 150
Southwest Nfld	Adults	3	134	8 350	6 850
Western Nfld	Adults	4	52	4 008	2 506
Northern Nfld	Adults	3	48	3 250	2 550
Gulf of St Lawrence	Adults	-	134	13 692	4 603
Chedabucto Bay	Mixed*	3	127	17 197	3 118
Southwest Nova Scotia	Mixed	-	116	19 704	3 667
Bay of Fundy-Gulf of Maine	Mixed	-	344	49 187	8 834
Capelin					
Offshore Banks (Nfld)	Adults	26	82	13 797	5 400
Inshore (Nfld)	Adults	46	25	4 652	3 550

*A proportion of these fish were $\leq$ 2 years old.

Tagging:

Date and Area		Tag type	No. Tagged	No. Recovered
Herring				
Mar 23-24	Placentia Bay	Dart	5 250	76
		Anchor	5 250	109
		Internal	900	None
Aug 7-8	Quirpon (Northern Nfld)	Dart	1 100	None
Aug 25	Green Bay (Eastern Nfld)	Dart	175	None
Oct 27-Nov 1	La Scie (Northern Nfld)	Dart	8 500	1
Nov 21-Dec 14	Grand Manan, N.B. (Bay of Fundy)	Anchor	12 147	None
Mackerel				
Sep 5-6	Trinity Bay (Eastern Nfld)	Dart	7 000	40
		Anchor	2 000	15
Oct 3	Prince Edward Island	Anchor	196	None
Oct 23-26	St Margaret's Bay, N.S.	Anchor	1 765	94

Research Vessel Cruises:

Vessel	Area	Season	Objectives
Marinus	Southwest Nfld	Winter (Jan)	Herring tagging
Marinus	Southwest Nfld	Winter (Feb)	Herring survey
Marinus	Southeast Nfld	Winter (Mar)	Herring tagging
Marinus	Southeast Nfld	Spring (Apr)	Herring tagging
Marinus	Southeast Nfld	Autumn (Sep-Oct)	Herring and mackerel survey
Marinus	Northern Nfld	Autumn (Oct-Nov)	Herring tagging
Marinus	Southeast Nfld	Autumn (Dec)	Hydrographic and herring survey
E. E. Prince	Northern Nfld and Labrador	Spring (May)	Herring and capelin survey
Silver Dolphin	Northern Nfld and Labrador	Summer (Jul-Aug)	Herring and mackerel survey
E. E. Prince	Bay of Fundy-Gulf of Maine	Winter (Mar)	Herring larval survey
Harengus	Gulf of St Lawrence	Spring (Apr)	Mackerel survey
E. E. Prince	Chedabucto Bay-Cape Breton	Summer (Jun)	Herring larval survey
E. E. Prince	St Margaret's Bay, N.S.	Summer (Aug)	Mackerel tagging
E. E. Prince	Bay of Fundy	Autumn (Oct)	Herring larval survey
Harengus	Chedabucto Bay	Autumn (Oct-Nov)	Herring larval survey
E. E. Prince	Bay of Fundy-Gulf of Maine	Autumn (Nov)	Herring larval survey
E. E. Prince	Bay of Fundy-Gulf of Maine	Winter (Dec)	Herring larval survey

Denmark

(K. Popp Madsen)

RV "Dana" participated in the international young herring surveys in February 1973.

No tagging experiments or special investigations were carried out.

Herring:

Area	Season	Type of Fish	No. of Samples		No. of Fish		
			Research	Market	Measured	Aged	Examined racially
West of Shetland (02)	Apr-Jun	immat.		1	28	28	
		adults		2	257	257	257
	Jul-Sep	immat.		1	6	6	
		adults		1	120	120	120
	Oct-Dec	immat.		1	27	27	
		adults		3	448	448	448
NW North Sea (03	Jan-Mar	immat.	3	3	109	101	
		adults		1	135	135	135
	Apr-Jun	immat.		2	57	57	
NE North Sea (04)	Jan-Mar	immat.		2	47	47	
		adults		2	240	240	240
	Jul-Sep	adults		1	100	100	100
	Oct-Dec	immat.		1	1	1	
		adults		1	100	100	100
Skagerak (05)	Jan-Mar	immat.	2	27	652	609	
	Apr-Jun	immat.		11	355	355	
		adults		1	113	113	113
	Jul-Sep	immat.		20	570	570	
		adults		1	125	125	125
	Oct-Dec	immat.		15	198	198	
Central North Sea (09)	Jan-Mar	immat.	21	50	6 421	4 381	1 582
	Apr-Jun	immat.		19	607	607	
	Jul-Sep	immat.		59	1 768	1 768	
		adults		2	241	241	241
	Oct-Dec	immat.		27	651	651	
		adults		1	199	199	199
Kattegat	Jan-Mar	immat.		28	1 299	1 299	
	Apr-Jun	immat.		10	524	524	
	Jul-Sep	immat.		2	66	66	
	Oct-Dec	immat.		19	480	480	
Baltic	Jan-Mar	immat.		6	590	590	
	Apr-Jun	immat.		2	206	206	
	Oct-Dec	immat.		1	42	42	
Σ			26	323	16 782	14 691	3 660

Sprat:

Area	Season	Type of Fish	No. of Samples		No. of Fish		
			Research	Market	Measured	Aged	Examined racially
NW North Sea (03)	Jan-Mar	immat.	3	1	248		
	Oct-Dec	immat.		1	6		
NE North Sea (04)	Jan-Mar	immat.	1	2	11		
	Oct-Dec	immat.		2	7		
Skagerak (05)	Jan-Mar	immat.	2	15	106		
	Apr-Jun	immat.		11	1 239		
South Buchan (08)	Jan-Mar	immat.		1	5		
Central North Sea (09)	Jan-Mar	immat.	20	43	3 105	246	246
	Apr-Jun	immat.		22	1 945		
	Jul-Sep	immat.		52	5 002		
	Oct-Dec	immat.		29	3 732		
Kattegat	Jan-Mar	immat.		25	1 276		
	Apr-Jun	immat.		9	658		
	Jul-Sep	immat.		1	106		
	Oct-Dec	immat.		8	488		
Baltic	Jan-Mar	immat.		4	85		
	Apr-Jun	immat.		2	153		
	Oct-Dec	immat.		1	57		

Mackerel:

West of Shetland (02)	Jul-Sep	adults		1	7		
NW North Sea (03)	Jun-Mar	adults	1		1		
	Apr-Jun	adults		1	1		
Skagerak (05)	Apr-Jun	adults		2	2		
	Jul-Sep	adults		1	1		
Central North Sea (09)	Jan-Mar	adults	2	4	220		
	Apr-Jun	adults		8	39		
	Jul-Sep	adults		12	18		
Kattegat	Jan-May	adults		1	1		
	Apr-Jun	adults		1	1		

Federal Republic of Germany

(K. Schubert)

Herring

Sampling:

Area	Season	Type of Fish*)	No. of Samples		No. of Fish		
			Research Vessel	Market	Measured	Aged	Examined racially
NW North Sea (03)	I	1,2,4,5,8	2	-	303	110	110
	III	2,3,4,5,8	2	-	520	200	200
NE North Sea (04)	IV	1,2,5,8	3	-	48	48	48
Skagerak (05)	IV	1,2,3,8	3	-	295	171	179
South Buchan (08)	I	1,2,4	2	-	121	112	112
	III	2,3,4,5	3	-	590	300	300
	IV	1,2,3	4	-	28	27	27
Central North Sea (09)	I	1,2,5,8	12	-	3 544	919	919
	III	2,3,4,5	1	-	833	100	100
	IV	1,2,3,4,8	7	-	217	134	134
W of Shetland (02)	III	1,2,3,4,5,7,8	9	2	2 483	888	888
Hebrides (01)	II	2,3,4,8	-	1	100	100	100
	III	2,3,4,5,8	4	-	716	396	396
NW of Ireland (06)	III	2,3,4,5,8	6	1	1 746	586	586
	IV	2,3,4,7,8	-	2	259	200	200
W Baltic (22)	I	1,2,3-5,6	-	1	1 042	487	-
	II	1,2,3-5,6	-	1	565	250	-
	III	1,2,3-5,6	-	1	748	297	-
	IV	1,2,3-5,6	-	1	792	335	-

*) Stages of maturity.

Research Vessel Surveys:

Area	Season	Objectives
NW North Sea (03) NE North Sea (04) Skagerak (05) S Buchan (08) Central North Sea (09)	8-21.2.73	Young herring
NW North Sea (03) W of Shetland (02) Hebrides (01) NW of Ireland (06) S Buchan (08) Central North Sea (09)	5-28.7.73	Adult herring
Central North Sea (09) Skagerak (05) NE North Sea (04) NW North Sea (03) S Buchan (08)	29.11-18.12.73	Adult herring

Mackerel

No work was done on mackerel in 1973.

Finland

(V. Sjöblom)

Sampling

Baltic herring:

Area	Season	Type of Fish	No. of Samples		No. of Fish		
			Research Vessel	Market	Measured	Aged	Examined racially
Gulf of Finland	Jun	spawning		3	552	552	
	Jul	spawning		1	154	154	
	Sep	feeding		2	351	351	
	Oct-Nov	feeding		4	541	541	
Archipelago Sea	Jun	spawning		1	149	149	
	Nov	feeding		2	354	354	
Bothnian Sea	Jun	spawning		1	154	154	
	Sep	feeding		1	159	159	
	Oct-Nov	feeding		2	230	230	
Bothnian Bay	Jun	spawning		1	160	160	
	Jul	feeding		1	189	189	
	Nov	feeding		2	231	231	

Sprat:

Area	Season	Type of Fish	No. of Samples		No. of Fish		
			Research Vessel	Market	Measured	Aged	Examined racially
Gulf of Finland	Sep	adults		1	200	200	
	Oct-Dec	adults		5	934	934	
Åland Sea	Nov-Dec	adults		2	384	384	

Research Vessel Surveys

Area	Date	Objectives
Gulf of Finland	17.7-27.8.73	Baltic herring larvae
Archipelago Sea	8-22.8.73	Baltic herring larvae
Bothnian Sea	8-27.8.73	Baltic herring larvae
Bothnian Bay	8-16.8.73	Baltic herring larvae

France

(Alain Maucorps)

Échantillonnage

Hareng:

Région	Saison	Genre de Poisson	Nb échantillons		Nb de Poissons		
			Bateau de recherche	Marché	mesurés	dont âge déterminé	classés suivant race
Central North Sea (09)	Juil-Sep	adultes matures	-	2	352	192	-
		adultes géniteurs	-	1	100	98	-
Hébrides (01)	Oct-Dec	adultes matures	-	2	264	194	-
		adultes matures	-	1	151	98	-
		adultes (spent)	-	2	379	195	-
Southern North Sea (12)	Oct-Dec	adultes matures	-	1	257	95	-
		adultes géniteurs	-	8	2 161	675	-

Maquereau:

W Channel (15)	Jan-Mar	adultes	-	2	415	-	-
	Oct-Dec	adultes	-	2	132	-	
Bristol Channel (14)	Jan-Mar	adultes	-	5	1 128	-	-
	Avr-Juin	adultes	-	1	144	-	-
	Oct-Dec	adultes	-	1	85	-	-
South of Ireland (13)	Oct-Dec	adultes	-	2	136	-	-

Pas de recherches spécifiques faites en mer à bord des navires océanographiques ou des chalutiers commerciaux.

Iceland

(J. Jakobsson)

Blue Whiting

Sampling:

Area	Season	Type of Fish	No. of Samples		No. of Fish		
			Research Vessel	Market	Measured	Aged	Examined racially
S Iceland	Apr-Jun		1		100	100	
"	Jul-Sep		1		100	100	
"	Oct-Dec		1		100	100	
Norwegian Sea	Apr-Jun		8		800	800	
Faroes	Apr-Jun		2		200	200	

Research Vessel Surveys:

Area	Season	Objectives
Faroes and Norwegian Sea	May-Jun	Environmental and blue whiting survey

Capelin

Sampling:

Area	Season	Type of Fish	No. of Samples		No. of Fish		
			Research Vessel	Fishing Vessel	Measured	Aged	Examined racially
Iceland	winter		20	43	6 300	6 220	
"	autumn		5	4	900	890	

Tagging:

Area	Season	Type of Tags	No. Tagged	Type of Fish	Recoveries
E Iceland	winter	internal	3 600	adult	

Research Vessel Surveys:

Area	Season	Objectives
E Iceland	2 - 26 Jan	Capelin survey
E and S Iceland	31 Jan - 23 Feb	Capelin survey
"	28 Feb - 17 Mar	" "
"	21 Mar - 20 Apr	" "

Herring (Icelandic Waters)

Sampling:

Area	Season	Type of Fish	No. of Samples		No. of Fish		
			Research Vessel	Fishing Vessel	Measured	Aged	Examined racially
Iceland, South Coast	Jan-Mar		1	5	374	370	370
	Jul-Sep		2	9	704	700	700
	Oct-Dec		6	5	1 050	1 020	1 020

Research Vessel Surveys:

Area	Season	Objectives
S Iceland	25 Jul - 8 Aug	Herring larval survey
"	15 - 29 Nov	Herring survey and absolute abundance estimates

Herring (North Sea and Adjacent Waters)

Sampling:

Area	Season	Type of Fish	No. of Samples		No. of Fish		
			Research Vessel	Fishing Vessel	Measured	Aged	Examined racially
02-W off 4°	Jul		2	2	200	200	200
02-E off 4°	Jul-Sep			3	447	447	447
"	Oct-Dec			4	350	349	349
03	Oct-Dec			3	300	299	299
05	Jul			2	177	175	175

Research Vessel Surveys:

Area	Season	Objectives
Shetland-Orkney	25 Jun-30 Jul	Herring survey
Hebrides	Oct	" "

Ireland

(J. Molloy)

Herring

Sampling

Sampling was continued on herring stocks along all coasts of Ireland during 1973, along the same lines as in previous years. Details are given in the table below. Some ovaries from the north-west coast were retained for fecundity studies.

Area	Season	Type of Fish	No. of Samples		No. of Fish		
			Research Vessel	Market	Measured	Aged	Examined racially
NW Ireland (06)	Jan-Dec	adult		21	8 746	2 208	2 208
W and SW Ireland (10)	Jan-Dec	adult		7	4 600	699	699
S Ireland (13)	Jan-Feb, Nov-Dec	adult		17	3 191	1 373	1 373
Irish Sea (11)	Mar-Oct	adult & immat		20	1 922	404	1 000

Research Vessel Surveys

The research vessel Cú Feasa took part in a survey for young herring during the summer of 1973.

Area	Season	Objectives
S Ireland	Jun - Jul	Young herring survey
Irish Sea	Jun - Jul, Oct	" " "
NW Ireland	Jul - Aug	" " "
W Ireland	Jul - Aug	" " "

Sprat

Some samples of sprat from the east and south coasts were measured.

Smelt (Osmerus eperlanus)

Research is in progress on the spawning, age, growth and food of smelt in the Shannon, the only Irish locality in which this species is known to occur.

Netherlands

(A. Corten)

Herring

Sampling:

Area (ICES) 27.3.01.00)	Quarter of Year	Type of Fish	No. of Samples		No. of Fish		
			Research Vessel	Market	Measured	Aged	Examined racially
(01) Hebrides	3	adults	-	9	1 258	450	250
(01) Hebrides	4	adults	-	3	459	150	100
(02) W of Shetland	3	adults	-	1	145	50	50
(03) NW North Sea	1	adults	-	2	288	100	-
(03) NW North Sea	2	adults	-	3	575	150	-
(03) NW North Sea	3	adults	-	2	335	100	-
(04) NE North Sea	2	adults	-	1	147	50	-
(06) NW of Ireland	2	adults	-	5	879	250	150
(06) NW of Ireland	3	adults	-	6	776	300	150
(06) NW of Ireland	4	adults	-	4	714	200	100
(08) South Buchan	2	adults	-	2	415	100	-
(09) Central N Sea	3	adults	-	14	2 160	700	-
(09) Central N Sea	3	spawners	-	22	3 210	1 100	1 100
(09) Central N Sea	4	adults	-	2	451	100	-
(09) Central N Sea	4	spawners	-	4	707	200	200
(12) S North Sea	1	adults	-	7	1 194	350	-
(12) S North Sea	4	adults	-	6	1 148	300	-
(12) S North Sea	4	spawners	-	13	2 344	650	550
(13) S of Ireland	1	spawners	-	4	517	200	-
(13) S of Ireland	2	adults	-	3	452	150	50
(13) S of Ireland	3	adults	-	2	343	100	50
(13) S of Ireland	4	adults	-	4	619	200	100
(14) Bristol Chnl	1	adults	-	1	97	50	50
(14) Bristol Chnl	1	spawners	-	1	74	50	50
Intern. Young Herring Survey — North Sea	Feb	immat.	13	-	ca 2600	627	627
Intern. Young Herring Survey — Irish Sea	Jun	immat.	14	-	ca 2800	700	700
Total			27	121	ca 19300	7 377	4 277

Research Vessel Surveys:

Area	Date	Objectives
Southern North Sea	1 - 20 Jan	Herring larvae
North Sea	29 Jan - 17 Feb	Young herring survey
Dutch coast	19 - 24 Mar	Herring larvae
Waddensea	19 - 24 Mar	Herring larvae
Dutch coast	16 - 21 Apr	Herring larvae
Waddensea	16 - 21 Apr	Herring larvae
Dutch coast	14 - 19 May	Herring larvae
Waddensea	14 - 19 May	Herring larvae
Irish Sea	12 - 30 May	Young herring survey
Central North Sea	3 - 15 Sep	Herring larvae
Central North Sea	17 - 29 Sep	Herring larvae
Central North Sea	15 - 27 Oct	Herring larvae
Southern North Sea	10 - 22 Dec	Herring larvae

Mackerel

Sampling:

Area (Bull. Stat. subdivision)	Quarter of Year	Type of Fish	No. of Samples		No. of Fish		
			Research Vessel	Market	Measured	Aged	Examined racially
IVa N North Sea	2	adults	-	3	700	150	-
IVa N North Sea	3	adults	-	1	250	50	-
IVa N North Sea	4	adults	-	3	550	150	-
IVb Central N Sea	4	adults	-	1	200	50	-
IVe S North Sea	2	adults	-	3	700	150	-
IVc S North Sea	3	adults	-	3	750	150	-
IVc S North Sea	4	adults	-	1	200	50	-
VIIg, h,j,k South Ireland	2	adults	-	3	700	150	-
VIIg, h,j,k South Ireland	3	adults	-	1	250	50	-
VIIg, h,j,k South Ireland	4	adults	-	3	550	150	-
VIa NW of Ireland	2	adults	-	3	700	150	-
VIa NW of Ireland	4	adults	-	1	200	50	-
Total				29	6 500	1 450	

Tagging:

Area	Season	Type of Tags	No. Tagged	Type of Fish	Recoveries
Dutch coast	August	internal	2 342	adults	0
Dutch coast	August	spaghetti	800	adults	1
Dutch coast	August	Floy	619	adults	0

Research Vessel Cruises:

Area	Date	Objectives
English Channel	21 May - 9 Jun	Serological research
Dutch coast	6 Aug - 1 Sep	Tagging

Norway

(O. J. Ostvedt)

Herring (Norwegian Coast)

Sampling:

Area	Season	Type of Fish	No. of Samples		No. of Fish		
			Research Vessel	Market	Measured	Aged	Examined racially
Norwegian west coast	winter	spawners	23	4	2 046	1 995	183
Northern Norway	summer/ autumn	adults	2	9	1 051	1 000	157
Møre/ Helgeland coast	summer/ autumn	immat.	3	7	724	711	119

Research Vessel Surveys:

Area	Season	Objectives
Norwegian west coast	Jan - Mar	Spawning migration of the Norwegian herring
Norwegian west coast	Apr	Larval survey
Barents Sea - W Spitsbergen	Aug - Sep	0-group fish survey

Herring (North Sea)

Sampling:

Area	Season Quarters	Type of Fish	No. of Samples		No. of Fish		
			Research Vessel	Market	Measured	Aged	Examined racially
Skagerak/ North Sea							
02	1	adults		3	300	300	200
05	1	spawners		1	95	95	
09	1	immat.		1	50	50	
01	2	adults		1	95		
01/02	2	adults		63	3 709		
02/03	2	adults		28	2 186		
03	2	adults		3	300	300	
05	2	immat.		1	100	100	
09	2	immat.	4		300	300	
09	2	adults	2	8	935	300	
01	3	adults		7	707		
01/02	3	adults		77	5 864		
02	3	adults		6	619	619	200
02/03	3	adults		181	13 210		
03	3	adults		3	300	300	100
09	3	im./ad.		181	21 169	100	
01/02	4	adults		1	57		
02/03	4	adults		3	242		
03	4	adults		1	100	100	

Research Vessel Surveys:

Area	Season	Objectives
North Sea/Skagerak	Apr - May	Fish survey
"	May - Jun	"
"	Oct - Nov	"

Mackerel (Scomber scombrus)

Sampling:

Area	Season	Type of Fish	No. of Samples		No. of Fish		
			Research Vessel	Market*	Measured	Aged	Examined racially
Shetland/ North Sea	Jul/Oct	adult		1 674	90 855		
Shetland**	Mar/Apr	adult		2	135	135	
"	Jul/Aug	adult		7	658	658	
North Sea	May/Oct	adult		17	1 717	1 717	
South of Ireland	Jun	all	3		217	(not yet)	

*) Samples obtained from Fish Co-operative and meal and oil factories.
**) Shetland, here defined as localities north of latitude 60°N.

Tagging:

Area	Season	Type of Tag	No. Tagged	Type of Fish	Recoveries
SSW and W of Ireland	Jun	internal	8 215	adult	25
North Sea/ Skagerak	Jul/Aug	internal	7 304	adult	441

Research Vessel Surveys:

Area	Season	Objectives
North Sea, Western Skagerak	Apr - May	Echo survey of mackerel. Hydrography.
Shetland Banks, North Sea between 56°N and 61°N, Skagerak	May - Jun	Plankton, egg-larvae survey. Hydrography.
South and West of Ireland, off the Hebrides, the Faroes, southern Norwegian Sea, and northern Norwegian Channel	Jun - Jul	Mackerel tagging, blue whiting survey. Hydrography.
North Sea, Skagerak	Jul - Aug	Mackerel tagging.

Capelin

Sampling:

Area	Season Quarters	Type of Fish	No. of Samples		No. of Fish		
			Research Vessel	Market	Measured	Aged	Examined racially
Barents Sea	1	mixed	52	2 223	9 232*)	2 685	0
" "	2	"	40	1	5 797	2 216	0
Grand Banks, Newfoundland	2	spawners		43	6 012	460	0
Barents Sea	3	mixed**)	162	540	93 391	2 763	0
Grand Banks, Newfoundland	3	spawners		10	1 336	54	0
Barents Sea	4	mixed	57	2	8 978	1 558	0

*)
**) Research vessel samples only, market samples come in addition.
0-group included.

Tagging:

Area	Season Quarters	Type of Tag	No. Tagged	Type of Fish	Recoveries
Barents Sea	1	internal	8 500	spawners	367

Research Vessel Surveys:

Area	Season	Objectives
Barents Sea	3 Jan - 21 Feb	Distribution and migration, tagging.
" "	6 Jan - 24 Feb	Distribution and migration.
" "	10 Jan - 17 Feb	Distribution and migration.
" "	13 Feb - 26 Feb	Distribution and migration.
Finnmark Coast	27 Feb - 14 Apr	Spawning and spawning localities, spawning behaviour.
Finnmark Coast and Barents Sea	1 May - 15 Jun	Distribution of larvae.
Barents Sea	22 May - 30 Jun	Distribution and abundance.
" "	28 Aug - 11 Sep*)	0-group survey.
" "	14 Sep - 15 Oct*)	Distribution and abundance.
" "	15 Nov - 15 Dec	Distribution and abundance.

*) Two vessels.

Polar Cod

Sampling:

Area	Season Quarters	Type of Fish	No. of Samples		No. of Fish		
			Research Vessel	Market	Measured	Aged	Examined racially
Barents Sea	1	mixed	6		558	377	0
" "	2	mixed	8	1	1 378	300	0
" "	3	mixed	7	1	1 126	120	0
" "	3	0-group	16		778		0
" "	4	mixed	18		1 476	100	0

Research Vessel Surveys:

Area	Season	Objectives
Barents Sea	10 Jan - 17 Feb	Capelin, distribution and migration.
" "	13 Feb - 26 Feb	Capelin, distribution and migration.
" "	22 May - 30 Jun	Distribution and abundance (capelin).
" "	28 Aug - 11 Sep	International 0-group survey.
" "	14 Sep - 15 Oct	Distribution and abundance (capelin and polar cod).
" "	26 Sep - 25 Oct	Distribution and abundance (polar cod).
" "	15 Nov - 15 Dec	Distribution and abundance (capelin and polar cod).

Poland

(J. Popiel)

Herring

Sampling:

Area	Season Quarters	Type of Fish	No. of Samples		No. of Fish		
			Research Vessel	Market	Measured	Aged	Examined racially
NW North Sea (03)	2	adults	9	-	4 674	900	
	3	adults	3	-	1 545	300	
South Buchan (08)	2	adults	4	-	1 753	400	
	1	adults	1	-	100	100	
Central North Sea (09) W of 03°00'E	2	adults	4	-	936	400	
	3	adults	12	-	6 329	1 200	
Central North Sea (09) E of 03°00'E	2	immature	3	-	1 587	300	
	3	immature	1	-	491	100	
W of Shetland (02)	2	adults	2	-	802	200	
	3	adults	1	-	351	100	
Hebrides (01)	2	adults	5	-	2 343	500	
	3	adults	3	-	811	300	
	4	adults	1	-	547	100	
NW of Ireland (06)	2	adults	6	-	3 231	600	
	3	adults	3	-	1 512	300	
	4	adults	1	-	1 728	100	
S of Ireland (13)	1	adults	2	-	765	200	
	3	adults	2	-	1 272	200	
Baltic (26)	1	immature	-	5	1 317	250	
(25)	1	immature	-	3	1 717	150	
(24)	2	spawning	-	3	959	250	
(26)	2	spawning	-	10	3 325	1 000	
(26)	4	spawning	-	3	2 046	300	
(24)	4	spawning	-	1	458	100	
(25)	3	adults	-	11	11 406	1 100	
(26)	3	adults	-	5	6 466	500	
(25)	1+2	adults	-	7	4 881	700	
(26)	1+2	adults	-	7	4 578	700	

Research Vessel Surveys:

Area	Season	Objectives
North Sea (03, 04, 08, 09, 12) Hebrides (01, 02, 06) South of Ireland (10, 13) m/t "Wieczno"	7 Jun-26 Jul	Herring, Mackerel, Cod, Haddock, Saithe, Whiting, Norway Pout, Horse Mackerel, Blue Whiting.
North Sea (08, 09) m/t "Birkut"	9 Sep-19 Oct	Herring larvae, hydrography

Portugal

No report received.

Spain

No report received.

Sweden

(G. Otterlind)

Herring

Sampling:

Area	Season	Type of Fish	No. of Samples		No. of Fish		
			Research Vessel	Market	Measured	Aged	Examined racially*
Kattegat	I-II	imm.	9		2 036	652	652
	I	ad./imm.		2	648	184	184
	II	"		1	336	75	75
	III	"		4	1 947	315	315
	IV	"		4	901	270	270
	VIII	"		2	407	175	175
	IX	"		3	625	277	277
	X	imm.	3		465	188	188
	X	ad./imm.		4	775	402	402
	XI	imm.	2		419	178	178
Skagerak	II	imm.	7		1 049	370	370
	II	spawners		1	335	100	100
	III	imm.	1		227	55	55
	III	spawners		1	185	75	75
	VIII	ad./imm.		4	925	400	400
	IX	"		2	1 003	258	258
	X	"		1	226	100	100
Inner Skagerak	I	ad./imm.	2		835	160	160
	II	"		1	240	100	100
	II	ad./imm. spawners	1		902	150	150
	II	ad./imm. spawners		5	1 053	302	302
	III	spawners		3	476	276	276
	X	ad.		1	152	100	100
	XI	ad./imm.		3	674	257	257
	XII	"	2		517	101	101

*) Approximate figures.

Research Vessel Surveys:

Area	Season	Objectives
		Investigations on -
Kattegat	I-II	young herring (trawling)
"	X	herring larvae "
Skagerak, Inner Skagerak	III-IV	eel larvae "
" "	II	young herring "
" "	VI	herring larvae "

Baltic Herring

Sampling:

Area	Season	Type of Fish	No. of Samples		No. of Fish		
			Research Vessel	Market	Measured	Aged	Examined racially*
Bothnian Bay	I-IV	ad.,imm.	2	2	3 120	560	560
	X	"		3	2 766	600	600
Bothnian Sea	II-VI	ad.,imm. spawners	11	8	16 499	3 742	3 742
	VIII-XII	ad.,imm.	-	6	6 037	1 215	1 215
Åland Sea	VI	spawners	2	-	2 544	400	400
Northern & Central Baltic proper	I-VI	ad.,imm. spawners	4	12	9 349	2 629	2 629
	VIII-XII	ad.,imm.	-	11	15 049	2 415	2 415
Southern Baltic proper	II-VI	ad.,imm. spawners	8	5	6 385	2 149	2 149
	VIII-XII	ad.,imm.	1	5	4 932	1 065	1 065

*) Approximate figures.

Tagging:

Area	Season	Type of Tags	No. Tagged	Type of Fish	Recoveries
Southern Bothnian Sea	21.5-25.5	Lea	1 600	spawners	47
Åland Sea	29.5	Lea	500	spawners	21
Central Baltic proper	15.5-16.5	Lea	700	spawners	58

Sprat

Sampling:

Area	Season	Type of Fish	No. of Samples		No. of Fish		
			Research Vessel	Market	Measured	Aged	Examined racially
Inner Skagerak	I-III	adults	5	3	5 311	1 198	-
	IX-XII	"	3	15	8 604	2 440	-
Skagerak	I-III	"	-	1	295	150	-
Kattegat	I-III	"	5	5	3 676	1 482	-
	IX-XII	"	5	10	7 869	2 367	-
Baltic	I-III	"	-	7	2 565	624	-
	IX-XII	"	-	7	1 772	620	-

Mackerel

Sampling:

Area	Season	Type of Fish	No. of Samples		No. of Fish		
			Research Vessel	Market	Measured	Aged	Examined racially
Inner Skagerak	Jun-Jul	spawners	2	-	3	2	-
Skagerak	"	"	11	-	96	94	-
Kattegat	"	"	24	-	825	815	-

Research Vessel Surveys:

Area	Season	Objectives
		Investigations on -
Inner Skagerak	Jun-Jul	sprat stock (trawling)
Inner Skagerak, Skagerak and Kattegat	Jan-Feb	mackerel stock (trolling)

United Kingdom

1. England and Wales

(A. C. Burd)

Herring

Sampling:

Area	Season	Type of Fish	No. of Samples		No. of Fish		
			Research Vessel	Market	Measured	Aged	Examined racially
Irish Sea (11)	Jan-Mar	adults	-	2	288	200	200
	Jul-Sep	immat & adults	-	9	1 079	785	621
	Oct-Dec	adults	-	3	1 088	221	221
West Channel (15)	Jan-Mar	adults	-	3	371	247	247
	Apr-Jun	adults	-	1	75	75	75
West of Scotland (07)	Jul-Sep	immat & adults	-	2	252	200	200
Central North Sea (09)	Jan-Mar	immat & adults	11	1	1 622	509	509
	Jul-Sep	adults	-	5	903	603	603
Northern North Sea (03)	Jan-Mar	immat & adults	1	-	15	14	14
Southern North Sea (12)	Jan-Mar	immat & adults	2	1	505	224	224
	Oct-Dec	adults	-	2	334	267	267
Southern North Sea (River Blackwater)	Jan-Mar	adults	-	2	408	200	200
	Oct-Dec	adults	-	1	203	100	100

Research Vessel Surveys:

Area	Month	Objectives
Southern North Sea and Channel	Jan	ICES herring larval survey
North Sea	Feb	ICES young herring survey
East coast of England	Aug	0-group herring survey
Irish Sea	Jul	0-group herring survey
Northern North Sea	Sep	ICES herring larval survey
Central North Sea	Oct	ICES herring larval survey

Other Research Activities: A total of 213 fish were examined for fat and moisture content.

Mackerel

Sampling:

Area	Season	Type of Fish	No. of Samples		No. of Fish		
			Research Vessel	Market	Measured	Aged	Examined racially
West Channel (15)	Jan-Mar	immat & adults	3	10	1 210	850	850
	Apr-Jun	immat & adults	-	6	782	382	382
	Jul-Sep	immat & adults	-	6	757	523	523
	Oct-Dec	immat & adults	-	6	617	482	482
Southern North Sea (12)	Apr-Jun	immat & adults	-	2	85	59	59
Central North Sea (09)	Apr-Jun	adults	1	-	38	38	38
Irish Sea (11)	Jul-Sep	immat & adults	-	2	115	115	115

Tagging:

Area	Month	Type of Tag	No. Tagged	Type of Fish	Recoveries
West Channel	Feb	Bolster hydro-static	1 732	adults	16

Other Research Activities: A total of 381 fish were examined for fat and moisture content.

Sprat

Sampling:

Area	Season	Type of Fish	No. of Samples		No. of Fish		
			Research Vessel	Market	Measured	Aged	Examined racially
Central North Sea (09)	Jan-Mar	immat & adults	16	39	10 244	795	186
	Apr-Jun	immat & adults	-	2	500	94	-
	Jul-Sep	immat & adults	30	1	2 861	441	-
West Channel (15)	Jan-Mar	adults	3	29	6 748	795	477
	Apr-Jun	mainly adults	5	-	1 048	238	-
	Jul-Sep	mainly adults	-	4	659	100	58
	Oct-Dec	mainly adults	-	19	3 366	452	361
Irish Sea (11)	Jul-Sep	immat & adults	7	-	783	223	-

Research Vessel Surveys:

Area	Month	Objective
Southern North Sea	Jan	Inshore sprat survey

Other Research Activities: A total of 157 separate sprat samples were analysed for moisture content.

United Kingdom

2. Scotland

(R. S. Bailey)

Herring

Sampling

Statistics collection and sampling of catches from the Scottish herring fisheries continued in 1973 (Table 1). Immature herring were examined for the parasites Renicola and Lacistorhynchus, and all types of herring for the presence of Anisakis.

Tagging

Tagging of herring from research vessel catches during 1973 is summarised in Table 2. Tagging took place to the west of Orkney and Shetland in July and on the west coast of Scotland in December. There were 169 further recoveries from tagging carried out in 1972 in the area between Shetland and North Rona. For half of the returns no definite position was given; 34 were recaptured in the area of tagging, 33 on the west coast of Scotland and 16 in the north-eastern North Sea.

Research Vessel Surveys

The surveys carried out by Scottish research vessels are shown in Table 3.

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.

Sprat

Sampling

Collection of commercial statistics and sampling of catches of the Scottish sprat fisheries continued in 1973 (Table 4). Weight and maturity data were collected on a routine basis.

Research Vessel Surveys

Egg and larval surveys were carried out in the Moray Firth and along the east coast of Scotland in June and August (see Table 5). An echo-sounder and midwater trawling survey was also carried out in the same area in August, but a proposed survey of the Moray Firth in December was seriously hampered by bad weather.

Other Research Activities

Stomach contents of sprats were collected from the east of Scotland in 1973 to compare with those of small herring, in an investigation of interspecific competition.

Mackerel

Sampling

Sampling of Scottish commercial mackerel catches and research vessel catches continued in 1973 (Table 6).

Other Research Activities

Biological sampling was carried out to investigate the reproductive cycle and growth of mackerel.

Blue Whiting

Sampling

Research vessel catches made to the west of Scotland were sampled in 1973 (Table 7).

Research Vessel Surveys

Two exploratory midwater trawling surveys were carried out to the west of Scotland in 1973 (Table 8).

Other Research Activities

Biological sampling of blue whiting was carried out to investigate the fecundity and process of maturation in this species.

Table 1

Herring

Sampling:

Area	Season	Type of Fish	No. of Samples		No. of Fish		
			Research Vessel	Market	Measured	Aged	Examined racially
IVa Northern North Sea							
02. W Shetland	Jan-Mar	imm	2	0	10	9	0
	Apr-Jun	adult	2	15	690	689	689
	Jul-Sep	adult	10	38	2 679	2 007	1 882
	Oct-Dec	adult	0	2	98	98	98
03. NW North Sea	Jan-Mar	imm	17	13	1 823	492	384
	Apr-Jun	imm/ad	18	10	1 672	551	551
	Jul-Sep	adult	0	27	1 076	1 076	1 076
	Oct-Dec	imm	0	16	629	184	0
	"	adult	0	5	234	234	234
04. NE North Sea	Apr-Jun	adult	3	0	5	0	0
IVb Central North Sea							
08. S Buchan	Jan-Mar	imm	9	0	575	174	119
	Apr-Jun	adult	3	0	29	24	24
	Oct-Dec	imm	0	4	119	4	0
09. Central North Sea	Jan-Mar	imm	12	0	1 718	298	272
	Jul-Sep	spawners	0	2	127	100	100
VIa W of Britain							
01. Hebrides	Jan-Mar	adult	0	4	196	196	196
	Apr-Jun	adult	0	3	150	150	150
	Jul-Sep	adult	13	3	529	527	527
	Oct-Dec	adult	0	2	100	100	100
06. NW Ireland	Jan-Mar	adult	0	1	50	50	50
	Apr-Jun	adult	0	10	457	457	457
	Jul-Sep	adult	11	3	1 098	569	569
07. W Scotland	Jan-Mar	imm	0	2	5	5	0
	"	adult & spawners	0	128	16410	4 581	4 154
	Apr-Jun	adult	0	59	12 225	860	560
	Jul-Sep	adult	3	74	9 979	2 041	1 492
	Oct-Dec	adult	0	122	11 977	4 556	2 957

Table 2

Herring

Tagging:

Area	Season	Type of Tags	No. Tagged	Type of Fish	Recoveries
W of Shetland	Jul	Scottish comb internal	3 176 2 030	adult	8 22
W of Orkney	Jul	Scottish comb internal	2 151 1 300	adult	6 13
Scottish West Coast	Dec	Scottish comb internal	1 007 960	adult	2 1

Table 3

Herring

Research Vessel Surveys:

Area	Season	Objectives
North Sea	Jan-Feb	International young herring survey
West Coast	Aug	Exploratory trawling survey
North Sea	Sep	Larval survey
West Coast	Sep-Oct	Larval survey

Table 4

Sprat

Sampling:

Area	Season	Type of Fish	No. of Samples		No. of Fish		
			Research Vessel	Market	Measured	Aged	Examined racially
IVa Northern North Sea	Jan-Mar		10	32	6 240	427	-
	Apr-Jun		9	-	472	209	-
	Jul-Sep		5	-	103	103	-
	Oct-Dec		2	20	3 217	510	-
IVb Central North Sea	Jan-Mar		13	-	2 311	452	-
	Jul-Sep		1	-	29	20	-
	Oct-Dec		-	5	598	69	-
VIa Scottish West Coast	Jan-Mar		-	4	678	136	-
	Oct-Dec		-	5	598	133	-

Table 5

Sprat

Research Vessel Surveys:

Area	Month	Objectives
East Coast Scotland	Jun	Egg and larval survey
Moray Firth and East Coast Scotland	Aug	Egg and larval survey, echo-sounder and midwater trawling survey
Moray Firth	Dec	Echosounder and midwater trawling survey

Table 6

Mackerel

Sampling:

Area	Season	Type of Fish	No. of Samples		No. of Fish		
			Research Vessel	Market	Measured	Aged	Examined racially
IVa Northern North Sea	Apr-Jun	adult	28	7	4 203	138	-
	Jul-Sep	adult	6	6	1 296	282	-
	Oct-Dec	adult	-	6	661	73	-
IVb Central North Sea	Jul-Sep	adult	-	2	155	38	-
VIa West Coast excluding Clyde	Apr-Jun	adult	-	3	693	77	-
	Jul-Sep	adult	21	3	1 532	300	-
	Oct-Dec	adult	-	14	1 219	106	-
Clyde	Apr-Jun	adult	-	4	538	126	-
	Jul-Sep	adult	-	3	384	172	-
	Oct-Dec	adult	-	3	204	67	-

Table 7

Blue Whiting

Sampling:

Area	Season	Type of Fish	No. of Samples		No. of Fish		
			Research Vessel	Market	Measured	Aged	Examined racially
VIa West of Scotland and VIb Rockall	Jan-Mar		8	-	1 723	240	-
	Jul-Sep		25	-	3 598	655	-

Table 8

Blue Whiting

Research Vessel Surveys:

Area	Month	Objectives
West of Scotland and Rockall	Mar	Echo-integrator and midwater trawling survey
West of Scotland	Aug	Echo-integrator and midwater trawling survey (combined with herring)

U.S.S.R.

(S. S. Fedorov)

In 1973 the PINRO Laboratory of Pelagic Fishes continued investigations on the biology of herring inhabiting the Norwegian, Barents and White Seas; polar cod in the Barents Sea; capelin in the Great Newfoundland Bank and Southern Labrador areas; and Atlantic saury and snipefish inhabiting the area west of Iberian Peninsula and north of the Azores. We also started investigations of sand eels in the Great Newfoundland Bank area.

Regularities of the dynamics of stock abundance, causes of changes in the migration routes and areas of distribution, conditions and factors favouring the formation of dense fish concentrations were studied on the basis of biostatistical data, results of observations on pelagic fish behaviour, and the distribution of hydroacoustic and photogrammetric surveys obtained by the research vessels "Akademik Knipovich", "Fridtjof Nansen", "Poisk", "Gemma", "Alaid" from their areas of operation.

In June, scientists of the laboratory participated in the complex oceanographic survey in the Norwegian and Greenland Seas together with their Icelandic colleagues. In July-August, they participated in the O-group fish survey off the area of Iceland together with the Icelandic scientists, in August-September in the O-group fish survey in the Barents and eastern Norwegian Seas together with the scientists of Norway and England, in November-December they carried out investigations to determine peculiarities of autumn-winter distribution of capelin in the Barents Sea together with Norwegian scientists.

All the investigations undertaken in 1973 will be continued in 1974.

Sampling Data

Area	Season	Type of Fish	No. of Samples		No. of Fish		
			Research Vessel	Market	Measured	Aged	Examined racially
			Herring				
Norwegian Sea	I		4	-	923	356	
	II				1 464		
	III		3		4 622	10	
	IV		23		24 600	2 080	
	Total		30		31 609	2 446	
			Blue Whiting				
Norwegian Sea	I		18		217	1 020	
	II		9		824	351	
	III		33		7 278	1 102	
	IV		10		741	523	
	Total		70		9 060	2 996	
Barents Sea	I				109		
	II				-		
	III		3		6 549	102	
	IV				2 584		
	Total		3		9 242	102	
			Capelin				
Barents Sea	I		36		31 955	3 427	200
	II		2		1 085	200	
	III		16		10 176	1 363	
	IV		18		10 260	1 380	
	Total		72		53 476	6 370	
			Polar Cod				
Barents Sea	I		23		23 862	1 349	
	II		5		8 612	500	
	III		16		11 970	1 379	
	IV		13		13 009	1 095	
	Total		57		57 453	4 323	

In 1973, investigations were continued in the North Sea and west of the British Isles.

Control surveys of herring and sprat were made in the Northern North Sea. Collection of material was conducted from June to November.

AtlantNIRO took part in the international trawl survey in the North Sea on counting of young herring. Accumulation of data on horsemackerel and mackerel biology, as well as their treatment was continued.

Data on the biology and environment conditions of horsemackerel, mackerel and of a gadoid fish were collected west of the British Isles and in the Bay of Biscay.

In 1974, investigations will be continued on the same programme.

Material collected and treated in 1973

Area	Mass Fish Measurement (specimens)		Age Sample (specimens)	Bioanalysis (specimens)	Tagging (specimens)
	Collected	Treated			
Horsemackerel					
West of the British Isles	116 241	116 241	4 650	21 891	2 000
North Sea	28 593	28 593	500	2 000	-
Total	144 844	144 844	5 150	23 891	2 000
Mackerel					
West of the British Isles	45 035	45 035	2 550	6 700	-
North Sea	20 000	-	500	2 800	-
Total	65 035	45 035	3 050	9 500	-
Sprat					
North Sea	10 000	2 600	2 000	2 000	-
Herring					
North Sea	7 230	4 230	2 000	2 000	-

Baltic Herring and Sprat

Reproductive conditions, distribution, and ecology of the larvae and of the juvenile stages of herring and sprat in the north-eastern and southern parts of the Baltic Sea, as well as in the Gulfs of Riga and Finland were studied. Distribution, population dynamics, population composition, growth, maturing, feeding of herring and sprat depending on environmental conditions were investigated.

Collection of material for its further analysis, taking into account the effect of the fishery on the stocks, was conducted, the methods of studying stock condition were perfected as well as those allowing a realistic forecast of possible catches of these species.