

International Council for the  
Exploration of the Sea

C.M. 1992/G:1  
Report of Activities

**DEMERSAL FISH COMMITTEE**

by

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**1991**



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**BELGIUM**

(R. de Clerck)

Densities and growth rates of the 1990 and 1991 year classes of sole, plaice, dab, flounder, cod and whiting were recorded. Two cruises were undertaken for this purpose according to the criteria of the International Demersal Young Fish Survey. The beam trawl survey was continued in order to estimate the stock size of adult flatfish in the southern North Sea in August. This was part of an international survey in collaboration with the Dutch and English Institutes.

The market sampling programme was continued covering cod (North Sea), whiting (North Sea, haddock (North Sea), plaice and sole (North Sea, English Channel, Celtic Sea and Irish Sea (see tables).

**SAMPLING DATA FOR : SOLE 1991 BELGIUM**

| Area    | Season | Nr of samples |        | Nr of fish |      |
|---------|--------|---------------|--------|------------|------|
|         |        | Res. vessels  | Market | Measured   | Aged |
| IV      | 1      | -             | 12     | 1175       | 230  |
|         | 2      | -             | 10     | 965        | 220  |
|         | 3      | -             | 9      | 855        | 220  |
|         | 4      | -             | 7      | 638        | 218  |
| VII f,g | 1      | -             | 3      | 280        | 70   |
|         | 2      | -             | 1      | 80         | 80   |
|         | 3      | -             | 3      | 290        | 80   |
|         | 4      | -             | 4      | 385        | 160  |
| VII a   | 1      | -             | -      | -          | -    |
|         | 2      | -             | 10     | 1010       | 230  |
|         | 3      | -             | 2      | 160        | 160  |
|         | 4      | -             | 1      | 79         | 79   |
| VII d,e | 1      | -             | 1      | 70         | 70   |
|         | 2      | -             | 6      | 571        | 230  |
|         | 3      | -             | 3      | 280        | 70   |
|         | 4      | -             | -      | -          | -    |
| VIII    | 1      | -             | 1      | 280        | 70   |
|         | 4      | -             | 2      | 140        | 140  |

**SAMPLING DATA FOR : PLAICE 1991 BELGIUM**

| Area    | Season | Nr of samples |        | Nr of fish |      |
|---------|--------|---------------|--------|------------|------|
|         |        | Res. vessels  | Market | Measured   | Aged |
| IV      | 1      | -             | 12     | 778        | 130  |
|         | 2      | -             | 10     | 665        | 140  |
|         | 3      | -             | 10     | 629        | 140  |
|         | 4      | -             | 8      | 465        | 140  |
| VII f,g | 1      | -             | 3      | 194        | 50   |
|         | 2      | -             | 1      | 40         | 40   |
|         | 3      | -             | 3      | 190        | 40   |
|         | 4      | -             | 4      | 212        | 80   |
| VII a   | 1      | -             | -      | -          | -    |
|         | 2      | -             | 10     | 616        | 130  |
|         | 3      | -             | 2      | 80         | 80   |
|         | 4      | -             | 1      | 40         | 40   |
| VII d,e | 1      | -             | 1      | 40         | 40   |
|         | 2      | -             | 6      | 342        | 129  |
|         | 3      | -             | 3      | 184        | 40   |
|         | 4      | -             | -      | -          | -    |

SAMPLING DATA FOR : **COD** **1991** **BELGIUM**

|      |        | Nr of samples |        | Nr of fish |      |
|------|--------|---------------|--------|------------|------|
| Area | Season | Res. vessels  | Market | Measured   | Aged |
| IV   | 1      | -             | 2      | 100        | 100  |
|      | 2      | -             | 4      | 210        | 210  |
|      | 3      | -             | 2      | 93         | 93   |
|      | 4      | -             | 5      | 250        | 250  |

SAMPLING DATA FOR : **WHITING** **1991** **BELGIUM**

|      |        | Nr of samples |        | Nr of fish |      |
|------|--------|---------------|--------|------------|------|
| Area | Season | Res. vessels  | Market | Measured   | Aged |
| IV   | 1      | -             | 4      | 165        | 165  |
|      | 2      | -             | 3      | 205        | 205  |
|      | 3      | -             | 3      | 258        | 135  |
|      | 4      | -             | 5      | 225        | 225  |

**CANADA**

(R.O'Boyle)

Canada had no fisheries and no research vessel activity on demersal fish in the ICES area in 1991. Activities in the Northwest Atlantic have been reported to NAFO.

**DENMARK**

(H.Gislason)

< No report received >

## FAROES

(J.Reinert)

The sampling programme for commercial catches of saithe, cod, haddock, Norway pout, tusk, ling, blue ling, Greenland halibut and redfish was continued in 1991. In addition samples of the species mentioned were taken from research vessel catches. The tables provide more details.

The following research cruises with relevance to the Demersal Fish Committee were made in 1991:

In January *R/V "Magnus Heinason"* carried out a Groundfish Survey around the Faroes as a part of the Faroese Stomach Sampling Programme.

In January-February *R/V "Magnus Heinason"* carried out an exploratory fishery for blue ling to the S and SW of the Faroes.

In February *R/V "Magnus Heinason"* carried out an exploratory fishery with bottom trawl for cod on the Faroe Plateau and the Iceland-Faroe Ridge.

In February-March *R/V "Magnus Heinason"* continued the Faroese Groundfish Surveys specially designed to obtain information on the stock sizes of cod and haddock.

In April *R/V "Magnus Heinason"* carried out a bottom trawl survey for redfish around the Faroes. The survey was continued in October.

In April-May *R/V "Magnus Heinason"* carried out a bottom trawl survey for Norway pout around the Faroes.

In May-June the commercial trawler *M/S Skálafjall* was chartered to carry out exploratory fishing for redfish in the Irminger Sea.

In June-July *R/V "Magnus Heinason"* continued the O-Group Surveys in Faroese Waters to get information on the year-class strength of cod, haddock, Norway pout and sandeel.

In June-July the commercial trawler *M/S "Skarðhamar"* was chartered to carry out an exploratory fishery with bottom trawl around the Faroes for flatfish, particularly lemon sole.

In August-September *R/V "Magnus Heinason"* carried out a Groundfish Survey around the Faroes, especially designed for saithe.

In September a stomach sampling survey was carried out with *R/V "Magnus Heinason"* designed to elucidate the amount of predation on Norway pout.

In September-October *R/V "Magnus Heinason"* carried out fishing experiments around the Faroes with a bottom trawl mounted with a sorting grid. These experiments were continued in December.

In October-November *R/V "Magnus Heinason"* carried out a combined acoustic and trawl survey for demersal fish around the Faroes.

On all cruises with *R/V "Magnus Heinason"* biological samples are taken as a routine for most fish species from almost every haul and the measurements are entered into the vessel computer automatically. Since all data have not been edited yet, the number of samples and measurements by species for 1991 can not be given at this stage except for selected species in the Faroese Groundfish Surveys in February-March and in August-September, and in the Norway pout surveys in April-May and September.

| SAMPLING DATA FOR : COD |        |                 | 1991       |        |           | FAROES     |        |
|-------------------------|--------|-----------------|------------|--------|-----------|------------|--------|
| Area                    | Season | Research vessel |            |        | Market    |            |        |
|                         |        | N Samples       | N Measured | N Aged | N Samples | N Measured | N Aged |
| Vb                      | 1      | 6               | *          | 261    | 77        | 13 298     | 698    |
|                         | 2      | *               |            |        | 34        | 4 120      | 784    |
|                         | 3      | 3               | *          | 140    | 29        | 3 432      | 690    |
|                         | 4      | *               |            |        | 37        | 5 109      | 853    |

SAMPLING DATA FOR : **HADDOCK** **1991** FAROES

|      |        | Research vessel |            |        | Market    |            |        |
|------|--------|-----------------|------------|--------|-----------|------------|--------|
| Area | Season | N Samples       | N Measured | N Aged | N Samples | N Measured | N Aged |
| Vb   | 1      | 7               | *          | 342    | 30        | 11 277     | 301    |
|      | 2      | *               |            |        | 18        | 3 979      | 398    |
|      | 3      | 3               | *          | 150    | 21        | 6 548      | 496    |
|      | 4      | *               |            |        | 25        | 8 818      | 552    |

SAMPLING DATA FOR : **SAITHE** **1991** FAROES

|      |        | Research vessel |            |        | Market    |            |        |
|------|--------|-----------------|------------|--------|-----------|------------|--------|
| Area | Season | N Samples       | N Measured | N Aged | N Samples | N Measured | N Aged |
| Vb   | 1      | 7               | *          | 299    | 48        | 11 146     | 606    |
|      | 2      | *               |            |        | 41        | 10 419     | 500    |
|      | 3      | 2               | *          | 100    | 41        | 9 279      | 551    |
|      | 4      | *               |            |        | 43        | 8 377      | 600    |

SAMPLING DATA FOR : **NORWAY POUT** **1991** FAROES

|      |        | Research vessel |            |        | Market    |            |        |
|------|--------|-----------------|------------|--------|-----------|------------|--------|
| Area | Season | N Samples       | N Measured | N Aged | N Samples | N Measured | N Aged |
| Vb   | 1      | 26              | 783        | *      | 15        | 1 781      | 750    |
|      | 2      | 54              | 9 881      | 503    | 4         | 401        | 200    |
|      | 3      | 68              | 8 467      | 503    | 6         | 594        | 250    |
|      | 4      | 15              | 154        | *      | 9         | 952        | 448    |

SAMPLING DATA FOR : ***Sebastes marinus*** **1991** FAROES

|      |        | Research vessel |            |        | Market    |            |        |
|------|--------|-----------------|------------|--------|-----------|------------|--------|
| Area | Season | N Samples       | N Measured | N Aged | N Samples | N Measured | N Aged |
| Vb   | 1      | *               |            |        | 5         | 1 063      | -      |
|      | 2      | *               |            |        | 1         | 46         | -      |
|      | 3      | *               |            |        | -         | -          | -      |
|      | 4      | *               |            |        | 1         | 141        | -      |

SAMPLING DATA FOR : ***Sebastes mentella*** **1991** FAROES

|      |        | Research vessel |            |        | Market    |            |        |
|------|--------|-----------------|------------|--------|-----------|------------|--------|
| Area | Season | N Samples       | N Measured | N Aged | N Samples | N Measured | N Aged |
| Vb   | 1      | *               |            |        | 8         | 4 367      | -      |
|      | 2      | *               |            |        | 12        | 6 313      | -      |
|      | 3      | *               |            |        | 20        | 12 748     | -      |
|      | 4      | *               |            |        | 15        | 9 256      | -      |

SAMPLING DATA FOR : **TUSK** **1991** FAROES

|      |        | Research vessel |            |        | Market    |            |        |
|------|--------|-----------------|------------|--------|-----------|------------|--------|
| Area | Season | N Samples       | N Measured | N Aged | N Samples | N Measured | N Aged |
| Vb   | 1      | *               |            |        | 2         | 762        | -      |
|      | 2      | *               |            |        | 1         | 878        | -      |
|      | 3      | *               |            |        | 5         | 1 378      | 50     |
|      | 4      | *               |            |        | 3         | 404        | -      |

SAMPLING DATA FOR : **LING** **1991** **FAROES**

|      |        | Research vessel |            |        | Market    |            |        |
|------|--------|-----------------|------------|--------|-----------|------------|--------|
| Area | Season | N Samples       | N Measured | N Aged | N Samples | N Measured | N Aged |
| Vb   | 1      | *               |            |        | 3         | 588        | -      |
|      | 2      | *               |            |        | 2         | 164        | -      |
|      | 4      | *               |            |        | 1         | 165        | -      |

SAMPLING DATA FOR : **BLUE LING** **1991** **FAROES**

|      |        | Research vessel |            |        | Market    |            |        |
|------|--------|-----------------|------------|--------|-----------|------------|--------|
| Area | Season | N Samples       | N Measured | N Aged | N Samples | N Measured | N Aged |
| Vb   | 1      | 16              | *          | 299    | 2         | 335        | -      |
|      | 2      | *               |            |        | 3         | 315        | -      |
|      | 3      | *               |            |        | 9         | 995        | -      |
|      | 4      | *               |            |        | 4         | 424        | -      |

SAMPLING DATA FOR : **GREENLAND HALIBUT** **1991** **FAROES**

|      |        | Research vessel |            |        | Market    |            |        |
|------|--------|-----------------|------------|--------|-----------|------------|--------|
| Area | Season | N Samples       | N Measured | N Aged | N Samples | N Measured | N Aged |
| Vb   | 1      | *               |            |        | 1         | 364        | -      |
|      | 2      | *               |            |        | 0         | 189        | -      |
|      | 3      | *               |            |        | 2         | 143        | -      |
|      | 4      | *               |            |        | 1         | 103        | -      |

\* Not possible to quantify at this stage (see text).



## GERMANY\*

(G.Rauck)

The biological sampling programme of demersal species on board of research vessels, commercial trawlers and on fish markets has been continued.

A comprehensive sampling scheme, including length frequency measurements, otolith sampling, individual fish weights, tagging of fish, stomach sampling, as well as studies on fish density and distribution of demersal fish species was carried out during groundfish surveys.

The monthly by-catch analysis of the shrimp fishery has been continued, as well as the joint investigations in the Wadden Sea area of Niedersachsen and Schleswig-Holstein (Young Fish and Brown Shrimp Survey) in spring and autumn together with vessels from the Netherlands and Belgium.

A North Sea groundfish survey with special emphasis on the gadoid and pelagic species covering the area IVa and b has been repeated.

Research vessel cruises related to the national sampling scheme of the demersal species were as follows:

| Months                       | ICES area      | Objectives                        |
|------------------------------|----------------|-----------------------------------|
| <b>R.V. "Walther Herwig"</b> |                |                                   |
| January                      | IVa,b,c        | Groundfish survey (fish diseases) |
| Jan./Febr.                   | IVa,b,c        | IYFS                              |
| Febr./March                  | VIa,b, VII     | Groundfish and pelagic survey     |
| March/May                    | XIV + NAFO     | Groundfish survey                 |
| May/June                     | IVa,b          | Groundfish survey                 |
| June/July                    | IVa,b, Va,b    | Groundfish survey (fish diseases) |
| Sept./October                | XIVa, NAFO SA1 | Groundfish survey                 |
| Oct./November                | XIV            | Groundfish survey                 |
| <b>R.V. "Solea"</b>          |                |                                   |
| January                      | IVb            | Brown shrimp beam trawl survey    |
| February                     | IVb,c          | Groundfish survey                 |
| May//June                    | IVb            | Sole beam trawl survey            |
| July                         | IVb,c          | Groundfish survey                 |
| September                    | IVb            | Sole beam trawl survey            |

Notes to tables:

- 1) Samples taken on board of commercial trawler
- 2) Groundfish surveys
- 3) Young Fish and Brown Shrimp Survey
- 4) Shrimp by-catch investigations
- 5) Brown shrimp beamtrawl survey
- 6) Sole beamtrawl survey

\* The sampling programme of the former German Democratic Republic has been included in the tables.

SAMPLING DATA FOR: **COD** **1991** **F.R.G.**

|             |        | Research vessels |        |       |       | Market sampling |       |      |
|-------------|--------|------------------|--------|-------|-------|-----------------|-------|------|
|             |        | Nr of fish       |        |       |       | Nr of fish      |       |      |
| Area        | Season | Nr samp.         | Meas.  | Aged  | Other | Nr samp.        | Meas. | Aged |
| IIa         | 2      | 3 1)             | 21 962 | 817   |       |                 |       |      |
| IVa         | 1      | 602)             | 452    | 365   |       |                 |       |      |
|             | 2      | 442)             | 676    | 630   |       |                 |       |      |
|             | 3      | 142)             | 162    |       |       |                 |       |      |
| IVb         | 1      | 1242)            | 4 508  | 1 404 |       |                 |       |      |
|             | 1      | 54)              | 17     |       |       |                 |       |      |
|             | 1      | 275)             | 113    |       |       |                 |       |      |
|             | 2      | 1382)            | 3 261  | 1 153 |       |                 |       |      |
|             | 2      | 373)             | 93     |       |       |                 |       |      |
|             | 2      | 194)             | 46     |       |       |                 |       |      |
|             | 2      | 516)             | 306    | 275   |       |                 |       |      |
|             | 3      | 832)             | 1 388  | 668   |       |                 |       |      |
|             | 3      | 193)             | 50     |       |       |                 |       |      |
|             | 3      | 264)             | 73     |       |       |                 |       |      |
|             | 3      | 56)              | 5      |       |       |                 |       |      |
| 4           | 403)   | 320              |        |       |       |                 |       |      |
| 4           | 184)   | 70               |        |       |       |                 |       |      |
| IVc         | 1      | 142)             | 80     | 74    |       |                 |       |      |
|             | 3      | 282)             | 217    | 207   |       |                 |       |      |
| Va          | 3      | 162)             | 22     |       |       |                 |       |      |
| Vb1         | 3      | 132)             | 49     |       |       |                 |       |      |
| VIa         | 1      | 212)             | 76     | 76    |       |                 |       |      |
| VIIb,c      | 1      | 22)              | 10     | 10    |       |                 |       |      |
| VIIe        | 1      | 42)              | 4      |       |       |                 |       |      |
| VIIg-k      | 1      | 22)              | 2      |       |       |                 |       |      |
| XIV         | 1      |                  |        |       |       | 3               | 1 341 | 733  |
|             | 2      | 742)             | 7 450  | 429   |       | 2               | 1 217 | 587  |
|             | 3      | 542)             | 607    | 605   |       | 4               | 1 600 | 571  |
|             | 4      | 532)             | 599    | 599   |       | 1               | 345   | 179  |
| NAFO<br>SA1 | 4      | 1122)            | 776    | 776   |       |                 |       |      |

SAMPLING DATA FOR: **BLUE WHITING** **1991** **F.R.G.**

|        |        | Research vessels |       |      |       | Market sampling |       |      |
|--------|--------|------------------|-------|------|-------|-----------------|-------|------|
|        |        | Nr of fish       |       |      |       | Nr of fish      |       |      |
| Area   | Season | Nr samp.         | Meas. | Aged | Other | Nr samp.        | Meas. | Aged |
| VIa    | 1      | 2 2)             | 127   |      |       |                 |       |      |
| VIIb,c | 1      | 1 2)             | 126   |      |       |                 |       |      |
| VIIe   | 1      | 3 2)             | 7     |      |       |                 |       |      |
| VIIg-k | 1      | 11 2)            | 1 298 |      |       |                 |       |      |

SAMPLING DATA FOR : **HADDOCK** **1991** **F.R.G.**

|        |        | Research vessels |        |      |       | Market sampling |       |      |
|--------|--------|------------------|--------|------|-------|-----------------|-------|------|
|        |        | Nr of fish       |        |      |       | Nr of fish      |       |      |
| Area   | Season | Nr samp.         | Meas.  | Aged | Other | Nr samp.        | Meas. | Aged |
| IIa    | 1      | 15 1)            | 2 981  |      |       | 1               | 277   | 138  |
| IVa    | 1      | 70 2)            | 21 718 | 668  |       |                 |       |      |
|        | 2      | 31 2)            | 4 906  | 407  |       |                 |       |      |
|        | 3      | 14 2)            | 1 402  |      |       |                 |       |      |
| IVb    | 1      | 64 2)            | 9 794  | 422  |       |                 |       |      |
|        | 2      | 78 2)            | 6 390  | 555  |       |                 |       |      |
|        | 3      | 22 2)            | 1 631  | 234  |       |                 |       |      |
| Va     | 3      | 16 2)            | 2 174  |      |       |                 |       |      |
| VIa    | 1      | 27 2)            | 2 730  | 293  |       |                 |       |      |
| VIIb,c | 1      | 6 2)             | 426    | 48   |       |                 |       |      |
| VIIe   | 1      | 1 2)             | 1      |      |       |                 |       |      |
| VIIg-k | 1      | 1 2)             | 1      |      |       |                 |       |      |
| XIV    | 4      | 1 2)             | 192    | 192  |       |                 |       |      |

SAMPLING DATA FOR : **WHITING** **1991** **F.R.G.**

|        |        | Research vessels |        |      |       | Market sampling |       |      |
|--------|--------|------------------|--------|------|-------|-----------------|-------|------|
|        |        | Nr of fish       |        |      |       | Nr of fish      |       |      |
| Area   | Season | Nr samp.         | Meas.  | Aged | Other | Nr samp.        | Meas. | Aged |
| IVa    | 1      | 66 2)            | 10 910 | 476  |       |                 |       |      |
|        | 2      | 28 2)            | 2 770  | 302  |       |                 |       |      |
|        | 3      | 14 2)            | 310    |      |       |                 |       |      |
| IVb    | 1      | 117 2)           | 20 121 | 465  |       |                 |       |      |
|        | 1      | 26 5)            | 2 130  |      |       |                 |       |      |
|        | 1      | 6 4)             | 278    |      |       |                 |       |      |
|        | 2      | 109 2)           | 16 840 | 801  |       |                 |       |      |
|        | 2      | 92 3)            | 2 059  |      |       |                 |       |      |
|        | 2      | 59 4)            | 2 022  |      |       |                 |       |      |
|        | 3      | 47 2)            | 5 992  | 625  |       |                 |       |      |
|        | 3      | 26 3)            | 91     |      |       |                 |       |      |
|        | 3      | 39 4)            | 211    |      |       |                 |       |      |
|        | 4      | 41 2)            | 8 145  | 126  |       |                 |       |      |
|        | 4      | 39 3)            | 189    |      |       |                 |       |      |
| 4      | 16 4)  | 41               |        |      |       |                 |       |      |
| IVc    | 1      | 12 2)            | 13 095 |      |       |                 |       |      |
|        | 3      | 13 2)            | 15 035 | 219  |       |                 |       |      |
| Va     | 3      | 14 2)            | 14     |      |       |                 |       |      |
| VIa    | 1      | 22 2)            | 15 045 | 180  |       |                 |       |      |
| VIIb,c | 1      | 7 2)             | 145    | 53   |       |                 |       |      |
| VIIId  | 4      | 7 2)             | 636    | -    |       |                 |       |      |
| VIIe   | 1      | 6 2)             | 248    |      |       |                 |       |      |
| VIIg-k | 1      | 3 2)             | 21     |      |       |                 |       |      |

SAMPLING DATA FOR : **LING** **1991** **F.R.G.**

|        |        | Research vessels |       |      |       | Market sampling |       |      |
|--------|--------|------------------|-------|------|-------|-----------------|-------|------|
|        |        | Nr of fish       |       |      |       | Nr of fish      |       |      |
| Area   | Season | Nr samp.         | Meas. | Aged | Other | Nr samp.        | Meas. | Aged |
| IVa    | 1      | 162)             | 143   |      |       |                 |       |      |
| VIa    | 1      | 122)             | 43    |      |       |                 |       |      |
| VIIb,c | 1      | 22)              | 2     |      |       |                 |       |      |
| VIIe   | 1      | 32)              | 5     |      |       |                 |       |      |

SAMPLING DATA FOR : **BLUE LING** **1991** **F.R.G.**

|      |        | Research vessels |       |      |       | Market sampling |       |      |
|------|--------|------------------|-------|------|-------|-----------------|-------|------|
|      |        | Nr of fish       |       |      |       | Nr of fish      |       |      |
| Area | Season | Nr samp.         | Meas. | Aged | Other | Nr samp.        | Meas. | Aged |
| Vb   | 1      |                  |       |      |       | 1               | 273   | 136  |
| XIV  | 3<br>4 | 12)              | 220   | 220  |       | 4               | 1 225 | 639  |

SAMPLING DATA FOR : **SAITHE** **1991** **F.R.G.**

|        |        | Research vessels |       |      |       | Market sampling |       |       |
|--------|--------|------------------|-------|------|-------|-----------------|-------|-------|
|        |        | Nr of fish       |       |      |       | Nr of fish      |       |       |
| Area   | Season | Nr samp.         | Meas. | Aged | Other | Nr samp.        | Meas. | Aged  |
| IIa    | 4      |                  |       |      |       | 6               | 2 549 | 1 316 |
| IIIc   | 4      |                  |       |      |       | 1               | 62    | 62    |
| IVa    | 1      | 162)             | 4 390 | 737  |       | 4               | 2 067 | 1 064 |
|        | 2      | 12)              | 44    | 44   |       | 10              | 5 009 | 2 865 |
|        | 3      |                  |       |      |       | 10              | 4 440 | 2 003 |
|        | 4      |                  |       |      |       | 4               | 2 088 | 1 073 |
| Vb     | 1      |                  |       |      |       | 1               | 440   | 248   |
| VIa    | 1      | 82)              | 211   |      |       |                 |       |       |
| VIIb,c | 1      | 62)              | 59    |      |       |                 |       |       |
| VIIg-k | 1      | 62)              | 61    |      |       |                 |       |       |
| VII    | 1      | 12)              | 121   | 67   |       |                 |       |       |

SAMPLING DATA FOR : **POLLOCK** **1991** **F.R.G.**

|        |        | Research vessels |       |      |       | Market sampling |       |      |
|--------|--------|------------------|-------|------|-------|-----------------|-------|------|
|        |        | Nr of fish       |       |      |       | Nr of fish      |       |      |
| Area   | Season | Nr samp.         | Meas. | Aged | Other | Nr samp.        | Meas. | Aged |
| IVa    | 1      | 22)              | 28    | 8    |       |                 |       |      |
| VIa    | 1      | 22)              | 44    | 41   |       |                 |       |      |
| VIIg-k | 1      | 42)              | 21    |      |       |                 |       |      |

SAMPLING DATA FOR : **HAKE** **1991** **F.R.G.**

|        |        | Research vessels |       |      |       | Market sampling |       |      |
|--------|--------|------------------|-------|------|-------|-----------------|-------|------|
|        |        | Nr of fish       |       |      |       | Nr of fish      |       |      |
| Area   | Season | Nr samp.         | Meas. | Aged | Other | Nr samp.        | Meas. | Aged |
| IVa    | 1      | 7 2)             | 12    |      |       |                 |       |      |
| VIa    | 1      | 21 2)            | 406   |      |       |                 |       |      |
| VIIb,c | 1      | 9 2)             | 73    |      |       |                 |       |      |
| VIIe   | 1      | 10 2)            | 41    |      |       |                 |       |      |
| VIIg-k | 1      | 25 2)            | 611   |      |       |                 |       |      |

SAMPLING DATA FOR : **SOLE** **1991** **F.R.G.**

|      |        | Research vessels |       |      |       | Market sampling |       |      |
|------|--------|------------------|-------|------|-------|-----------------|-------|------|
|      |        | Nr of fish       |       |      |       | Nr of fish      |       |      |
| Area | Season | Nr samp.         | Meas. | Aged | Other | Nr samp.        | Meas. | Aged |
| IVb  | 1      | 5 5)             | 19    |      |       | 2               | 487   | 293  |
|      | 2      | 61 3)            | 295   |      |       |                 |       |      |
|      | 2      | 46 4)            | 190   |      |       |                 |       |      |
|      | 2      | 93 6)            | 5 858 |      |       |                 |       |      |
|      | 3      | 36 3)            | 524   |      |       |                 |       |      |
|      | 3      | 77 4)            | 1 537 |      |       |                 |       |      |
|      | 3      | 31 6)            | 741   | 739  |       |                 |       |      |
|      | 4      | 53 3)            | 914   |      |       |                 |       |      |
| 4    | 17 4)  | 181              |       |      |       |                 |       |      |

SAMPLING DATA FOR : **DAB** **1991** **F.R.G.**

|      |        | Research vessels |        |      |       | Market sampling |       |      |
|------|--------|------------------|--------|------|-------|-----------------|-------|------|
|      |        | Nr of fish       |        |      |       | Nr of fish      |       |      |
| Area | Season | Nr samp.         | Meas.  | Aged | Other | Nr samp.        | Meas. | Aged |
| IVa  | 1      | 31 2)            | 1 100  |      |       |                 |       |      |
|      | 2      | 14 2)            | 904    |      |       |                 |       |      |
|      | 3      | 6 2)             | 869    |      |       |                 |       |      |
| IVb  | 1      | 114 2)           | 18 275 |      |       |                 |       |      |
|      | 1      | 3 4)             | 65     |      |       |                 |       |      |
|      | 1      | 26 6)            | 2 130  |      |       |                 |       |      |
|      | 2      | 103 2)           | 11 133 |      |       |                 |       |      |
|      | 2      | 106 3)           | 2 781  |      |       |                 |       |      |
|      | 2      | 54 4)            | 1 043  |      |       |                 |       |      |
|      | 2      | 6 5)             | 340    |      |       |                 |       |      |
|      | 3      | 48 2)            | 3 483  |      |       |                 |       |      |
|      | 3      | 74 3)            | 1 952  |      |       |                 |       |      |
|      | 3      | 79 4)            | 2 206  |      |       |                 |       |      |
|      | 3      | 46 5)            | 4 025  |      |       |                 |       |      |
|      | 4      | 36 2)            | 2 979  |      |       |                 |       |      |
|      | 4      | 72 3)            | 2 035  |      |       |                 |       |      |
| 4    | 32 4)  | 2 100            |        |      |       |                 |       |      |
| IVc  | 1      | 11 2)            | 1 850  |      |       |                 |       |      |
|      | 3      | 3 2)             | 19     |      |       |                 |       |      |
| VIa  | 1      | 1 2)             | 71     |      |       |                 |       |      |

SAMPLING DATA FOR : **PLAICE** **1991** **F.R.G.**

|        |        |          | Research vessels |      |       | Market sampling |       |      |
|--------|--------|----------|------------------|------|-------|-----------------|-------|------|
|        |        |          | Nr of fish       |      |       | Nr of fish      |       |      |
| Area   | Season | Nr samp. | Meas.            | Aged | Other | Nr samp.        | Meas. | Aged |
| IVa    | 1      | 9 2)     | 49               |      |       |                 |       |      |
|        | 2      | 33 2)    | 177              |      |       |                 |       |      |
| IVb    | 1      | 102 2)   | 1 760            |      |       |                 |       |      |
|        | 1      | 7 4)     | 935              |      |       |                 |       |      |
|        | 1      | 48 5)    | 2 039            |      |       |                 |       |      |
|        | 2      | 130 2)   | 447              |      |       |                 |       |      |
|        | 2      | 123 3)   | 4 367            |      |       |                 |       |      |
|        | 2      | 62 4)    | 5 590            |      |       |                 |       |      |
|        | 2      | 13 6)    | 778              |      |       |                 |       |      |
|        | 3      | 89 2)    | 528              |      |       |                 |       |      |
|        | 3      | 77 3)    | 2 005            |      |       |                 |       |      |
|        | 3      | 91 4)    | 7 971            |      |       |                 |       |      |
|        | 3      | 46 6)    | 4 284            |      |       |                 |       |      |
|        | 4      | 26 2)    | 803              |      |       |                 |       |      |
|        | 4      | 72 3)    | 3 202            |      |       |                 |       |      |
| 4      | 33 4)  | 2 518    |                  |      |       |                 |       |      |
| IVc    | 1      | 12 2)    | 439              |      |       |                 |       |      |
|        | 3      | 10 2)    | 15               |      |       |                 |       |      |
| VIa    | 1      | 17 2)    | 194              |      |       |                 |       |      |
| VIIb,c | 1      | 3 2)     | 20               |      |       |                 |       |      |
| VIIe   | 1      | 2 2)     | 3                |      |       |                 |       |      |
| VIIg-k | 1      | 1 2)     | 1                |      |       |                 |       |      |

SAMPLING DATA FOR : **FLOUNDER** **1991** **F.R.G.**

|      |        |          | Research vessels |      |       | Market sampling |       |      |
|------|--------|----------|------------------|------|-------|-----------------|-------|------|
|      |        |          | Nr of fish       |      |       | Nr of fish      |       |      |
| Area | Season | Nr samp. | Meas.            | Aged | Other | Nr samp.        | Meas. | Aged |
| IVb  | 1      | 20 2)    | 101              |      |       |                 |       |      |
|      | 1      | 7 4)     | 47               |      |       |                 |       |      |
|      | 2      | 87 3)    | 777              |      |       |                 |       |      |
|      | 2      | 47 4)    | 296              |      |       |                 |       |      |
|      | 2      | 2 6)     | 95               |      |       |                 |       |      |
|      | 3      | 24 3)    | 47               |      |       |                 |       |      |
|      | 3      | 52 4)    | 278              |      |       |                 |       |      |
|      | 3      | 7 6)     | 854              |      |       |                 |       |      |
|      | 4      | 49 3)    | 211              |      |       |                 |       |      |
|      | 4      | 19 4)    | 133              |      |       |                 |       |      |
| IVc  | 1      | 2 2)     | 13               |      |       |                 |       |      |

SAMPLING DATA FOR : **GREENLAND HALIBUT** **1991** **F.R.G.**

|      |        |          | Research vessels |      |       | Market sampling |       |      |
|------|--------|----------|------------------|------|-------|-----------------|-------|------|
|      |        |          | Nr of fish       |      |       | Nr of fish      |       |      |
| Area | Season | Nr samp. | Meas.            | Aged | Other | Nr samp.        | Meas. | Aged |
| XIV  | 3      |          |                  |      |       | 2               |       | 534  |
|      | 4      | 1 2)     | 79               |      |       |                 |       |      |

SAMPLING DATA FOR : **TURBOT** **1991** **F.R.G.**

|      |        | Research vessels |       |      |       | Market sampling |       |      |
|------|--------|------------------|-------|------|-------|-----------------|-------|------|
|      |        | Nr of fish       |       |      |       | Nr of fish      |       |      |
| Area | Season | Nr samp.         | Meas. | Aged | Other | Nr samp.        | Meas. | Aged |
| IVb  | 2      | 154)             |       | 28   |       |                 |       |      |
|      | 2      | 556)             |       | 182  |       |                 |       |      |
|      | 3      | 24)              |       | 2    |       |                 |       |      |
|      | 3      | 206)             |       | 50   | 42    |                 |       |      |
|      | 4      | 23)              |       | 2    |       |                 |       |      |
|      | 4      | 24)              |       | 2    |       |                 |       |      |

SAMPLING DATA FOR : *Sebastes marinus* **1991** **F.R.G.**

|      |        | Research vessels |       |      |       | Market sampling |       |      |      |       |     |
|------|--------|------------------|-------|------|-------|-----------------|-------|------|------|-------|-----|
|      |        | Nr of fish       |       |      |       | Nr of fish      |       |      |      |       |     |
| Area | Season | Nr samp.         | Meas. | Aged | Other | Nr samp.        | Meas. | Aged |      |       |     |
| IIa  | 2      | 3 1)             | 1     | 183  |       |                 |       |      |      |       |     |
|      | 4      |                  |       |      |       |                 |       |      | 3    | 1 596 | 307 |
| XIV  | 1      | 8 2)             | 2     | 202  |       | 1               |       | 482  |      |       |     |
|      | 2      |                  |       |      |       |                 |       |      |      |       |     |
|      | 3      |                  |       |      |       |                 |       |      | 282) | 2 156 | 600 |
|      | 4      |                  |       |      |       |                 |       |      | 412) | 3 473 | 552 |

SAMPLING DATA FOR : *Sebastes mentella* **1991** **F.R.G.**

|      |        | Research vessels |       |      |       | Market sampling |       |      |      |       |     |
|------|--------|------------------|-------|------|-------|-----------------|-------|------|------|-------|-----|
|      |        | Nr of fish       |       |      |       | Nr of fish      |       |      |      |       |     |
| Area | Season | Nr samp.         | Meas. | Aged | Other | Nr samp.        | Meas. | Aged |      |       |     |
| Vb   | 1      | 6 1)             | 2     | 433  |       | 2               | 1 145 | 320  |      |       |     |
|      | 2      |                  |       |      |       |                 |       |      | 1    | 447   | 100 |
| XIV  | 1      | 30 1)            | 13    | 373  | 694   | 1               |       | 392  |      |       |     |
|      | 2      |                  |       |      |       |                 |       |      |      |       |     |
|      | 2      |                  |       |      |       |                 |       |      | 122) | 4 839 | 308 |
|      | 3      |                  |       |      |       |                 |       |      | 372) | 8 680 | 633 |
| 4    | 142)   | 1 675            | 169   | 2    | 755   | 150             |       |      |      |       |     |

Notes to tables:

- 1) Samples taken on board of commercial trawler
- 2) Groundfish surveys
- 3) Young Fish and Brown Shrimp Survey
- 4) Shrimp by-catch investigations
- 5) Brown shrimp beamtrawl survey
- 6) Sole beamtrawl survey

**FINLAND**

(E. Aro)

No work was carried out on demersal fishes other than that reported to the Baltic Fish Committee.

**FRANCE**

(A.Souplet)

**SAMPLING DATA FOR : COD 1991 FRANCE**

| Area  | Season | Nr of samples |        | Nr of fish |      |
|-------|--------|---------------|--------|------------|------|
|       |        | Res. vessels  | Market | Measured   | Aged |
| IVa   | 1      | 52            | -      | 252        | -    |
| IVb   | 1      | 54            | -      | 380        | 148  |
| IVc   | 1      | 11            | -      | 53         | 59   |
|       | 1      | -             | 40     | 974        | -    |
| VIa   | 1      | -             | 38     | 979        | 275  |
|       | 2      | -             | 31     | 581        | 218  |
|       | 3      | -             | 20     | 292        | 138  |
|       | 4      | -             | 24     | 482        | 189  |
| VIIId | 4      | 10            | -      | 10         | 10   |

**SAMPLING DATA FOR : HADDOCK 1991 FRANCE**

| Area | Season | Nr of samples |        | Nr of fish |      |
|------|--------|---------------|--------|------------|------|
|      |        | Res. vessels  | Market | Measured   | Aged |
| IVa  | 1      | 52            | -      | 990        | -    |
| IVb  | 1      | 19            | -      | 5 337      | 565  |
| VIa  | 1      | -             | 10     | 569        | -    |
|      | 2      | -             | 5      | 266        | -    |
|      | 3      | -             | 18     | 1 347      | -    |
|      | 4      | -             | 25     | 1 289      | -    |

**SAMPLING DATA FOR : SAI THE 1991 FRANCE**

| Area     | Season | Nr of samples |        | Nr of fish |      |
|----------|--------|---------------|--------|------------|------|
|          |        | Res. vessels  | Market | Measured   | Aged |
| IVa      | 1      | 52            | -      | 774        | -    |
| VIa      | 1      | -             | 55     | 1 921      | 412  |
|          | 2      | -             | 56     | 1 857      | 402  |
|          | 3      | -             | 61     | 2 001      | 413  |
|          | 4      | -             | 50     | 1 723      | 292  |
| VIIg,h,j | 4      | 11            | -      | 26         | -    |

**SAMPLING DATA FOR : POLLACK 1991 FRANCE**

| Area | Season | Nr of samples |        | Nr of fish |      |
|------|--------|---------------|--------|------------|------|
|      |        | Res. vessels  | Market | Measured   | Aged |
| VII  | 1      | -             | x      | 350        | 175  |
|      | 2      | -             | x      | 220        | 110  |
| VIIe | 1      | -             | 15     | 958        | -    |
|      | 2      | -             | 12     | 1 354      | -    |
|      | 3      | -             | 9      | 685        | -    |
|      | 4      | -             | 7      | 463        | -    |



SAMPLING DATA FOR : **BIB** **1990** **FRANCE**

|       |        | Nr of samples |        | Nr of fish |      |
|-------|--------|---------------|--------|------------|------|
| Area  | Season | Res. vessels  | Market | Measured   | Aged |
| IVb   | 1      | 31            | -      | 227        | -    |
| IVc   | 1      | 9             | -      | 1 154      | -    |
|       | 4      | 39            | -      | 474        | -    |
| VIIId | 1      | -             | 7      | 751        | 571  |
|       | 2      | -             | 12     | 1 331      | 385  |
|       | 3      | -             | 7      | 1 285      | 107  |
|       | 4      | -             | 8      | 867        | -    |
|       | 4      | 17            | -      | 2 212      | 492  |

SAMPLING DATA FOR : **NORWAY POUT** **1991** **FRANCE**

|      |        | Nr of samples |        | Nr of fish |      |
|------|--------|---------------|--------|------------|------|
| Area | Season | Res. vessels  | Market | Measured   | Aged |
| IVb  | 1      | 15            | -      | 8 256      | 62   |

SAMPLING DATA FOR : **HAKE** **1991** **FRANCE**

|        |        | Nr of samples |        | Nr of fish |      |
|--------|--------|---------------|--------|------------|------|
| Area   | Season | Res. vessels  | Market | Measured   | Aged |
| VI     | 2      | -             | 8      | 310        | -    |
|        | 4      | -             | 11     | 479        | -    |
| VII    | 1      | -             | 11     | 516        | -    |
|        | 2      | -             | 15     | 501        | -    |
|        | 3      | -             | 22     | 769        | -    |
|        | 4      | -             | 3      | 207        | -    |
| VIIe,f | 1      | -             | 3      | 624        | -    |
|        | 2      | -             | 2      | 220        | -    |
|        | 3      | -             | 3      | 230        | -    |
|        | 4      | -             | 3      | 1 655      | -    |
| VIII   | 1      | -             | 64     | 2 199      | -    |
|        | 1      | 39            | -      | 3 139      | 180  |
|        | 2      | -             | 33     | 1 828      | -    |
|        | 2      | 44            | -      | 5 885      | 233  |
|        | 3      | -             | 55     | 2 349      | -    |
|        | 3      | 44            | -      | 2 792      | 260  |
|        | 4      | -             | 66     | 3 540      | -    |
|        | 4      | 35            | -      | 2 869      | 274  |

SAMPLING DATA FOR : **BLUE LING** **1991** **FRANCE**

|      |        | Nr of samples |        | Nr of fish |      |
|------|--------|---------------|--------|------------|------|
| Area | Season | Res. vessels  | Market | Measured   | Aged |
| VIa  | 1      | -             | 8      | 123        | 66   |
|      | 2      | -             | 24     | 383        | 201  |

**SAMPLING DATA FOR : LING 1991 FRANCE**

| Area     | Season | Nr of samples |        | Nr of fish |      |
|----------|--------|---------------|--------|------------|------|
|          |        | Res. vessels  | Market | Measured   | Aged |
| VIa      | 1      | -             | 3      | 605        | 202  |
|          | 2      | -             | 3      | 687        | 216  |
|          | 3      | -             | 3      | 438        | 183  |
|          | 4      | -             | 3      | 445        | 127  |
| VIIe     | 1      | -             | 10     | 500        | -    |
|          | 2      | -             | 11     | 572        | -    |
|          | 3      | -             | 5      | 343        | -    |
|          | 4      | -             | 6      | 373        | -    |
| VII+VIII | 1      | -             | 12     | 508        | 268  |
|          | 2      | 29            | 8      | 439        | 273  |
|          | 3      | -             | 12     | 521        | 285  |
|          | 4      | -             | 12     | 928        | 346  |

**SAMPLING DATA FOR : MEGRIM 1991 FRANCE**

| Area   | Season | Nr of samples |        | Nr of fish |      |
|--------|--------|---------------|--------|------------|------|
|        |        | Res. vessels  | Market | Measured   | Aged |
| VIA    | 4      | -             | 1      | 423        | -    |
| VIIg,h | 1      | -             | 17     | 4 392      | -    |
|        | 2      | -             | 12     | 3 513      | -    |
|        | 3      | -             | 12     | 3 388      | -    |
|        | 4      | -             | 14     | 2 665      | -    |
| VIIIa  | 1      | -             | 1      | 157        | -    |
|        | 2      | -             | 10     | 2 007      | -    |
|        | 3      | -             | 9      | 2 599      | -    |
|        | 4      | -             | 1      | 169        | -    |

**SAMPLING DATA FOR : ALBACORE 1991 FRANCE**

| Area | Season | Nr of samples |        | Nr of fish |      |
|------|--------|---------------|--------|------------|------|
|      |        | Res. vessels  | Market | Measured   | Aged |
| VIII | 3      | -             | 55     | 639        | -    |

**SAMPLING DATA FOR : RED GURNARD 1991 FRANCE**

| Area  | Season | Nr of samples |        | Nr of fish |      |
|-------|--------|---------------|--------|------------|------|
|       |        | Res. vessels  | Market | Measured   | Aged |
| IVc   | 4      | 24            | -      | 241        | -    |
| VIIId | 1      | -             | 16     | 1 776      | 212  |
|       | 2      | -             | 6      | 977        | 284  |
|       | 3      | -             | 10     | 1 043      | 181  |
|       | 4      | -             | 7      | 506        | 220  |
|       | 4      | 48            | -      | 477        | -    |

**SAMPLING DATA FOR : BASS 1991 FRANCE**

| Area | Season | Nr of samples |        | Nr of fish |      |
|------|--------|---------------|--------|------------|------|
|      |        | Res. vessels  | Market | Measured   | Aged |
| VIIe | 1      | -             | 8      | 359        | -    |
|      | 2      | -             | 6      | 151        | -    |
|      | 3      | -             | 8      | 327        | -    |
|      | 4      | -             | 5      | 48         | -    |

SAMPLING DATA FOR : **CUCKOO RAY** **1991** **FRANCE**

|       |        | Nr of samples |        | Nr of fish |      |
|-------|--------|---------------|--------|------------|------|
| Area  | Season | Res. vessels  | Market | Measured   | Aged |
| VIIIh | 1      | -             | 9      | 1 320      | -    |
|       | 2      | -             | 9      | 1 172      | -    |
|       | 3      | -             | 7      | 810        | -    |
|       | 4      | -             | 9      | 1 174      | -    |

SAMPLING DATA FOR : **PLAICE** **1991** **FRANCE**

|       |        | Nr of samples |        | Nr of fish |      |
|-------|--------|---------------|--------|------------|------|
| Area  | Season | Res. vessels  | Market | Measured   | Aged |
| IVb   | 1      | 62            | -      | 765        | 324  |
| IVc   | 1      | 12            | -      | 111        | 98   |
|       | 2      | -             | 3      | 86         | -    |
|       | 3      | -             | 10     | 454        | -    |
|       | 4      | -             | 1      | 45         | -    |
|       | 4      | 44            | -      | 527        | 22   |
| VIIId | 1      | -             | 25     | 1 815      | 289  |
|       | 2      | -             | 18     | 1 422      | 283  |
|       | 3      | -             | 23     | 711        | 308  |
|       | 4      | 27            | -      | 131        | 101  |
|       | 4      | -             | 16     | 1 037      | 131  |

SAMPLING DATA FOR : **TURBOT** **1991** **FRANCE**

|      |        | Nr of samples |        | Nr of fish |      |
|------|--------|---------------|--------|------------|------|
| Area | Season | Res. vessels  | Market | Measured   | Aged |
| VIIe | 1      | -             | 9      | 52         | -    |
|      | 2      | -             | 10     | 280        | -    |
|      | 3      | -             | 10     | 275        | -    |
|      | 4      | -             | 6      | 21         | -    |

SAMPLING DATA FOR : **BRILL** **1991** **FRANCE**

|       |        | Nr of samples |        | Nr of fish |      |
|-------|--------|---------------|--------|------------|------|
| Area  | Season | Res. vessels  | Market | Measured   | Aged |
| VIIId | 1      | -             | 13     | 335        | -    |
|       | 2      | -             | 10     | 415        | -    |
|       | 3      | -             | 11     | 310        | -    |
|       | 4      | -             | 6      | 112        | -    |

SAMPLING DATA FOR : **DAB** **1991** **FRANCE**

|       |        | Nr of samples |        | Nr of fish |      |
|-------|--------|---------------|--------|------------|------|
| Area  | Season | Res. vessels  | Market | Measured   | Aged |
| IVb   | 1      | 65            | -      | 6 637      | 452  |
| IVc   | 1      | 12            | -      | 1 026      | 361  |
|       | 4      | 5             | -      | 353        | 179  |
| VIIId | 1      | -             | 28     | 1 841      | 246  |
|       | 2      | -             | 10     | 1 092      | 176  |
|       | 3      | -             | 10     | 762        | 102  |
|       | 4      | 61            | -      | 1 631      | 337  |
|       | 4      | -             | 16     | 906        | 79   |

SAMPLING DATA FOR : **LEMON SOLE** **1991** **FRANCE**

|       |        | Nr of samples |        | Nr of fish |      |
|-------|--------|---------------|--------|------------|------|
| Area  | Season | Res. vessels  | Market | Measured   | Aged |
| IVb   | 1      | 30            | -      | 147        | 43   |
| IVc   | 1      | 5             | -      | 66         | 52   |
|       | 4      | 2             | -      | 3          | 2    |
| VIIId | 4      | 5             | -      | 24         | 19   |

SAMPLING DATA FOR : **SOLE** **1991** **FRANCE**

|       |        | Nr of samples |        | Nr of fish |      |
|-------|--------|---------------|--------|------------|------|
| Area  | Season | Res. vessels  | Market | Measured   | Aged |
| IVc   | 1      | 8             | -      | 45         | -    |
|       | 1      | -             | 11     | 771        | -    |
|       | 2      | -             | 4      | 300        | -    |
|       | 3      | -             | 11     | 711        | -    |
|       | 4      | 19            | -      | 24         | -    |
|       | 4      | -             | 11     | 805        | -    |
| VIIId | 1      | -             | 45     | 1 898      | 238  |
|       | 2      | -             | 54     | 1 788      | 250  |
|       | 3      | -             | 21     | 1 144      | 177  |
|       | 4      | 9             | -      | 9          | 9    |
|       | 4      | -             | 28     | 1 357      | 144  |
| VIIe  | 1      | -             | 4      | 41         | -    |
|       | 2      | -             | 10     | 533        | -    |
|       | 3      | -             | 7      | 885        | -    |
|       | 4      | -             | 13     | 694        | -    |
| VIII  | 1      | -             | 40     | 2 901      | -    |
|       | 1      | 32            | -      | 387        | 220  |
|       | 2      | -             | 39     | 2 802      | -    |
|       | 2      | 44            | -      | 513        | 279  |
|       | 3      | -             | 30     | 2 314      | -    |
|       | 3      | 38            | -      | 302        | 103  |
|       | 4      | -             | 37     | 2 571      | -    |
|       | 4      | 32            | -      | 1 014      | 300  |

SAMPLING DATA FOR : **RED MULLET** **1991** **FRANCE**

|      |        | Nr of samples |        | Nr of fish |      |
|------|--------|---------------|--------|------------|------|
| Area | Season | Res. vessels  | Market | Measured   | Aged |
| VIII | 1      | -             | 8      | 309        | -    |
|      | 1      | 22            | -      | 72         | -    |
|      | 2      | -             | 8      | 468        | -    |
|      | 2      | 38            | -      | 198        | -    |
|      | 3      | -             | 2      | 93         | -    |
|      | 3      | 6             | -      | 35         | -    |
|      | 4      | -             | 9      | 552        | -    |
|      | 4      | 26            | -      | 256        | -    |

SAMPLING DATA FOR : **ROUNDNOSE GRENADIER 1991**

FRANCE

|      |        | Nr of samples |        | Nr of fish |      |
|------|--------|---------------|--------|------------|------|
| Area | Season | Res. vessels  | Market | Measured   | Aged |
| VI   | 1      | -             | x      | 140        | 140  |
|      | 2      | -             | x      | 135        | 135  |
|      | 3      | -             | x      | 130        | 130  |
|      | 4      | -             | x      | 140        | 140  |

SAMPLING DATA FOR : **WHITE ANGLER\***

1991

FRANCE

|          |        | Nr of samples |        | Nr of fish |      |
|----------|--------|---------------|--------|------------|------|
| Area     | Season | Res. vessels  | Market | Measured   | Aged |
| VIII     | 1      | -             | 11     | 222        | -    |
|          | 1      | 18            | -      | 34         | 34   |
|          | 2      | -             | 18     | 106        | -    |
|          | 2      | 13            | -      | 14         | 14   |
|          | 3      | -             | 22     | 246        | -    |
|          | 3      | 10            | -      | 12         | 12   |
|          | 4      | -             | 16     | 209        | -    |
|          | 4      | 11            | -      | 23         | 23   |
| VIIe     | 1      | -             | 11     | 1 134      | -    |
|          | 2      | -             | 9      | 919        | -    |
|          | 3      | -             | 12     | 793        | -    |
|          | 4      | -             | 5      | -          | -    |
| VII+VIII | 1      | x             | x      | 4 040      | 245  |
|          | 2      | x             | x      | 2 780      | 250  |
|          | 3      | x             | x      | 2 690      | 260  |
|          | 4      | x             | x      | 3 400      | 250  |

\**Lophius piscatorius*

SAMPLING DATA FOR : **BLACK ANGLER\***

1991

FRANCE

|          |        | Nr of samples |        | Nr of fish |      |
|----------|--------|---------------|--------|------------|------|
| Area     | Season | Res. vessels  | Market | Measured   | Aged |
| VIIe     | 1      | -             | 2      | 2          | -    |
|          | 2      | -             | 2      | 5          | -    |
|          | 3      | -             | 4      | 58         | -    |
|          | 4      | -             | 2      | 23         | -    |
| VIII     | 1      | -             | 10     | 21         | -    |
|          | 1      | 3             | -      | 3          | 3    |
|          | 2      | -             | 14     | 153        | -    |
|          | 2      | 8             | -      | 14         | 14   |
|          | 3      | -             | 20     | 339        | -    |
|          | 3      | 10            | -      | 10         | 10   |
|          | 4      | -             | 15     | 284        | -    |
|          | 4      | 3             | -      | 4          | 4    |
| VII+VIII | 1      | x             | x      | 4 550      | 170  |
|          | 2      | x             | x      | 4 890      | 180  |
|          | 3      | x             | x      | 4 690      | 175  |
|          | 4      | x             | x      | 4 640      | 170  |

\**Lophius budegassa*

SAMPLING DATA FOR : **NEPHROPS** **1991** **FRANCE**

|        |        | Nr of samples |        | Nr of fish |      |
|--------|--------|---------------|--------|------------|------|
| Area   | Season | Res. vessels  | Market | Measured   | Aged |
| VIIg,h | 1      | -             | 9      | 1 475      | -    |
|        | 2      | -             | 9      | 1 478      | -    |
|        | 3      | -             | 9      | 1 305      | -    |
|        | 4      | -             | 9      | 1 446      | -    |
| VIII   | 1      | -             | 4      | 480        | -    |
|        | 1      | 21            | -      | 1 329      | -    |
|        | 2      | -             | 5      | 705        | -    |
|        | 2      | 32            | -      | 3 007      | -    |
|        | 3      | -             | 4      | 619        | -    |
|        | 3      | 29            | -      | 2 729      | -    |
|        | 4      | -             | 5      | 563        | -    |
|        | 4      | 26            | -      | 2 059      | -    |
| VIIIa  | 1      | -             | 58     | 3 128      | -    |
|        | 2      | -             | 55     | 2 630      | -    |
|        | 3      | -             | 52     | 2 755      | -    |
|        | 4      | -             | 58     | 2 478      | -    |

## ICELAND

(S.A.Schopka)

The biological sampling programme and research work on demersal fish was carried out along the same lines as in previous years and is thus based both on research vessel data and market samples.

The greatest part of the research vessel data was collected during the annual groundfish survey in March. The survey is carried out simultaneously with five commercial stern trawlers of the same type covering the whole shelf area around Iceland with some 600 trawling stations.

Market samples were collected at the headquarters of the Marine Research Institute in Reykjavík and the five branches of MRI located at other important fishing ports. Fishery inspectors collected a considerable amount of data both on board of commercial fishing vessels and at the landing places.

Emphasis was laid on assessment work, as usual, and steps were taken to increase studies on species interactions.

The number of fish sampled by species are shown in the following tables

| SAMPLING DATA FOR : COD |        | 1991          |        | ICELAND    |        |        |
|-------------------------|--------|---------------|--------|------------|--------|--------|
|                         |        | Nr of samples |        | Nr of fish |        |        |
| Area                    | Season | Res. vessels  | Market | Measured   | Aged   | Tagged |
| Va                      | 1      | 1 272         |        | 70 910     | 5 057  |        |
|                         |        |               | 93     | 10 876     | 4 460  |        |
|                         | 2      | 281           |        | 23 308     | 1 614  | 1 278  |
|                         |        |               | 62     | 7 081      | 2 928  |        |
|                         | 3      | 286           |        | 49 080     | 1 849  |        |
|                         |        |               | 16     | 1 484      | 640    |        |
|                         | 4      | 217           |        | 20 951     | 1 062  |        |
|                         |        |               | 17     | 1 314      | 914    |        |
| Total                   |        | 2 056         | 188    | 185 004    | 18 524 | 1 278  |

| SAMPLING DATA FOR : HADDOCK |        | 1991          |        | ICELAND    |       |  |
|-----------------------------|--------|---------------|--------|------------|-------|--|
|                             |        | Nr of samples |        | Nr of fish |       |  |
| Area                        | Season | Res. vessels  | Market | Measured   | Aged  |  |
| Va                          | 1      | 926           |        | 69 442     | 3 085 |  |
|                             |        |               | 20     | 2 187      | 901   |  |
|                             | 2      | 172           |        | 35 039     | 1 090 |  |
|                             |        |               | 13     | 2 140      | 493   |  |
|                             | 3      | 97            |        | 17 398     | 1 667 |  |
|                             |        |               | 11     | 1 643      | 300   |  |
|                             | 4      | 127           |        | 18 610     | 1 160 |  |
|                             |        |               | 2      | 687        |       |  |
| Total                       |        | 1 322         | 46     | 147 146    | 8 696 |  |

SAMPLING DATA FOR : SAITHE 1991 ICELAND

|       |        | Nr of samples |        | Nr of fish |       |
|-------|--------|---------------|--------|------------|-------|
| Area  | Season | Res. vessels  | Market | Measured   | Aged  |
| Va    | 1      | 345           |        | 7 404      | 801   |
|       | 2      | 56            | 39     | 5 047      | 1 501 |
|       | 3      | 19            | 14     | 1 799      | 273   |
|       | 4      |               | 10     | 1 464      | 500   |
|       | 4      | 56            | 4      | 2 620      | 274   |
|       |        |               |        | 1 495      | 300   |
|       |        |               |        | 4 935      | 660   |
|       |        |               |        | 394        | 100   |
| Total |        | 476           | 67     | 25 158     | 4 409 |

SAMPLING DATA FOR : LING 1991 ICELAND

|       |        | Nr of samples |        | Nr of fish |      |         |
|-------|--------|---------------|--------|------------|------|---------|
| Area  | Season | Res. vessels  | Market | Measured   | Aged | Counted |
| Va    | 1      | 132           |        | 326        | 143  |         |
|       | 2      | 10            |        | 17         |      |         |
| Total |        | 142           |        | 343        | 143  |         |

SAMPLING DATA FOR : BLUE LING 1991 ICELAND

|       |        | Nr of samples |        | Nr of fish |      |         |
|-------|--------|---------------|--------|------------|------|---------|
| Area  | Season | Res. vessels  | Market | Measured   | Aged | Counted |
| Va    | 1      | 59            |        | 353        | 110  |         |
|       | 2      | 4             |        | 4          |      |         |
|       | 4      | 2             |        | 2          |      |         |
| Total |        | 65            |        | 359        | 110  |         |

SAMPLING DATA FOR : TUSK 1991 ICELAND

|       |        | Nr of samples |        | Nr of fish |      |         |
|-------|--------|---------------|--------|------------|------|---------|
| Area  | Season | Res. vessels  | Market | Measured   | Aged | Counted |
| Va    | 1      | 294           |        | 1 298      | 847  |         |
|       | 2      | 17            |        | 28         |      |         |
|       | 2      |               | 2      | 420        |      |         |
|       | 3      |               | 1      | 240        |      |         |
|       | 4      | 10            |        | 19         |      |         |
|       | 4      |               | 1      | 209        |      |         |
| Total |        | 321           | 4      | 2 214      | 847  |         |

SAMPLING DATA FOR : *Sebastes marinus* 1991 ICELAND

|       |        | Nr of samples |        | Nr of fish |       |
|-------|--------|---------------|--------|------------|-------|
| Area  | Season | Res. vessels  | Market | Measured   | Aged  |
| Va    | 1      | 548           |        | 62 303     |       |
|       | 2      | 76            | 6      | 1 442      | 182   |
|       | 3      |               | 8      | 5 036      |       |
|       | 4      |               | 5      | 2 013      | 409   |
|       | 4      | 95            |        | 1 658      | 166   |
|       |        |               | 10     | 2 871      |       |
|       |        |               |        | 2 605      | 480   |
| Total |        | 719           | 29     | 77 928     | 1 237 |



SAMPLING DATA FOR : *Sebastes mentella* 1991 ICELAND

| Area  | Season | Nr of samples |        | Nr of fish |      |
|-------|--------|---------------|--------|------------|------|
|       |        | Res. vessels  | Market | Measured   | Aged |
| Va    | 1      | 34            |        | 2 834      |      |
|       | 2      | 20            | 1      | 333        |      |
|       | 3      |               | 4      | 2 247      | 100  |
|       | 4      | 5             | 1      | 567        |      |
|       |        |               | 3      | 1 183      |      |
|       |        |               | 3      | 405        | 126  |
| Total |        | 59            | 98     | 7 572      | 226  |

SAMPLING DATA FOR : PLAICE 1991 ICELAND

| Area  | Season | Nr of samples |        | Nr of fish |       |
|-------|--------|---------------|--------|------------|-------|
|       |        | Res. vessels  | Market | Measured   | Aged  |
| Va    | 1      | 195           |        | 5 021      | 856   |
|       | 3      |               | 10     | 1 816      | 1 085 |
|       | 4      |               | 3      | 552        | 227   |
| Total |        | 195           | 12     | 7 389      | 2 168 |

SAMPLING DATA FOR : DAB 1991 ICELAND

| Area | Season | Nr of samples |        | Nr of fish |      |
|------|--------|---------------|--------|------------|------|
|      |        | Res. vessels  | Market | Measured   | Aged |
| Va   | 1      | 145           |        | 4 220      |      |

SAMPLING DATA FOR : GREAT SILVERSMELT 1991 ICELAND

| Area  | Season | Nr of samples |        | Nr of fish |      |
|-------|--------|---------------|--------|------------|------|
|       |        | Res. vessels  | Market | Measured   | Aged |
| Va    | 1      | 57            |        | 2 574      | 235  |
|       | 2      | 13            |        | 890        |      |
|       | 4      | 2             |        | 3          |      |
| Total |        | 72            |        | 3 467      | 235  |

SAMPLING DATA FOR : CATFISH 1991 ICELAND

| Area  | Season | Nr of samples |        | Nr of fish |       |         |
|-------|--------|---------------|--------|------------|-------|---------|
|       |        | Res. vessels  | Market | Measured   | Aged  | Counted |
| Va    | 1      | 481           |        | 18 353     | 2 006 |         |
|       | 2      |               | 1      |            | 100   |         |
|       | 4      | 32            |        | 229        |       |         |
| Total |        | 513           | 1      | 18 582     | 2 106 |         |

SAMPLING DATA FOR : LUMPSUCKER 1991 ICELAND

| Area  | Season | Nr of samples |        | Nr of fish |      |         |
|-------|--------|---------------|--------|------------|------|---------|
|       |        | Res. vessels  | Market | Measured   | Aged | Counted |
| Va    | 1      | 200           |        | 639        |      |         |
|       | 2      |               | 56     | 3 400      |      |         |
| Total |        | 200           | 56     | 4 039      |      |         |

SAMPLING DATA FOR : **WITCH** **1991** ICELAND

|       |        | Nr of samples |        | Nr of fish |      |         |
|-------|--------|---------------|--------|------------|------|---------|
| Area  | Season | Res. vessels  | Market | Measured   | Aged | Counted |
| Va    | 1      | 203           |        | 1 472      |      |         |
|       | 2      |               | 1      | 141        |      |         |
|       | 4      | 13            |        | 86         |      |         |
|       | 4      |               | 13     | 595        | 200  |         |
| Total |        | 216           | 14     | 2 294      | 200  |         |

SAMPLING DATA FOR : **GREENLAND HALIBUT** **1991** ICELAND

|       |        | Nr of samples |        | Nr of fish |       |  |
|-------|--------|---------------|--------|------------|-------|--|
| Area  | Season | Res. vessels  | Market | Measured   | Aged  |  |
| Va    | 1      | 60            |        | 695        |       |  |
|       | 2      |               | 6      | 1 715      | 100   |  |
|       | 3      | 147           | 38     | 8 100      | 1 113 |  |
|       | 4      |               | 1      | 4 499      | 709   |  |
|       | 4      |               | 9      | 50         | 50    |  |
| Total |        | 207           | 54     | 16 475     | 2 112 |  |

SAMPLING DATA FOR : **HALIBUT** **1991** ICELAND

|      |        | Nr of samples |        | Nr of fish |      |  |
|------|--------|---------------|--------|------------|------|--|
| Area | Season | Res. vessels  | Market | Measured   | Aged |  |
| Va   | 1      | 1             |        | 105        | 214  |  |

**IRELAND**

(E. Fahy)

In 1991 four young fish surveys were undertaken:

- The Irish Sea juvenile plaice survey (MFV Sealgair, ICES division VIIa).
- The Irish Sea young fish survey (RV Lough Beltra, ICES division VIIa).
- The South coast young fish survey (RV Lough Beltra, ICES division VIIg).
- The West Coast young fish survey (RV Lough Foyle, ICES division VIa and VIIb).

**SAMPLING DATA FOR : COD 1991 IRELAND**

|      |        | Nr of fish |       |            |
|------|--------|------------|-------|------------|
| Area | Season | Nr samples | Aged  | Meas. only |
| VIa  | 1/4    | -          | 674   | 4 937      |
| VIIa | 1/4    | -          | 1 224 | 2 783      |
| VIIb | 1/4    | -          | -     | 2 049      |
| VIIg | 1/4    | -          | 290   | 1 485      |
| VIIj | 1/4    | -          | -     | 2 210      |

**SAMPLING DATA FOR : HADDOCK 1991 IRELAND**

|      |        | Nr of fish |       |            |
|------|--------|------------|-------|------------|
| Area | Season | Nr samples | Aged  | Meas. only |
| VIa  | 1/4    | -          | 1 583 | 13 035     |
| VIb  | 1/4    | -          | 140   | 288        |
| VIIb | 1/4    | -          | -     | 1 492      |

**SAMPLING DATA FOR : WHITING 1991 IRELAND**

|      |        | Nr of fish |       |         |            |
|------|--------|------------|-------|---------|------------|
| Area | Season | Nr samples | Aged  | Weighed | Meas. only |
| VIa  | 1/4    | -          | 1 277 |         | 21 503     |
| VIIa | 1/4    | -          | 2 958 |         | 20 147     |
| VIIb | 1/4    | -          | 105   |         | 9 084      |
| VIIg | 1/4    | -          | 554   |         | 9 139      |

**SAMPLING DATA FOR : HAKE 1991 IRELAND**

|      |        | Nr of fish |      |         |            |
|------|--------|------------|------|---------|------------|
| Area | Season | Nr samples | Aged | Weighed | Meas. only |
| VIa  | 1/4    | -          | -    |         | 736        |
| VIIb | 1/4    | -          | 40   |         | 1 006      |
| VIIg | 1/4    | -          | 185  |         | 1 267      |
| VIIj | 1/4    | -          | 857  |         | 4 893      |

SAMPLING DATA FOR : **SOLE** **1991** **IRELAND**

|      |        | Nr of fish |      |         |            |
|------|--------|------------|------|---------|------------|
| Area | Season | Nr samples | Aged | Weighed | Meas. only |
| VIa  | 1/4    | -          | -    |         | 393        |
| VIIa | 1/4    | -          | 612  |         | 1 645      |
| VIIb | 1/4    | -          | -    |         | 245        |
| VIIg | 1/4    | -          | 83   |         | 654        |
| VIIj | 1/4    | -          | -    |         | 846        |

SAMPLING DATA FOR : **PLAICE** **1991** **IRELAND**

|      |        | Nr of fish |       |         |            |
|------|--------|------------|-------|---------|------------|
| Area | Season | Nr samples | Aged  | Weighed | Meas. only |
| VIa  | 1/4    | -          | 507   |         | 4 011      |
| VIIa | 1/4    | -          | 2 767 |         | 7 303      |
| VIIb | 1/4    | -          | -     |         | 9 016      |
| VIIg | 1/4    | -          | 403   |         | 5 654      |
| VIIj | 1/4    | -          | -     |         | 1 358      |

SAMPLING DATA FOR : **MEGRIM** **1991** **IRELAND**

|      |                    | Nr of fish |      |         |            |
|------|--------------------|------------|------|---------|------------|
| Area | Season<br>Total nr | Nr samples | Aged | Weighed | Meas. only |
| VIa  | 1/4                | -          | -    |         | 1 735      |
| VIIb | 1/4                | -          | -    |         | 5 090      |
| VIIg | 1/4                | -          | 69   |         | 4 300      |
| VIIj | 1/4                | -          | 992  |         | 3 785      |

SAMPLING DATA FOR : **FOUR SPOT MEGRIM** **1991** **IRELAND**

|      |                    | Nr of fish |      |         |            |
|------|--------------------|------------|------|---------|------------|
| Area | Season<br>Total nr | Nr samples | Aged | Weighed | Meas. only |
| VIIj | 1/4                | -          | 67   |         | 129        |

SAMPLING DATA FOR : *Lophius budegassa* **1991** **IRELAND**

|      |        | Nr of fish |       |  |            |
|------|--------|------------|-------|--|------------|
| Area | Season | Nr samples | Aged  |  | Meas. only |
| VIa  | 1/4    | -          | -     |  | 768        |
| VIIb | 1/4    | -          | -     |  | 823        |
| VIIg | 1/4    | -          | -     |  | 1 254      |
| VIIj | 1/4    | -          | 1 124 |  | 2 341      |

SAMPLING DATA FOR : *Lophius piscatorius* 1991 IRELAND

|      |        | Nr of fish |       |            |
|------|--------|------------|-------|------------|
| Area | Season | Nr samples | Aged  | Meas. only |
| VIa  | 1/4    | -          | -     | 933        |
| VIIb | 1/4    | -          | -     | 697        |
| VIIg | 1/4    | -          | -     | 2 121      |
| VIIj | 1/4    | -          | 2 213 | 2 011      |

## THE NETHERLANDS

(F. van Beek)

In 1991 the market sampling of landings of the Dutch fleet from the North Sea in The Netherlands was continued for the following species: cod (*Gadus morhua*), plaice (*Pleuronectes platessa*), sole (*Solea solea*), whiting (*Merlangius merlangus*) and the greater silver smelt (*Argentina silus*). Market sampling for brill (*Scophthalmus rhombus*), and turbot (*Scophthalmus maximus*) was not continued. For all species samples were taken stratified by harbour. All samples were also stratified by market category. The tables below indicate the level of sampling.

In each quarter surveys were carried out with R.V. "Tridens" (13 weeks) and R.V. "Isis" (10 weeks) in the southern and central North Sea with the standard GOV trawl in the framework of the International Bottom Trawl Survey (IBTS) program. These surveys are also a continuation of the International Young Fish Survey (IYFS) and the Dutch Groundfish Survey (DGS). During the trips stomachs were sampled for the multispecies program (1991 was the year of the stomach). During the surveys 857 adult plaice were tagged with a yellow Peterson tag (codes: YMN 8291-9148) and injected with tetracycline.

In the second quarter R.V. "Tridens" (1 week) carried out a survey off the coast of Jutland with the IYGPT on juvenile pelagic gadoids.

An international egg survey in the period April-July on sole and horse mackerel was carried out by R.V. "Isis" (9 weeks) and R.V. "Tridens" (3 weeks) in the southern North Sea and English Channel. The other countries participating in this survey are Germany and the U.K. The aim of these surveys is to estimate the egg production and stock size of these species in this area.

In September-October a SNS survey (Sole Net Survey) was carried out by R.V. "Tridens" (3 weeks). This survey provides recruitment indices for 1- and 2-year old plaice and sole.

In August-September the International Beam Trawl Survey (BTS) was carried out by R.V. "Isis" (4 weeks) in the southern North Sea and in the English Channel in collaboration with Belgium Germany and the U.K in order to investigate the abundance and distribution of adult plaice and sole in this area.

In September-October R.V. "Isis" (4 weeks), R.V. "Stern" (3 weeks) and R.V. "Schollebaar" (2 weeks) participated in the Demersal Young Fish Surveys (DYFS). These surveys estimate the relative abundance of brown shrimp (*Crangon crangon*) and juvenile plaice and sole in the continental nursery areas. The surveys are carried out since 1969 in collaboration with Belgium and the Federal Republic of Germany.

SAMPLING DATA FOR : **COD** 1991 THE NETHERLANDS

|              |            | Market       |              | Research vessels |
|--------------|------------|--------------|--------------|------------------|
| Area *       | Season     | Measured     | Aged         | Aged             |
| NRFA 1       | 1          | -            | -            | 55               |
|              | 3          | -            | -            | 92               |
| NRFA 2       | 2          | -            | -            | 137              |
|              | 3          | -            | -            | 99               |
|              | 4          | -            | -            | 36               |
| NRFA 3       | 1          | -            | -            | 33               |
|              | 2          | -            | -            | 13               |
|              | 3          | -            | -            | 80               |
| NRFA 4       | 2          | -            | -            | 24               |
|              | 4          | -            | -            | 4                |
| NRFA 5       | 1          | -            | -            | 24               |
|              | 2          | 141          | 50           | 49               |
|              | 3          | 470          | 51           | -                |
|              | 4          | 50           | -            | 4                |
| NRFA 6       | 1          | 1 995        | 495          | 404              |
|              | 2          | 700          | 140          | 614              |
|              | 3          | 751          | 284          | 30               |
|              | 4          | 1 586        | 415          | 303              |
| NRFA 7       | 2          | -            | -            | 123              |
|              | 3          | 61           | -            | 93               |
|              | 4          | -            | -            | 18               |
| <b>Total</b> | <b>1/4</b> | <b>5 754</b> | <b>1 435</b> | <b>2 235</b>     |

(\*) North Sea Roundfish Sampling Areas

SAMPLING DATA FOR : **SILVER SMELT** 1991 THE NETHERLANDS

|              |            | Market     |            | Research vessels |
|--------------|------------|------------|------------|------------------|
| Area         | Season     | Measured   | Aged       | Aged             |
| <b>VIa</b>   | 2          | 325        | 325        | -                |
| <b>VIIc</b>  | 2          | 44         | 25         | -                |
| <b>Total</b> | <b>1/4</b> | <b>369</b> | <b>350</b> | <b>-</b>         |

SAMPLING DATA FOR : **HADDOCK** **1991** **THE NETHERLANDS**

| Area*  | Season | Market   |      | Research vessels |
|--------|--------|----------|------|------------------|
|        |        | Measured | Aged | Aged             |
| NRFA 1 | 1      | -        | -    | 197              |
|        | 3      | -        | -    | 208              |
| NRFA 2 | 2      | -        | -    | 146              |
|        | 3      | -        | -    | 180              |
|        | 4      | -        | -    | 83               |
| NRFA 3 | 1      | -        | -    | 182              |
|        | 2      | -        | -    | 114              |
|        | 3      | -        | -    | 146              |
| NRFA 4 | 2      | -        | -    | 155              |
|        | 4      | -        | -    | 4                |
| NRFA 6 | 2      | -        | -    | 7                |
|        | 3      | -        | -    | 1                |
|        | 4      | -        | -    | 23               |
| NRFA 7 | 2      | -        | -    | 94               |
|        | 3      | -        | -    | 150              |
| Total  | 1/4    | -        | -    | 1 690            |

SAMPLING DATA FOR : **NORWAY POUT** **1991** **THE NETHERLANDS**

| Area*  | Season | Market   |      | Research vessels |
|--------|--------|----------|------|------------------|
|        |        | Measured | Aged | Aged             |
| NRFA 1 | 1      | -        | -    | 60               |
|        | 3      | -        | -    | 47               |
| NRFA 2 | 2      | -        | -    | 30               |
|        | 3      | -        | -    | 45               |
|        | 4      | -        | -    | 15               |
| NRFA 3 | 1      | -        | -    | 25               |
|        | 2      | -        | -    | 34               |
|        | 3      | -        | -    | 34               |
| NRFA 4 | 1      | -        | -    | 51               |
|        | 3      | -        | -    | 14               |
| NRFA 6 | 4      | -        | -    | 16               |
| NRFA 7 | 3      | -        | -    | 20               |
| Total  | 1/4    | -        | -    | 391              |

(\*) North Sea Roundfish Sampling Areas

SAMPLING DATA FOR : **WHITING** **1991** **THE NETHERLANDS**

|        |        | Market   |       | Research vessels |
|--------|--------|----------|-------|------------------|
| Area * | Season | Measured | Aged  | Aged             |
| NRFA 1 | 1      | 79       | 50    | 116              |
|        | 3      | -        | -     | 125              |
| NRFA 2 | 2      | -        | -     | 123              |
|        | 3      | -        | -     | 141              |
|        | 4      | -        | -     | 158              |
| NRFA 3 | 1      | -        | -     | 141              |
|        | 2      | -        | -     | 115              |
|        | 3      | -        | -     | 100              |
| NRFA 4 | 2      | -        | -     | 96               |
|        | 3      | -        | -     | 71               |
|        | 4      | -        | -     | 79               |
| NRFA 5 | 1      | -        | -     | 133              |
|        | 2      | -        | 150   | 94               |
|        | 3      | 532      | -     | 70               |
|        | 4      | 40       | -     | 50               |
| NRFA 6 | 1      | 2 258    | 200   | 417              |
|        | 2      | 1 612    | 100   | 495              |
|        | 3      | 1 984    | 375   | 152              |
|        | 4      | 2 743    | 300   | 589              |
| NRFA 7 | 2      | -        | -     | 111              |
|        | 3      | 230      | -     | 129              |
|        | 4      | -        | -     | 130              |
| Total  | 1/4    | 9 469    | 1 175 | 3 530            |

SAMPLING DATA FOR : **SAITHE** **1991** **THE NETHERLANDS**

|        |        | Market   |      | Research vessels |
|--------|--------|----------|------|------------------|
| Area * | Season | Measured | Aged | Aged             |
| NRFA 1 | 1      | -        | -    | 24               |
|        | 3      | -        | -    | 143              |
| NRFA 2 | 2      | -        | -    | 7                |
|        | 3      | -        | -    | 1                |
| NRFA 3 | 1      | -        | -    | 2                |
| NRFA 6 | 3      | -        | -    | 1                |
| NRFA 7 | 3      | -        | -    | 1                |
| Total  | 1/4    | -        | -    | 179              |

\* North Sea Roundfish Sampling Areas



SAMPLING DATA FOR : **PLAICE** **1991** THE NETHERLANDS

|                 |        | Market   |       | Research vessels |
|-----------------|--------|----------|-------|------------------|
| Area            | Season | Measured | Aged  | Aged             |
| IV              | 1      | -        | 1 496 | -                |
|                 | 2      | -        | 1 080 | -                |
|                 | 3      | -        | 1 080 | 541              |
|                 | 4      | -        | 1 062 | 1 326            |
| Waddensea       | 4      | -        | -     | 224              |
| Zeeland estuary | 3      | -        | -     | 151              |
| Total           | 1/4    | -        | 4 718 | 2 242            |

SAMPLING DATA FOR : **SOLE** **1991** THE NETHERLANDS

|                 |        | Market   |       | Research vessels |
|-----------------|--------|----------|-------|------------------|
| Area            | Season | Measured | Aged  | Aged             |
| IV              | 1      | -        | 850   | -                |
|                 | 2      | -        | 1 397 | -                |
|                 | 3      | -        | 844   | 342              |
|                 | 4      | -        | 500   | 815              |
| Waddensea       | 4      | -        | -     | 61               |
| Zeeland estuary | 3      | -        | -     | 77               |
| Total           | 1/4    | -        | 3 591 | 1 295            |

SAMPLING DATA FOR : **TURBOT** **1991** THE NETHERLANDS

|                 |        | Market   |      | Research vessels |
|-----------------|--------|----------|------|------------------|
| Area            | Season | Measured | Aged | Aged             |
| IV              | 1      | -        | -    | -                |
|                 | 2      | -        | -    | -                |
|                 | 3      | -        | -    | 180              |
|                 | 4      | -        | -    | 216              |
| Waddensea       | -      | -        | -    | -                |
| Zeeland estuary | -      | -        | -    | -                |
| Total           | 1/4    | -        | -    | 396              |

SAMPLING DATA FOR : **BRILL** **1991** THE NETHERLANDS

|                 |        | Market   |      | Research vessels |
|-----------------|--------|----------|------|------------------|
| Area            | Season | Measured | Aged | Aged             |
| IV              | 1      | -        | -    | -                |
|                 | 2      | -        | -    | -                |
|                 | 3      | -        | -    | 75               |
|                 | 4      | -        | -    | 82               |
| Waddensea       | -      | -        | -    | -                |
| Zeeland estuary | -      | -        | -    | -                |
| Total           | 1/4    | -        | -    | 157              |

SAMPLING DATA FOR : **DAB** **1991** THE NETHERLANDS

|                 |        | Market   |      | Research vessels |
|-----------------|--------|----------|------|------------------|
| Area            | Season | Measured | Aged | Aged             |
| IV              | 2      | -        | -    | -                |
|                 | 3      | -        | -    | 311              |
|                 | 4      | -        | -    | 622              |
| Waddensea       | 4      | -        | -    | 47               |
| Zeeland estuary | 3      | -        | -    | 28               |
| Total           | 1/4    | -        | -    | 1 008            |

SAMPLING DATA FOR : **FLOUNDER** **1991** THE NETHERLANDS

|                 |        | Market   |      | Research vessels |
|-----------------|--------|----------|------|------------------|
| Area            | Season | Measured | Aged | Aged             |
| IV              | 1      | -        | -    | -                |
|                 | 2      | -        | -    | -                |
|                 | 3      | -        | -    | 86               |
|                 | 4      | -        | -    | 133              |
| Zeeland estuary | 3      | -        | -    | 37               |
| Waddensea       | 4      | -        | -    | 91               |
| Total           | 1/4    | -        | -    | 347              |

## NORWAY

(T.Jakobsen & O.M.Smedstad)

### Sub-areas I and II.

Routine research surveys were carried out as in previous years, accounting for most of the activity at sea. The experiment to use commercial trawlers for a bottom trawl survey in the Barents Sea/Svalbard area was continued with five trawlers for two weeks. Stomach sampling for multispecies research was carried out during routine surveys throughout most of the year. Investigations on cod and haddock spawning (eggs, larvae) were combined with other surveys.

The abundance of cod, haddock and redfish in the Barents Sea was investigated during a combined acoustic and stratified bottom trawl survey in February-March. The distribution and abundance of spawning cod was investigated by acoustic surveys in the Lofoten area in February-March. Combined with shrimp investigations, the distribution of young cod and haddock was studied in the central Barents Sea in May-June. The distribution of shrimp, cod, haddock, redfish, and Greenland halibut was investigated in the Svalbard area in September. Part of this survey was included in a combined O-group/multispecies survey carried out together with U.S.S.R. vessels during the same period, when the distribution of cod, haddock, redfish and pelagic species was investigated in the Barents Sea. Stomach samples from cod and haddock were collected during all the routine surveys for cod/haddock in the Barents Sea and at Svalbard, and in addition during shrimp and pelagic fish surveys.

In November, a bottom trawl survey with five commercial trawlers was carried out during two weeks in the Barents Sea under the supervision of the Institute of Marine Research. The intention is to repeat the survey for at least two more years. In addition to the abundance estimation, emphasis was put on comparisons between commercial trawls and the standard sampling trawl used by research vessels.

The post-larvae were studied in July. In August-September the International O-group survey was carried out in the Barents Sea and adjacent waters in cooperation with U.S.S.R. vessels.

An O-group (post-larvae) survey for saithe was carried out from 62°N to the Lofoten Islands in May, and an acoustic survey for saithe and redfish was carried out on the coastal banks from North Cape to 62°N in October.

The sampling programme for commercial catches of cod, haddock, saithe, redfish and Greenland halibut was continued.

### Sub-area IV

Norway participated in the quarterly International Bottom Trawl Surveys in three quarters. The International Young Fish Survey was carried out in January-February for four weeks. In June, R/V "Johan Hjort" carried out a survey in the northeastern part of the North Sea for two weeks. In October-November, the distribution and abundance of demersal and pelagic fish were investigated in the northern North Sea during a combined acoustic and bottom trawl survey. The annual acoustic survey for saithe in the North Sea was carried out in February. Stomach samples were collected during all surveys. In May, the distribution of saithe post-larvae was studied. The sampling of commercial catches of saithe, sandeel and Norway pout was continued.

SAMPLING DATA FOR : **COD** **1991** **NORWAY**

| Area | Season | Market |               |      |           | Research vessels |               |      |           |
|------|--------|--------|---------------|------|-----------|------------------|---------------|------|-----------|
|      |        | Samp   | Measured Fish | Samp | Aged Fish | Samp             | Measured Fish | Samp | Aged Fish |
| I    | 1      | 18     | 1 507         | 10   | 1 050     | 330              | 30 772        | 72   | 2 651     |
|      | 2      | -      | -             | 5    | 589       | 125              | 16 901        | 22   | 885       |
|      | 3      | -      | -             | 8    | 583       | 242              | 10 584        | 20   | 797       |
|      | 4      | -      | -             | 8    | 605       | 450              | 48432         | 27   | 1 713     |
| IIa  | 1      | 33     | 4 385         | 165  | 14 409    | 187              | 9 383         | 66   | 2 665     |
|      | 2      | 6      | 1 1593        | 33   | 3 453     | 125              | 13 722        | 20   | 899       |
|      | 3      | -      | -             | 31   | 1 274     | 116              | 4 147         | 6    | 165       |
|      | 4      | -      | -             | 27   | 3 032     | 248              | 21 043        | 13   | 845       |
| IIb  | 1      | -      | -             | -    | -         | 65               | 6 891         | 5    | 278       |
|      | 2      | -      | -             | -    | -         | 72               | 3 976         | 4    | 221       |
|      | 3      | -      | -             | -    | -         | 363              | 24 017        | 33   | 1 154     |
|      | 4      | -      | -             | -    | -         | 309              | 48 960        | 22   | 1 393     |
| III  | 3      | -      | -             | -    | -         | 10               | 30            | -    | -         |
| IVa  | 1      | -      | -             | 7    | 415       | 56               | 454           | 26   | 348       |
|      | 2      | -      | -             | -    | -         | 21               | 169           | 19   | 143       |
|      | 4      | -      | -             | -    | -         | 44               | 499           | 21   | 174       |
| IVb  | 1      | -      | -             | -    | -         | 16               | 246           | 11   | 126       |
|      | 2      | -      | -             | -    | -         | 7                | 193           | 5    | 80        |

SAMPLING DATA FOR : **HADDOCK** **1991** **NORWAY**

| Area | Season | Market |               |      |           | Research vessels |               |      |           |
|------|--------|--------|---------------|------|-----------|------------------|---------------|------|-----------|
|      |        | Samp   | Measured Fish | Samp | Aged Fish | Samp             | Measured Fish | Samp | Aged Fish |
| I    | 1      | 6      | 55            | 5    | 242       | 304              | 23 183        | 43   | 1 052     |
|      | 2      | -      | -             | 3    | 244       | 138              | 7 182         | 8    | 145       |
|      | 3      | -      | -             | 14   | 1 272     | 150              | 4 117         | 9    | 175       |
|      | 4      | -      | -             | 5    | 387       | 302              | 18 494        | 17   | 910       |
| IIa  | 1      | 9      | 400           | 43   | 3 208     | 180              | 11 535        | 25   | 849       |
|      | 2      | 3      | 352           | 15   | 1 329     | 148              | 4 515         | 8    | 201       |
|      | 3      | -      | -             | 24   | 2 076     | 113              | 4 950         | -    | -         |
|      | 4      | -      | -             | 19   | 1 425     | 208              | 7 001         | 13   | 389       |
| IIb  | 1      | -      | -             | -    | -         | 41               | 2 808         | 3    | 51        |
|      | 2      | -      | -             | -    | -         | 55               | 908           | -    | -         |
|      | 3      | -      | -             | -    | -         | 253              | 12 733        | 9    | 184       |
|      | 4      | -      | -             | -    | -         | 127              | 4 049         | -    | -         |
| III  | 4      | -      | -             | -    | -         | 32               | 1 600         | -    | -         |
| IVa  | 1      | -      | -             | -    | -         | 70               | 5 031         | 16   | 410       |
|      | 2      | -      | -             | -    | -         | 33               | 2 296         | 8    | 266       |
|      | 4      | -      | -             | -    | -         | 80               | 6 422         | 7    | 108       |
| IVb  | 1      | -      | -             | -    | -         | 14               | 816           | 6    | 133       |
|      | 2      | -      | -             | -    | -         | 8                | 496           | 6    | 171       |

SAMPLING DATA FOR : SAITHE 1991 NORWAY

| Area | Season | Market |               |      |           | Research vessels |               |      |           |
|------|--------|--------|---------------|------|-----------|------------------|---------------|------|-----------|
|      |        | Samp   | Measured Fish | Samp | Aged Fish | Samp             | Measured Fish | Samp | Aged Fish |
| I    | 1      | -      | -             | -    | -         | 25               | 403           | -    | -         |
|      | 2      | -      | -             | 1    | 101       | 28               | 793           | -    | -         |
|      | 3      | 1      | 237           | 14   | 1 229     | 14               | 19            | -    | -         |
|      | 4      | -      | -             | 5    | 355       | 64               | 4 253         | 3    | 111       |
| IIa  | 1      | 5      | 806           | 21   | 1 151     | 67               | 2 141         | 7    | 296       |
|      | 2      | 7      | 1 802         | 38   | 3 432     | 179              | 6 418         | 1    | 50        |
|      | 3      | 1      | 173           | 50   | 3 847     | 13               | 23            | -    | -         |
|      | 4      | 1      | 123           | 32   | 2 663     | 115              | 4 726         | 25   | 744       |
| IIb  | 1      | -      | -             | -    | -         | 2                | 2             | -    | -         |
|      | 3      | -      | -             | -    | -         | 9                | 9             | -    | -         |
|      | 4      | -      | -             | -    | -         | 10               | 10            | -    | -         |
| IVa  | 1      | -      | -             | -    | -         | 20               | 553           | 33   | 7-1       |
|      | 2      | -      | -             | -    | -         | 53               | 1 213         | -    | -         |
|      | 4      | -      | -             | -    | -         | 30               | 939           | 20   | 204       |
| IVb  | 1      | -      | -             | -    | -         | 3                | 243           | 1    | 98        |
|      | 2      | -      | -             | -    | -         | 2                | 109           | -    | -         |

SAMPLING DATA FOR : GREENLAND HALIBUT 1991 NORWAY

| Area | Season | Market |               |      |           | Research vessels |               |      |           |
|------|--------|--------|---------------|------|-----------|------------------|---------------|------|-----------|
|      |        | Samp   | Measured Fish | Samp | Aged Fish | Samp             | Measured Fish | Samp | Aged Fish |
| I    | 1      | -      | -             | -    | -         | 68               | 521           | 1    | 34        |
|      | 2      | -      | -             | 3    | 249       | 70               | 1 227         | 3    | 74        |
|      | 3      | -      | -             | 1    | 73        | 28               | 152           | -    | -         |
|      | 4      | -      | -             | 1    | 78        | 186              | 1 821         | 4    | 149       |
| IIa  | 1      | -      | -             | 1    | 105       | 37               | 1 519         | 2    | 39        |
|      | 2      | -      | -             | -    | -         | 37               | 807           | 2    | 43        |
|      | 3      | -      | -             | -    | -         | 24               | 736           | 3    | 48        |
|      | 4      | -      | -             | 1    | 70        | 44               | 551           | 2    | 60        |
| IIb  | 1      | -      | -             | -    | -         | 34               | 1 385         | 5    | 145       |
|      | 2      | -      | -             | -    | -         | 49               | 3 554         | 8    | 191       |
|      | 3      | -      | -             | -    | -         | 114              | 4 874         | 21   | 700       |
|      | 4      | -      | -             | -    | -         | 154              | 4 414         | 4    | 272       |

SAMPLING DATA FOR : TUSK 1991 NORWAY

| Area | Season | Market |               |      |           | Research vessels |               |      |           |
|------|--------|--------|---------------|------|-----------|------------------|---------------|------|-----------|
|      |        | Samp   | Measured Fish | Samp | Aged Fish | Samp             | Measured Fish | Samp | Aged Fish |
| I    | 1      | -      | -             | -    | -         | 4                | 4             | -    | -         |
|      | 2      | -      | -             | -    | -         | 3                | 7             | -    | -         |
|      | 4      | -      | -             | -    | -         | 10               | 10            | -    | -         |
| IIa  | 1      | -      | -             | -    | -         | 47               | 209           | -    | -         |
|      | 2      | -      | -             | -    | -         | 23               | 91            | -    | -         |
|      | 3      | -      | -             | -    | -         | 10               | 47            | -    | -         |
|      | 4      | -      | -             | -    | -         | 35               | 125           | -    | -         |
| IIb  | 1      | -      | -             | -    | -         | 2                | 5             | -    | -         |
|      | 3      | -      | -             | -    | -         | 6                | 7             | -    | -         |
| IVa  | 1      | -      | -             | -    | -         | 8                | 21            | -    | -         |
|      | 2      | -      | -             | -    | -         | 4                | 4             | -    | -         |
|      | 4      | -      | -             | -    | -         | 7                | 11            | -    | -         |

SAMPLING DATA FOR : **WHITING** **1991** **NORWAY**

| Area | Season | Market |               |      |           | Research vessels |               |      |           |
|------|--------|--------|---------------|------|-----------|------------------|---------------|------|-----------|
|      |        | Samp   | Measured Fish | Samp | Aged Fish | Samp             | Measured Fish | Samp | Aged Fish |
| I    | 1      | -      | -             | -    | -         | 2                | 8             | -    | -         |
|      | 4      | -      | -             | -    | -         | 1                | 1             | -    | -         |
| IIa  | 1      | -      | -             | -    | -         | 6                | 16            | -    | -         |
|      | 2      | -      | -             | -    | -         | 3                | 7             | -    | -         |
|      | 3      | -      | -             | -    | -         | 7                | 25            | -    | -         |
|      | 4      | -      | -             | -    | -         | 26               | 535           | -    | -         |
| IVa  | 1      | -      | -             | -    | -         | 69               | 4 305         | 13   | 327       |
|      | 2      | -      | -             | -    | -         | 28               | 1 681         | 9    | 278       |
|      | 4      | -      | -             | -    | -         | 56               | 4 392         | 5    | 90        |
| IVb  | 1      | -      | -             | -    | -         | 17               | 1 468         | 9    | 138       |
|      | 2      | -      | -             | -    | -         | 3                | 249           | 3    | 53        |

SAMPLING DATA FOR : **NORWAY POUT** **1991** **NORWAY**

| Area | Season | Market |               |      |           | Research vessels |               |      |           |
|------|--------|--------|---------------|------|-----------|------------------|---------------|------|-----------|
|      |        | Samp   | Measured Fish | Samp | Aged Fish | Samp             | Measured Fish | Samp | Aged Fish |
| I    | 1      | -      | -             | -    | -         | 37               | 830           | -    | -         |
|      | 2      | -      | -             | -    | -         | 3                | 143           | -    | -         |
|      | 3      | -      | -             | -    | -         | 7                | 221           | -    | -         |
|      | 4      | -      | -             | -    | -         | 14               | 663           | -    | -         |
| IIa  | 1      | -      | -             | -    | -         | 70               | 2 942         | -    | -         |
|      | 2      | -      | -             | -    | -         | 40               | 1 198         | -    | -         |
|      | 3      | -      | -             | -    | -         | 12               | 489           | -    | -         |
|      | 4      | -      | -             | -    | -         | 55               | 2 351         | -    | -         |
| IIb  | 1      | -      | -             | -    | -         | 2                | 60            | -    | -         |
|      | 3      | -      | -             | -    | -         | 4                | 191           | -    | -         |
| III  | 4      | -      | -             | -    | -         | 20               | 1 200         | -    | -         |
| IVa  | 1      | -      | -             | 2    | 100       | 66               | 5 397         | 6    | 186       |
|      | 2      | -      | -             | 5    | 300       | 56               | 2 374         | 6    | 185       |
|      | 3      | -      | -             | 4    | 125       | -                | -             | -    | -         |
|      | 4      | -      | -             | 4    | 160       | 51               | 4 149         | -    | -         |
| IVb  | 1      | -      | -             | -    | -         | 14               | 1 104         | 3    | 27        |
|      | 2      | -      | -             | -    | -         | 5                | 201           | 1    | 20        |
| Vb   | 2      | -      | -             | -    | -         | 1                | 120           | -    | -         |

SAMPLING DATA FOR : **BLUE WHITING** **1991** **NORWAY**

| Area | Season | Market |               |      |           | Research vessels |               |      |           |
|------|--------|--------|---------------|------|-----------|------------------|---------------|------|-----------|
|      |        | Samp   | Measured Fish | Samp | Aged Fish | Samp             | Measured Fish | Samp | Aged Fish |
| I    | 1      | -      | -             | -    | -         | 26               | 255           | -    | -         |
|      | 2      | -      | -             | -    | -         | 12               | 358           | -    | -         |
|      | 3      | -      | -             | -    | -         | 8                | 504           | -    | -         |
|      | 4      | -      | -             | -    | -         | 6                | 46            | -    | -         |
| IIa  | 1      | 1      | 100           | 1    | 50        | 76               | 3 657         | 1    | 88        |
|      | 2      | -      | -             | -    | -         | 58               | 3 336         | 17   | 1 009     |
|      | 3      | -      | -             | -    | -         | 40               | 2 421         | -    | -         |
|      | 4      | -      | -             | -    | -         | 59               | 1 714         | 1    | 100       |
| IIb  | 1      | -      | -             | -    | -         | 8                | 144           | -    | -         |
|      | 2      | -      | -             | -    | -         | 5                | 28            | -    | -         |
|      | 3      | -      | -             | -    | -         | 38               | 1 685         | -    | -         |
|      | 4      | -      | -             | -    | -         | 2                | 82            | -    | -         |
| III  | 4      | -      | -             | -    | -         | 65               | 3 250         | 2    | 100       |
| IVa  | 1      | 1      | 100           | 1    | 50        | 2                | 151           | -    | -         |
|      | 2      | 6      | 610           | 4    | 180-      | 3                | 127           | 1    | 100       |
|      | 4      | 5      | 243           | 5    | 241       | -                | -             | -    | -         |
| IVb  | 1      | -      | -             | -    | -         | 1                | 1             | -    | -         |
| Vb   | 1      | -      | -             | -    | -         | 17               | 1 855         | 17   | 1 243     |
|      | 2      | -      | -             | -    | -         | 12               | 1 819         | 12   | 840       |

SAMPLING DATA FOR : **LONG ROUGH DAB** **1991** **NORWAY**

| Area | Season | Market |               |      |           | Research vessels |               |      |           |
|------|--------|--------|---------------|------|-----------|------------------|---------------|------|-----------|
|      |        | Samp   | Measured Fish | Samp | Aged Fish | Samp             | Measured Fish | Samp | Aged Fish |
| I    | 1      | -      | -             | -    | -         | 155              | 8 699         | -    | -         |
|      | 2      | -      | -             | -    | -         | 75               | 2 923         | -    | -         |
|      | 3      | -      | -             | -    | -         | 110              | 3 907         | -    | -         |
|      | 4      | -      | -             | -    | -         | 52               | 3 310         | -    | -         |
| IIa  | 1      | -      | -             | -    | -         | 89               | 3 169         | -    | -         |
|      | 2      | -      | -             | -    | -         | 49               | 1 637         | -    | -         |
|      | 3      | -      | -             | -    | -         | 38               | 1 264         | -    | -         |
|      | 4      | -      | -             | -    | -         | 62               | 872           | -    | -         |
| IIb  | 1      | -      | -             | -    | -         | 31               | 2 062         | -    | -         |
|      | 2      | -      | -             | -    | -         | 36               | 1 825         | -    | -         |
|      | 3      | -      | -             | -    | -         | 221              | 11 895        | -    | -         |
|      | 4      | -      | -             | -    | -         | 88               | 2 658         | -    | -         |
| IVa  | 1      | -      | -             | -    | -         | 70               | 2 249         | -    | -         |
|      | 2      | -      | -             | -    | -         | 20               | 312           | -    | -         |
|      | 4      | -      | -             | -    | -         | 20               | 563           | -    | -         |
| IVB  | 1      | -      | -             | -    | -         | 14               | 317           | -    | -         |
|      | 2      | -      | -             | -    | -         | 2                | 12            | -    | -         |

SAMPLING DATA FOR : **LING** **1991** **NORWAY**

| Area | Season | Market |               |      |           | Research vessels |               |      |           |
|------|--------|--------|---------------|------|-----------|------------------|---------------|------|-----------|
|      |        | Samp   | Measured Fish | Samp | Aged Fish | Samp             | Measured Fish | Samp | Aged Fish |
| IIa  | 1      | -      | -             | -    | -         | 18               | 30            | -    | -         |
|      | 2      | -      | -             | -    | -         | 12               | 17            | -    | -         |
|      | 4      | -      | -             | -    | -         | 11               | 31            | -    | -         |
| IIb  | 3      | -      | -             | -    | -         | 2                | 107           | -    | -         |
| IVa  | 1      | -      | -             | -    | -         | 13               | 25            | -    | -         |
|      | 2      | -      | -             | -    | -         | 7                | 12            | -    | -         |
|      | 4      | -      | -             | -    | -         | 21               | 102           | -    | -         |
| IVb  | 2      | -      | -             | -    | -         | 1                | 4             | -    | -         |

SAMPLING DATA FOR : SILVER SMELT 1991 NORWAY

| Area | Season | Market |               |      |           | Research vessels |               |      |           |
|------|--------|--------|---------------|------|-----------|------------------|---------------|------|-----------|
|      |        | Samp   | Measured Fish | Samp | Aged Fish | Samp             | Measured Fish | Samp | Aged Fish |
| I    | 1      | -      | -             | -    | -         | 4                | 11            | -    | -         |
|      | 2      | -      | -             | -    | -         | 1                | 1             | -    | -         |
|      | 3      | -      | -             | -    | -         | 1                | 1             | -    | -         |
|      | 4      | -      | -             | -    | -         | 3                | 16            | -    | -         |
| IIa  | 1      | 2      | 155           | 1    | 98        | 22               | 553           | -    | -         |
|      | 2      | 2      | 200           | 2    | 198       | 31               | 1 648         | 20   | 971       |
|      | 3      | 2      | 297           | 2    | 199       | 10               | 250           | -    | -         |
|      | 4      | -      | -             | -    | -         | 39               | 792           | -    | -         |
| IIb  | 1      | -      | -             | -    | -         | 1                | 4             | -    | -         |
|      | 3      | -      | -             | -    | -         | 2                | 4             | -    | -         |
| III  | 4      | -      | -             | -    | -         | 12               | 480           | -    | -         |
| IVa  | 1      | -      | -             | -    | -         | 3                | 10            | -    | -         |
|      | 2      | 5      | 63            | -    | -         | 18               | 743           | 2    | 103       |
|      | 3      | 1      | 1             | -    | -         | -                | -             | -    | -         |
|      | 4      | 1      | 3             | -    | -         | -                | -             | -    | -         |
| Vb   | 1      | -      | -             | -    | -         | 6                | 408           | 6    | 389       |
|      | 2      | -      | -             | -    | -         | 8                | 412           | 8    | 391       |

SAMPLING DATA FOR : SANDEEL 1991 NORWAY

| Area | Season | Market |               |      |           | Research vessels |               |      |           |
|------|--------|--------|---------------|------|-----------|------------------|---------------|------|-----------|
|      |        | Samp   | Measured Fish | Samp | Aged Fish | Samp             | Measured Fish | Samp | Aged Fish |
| I    | 3      | -      | -             | -    | -         | 57               | 811           | -    | -         |
|      | 4      | -      | -             | -    | -         | 2                | 6             | -    | -         |
| IIa  | 2      | -      | -             | -    | -         | 49               | 218           | -    | -         |
|      | 3      | -      | -             | -    | -         | 14               | 56            | -    | -         |
|      | 4      | -      | -             | -    | -         | 1                | 1             | -    | -         |
| IIb  | 3      | -      | -             | -    | -         | 9                | 22            | -    | -         |
| IVa  | 1      | -      | -             | -    | -         | 1                | 1             | -    | -         |
|      | 2      | -      | -             | -    | -         | 18               | 509           | -    | -         |
| IVb  | 2      | -      | -             | -    | -         | 2                | 117           | -    | -         |

SAMPLING DATA FOR : REDFISH 1991 NORWAY

| Area | Season | Market |               |      |           | Research vessels |               |      |           |
|------|--------|--------|---------------|------|-----------|------------------|---------------|------|-----------|
|      |        | Samp   | Measured Fish | Samp | Aged Fish | Samp             | Measured Fish | Samp | Aged Fish |
| I    | 1      | 6      | 769           | 1    | 54        | 310              | 14 092        | 9    | 374       |
|      | 2      | -      | -             | -    | -         | 233              | 9 896         | -    | -         |
|      | 3      | -      | -             | -    | -         | 92               | 3 390         | 5    | 175       |
|      | 4      | 1      | 103           | -    | -         | 183              | 5 195         | 1    | 50        |
| IIa  | 1      | 8      | 714           | 4    | 163       | 289              | 15 600        | 13   | 384       |
|      | 2      | 5      | 1 260         | 8    | 387       | 253              | 10 905        | 9    | 209       |
|      | 3      | 5      | 752           | 10   | 498       | 142              | 7 666         | 1    | 53        |
|      | 4      | 2      | 464           | 3    | 148       | 258              | 5 065         | 9    | 414       |
| IIb  | 1      | -      | -             | -    | -         | 74               | 5 040         | 5    | 145       |
|      | 2      | -      | -             | -    | -         | 135              | 6 045         | -    | -         |
|      | 3      | -      | -             | -    | -         | 401              | 23 315        | 1    | 43        |
|      | 4      | -      | -             | -    | -         | 120              | 1 761         | -    | -         |
| IVa  | 1      | -      | -             | 1    | 50        | 15               | 71            | -    | -         |
|      | 2      | -      | -             | -    | -         | 10               | 179           | -    | -         |

POLAND

(J.Janusz and M.Liwoch)

No biological samples were collected in the northeast Atlantic area by Poland.



## PORTUGAL

(F.Cardador)

During 1991 the National Institute of Fisheries Research (INIP, Lisbon) has continued its National Sampling Programme at the main fishing ports. The main objective of this sampling programme is to provide length frequency distributions of the landings for the most important commercial species.

INIP has carried out two groundfish surveys on board of the R/V "NORUEGA". These surveys covered the entire Portuguese coast in depths ranging from 20 to 750 m. The main goal of these surveys was to provide abundance indices and to study the distribution pattern of the most important species. The second aim comprised the estimation of the abundance and distribution of eggs and larvae of the main species associated with basic environmental parameters.

The surveys took place in summer (July) and in autumn (October/November). The methodology adopted is a fixed station scheme. Each survey had a duration of 30 fishing days, using a bottom trawl net (Norwegian Campell Trawl) with 20 mm cod-end mesh size. Trawl stations were fished during day light, with a mean tow duration of 60 minutes and a mean trawl speed of 3.5 knots:

The following tables present the sampling data collected by INIP for hake (*Merluccius merluccius*), black scabbard fish (*Aphanopus carbo*), some species of seabreams (*Boops boops*, *Pagellus acarne* and *Spondyllosoma cantharus*), monkfish (*Lophius budegassa* and *L. piscatorius*), and megrim (*Lepidorhombus boscii* and *L. whiffiagonis*).

### SAMPLING DATA FOR : HAKE 1991 PORTUGAL

| Area  | Season | Nr of samples |        | Nr of fish |      |
|-------|--------|---------------|--------|------------|------|
|       |        | Res. vessels  | Market | Measured   | Aged |
| IXa   | 1      | 33            | 253    | 37 675     |      |
|       | 2      | 22            | 261    | 28 876     |      |
|       | 3      | 141           | 167    | 30 109     |      |
|       | 4      | 134           | 206    | 38 618     |      |
| Total |        | 330           | 887    | 135 278    |      |

SAMPLING DATA FOR : **BLACK SCABBARD FISH 1991** PORTUGAL

|       |        | Nr of samples |        | Nr of fish |      |
|-------|--------|---------------|--------|------------|------|
| Area  | Season | Res. vessels  | Market | Measured   | Aged |
| IXa   | 1      | -             | 29     | 3 211      |      |
|       | 2      | -             | 36     | 3 740      |      |
|       | 3      | -             | 39     | 3 191      |      |
|       | 4      | -             | 21     | 1 672      |      |
| Total |        | -             | 125    | 11 814     |      |

SAMPLING DATA FOR : *Boops boops* 1991 PORTUGAL

|       |        | Nr of samples |        | Nr of fish |      |
|-------|--------|---------------|--------|------------|------|
| Area  | Season | Res. vessels  | Market | Measured   | Aged |
| IXa   | 1      | -             | 44     | 2 061      |      |
|       | 2      | -             | 42     | 2 007      |      |
|       | 3      | 32            | 29     | 2 544      |      |
|       | 4      | 21            | 28     | 2 747      |      |
| Total |        | 53            | 143    | 9 359      |      |

SAMPLING DATA FOR : *Pagellus acarne* 1991 PORTUGAL

|       |        | Nr of samples |        | Nr of fish |      |
|-------|--------|---------------|--------|------------|------|
| Area  | Season | Res. vessels  | Market | Measured   | Aged |
| IX    | 1      | -             | 39     | 2 648      |      |
|       | 2      | -             | 44     | 3 330      |      |
|       | 3      | 15            | 33     | 2 410      |      |
|       | 4      | 18            | 37     | 3 771      |      |
| Total |        | 33            | 153    | 12 159     |      |

SAMPLING DATA FOR : *Spondyliosoma cantharus* 1991 PORTUGAL

|       |        | Nr of samples |        | Nr of fish |      |
|-------|--------|---------------|--------|------------|------|
| Area  | Season | Res. vessels  | Market | Measured   | Aged |
| IX    | 1      | -             | 19     | 383        |      |
|       | 2      | -             | 27     | 631        |      |
|       | 3      | 18            | 20     | 488        |      |
|       | 4      | 8             | 18     | 429        |      |
| Total |        | 26            | 84     | 1 931      |      |

SAMPLING DATA FOR : **MONKFISH\*** 1991 PORTUGAL

|       |        | Nr of samples |        | Nr of fish |      |
|-------|--------|---------------|--------|------------|------|
| Area  | Season | Res. vessels  | Market | Measured   | Aged |
| IXa   | 1      | -             | 92     | 1 411      |      |
|       | 2      | -             | 91     | 996        |      |
|       | 3      | 11            | 47     | 469        |      |
|       | 4      | 7             | 93     | 2 149      |      |
| Total |        | 18            | 323    | 5 025      |      |

\* *Lophius budegassa* & *Lophius piscatorius*



## RUSSIA

(V.N.Schleinik)

In 1991, as previously, trawl, trawl-acoustic and ichthyoplankton surveys have been conducted to estimate abundance and biomass of the main commercial fish species, and the potential recruitment to demersal commercial fish stocks in the Barents Sea and adjacent waters.

Investigations were continued to determine the influence of abiotic and biotic environmental factors on fish distribution and behaviour. Population structure, dynamics of the biological characteristics, trophic interrelations between stocks and migration patterns of major commercial fish species were studied.

The tables present the information collected during 1991

| SAMPLING DATA FOR : COD |        | 1991       |                        | RUSSIA |
|-------------------------|--------|------------|------------------------|--------|
|                         |        | Nr of fish |                        |        |
| Area                    | Season | Measured   | Feeding investigations | Aged   |
| I                       | 1      | 3 096      | 325                    | -      |
|                         | 2      | 11 166     | 1 008                  | 722    |
|                         | 3      | 16 778     | 1 985                  | 501    |
|                         | 4      | 14 721     | 2 630                  | 1 717  |
| IIb                     | 2      | 9 332      | 1 207                  | 608    |
|                         | 3      | 32 229     | 3 261                  | 1 603  |
|                         | 4      | 10 376     | 1 774                  | 1 141  |
| IIa                     | 1      | 14 752     | 1 250                  | -      |
|                         | 3      | 11 458     | 1 021                  | 963    |
|                         | 4      | 3 518      | 713                    | 190    |
| Total                   | 1/4    | 127 426    | 15 174                 | 7 445  |

| SAMPLING DATA FOR : HADDOCK |        | 1991       |                        | RUSSIA |
|-----------------------------|--------|------------|------------------------|--------|
|                             |        | Nr of fish |                        |        |
| Area                        | Season | Measured   | Feeding investigations | Aged   |
| I                           | 1      | 905        | 175                    | -      |
|                             | 2      | 4 135      | 136                    | 136    |
|                             | 3      | 17 683     | 1 650                  | 200    |
|                             | 4      | 25 772     | 2 407                  | 1 999  |
| IIb                         | 2      | 1 335      | 202                    | 268    |
|                             | 3      | 400        | 109                    | 101    |
|                             | 4      | 7 498      | 224                    | 543    |
| IIa                         | 1      | 1 823      | 350                    | -      |
|                             | 2      | 1 434      | 56                     | 222    |
|                             | 4      | 2 570      | 754                    | 359    |
| Total                       | 1/4    | 63 555     | 6 603                  | 3 828  |

| SAMPLING DATA FOR : REDFISH |        | 1991       |                        | RUSSIA |
|-----------------------------|--------|------------|------------------------|--------|
|                             |        | Nr of fish |                        |        |
| Area                        | Season | Measured   | Feeding investigations | Aged   |
| I                           | 2      | 2 995      | 100                    | 100    |
|                             | 3      | 11         | -                      | -      |
|                             | 4      | 8 036      | 151                    | 151    |
| IIb                         | 2      | 18 166     | 2 340                  | 360    |
|                             | 3      | 333        | -                      | -      |
|                             | 4      | 2 357      | 369                    | 326    |
| IIa                         | 1      | 3 513      | 629                    | 300    |
|                             | 2      | 4 691      | 475                    | 430    |
|                             | 4      | 4 683      | 386                    | 603    |
| Total                       | 1/4    | 44 785     | 4 450                  | 2 270  |

| SAMPLING DATA FOR : GREENLAND HALIBUT |        | 1991       |                        | RUSSIA |
|---------------------------------------|--------|------------|------------------------|--------|
|                                       |        | Nr of fish |                        |        |
| Area                                  | Season | Measured   | Feeding investigations | Aged   |
| I                                     | 2      | 134        | -                      | 109    |
|                                       | 3      | 31         | -                      | -      |
|                                       | 4      | 819        | 25                     | 2      |
| IIb                                   | 3      | 689        | 280                    | 336    |
|                                       | 4      | 3 736      | 809                    | 609    |
| IIa                                   | 4      | 227        | 18                     | 19     |
| Total                                 | 1/4    | 5 636      | 1 132                  | 1 075  |

| SAMPLING DATA FOR : SAITHE |        | 1991       |                        | RUSSIA |
|----------------------------|--------|------------|------------------------|--------|
|                            |        | Nr of fish |                        |        |
| Area                       | Season | Measured   | Feeding investigations | Aged   |
| I                          | 2      | 302        | 25                     | -      |
|                            | 3      | 1          | -                      | -      |
|                            | 4      | 6          | -                      | -      |
| IIb                        | 3      | 1          | -                      | -      |
|                            | 4      | 4          | -                      | -      |
| IIa                        | 1      | 5          | -                      | -      |
|                            | 2      | 229        | 55                     | 19     |
|                            | 4      | 10         | -                      | -      |
| Total                      | 1/4    | 558        | 80                     | 19     |

SAMPLING DATA FOR : **WOLFFISHES** **1991** **RUSSIA**

|       |        | Nr of fish |                        |      |
|-------|--------|------------|------------------------|------|
| Area  | Season | Measured   | Feeding investigations | Aged |
| I     | 2      | 6          | -                      | -    |
|       | 3      | 70         | -                      | -    |
|       | 4      | 562        | 13                     | 3    |
| IIb   | 3      | 2 054      | 110                    | 110  |
|       | 4      | 1 631      | 236                    | 11   |
| IIa   | 4      | 68         | 1                      | 1    |
| Total | 1/4    | 4 391      | 360                    | 125  |

SAMPLING DATA FOR : **LONG ROUGH DAB** **1991** **RUSSIA**

|       |        | Nr of fish |                        |      |
|-------|--------|------------|------------------------|------|
| Area  | Season | Measured   | Feeding investigations | Aged |
| I     | 3      | 175        | 25                     | -    |
|       | 4      | 18 321     | 271                    | 221  |
| IIb   | 2      | 192        | 137                    | 192  |
|       | 3      | 2 049      | 349                    | 264  |
|       | 4      | 9 334      | 50                     | 100  |
| IIa   | 1      | 10         | -                      | -    |
|       | 4      | 1 584      | 28                     | 12   |
| Total | 1/4    | 31 665     | 860                    | 789  |

SAMPLING DATA FOR : **PLAICE** **1991** **RUSSIA**

|       |        | Nr of fish |                        |      |
|-------|--------|------------|------------------------|------|
| Area  | Season | Measured   | Feeding investigations | Aged |
| I     | 3      | 234        | 115                    | 284  |
|       | 4      | 1 126      | 382                    | 382  |
| Total | 1/4    | 1 360      | 497                    | 666  |

## SPAIN

(P.Pereda)

A groundfish survey has been carried out on board of R/V "CORNIDE DE SAAVEDRA" in September and October along the continental shelf of Divisions VIIIc and IXa North to estimate recruitment indices, abundance indices and spatial distribution patterns of the main demersal species. In addition, stomach samples of species belonging to the demersal community were collected.

Selectivity experiments have been conducted on board of a commercial vessel in Division VIIIc with the aim of estimating differences in size composition of the trawl catches using covered 40, 65 and 80 mm diamond and square mesh codends

The market sampling programme was continued in 1991. The number of fish sampled in Sub-Areas VI and VII and in Divisions VIIIa,b,c and IXa are given in the tables below.

SAMPLING DATA FOR : **HAKE** **1991** **SPAIN**

| Area         | Season | Nr of samples |        | Nr of fish |      |
|--------------|--------|---------------|--------|------------|------|
|              |        | Res. vessels  | Market | Measured   | Aged |
| VI           | 1      |               | 2      | 164        |      |
|              | 2      |               | 1      | 71         |      |
|              | 3      |               | 1      | 108        |      |
|              | 4      |               | 12     | 301        |      |
| VII          | 1      |               | 29     | 7 093      |      |
|              | 2      |               | 32     | 7 759      |      |
|              | 3      |               | 34     | 7 112      |      |
|              | 4      |               | 27     | 5 771      |      |
| VIIIa,b      | 1      |               | 56     | 8 071      |      |
|              | 2      |               | 42     | 8 323      |      |
|              | 3      |               | 62     | 6 779      |      |
|              | 4      |               | 71     | 10 123     |      |
| VIIIc        | 1      |               | 121    | 8 167      |      |
|              | 2      | 60            | 92     | 6 564      |      |
|              | 3      |               | 79     | 7 508      |      |
|              | 4      | 72            | 55     | 15 976     |      |
| IXa          | 1      |               | 24     | 2 026      |      |
|              | 2      |               | 38     | 3 026      |      |
|              | 3      |               | 38     | 11 080     |      |
|              | 4      | 20            | 37     | 10 049     |      |
| <b>Total</b> |        | 152           | 853    | 126 071    |      |

SAMPLING DATA FOR : *L. whiffiagonis* 1991 SPAIN

| Area         | Season | Nr of samples |        | Nr of fish |      |
|--------------|--------|---------------|--------|------------|------|
|              |        | Res. vessels  | Market | Measured   | Aged |
| VI           | 1      |               | 2      | 126        |      |
|              | 3      |               | 2      | 111        |      |
|              | 4      |               | 3      | 163        |      |
| VII          | 1      |               | 26     | 5 221      | 293  |
|              | 2      |               | 36     | 5 513      | 143  |
|              | 3      |               | 30     | 4 789      | 502  |
|              | 4      |               | 26     | 4 038      | 267  |
| VIIIa,b      | 1      |               | 27     | 2 064      | 66   |
|              | 2      |               | 22     | 1 615      | 72   |
|              | 3      |               | 22     | 1 305      | 46   |
|              | 4      |               | 30     | 2 067      |      |
| VIIIc        | 1      |               | 36     | 1 957      | 156  |
|              | 2      | 60            | 37     | 1 926      | 145  |
|              | 3      |               | 38     | 2 454      | 253  |
|              | 4      | 65            | 35     | 2 228      | 331  |
| IXa          | 1      |               | 14     | 2          | 1    |
|              | 2      |               | 13     | 43         | 40   |
|              | 3      |               | 17     | 63         | 53   |
|              | 4      | 17            | 13     | 47         |      |
| <b>Total</b> |        | 142           | 429    | 35 732     | 2368 |

SAMPLING DATA FOR : *Lepidorhombus boscii* 1991 SPAIN

| Area         | Season | Nr of samples |        | Nr of fish |       |
|--------------|--------|---------------|--------|------------|-------|
|              |        | Res. vessels  | Market | Measured   | Aged  |
| VI           | 1      |               | 2      | 21         |       |
|              | 3      |               | 1      | 27         |       |
|              | 4      |               | 3      | 66         |       |
| VII          | 1      |               | 22     | 929        | 12    |
|              | 2      |               | 30     | 853        | 17    |
|              | 3      |               | 23     | 1 258      | 25    |
|              | 4      |               | 22     | 1 016      | 32    |
| VIIIa,b      | 1      |               | 26     | 149        | 48    |
|              | 2      |               | 21     | 384        | 72    |
|              | 3      |               | 22     | 156        | 58    |
|              | 4      |               | 23     | 293        |       |
| VIIIc        | 1      |               | 17     | 655        | 71    |
|              | 2      |               | 19     | 1 036      | 339   |
|              | 3      |               | 20     | 2 581      | 291   |
|              | 4      | 76            | 18     | 3 462      | 437   |
| IXa          | 1      |               | 32     | 2 716      | 63    |
|              | 2      | 60            | 31     | 2 147      | 177   |
|              | 3      |               | 34     | 3 105      | 393   |
|              | 4      | 20            | 30     | 2 990      |       |
| <b>Total</b> |        | 156           | 396    | 23 844     | 2 035 |



SAMPLING DATA FOR : *Lophius piscatorius* 1991 SPAIN

| Area         | Season | Nr of samples |        | Nr of fish |      |
|--------------|--------|---------------|--------|------------|------|
|              |        | Res. vessels  | Market | Measured   | Aged |
| VI           | 1      |               | 2      | 85         |      |
|              | 3      |               | 2      | 91         |      |
|              | 4      |               | 3      | 135        |      |
| VII          | 1      |               | 20     | 1 329      |      |
|              | 2      |               | 26     | 1 555      |      |
|              | 3      |               | 25     | 1 403      |      |
|              | 4      |               | 16     | 1 106      |      |
| VIIIa,b      | 1      |               | 12     | 581        |      |
|              | 2      |               | 13     | 533        |      |
|              | 3      |               | 13     | 514        |      |
|              | 4      |               | 14     | 457        |      |
| VIIIc        | 1      |               | 43     | 1 318      |      |
|              | 2      | 60            | 52     | 1 434      |      |
|              | 3      |               | 45     | 1 668      |      |
|              | 4      | 25            | 75     | 2 105      |      |
| IXa          | 1      |               | 4      | 73         |      |
|              | 2      |               | 5      | 62         |      |
|              | 3      |               | 5      | 106        |      |
|              | 4      | 3             | 7      | 92         |      |
| <b>Total</b> |        | 88            | 382    | 14 647     |      |

SAMPLING DATA FOR : *Lophius budegassa* 1991 SPAIN

| Area         | Season | Nr of samples |        | Nr of fish |      |
|--------------|--------|---------------|--------|------------|------|
|              |        | Res. vessels  | Market | Measured   | Aged |
| VII          | 1      |               | 20     | 1 781      |      |
|              | 2      |               | 27     | 1 504      |      |
|              | 3      |               | 28     | 1 375      |      |
|              | 4      |               | 20     | 1 425      |      |
| VIIIa,b      | 1      |               | 35     | 1 358      |      |
|              | 2      |               | 33     | 1 462      |      |
|              | 3      |               | 22     | 772        |      |
|              | 4      |               | 55     | 2 015      |      |
| VIIIc        | 1      |               | 32     | 592        |      |
|              | 2      | 60            | 40     | 868        |      |
|              | 3      |               | 43     | 821        |      |
|              | 4      | 31            | 35     | 956        |      |
| IXa          | 1      |               | 6      | 384        |      |
|              | 2      |               | 5      | 336        |      |
|              | 3      |               | 5      | 265        |      |
|              | 4      | 7             | 7      | 756        |      |
| <b>Total</b> |        | 98            | 413    | 18 670     |      |

SAMPLING DATA FOR : *Pagellus bogaraveo* 1991 SPAIN

|         |        | Nr of samples |        | Nr of fish |      |
|---------|--------|---------------|--------|------------|------|
| Area    | Season | Res. vessels  | Market | Measured   | Aged |
| VIIIa,b | 2      |               | 3      | 42         |      |
| VIIIc   | 1      |               | 27     | 324        |      |
|         | 2      |               | 34     | 793        |      |
|         | 3      |               | 10     | 139        |      |
|         | 4      |               | 6      | 64         |      |
| Total   |        |               | 80     | 1 362      |      |

## SWEDEN

(P-O.Larsson)

An IBTS ("Young Fish Survey") was performed in February in Division IIIa and the eastern North Sea. Bottom trawl surveys were also made in Division IIIa in the second and third quarter. In all surveys, stomach samples were collected according to the special programme for 1991. The number of stomachs sampled is shown in the following table.

| Species        |                              | February |     |      |       | Apr  | Sept |
|----------------|------------------------------|----------|-----|------|-------|------|------|
|                |                              | IVa      | IVb | IIIa | Total | IIIa | IIIa |
| Cod            | Gadus morhua                 | 40       | 124 | 1086 | 1250  | 498  | 729  |
| Whiting        | Merlangius merlangus         | 53       | 375 | 968  | 1396  | 304  | 639  |
| Haddock        | Melanogrammus aeglefinus     | 58       | 50  | 302  | 410   | 134  | 111  |
| Saithe         | Pollachius virens            | 1        |     | 64   | 65    |      |      |
| Ling           | Molva molva                  |          |     | 1    | 1     |      |      |
| Hake           | Merluccius merluccius        |          |     | 27   | 27    | 8    | 200  |
| Mackerel       | Scomber scomber              |          | 1   | 3    | 4     | 4    |      |
| Grey gurnard   | Eutrigla gurnardus           | 3        | 22  | 190  | 215   | 15   |      |
| Long rough dab | Hippoglossoides platessoides | 8        | 22  | 54   | 84    |      |      |
| Turbot         | Scophthalmus maximus         |          | 2   | 34   | 36    |      |      |
| Brill          | Scophthalmus rhombus         |          | 2   | 2    | 4     |      |      |
| Halibut        | Hippoglossus hippoglossus    | 1        |     |      |       |      |      |
| Spurdog        | Squalus acanthias            |          |     | 2    | 2     |      |      |
| Starry ray     | Raja radiata                 | 4        | 27  | 56   | 87    |      |      |

Some 500 adult plaice were tagged and released in a fjord at the Skagerrak coast (Division IIIa), mainly to study spawning migrations.

A research project was started on recruitment and year class dimensioning mechanisms in flatfish, mainly plaice and flounder, in Division IIIa. O-group flatfish were sampled from settling onwards in shallow nursery areas.

Numbers of fish sampled for size and age are given in the following tables.

### SAMPLING DATA FOR : COD 1991 SWEDEN

| Area | Season | Nr of samples |        | Nr of fish |      |
|------|--------|---------------|--------|------------|------|
|      |        | Res. vessels  | Market | Measured   | Aged |
| IIIa | 1      | 42            |        | 1 884      | 496  |
|      | 2      | 40            |        | 1 744      | 503  |
|      | 3      | 49            |        | 2 772      | 485  |
| IVa  | 1      | 2             |        | 59         | 32   |
| IVb  | 1      | 11            |        | 185        | 65   |

### SAMPLING DATA FOR : HADDOCK 1991 SWEDEN

| Area | Season | Nr of samples |        | Nr of fish |      |
|------|--------|---------------|--------|------------|------|
|      |        | Res. vessels  | Market | Measured   | Aged |
| IIIa | 1      | 42            |        | 1 539      | 187  |
|      | 2      | 40            |        | 582        | 134  |
|      | 3      | 49            |        | 2 271      | 111  |
| IVa  | 1      | 2             |        | 324        | 49   |
| IVb  | 1      | 11            |        | 429        | 78   |

SAMPLING DATA FOR : **WHITING** **1991** **SWEDEN**

|      |        | Nr of samples |        | Nr of fish |      |
|------|--------|---------------|--------|------------|------|
| Area | Season | Res. vessels  | Market | Measured   | Aged |
| IIIA | 1      | 42            |        | 3 604      | 431  |
|      | 2      | 40            |        | 3 023      | 336  |
|      | 3      | 49            |        | 4 080      | 294  |
| IVa  | 1      | 2             |        | 121        | 22   |
| IVb  | 1      | 11            |        | 1 819      | 135  |

SAMPLING DATA FOR : **NORWAY POUT** **1991** **SWEDEN**

|      |        | Nr of samples |        | Nr of fish |      |
|------|--------|---------------|--------|------------|------|
| Area | Season | Res. vessels  | Market | Measured   | Aged |
| IIIA | 1      | 42            |        | 1 800      | 140  |
|      | 2      | 40            |        | 1 545      |      |
|      | 3      | 49            |        | 2 007      | 41   |
| IVa  | 1      | 2             |        | 149        | 12   |
| IVb  | 1      | 11            |        | 245        | 22   |

SAMPLING DATA FOR : **PLAICE** **1991** **SWEDEN**

|      |        | Nr of samples |        | Nr of fish |      |
|------|--------|---------------|--------|------------|------|
| Area | Season | Res. vessels  | Market | Measured   | Aged |
| IIIA | 1      | 42            |        | 800        | 292  |
|      | 2      | 40            |        | 890        | 340  |
|      | 3      | 49            |        | 770        | 435  |
| IVa  | 1      | 2             |        |            |      |
| IVb  | 1      | 11            |        | 235        | 37   |

## UNITED KINGDOM (England and Wales)

(C.T.Macer)

The market sampling programme was continued in 1991. Details of number of fish measured and otolithed are presented in the tables.

The following research vessel cruises took place in 1990:

| Vessel   | Cruise | Area                       | Period          | Comment   |
|----------|--------|----------------------------|-----------------|---|
| Cirolana | 3      | SW Approaches, W Channel   | 8 Mar-2 Apr     | PHH trawl survey (stomach samples; juvenile fish)     |
| Cirolana | 5      | North Sea                  | 10 May - 7 Jun  | GOV trawl survey (stomach samples)                    |
| Cirolana | 7      | North Sea                  | 9 Aug - 5 Sep   | Granton trawl survey (stomach samples; Macrobenothos) |
| Cirolana | 9      | North Sea                  | 23 Oct - 20 Nov | GOV trawl survey (stomach samples)                    |
| Corystes | 8      | Southern Bight, Channel    | 16 - 31 Aug     | Beam trawl survey                                     |
| Corystes | 9      | Irish Sea, Bristol Channel | 10 Sep - 1 Oct  | Beam trawl survey                                     |

PHH = Portuguese High Headline  
GOV = Grande Ouverture verticale

### SAMPLING DATA FOR : SPURDOG 1991 ENGLAND

| Area  | Season | Market |               | Research vessels |
|-------|--------|--------|---------------|------------------|
|       |        | Samp   | Measured Fish | Aged Fish        |
| IVb   | 1      | 9      | 403           | -                |
|       | 2      | 14     | 755           | -                |
|       | 3      | 10     | 452           | -                |
|       | 4      | 15     | 913           | -                |
| IVc   | 1      | 9      | 383           | -                |
|       | 2      | 5      | 278           | -                |
|       | 4      | 9      | 354           | -                |
| VIa   | 4      | 4      | 328           | -                |
| VIIa  | 1      | 1      | 98            | -                |
|       | 2      | 8      | 431           | -                |
|       | 3      | 9      | 890           | -                |
|       | 4      | 5      | 416           | -                |
| VIIIf | 4      | 1      | 148           | -                |
| VIIIf | 4      | 3      | 292           | -                |

SAMPLING DATA FOR : COD 1991 ENGLAND

| Area | Season | Market |               | Research vessels |           |
|------|--------|--------|---------------|------------------|-----------|
|      |        | Samp   | Measured Fish | Aged Fish        | Aged Fish |
| IIe  | 1      | 6      | 778           | 292              | -         |
| IVa  | 1      | 3      | 741           | 75               | -         |
|      | 2      | 6      | 912           | 139              | 218       |
|      | 3      | 11     | 1 293         | 162              | 253       |
|      | 4      | 2      | 236           | 34               | 242       |
| IVb  | 1      | 135    | 18 152        | 1 245            | -         |
|      | 2      | 131    | 18 956        | 1 320            | 245       |
|      | 3      | 133    | 19 123        | 1 303            | 357       |
|      | 4      | 123    | 17 765        | 1 453            | 141       |
| IVc  | 1      | 28     | 3 006         | 311              | -         |
|      | 2      | 26     | 1 882         | 276              | 28        |
|      | 3      | 20     | 1 540         | 250              | 38        |
|      | 4      | 16     | 837           | 227              | 10        |
| VIa  | 1      | 2      | 343           | 22               | -         |
|      | 2      | 2      | 344           | 50               | -         |
|      | 4      | 1      | 168           | -                | -         |
| VIIa | 1      | 14     | 1 297         | 243              | -         |
|      | 2      | 11     | 1 415         | 168              | -         |
|      | 3      | 15     | 2 448         | 209              | 57        |
|      | 4      | 21     | 2 840         | 239              | 28        |
| VIId | 1      | 4      | 191           | 43               | -         |
|      | 4      | 12     | 284           | 102              | -         |
| VIIe | 1      | 10     | 346           | 112              | -         |
|      | 2      | 9      | 347           | 58               | -         |
|      | 3      | 16     | 795           | 143              | -         |
|      | 4      | 9      | 459           | 146              | 4         |
| VIIf | 1      | 5      | 301           | 37               | 6         |
|      | 2      | 3      | 129           | -                | -         |
|      | 4      | 10     | 660           | 20               | 29        |
| VIIg | 1      | 4      | 305           | -                | 13        |
|      | 4      | 6      | 290           | 66               | 37        |
| VIIh | 1      | -      | -             | -                | 5         |
|      | 2      | -      | -             | -                | 21        |
|      | 3      | 2      | 111           | -                | -         |
|      | 4      | 1      | 45            | 6                | 6         |
| VIIj | 1      | -      | -             | -                | 12        |
|      | 4      | 1      | 43            | 3                | 3         |

SAMPLING DATA FOR : SAITHE 1991 ENGLAND

| Area | Season | Market |               | Research vessels |           |
|------|--------|--------|---------------|------------------|-----------|
|      |        | Samp   | Measured Fish | Aged Fish        | Aged Fish |
| IVa  | 1      | 1      | 109           | -                | 2         |
|      | 2      | 1      | 177           | -                | 99        |
|      | 3      | 4      | 686           | -                | 166       |
|      | 4      | 2      | 305           | -                | 84        |
| IVb  | 1      | 5      | 322           | -                | -         |
|      | 2      | 10     | 535           | -                | 4         |
|      | 3      | 10     | 701           | -                | 7         |
|      | 4      | 7      | 363           | -                | 2         |

SAMPLING DATA FOR : **HADDOCK** **1991** **ENGLAND**

| Area | Season | Market |               |           | Research vessels |
|------|--------|--------|---------------|-----------|------------------|
|      |        | Samp   | Measured Fish | Aged Fish | Aged Fish        |
| IIe  | 1      | 5      | 546           | 118       | -                |
|      | 1      | 1      | 86            | 106       | -                |
| IVa  | 1      | 1      | 177           | -         | -                |
|      | 2      | 6      | 595           | 76        | 821              |
|      | 3      | 7      | 1 260         | 119       | 625              |
|      | 4      | 2      | 479           | 28        | 717              |
| IVb  | 1      | 60     | 8 808         | 728       | -                |
|      | 2      | 89     | 12 021        | 896       | 517              |
|      | 3      | 76     | 10 882        | 898       | 356              |
|      | 4      | 70     | 9 197         | 756       | 261              |
| VIa  | 4      | 1      | 133           | -         | -                |
| VIIb | 3      | 1      | 272           | -         | -                |
| VIIe | 3      | 1      | 99            | -         | -                |
| VIIh | 1      | 1      | 53            | -         | -                |

SAMPLING DATA FOR : **WHITING** **1991** **ENGLAND**

| Area  | Season | Market |               |           | Research vessels |
|-------|--------|--------|---------------|-----------|------------------|
|       |        | Samp   | Measured Fish | Aged Fish | Aged Fish        |
| IVa   | 1      | 1      | 51            | -         | -                |
|       | 2      | -      | -             | -         | 493              |
|       | 3      | -      | -             | -         | 507              |
|       | 4      | -      | -             | -         | 618              |
| IVb   | 1      | 47     | 4 162         | 467       | -                |
|       | 2      | 44     | 3 801         | 487       | 781              |
|       | 3      | 53     | 4 791         | 561       | 718              |
|       | 4      | 51     | 4 621         | 681       | 691              |
| IVc   | 1      | 10     | 483           | 120       | -                |
|       | 2      | 8      | 690           | 117       | 158              |
|       | 3      | 10     | 748           | 114       | 168              |
|       | 4      | 9      | 651           | 128       | 105              |
| VIa   | 1      | 1      | 91            | -         | -                |
| VIIa  | 1      | 17     | 1 728         | -         | -                |
|       | 2      | 10     | 1 088         | 123       | -                |
|       | 3      | 11     | 1 232         | -         | 78               |
|       | 4      | 17     | 1 788         | -         | -                |
| VIIId | 1      | 2      | 284           | -         | -                |
|       | 2      | 3      | 318           | -         | -                |
|       | 3      | 3      | 266           | -         | -                |
|       | 4      | 2      | 147           | -         | -                |
| VIIe  | 1      | 9      | 1 134         | -         | -                |
|       | 2      | 10     | 1 441         | -         | -                |
|       | 3      | 8      | 1 159         | -         | -                |
|       | 4      | 6      | 1 119         | -         | -                |
| VIIIf | 1      | 7      | 946           | -         | -                |
|       | 2      | 2      | 124           | -         | -                |
|       | 3      | 3      | 347           | -         | -                |
|       | 4      | 8      | 1 124         | -         | -                |
| VIIg  | 1      | 2      | 241           | -         | -                |

SAMPLING DATA FOR : **BLUE WHITING** **1991** **ENGLAND**

| Area | Season | Market |               | Research vessels |
|------|--------|--------|---------------|------------------|
|      |        | Samp   | Measured Fish | Aged Fish        |
| IVa  | 2      | -      | -             | 32               |

SAMPLING DATA FOR : **HAKE** **1991** **ENGLAND**

| Area  | Season | Market |               | Research vessels |
|-------|--------|--------|---------------|------------------|
|       |        | Samp   | Measured Fish | Aged Fish        |
| VIa   | 1      | 1      | 96            | -                |
|       | 2      | 1      | 207           | -                |
|       | 3      | 2      | 439           | -                |
| VIIa  | 1      | 5      | 543           | -                |
|       | 2      | 3      | 643           | -                |
|       | 3      | 2      | 292           | -                |
|       | 4      | 4      | 494           | -                |
| VIIe  | 1      | 7      | 513           | -                |
|       | 2      | 10     | 888           | 1                |
|       | 3      | 9      | 892           | -                |
|       | 4      | 11     | 1 187         | 28               |
| VIIf  | 1      | 17     | 1 728         | -                |
|       | 2      | 10     | 1 088         | 123              |
|       | 3      | 11     | 1 232         | -                |
|       | 4      | 17     | 1 788         | -                |
| VIId  | 1      | 2      | 129           | 7                |
|       | 2      | 1      | 49            | -                |
|       | 4      | 6      | 730           | 23               |
| VIIg  | 1      | 1      | 34            | 38               |
|       | 2      | 2      | 139           | -                |
|       | 4      | 3      | 207           | 81               |
| VIIh  | 1      | 1      | 65            | 9                |
|       | 2      | 2      | 170           | -                |
|       | 3      | 1      | 41            | -                |
|       | 4      | 3      | 378           | 34               |
| VIIj  | 1      | -      | -             | 98               |
|       | 3      | 1      | 164           | -                |
|       | 4      | 1      | 59            | 18               |
| VIIIa | 1      | -      | -             | 5                |

SAMPLING DATA FOR : **NORWAY pout** **1991** **ENGLAND**

| Area | Season | Market |               | Research vessels |
|------|--------|--------|---------------|------------------|
|      |        | Samp   | Measured Fish | Aged Fish        |
| IVa  | 2      | -      | -             | 214              |
|      | 3      | -      | -             | 244              |
|      | 4      | -      | -             | 297              |
| IVb  | 2      | -      | -             | 119              |
|      | 3      | -      | -             | 95               |
|      | 4      | -      | -             | 91               |



SAMPLING DATA FOR: **LOPHIUS PISCATORIUS** 1991 ENGLAND

| Area  | Season | Market |               | Research vessels |
|-------|--------|--------|---------------|------------------|
|       |        | Samp   | Measured Fish | Aged Fish        |
| VIIa  | 3      | -      | -             | 16               |
|       | 4      | -      | -             | 4                |
| VIIe  | 1      | -      | -             | 1                |
|       | 4      | -      | -             | 1                |
| VIIf  | 3      | -      | -             | 10               |
|       | 4      | -      | -             | 2                |
| VIIg  | 1      | -      | -             | 6                |
|       | 4      | -      | -             | 16               |
| VIIh  | 1      | -      | -             | 10               |
|       | 4      | -      | -             | 2                |
| VIIj  | 1      | -      | -             | 14               |
|       | 4      | -      | -             | 3                |
| VIIIa | 1      | -      | -             | 3                |

SAMPLING DATA FOR: **LOPHIUS BUDEGASSA** 1991 ENGLAND

| Area | Season | Market |               | Research vessels |
|------|--------|--------|---------------|------------------|
|      |        | Samp   | Measured Fish | Aged Fish        |
| VIIg | 1      | -      | -             | 2                |
|      | 4      | -      | -             | 3                |
| VIIh | 1      | -      | -             | 1                |
|      | 4      | -      | -             | 4                |
| VIIj | 1      | -      | -             | 10               |
|      | 4      | -      | -             | 7                |

SAMPLING DATA FOR: **ANGLER FISH** 1991 ENGLAND

| Area  | Season | Market |               | Research vessels |
|-------|--------|--------|---------------|------------------|
|       |        | Samp   | Measured Fish | Aged Fish        |
| VIa   | 2      | 1      | 120           | -                |
| VIIa  | 4      | 1      | 139           | 4                |
| VIIIa | 2      | 1      | 153           | -                |
| VIIe  | 1      | 9      | 1 232         | -                |
|       | 2      | 13     | 1 262         | 1                |
|       | 3      | 14     | 1 474         | -                |
|       | 4      | 14     | 1 449         | 1                |
| VIIf  | 1      | 4      | 624           | -                |
|       | 2      | 4      | 487           | -                |
|       | 4      | 2      | 338           | 2                |
| VIIg  | 1      | 1      | 203           | 8                |
|       | 2      | 2      | 216           | -                |
|       | 4      | 1      | 151           | 16               |
| VIIh  | 1      | 5      | 833           | 11               |
|       | 2      | 5      | 717           | -                |
|       | 3      | 6      | 974           | -                |
|       | 4      | 6      | 905           | -                |
| VIIj  | 1      | -      | -             | 24               |
|       | 4      | -      | -             | 3                |
| VIIIa | 1      | -      | -             | 3                |

SAMPLING DATA FOR : **PLAICE** **1991** **ENGLAND**

| Area  | Season | Market |               |           | Research vessels |  |
|-------|--------|--------|---------------|-----------|------------------|--|
|       |        | Samp   | Measured Fish | Aged Fish | Aged Fish        |  |
| IVa   | 2      | 4      | 895           | 120       | 15               |  |
|       | 3      | 7      | 1 346         | 197       | 165              |  |
|       | 4      | 1      | 168           | 23        | 20               |  |
| IVb   | 1      | 40     | 8 459         | 899       | -                |  |
|       | 2      | 39     | 9 133         | 569       | 275              |  |
|       | 3      | 39     | 8 493         | 537       | 651              |  |
|       | 4      | 35     | 6 046         | 605       | 378              |  |
| IVc   | 2      | -      | -             | -         | 55               |  |
|       | 3      | -      | -             | -         | 162              |  |
|       | 4      | -      | -             | -         | 11               |  |
| VIa   | 1      | 1      | 138           | -         | -                |  |
| VIIa  | 1      | 12     | 1 727         | 243       | -                |  |
|       | 2      | 10     | 1 459         | 177       | -                |  |
|       | 3      | 9      | 1 606         | 469       | 320              |  |
|       | 4      | 10     | 1 743         | 229       | -                |  |
| VIIId | 1      | 11     | 1 717         | 89        | -                |  |
|       | 2      | 40     | 5 275         | 440       | -                |  |
|       | 3      | 31     | 2 680         | 698       | 488              |  |
|       | 4      | 36     | 3 429         | 422       | -                |  |
| VIIe  | 1      | 16     | 2 653         | 304       | -                |  |
|       | 2      | 20     | 3 210         | 394       | -                |  |
|       | 3      | 21     | 2 612         | 358       | -                |  |
|       | 4      | 21     | 2 503         | 520       | -                |  |
| VIIIf | 1      | 9      | 1 069         | 95        | 10               |  |
|       | 2      | 4      | 540           | 85        | -                |  |
|       | 3      | -      | -             | 466       | 122              |  |
|       | 4      | 1      | 64            | 32        | 32               |  |
| VIIg  | 1      | 5      | 556           | 7         | 7                |  |
|       | 2      | -      | -             | 16        | -                |  |
|       | 4      | 4      | 266           | 23        | 23               |  |
| VIIh  | 1      | -      | -             | -         | 1                |  |
|       | 4      | 4      | 436           | 5         | 5                |  |
| VIIj  | 4      | -      | -             | 2         | 6                |  |

SAMPLING DATA FOR : **LEMON SOLE** **1991** **ENGLAND**

| Area  | Season | Market |               |           | Research vessels |  |
|-------|--------|--------|---------------|-----------|------------------|--|
|       |        | Samp   | Measured Fish | Aged Fish | Aged Fish        |  |
| VIIa  | 3      | -      | -             | 30        | 30               |  |
| VIIId | 1      | 1      | 148           | -         | -                |  |
| VIIe  | 1      | 11     | 1 687         | 108       | -                |  |
|       | 2      | 10     | 1 428         | 157       | -                |  |
|       | 3      | 12     | 1 599         | 62        | -                |  |
|       | 4      | 8      | 1 028         | 163       | -                |  |
| VIIIf | 1      | -      | -             | 44        | 44               |  |
|       | 3      | -      | -             | 11        | 11               |  |
|       | 4      | 4      | 1             | 86        | -                |  |
| VIIg  | 1      | -      | -             | 21        | 21               |  |
| VIIh  | 1      | -      | -             | 19        | 68               |  |
|       | 3      | 1      | 107           | -         | -                |  |
|       | 4      | 3      | 475           | -         | -                |  |
| VIIj  | 1      | -      | -             | -         | 20               |  |
| VIIIa | 1      | -      | -             | -         | 6                |  |

SAMPLING DATA FOR : **SOLE** **1991** **ENGLAND**

| Area | Season | Market |               |           | Research vessels |  |
|------|--------|--------|---------------|-----------|------------------|--|
|      |        | Samp   | Measured Fish | Aged Fish | Aged Fish        |  |

|       |   |    |        |     |     |
|-------|---|----|--------|-----|-----|
| IVa   | 2 | -  | -      | 18  | -   |
| IVb   | 1 | 24 | 3 292  | 638 | -   |
|       | 2 | 11 | 655    | 128 | 4   |
|       | 3 | 9  | 861    | 54  | -   |
|       | 4 | 20 | 2 206  | 382 | -   |
| IVc   | 1 | 1  | 52     | -   | -   |
|       | 2 | 15 | 2 661  | 311 | 4   |
|       | 3 | 23 | 2 707  | 457 | -   |
|       | 4 | 10 | 1 615  | 90  | -   |
| VIIa  | 1 | 7  | 670    | 66  | -   |
|       | 2 | 16 | 2 566  | 333 | -   |
|       | 3 | 10 | 1 750  | 569 | 381 |
|       | 4 | 13 | 1 986  | 157 | 1   |
| VIIId | 1 | -  | -      | 4   | -   |
|       | 2 | 83 | 10 411 | 744 | -   |
|       | 3 | 32 | 5 119  | 710 | 828 |
|       | 4 | 7  | 1 230  | 47  | -   |
| VIIe  | 1 | 18 | 2 494  | 239 | -   |
|       | 2 | 27 | 2 464  | 251 | -   |
|       | 3 | 29 | 3 228  | 281 | 59  |
|       | 4 | 18 | 2 123  | 445 | 2   |
| VIIIf | 1 | 17 | 2 254  | 366 | 3   |
|       | 2 | 10 | 1 329  | 135 | -   |
|       | 3 | -  | -      | 358 | 200 |
|       | 4 | 5  | 951    | 250 | 3   |
| VIIg  | 1 | 5  | 580    | 2   | 2   |
|       | 2 | 1  | 254    | -   | -   |
|       | 4 | 4  | 850    | 7   | 7   |
| VIIh  | 2 | 3  | 264    | -   | -   |
|       | 3 | 6  | 823    | 119 | -   |
|       | 4 | 9  | 1 376  | 103 | 1   |

SAMPLING DATA FOR : MEGRIM 1991 ENGLAND

| Area  | Season | Market        |      | Research vessels |
|-------|--------|---------------|------|------------------|
|       |        | Measured Samp | Fish | Aged Fish        |
| IVa   | 2      | -             | -    | 16               |
| VIIa  | 3      | -             | -    | 1                |
| VIIe  | 1      | -             | -    | 6                |
|       | 2      | -             | -    | -                |
|       | 3      | 1             | 182  | -                |
|       | 4      | 1             | 160  | 15               |
| VIIIf | 1      | -             | -    | 3                |
|       | 2      | 2             | 232  | 48               |
|       | 4      | -             | -    | 38               |
| VIIg  | 1      | 1             | 83   | 45               |
|       | 2      | -             | -    | 48               |
|       | 4      | 3             | 418  | 121              |
| VIIh  | 1      | 2             | 199  | 258              |
|       | 2      | 1             | 143  | 55               |
|       | 3      | 1             | 160  | 162              |
|       | 4      | 2             | 308  | 60               |
| VIIj  | 1      | -             | -    | 809              |
|       | 4      | -             | -    | 99               |
| VIIIa | 1      | -             | -    | 58               |

SAMPLING DATA FOR : BASS 1991 ENGLAND

| Area | Season | Market        |      | Research vessels |
|------|--------|---------------|------|------------------|
|      |        | Measured Samp | Fish | Aged Fish        |
| IVc  | 2      | 7             | 24   | 186              |
|      | 3      | 8             | 80   | 247              |
|      | 4      | 4             | 35   | 202              |

|      |   |    |     |     |   |
|------|---|----|-----|-----|---|
| VIIa | 2 | 2  | 156 | 28  | - |
|      | 3 | -  | -   | 111 | - |
|      | 4 | 1  | 2   | -   | 1 |
| VIIb | 2 | 32 | 424 | 677 | - |
|      | 3 | 5  | 97  | 369 | - |
|      | 4 | 3  | 22  | 52  | - |
| VIIc | 1 | 5  | 159 | 143 | - |
|      | 2 | -  | -   | 177 | - |
|      | 3 | 2  | 28  | 305 | - |
|      | 4 | 7  | 389 | 203 | - |
| VIId | 1 | 8  | 51  | 5   | - |
|      | 2 | 8  | 198 | 333 | - |
|      | 3 | 16 | 361 | 402 | - |
|      | 4 | 6  | 100 | 56  | - |
| VIIe | 1 | 3  | 39  | -   | - |
| VIIh | 1 | -  | -   | 1   | - |

## UNITED KINGDOM (Scotland)

(R.Cook)

Monitoring of the main demersal species by Scotland is undertaken through three main sampling activities. These are market sampling of fish landed by the commercial fishery, sampling fish caught but discarded at sea and annual trawl surveys by the Department's research vessels. Most of the data collected are used by the ICES Roundfish Working Group (RFGW) and Industrial Fisheries Working Group.

During 1991 sampling continued at the same level as in previous years. Port samples are stratified by month, gear type and sea area. The numbers of fish sampled in ICES sub-area IV and Divisions VIa and VIb are given in the table below.

| Species    | North Sea (IV) |        | West of Scotland (VIa) |       | Rockall (VIb) |      |
|------------|----------------|--------|------------------------|-------|---------------|------|
|            | measured       | aged   | measured               | aged  | measured      | aged |
| Cod        | 61 767         | 11 288 | 9 638                  | 3 431 | 349           | 125  |
| Haddock    | 120 235        | 11 985 | 23 875                 | 4 142 | 2 636         | 531  |
| Whiting    | 95 890         | 6 743  | 29 320                 | 2 990 | -             | -    |
| Saithe     | 17 130         | 6 597  | 6 381                  | 2 388 | 123           | 60   |
| Lemon sole | 27 050         | 2 634  | 4 453                  | 671   | -             | -    |
| Plaice     | 28 767         | 3 443  | 10 519                 | 1 219 | -             | -    |
| Megrim     | 1 182          | 0      | 10 595                 | 284   | 345           | 0    |
| Angler     | 792            | 0      | 7 290                  | 526   | 133           | 0    |
| Spurdog    | 517            | 0      | 1 426                  | 0     | -             | -    |
| Sandeel    | -              | -      | 696                    | 271   | -             | -    |

In 1991, approximately 64 commercial vessels were sampled for discards. Discard sampling, like port sampling is stratified by gear type and sea area but because of resource limitations sampling is undertaken on a quarterly basis. Aggregate numbers of fish sampled are given below:

| Species | North Sea (IV) |       | West of Scotland (VIa) |       |
|---------|----------------|-------|------------------------|-------|
|         | measured       | aged  | measured               | aged  |
| Cod     | 4 980          | 1 085 | 244                    | 208   |
| Haddock | 41 639         | 2 787 | 11 735                 | 1 098 |
| Whiting | 34 349         | 2 159 | 14 298                 | 1 380 |
| Saithe  | 617            | 274   | 27                     | 27    |

The following bottom trawl surveys were carried out for groundfish:

| Vessel | Area                   | Period    | Comment                                 |
|--------|------------------------|-----------|---|
| Scotia | North Sea (IV)         | February  | IYFS Commitment                         |
| Scotia | West of Scotland (VIa) | March     | Indices used by RFGW                    |
| Scotia | North Sea (IV)         | May       | New survey, IBTS commitment             |
| Scotia | North Sea (IV)         | August    | SGFS, indices used by RFGW              |
| Scotia | Rockall (VIb)          | September | Indices used by RFGW                    |
| Clupea | Shetland               | November  | Indices used by Industrial Fisheries WG |

## U.S.A

(F.Serchuk and B.Rothschild)

The U.S.A. had no fisheries and no research vessel activity on demersal fish in the ICES area in 1990. Activities in the Northwest Atlantic have been reported to NAFO.