



REPORT OF THE
**JOINT MEETING OF THE STATISTICS COMMITTEE LIAISON
WORKING GROUP AND THE EUROSTAT WORKING GROUP
“FISHERY STATISTICS”**

ICES, Headquarters
21-22 January 1997

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1 INTRODUCTION AND OPENING

1.1 Participants

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Mr R Bourgeolet	France
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Ms A Cieslak	Poland
Dr R M Cook	(Chairman) Chairman of ICES Statistics Committee
Mr D G Cross	EUROSTAT
Mr I L Dahl	EUROSTAT
Mr R De Mellow	United Kingdom
Ms K Flygenring	Iceland
Dr R Grainger	FAO
Ms J Grzenia	Poland
Ms M-F Guia	Portugal
Dr E Günther	Germany
Mr W Hall	United Kingdom
Mr F Hansen	Denmark
Mr M Henrard	EUROSTAT
Mr L Holmberg	OECD
Ms D Juknevičiute	Lithuania
Mr M Jørgensen	Denmark
Ms G Kuhnle	Norway
Ms N Kuipers	Netherlands
Mr A Lemkes	Netherlands
Ms A Leniger	EUROSTAT
Mr S Lianes	Norway
Mr D Maher	Ireland
Ms J Maksimenkiene	Lithuania
Ms S Möller	Germany
Mr K Norström	Sweden
Ms E Nylander	Finland
Mr L-E Palmén	Sweden
Mr G Robledo Fraga	European Commission
Mr T Roose	Estonia
Mr R Van San	European Commission
Mr M Welvaert	Belgium
Mr G Zacchi	Italy

1.2 Terms of Reference

In accordance with Council Resolution 1996/2:26 a joint meeting of the **Statistics Committee Liaison Working Group** [WGSTAL] (Chairman: Dr R.M. Cook, UK) and the **EUROSTAT Working Group on Fishery Statistics** was held at ICES Headquarters from 21–22 January 1997 to:

- a) prepare the ICES position on the following items in advance of the Coordinating Working Party on Fishery Statistics (CWP) meeting to be held in March 1997:
 - i. modification to the ICES fishery statistics programme,
 - ii. improvements in the reliability of fishery statistics and the use of fishery-independent data,
 - iii. exchange and dissemination of fishery statistics,
 - iv. future activities of the CWP;
- b) make revisions to the ICES species lists;

- c) review conversion factors used in developing live weight equivalents in compiling fishery statistics;
- d) consider any other issues related to the ICES fishery statistics programme and other issues of interest to ICES and EUROSTAT.

The titles and order of headings in this report follow the agenda adopted at the meeting (Appendix 1).

2 SITUATION WITH REGARD TO THE TRANSMISSION OF FISHERIES DATA TO EUROSTAT AND ICES

ICES and EUROSTAT presented up-to-date accounts of the completeness and timeliness of reporting of fisheries data to their respective organisations.

2.1 ICES

In the case of ICES a working paper was presented giving the timeliness of reporting. It was noted that timeliness of reporting STATLANT 27A data had improved but that there had been some slippage with respect to 1995 data reported in 1996.

Specific problems concerned:

France which had not provided STATLANT 27A data for 1995 or data on French landings in foreign ports broken down by ICES fishing areas;

Spain which had provided no STATLANT 27A data for 1993, 1994 or 1995.

2.2 EUROSTAT

Eurostat reported that the generally improved situation noted with the STATLANT 27A was also seen in other data transmissions. However France and Spain were failing to meet certain of their obligations under EU legislation and infringement proceedings had been initiated by the European Commission.

2.3 Discussion

It was noted that one of the major customers of fisheries statistics is the scientific community. As a result of inadequate statistics, assessments of some stocks in Sub-areas VII and VIII had proved almost impossible. If stock assessments are to improve in these areas, improvement is essential. In particular, catch data are needed by stock area, not TAC management area.

3 IMPROVEMENTS IN THE RELIABILITY OF FISHERY STATISTICS AND THE USE OF FISHERY-INDEPENDENT DATA

Information about the extent of misreporting in the ICES area during the years 1991-1995 as reported by the Advisory Committee on Fishery Management (ACFM, 1997) was compiled in preparation for the CWP 17th Session (Appendix 2). In cases of suspected misreporting on a serious scale, ICES had used time series of data from research vessel surveys to provide alternative estimates of the catch that had been taken. In some assessments, eg Baltic cod, these alternative estimates had been used in the assessments adopted by ACFM in preparing management advice. Although these estimates had wide confidence limits, they were thought by ICES to be closer to reality than the officially reported data. It was, however, recognised that they might better reflect the level of uncertainty in the assessments concerned.

Some concern was expressed as to whether the ICES estimates of unreported catches in all cases applied to real misreporting or to lack of reporting by vessels fishing in international waters under flags of convenience. It was also considered that the sources of evidence used can sometimes give misleading information. It was noted, for example, that the extent of misreporting of North Sea plaice in earlier years had been exaggerated and that ICES was now using lower catch levels for those years in its assessments. In all cases, the need to provide the nature of the evidence of misreporting was emphasised and ICES was requested to provide as much information on this as possible.

In cases where unreported or misreported catches have been reasonably well substantiated, it was noted that no adjustments are made to the officially-reported catch figures. This is the case because the only legal basis is to accept catches as reported unless there is documented evidence of misreporting available.

4 MODIFICATIONS TO THE PROGRAMME OF FISHERY STATISTICS

4.1 ICES

ICES reported that few modifications had been made to the ICES fishery statistics programme. The only major modification had been that the requirement to report aquaculture statistics direct to ICES had been discontinued because of incompleteness of reporting and because the data were also reported to FAO.

A possible misunderstanding about the submission of Norwegian catch data was clarified. Although the data were in the first instance submitted as preliminary data to comply with the ICES deadline, this was to give an opportunity to check the data against other sources of information after which the data were submitted as "final" data.

In the context of timeliness, it was noted that the ICES requirements are for complete data in time to carry out the annual stock assessments required for ICES to provide advice in advance of deadlines set by the management authorities. Although the data supplied by some countries may be aggregated, participants at the meeting recognised the need for timely data in a form that complies with the requirements of ICES.

It was suggested that any requirement for statistics broken down between different EEZs and between EEZs and waters beyond the limits of national jurisdiction was mainly an administrative requirement in the allocation of catches to zones and not associated with scientific needs. In their present form the data cannot be broken down by political boundaries. If a breakdown of this sort were required it would involve difficult and time consuming changes to the present system. It would also require the provision of an agreed chart showing political boundaries not all of which are agreed. In the absence of any demonstrable need, the participants at the meeting concluded that no initiatives to subdivide catch statistics by these boundaries should be taken at present. It was nevertheless recognised that there may be requirements for data on a finer geographical scale, eg ICES statistical rectangles, for specific scientific reasons.

4.2 EUROSTAT

Eurostat reported that the major work of establishing its fishery data-base had been completed and work was now concentrating on an improved dissemination of the information.

5 REVIEW OF COLLABORATION BETWEEN EUROSTAT AND ICES IN FISHERY STATISTICS

Eurostat and the ICES Secretariat both reported that they were generally satisfied with the level of collaboration. Of note was the improved flow of statistical data between the two organisations. The holding of joint meetings of the Eurostat Working Group and the ICES Statistics Committee has been a qualified success. Although the meetings had provided the opportunity for a dialogue between the statisticians and the scientists, the ICES Annual Science Conference was not the most appropriate time for the detailed discussions required. In particular, the scientists have failed to demonstrate adequately the effect of misreporting on stock assessments and there has been little opportunity to discuss how the situation may be remedied..

Previous meetings of the Statistics Committee Liaison Working Group had had few representatives from national reporting offices. The current meeting has improved that situation significantly but, unfortunately, assessment scientists were largely absent. It was therefore suggested that Eurostat, in collaboration with ICES, should organise a future meeting with, as a major topic, the use made of fishery statistics by assessment scientists. Scientists could be invited to attend this meeting as designated experts.

As a point of future collaboration, a proposal to extend the computerised STATLANT 27A database back in time beyond 1973 was welcomed.

6 DISSEMINATION OF FISHERY STATISTICS

The ICES Secretariat believed that one of its major functions was to disseminate fisheries data, and it was currently reviewing how to improve this service, possibly through the use of the WWW. Eurostat, FAO and ICES all reported similar policies with regard to dissemination. Requests from "privileged" users (eg national authorities) and other requests for small volumes of data were processed at no charge. However the organisations reserved the right to recover from the customer the cost of extracting and processing large volumes of data. ICES required the request to be accompanied by an indication as to the use being made of the data and an undertaking that the use of the data in reports and documents be accompanied by a reference to the source.

Eurostat reported that it was considering the dissemination of statistics on the WWW but had noted FAO's experience that a presence on the WWW could generate requests for assistance that may cause a heavy workload on the unit concerned.

The meeting confirmed the view of Eurostat, FAO and ICES that data submitted to international organisations under the STATLANT system were to be considered as being in the public domain.

7 CONVERSION FACTORS (LANDED WEIGHT TO THE LIVE WEIGHT EQUIVALENT)

Eurostat reported on a study it had made of the factors supplied to FAO on the FISHSTAT CF1 questionnaire and on a study of factors by COFREPECHE for the European Commission. Both these studies indicated that few national authorities conducted regular technical reviews of the factors and that many factors had been in use for many years (in at least one case, for over 50 years). It was very difficult to determine the origin of many factors used by national authorities.

The Norwegian representative reported on a Norwegian-Russian technical study to establish a procedure for developing factors to apply in Barents Sea fisheries.

The Working Group welcomed these studies and stressed the importance of conversion factors in compiling the catch statistics used as a basic input to fish stock assessment work. In noting the differing factors being applied by member countries the Working Group pointed out the importance of ensuring that factors for similar products were being compared. Should there be a move towards the harmonisation of factors the Working Group considered that harmonised factors were only practicable for relatively unprocessed products and that these factors should be based on technical studies

8 UP-DATING OF THE ICES SPECIES LIST

In recognition of new requests for advice covering species not traditionally exploited, ICES was in the process of reviewing and expanding the list of species for which STATLANT 27A data are required. This was broadly welcomed and, in view of the impending review of log-book legislation, it was agreed that new classifications are needed as soon as possible. Detailed classifications are to be preferred as it is easier to aggregate than to disaggregate data at a later stage.

A particular area where more detailed classification is needed is in relation to deep-water species. With some species there is a need for better guides to species identification. It was noted that a report on deep-water species had been issued by ICES (ICES, 1997, Report of ACFM, 1996. ICES, Cooperative Research Report, No. 221).

It was suggested that the list of recognised species and species groups could be listed on the world-wide web site.

9 CITES REQUEST FOR DATA ON CATCHES OF ELASMOBRANCH SPECIES

The FAO observer reported that the Convention on the International Trade in Endangered Species (CITES) has requested FAO and other fisheries agencies to extend their collection of catch data on Elasmobranch species. The Working Group noted that the ICES Study Group on Elasmobranch Fishes was currently studying ICES requirements for Elasmobranch data and proposed that the results of this study should be awaited before formulating

a response to the CITES request. However, the identification of sharks was recognised as being difficult and national authorities might require guidance on identification in order to ensure the compilation of reliable data.

10 MODIFICATIONS TO EU LEGISLATION ON FISHERY STATISTICS

Eurostat reported that it was planning a revision of the technical annexes to Council Regulation no. 2018/93 (catch and effort statistics for the Northwest Atlantic) to take account of certain changes within the NAFO system. EU Member States would be kept informed of developments.

11 STATISTICAL REGISTER OF EU FISHING VESSELS

Eurostat said that it was anxious to improve its collaboration with Iceland, Norway and the Baltic States by increasing the coverage of its Statistical Register of Fishing Vessels to include records of their fleets. It would be approaching the national administrations for bi-lateral discussions on the possibility of achieving this objective. The representatives of those countries present at the meeting expressed an interest in this project and undertook to look positively at the proposal.

12 COORDINATING WORKING PARTY ON FISHERY STATISTICS (CWP)

The FAO observer described the structure and function of the CWP and reviewed the agenda of the coming 17th session at the CCAMLR Headquarters in Hobart, Australia.

It was announced that both Eurostat and ICES, would participate at the meeting, the latter by the Chairman of the ICES Statistics Committee and the ICES Fisheries Adviser. A proposal from an ICES member country that it should send a national representative at national expense was awaiting approval.

The Working Group noted that the importance of the CWP to the work of both Eurostat and ICES was indicated by the high degree of overlap between the CWP agenda and that of the current meeting.

13 ANY OTHER BUSINESS

Eurostat informed the Working Group that it was still looking with the DG XIV at the possibility of organising a seminar for the Baltic States on the data requirements for the management of the Common Fisheries Policy.

APPENDIX 1

STATISTICAL OFFICE
OF THE
EUROPEAN COMMUNITIES

Unit F2

Document FISH/162
Available in DE, EN, FR



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Working Group "Fishery Statistics"
of the
Agricultural Statistics Committee

Joint meeting of the ICES Statistics Committee's Liaison Working Group and the Eurostat Working Group "Fishery Statistics" to be held in the ICES Headquarters, Palægade 2-4, DK-1261 Copenhagen K on 21-22 January 1997

Provisional agenda

- 1: Opening of the meeting
- 2: Situation with regard to the transmission of fisheries data to Eurostat and ICES
3. Improvements in the reliability of fishery statistics and the use of fishery independent data
4. Modifications to the ICES programme of fishery statistics
5. Review of collaboration between Eurostat and ICES in fishery statistics
6. Dissemination of fishery statistics.
7. Conversion factors (landed weight to the live weight equivalent)
8. Up-dating of the ICES species list
9. CITES request for data on catches of Elasmobranch species.
10. Modifications to EU legislation on fishery statistics
- 11 Statistical register of fishing vessels
12. Coordinating Working Party on Fishery Statistics
 - (a) Preparation for the meeting of the 17th Session of the CWP, Hobart (Australia), 3-7 March 1997
 - (b) Future activities of the CWP
- 13 Any other business

NB: The working language of the meeting will be English

APPENDIX 2

THE RELIABILITY OF CATCH STATISTICS IN THE ICES AREA

Introduction

At the Sixteenth Session of the CWP in 1995, ICES submitted a paper (CWP-16/15B) entitled "Catch misreporting in the ICES Area", in which the results of two case studies describing the effects of misreporting on stock assessments were presented. The general conclusion from these case studies was that the use of underestimated catches in assessments may conceal the true level of fishing mortality rate which, if allowed to continue unchecked, may result in spawning stock sizes much lower than predicted.

In order that the consequences of misreporting on stock assessment be better understood and quantified, the CWP recommended that further case studies be undertaken and that such studies should consider the effect of misreporting on the efficacy of the prevailing fishery management regime.

In the present paper, one particular aspect of the misreporting question is addressed, namely a method of evaluating the reliability of catch data using fishery-independent data such as those obtained on research vessel surveys. To put this work into context, a brief survey is first presented of the occurrence and extent of misreporting in the ICES area in recent years. This is taken largely from the most recent report of the ICES Advisory Committee on Fishery Management (ACFM, in press).

Recent cases of misreporting

In Table 1 are listed the known or suspected instances of misreporting in the ICES area over the five year period 1991-1995, together with the estimates of misreported or under-reported landings. In some cases catches taken in other areas have been misreported as having been taken in the area in question. The table deals with misreporting of landings and does not indicate the occurrence of discarding for which there are no official figures and, except in a few instances, no estimates.

As indicated in Table 1, misreporting and particularly under-reporting (or non-reporting) occur in many fisheries in the ICES area. The recognition that it occurs, however, is only possible in those fisheries where an independent body or individuals carry out the investigations needed to provide the evidence. The absence of a fish stock in the list therefore cannot be taken as evidence that no misreporting of that stock occurs. As a general rule, however, misreporting only occurs in those fisheries where the catch regulations and quotas are restrictive.

Correcting for misreporting in assessments

The process of stock assessment involves the analysis of all available information about a stock with the objective of estimating the past and current stock sizes and fishing mortality rates. If the information available, and any assumed values of parameters involved in the models such as the natural mortality rate, are unbiased, then different sources of information about a stock should show consistent trends. In many stock assessments carried out by ICES, the results of research vessel surveys are used in combination with commercial catch data and biological sampling of the catches.

In many stock assessments that use data both from commercial landings statistics and associated biological sampling of the catch, and from research vessel surveys, there is often a concordance in the trends observed by both methods. Where such consistency can be shown from an analysis of the historical data, then research vessel data can in principle be used to correct for errors in catch data when this is thought to be spurious. In the 1996 round of stock assessments carried out by ICES this method was used with some success for the following stocks (with the appropriate years in parenthesis):

West of Scotland (Division VIa) cod (1992-1995)
West of Scotland (Division VIa) haddock (1992-1994)
West of Scotland (Division VIa) whiting (1992-1995)

Eastern Baltic (Sub-divisions 25-32) cod (1982-1983 and 1992-1995)

Further details of how the corrections were made are given below.

As described for West of Scotland demersal stocks by the 1996 meeting of the Working Group on the Assessment of Northern Shelf Demersal Stocks (Anon 1997) using a method developed by Cook (1995):

"The method involved an initial application of a separable (age, year class and year effects) model to the survey catch at age data. The outputs of the model include indices of recruitment, spawning stock biomass and catch. In order to evaluate the information on levels of misreporting provided to the Working Group for VIa haddock, whiting and cod, the index of catch was regressed against observed landings over the time series of the survey, excluding the years for which the estimates of misreported landings were provided. The true landings in those years were then estimated from the fitted regressions.

This year's Working Group updated the model using 1995 survey indices, and computed the confidence limits around the predicted catches of VIa cod, whiting and haddock. Although the predicted catches of cod for the years 1992-1995 were imprecise, they were considered more realistic than those based on reported landings. For this stock, there was evidence that misreporting was particularly extensive in 1995. Hence, the assessment was run incorporating the model predictions of misreporting. For VIa whiting and haddock in 1995, there was no direct evidence of misreporting at the substantial level apparent in some previous years. However, the landings predicted from the survey model were well above the reported landings. In the case of haddock, the confidence limits around the prediction were very large and it was considered most appropriate to base the XSA assessment on reported landings in 1995. The fit of the model for whiting was better than for haddock or cod. In view of the equivocal evidence for the level of misreporting of VIa whiting in 1995, XSA runs were carried out both including and excluding the predicted misreported landings."

The results of the analysis for cod are shown in Tables 2-3. Although the reported landings lie within the 95% confidence limits predicted by the model in three years out of four, the predicted landings are all much higher than the reported landings.

As the Working Group points out, the confidence limits on the estimates of catch are wide and the estimates are not precise. Nevertheless, they are for some years very different from the reported landings and the Working Group considered that the results from the model were likely to be closer to the true values than the reported landings. This conclusion was accepted by the Advisory Committee on Fishery Management (ACFM) and the corresponding assessments using the landings predicted from the model were used as the basis for giving management advice for 1997.

For the West of Scotland stocks described above, discarding is known to occur. For haddock and whiting, there are estimates of the quantities discarded from observer schemes and these are used in the assessments. In correcting the landings using the survey model, it is assumed that the pattern and extent of discarding is constant from year to year.

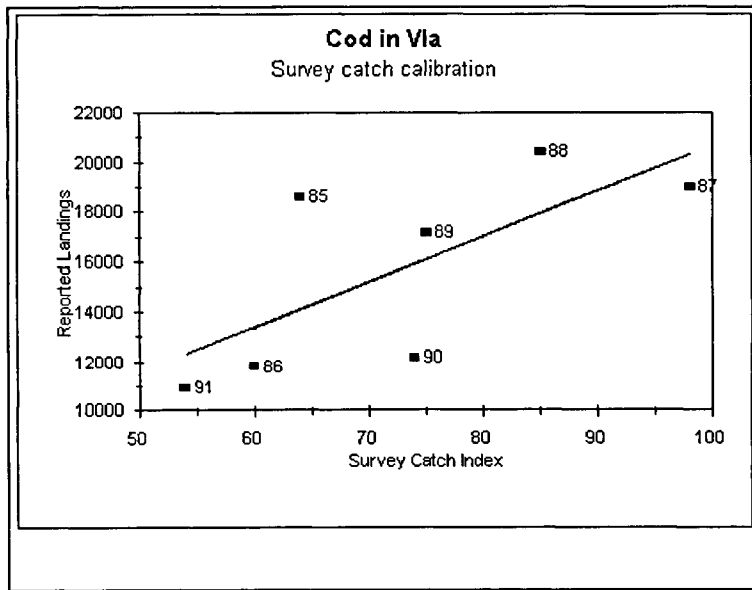
Table 1. Occurrences of misreporting in the ICES area (northeast Atlantic) from 1991-1995 as reported by the Advisory Committee on Fishery Management (ACFM, in press).

The figures given are the officially reported landings (or in some cases the reported landings corrected by ICES Working Groups) and, in parenthesis, the estimated true landings in that area.

Stock/area	Official landings (Landings adopted by ICES) '000 t; % difference					Comments
	1991	1992	1993	1994	1995	
Northeast arctic cod	269 (319)	383 (513)	532 (582)	746 (771)	740 (740)	
Faroe Plateau cod					19.8 (23.1)	Estimate of misreporting includes discards; misreporting by some fleets in 1995 due to introduction of catch quota management system
Kattegat cod				6.9 (7.8)	6.6 (8.2)	
Division IIIa sole	1.0 (?)	1.3 (?)	1.4 (?)			Significant misreporting 1991-1993; reliable since 1994 due to change from TAC to effort regulation
North Sea herring	536 (561)	518 (544)	502 (521)	459 (465)	501 (534)	Considerable misreporting by area
North Sea cod	86 (89)	98 (97)	95 (105)	88 (94)	111 (120)	
North Sea haddock	44.5 (44.6)	50.8 (70.2)	80.0 (79.7)	87.1 (80.9)	75.6 (75.3)	
North Sea saithe	93.5 (98.9)	92.2 (92.5)	100.3 (105.6)	98.2 (101.7)	100.9 (113.7)	
North Sea plaice	143.6 (148.0)	123.5 (125.2)	115.2 (117.1)	109.7 (110.4)	96.6 (98.4)	
North Sea sole	27.6 (33.5)	26.0 (29.3)	29.8 (31.4)	31.3 (32.6)	28.7 (30.3)	
E Channel sole	3.8 (4.4)	3.8 (4.1)	3.4 (4.5)	3.7 (4.6)	3.5 (4.5)	
E Channel plaice	7.4 (7.8)	5.9 (6.3)	4.4 (5.3)	5.2 (6.1)	4.3 (5.1)	
West of Scotland cod	10.6 (10.9)	9.0 (15.6)	10.5 (14.3)	9.8 (17.6)	9.1 (20.5)	
West of Scotland haddock	10.1 (10.6)	6.9 (11.4)	12.7 (19.1)	9.5 (14.2)	12.7 (12.4)	
West of Scotland whiting	6.9 (6.7)	6.0 (9.7)	6.8 (10.2)	6.0 (12.9)	6.4 (13.8)	
West of Scotland saithe	17.9 (17.0)	11.1 (11.8)	15.5 (14.7)	14.3 (12.8)	11.5 (11.7)	
Rockall cod						Recent catches unreliable
Rockall haddock	5.9 (5.7)	4.5 (5.3)	4.1 (4.8)	3.7 (5.7)	5.5 (5.6)	
West of Scotland herring	60.0 (31.2)	56.9 (28.7)	59.9 (32.0)	58.3 (24.6)	66.3 (29.3)	Misreporting of catches taken elsewhere

Stock/area	Official landings (Landings adopted by ICES) '000 t; % difference					Comments
Northwest Ireland herring	23.1 (34.3)	27.2 (31.8)	30.3 (36.6)	27.0 (33.2)	26.7 (27.8)	
Celtic Sea herring	21.1 (21.7)	18.6 (20.9)	20.3 (19.2)	18.9 (17.4)	18.5 (18.3)	
W Channel plaice	1.6 (1.8)	1.4 (1.6)	1.4 (1.4)	1.2 (1.2)	1.0 (1.0)	
W Channel sole	0.6 (0.7)	0.6 (0.8)	0.7 (0.8)	0.8 (0.7)	0.9 (0.7)	
Biscay sole	4.7 (5.6)	6.4 (6.6)	6.0 (6.4)	6.9 (7.2)	5.9 (6.2)	
Irish Sea cod	7.0 (7.1)	7.4 (7.7)	5.8 (7.6)	4.4 (5.4)	4.4 (4.6)	
Irish Sea haddock	0.6 (0.6)	0.7 (0.7)	0.7 (0.7)	0.7 (0.7)	0.8 (0.9)	1993-1995 figures possibly underestimated due to misreporting
Irish Sea whiting	7.4 (7.3)	7.1 (8.5)	6.0 (6.5)	5.8 (6.8)	5.4 (4.9)	
Irish Sea plaice	2.8 (2.6)	3.2 (3.3)	2.0 (2.0)	2.0 (2.1)	2.0 (1.9)	
Irish Sea sole	1.2 (1.2)	1.2 (1.3)	1.0 (1.0)	1.4 (1.4)	1.3 (1.3)	
Mackerel (Norwegian Sea)	97.8 (97.8)	139.1 (139.1)	166.0 (166.0)	181.5 (71.9)	154.1 (135.5)	1994-1995 only
Mackerel (North Sea)	211.9 (341.9)	223.6 (350.6)	241.1 (387.8)	228.2 (473.3)	194.8 (301.7)	Caught in North Sea reported in Western area
Mackerel (Western areas)	294 (160)	340 (214)	380 (233)	378 (247)	342 (263)	Caught in North Sea reported in Western area
Horse mackerel (Western areas)	213 (236)	215 (229)	278 (275)	256 (270)	387 (414)	
Baltic cod	139 (139)	73 (123)	54 (115)	76 (136)	121 (158)	Mainly in the eastern Baltic SD 25-32

Table 2. Cod in Division VIa, survey estimates of landings.



Model: MODEL1
Dependent Variable: Y

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value
Model	1	46165861.1	46165861.1	4.844
Error	5	47651386.9	9530277.3801	
C Total	6	93817248		

Prob>F 0.0790

Statistic	Value	Statistic	Value
Root MSE	3087.11473	R-square	0.4921
Dep Mean	15727.00000	Adj R-sq	0.3905
C.V.	19.62939		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > T
INTERCEP	1	2424.596451	6155.5715869	0.394	0.7099
X	1	182.582009	82.95647369	2.201	0.0790

OBS	X	Y	P	L95	U95	STDI
85	64	18608	14109.85	5418.54	22801.15	3381.07
86	60	11820	13379.52	4463.88	22295.16	3468.33
87	98	18975	20317.63	10281.77	30353.49	3904.12
88	85	20413	17944.07	9074.09	26814.05	3450.57
89	75	17171	16118.25	7622.35	24614.14	3305.05
90	74	12176	15935.67	7448.57	24422.76	3301.63
91	54	10926	12284.02	2895.65	21672.40	3652.24
92	72	.	15570.50	7084.93	24056.07	3301.03
93	65	.	14292.43	5644.95	22939.90	3364.01
94	83	.	17578.90	8823.92	26333.89	3405.84
95	99	.	20500.22	10348.83	30651.60	3949.06

Table 3. Cod in Division VIa. Reported landings and Working Group estimates of total landings 1992-1995 (in tonnes).

Year	Reported landings	Landings as used by Working Group
1992	9,086	15,586
1993	10,315	14,315
1994	8,929	17,578
1995	9,428	20,528