

**REPORT OF
THE INTERNATIONAL BOTTOM TRAWL SURVEY
WORKING GROUP**

(by correspondence)

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International Council for the Exploration of the Sea
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1 TERMS OF REFERENCE

The International Bottom Trawl Survey Working Group [IBTSWG] (Chair: A. Newton, UK) will work by correspondence in 2000 to:

- a) plan for a meeting in Dublin in either March or April 2001;
- b) plan for a joint IBTSW-WGFTFB group to make specifications for standard fishing gear for ICES co-ordinated bottom trawl surveys in the western and southern area;
- c) to plan establishing a western/southern survey database within ICES. Investigate possibilities of extending ICES data base to include western and southern division data;
- d) produce a working manual to cover the western and southern division surveys;
- e) evaluate comparative fishing trials between France, Ireland and Scotland in the western Division;
- f) promote further co-ordination in western and southern divisions;
- g) for the North Sea 3rd quarter survey, examine the effects of the vessel re-allocation and the possibility for a better overlap in the timing;
- h) encourage further exchange of valid tow positions between all participating institutes;
- i) review the exchange of IBTS data with regard to any possible corruption from the millennium 'bug';
- j) evaluate the new abundance indices to be produced by ICES;
- k) propose Terms of Reference for the future work of the Working Group to be considered by RMC. The ToRs should take into account the priorities outlined in the ICES strategic plan and in particular the priorities adopted by RMC.

2 GENERAL

During a 'correspondence year' the most important task is to maintain the high level of co-ordination that has been achieved in recent years between participating nations. This year has been no exception.

2.1 Overview of the IBTS 2000 quarter 1 survey

As usual during the last few years, seven countries participated in the 2000 quarter 1 IBTS survey (see table). All participants fished with the GOV-trawl during daytime and sampled 6-months old herring larvae of the 1999 year-class with the MIK-trawl during the night. Although the weather conditions were rather poor from time to time, the overall coverage was good: all rectangles (except 1 coastal rectangle in the German Bight) were fished at least once with the GOV. In the MIK coverage some gaps still occurred despite the effort to increase the sampling intensity in the Southern Bight.

While at sea, the preliminary catch data were exchanged between vessels. This information is restricted to the catch in number per hour of the youngest year classes of 7 species, and the number of MIK hauls per rectangle.

Except for cod, all other species seem to have produced average or strong year classes. For cod there was only one big catch of one-year-olds in the entrance of the English Channel. All other catches in the southern North Sea as well as in the German Bight were poor. This was especially striking as during the early 1980's high abundance of juvenile cod was a feature of this area.

Catches of one-year-old haddock were very big this year. By far the biggest average catches over the last 25 years were made. Catches of whiting were usually good, but in the Southern Bight the amount of young whiting was not exceptional.

Catches of <20 cm herring were good, over the past years there have only been 3 years with higher catches. This is in line with the observations of high numbers of herring larvae in February 1999. This year (2000) the average catch of herring larvae was much smaller than last year. The catches of 1-year old sprat were also good.

Most of the juvenile mackerel were caught in the northern North Sea. It is more likely that these mackerel belong to the western stock which are at the edge of their distribution area, than that they belong to the North Sea stock.

The catches of herring larvae in the MIK hauls, year class 1999, indicated a year class strength of average size.

Table 1. Level of Participation in IBTS Q1 2000

country	vessel	period	GOV	MIK
Denmark	Dana 2			68
France	Thalassa 2			39
Germany	Walther Herwig 3			97
Netherlands	Tridens 2	24-01/25-02	55	84
Norway	Michael Sars			58
Scotland	Scotia 3	24-01/12-02	46	83
Sweden	Argos			58

The preliminary indices obtained are shown in Appendix 1.

2.2 Overview of Western Division Surveys

A Scottish Survey (November 1999)

A total of 39 valid half hour tows were conducted in ICES area VIa, 5 in VIIb and a further 11 tows were undertaken in the Irish Sea (VIIa). In addition 20 hauls were carried out in conjunction with *Celtic Voyager* as a comparative fishing exercise and the results of the latter task are referred to under the appropriate sub section.

Scotia deployed the GOV trawl fitted with heavy ground gear (gear C) on the trawling stations to the west of Scotland. The fishing gear was monitored continuously by Scanmar equipment for headline height, wing spread, door spread and net speed through the water. Additionally a number of navigational parameters were also monitored. The catches were sampled and analysed according to established Scottish principles which, in turn, are based on recommendations from the IBTS working Group (Addendum to ICES CM1996/H:1).

One of the main objectives of this survey is to provide indices of abundance for the relevant ICES working groups e.g., Northern Shelf Demersal Assessment WG and the 1999 indices resulting from this survey for the major commercial species are tabulated below.

Table 2 Scottish Indices of Abundance – VIa 1999 – Nb/30mn

Species	Hauls/Age	0	1	2	3	4	5	6
Cod	39	0.10	0.20	0.30	0.45	0.05	0.00	0.00
Haddock	39	233.50	18.30	28.70	13.35	4.60	3.40	0.55
Whiting	39	410.15	116.90	29.10	7.05	1.65	1.20	0.05
N Pout	39	1039.20	114.75	15.20	7.00	0.00	0.00	0.00
Herring	39	1.85	12.35	4.95	24.65	13.85	14.25	17.85
Mackerel	39	27.45	181.55	22.55	5.05	0.15	1.75	0.05

Table 3 Scottish Indices of Abundance – VIIa 1999 – Nb/30mn								
Species	Hauls/Age	0	1	2	3	4	5	6
Cod	11	8.20	0.10	1.20	0.30	0.10	0.00	0.00
Haddock	11	1234.60	13.90	5.35	9.35	4.10	0.30	1.00
Whiting	11	27.40	96.50	34.55	26.05	0.00	0.00	0.20
N Pout	11	630.60	47.40	0.25	5.60	0.00	0.00	0.00
Herring	11	36.40	30.15	11.55	2.35	0.80	0.00	0.15
Mackerel	11	2.00	0.10	0.10	0.00	0.00	0.00	0.00

B French survey (November – December 1999)

111 valid hauls were realised in the strata covered traditionally since 1997 and 8 extra hauls in depth from 400-600 m were also realised following a recommendation from the IBTS working group. The sampling strategy has remained unchanged and is of a stratified random selection of station.

The gear used is a GOV 36/47 without the kite but with extra buoyancy added. Gear performance was monitored during each set through Scanmar and Pacha instrumentation.

Abundance indices were computed by age and by sex for hake, whiting, megrim, cod, anglerfishes (black and white) and ling. All other species of fish, *nephrops* and three species of *cephalopods* (*Illex coinditi*, *Loligo vulgaris*, *Loligo forbesii*) were measured.

Results for some of the most important commercial species are given below. Ageing has not been completed yet for the other species (Anglerfishes and ling).

Table 4 French Indices of Abundance – Celtic Sea - Nb/30mn								
Species	Hauls/Age	0	1	2	3	4	5	6
Cod	59	0.02	0.17	0.17	0.27	0.01	0.03	0.01
Whiting	59	257.79	59.60	16.61	4.77	1.80	1.57	1.11

Table 5 French Indices of Abundance – Celtic Sea and Bay of Biscay - Nb/30mn								
Species	Hauls/Age	0	1	2	3	4	5	6
Hake	111	28.11	13.53	9.05	2.37	0.41	0.10	0.08
Megrim	111	0.08	0.53	3.35	0.68	2.06	3.30	1.61

C Irish surveys

The Marine Institute carried out the Irish Sea Celtic Sea Groundfish Survey in November 1999. A total of 65 valid hauls were completed in ICES Divisions VIIa and VIIg. Celtic Voyager used a reduced GOV trawl (28.9/37.1) with S Kite (0.85 x 0.85), and Morgere Polyvalent doors (Type AA 4.5). SCANMAR net monitoring system (RX400) was used throughout the survey and ROXANNE Ground Definition System was also used. Catch was sampled and analysed according to established Irish Survey Protocols which are based on the recommendations of the IBTS.

The Marine Institute also carried out the West Coast Groundfish Survey. This survey was carried out in two parts: Part A fished 32 stations in ICES Divisions VIa (south) and VIIb (north); Part B covered 38 stations in ICES Divisions VIIb and VIIj. This survey is carried out on the same chartered commercial fishing vessels each year.

2.3 Overview of Southern Division Surveys

A Spanish Surveys

Two surveys were conducted in the 4th quarter of 1999, one on the northern Spanish shelf (ICES Divisions VIIIc and IXa) and other in the Gulf of Cadiz (ICES Division IXa) and one in the 1st quarter (only in the Gulf of Cadiz). All surveys were accomplished following stratified random sampling protocols with the R/V *Cornide de Saavedra* and using the Baka 44/60 trawl gear. In the North of Spain a total of 116 valid half-hour tows were conducted. In addition 12 extra hauls were carry out outside the standard sampling area, in shallow and deeper depths (less than 80 m and more than 500 m depth). Gear performance was monitored continuously by Scanmar equipment. Also, 158 CTD sampling stations were carried out.

Abundance indices were computed by age and by sex for hake, blue whiting, four-spot megrim, megrim, anglerfishes (black and white), horse mackerel, and mackerel. All other species of fish and invertebrates (only commercial species) were measured. One of the main objectives of this survey is to provide indices of abundance for the relevant ICES working groups (Southern Shelf Demersal Assessment WG, WG on Assessment of Mackerel, Horse Mackerel, Anchovy and Sardine and WG on Blue Whiting). The 1999 indices resulting from this survey for the major commercial species are tabulated below.

Table 6 Spanish Indices of Abundance - Cantabrian Sea and Galicia - Nb/30mn								
Species	Hauls/Age	0	1	2	3	4	5	6
Hake	116	69.36	12.70	1.22	2.27	0.52	0.31	0.05
Blue whiting	116	2828.95	978.06	77.27	74.51	14.84	5.65	1.80
Four-spot megrim	116	0.90	6.50	10.14	5.59	2.69	0.86	0.14
Megrim	116	0.65	1.20	4.18	4.14	2.49	1.50	0.47
Horse mackerel	116	30.74	50.19	17.43	3.93	19.33	18.30	10.96
Mackerel	116	3.27	1.33	3.30	0.69	0.16	0.01	0.00

During 1999 two groundfish surveys were conducted in the Gulf of Cadiz, in the Spring and in the Autumn. A total of 38 valid half-hour tows were achieved in each survey. In addition 28 CTD sampling stations were carried out during the autumn survey. Biomass indices (kg per hour) for the whole area were computed for the main commercial species: hake, horse mackerel, blue whiting, mackerel and Spanish mackerel, octopus (*Octopus vulgaris*), cuttlefish (*Sepia officinalis*), rose shrimp (*Parapenaeus longirostris*) and Norway lobster. Results are shown in the table below.

Table 7 Spanish Indices of Abundance - Gulf of Cadiz groundfish surveys

Species	Spring 99	Autumn 99
	Kg/hour	Kg/hour
Hake	3.1	2.7
Horse mackerel	1.2	5.1
Blue whiting	1.2	8.1
Mackerel	0.5	0.6
Spanish mackerel	0.8	0.5
Common Octopus	1.6	2.7
Cuttlefish	0.4	1.3
Norway lobster	0.2	0.2
Rose shrimp	6.4	3.4

B Portuguese surveys

During 1999 two Portuguese groundfish surveys were conducted, in summer and autumn, covering Division IXa in Portuguese waters. The area surveyed extends from latitude 41°20' N to 36°30' N, and from 20 to 750 meters depth. In summer (July) and autumn (October-November) 1999 surveys a total of 65 and 79 valid hauls were realised, and 119 and 167 CTDs sampling stations took place, respectively.

The sampling strategy was unchanged from the previous surveys and is a fixed station sampling scheme. A total of 97 fixed stations were planned, spread over 12 sectors. Each sector is subdivided into 4 depth ranges: 20-100, 101-200, 201-500 and 501-750 m with a total of 48 strata. The duration of each tow was 60 minutes, carried out during daylight at a towing mean speed of 3.5 knots.

The Portuguese surveys were carried out with the R/V *Noruega*. The fishing gear used was a bottom trawl (type Norwegian Campell Trawl 1800/96 NCT) with a 20 mm codend mesh size. The mean vertical opening was 4.6 m and the mean horizontal openings between wings and doors were 15.1 m and 45.7 m, respectively. CTD sampling stations were homogeneously distributed all over the study area, avoiding leaving large extensions uncovered. CTD casts sampled at stations over the shelf area covered the whole water column, from surface to bottom. When CTD casts were made off the shelf sampling was conducted to at least 400 metres.

The catch was sorted by species, counted and weighted. In the case of a huge catch of one dominant species, only a fraction of the catch was sorted. All fish and commercial cephalopods and crustaceans species were measured. Biological parameters (length, weight, status of maturity among others) and hard structures (otoliths and *illicia*) were collected.

Abundance indices (Number per hour) and biomass indices (kg per hour) for the whole area were computed for the main commercial species: hake, horse mackerel, blue whiting, mackerel and Spanish mackerel, megrims, anglerfish and rose (*Parapenaeus longirostris*) and red (*Aristeus antennatus*) shrimps and Norway lobster. Results are shown in the table below.

Table 8 Abundance and biomass indices estimated in the 1999 Portuguese groundfish surveys

Species	Summer 99		Autumn 99	
	N/hour	Kg/hour	N/hour	Kg/hour
Hake	116.2	11.8	100.5	10.5
Horse mackerel	32.5	3.1	274.2	10.1
Blue whiting	795.6	36.7	967.9	40.5
Mackerel	7.5	1.6	211.8	14.2
Spanish mackerel	1.3	0.1	14.3	1.8
Megrims	1.6	0.2	1.0	0.1
Anglerfish	0.3	0.3	0.1	0.1
Norway lobster	1.3	0.1	1.3	0.1
Rose shrimp	60.4	0.6	108.5	1.0
Red shrimp	8.1	0.2	8.8	0.2

One of the main objectives of these surveys is to provide indices of abundance by age for the relevant ICES working groups e.g., Southern Shelf Demersal Assessment, Mackerel, Horse Mackerel, Sardine and Anchovy Assessment, Northern Pelagic and Blue Whiting Fisheries and *Nephrops* Stocks Working Groups. At present abundance indices by age are being processed.

3 STANDARDISE FISHING GEARS

ToR (b) – ‘plan for a joint IBTSW-WGFTFB group to make specifications for standard fishing gear for ICES co-ordinated bottom trawl surveys in the western and southern area’.

Discussions have been opened with the WGFTFB on the setting up of a study group to examine this question. A similar group was previously set up to design gear for the Baltic surveys. An *ad hoc* presentation was made to the meeting of WGFTFB in St Johns Canada in April 1999. At this meeting it was agreed that this subject would be suitable for WGFTFB. It was generally felt by the WG that the best approach would be to consider approaching the European Commission for supporting funding, possibly in the form of a Concerted Action. However, no agreement was reached on a timetable due to a full WGFTFB agenda. The subject was also discussed again at the WGFTFB meeting in Haarlem, Netherlands in April 2000. Again, no firm arrangements were made but an agreement in principle was reached.

Investigations into existing gears, which might be suitable for use in the more difficult grounds of the western shelf have been carried out at FRS-MLA. A number of candidate gears were identified, which have proven robust in this type of ground. Trials with these gears are planned when ship time becomes available. This matter will continue to receive attention.

4 WESTERN/SOUTHERN DATABASE

In November 1999 DGXIV was formally approached by the chair of the Working Group seeking extra funds in order that ICES could maintain data gathered in the southern and western divisions in the same fashion as data garnered from the North Sea, Skagerrak and Kattegat. The response was disappointing. The Commission recognised that it was an important point and although they had funded previous feasibility studies there was no provision under the CFP or the Fifth Framework to fund the maintenance and hosting of databases. DGXIV suggested looking at new technology e.g., Common Object Request Broker Architecture, which they felt that the EU could support under the Research Networking programme. This form of technology is beyond the experience of the Working Group membership and has not been pursued further. This whole topic should be explored further at the next WG meeting.

5 WESTERN/SOUTHERN WORKING MANUAL

The SESITS (South-western European Shelf International Trawl Surveys) project, described in the IBTS report of 1999, produced a survey manual describing the objectives of the surveys, the survey area, the sampling design and a description of the vessels and the gears involved. In addition the types of biological and hydrographic data recorded, a description of the databases, histories of the surveys and faunistic list of all fishes and invertebrate caught during these surveys were recorded. The last IBTS WG in Lisbon decided to use this manual as the first reference for the Western and Southern areas.

It is now realised that producing a comprehensive manual along the lines of the North Sea manual is not a practical proposition given the differences in fishing gears between the two areas and the large variety of species with different national interests. However, a start has been made within the western division to produce a list of standard protocols, which can be used by western division participants. These protocols cannot be finalised until a complete analysis is made of a combined survey undertaken by France, Ireland and Scotland in November 1999. The draft manual will then be passed to members of the southern division for comments and advice.

6 COMPARATIVE FISHING TRIALS

During November 1999 twenty comparative tow were carried out in the Irish Sea between the RV Celtic Voyager and the RV Scotia. The tows were selected at standard stations taken from the Marine Institute's Irish Sea Celtic Sea Groundfish Survey. The area covered was east of Dublin in ICES Division VIIa. The catch was sorted and sampled on board ship using the respective survey protocols based on IBTS recommendations.

The gear performance was reviewed from the SCANMAR data and shows that there is a difference in the volume swept between the two gears. This breaks down into two components with the modified GOV trawl of the Voyager being both narrower and also having a higher headline height than that of the Scotia.

The catches have been mapped for the comparative tows and indicate that the main species were whiting, haddock and, to a lesser extent plaice. The comparative bulk catches and main species have also been mapped and on initial inspection suggest that the Scotia tended to have comparatively higher catches over the shallower stations where there is a sandy bottom. There also appears to be some difference in the catchability between round and flatfish species between the two boats.

Summed raised length frequencies were shown to be different between the vessels by K-S tests for the main species examined (whiting, haddock, plaice and dab), although this was not the case at each individual station for individual species.

Abundance indices were then calculated by applying the Irish age-length key to the whiting and haddock length frequencies from the two vessels to see if similar abundances are being indicated. A significant difference was indicated in calculated abundance by Chi-square test.

A more extensive analysis of the comparative tow data is being undertaken at the moment in order to assess the significance of the differences identified in the preliminary analysis.

7 FURTHER CO-ORDINATION IN WESTERN AND SOUTHERN DIVISIONS

Given the short time span that formal co-ordination has existed in these two areas this task has proceeded extremely well. In the western division Ireland and Scotland held a joint planning meeting on comparative fishing in Aberdeen in the autumn of 1999. Aberdeen again played host to Ireland and France for a further meeting in April 2000. Individual institute's protocols are well understood and a degree of standardisation has been reached with every expectation of further convergence. A further, closely co-ordinated survey will occur in November 2000.

The next five surveys planned for the year 2000 in the Southern division will be carried out following the protocols defined in the SESITS surveys manual for each area.

8 BETTER TIMING IN Q3 NORTH SEA SURVEYS

In 1999 the time frame of the surveys was too extensive, especially when it is considered that in 1999 a very large effort was made to process all the survey data prior to the Northern Shelf Demersal Working Group in October. There is a slight improvement for 2000 as the surveys will span the time period 21st July – 21st September. However, this is still 9 weeks and for biological and technical reasons (delivery of final results to NSDWG) it would be advisable to shorten the survey time in September. Recommendations on a shorter time frame from the appropriate Working Groups would be helpful to the various national representatives.

9 EXCHANGE OF VALID TOW POSITIONS

Considering the importance of this task in the saving of expensive net damage it is disappointing that more information has not been exchanged. This applies to all divisions. This TOR should be included for the next meeting with the hope that participants will bring data to the meeting.

10 MILLENNIUM 'BUG'

In the event this much-hyped event passed quietly. ICES were unable to make the IBTS data base completely Y2K compliant but by programming the software to assume that any year stored as a two digit value between 48 and 99 referred to the years 1949-1999 the problem over conflicting years is delayed until 2048. It is assumed that the database will be re-written before then. No Y2K problems were reported to the Working Group. The new, improved, Y2K compliant checking program was released by ICES to all institutes and again this will help considerably in the provision of 'clean' data to ICES.

11 NEW ABUNDANCE INDICES

There are two aspects to this task.

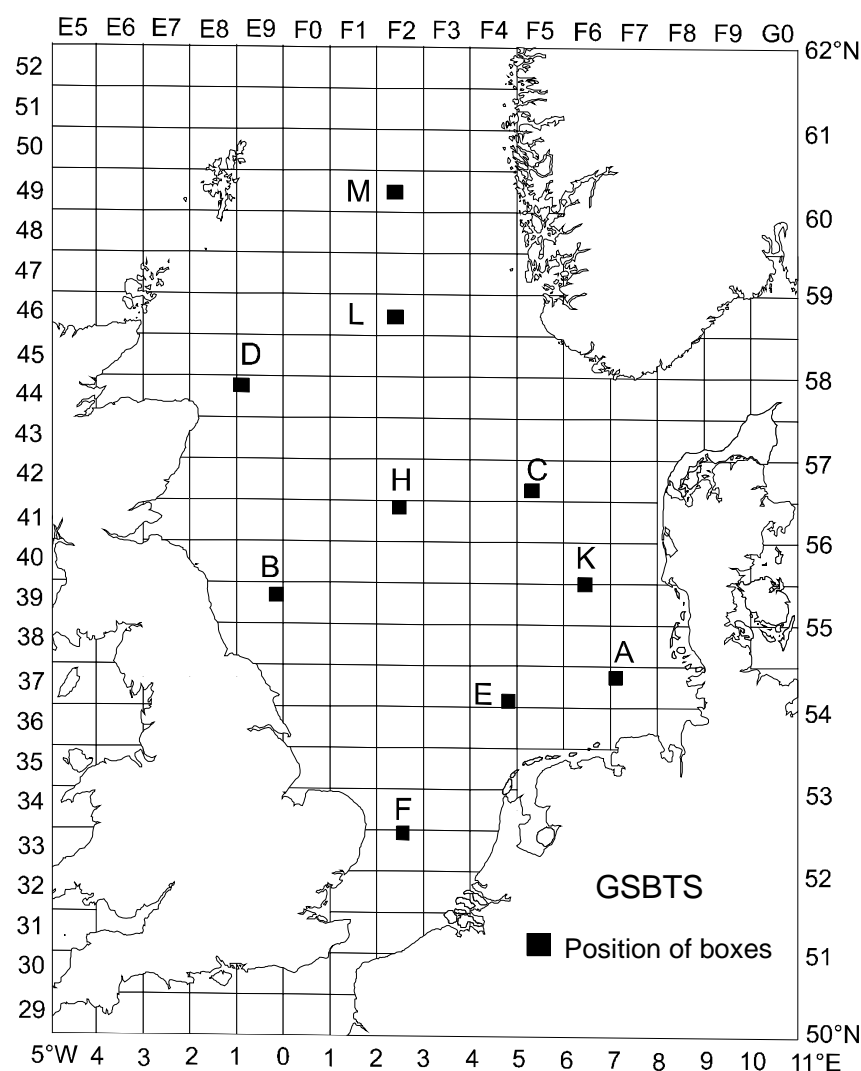
- a) In co-operation with CEFAS (UK), IFREMER (France) and MRI (Iceland) the Institut für Seefischerei and the Institut für Hydrobiologie und Fischereiwissenschaft (co-ordination) from Hamburg are carrying out an EU-Study entitled: "Survey-Based Abundance Indices that account for fine spatial scale information for North Sea stocks (FINE)".

This is a 3 year programme which started on 1st of April 1999. It is the intention of this study to investigate the value of using high-resolution spatial catch data; together with environmental and biological information, to improve the precision of model-based estimates of fish stock abundance and to evaluate performance of survey designs conducted at different spatial scales. Intuitively, information that improves understanding of the variability of fish distribution should

be helpful in specifying models to describe fish abundance. The study is proposed for North Sea stocks. The scale of the various surveys from which data are available ranges from a coarse resolution with a grid covering the whole North Sea (International Bottom Trawl Survey, IBTS and English Groundfish Survey, EGFS) to a fine-scale in several delimited areas (German Small-scale Bottom Trawl Survey, GSBTS; see Figure). Data are for a total of 12 years from summer surveys. The species of interest are cod, haddock, whiting, herring, Norway pout and mackerel. Data on abundance of these species as prey from the stomach content of the main North Sea predators will be used as ancillary information.

The study proposes the use of standard statistical methods and simulation techniques as well as development of new analytical procedures. As a first step standard geo-statistic techniques and regression models will be used to investigate the spatial distribution of stock abundance and the relationship with environmental and biological co-variables. Abundance indices will be produced in the form of numbers and maps. Techniques within a Bayesian framework will be developed to combine information at different spatial scales and to account for associated uncertainties. Based on the derived inference of the stock distribution, simulation scenarios will be investigated to define cost efficient sampling strategies and guide appropriate data analysis. Additionally, preliminary results will be used to determine the location of supplementary stations to sample the distribution of fish abundance at a fine spatial scale in areas currently not covered by the GSBTS. The main objectives of the study are:

- ❶ To produce model-based age disaggregated abundance indices that combine data from coarse- and fine-scale bottom trawl surveys for fish stocks in the North Sea.
- ❷ To evaluate the relevance of fine-scale catch and environmental survey data in the estimation of model-based abundance indices using data from North Sea surveys.
- ❸ To assess the performance of the proposed model-based indices and the currently used abundance indices under a range of alternative scenarios of spatial variability.
- ❹ To propose modifications in strategies of current surveys in the North Sea in the light of the results obtained, particularly in respect of sampling design and protocols for variables to be measured.
- ❺ To collect data on the fine-scale spatial variation of abundance and to expand the coverage of GSBTS so as to obtain additional information from the current sampling design for areas not covered by the grid.



- b) The Study Group on the Evaluation of the quarterly IBTS surveys (ICES CM 1998/D:4) recommended that the abundance indices should be re-calculated based on newly defined species-specific standard areas. The IBTS Working Group

(ICES CM 1999/D:2) defined the new areas and asked the ICES Secretariat to carry out the new calculations. This task is, however, still pending and the present WG can therefore not evaluate the new indices.

12 MEETING IN 2001

The next meeting of the IBTS Working Group (Chair: A. W. Newton, UK) will be held at the Marine Institute, Dublin from Monday 2nd to Thursday 5th April 2001 (inclusive). The suggested TORs for this meeting are:

- 1) investigate possibilities of extending the ICES IBTS data base to include western and southern division data;
- 2) evaluate comparative fishing trials during the IBTS in the western Division between France, Ireland and Scotland;
- 3) encourage further exchange of valid tow positions between all participating institutes;
- 4) agree on procedures on how to validate the integrity of the data in the IBTS database;
- 5) consider the implications of the conclusions of Theme Session K of the ASC in Bruges;

- 6) evaluate the new standard indices and the implications in using the new indices in assessments;
- 7) to examine the gear parameters extracted by ICES from the IBTS database and analyse net performance;
- 8) to examine, in conjunction with members of the WGOH and SGGOOS, those aspects of the IBTS which may form an ICES contribution to GOOS and what changes might be necessary to conform to the requirements of GOOS;
- 9) to review the co-ordination of surveys in the three divisions.

Supporting Information

Priority:	
Scientific Justification:	<p>1) The WG have always supported the general view that data from the western and southern divisions should be held in a central data base - preferably at ICES.</p> <p>However, ICES do not have the financial capability to support such a database and the EU cannot offer support within the frame of CFP (Studies) or the 5th Framework. We should review all options in the light of the DGXIV response.</p> <p>2) A complete analysis of Scotland/Ireland will be completed by December 2000 and preliminary data from France/Ireland (Nov 2000) should be available for comment.</p> <p>3) The exchange of clear tow positions greatly helps to avoid unnecessary gear damage and eventually reduces ship time and cost.</p> <p>4) The IBTS database is increasingly used for biodiversity studies and to study the effects of fishing. Sometimes this is done by scientists who know what our data mean, and sometimes by outsiders. The IBTS WG should ensure that the data are as correct as possible. Niels Daan (Netherlands) will prepare a working document to highlight some problems with the existing data.</p> <p>5) During Theme session K of the ASC in Bruges (Incorporation of External Factors in Marine Resource Surveys) some studies which use IBTS data will be presented. The IBTS WG should consider the outcome of this theme session for implications of survey design and analyses.</p> <p>6) The IBTS WG proposed to modify the way in which standard indices for the 8 target species are to be calculated. As soon as the new indices are calculated by the ICES Secretariat, the change from old to new indices should be evaluated.</p> <p>7) Apart from details on the fish caught during the IBTS, the IBTS Database also holds information on gear parameters. During the former full meeting of the IBTS WG in Lisbon, it was recommended to analyse the performance of the gear as it is used by different vessels.</p> <p>8) The IBTS was put forward by ICES as a contribution to the international GOOS Initial Observing System at the 1999 Paris GOOS commitments meeting. ICES, the SGGOOS and the IBTSWG must now ensure that the IBTS conforms to the requirements of GOOS in terms of its data collection, archiving and dissemination. It is possible that the ICES Hydrographer or a member of the ICES/IOC Steering Group on GOOS will be able to make a presentation at the Dublin meeting.</p> <p>9) This is the basic function of the WG. As an illustration of potential future analysis Francisco Sanchez will make a presentation of age distribution maps of the main target species in the Southern and Western divisions.</p>

Relation to Strategic Plan:	<p>1) Towards Scientific Objectives; 5c (Co-ordinate international monitoring and data management programmes that underpin ongoing ICES core science)</p> <p>2) Towards Scientific Objective;3g (Improve the accuracy and precision of abundance survey methods)</p> <p>3) Towards Scientific Objectives; 3g (Improve the accuracy and precision of abundance survey methods); 4a (Provide sound, credible, timely, peer-reviewed, and integrated scientific advice on fishery management and the protection of the marine environment in response to requests from regulatory commissions, Member Countries and partner organisations.</p> <p>4) Towards Scientific Objective;3g (Improve the accuracy and precision of abundance survey methods)</p> <p>5) Towards Scientific Objective;3g (Improve the accuracy and precision of abundance survey methods)</p> <p>6) Towards Scientific Objective;3g (Improve the accuracy and precision of abundance survey methods)</p> <p>7) Towards Scientific Objective;3g (Improve the accuracy and precision of abundance survey methods)</p> <p>8) Towards Scientific Objectives; 5a (To take an active role in the design, implementation and execution of global and regional research and monitoring programmes.); 5c (Co-ordinate international, monitoring and data management programmes which underpin ongoing ICES core science.)</p> <p>Towards Institutional Objectives 8c (Enter into agreements to collaborate on international programmes that are supportive of ICES goals, such as GLOBEC, GOOS, Climate Variability and Predictability (CLIVAR), and Global Environmental Fund Large Marine Ecosystem projects).</p> <p>9) Towards Scientific Objectives; 5c (Co-ordinate international monitoring and data management programmes that underpin ongoing ICES core science), 3g (Improve the accuracy and precision of abundance survey methods).</p>
Resource Requirements:	<p>1) 4 day IBTS meeting. Pre-prepared documents from members.</p> <p>2) 5 days Chairman's time to edit.</p> <p>3) TORs 1 – 9) It is estimated that each Tor will require 4 hours pre-preparation</p> <p>4) 2 days preparation by ICES Secretariat</p> <p>5) 1 day preparation by ICES Secretariat</p>
Participants:	<p>All members</p> <p>All members will participate in all TORs although leads for each TOR have still to be allocated.</p>
Secretariat Facilities:	2 days for Secretariat to prepare IBTS WG Report

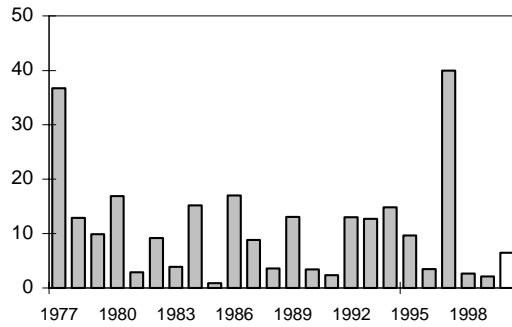
Financial:	<p>4 days attendance of Fisheries Biologist (H. Sparholt) 2 days attendance of ICES Hydrographer (H. Dooley)?</p> <p>1) None</p> <p>2) None</p> <p>3) None</p> <p>4) None</p> <p>5) None</p> <p>6) None</p> <p>7) None</p> <p>8) None</p> <p>9) None</p>
Linkages to Advisory Committees:	<p>1)</p> <p>2)</p> <p>3)</p> <p>4)</p> <p>5)</p> <p>6)</p> <p>7)</p> <p>8)</p> <p>9)</p>
Linkages to Other Committees or Groups	<p>1)</p> <p>2)</p> <p>3)</p> <p>4)</p> <p>5)</p> <p>6)</p> <p>7) Consultative Committee, SGG00S</p> <p>8)</p> <p>9)</p>

Linkages to Other Organisations:	1) 2) 3) 4) 5) 6) 7) 8) IOC, GOOS 9)
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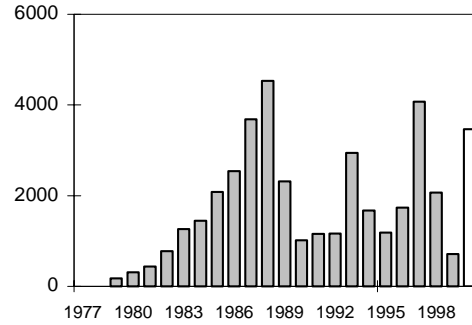
APPENDIX 1

International Bottom Trawl Survey: 1-group indices as average N/ hour fishing
 1977-1999 Final indices, 2000 preliminary values based on 393 hauls

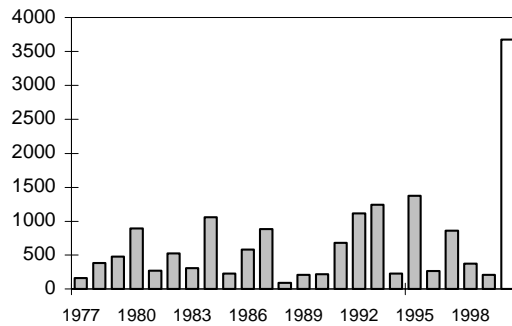
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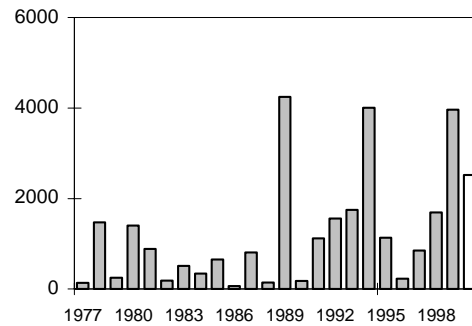
HERRING



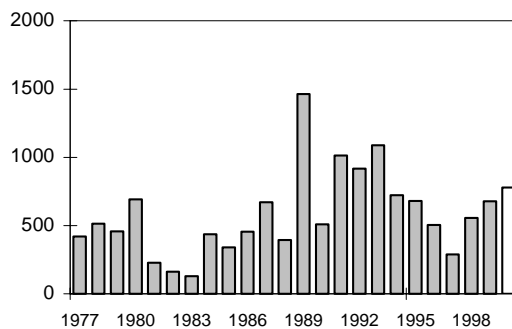
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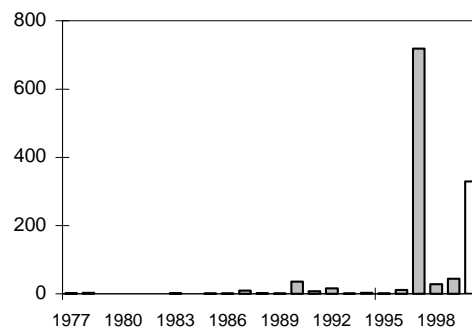
SPRAT



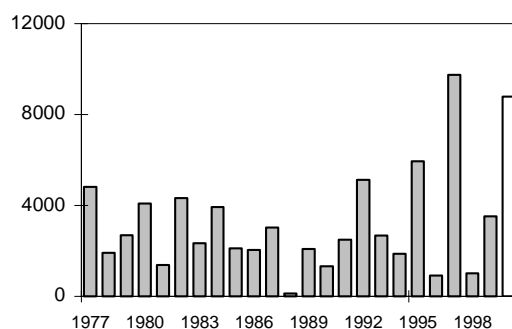
WHITING



MACKEREL



NORWAY POUT



	final index 1999	reliminary 2000
cod	2.1	6
haddock	212	3678
whiting	676	778
Norway p	3527	8789
herring	715	3468
sprat	3964	2521
mackerel	43.7	329