ICES PGCCDBS Report 2005

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Report of the Planning Group on Commercial Catch, Discards and Biological Sampling (PGCCDBS)

1-4 March 2005

Oostende, Belgium

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Conseil International pour l'Exploration de la Mer

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1 INTRODUCTION

1.1 Terms of reference

During the Annual Science Conference (92th Statutory Meeting) in Vigo, September 2004 it was decided that an ICES Planning Group on Commercial Catch, Discards and Biological Sampling [PGCCDBS] should meet in Oostende, 1–4 March to:

a) Review the recommendations of the EU regional Data Collection Coordination Meetings and address the future of the PG in light of the role and involvement of non-EU countries,

b) Propose sampling methodology for fleet/fishery based data collection;

c) Review existing information and propose sampling strategies for recreational fisheries;

d) Review national descriptions of small scale fleets by country and evaluate the strategies used by different countries to obtain basic information for management purposes;

e) Review the possibilities of using shared ALKs;

f) Review the reports from the age-reading exchanges and workshop and identify on a regional basis the candidate stocks and species requiring improved ageing;

1.2 List of participants

The meeting was attended by:

Alvaro Abella	Italy
Richard Ayers	UK
Frans A. van Beek	Netherlands
Margaret Bell	UK
Ulrich Berth	Germany
Otte Bjellan	Norway
Paolo Carpentieri	Italy
Gráinne Ni Chonchuir	Ireland
Hans Peter Cornus	Germany
Jørgen Dalskov (chair)	Denmark
Henrik Degel	Denmark
Wim Demaré	Belgium
Christian Dintheer	France
Peter Ernst	Germany
Wlodzimierz Grygiel	Poland
Ryszard Grzebielec	Poland
Maria Hansson	Sweden
Isabel González Herraiz	Spain
Mary Labropoulou	Greece
Sebastiaan Luyssaert	Belgium
Richard Millner	UK
Philippe Moguedet	EU Commission
Alberto Murta	Portugal
Tapani Pakarinen	Finland
Costas Papaconstantinou	Greece

Juan-Pablo Pertierra	EU Commission
Maris Plikshs	Estonia
Antonio Punzón	Spain
Jukka Pönni	Finland
Tiit Raid	Estonia
Katja Ringdahl	Sweden
Evelina Sabatella	Italy
Maria Sainza	Spain
Marina Santurtun	Spain
Christoph Stransky	Germany
Pedro Torres	Spain
Joel Vigneau	France
Willy Vanhee	Belgium
John F. Witzig	USA

1.3 Background

The PGCCDBS was established at the ICES Annual Science Conference in 2001 for having its first meeting in 2002. The establishment of the group was to ensure continuation of international cooperation on fisheries data collection after the data collection regime was changed from international cooperation programmes to national data collection programmes in 2002.

The majority of PGCCDBS participants represent EU member countries. All these countries have to comply with EU Commission regulation 1639/2001 and from 1. January 2006 EU Commission regulation 1581/2004 on fisheries data collection (these Commission Regulations is in this report referred to as the Data Directive, DCR). Therefore, this report may have a more EU focused contents. Though effort has been made to facilitate possibilities of better coordination and cooperation of data collection of fisheries data in the Baltic, the North Sea, Western and Southern waters and in the Mediterranean, still significant effort have to be put into further development of the international coordination and cooperation.

Nowadays, EU member countries sampling schemes are established and operate on an international basis. Until 2004, no international mechanism was established to ensure internationally coordination of the sampling of fishery dependent data. In 2004 the EU Commission established Regional Coordination Meetings (RCM) for the Baltic, the North Sea, Western and Southern waters and in the Mediterranean respectively. Most of the research vessel surveys are coordinated through planning groups such as ICES PGHERS, ICES WGBEAM, WGBIFS and IBTSWG.

2 REVIEW OF THE RECOMMENDATIONS FROM THE REGIONAL COORDINATING MEETINGS (RCM)

PGCCDBS reviewed the recommendations made by the start up meetings of the Baltic, Mediterranean (Med), North East Atlantic (NEA), and North Sea (NS) RCMs in 2004 and early 2005. The recommendations are listed below by topic. PGCCDBS noted whether action has already been taken and if not has tried to suggest how the recommendations should be taken forward. In most cases, PGCCDBS was not in a position to recommend actions and has referred further decisions to the Liaison meeting with the Commission, the RCM chairs and the SGRN chair which will take place in Brussels on 10 March 2005.

2.1 Summary of Recommendations

2.1.1 Liaison and RCM meetings

NS/ Baltic: a liaison meeting to be held annually between chairs of the RCMs, the chair of SGRN and the Commission for 1 day each year, in order to maintain communication between the areas and to ensure that recommendations requiring wider participation are effectively dealt with.

Action: a Liaison group has been established and is meeting 10 March 2005.

PGCCDBS comment: For future liaison meetings it is suggested that both the outgoing and new RCM chair should be present

NEA/Med: The chair of each RCM should hold the position for a period of one year and try to ensure that all recommendations are followed up and actioned.

Action: already agreed on

NEA/Med: The Reports of RCM's should be distributed to all National Correspondents, STECF, SGRN and the Commission.

Action: already agreed on

Baltic: The RCM recommends that reports from meetings related to the DCR such as ICES WG and SG should be distributed to the Baltic Regional mailbox (BalticRegionalPlanningGroup@dfu.min.dk) by the participants from the Baltic region.

Action: Baltic RCM

Baltic: The communication lines between RCMs and ICES/ NAFO/ICCAT need to be discussed in anticipation of a clarification during the first liaison meeting between RCM chairs. The Commission should discuss the issue with ICES.

Action: to be dealt with in Liaison group

PGCCDBS comment: The problem of communication between the RCMs and management bodies such as ICES remains unclear. Meetings of PGCCDBS are one way in which issues raised by RCMs can be considered and actions forwarded if appropriate to ICES. The problem of communication with assessment Working Groups is noted below (sect 2.5). There needs to be a much closer dialogue between the users of the data collected under the DCR and the people involved in collecting data. This communication is not happening effectively with most WGs and needs to be improved.

NEA: Data Uses – All RCM reports should include a clear table indicating the type of DCR data presented to the Working Group by each Member countries.

PGCCDBS notes that a template has been developed for use by all MS in their technical reports for 2004.

2.1.2 Overlapping stocks

NS: Western mackerel, northern hake and IVa horse mackerel should be dealt with by the NEA RCM. This is to be agreed on between RCM chairs at the first Liaison meeting.

Action: Liaison meeting

Baltic: Final decision concerning the distribution of stocks Skagerrak and Kattegat between the NS and Baltic RCM should be agreed on at the first Liaison meeting between RCM chairs.

Action: Liaison meeting

2.1.3 Economic data

NS: Future updates of the DCR should review and clarify the definitions of key parameters in modules C and D

Action: Liaison group

NEA/Med: Fleet Activity: All Member countries not directly involved in the workshop in Paris in May 2004 are encouraged to look at the report of the workshop, and do the analysis recommended as a precursor to their participation in the follow-up workshop in 2005.

Action: Liaison group

NEA: Processing Industry: RCM would agree with a workshop to be held in 2005 to address the problem areas identified by the STECF Sub-group for Research Needs (SGRN) and would encourage Member countries to participate.

Action: Liaison group

NEA: Forum for Assessment of Economic Data: RCM recommends that discussions be established for the collation and analysis of economic data; its role should be similar to that carried out by ICES with regards to biological data, providing a degree of independent assessment and analysis of the data.

Action: Liaison group

Baltic: The group recommends further analysis on the linkage between the vessel unit and family/company income; clarification of specific collecting patterns for small scale fisheries (like collecting intervals *etc.*); adding geographical sub-segmentation (Baltic / North Sea).

Action: Liaison group

Baltic: The group support the recommendation of the STECF Sub-group on economic affairs (SGECA) on studies on: fixed costs, investment and employment to clarify a common method for the data collection framework.

Action: Liaison group

Baltic: Un- and mis-reported landings should be focused on in future studies.

Action: Liaison group

Baltic: The subgroup supports the initiative of the Joint Research Centre (JRC) to implement an internet based information platform with all relevant documents (incl. workshop papers) and contact persons. Access for all persons involved in the data collection framework should be possible.

Action: Liaison group

Baltic: MS should prepare a short presentation on methods and practical implementation in the next meeting for the small scale fishery.

Action: Liaison group + TOR next Baltic RCM meeting

Baltic: Some key indicators on quality (benchmarking) should be developed and adapted, so the group support the initiative of the North East Atlantic Co-ordination Meeting

Action: Liaison group

2.1.4 Self sampling

NS: The Commission should consider a Workshop to undertake a review of the effectiveness of and if necessary develop protocols for implementing self sampling programmes including validation and verification procedures.

Action: Liaison group

PGCCDBS notes that pilot self sampling systems are in place for Nephrops in Ireland and Belgium and for demersal species in SW England. There is also a self sampling scheme for Baltic cod in Germany. There are generally considered to be serious verification problems with all self sampling schemes and PGCCDS supports the recommendation for a workshop to consider best practice and share experiences in this area.

2.1.5 Surveys

NS/NEA: The EU Commission should be approached to support a workshop that would carry out an inter-calibration exercise in relation to identifying and counting *Nephrops* burrows from underwater TV survey data.

Action: Liaison group

PGCCDBS comment: this request should be referred to the Nephrops WG for guidance on action.

NEA: An EU Commission study contract should be set up to look at standardisation, co-ordination, efficiency and usefulness of IBTS surveys in the NE Atlantic.

Action: Liaison group

PGCCDBS comment: PGCCDBS felt that this discussion should in principle be dealt with in the IBTS WG rather than a study contract. Further, PGCCDBS stresses that IBTS still needs to resolve the issue of standardisation of gear in the NE Atlantic area to the satisfaction of the countries currently under-taking Priority 1 surveys.

Med: The RCM noted the lack of international coordination for the surveys dealing with small pelagic species (sardine and anchovy). It recommends a workshop to be organised through DCR to identify the way for such a coordination (best periods depending on the objectives, standardization of protocols, intercalibration, written guidelines etc).

Action: Liaison group

Med: the RCM emphasised that Medits, as other priority 1 surveys, should contribute to the advisory process at a national level and through international bodies (GFCM, STECF, Working groups))

Action: Liaison group

PGCCDBS comment: this is noted but is not something that PGCDBS can influence

Med: The Mediterranean RCM recommends a meeting on tuna tagging to be held in the beginning of 2005 to include its conclusions in the submissions for 2006 National Programs

PGCCDBS notes that a meeting will take place in Italy in May.

Baltic: RCM recommends that a redesign of surveys should be handled by WGBIFS. It is of great importance that Finland and Estonia will participate in the forthcoming WGBIFS meeting in Rostock in primo April 2005.

Action: This action has already been agreed on.

2.1.6 Fleet based approach

NS/Baltic: The DCR should move to metier based sampling programme. Further it suggests that rather than establish a complete list of national metiers which could take a considerable time to be agreed, SGRN should be requested to endorse the definition of a metier based on the work of expert groups such as SGDFF (ICES, 2004) as part of the upcoming revision of the regulation. This definition should be used by MS to determine their metier list which can be reviewed in future by the Commission.

action: Liaison meeting

PGCCDBS comments: this general approach is supported by PGCCDBS (see chapter 3).

NS/Baltic/NEA: All Member countries continue to work on defining their fleet metiers in line with the protocols outlined in the 2003 ICES Report of SGDFF (ICES 2003b).

PGCCDBS comments: PGCCDBS supports this approach and notes that it will be developed further at the meeting on fishery based forecasts in Nantes in May 2005(ICES SGDFF) (see chapter 3)

NEA: A Workshop should be held in early 2006 to attempt to group the large number of national metiers into a smaller number of more manageable standard metiers for the North East Atlantic Area. The results from this and similar Workshops from other areas could then be used in any revisions to the DCR as it is adjusted to meet the needs of a fleet based sampling strategy.

PGCCDBS comments: Since this will be discussed by SGDFF in May 2005, it may not be necessary to hold a further workshop in 2006

NEA/Med: New metiers are defined for biological sampling and should be consistent with the metiers/operational units defined for economic data collection.

PGCCDBS noted that this is appropriate for all RCM areas. It also notes that in the Mediterranean the possibility of collecting data by operational units, which are defined as metiers and include economic characteristics, may be appropriate.

For fleet base approach issues, see also section 3.

2.1.7 Small scale fisheries

Baltic: The meeting recommends that the discussion on sampling of small scale fisheries should be continued at the next (September 2005) Baltic RCM meeting in order to utilize ideas and information from the planned workshop in June in Kavala, Greece.

Action: Baltic RCM

For small scale fisheries issues, see also section 5.

2.1.8 Foreign landings

NS/NEA: MS start bilateral talks as soon as possible, with a view to establishing bilateral agreements on the issue of foreign flag vessel sampling.

NEA: RCM encourages Member countries to include copies of these agreements in their National Program submissions for the year 2006.

Baltic: in case where more than 5 percent of the national quota is landed in a foreign country, bilateral agreements should be made.

PGCCDBS notes that a general template covering the key issues that need to be included in the agreement is given in appendix 5 of the Baltic RCM, appendix 4 of the NEA and Appendix 3 of the NS RCM. In preference, bilateral agreements could be most easily made at the RCMs, by correspondence or through separate meetings if necessary.

2.1.9 Precision

NS: MS carry out a precision analysis on at least one selected stock from within the NS RCM region, using the guidelines and protocols suggested at the Precision Workshop held in Nantes 2004 (ref). The results of this analysis should be reported back to the NS RCM in time to be considered at its next meeting.

Action: NS RCM

PGCCDBS comments: in view of the difficulties in adopting a common approach to precision estimation, PGCCDBS considered that this analysis should wait until the outcome of the Hands-on workshop on precision calculation which has been proposed for 2006.

Baltic: an analysis revealing and comparing the consequences of different raising methods is made as soon as effort information and matching raising procedures are included in the *FishFrame* database.

Action: Baltic RCM

2.1.10 Ageing exchanges and workshops

NS: ageing exchanges and workshops should be open to participants from all RCM regions and that invitations to participate should be sent to the age reading coordinators (Table 6 of PGCCDBS 2003 (ICES, 2003a)) as well as all NC to forward to relevant national scientists. RCM recognises that this list needs do be updated regularly and this should be a task for PGCCDBS.

Action: already been actioned

NS: countries evaluate the potential species requiring otoliths exchanges and age determination workshops in 2005, 2006 and 2007 in order to propose these to the RCM Liaison meeting and at the 2005 PGCCDBS meeting in Ostend.

Action: to be updated by PGCCDBS as this group evaluates the comments made by the Assessments groups on quality aspect in age reading

2.1.11 ALKs

NEA: A workshop should be set up to deal with the issue of combining multiple Age Length Keys (ALKs).

Action: *Action: Liaison group*

PGCCDBS notes that such an exercise was done on combining ALKs of different countries and areas for Baltic sprat, herring and cod. The conclusion was that there were difficulties in combining ALKs. In the case of cod this may be due to year class interpretation. PGCCDBS discussed the problems of combining ALKs (see section 6) and recommended that countries should test their own data using software which will be made available through PGCCDBS. For those countries which will be using FishFrame, there is already the facility to compare ALKs and countries were recommended to do so.

Other Biological Parameters

NS: In all cases the measured weight (either gutted or live) should be recorded in databases rather than weights derived from gutted/whole weight conversion factors.

Action: all RCMs should note this and adopt a common approach when reporting weight measurements in data bases

Baltic: The RCM recommend that for both Eastern and Western Baltic cod, otoliths weight should on a routine basis be collected as a complement to age reading. This must start from 2005.

Action: all MS. A protocol for taking weight measurements and the accuracy required should be provided by the Baltic RCM.

NS: A preliminary analysis of the level of maturity sampling and sampling coverage by area and time should be carried out and presented to the next meeting of the RCM with a view of establishing task sharing agreements from 2007 onwards. It was agreed that Belgium would take on responsibility for the demersal species and the Netherlands would describe the situation in relation to pelagic species.

Action: NS RCM

NEA/Med: A Workshop on the standardisation of maturity staging and collection is proposed to be funded by the Commission for a series of priority species.

Action: Liaison meeting

PGCCDBS comment: The NS RCM found that most countries are using maturity keys that can be mapped down to a standard key. In the case of demersal species, all countries were using keys that could be mapped to the 4-stage IBTS key. It may be sufficient for other RCMs to evaluate this by correspondence before there is a need to set up a workshop. PGCCDBS considered that it was up to WGs to provide guidance about protocols for standardising maturity staging.

Baltic: The RCM recommends that sampling of biological parameters should be carried out throughout the entire triannual period.

Action: Baltic RCM

PGCCDBS notes that this issue should be dealt with in all RCMs

Baltic: The RCM recommends the assessment WGs to spend time discussing the issue of mismatch in time between surveys, where data on "other biological parameters" is sampled and actual spawning seasons

Action: this was specifically felt to be a problem in the Baltic for WGs dealing with cod and sprat

2.1.12 Integrated North Sea Database

NS: the *FishFrame* database should be used on an exploratory basis to input raw level data from 2004 from both EU and non-EU countries. Countries should try to input data in time to be used by the stock coordinators of the WGNSSK by May 2005. A database subgroup (chaired by Henrik Degel) will provide guidelines for data entry and the timing of data submission.

PGCCDBS was informed that the FishFrame for the North Sea was now available for data entry. MS should obtain a password from the FishFrame manager and would then be able to upload data to FishFrame. The deadline for providing data to FishFrame in order to be used by the coordinator for NS roundfish is 31 May.

Action: NS RCM

NS: All RCM's also explore the use of the *FishFrame* database for inputting raw level data and in a first instance can contact the chairman of the database subgroup.

Action: Liaison group

2.1.13 Sampling level database

Baltic/NS: RCM recommends that the each MS on monthly basis update the "Real Time Monitoring Spreadsheet" giving the actual sampling status in each country and giving the coverage as defined according to the DCR. The spreadsheet is available at http://www.dfu.min.dk/samplingstatus/ .

Action: MSs

PGCCDBS notes that spreadsheets are available for inputting data on a trial basis for North Sea cod, and for Baltic cod, herring, sprat and flounder. Instructions for completing the spreadsheets will be available from DIFRES by 15/03/05.

2.1.14 Web site

NS/NEA/Med: The Commission establish a web site for the Data Collection Regulation. This website should contain the DCR (including all the revised versions), all relevant reports from the Commission (*e.g.* SGRN reports, Minutes of the Management Committee) and Member countries reports (*e.g.* National Programmes, technical reports, reports on pilot studies), give details of pending reports to be submitted to the Commission together with clear guidelines on the nature of the reports. The web site could also act as a bulletin Board for the DCR. Such a web site will be a considerable benefit to all participants involved in the co-ordination of the DCR.

PGCCDBS was concerned about the lack of progress in the development of a website and urged the commission to prioritise this issue and to provide an indicative timescale for the completion of the site and circulate the web address.

2.1.15 Small scale projects

Med/NS/NEA Baltic: Member countries are encouraged to look at other areas of the DCR that would benefit from collaborate studies that could be eligible for this funding.

PGCCDBS notes that areas which could require funding include:

Landing size category sampling;

- *precision estimation (software development and inclusion into FishFrame);*
  - *combining ALKs;*
  - *construction of time series of discards;*
  - *discard raising procedures.*

PGCDBS further urges those countries with a particular interest in these areas to take the initiative by preparing a proposal for consideration by the Commission.

Baltic: The RCM recommends that any suggestions for small scale project should be well outlined at the next RCM meeting including estimates ready for application including cost estimates and need for manpower etc.

Action: Baltic RCM

PGCCDBS recommends that this approach should be adopted by all RCMs

The EU RCM report from the Baltic, North Sea, Atlantic and Mediterranean are attached as Annex I – IV.

2.2 Review of data provided to ICES assessment WGs

Prior to the meeting, PGCCDBS members were asked to complete templates listing comments or recommendations from ICES WGs on the landings, discard or biological data provided to the WG. It was apparent that there is no clearly defined or organised way in which data collected under the DCR is provided to WGs. In most cases, the stock coordinators request data from individual countries and these requests generally only relate to data historically provided to the WG and regularly included in assessment analyses. Stock co-ordinators are not always aware of newly available data and consequently may not ask for it or they may feel that the data is not yet in a form which can be utilised by the WG. A typical example is discard information. Most countries have discard data but do not always provide them to the WG because stock coordinators have not requested it or because of the shortness of the data series. In many cases there has also been no agreement on the optimum way to raise the data and individual countries may be using different approaches. The data provided to the roundfish stock coordinator for the ICES North Sea Demersal Working Group in 2004 is shown below:

DEMERSAL DISCARD DATA PROVIDED FOR WGNSSK (NORTH SEA)

SPECIES	AREA	COUNTRY		
cod	IV	Scotland	Denmark	Germany
cod	7d	England		
cod	IIIa	Sweden		
haddock	IV	Scotland	Denmark	Germany
haddock	IIIa	Sweden		
whiting	IV	Scotland	Denmark	Germany
whiting	7d	NONE		
saithe	IV	Scotland	Denmark	
angler	IV	Scotland		

It is clear that many countries are still not providing data on discards and there are also gaps in the provision of weight at age and age composition data. At the same time, because of time constraints during assessment meetings, WGs rarely have time to carry out exploratory analyses or combine disaggregated data. There is also a reluctance to use new data in assessments when these have not been trialed beforehand and the implications to the assessment fully explored. PGCCDBS recognised that before new data is included in assessments it should be fully tested and the same quality controls included as in all other data used by the WG. In order to assist in ensuring that new data collected under the DCR is fully utilised by assessment WGs, PGCCDBS recommends that WGs should provide stock coordinators with a list of the data to be provided by individual countries for the assessment process in ICES. This list should also include standard methods for raising data and methods for aggregating data where necessary. PGCCDBS suggests that a list of stock coordinators should be provided on the DCR and the ICES websites and countries should note which data were submitted to the assessment working groups when completing table 4.1 of the DCR Technical Report. PGCCDBS also noted that there are stocks sampled under the DCR for which there are no assessment working groups. Data on these stocks will be reported annually in Technical Reports to the Commission.

List of data collected under the DCR which should be supplied to assessment WGs on a stock basis:

Landings: tonnes, catch numbers at age, catch weight at age, stock weight at age

Discards: tonnes, catch numbers at age, catch weight at age, stock weight at age

Fleet: tuning, catch numbers at age, CPUE

Survey: catch numbers at age

Biological parameters: maturity ogives

Indication of spatial and temporal aggregation of data

2.2.1 Comments from individual WGs on data availability and quality

I order to get an overview on data availability and quality of the data provided to the ICES assessment working groups, members of the PG have had the task to go trough the assessment WG report for extracting comments on data. Not all WG reports have been scrutinize for comments on data availability and quality. Comments from each of the WG reports listen below have been scrutinized. Details are given in Appendix I

Herring Assessment WG for the Area South of 62°N [HAWG]

North-Western Working Group [NWWG]

Working Group on the Assessment of Southern Shelf Demersal Stocks [WGSSDS]

Working Group on the Assessment of Southern Shelf Stocks of Hake, Monk and Megrim [WGHMM]

Working Group on the Assessment of Mackerel, Horse Mackerel, Sardine and Anchovy [WGMHSA]

Pandalus Assessment Working Group [WGPAND]

Working Group on Elasmobranch Fishes [WGEF]

Working Group on Nephrops Stocks [WGNEPH]

Northern Pelagic and Blue Whiting Working Group (WGNPBW)

Deep Sea Working Group

Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak (WGNSSK)

Working Group on the Assessment of Northern Shelf Demersal Stocks (WGNSDS)

Baltic Fisheries Assessment Working Group (WGBFAS)

2.3 The future role of the RCMs and involvement of non-EU countries

The EU Commission decided in 2004 within fisheries data collection to form a counterpart to the Regional Advisory Committee's. These Regional Coordination Meeting's (RCMs) were established for the Baltic, the North Sea, the Western Areas and Atlantic and for the Mediterranean. Non-EU countries were invited to participate in these data collection planning group meetings.

The members of the RCMs are the National Correspondent, one biologist and one economist from each country. The idea of establishing the RCMs was to have a forum where coordination of the fisheries data collection could be discussed and agreements could be made. It should not be a forum where detailed technical issues should be discussed but a forum where agreements on who is doing what and also potential financial issues agreed.

Even though, non-EU countries are invited to participate in the RCMs, the topics discussed at these meetings will necessarily be very EU-focused and my not secure cooperation and coordination between all European fishing nations.

3 SAMPLING METHODOLOGY FOR FLEET/FISHERY BASED DATA COLLECTION

3.1 Introduction

The task of assessing the number of fish composing a specific stock can be undertaken in several ways, there are a few possible choices such as relative or absolute indices coming from scientific survey or CPUE analysis. The choice of trying to assess the absolute number of fish and understand the interaction between fishing activities and historical behaviour requires extensive sampling of the catch. The role of Catch, Discard and Biological sampling is to provide data to groups such as assessment working groups and the data they may require is the information on the catch (landings + discards+ unreported landings) from fishing activities.

The proper place to sample the catch is on board the fishing vessels at the time of capture, however in many cases this is not thought to be a practical solution.

A practical approach to sampling the catch is to sub-divide it into fishery units which can then be sampled somewhere during the passage of a fish from the sea to the consumer. The definition of fishery units can range from 'Active Gears and Passive Gears' with only 2 strata up to single vessel with potentially 1000s of strata.

With many strata comes the issue of being able to sample each cell of the matrix at an acceptable level.

Well defined fishery units will allow the collection of national data on Landings, Discards, Biological and Economic data using the same operational units. These fishery units should be defined to align with technical management units, and to enable international aggregation. It should be noted that although defined strata may be identical in terms of vessels, gear, target species and area there may be national issues (*e.g.* market practices) affecting the exploitation pattern that make international aggregation for sampling less effective.

The definition of a fishery unit obliges the countries to provide all the necessary information at this particular level of disagregation. The technical information collected on the EU Logbook (gearcodes, species grouping) does not automatically allow allocation to a strata. Strata definitions must be also sufficiently flexible to allow new definitions or updating of existing ones.

3.2 Special comment on discard sampling

DCR has made good progress in the area of discard sampling which is part of a fleet based approach. It is recognised that the present sampling intensity/procedures are not likely to lead to a time series good enough to be included in analyses in situations. An evaluation of the current data set is needed to refine the existing approaches and examine new approaches to estimating discards.

3.3 The concept of Metier

Definition of fleet, fishery and metier for this subgroup and the method for identifying them were taken from the ICES SGDFF 2003 report (ICES, 2003b).

A discussion on the issue of metier in terms of *a-priori* or *a posteriori* definition took place. *A-priori* definition assumes that it is known before a vessel begins a trip what species will be

targeted and what gear will be used and that this will not change whilst the *a posteriori* definition relies on catch composition.

A lot of examples of obvious *a priori* defined metiers can be found but it is sometimes the case that there is no acknowledged target species or the target species will change due to external forces *e.g.* catch rates or market forces.

The point of definition is especially important when taking management action, it is impossible to address management measures to a metier using *a-posteriori* definition. Preparing a sampling plan based on *a-priori* definition relies on the metiers and fishing pattern remaining stable.

The group supports the use of *a-priori* definitions where possible but realises that in some cases there is a need to be able to define the métier post-capture.

A metier can be described as polyvalent multi species but this can cause practical issues for sampling and affect the precision of this sampling. A suggested practical approach is to cluster a group of ports or locations and plan sampling around this geographical grouping.

In some cases a vessel can participate in more than 1 metier during a single trip but this can be taken into account only if the primary data (*e.g.* catch, gear, effort) can be allocated accordingly.

3.4 The importance of area and period in the definition of metier.

The aim of stratifying is to sample the different exploitation patterns present within a stock. Area and time are more important in describing the different patterns than for example vessel characteristics.

The precision of the area definition related to a metier is of particular importance. Splitting time in quarters may be an arbitrary feature of stratification for data collection in terms of assessment, it could have no influence on the exploitation pattern. Period could be defined in other terms.

3.5 Moving to a fishery based sampling: A unique opportunity

The final aim of the data gathering program is to provide high-quality data for stock assessment. Currently there are three main sampling methods in use (ICES, 2005). The low number of sampling methods described can, however, give a false idea of the level of harmonisation as in fact there are not two countries which are using exactly the same sampling design. This wealth of sampling strategies does not help the provision of high-quality data in a cost-efficient way.

Moving towards a fishery based management and a fishery based sampling regime raises a lot of challenges, but is also a unique opportunity for harmonising the sampling program on a regional level. With a few harmonised strategies it will become possible to combine data on the most detailed level of aggregation and to optimise the common sampling strategy in terms of precision and cost.

3.6 Recommendations

In May 2005 there will be a workshop in Nantes dealing with the problem of fleet based data collection approach. All experts attending this workshop should have read the SGDFF reports from 2003/2004 (ICES, 2003b, 2004) and used their recommendations on how to specify metier to prepare beforehand their data, basic definitions and structures for their national metiers.

All countries involved in the DCR, participating or not to the Nantes workshop, should provide information on their national metiers. All data should be recorded at the most detailed possible level of desegregations.

An evaluation of the current data set is needed to refine the existing approaches and examine new approaches to estimating discards.

Proposed ToR for Nantes meeting

g) Propose a common definition for all the concepts used for fleet/fishery based approach gathering together the definitions already proposed by the biologists (SGDFF 2003(ICES, 2003b)) and the economist (SGECA 2004)

h) Compile all the defined metiers by country

i) Consider the list of fleets/fishery/métiers in the light of them being practical as operational and sampling units for discards, biological and economic parameters. Special focus should be set on the possibility of harmonising the definition by countries on a Regional scale

j) Define biological and economic data requirements for fleet based management advice taking into account situations where full analytical assessments may not be possible or needed and taking into account the prospect to use these data in other fleets/fisheries/métiers stratification than those presently in use

k) Indicate deficiencies in present source of information such as logbook which need to be addressed in the light of future data requirements

Definition of concept

The discussion about fleet/fishery based approach makes use of different concepts that are not always understood the same way by one or another. This misunderstanding is put to the fore by the different definition given by the biologists of SGDFF in 2003 (ICES, 2003b) and the economists of SGECA in 2004 (Cf. table bellow). It has been agreed to ask the workshop on the fleet based approach in Nantes (May, 2005) to begin their work by proposing new united definitions.

CONCEPT	SGDFF 2003	SGECA 2004
Fleet	Physical group of vessels sharing similar characteristics in terms of technical features and/or major activity (*e.g.* the Dutch beam trawler fleet < 300 hp, regardless of which species or species groups they are targeting).	an aggregation of fishing vessels during a reference period (*e.g.* the year) more or less homogeneous in terms of fishing strategies (combination of metiers). A vessel can practice different metiers and can belong to different fisheries but can be classified in only one fleet The fleet gather homogeneous vessels which have more or less the same fishing strategies during a period of reference (*e.g.* a year). This homogeneity is assessed in terms of fishing effort and economic information
Fishery/ Operational units	Group of vessel voyages targeting the same (assemblage of) species and/or stocks, using similar gear, during the same period of the year and within the same area (*e.g.* the Dutch flatfish-directed beam trawl fishery in the North Sea).	Group of fishing vessels practising the same metier during the same period of the year. This concept is related with the concept of Operational Unit if the economic structure (cost patterns, size of the vessel…) is included in the definition of the metier. During a year, a vessel can belong to several fisheries or operational units.
Metier	A homogeneous Subdivision of a fishery by vessel type (*e.g.* the Dutch flatfish-directed beam trawl fishery by vessels < 300 hp in the North Sea).	A combination of “gear*target species*fishing area”. During a year, a month, or even a fishing trip, a vessel may practice one or several “metiers”. The Working Group noted that the choice of metier or a particular combination of metier made by a vessel during a year (or the operation unit) reflects its fishing or operating strategy

4 SAMPLING STRATEGIES FOR RECREATIONAL FISHERIES

4.1 Present sampling programmes in Europe

Pilot studies on surveying catches of salmon and tuna fish have been carried out in a number of European countries. In most cases methods such as sending questionnaires to a limited number of recreational fishermen have been used. Also contacts have been made to local angler associations and interview of skippers of angler charter boats.

In 2006 pilot studies on recreational fisheries for cod have to be carried out according to the DCR. In some countries limited studies on recreational fisheries for cod have been conducted and preliminary result shows that for some limited areas these catches can be significant when compared to the commercial catches for the same areas.

4.2 Marine Recreational Fisheries Statistics Programs in the United States

As an inspiration on how data collection schemes have been set up in countries outside Europe, John F. Witzig, Fisheries Statistics Office, NOAA Fisheries Service, U.S.A presented several approaches used in the States.

Considerations:

Overall recreational fisheries landings are a small fraction (approximately 4%) of total U.S. marine finfish landings. However, for many high value species, catches by recreational anglers account for a significant portion of total fishing mortality. For example, recreational landings (6100 t) accounted for about 65% of the total of bluefish (*Pomatomus saltatrix*) landed in 2003. Recreational catches also contribute significantly to the total mortality of red snapper (*Lutjanus campechanus)*, summer flounder (*Paralichthys dentatus*), some rockfish species (*Sebastes spp.*) and many other species (NOAA, 2004).

Total marine expenditures in the U.S. by recreational anglers were estimated to be $22.163 billion in 2000. Of this $22.163 billion in marine recreational expenditures, $14.605 billion was estimated to have multiplier effects on other supporting industries in the US. The difference is due to the fact that the $22.163 billion estimate of expenditures did not distinguish between purchases made at the retail level and those made through household-to-household sales. Household-to-household sales of merchandise are considered transfer payments from one household to another and generate no economic impacts in the economy. Approximately $7.558 billion was spent on these transfer payments, mainly, for purchases of boats and vehicles used for saltwater fishing. Thus, marine angler expenditures spent at businesses in the U.S. totaled $14.605 billion in 2000. These are the expenditures that generate additional sales, income, and employment in the US. Nationwide, it was estimated that the $14.605 billion in retail sales generated over $30.5 billion in total sales in the U.S. in 2000, nearly $12.0 billion in personal income, and supported nearly 350 000 jobs (Steinbeck *et al.*, 2004).

Catch information from recreational fisheries are used in many stock assessments on the Atlantic, Gulf of Mexico and Pacific Coasts of the United States (Northeast Fisheries Science Center 2000; Cummings, 2000; Northwest Fisheries Science Center, 2005). In addition, landings information collected through standardized surveys are used to set annual specification for many recreational fisheries (Anon. 2004).

Challenges in Sampling Marine Recreational Fisheries in the U.S.:

Unlike commercial fisheries which are limited to a fully defined universe of fishing vessels and ports, recreational fisheries tend to be more diffuse, occurring almost anywhere where

there is access to the sea. Some of the factors that make collection of information on recreational fisheries challenging are listed below.

- Geographically disperse along ocean front, bays, inlets, sounds and river mouths;
- Points of recreational landings are not heavily concentrated at easily identifiable ports but may occur at a large number of boat ramps, fishing piers, beach access points, and marinas;
- The marine fishing population is not well defined;
- Recreational fishing licenses not required in most areas;
- Many recreational fishing trips originate from private property that are not accessible to standard sampling methods; and
- There are an estimated 10 million marine recreational anglers in the U.S. These anglers took an estimated 72 million fishing trips and landed over 127 thousand metric tons of fish in 2003. The recreational catch includes several hundred marine finfish species.

Data Collection Programs in the USA:

The National Marine Fisheries Service (NMFS) initiated a series of surveys in 1979 to obtain standardized and comparable estimates of participation, effort, and catch by recreational anglers in the marine waters of the United States. Continued efforts to develop and maintain a comprehensive marine recreational fisheries data acquisition and analysis system implemented the first priority of the NMFS Marine Recreational Fisheries Policy established in 1981. In February 2005, NOAA Fisheries (NMFS) published the Agency's National Recreational Fisheries Strategic Plan (Anon. 2005).

Marine Recreational Fisheries Statistics Survey (MRFSS):

- Designed to provide annual regional catch estimates of most commonly caught species with a proportional standard error of 5%.
- Dual sampling frame approach:
    - Telephone survey to collect fishing effort information
        - Target population – coastal county households (i.e., households within 50 to 100 miles (80 - 166 km))
        - Sampling unit = coastal county household
        - Information collected:
            - Number of fishing trips by all members of each household
            - Fishing mode (shore, man-made structures, private/rental boat, party boat, charter boat)
            - Date and time of each trip
            - Access (public vs. private)
        - Number of households known from decennial U.S. census (updated annually).
        - Sample sizes are proportional to historic fishing effort estimates with minimum of 30 interviews in each county (initial allocations made at state, wave (2 month periods), further allocations to counties based on square root of county populations. This reduces the relative importance of high population counties (*e.g.*, New York City) and ensures that rural counties receive some sampling effort. However, since the estimates are made at the state level, the data must be reweighted to account for the square root allocations.)
        - Effort estimates include adjustments for non-coastal and out-of-state residency and telephone ownership. Data for adjustments come from Access Point Survey.
        - Access point survey to collect information from anglers at completion of fishing trip
            - Target population – recreational anglers
            - Sampling unit = fishing trip by an angler(s)

        - Sampling sites weighted by estimated fishing pressure (number of anglers)
        - Information collected:
            - Catch information: number of each species by category (A = identified and counted by trained interviewer, B1 = landed and reported by angler but not available for inspection, B2 = reported by angler as having been discarded (alive or dead), disposition of catch
            - Trip information: fishing mode, distance from shore, number of anglers, type of gear, intercept site
            - Demographic information: state & county of residence, number of fishing trips in 2 month period and previous 12 months, telephone ownership
        - Estimation of catch per unit of effort takes into account number of anglers contributing to catch
- Advantages
    - Program has been in continuous operation since 1979 using consistent methodology thus trends in fisheries can be analyzed.
    - Statistically sound.
    - Allows states to improve precision by "buying" additional samples.
    - Provides base level information on recreational fishing effort and catches.
- Disadvantages
    - Expensive: total expenditure on the MRFSS – around $8M USD; labor intensive. Additional funding required to improve precision of estimates at subregional (*e.g.*, state) level.
    - Mistrust of telephone survey results.
    - Does not provide precise estimates for rare/occasional event fisheries (*e.g.*, billfish, some tunas) or pulsed fisheries (*e.g.*, Atlantic mackerel).
- Outstanding Issues
    - Small sample sizes and employment of ratio estimators for adjustments sometimes results in widely fluctuating effort and catch estimates.
    - New technologies (*e.g.*, cell phones & call screening) can increase non-response bias.
    - Low participation in fishery (< 1% to 14% depending on geographic area and time of year) by households in telephone survey areas results in inefficient telephone survey (*i.e.*, most of contacts are with non-fishing households).
- Alternatives
    - Use recreational angler licenses if available as a sample frame for obtaining effort information.
    - Use vessel registration information as sample frame for private boat anglers.

For-Hire Survey: The traditional MRFSS random-digit-dialing (RDD) telephone survey of coastal county households has been very effective for collecting fishing effort information from shore and private/rental boat anglers. However, it is less effective for collecting effort data from party and charter boat anglers for two reasons. First, the large majority of party and charter boat clientele do not reside within coastal counties. Consequently, large adjustments must be made to account for party/charter fishing by non-coastal residents. Second, less than 1% of coastal residential households surveyed actually report party/charter fishing activity. This makes it difficult to obtain adequate sample sizes for precise estimation. Because these problems can cause estimates to vary from year to year, they have been questioned by fishery managers and the party/charter boat fleet[1].

The For-Hire Survey was initiated on the Atlantic coast of the US in 2003 to collect recreational fishing effort and catch information from the party, charter and guide boat sector of the recreational fleet. Prior to 2003, this sector had been covered by the MRFSS described above. The basic change was to shift from a telephone interview survey covering all households in

1 http://www.st.nmfs.gov/st1/recreational/pubs/charter_method.pdf

coastal counties to a discrete sample frame of all known fishing vessels in the for-hire sector of the recreational fishery. The sample frame was constructed from a list of vessels permitted by NOAA Fisheries or by one of the States and from other sources, *e.g.* U.S. Coast Guard certifications. Vessel operators provide information on fishing effort (number of angler trips); catch information is collected through access point interviews, similar to the procedures used in the MRFSS.

The For-Hire Survey provides the following benefits:

- More efficient sampling for fishing effort
- Larger effective sample sizes
- More precise effort estimates
- Better coverage of for-hire fishing effort
- More accurate reporting of effort by fishing area
- Effort reported by boat operators rather than anglers
- Separate estimates for Charter & Party Boats.

Large Pelagics Survey (LPS)

(Van Voorhees *et al.,* 2004) The primary purpose of the LPS has been to estimate annual recreational catches of large pelagic species, especially school and medium size bluefin tuna, based on effort and catch-per-unit-effort (CPUE) data collected through random sampling surveys of offshore fishery participants along the northeastern U.S. Coast. The LPS has generally been conducted from June through October in Virginia through Maine.

Telephone surveys of permit holders are used to collect the effort data needed to estimate the total number of large pelagic fishing trips made by permitted boats. The sampling frames used for the telephone surveys are developed from current lists of HMS Charter/Headboat, HMS Angling category, and Atlantic Tunas General category permits. Only boats with valid phone numbers are included in the frames. Separate telephone surveys are conducted for charter boats (Charter/Headboat category) and private boats (Angling and General category). The charter boat and private boat telephone surveys have traditionally been weekly sampling surveys, although the 2002 and 2003 private boat surveys were conducted biweekly. A random sample of boats is drawn each week and several attempts are made to contact and interview the operators of those boats to collect fishing effort data from the prior one-week, or two-week, period. Interviewed boat operators report the total number of fishing trips and the total number of offshore trips that were directed at tunas, billfishes, swordfish, sharks, dolphin, wahoo, or amberjack. Each trip is profiled to determine the state to which it returned and the date on which it occurred. The data are used to calculate the mean number of trips per boat, which is then expanded by the total number of boats in the frame from which the sample of boats were.

The telephone survey frames are stratified geographically such that independent charter and private boat surveys are conducted for different regions. Boats are assigned to geographic strata based on their principal port location.

Dockside intercept surveys of charter and private boats are used to collect catch data from representative samples of returning offshore boat trips that were directed at large pelagic species. The dockside surveys also determine whether or not the sampled trips were made by boats that were included in the sampling frames used for the telephone survey. Trips by boats included in the telephone frames are identified as “in-frame” trips. The ratio of total/in-frame boat trips is calculated and used to adjust the telephone survey estimate of effort upward to include an estimated number of trips by boats not covered by the telephone survey.

The intercept survey catch data are used to estimate the mean numbers of fish caught, kept, and released per boat trip for different fish species. Traditionally, weekly LPS trip estimates have been combined with weekly intercept survey estimates of catch per trip to generate weekly catch estimates for in-season monitoring of bluefin tuna catches.

Other Specialized / Supplemental Programs

NOAA Fisheries (NMFS) and many of the coastal states conduct specialized or supplemental surveys to improve the precision of effort and catch estimates for the recreational fisheries. In addition, these surveys provide a greater degree of geographic and temporal resolution for management of the fisheries within state jurisdictional waters. These programs include a survey of headboats in the South Atlantic and Gulf of Mexico, Ocean Boat Survey conducted by the states of Washington and Oregon, salmon surveys in Washington and Alaska, and the California Commercial Passenger Fishing Vessel logbook program conducted since 1937(Hill and Schneider, 1999).

Program Costs:

Many of the data collection programs are cooperative state-federal ventures. Thus funds are provided through a variety of appropriation channels. Many states add funds and increase the sampling effort in the MRFSS to improve the precision of the catch and effort estimates for use in managing fisheries under the state jurisdiction. Table 1 provides a breakdown of estimated total 2003 funding (all figures are in thousands U.S. dollars).

FUNDING SOURCE:	AMOUNT (THOUSAND USD)
Federal Funding	
Atlantic (GA-ME)	$ 3316
Gulf of Mexico (LA-FL)	2700
Pacific (CA-WA)	2200
Hawaii	210
Puerto Rico	150
Federal TOTAL	**$5,260**
State Funding	
Maine	$ 134
New Hampshire	133
Massachusetts	342
Rhode Island	269
Connecticut	157
New York	278
New Jersey	372
Delaware	247
Maryland	235
Virginia	305
North Carolina	606
South Carolina	141
Georgia	102
California, Oregon, Washington	1500
State TOTAL	**$4,687**
TOTAL	**$9,947**

Table 1. Estimated expenditures on recreational fisheries data collection programs (2003).

Summary

If estimates on the magnitude of the catches made by recreational fishermen are required with a precision level of ±25 % for a 95 % confidence level, significant resources should be allocated to this task. Few countries recreational fishermen require licenses or permits for. If licensing or registration is required then, the American approach using a telephone questionnaire survey could be conducted. In addition, if local recreational angler clubs exists, cooperative programs with such organizations could provide a means for collecting data for use as an index to recreational fishing catch and effort. Expansion of such data to the entire recreational fishery may not be possible because such clubs usually include only avid anglers and may not be representative of the entire recreational fishing community. But, in some countries neither of the two possibilities exists and therefore other approaches have to be considered to be implemented.

5 SAMPLING STRATEGIES FOR SMALL SCALE FISHING FLEETS

Most PGCCDBS participants presented or submitted WD in plenary at the meeting their national data collection on the small scale fishing fleets. In order to maximize the outcome of the meeting, a sub-group dealing with small scale fishing fleet data collection issues was established. The Sub-group for on sampling strategies for small scale fishing fleets encountered difficulties in defining the small scale fishing fleet. It was found very important that biologists and economist uses same fleet definitions. In some countries vessels length of 10 m have been used, in other countries 12 m and some have used logbook obligation as a borderline for defining the small scale fleet. As final decision of how to define fleets, fisheries and metiers is of crucial importance, it was decided to postpone the planned workshop on sampling of the small scale fleet until final decisions have been taken at the workshop fleet/fisheries/metier definitions.

Therefore, the agenda or ToR reference for the forthcoming workshop on sampling of the small scale fishing fleet was discussed and agreed.

Meeting Schedule:

Dates for the workshop will be decided (probably in September/October) Kavala, Greece.

Schedule and logistics will be decided in cooperation between the EU Commission and the chairman of the workshop. Invitation of a Key note speaker will be decided on a later stage. Invitation for participation will be forwarded as soon as possible.

Possible Terms of Reference for the workshop will be:

a) Preparation an inventory of metier at country level.

b) Presentation of inventory of small scale fishery metiers by country with explanation on the criteria used for establishing metier.

c) Discuss standard criteria for aggregating metiers into fisheries and fleets.

d) Review of economic parameters and effort definitions for passive gears.

e) Review sampling strategies/approaches for identified fleets and propose adaptations for identified fleets.

f) Collection of landings and effort data through random sampling approach via interview/questionnaire if exhaustive data do not exists - primary landings and effort information.

g) Organization of sampling strategy at the operational unit level.

h) Discard information – (self reporting and validation).

i) Define Statistical Requirements.

j) Review current sampling strategies and propose future common guidelines to sample fleets.

k) Propose protocol for raising sample statistics to fleet estimates in context of small scale fisheries

It has been agreed that ToR item 1 and 2 will only be dealt with if the Nantes meeting has not been able to cover them.

It is recommended that following should be done prior to the meeting:

- Each country should provide an inventory – most metiers identified and propose how they would sample the metier. Text table below should be used as template.
- Aim at having appropriate attendance by statisticians, economists and biologists to understand context.
- Invite Key note speaker (Action: Christian Dintheer, France)
- Provide participants with appropriate background documents:

  A. Scientific, Technical and Economic Committee for Fisheries, Subgroup on Economic data (SGECA), Brussels, 4 – 8 October 2004 (Action: Evelina Sabatella, Italy) JRC web.

  B. ICES Study Group on the Development of a Fisheries Forecast January 2004, (can be found at: http://www.ices.dk/iceswork/wgdetailacfm.asp?wg=SGSDFS). English Channel métier catalogue [IFEMER / CEFAS, Sea Fisheries Department] (Action: Christian Dintheer, France)

  C. Case study on the definition of operational units (Action: Evelina Sabatella, France)

COUNTRY:

	Minimum requirement					**Other Information**	
Name	Gear	Main target species	Fishery area	Season (Time-period)	Effort units	By-catch species	No. and characteristics of vessels

Text table. Small Scale Fisheries Metier Table

6 SHARING AGE/LENGTH KEYS

The simplest way to distribute the catch into age-classes is to determine the ages of individuals from a random sample taken from the catch, and assume the proportion of each age-class in the sample to be representative of the whole catch. Although this method has some good asymptotic statistical properties (Kimura, 1977) it is not widely used because usually the biggest part of the catches belong to just a few age-classes, making it difficult to cover all age-classes with a sample of feasible size. Therefore, unless large samples are taken, this method gives biased results for the age-classes less frequent in the catches.

Age-length keys (Fridriksson, 1934), also known as a "distribution matrices" (Hilborn and Walters, 1992) are therefore used in most cases to classify the individuals in the catch-at-length data, by length and age-classes. Each cell of the age-length key (ALK) gives the proportion of fish belonging to an age-class a, given it belongs to a length-class l: Pr(a|l). The use of ALKs relies on the assumption that Pr(a|l) is the same in the ALK and in the catch (Kimura, 1977; Westerheim and Ricker, 1978). Several factors may cause this assumption to fail, and in that case the estimates produced by the ALK reflect the age structure of the sample used to construct it, independently of the real age structure of the catch (Clark, 1981).

For example if an ALK was calculated with samples from a year previous to the catches, and if the recruitment in the year of the catch data was higher than in the year of the ALK data, it is expected that the proportion of recruits in some length classes will be different in the ALK and in the catch. In such case an inverse ALK should be used instead of the ordinary ALK. All methods based on inverse ALKs rely on the assumption that the probability of a fish being of a certain length, given being of a certain age, Pr(l|a), is the same in the inverse ALK and in the catch. This is a less restrictive assumption than that of the classic ALKs.

To date, a total of 5 methods based on inverse ALKs were described:

1) Inverse ALK (Clark, 1981; Bartoo and Parker, 1983);
2) Iterative application of the age-length key (Kimura and Chikuni, 1987);
3) Use of a log-linear model with the EM algorithm to convert length to age (Hoenig and Heisey, 1987);
4) Fit ALK minimizing differences between observed and estimated length distributions (Gascuel, 1994);
5) Use of prior and current information to estimate age composition (Hoenig *et al.*, 1993, 1994).

These were compared using simulated data (Murta, in prep.) and the results indicated that method number 5 provides clearly better estimates than the others, both in terms of precision and accuracy.

However, changes in growth rate between the time age data was collected and the time of the catches would invalidate even the use of inverse ALKs (and obviously also the use of classic ALKs). Therefore, when combining ALKs with any of the methods listed above, one must ensure that there were no changes in growth, no length-dependent migrations within a year-class, or in general that the Pr(l|a) in the population from where the ALK data were sampled is the same as in the population from where the length distributions were sampled. Although methods based on inverse ALKs may solve the problem of combining ALKs in situations where age data is lacking, for each particular case a study should be carried out to see in what extent the accuracy and precision of the estimates obtained may have decreased, when compared to those from classic ALKs. Also, if inverse ALKs are going to be used as routine, formal procedures should be defined, in order to check as much as possible if the basic assumption is true.

7 AGE-READING WORKSHOPS HELD IN 2004

The PGCCDBS initiated at its meeting in 2003 that four age-reading workshop should be held in 2004. The four workshops were age-reading of hake, anglerfish, megrim and sprat respectively. The reports from the four workshops are attached as annexes V–VIII.

7.1 Review of the hake age-reading workshop

Introduction:

In 2002 the ICES WGSSDS (ICES, 2003c) showed the difficulties in the assessment of hake due to the age due to the age data structure. The Working Group suggested presenting ALK with the 10+ age group instead of an 8+ group. The experts in growth warned about the quality of age estimated of older age groups (working document to the PGCCDBS 2002 in Lisbon) and they considered impossible to provide ages estimates of fish older than 5 years with relative confidence.

This WGHMM recommended undertaking these problems through an exchange focused on older fishes followed by an international workshop to discuss the results.

In March 2003 the PGCCDBS in Rome (ICES, 2003a), assumed to celebrate this Workshop within the framework of the National Data Collection and Management Programme.

The planned ToR for the workshop was:

1) Checking the precision and relative bias in age reading mainly in older ages from age readers involved in stock assessment.
2) Try to establish ageing criteria for old fish.
3) To incorporate new readers in hake age estimation.

As new information on age and growth estimation from tagging experiments and daily growth studies, the ToR for the 2004 workshop was modified to:

1) Discuss the results of the 2003 otolith exchange programme.
2) Discuss new information regarding:
   2.1. Age and growth estimation (tag-recapture and otolith microstructure).
   2.2. Alternative methods to obtain ALKs for assessment purposes as for example the elaboration of synthetics ALK.

The workshop was partially funded by the EC No 1543/2000 within the framework of the DCR.

Two main analyses were undertaken during the 2004 WS. Comparison between the results of the 2003 and the 2001 exchange programmes and comparison of the results of the age reading exercises conducted in the 2003 exchange and in the 2004 workshop.

Background:

Validation studies on age estimation for North East Atlantic hake have not been accomplished until very recently. Therefore, until now attention of researchers and otolith readers has been devoted to improving precision and to developing internationally agreed ageing criteria for the species. The criteria adopted for ageing are described in reports of previous exchanges (Piñeiro, 2000 and Piñeiro *et al.*, 2000; Piñeiro, and Sainza, 2002). Recent results from tagging experiments have strongly suggested that those criteria may not be accurate and that they may lead to overestimation of ages (De Pontual *et al.*, 2003).

Material and methods:

2003 Otolith Exchange: (1st reading) 200 otolith sections from both, Northern and Southern stocks were read. A protocol and Digitalised images from otoliths sections were available on a CD. Rings r1-r5 and the check ring considered by reader, were measured.

Otoliths were read without having other information available.

2004 WS: A subset of 70 Hake otoliths were selected from 2003 exchange collection (2nd reading) based on their low / high agreement. A protocol and images from otoliths sections were available. Rings r1-r3 and the check ring considered by reader, were measured. Otoliths were read without having other information available.

Guidelines and Tools for Age Reading Comparisons, EFAN Report 3-2000 were used (Excel ad-hoc Workbook “AGE COMPARATIONS. XLS” from A.T.G.W. Eltink, RIVO). The level of experience of the readers was split into three levels in order to make comparisons with previous exchanges:

A: All Participating Readers

B: Readers Involved in Hake Stock Assessment

C: the Most Expert Readers

- The modal age (no true age) was calculated based on the results of readers involved in stock assessment: R1-R5.
- Graphical representation: The box-whisker plots and Bias plot were used to summarise the observations
- APE: Index of reading precision to compare a series of observations (Beamish and Fournier, 1981).
- CV: The precision errors in age reading are best described by this coefficient by age groups, the CV might often differ by age group.

Results

In general, the box-whisker plot for all readers shows that the range of ages attributed was very wide with a mean value of 4 years for the first reading and 4.4 for the second reading.

Box-whisker plot of the distances measured (mm) for rings: r1-r3 and check ring. High agreement between readers in the location of the first three rings that means that ageing criteria up to age three has been used by practically all the readers.

The coefficient of variation (CV%) and percent agreement are plotted against modal age for the last two exchanges. The results for the three groups of readers based on the experience (A,B,C) and indicate how the CV and Agreement change accordingly with experience.

In order to see problems arisen and evaluate tendencies of individual readers, the last two exchanges were compared. However, as they could not be compared directly because the samples are different and 2003 collection had focused on older fish the comparative analysis was done for individuals smaller than 60 cm of length. The comparison between readings from 2003 and 2001 exchanges shows that the agreement fell from 72 to 60% while APE increase from 19 to 35% and the CV increase considerably from 25 till 48.The results for experienced readers that provided ALKs. This indicates that precision of age estimation has significantly decreased between both exchanges.

This loss of precision highlights the problems associated with:

1) Application of ageing criteria not validated.
2) Reader-drifts from standard ageing protocol over time.
3) Most expert readers were confused by recent results of tagging and recapture experiment, they were involved in the interpretation of marked otoliths recoveries

CV % and percent agreement are plotted against MODAL age for the last two exchanges. This figures shows the results for the three groups of readers based on the experience and indicate that: CV and agreement change accordingly with experience.

Lower precision and a higher bias in the 2003 exchange compared to the results of the 2001 exchange exercise. When the results of the second reading were compared with the first reading using APE and CV for the same subset of sample it can be seen that both indexes have improved slightly in all groups except for all readers, due to the presence of new readers having not experience or very little experience.

Conclusions:

1) The precision of age estimation has increased from 25–48% between the last two exchanges for the same length range.
2) No agreed criteria were established for older fish, taking into account the low precision obtained for those lengths.
3) The results indicated that it is difficult to maintain precision for fish older than 3 years (model age, not true age). Therefore, using age reading data in stock assessment may introduce high uncertainty.

4) The confident age range dropped from 5–3 years old, from 2001–2003, as a consequence of hake ageing difficulty with non validated ageing criteria.

5) The studies on hake growth presented at the workshop indicate that the actual ageing criteria are not accurate.

6) At the moment there is a need for research to provide a new interpretation scheme of the otolith structures based on reliable quantities of data. Such needs will be achieved through an appropriate set of reference material provided by tagging material.

Recommendations:

1) Plan an "ad hoc" meeting with the ICES WGHMM chairman, the coordinators of WG Northern and Southern stocks, the National coordinators of Hake fishery monitoring, the chairperson of the present Hake Age Reading Workshop and the people responsible for the Tagging experiments surveys. The main objective of the meeting will be to present the results and conclusions of this Workshop and to decide what to do in relation to the ALKs to be provided to ICES WGHMM in the forthcoming years (2005 onwards).

2) It is not possible to go further in hake ageing studies without progress in validation. Tagging is a very promising method for validating hake ageing, taking into account the recapture rate obtained in recent studies (De Pontual *et al.*, 2003).

3) To interrupt the supply of age reading data to elaborate ALK for the WGHMM until new validated/accurate criteria is available.

4) In the meantime, allocate the effort (time and people) employed until now in the reading of otoliths to other tasks, such as:

   a) Tagging surveys, financed by the National Data Collection and Management Programs, to provide reference material which is essential to build accurate age criteria used to provide reliable ALK.
   b) Otolith microstructure studies (daily growth, *etc*.)
   c) Length distribution analysis on surveys and commercial catches available.
   d) Research studies to understand the macrostructure pattern to establish the typology of the rings (annual rings and checks).
   e) Create Data base: otoliths images, weight and other complementary biological information.

5) That another workshop (2006) should be planned in the framework of the PGCCDBS and the DCR for scientists working on Hake biology in order to review and discuss the biological parameters in relationship with the recent developments on age validation and their impact on stock assessments and predictions.

7.2 Review of the anglerfish age-reading workshop

The ICES Planning Group on Commercial Catch, Discards and Biological Sampling

PGCCDBS held in Rome in March 2003 recommended that anglerfish ageing precision should be improved, principally due to the different age reading structures used (*illicia* and otoliths) (ICES, 2003a). The Anglerfish Illicia/Otoliths Ageing Workshop was held at IPIMAR, Lisbon, Portugal 8–12 November 2004. The workshop was dealing with age readings of white and black anglerfish (Lophius piscatorius and L. budegassa).

The objectives of this workshop were established as following:

Analyse and discuss the *illicia*/otolith exchange results for both species considering:

Between all reader agreement in each structure,

- Between experienced reader agreement in each structure,
- Between structure agreement.

Discuss recent validation advances.

Prior to the workshop an exchange set of otoliths and illicia, 50 from both black and white anglerfish were circulated amongst all readers. A set of digitised images were also circulated, to be annotated by each reader indicating the annual rings they assigned to each image.

The results were as follows:

For white anglerfish there was only 27% agreement between experienced *illicia* readers and one experienced otolith reader (11% for the other experience otolith reader) and for black anglerfish the agreement between *illicia* and otoliths was only 8% for both reference readers. Within each structure, between reader agreement was higher in *illicia* than otoliths (for experienced and non-experienced readers), since for both species *illicia* readings were more precise and less biased compared to otolith readings. The present exchange and workshop results showed that standardization of otolith ageing criteria is necessary and that only after a better agreement between otolith readers would it be possible to analyze further the discrepancies of interpretation between structures. In addition, results from recent validation studies were compared with results from *illicia* readings, suggesting that white anglerfish growth may be faster and black anglerfish growth may be similar or slower than that estimated by *illicia*.

The workshop made the following recommendations:

1) Validation studies should be carried out. It is not possible to go further in anglerfish ageing studies without progress in validation. Tagging is a very promising method for validating anglerfish ageing

2) Otolith readers should standardize the reading method and ageing criteria.

3) *Illicia* readers should analyze the recent progress in validation studies particularly with regard to the identification of the first annual ring and possibly revise ageing criteria.

4) After otolith age reading standardization and the possible *illicia* criteria revision, a second otoliths/*illicia* exchange should be carried out in order to investigate more fully the *illicia*/otolith discrepancies.

5) Information obtained from validation studies (actual and future studies) should be used to assess the levels of bias in otoliths and *illicia* readings and to standardize reading criteria in both structures.

6) New *illicia* or otoliths readers should follow the ageing criteria described in the workshop report.

7) Analysis of the impacts of using otolith or *illicia* age readings in age structured stock assessment models should be carried out in.

7.3 Review of the megrim age-reading workshop

Although no specific problems have been detected in the readings provided to the Assessment Working Groups, the need of organising a Workshop on Megrim Readings was defined by the long period that has passed from the last Workshop (since 1997 under BIOSDEF Study Project Contract No. 95/038). Thus, from 29 November to 1 December 2004, a workshop on Megrim Ageing was carried out in Sukarrieta (Spain).

Previous to this Workshop, a Megrim otolith exchange conducted in 2004 indicates that the age estimation criteria adopted seem to be appropriate. Both digitised images and real otolith were used for both the exchange and the workshop. The results of the exchange are widely explained in the Exchange Report.

The results of the comparison between the exchange and the workshop indicate, in general, that the percentage of agreement increased. The results of this workshop indicate that the precision of age readings (CV) decreased, probably due to the smaller sample size of the workshop collection (n=39) although the average percent of error also decreased. Thus, for all

readers, the values of the agreement and CV in (%) were 55 and 22, and 52 and 18% respectively for the real and image otolith collection. For the expert readers, the values of the agreement and CV in (%) were 64 and 18, and 62 and 14% respectively for the real and image otolith collection.

Due to the consistency of the results between this workshop and the previous one, no serious deviations in the otolith reading criteria are detected and so it can be said that the criteria is firmly established. The use of digital images of the otolith proved to be a good method for checking the ageing criteria followed by readers and so the location of the rings. The good results obtained from the digital images recommend their use as diagnosis tools for regular future exchanges.

7.4 Review of the sprat age-reading workshop

An otolith exchange was organized prior to the workshop to clarify current problems in the age estimations. The workshop took place in the Institute of Marine Research, Flødevigen, Arendal, 14–17 December 2004. The main aims were a) to analyse the results of the otoliths being exchanged in 2004, b) to try to include techniques to validate the age reading methods, c) to discuss, if possible, otoliths processing techniques, which might help to clarify the ring structures

In general two main problems in age determination caused disagreements, a) interpretation of the first translucent ring from a "small" L_1 where the shape of this "first" ring did not follow the shape of the otolith, and b) interpretation of opaque zones or fragments in the reading area (rostrum-antirostrum). The discussion at the workshop revealed that it is important to measure what is an acceptable range of L_1 in the geographical areas the readers normally sample. Interpretations of opaque zones when they appear as more narrow fragments of opaque materials in the outer area of the rostrum caused the inconsistencies in the results of experienced readers.

Validation studies of sprat otoliths, Validation of winter rings (Lotte W. Clausen, DIFRES) and Marginal Increment Analysis (Michele Casini, IMR/Lysekil) has been made but not yet published. These studies were presented and show:

a) Validation of winter rings in sprat

Studies of microstructures in sprat otoliths have demonstrated structural differences between what are defined as true and false translucent (winter) rings. During winter when the winter ring is deposited the width of the daily increments gradually reduces in width. This pattern can be found in true winter rings in the otolith in sprat aged 0 – 2 years old. A false winter ring is not surrounded by a gradual reduction/increments of the width of the daily rings. Thus, in otoliths where the age reader is in doubt whether a translucent zone is true or false, the validity of the ring can be examined by reading the otolith microstructure.

b) Marginal increment analysis (MIA)

The results from MIA (Skagerrak–Kattegat) pointed out that the otolith translucent zone (winter ring) was laid down once a year during the period analysed. The increment of the outermost ring increased slowly from February to May. This pattern conforms to the slow growth of sprat during the winter period. The deposition of the new hyaline ring was completed during the summer period (June–July). The period July-November represented the period of faster otolith growth. This sinusoidal pattern was common for both Skagerrak and Kattegat and for all w-r groups. Only the 0 w-r group did not follow this pattern, likely due to the long spawning period of sprat in this area (March–July). A tentative measurement exercise using the results of marginal increment growth was performed during the WS, but no final results were presented. It is recommended that otoliths taken in the different areas being measured to increase the knowledge of when the different growth zones are laid down.

The participants at the WS use different preparation methods (six) and different age reading methods in their routine age estimation. At present there are no basic for deciding one as better than the others. The various laboratories are encouraged to evaluate their method and examine different techniques.

A preliminary description of reading procedure and guideline for age estimation of sprat has been made. An agreed reference collection of digitised images of sprat otoliths has been prepared. As no otoliths of known age are available, the collection will be a useful tool for training of new readers and for calibration and updating of established readers. The collections represent otoliths where: a) >90% agreements were attained, and b) where the agreement was >10% but <20%. A CD with the reference collections will be prepared and distributed to the laboratories participated in the exchange and in the WS.

The Sprat age reading workshop recommends:

1) Age-validation should be performed in order to confirm the validity of the ageing method used (confirm the periodicity of deposition of the translucent ring) and to investigate the time of deposition of the translucent ring for each age-class.

2) It is recommended to continue the studies of daily increment in order to validate the deposition of the first hyaline ring and to determine the time of its formation, and also to determine the spawning time. The prolonged spawning time of sprat (February-July in Division IIIa) likely represents the main problem in the interpretation of the first hyaline ring. It is suggested that the studies to be done on otoliths from the various areas.

3) It is recommended to prepare an exchange and reference set of digital images of monthly/seasonal sprat otoliths from the areas of current interests. This should be based on cooperation and coordination between laboratories. It is also recommended that the national laboratories create representative collection of otoliths from all months to be able to follow the seasonal growth of the otolith edge in their particular area to know when the first translucent zone is laid down in young sprat, when an older starts and when they start to make the opaque zone.

4) It is recommended that the national laboratories allocate effort to improve the agreement between the age-readers from other laboratories by regular exchange and when problematic otoliths are encountered. The otolith readers should regularly check their precision by re-reading some of the otolith samples. Small-scale otolith exchanges should be conducted annually for each stock/species as a quality check. It is also recommended that the age readers test out their results of readings by different otoliths processing techniques. Experiences from other area (Baltic) indicate that each laboratory should check the readability of the otoliths reading the sulcus acusticus side to compare with the present method using the other side of the otolith.

5) It is strongly recommended not to consider fish length in age estimation, at least not for the first reading. Otoliths continue growing even when somatic growth stops (for instance due to starvation).

6) It is recommended that measurements of L_1 be performed to find out what is the acceptable range within the various geographical areas.

7) These actions should be considered by the coming series of ageing workshops.

8) It is recommended to have a next exchange in 2007, followed by a WS if necessary.

Planning of future age-reading workshops

The PG discussed the present problems in age readings and agreed in carrying out otolith exchange programmes in 2005 and 2006 for a number of species. Furthermore, the PG agreed in having 4 otolith age reading workshop in 2005. The species for which otolith exchange programmes as well as age reading workshops is given in Table 1.

		LATEST	LATEST	RESPONSIBLE COUNTRY		
SPECIES		otol. exch.	Worksho p	2005	2006	2007
Sandeel	*Ammodytidae*			Denmark	Workshop in Denmark	
Scabbardfishes	*Aphanopus* spp.	1999	2000			
Alfonsinos	*Beryx* spp.					
Atlanto-Scandian Herring	*Clupea harengus*		1999			
Herring	*Clupea harengus*	2001-03	2001-02	Workshop in 2005 in Finland		
Conger	*Conger conger*					
Roundnose Grenadier	*Coryphaenoides rupestris*			France	Workshop in France	
Seabass	*Dicentrarchus labrax*					
Anchovy	*Engraulis encrasicolus*	2001	2002	Spain	Workshop in Spain	
Cod	*Gadus morhua*	2000-01	2001	Ireland		
Witch	*Glyptocephalus cynoglossus*					
Bluemouth rockfish	*Helicolenus dactylopterus*					
Four-spot Megrim	*Lepidorhombus boscii*					
Megrim	*Lepidorhombus whiffiagonis*		2004			
Black-bellied Angler	*Lophius budegassa*	2001	2004			
Anglerfish	*Lophius piscatorious*					
Haddock	*Melanogrammus aeglefinus*					
Whiting	*Merlangius merlangus*	2004	1999	Workshop in England		
Hake	*Merluccius merluccius*	2001	2004			
Blue whiting	*Micromesistius poutassou*			Workshop in Denmark		
Lemon sole	*Microstomus kitt*					
Blue ling	*Molva dypterygia*					
Forkbeard	*Phycis phycis*					
Plaice	*Pleuronectes platessa*	2003	2003			
Saithe	*Pollachius virens*			France		
Turbot	*Psetta maxima*			Netherlands		
Salmon	*Salmo salar*	2002-03	2002-03	Workshop in Finland?		
Sea trout	*Salmo trutta*					
Sardine	*Sardina pilchardus*			Workshop in Lisbon		
Spanish mackerel	*Scomber japonicus*					
Mackerel	*Scomber scombrus*	2001	1995			
Brill	*Scophthalmus rhombus*			Netherlands		
Redfishes	*Sebastes* spp.	2000-03	1995	Spain		
Sole	*Solea solea*	2001	2002	England		
Seabreams	*Sparidae*					
Sprat	*Sprattus sprattus*	2001	2004			
Blue jack mackerel	*Trachurus picturatus*					
Horse mackerel	*Trachurus trachurus*		1999	Netherlands	Workshop	

					in 2006 in Netherland	
Pouting	*Trisopterus luscus*					
Norway pout	*Trisopterus esmarki*					
Red stripe mullet					Greece	
Red mullet					Greece	

Table 1. Countries responsible for organizing otolith exchanges in 2005, 2006 or 2007 and age determination workshops in 2004. Information on the latest otolith exchange and latest workshop is provided based in the information available to the PG. The species listed are the species that require age reading according Appendix XV of the Data Directive.

8 ACCESS AND USE OF LOGBOOKS, SALES NOTES AND VMS DATA

The planning group held a questionnaire under the participants of the meeting in order to get an idea what the national situation is with regard to access to official information collected in logbooks and by VMS. Also the access to sale information from fish markets was investigated. The reason for having the questionnaire was that access to these resources by scientists and economists may be essential in order to comply with future data demands from the DCR. This will certainly be the case when the data collection will be redirected from stock/species based to fleet/fishery based. In order to guarantee the access it may be necessary to adjust national legislation.

Information was provided by 19 countries of which 2 non EU members. The information was provided by participants of the PGCCDBS meeting as far as they were aware of the situation and must be considered only as indicative. The following questionnaire was put forward to the participants during the meeting

Questionnaire

Indicate in each box the national situation with regard to access to information from logbooks, VMS data, sale slips using the characters defined below.

In each box several answers are possible

N: no access to information;
A: access to all information;
S: access to selection of data fields;
T: access to selection of data trips;
D: direct access to national logbook database;
P: permission required from national authority;
R: permission required from individual ship owner

country/area	logbook	VMS	sale slips	Comments
Netherlands	S, P	T,R	N	
Germany	A*	A*	A	*publishing of aggregated data allowed but prior permission is required
France	A	N, R**	A*	*auction sales **some current attempts
Greece	N	P	P*, R	*auction sales
UK (England and Wales)	A	P*,R	S	*only for limited scientific purposes

Sweden	A, D*	P	A	*direct access to part of the database
Denmark	D	R	D	
Italy	P	P	P	
Latvia	D	P	D	
Estonia	D	P	P	
Poland	S, P	P	S, P	
Spain	N, R*	N	N, R*	* in a few cases
USA	P,R	P	P, R	level of access depend on “need to know” generally limited to agency staff (confidentiality agreement required)
UK (Scotland)	R	N	S*	*access via ships management office
Ireland	P	N	S	
Belgium	A, P*	N	A	*since 2003 (data year) access to the data for internal uses, but permission necessary to use the data externally
Portugal	D	N, P	R	
Norway	A*	S**	A*	*in the process of getting direct access **full access to reference fleet data; process started to get direct access to all data
Finland	A*	P, R	A*	*development towards direct access.

The paragraphs below give a short summary of the results of the questionnaire.

Access to logbooks

15 Countries have access to all information to log book information of which 5 countries have direct access to at least part of the information. 2 Other countries are developing towards direct access. 5 Countries need permission from national authorities to use or access the data;

2 countries have access to selection of data fields and need permission to use the data (Poland and the Netherlands)

2 countries have no access to log book data (Greece and Spain)

Access to VMS data

Only 1 country (Germany) has full access to VMS data but there are restrictions in the use of the data. 12 countries have possibilities to access the data or part of the data. In all cases permission and/or justification is required from national authority and/or ship owner to access and to use the data. 6 countries have no access to VPS data.

Access to sale slips

11 countries have full access to sale slips of which 2 have direct access and 2 need permission of national authority to use the data.

4 countries have access to limited data of which one needs permission of ship owner to use the data. (UK, UK, Poland and Ireland)

2 countries have access on request with permission and/or justification (USA and Greece)

2 countries have no access the sale slips data (Netherlands and Spain)

8.1 Application of Vessel Monitoring Systems (VMS) in Market-based Biological Sampling in the Northeast United States

Collection of most biological samples of commercial fishery landings in the Northeast United States is a market-based sampling design. Sample requirements are set at the beginning of each calendar year by the stock assessment scientists. Specific allocations are by species, market category, calendar year quarter, gear and stock area, and in some cases by smaller statistical areas. Most samples are obtained opportunistically within a stratum; however, as a sampling quarter draws to a close it is necessary to obtain specific intelligence about the potential for collecting samples to complete the sample matrix. Beginning in 2004 vessel identity and fishing location information collected through on-board vessel monitoring systems have been used to fine tune sampling strategies. Only a portion of the fishing fleet, primarily scallop and some groundfish vessels, are required to have operational VMS. Daily reports are produced that provide detailed information on vessels' fishing locations and likely landing date. In some circumstances a message may be sent to a specific vessel to determine what species are available for sampling and to obtain anticipated port of landing and date. Staff uses the reports to develop a sampling schedule that allows them to meet the vessel upon arrival.

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9 SUMMARY OF THE WORKSHOP ON SAMPLING AND CALCULATION METHODOLOGY FOR FISHERIES DATA (WKSDFD)

Following the Nantes 2004 WKSCMFD, the WKSDFD (Pasajes, Spain 2005 (ICES, 2005)) reviewed all the information available on sampling strategies and precision levels on a stock basis. The first outcome of this review is that only very few stocks have been analysed and the results are not easily comparable because they are obtained with different methods and different sampling designs.

The group decided then to analyse two case studies and tried to quantify for the same stock the difference between the methods and for the same stock and with the same method the difference between sampling designs. The result confirms the effect of method and sampling design on the final precision estimation, leading to the conclusion that the qualification of one estimator by its precision level must be done on a common basis.

Specific tools have been developed in a few countries, some allows the exploratory analysis and/or calculates the precision of length/age structure, some calculates the precision of the maturity and growth data, others can compare age-length keys, none of them covers the all range of the DCR with reliable, comprehensive and agreed method.

Instead of letting all the countries cope with the difficult and long-running task of implementing a complete statistical tool by themselves, the group gave support to the idea of developing an "open source" common tool. The development of this common tool would go together with user workshops where participants of each country would come with its own data. The statistical outcomes would then be presented and discussed in plenary sessions in presence of statisticians. This way of doing would not only improve the quality and convergence of the collected data but also improve the expertise of all the participants.

Since the meeting in February 2005 of the WKSDFD, an initiative to develop an open source software tool has been started. The main is to improve and expand the package “Casa” presented by Ernesto Jardim, IPIMAR, Portugal. This software tool is programmed as an R package in S4 language.

To facilitate the development a common site as been established at the address http://casa.berlios.de. At this site developers can post code and documentation, share tasks and report bugs. Currently six members from five countries are registered at the developer site.

10 THE FUTURE OF THE PGCCDBS

The future of the PGCCDBS was discussed. This discussion has its source in the discussion at the last years ACFM October meeting and the fact that the EU Commission has established the four regional RCMs.

There was a general consensus on the role of the RCMs:

- Members are the National Correspondents, one biologist and one economist.
- A forum where Member countries can discuss how EU Member countries conducting their respectively national programme;
- To identify areas for greater standardization, collaboration and co-operation;
- Discuss and agree on financial issues concerning the data collection.
- The RCMs should not get too technical or too detailed

The role of PGCCDBS could be:

- Linkage on technical issues between the RCM and the ICES assessment working groups;
- Discuss technical issues and recommend actions to be taken;

- A platform for **communication** and **exchange of experience** for people daily working with data collection ;
- Analyze and discuss on a technical level how recommendation made by the RCM can be implemented;
- Take initiatives for coordination and cooperation on issues which have general interest or need in all regions (Baltic, North Sea, Atlantic and Mediterranean).
- Take initiatives for recommending and organizing workshops on ageing and precision of collected data;
- Take initiatives for maintaining and developing the **quality** of science/data collection.

Therefore, the PGCCDBS recommends that the PGCCBDS should meet in Rostock or Hamburg Germany, 28 February – 3 March 2006 with the following Terms of Reference.

A) Review findings on data quality work such as ALKs precisions carried out in national fisheries research institutes and propose implementation of improvements;

B) Propose action to be taken based on review of the data requirements from assessment working groups;

C) Implement the technical recommendations of the EU liaison RCM and address action to be taken,

D*) Propose action to be taken based on the outcome of the workshop on sampling methodology for fleet/fishery based data collection;*

E) Propose action to be taken based on the outcome of the workshop on small scale fleets data collection;

F) Review the development a common software for calculation precisions on collected data;

G) Review the reports from the age-reading exchanges and workshop and identify on a regional basis the candidate stocks and species requiring improved ageing;

The PGCCDBS nominate the chairman for the 2006 PGCCDBS meeting to be Ernesto Jardim, IPIMAR, Portugal.

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Appendix 1

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1. Working Group on the Assessment of Southern Shelf Stocks of Hake, Monk and Megrim 2004

Stock:	Anglerfish *(Lophius budegassa)* in Divisions VIIb-k and VIIIa,b,d,e
WG name:	Working Group on the Assessment of Southern Shelf Stocks of Hake, Monk and Megrim 2004

WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter, fishery unit	ICES Division (VIIb–k, VIIIa,b,d,e)
DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter and fishing technique	By ICES Division (VIIb–k+ VIIIabd)

WG comments to the data quality:

- There has been a revision of the UK-EW data base leading to a slight change in the proportion of the allocation to different fishery units. This lead to a slight revision of total *L. budegassa* landings for 2000–2002. The data revision process carried by the E&W was not completely achieved before the WG and the contribution of the species in the sampling still need to be updated. This should however lead only to a slight further revision of the total catch data.
- The UK-WCGFS data are being revised as some misinterpretation in the common names in use in the transfer of data are suspected. They are therefore not presented.
- The data revision process carried by the E&W was not completely achieved before the WG and the contribution of the species in the sampling still need to be updated. Therefore, although this revision had little influence on the total catch data, it will change the catch data for the FU06 only and it was decided to exclude the data from the E&W FU06 fleet usually presented here.

Since French logbook data were only partially available since 1999, effort data were not available.

WG comments to data requirements:

The estimated catches of young individuals in 2003 may be under-estimated due to increasing discarding practices at levels that could not be estimated and presented to the Working Group.

PGCCDBS comments to improvement of the data collection:

PGCCDBS considers that it would be desirable:

- To estimate discards every year.

That the complete logbook data would be available every year.

Completed by:	PGCCDBS 2005

Stock:	Northern Stock of Hake
WG name:	Working Group on the Assessment of Southern Shelf Stocks of Hake, Monk and Megrim 2004

WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter, country and fishery unit	By ICES Division (IVa+VI, VII, VIIIa,b,)

DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter and fishing technique	By ICES Division (IIIa+IV+VI+VII+VIIIab)

WG comments to the data quality:

- Unallocated landings are also included in the series, which are higher over the first decade (1961–1970), when the uncertainties in the fisheries statistics were high.
- No discards data were provided by France for 2003. For the Danish fishery, discards were estimated for trawlers, gill-netters and seiners fishing in Subarea IV except in 2002 and 2003 where no estimates were available for gill-netters. Recent changes to the French discard sampling programme (see section 3.2.1) meant that estimates of discards for France were not available this year. Some discard data were available from other countries, but it was not possible to incorporate these in a consistent way. The Group therefore decided to remove discard estimates from the full time series of catch at age data.
- Annual catch figures were, in some countries, were taken from the official statistics.
- While the Working Group agreed on the importance of testing alternative procedures to apply and calculate ALKs, time constraints did not permit such an investigation during the WG. The results of the last otolith reading exchange indicate that in 2003 the precision has decreased and the bias increased as compared to 2001. A pilot tagging study conducted in 2002 in the Bay of Biscay (de Pontual *et al.*, 2003., de Pontual, pers. comm.) indicates that we may currently under-estimate the growth of hake. Results of this preliminary study based on very few fish indicate that change in growth affects the absolute levels of estimates of fishing mortality and stock biomass obtained from the stock assessment but not the overall trends.

WG comments to data requirements:

- WG stress the need to improve hake age determination as stock assessment conducted in this WG depends strongly on it.
- A proposal for a large scale tagging project is in the process of being finalized and funding is being sought.

PGCCDBS comments to improvement of the data collection:

PGCCDBS considers that it would be desirable:

- That countries could provide discard estimates data for all the subareas, gears and years.
- That logbook data were completely available every year for all countries.

PGCCDBD support the WG comments to data requirements, specially about the tagging project.

Completed by:	PGCCDBS 2005

Stock:	Anglerfish (L. piscatorius) in Divisions VIIb-k and VIIIa,b,d
WG name:	Working Group on the Assessment of Southern Shelf Stocks of Hake, Monk and Megrim 2004
WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter, fishery unit	By ICES Division (VIIb-k+ VIIIa,b,d)
DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter and fishing technique	By ICES Division (VIIb-k+ VIIIa,b,d)
WG comments to the data quality:	
In view of the data available and the fact that for years 1999 and 2000 there was a lack of age data for some lengths, it was decided to use a combined France 1999 + Spain 2000 ALK (sum of the readings) to the 1999 and 2000 international length compositions of the landings in each fishery unit, and to the length compositions of the tuning fleets. ALKs were available for Spain in 1997–2001. In 1997 they were available for Quarters 1, 2, and 4, but since only a small number of *illicia* were read in the fourth quarter, only the two first quarters ALKs were used. In 1998, ALKs were available by semester for the Bay of Biscay, but only for the last semester for the Celtic Sea. Since French logbook data were only partially available since 1999, effort data were not available. The LPUE data revision process carried by the UK (E&W) was not completely achieved before the WG and the contribution of the species in the sampling still need to be updated.	
WG comments to data requirements:	
There are not WG comments to data requirements for this stock.	
PGCCDBS comments to improvement of the data collection:	
PGCCDBS considers that it would be desirable: - To obtain anually age data for the complete length range in the catch. - To read enough *illicia* in all the quarters in all areas. - That logbook data were completely available every year. - To estimate discards every year.	
Completed by:	PGCCDBS 2005

Stock:	Megrim (*L.whiffiagonis*) in Divisions VIIb,c,e–k and VIIIa,b,d
WG name:	Working Group on the Assessment of Southern Shelf Stocks of Hake, Monk and Megrim 2004

WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter/semestral	By ICES Divisions VIIb-c,e-k, VIIIa,b,d

DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
Quarterly by type of fishing technique	By ICES Division (VII+VIIIabd)

WG comments to the data quality:

- Since using the French discards from the 1991 survey to obtain estimates for 1999 and subsequent years was considered unreliable, only the Spanish data were used for these years, applied only to the Spanish fleets. This has led to an artificial decrease in the amount of total discards, since no estimates for French fleets were available.
- Some preliminary discards estimates from United Kingdom and Ireland were available during to the group in form of length distributions and weights and so they were not incorporated to the assessment.

France has provided quarterly length distribution by fishery unit and by sex since 1984. However, for 2002 and 2003 French data (length distributions, catch at age by FU and ALKs) were not available for the assessment (see Section 5.1.6 and Table 5.2b).

- Since 1991, annual length composition has been available for sexes combined for most countries except for France that used to give them separated by sexes.
- In recent years, the length compositions have been available on a quarterly basis and sexes combined, except in 1993 for Spain, when data were presented for separate sexes and on an annual basis.

Derivations were used to provide length compositions where no data other than weights of landings were available (Table 5.2b).

- International length composition of landings and discards from 1990–2003 and the available length composition of landings by fleet in 2003 were presented.
- No ALKs were available for the period 1984–1986, and age compositions for these years were derived from a combined-sex ALK based on age readings from 1987–1990.
- In 2003, quarterly ALKs for sexes combined were available for UK (E&W).
- Annual age composition of discards and semestral for landings per fleet, based on semestral ALKs for both sexes combined, were available from Spain in Subarea VII and in Divisions VIIIa,b,d.
- Quarterly age compositions of Irish catches for both sexes combined were provided for Divisions VIIb–k.

WG comments to data requirements:

The group states the importance of incorporating annual estimates of discards to explain some of the recruitment processes detected in the analysis and no completely registered in the catch at age matrix and LPUE.

PGCCDBS comments to improvement of the data collection:

The indication of the WG about the importance of incorporating annual estimates of discards to the assessment is according to CR(EC) No 1581/2004 amending Regulation (EC) No 1639/2001 (Annex I, 2, Section H, point E) and supported by the PGCCDBS.

It would be desirable: - To have reliable discard estimates for all countries and all the period analyzed. - To have length distributions, catch at age by FU and ALK available for the assessment every year. - To have length compositions on a quarterly/semestral basis and sexes combined. - To have length compositions and not only weights of landings in some cases. - To have length composition of landings by fleet from 2003. - To have quarterly/semestral ALKs for sexes combined. - To have quarterly/(semestral) age composition for discards and landings per fleet for sexes combined. - That logbook data were completely available every year for all countries.

Completed by:	PGCCDBS 05

Stock:	Southern Stock of Hake
WG name:	Working Group on the Assessment of Southern Shelf Stocks of Hake, Monk and Megrim 2004
WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter, country and fishery unit	By ICES Divisions (VIIIc+IXa)
DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter and fishing technique	By ICES Divisions (VIIIc, IXa)
WG comments to the data quality:	
- The landings data used in Southern Hake assessment are based on: (i) Portuguese sales notes compiled by the National Fisheries and Aquaculture Directorate; (ii) Spanish sales notes and Fishermen Associations data compiled by IEO; and (iii) Spanish sales notes and Fishermen Associations data compiled by AZTI in Basque Country. - Spain has conducted an observer discard sampling programme since 1993 (Bellido *et al*., 2003). The information covers discarded and retained catch in weight and numbers and length distributions for Southern Hake, among other species. Sampling was carried out for years 1993, 1994, 1997, 1999 (second semester), 2000, 2001 and 2003, but not in 2002. The discards sampling programme was based on stratified random sampling per Fishery Unit (fleet by ICES Division). No discard estimates are included in the assessments because (i) the discard sampling starts in 1993 and the assessment is conducted from 1982, (ii) there are gaps in some intermediate years (iii) and there has been no information from Portuguese fleets until now. Raised discard data are available only for Spanish trawlers in the years 1999–2001 and 2003. The Portuguese discard sampling program started on a routine basis in 2003 for the trawl fleet. The number of trips sampled in 2003 was 14 and there is information on 84 hauls. - The length composition sampling design follows a multistage stratified random scheme by quarter, harbour and gear. The age sampling scheme follows a stratified random sampling design by length class of 1 cm. - Commercial and surveys ALKs are available since 1993, except for the Spanish survey with ALKs since 1994. Catch at age for the years without ALK were estimated using combined ALKs from recent years. An annual Iberian ALK has been used since 2001 combining IEO, AZTI and IPIMAR age readings. - In 2002, the ICES WGSSDS showed the difficulties in the assessment of hake due to uncertainty in the age estimation of older fish, which led the WG to use a plus group at age 8. Results of otolith exchanges indicate that the age estimation criteria used up to age 3 has not changed in the last years. However, for older fishes, otolith interpretation is more complicated and the agreement among readers decreases. The same happens among ALK readers.	
WG comments to data requirements:	
There are no comments to data requirements about this stock.	
PGCCDBS comments to improvement of the data collection:	
PGCCDBS considers that the WG comments to data requirements on the Northern stock should be suitable for this stock, specially about tagging project: - WG stress the need to improve hake age determination as stock assessment conducted	

in this WG depends strongly on it. - A proposal for a large scale tagging project is in the process of being finalized and funding is being sought. PGCCDBS considers that it would be desirable to have logbook information available.	
Completed by:	PGCCDBS 2005

Stock:	*Lophius piscatorius* in Divisions VIIIc and IXa
WG name:	Working Group on the Assessment of Southern Shelf Stocks of Hake, Monk and Megrim 2004

WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter, fishery unit	By ICES Division (VIIIc+IXa)

DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter and fishing technique	By ICES Division (VIIIc+IXa)

WG comments to the data quality:

- Total landings of *L. piscatorius* by country and gear for the period 1978–2003 are estimated by the Working Group. There were unrecorded landings in Division VIIIc between 1978 and 1979, and it is not possible to obtain the total landings in those years.
- Although discard data are not available for the whole time series, a discard sampling program was carried out by Spain (Pérez *et al*., 1996 and ICES, 2001), indicating that discards are very low and mainly in small length classes (below 25 cm).
- Both Spain and Portugal carry out biological sampling at markets. Length data from sampled vessels are summed and the resulting length composition is applied to the quarterly landings of the corresponding port, gear and ICES Divisions. Spanish and Portuguese market sampling effort has increased considerably since 1995 and is expected to be maintained in future.
- The sampled length compositions were raised for each country and SOP corrected to total landings on a quarterly or half yearly basis (when the sampling levels by quarter were low).
- Age readings (*illicia*) are available for *L. piscatorius* from 1996-1999 and for 2001 (2000 age readings are only partially complete). Since no analytical assessment was performed, the Group decided not to use these age readings to obtain catch at age data.
- Considering the very low indices for the three Spanish and Portuguese surveys for the period 1983–2003, they were not considered to reflect the change in the abundance of this species.
- Landings, effort and LPUE data were provided for Spanish trawlers from the ports of Avilés, Santander and A Coruña since 1986 and for the Portuguese crustacean trawlers since 1989. The Portuguese crustacean trawlers generally have a fishing activity in a narrower depth range, which is believed to be closer to the anglerfish depth distribution.

WG comments to data requirements:

There were no comments about data requirements of Divisions VIIIc and IXa *L. piscatorius* stock.

PGCCDBS comments to improvement of the data collection:

PGCCDBS considers that it would be desirable:

- To have discard data available in the future for both countries.
- To have a good sampling level by quarter.
- To have age readings by year and in general an ALK series that will allow to do an assessment based in an age structured model.

To have logbook information available.

Completed by:	PGCCDBS 2005

Stock:	*Lophius budegassa* in Divisions VIIIc and IXa
WG name:	Working Group on the Assessment of Southern Shelf Stocks of Hake, Monk and Megrim 2004 (Gijón, Spain)

WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter, fishery unit	By ICES Division (VIIIc+IXa)
DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter and fishing technique	By ICES Division (VIIIc+IXa)

WG comments to the data quality:

- Total landings of *L. budegassa* by country and gear for the period 1978–2003 are estimated by the Working Group. There were unrecorded landings in Division VIIIc between 1978 and 1979, and it is not possible to obtain the total landings in those years.
- Although discard data are not available for the whole time series, a discard sampling program was carried out by Spain (Pérez *et al*., 1996 and SGDBI, 2001), indicating that discards are very low and mainly in small length classes (below 25 cm).
- Both Spain and Portugal carry out biological sampling at markets. Length data from sampled vessels are summed and the resulting length composition is applied to the quarterly landings of the corresponding port, gear and ICES Divisions. Although all the fish of each sampled boat are measured, it is difficult to cover the whole length range in the landings. Spanish and Portuguese market sampling effort has increased considerably since 1995 and is expected to be maintained in future.
- The sampled length compositions were raised for each country and SOP corrected to total landings on a quarterly basis or half yearly basis (when the sampling levels by quarter were low).
- Age readings are available for *L. budegassa* from 1996 to 2003. Since no analytical assessment was performed, the Working Group decided not to use these age readings to obtain catch at age data.
- Spanish and Portuguese survey results for the period 1983–2003 are presented. Considering the very
low indices for the three surveys, they were not considered to reflect the change in the abundance of this species.

WG comments to data requirements:

There are no comments to data requirements for this stock.

PGCCDBS comments to improvement of the data collection:

PGCCDBS considers that it would be desirable:

- To have discard data available in the future for both countries.
- To have a good sampling level by quarter.
- To have age readings by year and in general an ALK series that will allow to do an assessment based in an age structured model.
- To have logbook information available.

Completed by:	PGCCDBS 2005

Stock:	Megrim (*L. whiffiagonis)* in Divisions VIIIc and IXa
WG name:	Working Group on the Assessment of Southern Shelf Stocks of Hake, Monk and Megrim 2004

WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By year	By ICES Division (VIIIc, IXa)

DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter and fishing technique	By ICES Division (VIIIc+IXa)

WG comments to the data quality:

- The Working Group estimates the landings for the period 1986 to 2003. Portuguese landings by species were estimated as last year using the relative abundance of each species in the sampled landings.
- Discard data are available only for Spanish trawlers in 1994, 1997, 1999–2001 and 2003. Annual discards of megrim are estimated. Discards in number represent between 10–45% of the total caught.
- Annual length compositions for total landings are provided for the period 1986–2003. Length distributions were available for Spanish and Portuguese landings until 1998. Portuguese length frequency data were previously mainly based on samples from Aveiro, but due to the exclusion of this port for 1999–2003, no length frequency is presented for Portuguese landings for this period. Instead, Spanish length distributions were raised to the total international landing. Nevertheless, Portuguese landings only represent 13% of the total landings on average.
- Age composition for 2003 was based only on ALKs from the Spanish survey (SP-GFS). Age compositions for 1990–2002 were based on Spanish ALKs and, as in previous years, age compositions for 1986–1989 were based on a combined ALK (survey ALK for 1986 combined with an annual ALK for 1990). Catch weights-at-age of the international landings were also used as the weights-at-age in the stock.

Portuguese survey indices for the period 1989–2003, and Spanish survey (SP-GFS) indices for the period 1983–2003 were provided.

- Catch numbers-at-age and effort data sets for the Spanish survey (SP-GFS) in Divisions VIIIc and IXa (1988–2003) were provided.
- Fishing effort and LPUE data were available for the period 1986–2003 for two fleets of Spanish trawlers from A Coruña (SP-CORUTR8c) and Avilés (SP-AVILESTR) fishing in Division VIIIc, and for Portuguese trawlers fishing in Division IXa for the period 1988–2003.

WG comments to data requirements:

Discard data are not used in this assessment because of the lack of data in some years of the series. However, they are thought to be important particularly for younger ages. (Bellido and Pérez, WD12 in Report of the WGHMM 2004) presents an exercise concerning the plausible influences to add discards into assessments, focussing on medium term projections.

PGCCDBS comments to improvement of the data collection:

PGCCDBS considers that it would be desirable: - To have available discard data every year for all the segments of the fleet involved of each country in order to incorporate these data to the assessment process. - That logbook data were completely available every year for all countries. - That every country could provided length frecuency and ALKs. PGCCDBS considers very interesting the exercises concerning the influences to add discards into assessments.	
Completed by:	PGCCDBS 2005

Stock:	Four-spot megrim (*Lepidorhombus boscii*) in Divisions VIIIc and IXa
WG name:	Working Group on the Assessment of Southern Shelf Stocks of Hake, Monk and Megrim 2004

WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By year and fishing technique	By ICES Division (VIIIc, IXa)

DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter and fishing technique	By ICES Division (VIIIc+IXa)

WG comments to the data quality:

- Four-spot megrim landings were estimated for the period 1986 to 2003. As in previous years assessments, Portuguese and Spanish landings were estimated using the relative abundances for the two species in the sampled landings.
- Discard data are available only for Spanish trawlers in 1994, 1997, 1999 to 2001 and 2003. Discards in number represent between 40–60% of the total caught.
- Annual length compositions for total landings were provided for the period 1986–2003. Length distributions by fleet were available for Spanish (since 1986) and Portuguese (since 1998) landings.
- Age compositions for 1990–2003 were based on Spanish annual ALK and, as in previous years, age compositions for 1986–1989 were based on a combined ALK (survey ALK for 1986 combined with an annual ALK for 1990).
- Due to the low catches of 0-groups, this age was not used in the assessment, though (as in previous years) data were presented.
- Catch weights-at-age of the international landings were also used as the weights-at-age in the stock.
- Portuguese survey indices for the period 1989–2003 and Spanish survey (SP-GFS) results for the period 1983–2003 were presented. Due to the gear used the July and October Portuguese surveys do not provide useful abundance indices for this species. The Portuguese August survey series has not been available since 1999. For 2003, a series of Spanish survey abundance indices (in number/30 min) was presented.
- The Spanish survey (SP-GFS) covers all the area and depth strata of this species in Spanish waters. A Coruña (SPCORUTR8c) and Avilés (SP-AVILESTR) fleets have different exploitation areas and cover only a small part of the species distribution. This may explain the differing pattern observed in some years: commercial catches being mostly composed of ages 3 and 4, while the Spanish survey (SP-GFS) catches mostly ages 1 and 2.
- Catch numbers-at-age and effort data set (ages 0 to 7) was available for Spanish survey (SP-GFS) in ICES
Divisions VIIIc and IXa (1988–2003).
- Fishing effort and LPUE data were available for the period 1986–2003 for two fleets of Spanish trawlers from A Coruña (SP-CORUTR8c) and Avilés (SP-AVILESTR) fishing in Division VIIIc, and for Portuguese trawlers fishing in Division IXa for the period

1988–2003.
WG comments to data requirements:
Discard data are not used in this assessment because of the lack of data in some years of the series. However, they are thought to be important particularly for younger ages. Lema et al (2002) shows an exercise about plausible influences to add discards into assessments, with a special focus on medium term projections.
PGCCDBS comments to improvement of the data collection:
PGCCDBS considers that it would be desirable: - To have available discard data every year for all the segments of the fleet involved of each country in order to incorporate these data to the assessment process. - That every country could provided ALKs. - To have available surveys series for all the period and covering a bigger part of the species distribution. - That logbook data were completely available every year for all countries. PGCCDBS considers very interesting the exercises concerning the influences to add discards into assessments.

Completed by:	PGCCDBS 2005

2. Working Group on Elasmobranch Fishes (WGEF)

Many of the stocks addressed are straddling areas or are highly migratory making stock assessment particularly difficult. The WG does not provide full stock assessments but previously various groups have conducted experimental assessments (SGDEEP, SGEF, WGEF). The report of the 'Ad hoc Working group on Elasmobranchs Fisheries have given some thought to data requirements:

The sub-group continues to be concerned with the poor quality of catch statistics for elasmobranchs from member States. A particular difficulty is the use of generic categories for species, such as "Sharks not elsewhere indicated" and "dogfish and hounds" for example. The sub-group recommends that sampling in the markets be extended in order to disaggregate mixed landings. Furthermore, for species that are reported separately within member states, it is recommended that these be reported to ICES and ICCAT at the same specific resolution.

The data collected and made available to WGEF and other groups is sporadic, collected in a variety of ways with limited standardisation. This is possibly due to the nature of the fisheries themselves. Comment was made in several sections regarding the identification and aggregation of species making assessment of catches difficult.

A major issue for any assessment or study is that many of the species are landed as part of aggregated landings, resulting in catch figures for individual species being unavailable. Further sampling effort is required to provide better identification and species breakdowns for these aggregated landings.

WGEF and the Ad-Hoc group have noted a real lack of life history information for the majority of the species.

Stock:	Basking Shark	
WG name:	Working Group on Elasmobranch Fishes (WGEF)	
WG data aggregation level:		
Temporal and segmentation:		**Spatial:**
Annual national catch data from Fishstat Plus		ICES Areas I & II, II & IV, Vb, VI, VII, VIII, IX, X
DCR data aggregation level:		
Temporal and segmentation:		**Spatial:**
WG comments to the data quality:		
Available catch data are presented, these data were extracted from FishStat Plus database for 1973-2001and Swedish logbook data. Tables also include landings data from Netherlands (2002), Norway (2003) and Portugal (1991-2003).		
WG comments to data requirements:		
PGCCDBS comments to improvement of the data collection:		
Completed by:	Richard Ayers	

Stock:	Blue Shark	
WG name:	Working Group on Elasmobranch Fishes (WGEF)	
WG data aggregation level:		
Temporal and segmentation:		**Spatial:**
DCR data aggregation level:		
Temporal and segmentation:		**Spatial:**
WG comments to the data quality:		
WG comments to data requirements:		
PGCCDBS comments to improvement of the data collection:		
Completed by:	Richard Ayers	

Stock:	Generic Sharks and Dogfish
WG name:	Working Group on Elasmobranch Fishes (WGEF)
WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
Landings of various sharks are presented by country and region. These data mainly come from FishStat Plus database for 1973–2001. Nevertheless, several countries have provided landings data for some period, particularly from 2001–2003.	ICES Areas I & II, III & IV, Va & Vb, VI & VII, VIII, VIII & X, IX, X, XII, XIV
DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
WG comments to the data quality:	
Many countries report sharks or dogfish catches using generic categories. WGEF has made some progress in identifying species or species groups that these catches can be assigned to. However this task can not be fully accomplished. WGEF has made some progress in disaggregating landings into deepwater sharks. There is also a fleet of UK (England and Wales and Scotland) gill-netters and longliners that target deepwater sharks, in western waters. Landings by these UK of various sharks (SKH) and dogfish (DGX) are also, largely deepwater species.	
WG comments to data requirements:	
PGCCDBS comments to improvement of the data collection:	
For the catch data to be of use to any WG there needs to be a move away from the reporting of aggregated species groups. This requires species identification to be conducted during sampling to allow the composition of the aggregated landings to be calculated.	
Completed by:	Richard Ayers

Stock:	Kitefin

WG name:	Working Group on Elasmobranch Fishes (WGEF)
WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
Landings presented as annual national totals.	ICES Areas :Vb, VI, VII, IXa, X,
DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
WG comments to the data quality:	
There is still a lack of data that can accurately identify any different stocks of kitefin shark in the NE Atlantic.	
WG comments to data requirements:	
PGCCDBS comments to improvement of the data collection:	
Completed by:	Richard Ayers

Stock:	Leafscale Gulper Shark
WG name:	Working Group on Elasmobranch Fishes (WGEF)
WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
Landings presented as annual national totals.	Stock structure is poorly understood, but the DELASS project considered that available information suggests a single stock in the NE Atlantic. Thus, ICES assessments of stock status are based on a single stock distributed along the continental slopes of Europe from the Faroe Islands to Portugal and along the Mid-Atlantic Ridge from Iceland to the Azores. This stock may also extend to waters further south, at Madeira, the Canaries and the African coast. Data is presented for IVa, Vb, VIa, Vib, VII, VIII, IXa, X, XII.
DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
WG comments to the data quality:	
Catch data for this species are very incomplete. Species-specific data are only available from a small number of countries.	
WG comments to data requirements:	
PGCCDBS comments to improvement of the data collection:	
For the catch data to be of use to any WG there needs to be a move away from the reporting of aggregated species groups. This requires species identification to be conducted during sampling to allow the composition of the aggregated landings to be calculated.	
Completed by:	Richard Ayers

Stock:	Porbeagle
WG name:	Working Group on Elasmobranch Fishes (WGEF)
WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
Annual national totals from Fishstat Plus.	ICES Areas, I & II, III & IV, Va, Vb,VI,VII, VIII, VIII, IX, X.
DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
WG comments to the data quality:	
Several countries report porbeagle catches in the category of sharks NEI. In particular, countries that exploit tunas and billfish have bycatches of this species. However it is not possible to identify what proportion are porbeagle.	
WG comments to data requirements:	
PGCCDBS comments to improvement of the data collection:	
For the catch data to be of use to any WG there needs to be a move away from the reporting of aggregated species groups. This requires species identification to be conducted during sampling to allow the composition of the aggregated landings to be calculated	
Completed by:	Richard Ayers

Stock:	Portuguese Dogfish
WG name:	Working Group on Elasmobranch Fishes (WGEF)
WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
Landings presented as annual national totals.	Stock structure is poorly understood, but the DELASS project considered that available information suggests a single stock in the NE Atlantic. Thus, ICES assessments of stock status are based on a single stock distributed along the continental slopes of Europe from the Faroe Islands to Portugal and along the Mid-Atlantic Ridge from Iceland to the Azores. This stock may also extend to waters further south, at Madeira, the Canaries and the African coast. Data presented from IVa, Va, Vb, VIb, VIa, VI, VII, IXa, XII.
DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
WG comments to the data quality:	
Catch data for this species are very incomplete. Species-specific data are only available from a small number of countries.	
WG comments to data requirements:	
PGCCDBS comments to improvement of the data collection:	
For the catch data to be of use to any WG there needs to be a move away from the reporting of aggregated species groups. This requires species identification to be conducted during sampling to allow the composition of the aggregated landings to be calculated.	
Completed by:	Richard Ayers

Stock:	Rays and Skates
WG name:	Working Group on Elasmobranch Fishes (WGEF)

WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
Landings presented as annual national totals. Data extracted from ICES Fishstat and not from national data submissions to the WG. Some landings presented as species specific with gear information.	ICES Areas, I & II, IIIa, IV, V,VI,VIIa, VIIb,c, VIId, VIIf-k, VIII, IX, X, XII, XIV, Unspecified area.
DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**

WG comments to the data quality:

WG comments to data requirements:

These data are not separated by species. Therefore port sampling data will be required to disaggregate these data to species level.

Ad Hoc group comment :

Preferably, species-specific landings data would be available for all species. Failing that, the species composition of skate/ray landings should be collected on an appropriate spatio-temporal scale, as opposed to specific landings data for selected species.
Data on the species composition, size distribution and sex ratio are also required. Hence, sample sizes should be comprised of 100–200 fish in the Atlantic and 50–100 fish in the Mediterranean. Regarding the number of samples that should be taken, the sub-group recommends that samples should be collected regularly throughout the year (*e.g.* monthly) as opposed to one sample per 200–1000 t landed, as is currently suggested.

PGCCDBS comments to improvement of the data collection:

For the catch data to be of use to any WG there needs to be a move away from the reporting of aggregated species groups. This requires species identification to be conducted during sampling to allow the composition of the aggregated landings to be calculated.

Completed by:	Richard Ayers

Stock:	Shortfin Mako
WG name:	Working Group on Elasmobranch Fishes (WGEF)
WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
Incomplete annual national data presented from Fishstat Plus.	Ices Areas III & IV, VI, VII, VIII, IX, X, XII
DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
WG comments to the data quality:	
WG comments to data requirements:	
PGCCDBS comments to improvement of the data collection:	
Completed by:	Richard Ayers

Stock:	Spurdog
WG name:	Working Group on Elasmobranch Fishes (WGEF)
WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
Various aggregations presented from month/gear to annual national totals.	Single stock assessment for areas IIa, IIIa, IV, V, VI and VII. Data presented from further areas.
DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
WG comments to the data quality:	
WGEF Comment : Most landings of spurdogs are reported under the species-specific category. However the situation is confused by the use, by some countries, of other categories; “Dogfishes and hounds”, “Squalus spp”, “Squalidae” and “Squalidae and Scyliorhinidae”.	
WG comments to data requirements:	
Ad-Hoc group comment : Landings of spurdog should be monitored quarterly by fishing technique and by ICES/NAFO/GFCM Sub-area in the minimum programme. Data on the size distribution and sex ratio are also required. Hence, sample sizes should be comprised of 50–200 fish, and some of the current sampling levels (*e.g.* <25 fish in the North Sea) are insufficient. Landings of spurdog should not be reported as “dogfishes” or as other generic categories. Landings from Iberian waters, Bay of Biscay and Mediterranean Sea should also be examined in order to determine the relative importance of spurdog *Squalus acanthias* and longnose spurdog *Squalus blainvillei.*	
PGCCDBS comments to improvement of the data collection:	
For the catch data to be of use to any WG there needs to be a move away from the reporting of aggregated species groups. This requires species identification to be conducted during sampling to allow the composition of the aggregated landings to be calculated.	
Completed by:	Richard Ayers

3. Working Group on Cephalopod Fisheries and Life History (WGCEPH) 2004

Stock:	ICES area Cephalopods
WG name:	Working Group on Cephalopod Fisheries and Life History (WGCEPH) 2004 (By correspondence)

WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By species groups (octopus, cuttlefish, squids and short finned squid), year and country	By ICES Division (I+II; IIIa; IVa; Va; Ivb; Ivc; Via,b; VIIa; VIIb,c; VIId,e; VIIf; VIIg-k; VIII; IX; X)

DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By species, quarter and fishing technique	*O. vulgaris, S. officinalis, L.vulgaris* by ICES Division (VIIIc+IXa)

WG comments to the data quality:

- The WG updated landing statistics and information on fishing effort, discards, and gear selectivity, and explore the existing resource survey databases for information about sampled cephalopods in the ICES area.
- The present report updates landing statistics from 1995–2002 and provides provisional catch data for 2003 for cephalopod groups caught in the ICES area.The data originate from the ICES STATLANT database and from additional national and more precise information supplied by Working Group members. In general, WG feels that all 2003 data should be considered as preliminary. The data compiled in this report represent the most precise information on cephalopod landings within the ICES area that can be obtained to date. For all major fishery nations (i.e., France, Portugal, Spain, UK) we relied on the statistical information provided by the Working Group members. This information is – as in previous years – not necessarily identical to the data officially reported to the ICES ATATLANT database and stresses the inaccuracy with which cephalopod statistics are still handled. WG gives information on annual catch statistics (1995–2001) per in each ICES division or subarea, separately for each nation. The cephalopod groups listed in the tables comprise the following species: cuttlefish (Sepiidae), common squid , short-finned squid and octopods. A compilation separated into single species is still not possible as all countries report landings for cephalopod groups.
- Cephalopod discard information was provided by Spain.
- Portugal is the only European country with ongoing research cruises designed for the analysis of cephalopod stocks. In other areas it was suggested that WGCEPH should make use of existing survey programmes. It is worth noting that within the CEPHSTOCK project, other survey data has been compiled (for instance German trawl surveys in the eastern North Sea).
- It is worth noting here that the classical use of fishery statistics (stock assessment and/or computation of
abundance indices) in the case of cephalopods requires data on a monthly basis at least. Thus, WGCEPH would have to change its way of working and concentrate on the collection of data per month (and possibly per ICES rectangle). It has already been

pointed out that the major cephalopod fishing countries nowadays collect fishery statistics per month so this seems feasible. It has only been done so far in a limited number of separated areas (Scottish waters, English Channel, Portuguese coasts) most likely because of the large amount of data that must be handled.
WG comments to data requirements:
- A compilation separated into single species is still not possible as all countries report landings for cephalopod groups. - It is worth noting that there are areas of known importance for cephalopod stocks (for instance the western English Channel – ICES Division VIIe) where no trawl survey data seem to be available (to our knowledge). Survey data is a useful source of information that provides species-specific indices based on standardized fishing techniques. Its compilation is an additional task that national fishery institutes can carry out more easily than university partners.
PGCCDBS comments to improvement of the data collection:
In DOC only appears some of the species of cephalopod and only for division VIIIc and IXa. Maybe the number of these species should increase, covering more divisions. It would be desirable: - To have information by species. - To have discard information for each country. - That the WG data aggregation level was by quarter and fishing technique. - To have trawl survey data available for all the cephalopod fishing grounds.

Completed by:	PGCCDBS 2005

4. WG on the Assessment of Mackerel, Horse Mackerel, Sardine and Anchovy

Stock:	Anchovy in Div. IXa
WG name:	WG on the Assessment of Mackerel, Horse Mackerel, Sardine and Anchovy

WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter and fishery/métier	By ICES Division

DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter and fishing gear	By ICES Division

WG comments to the data quality:

Anchovy sampling in 2003 is similar to 2002 and continues at a high level.

WG comments to data requirements:

No catches from Portugal were sampled for length and age in Division IXa in 2003.
There are no estimates of discards in the anchovy fishery.

PGCCDBS comments to improvement of the data collection:

All catches should be sampled and discards estimates should be obtained where discard level may be important.

Completed by:	Alberto Murta

Stock:	Anchovy in Sub-area VIII
WG name:	WG on the Assessment of Mackerel, Horse Mackerel, Sardine and Anchovy

WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter and fishery/métier	By ICES Division

DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter and fishing gear	By ICES Division

WG comments to the data quality:

Anchovy sampling is similar to 2002 and continues at a high level. Sampling throughout Divisions VIIIa+b and VIIIc appear to be satisfactory.

WG comments to data requirements:

There are no estimates of discards in the anchovy fishery.

PGCCDBS comments to improvement of the data collection:

Discard estimates should be obtained where they appear to be important.

Completed by:	Alberto Murta

Stock:	North East Atlantic Mackerel
WG name:	WG on the Assessment of Mackerel, Horse Mackerel, Sardine and Anchovy

WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter and fishery/métier	By ICES Division

DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter and fishing gear	By ICES Division

WG comments to the data quality:

For mackerel in the southern areas the catch statistics appear to be satisfactory. In the northern areas it was concluded that since 1996 there has been a considerable improvement in the accuracy of the total landing figures. The reason for the improvement in catch statistics are given as: tighter enforcement of the management measures in respect of the national quota and increasing awareness of
the importance of accurate catch figures for possible zonal attachment of some stocks. In 2003 the misreporting of catches from Division IVa into VIa is at the same level as last year. Underreporting of catches because of trans-shipping of catches at sea has decreased in recent years because most of the catches are now landed to factories ashore. In 2003 80% of the total catch was covered by the sampling programmes. This represents a decrease since last year. The number of samples and numbers of fish aged and measured have all decreased in 2003. Spain, Portugal and Russia carried out intensive programmes on their catches, as in 2002. Norway and Scotland also continued to sample their entire catch thoroughly. There have been marked decreases in the sampling levels for the Netherlands, Ireland, Germany and Denmark from 2002–2003. England & Wales proportion of catch sampled increased from 2002 15% to 17% in 2003; however, the total number of samples taken and measured decreased. France now supplies catch data to this WG. However, no sampling of their catches of mackerel was carried out. One nation alone provided discard data for 2003: age disaggregated discard data from the Scottish fishery in the first quarter in areas IVa and VIa and in the fourth quarter in area IVa were available to the working group.
The Working Group highlights the possibility that discarding of small mackerel may be a problem in all areas, particularly if a strong year classes enters the fishery, as is believed to be the case for both the 2001 and 2002 year classes.

WG comments to data requirements:

France, the Faroe Islands, Northern Ireland, Belgium, Iceland and Sweden did not sample any catches, although significant catches are only taken by the first three of those countries. There were more areas than in previous years that were not adequately sampled. In general these areas were in the southern North Sea, the west of Ireland, the English Channel and north Biscay (with the exception of VIIId) Less than 50% of the catch was sampled in IVc, VIIb,c,d, and VIIIa,b. Of these areas, significant catches of

about 40,000t were insufficiently sampled in VIIb,d, and VIIIa. No sampling of catches was carried out in IIb, IIIa, IVb, VIb, VIIa,g, and VIIIe. However these areas represent only minor catches of about 4,000 t in total. No discard information was available from Denmark, England & Wales, Faroe Islands, Germany, Ireland, the Netherlands and Norway in 2003. Norway and Russia have large catches in IIa, for which no discard information is available. England & Wales, Faroe Islands, France, Germany, Ireland, the Netherlands and Northern Ireland have substantial catches in VIa, for which no discard information is available. For the major areas covered by the mackerel fishery, quarterly discard sampling by fishing technique, by ICES Division (EU data regulation 1639_2001) is now a requirement. Clearly, this has not happened in 2003.

PGCCDBS comments to improvement of the data collection:

All countries with important mackerel fisheries should sample their catches at a appropriate level. All such countries should also provide discards estimates, especially those that catch young mackerel.

Completed by:	Alberto Murta

Stock:	North Sea Horse Mackerel
WG name:	WG on the Assessment of Mackerel, Horse Mackerel, Sardine and Anchovy

WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
	By ICES Division

DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter and fishing gear	By ICES Division

WG comments to the data quality:

The overall sampling levels on horse mackerel appear to have increased in 2003, but the number of samples has decreased. The country that carried out a comprehensive sampling programme in 2003 was the Netherlands. Sampling intensity from Ireland and Germany was slightly higher than last year, 71% and 63% respectively. The lack of sampling data for relatively large portions of the horse mackerel catch continues to have a serious effect on the accuracy and reliability of the assessment and the Working Group remain concerned about the low number of fish that are aged. The WG concluded that since 1996 there has been a considerable improvement in the accuracy of the total landing figures, this continues to be the case. The reason for the improvement in catch statistics are given as: tighter enforcement of the management measures in respect of the national quota and increasing awareness of the importance of accurate catch figures for possible zonal attachment of some stocks. In 2003 the misreporting of catches from Division IVa into VIa is at the same level as last year. Underreporting of catches because of trans-shipping of catches at sea has decreased in recent years because most of the catches are now landed to factories ashore. In the past discards of juvenile horse mackerel have been thought to constitute a problem. However, in recent years a targeted fishery has developed on juveniles, including 1-year old fish. Therefore discarding of juveniles is now thought to be unlikely.

WG comments to data requirements:

From UK (England & Wales), Denmark and Sweden no samples were available. Some of these catches may be landed outside these countries. Because of the potential importance of significant discards levels on the horse mackerel assessments the Working Group again recommends that observers should be placed on board vessels in those areas in which discarding may be a problem. Existing observer programmes should be continued.

PGCCDBS comments to improvement of the data collection:

All countries should supply sample data for theis catches.

Completed by:	Alberto Murta

Stock:	Sardine in Div. VIIIc and IXa
WG name:	WG on the Assessment of Mackerel, Horse Mackerel, Sardine and Anchovy

WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter and fishery/métier	By ICES Division

DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter and fishing gear	By ICES Division

WG comments to the data quality:

Sardines continue to be well sampled. In 2003 samples were also provided by France. The overall sampling levels for sardine are adequate for the stock area VIIIc and IXa. Length distributions and catch-at-age data in 2003 of Sardine by France in areas VIIIa,b were reported to the WG. Catch data for sardine from Ireland in 2003 was not available.

WG comments to data requirements:

Samples should be obtained from all areas where sardines are caught. Catches of sardine in Area VII are not appropriately sampled. This is considered to be important given that catches in this area are increasing. No observer programme has been conducted to collect more information on the importance of slipping but research on the effects of slipping on sardine survival are in progress.

PGCCDBS comments to improvement of the data collection:

There should be an appropriate sampling level in all areas where a sardine fishery takes place.

Completed by:	Alberto Murta

Stock:	Southern Horse Mackerel (Div. IXa)
WG name:	WG on the Assessment of Mackerel, Horse Mackerel, Sardine and Anchovy

WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter and fishery/métier	By ICES Division

DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter and fishing gear	By ICES Division

WG comments to the data quality:

The large numbers of samples and measured fish are due mainly to intensive length measurement programs in the southern areas. In 2003, 63 % of the horse mackerel measured were from Division IXa. The WG concluded that in the southern areas the catch statistics appear to be satisfactory.

WG comments to data requirements:

PGCCDBS comments to improvement of the data collection:

Completed by:	Alberto Murta

Stock:	Western Horse Mackerel
WG name:	WG on the Assessment of Mackerel, Horse Mackerel, Sardine and Anchovy

WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter and fishery/métier	By ICES Division

DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter and fishing gear	By ICES Division

WG comments to the data quality:

The overall sampling levels on horse mackerel appear to have increased in 2003, but the number of samples has decreased. Countries that carried out comprehensive sampling programmes (>90%) in 2003 were Netherlands, Spain and Norway. Sampling intensity from Ireland and Germany was slightly higher than last year, 71% and 63% respectively. UK (England & Wales), France, Denmark and Sweden continue to take considerable catches but no samples were available. Some of these catches may be landed outside these countries. The lack of sampling data for relatively large portions of the horse mackerel catch continues to have a serious effect on the accuracy and reliability of the assessment and the Working Group remain concerned about the low number of fish that are aged. In the northern areas it was concluded that since 1996 there has been a considerable improvement in the accuracy of the total landing figures, this continues to be the case. The reason for the improvement in catch statistics are given as: tighter enforcement of the management measures in respect of the national quota and increasing awareness of the importance of accurate catch figures for possible zonal attachment of some stocks. In 2003 the misreporting of catches from Division IVa into VIa is at the same level as last year. Underreporting of catches because of trans-shipping of catches at sea has decreased in recent years because most of the catches are now landed to factories ashore. In the past discards of juvenile horse mackerel have been thought to constitute a problem. However, in recent years a targeted fishery has developed on juveniles, including 1-year old fish. Therefore discarding of juveniles is now thought to be unlikely.

WG comments to data requirements:

France now supplies catch data to this WG. However, no sampling of their catches of horse mackerel was carried out. Because of the potential importance of significant discards levels on the horse mackerel assessments the Working Group again recommends that observers should be placed on board vessels in those areas in which discarding may be a problem. Existing observer programmes should be continued.

PGCCDBS comments to improvement of the data collection:

All countries with horse mackerel fisheries should provide sample data from their catches, as well as discard estimates.

Completed by:	Alberto Murta

5. Herring Assessment Working Group for the Area South of 62^0N

Stock:	North Sea Autumn Spawning Herring
WG name:	Herring Assessment Working Group for the Area South of 62^0N
WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter and fishery/métier	By ICES Div. or sub-Div.: IVaE, IVaW, IVb, IVc and VIId, catch by rectangle
DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter and fishing technique	By ICES Division

WG comments to the data quality:

The working group has evaluated the spatial coverage of the level of catch sampling by area for all herring stocks covered by HAWG. It was indicated that the sampling level (in terms of fraction of catch sampled and number of age readings per 1000 t catch) is different for the various areas

Given the diversity of the fleets harvesting North Sea Autumn Spawning herring, an appropriate spread of sampling effort over the different fisheries/métiers is important to ensure the quality of the catch at age data The EU data directive (Commission Regulation 1639/2001) does not warrant this. The WG therefore recommends that all fisheries/métiers with substantial catch should be sampled (including by-catches in the industrial fisheries) and that catches landed in foreign ports should be sampled and information on these samples be made available to the national laboratories of the vessel's flag state.

Most of the issues raised her have also been addressed by the Planning Group on Commercial Catch, Discard and Biological Sampling at its meeting in 2004.

WG comments to data requirements:

As the advice on exploitation of the marine fish and shellfish stocks gradually changes from single species advice to multispecies/mixed fisheries advice, it is necessary to obtain catch-at-age information by fishery/metier. To facilitate this, HAWG has defined the fisheries that exploit the herring stocks which are assessed by the WG

It is recommended to the regional fisheries data collection coordination and co-operation groups and to the national laboratories to take the WG suggestions for the definition of fisheries into account when setting up sampling schemes for 2005.

It should be noted that this fishery/metier definition is on a lower level of aggregation than defined in the EU data directive. In order to be able to derive multi-fisheries advice it will be necessary to harmonise the data directive accordingly.

Completed by:	Jørgen Dalskov

Stock:	Herring in Division IIIa and the Western Baltic area
WG name:	Herring Assessment Working Group for the Area South of 62^0N

WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter and fishery/métier	By ICES Sub-division: IIIaN and IIIaS

DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter and fishing technique	By ICES Division

WG comments to the data quality:

Given the diversity of the fleets harvesting this stock the HAWG recommends that an appropriate spread of sampling effort over the different fisheries/métiers is important to the quality ensure the estimates of catch at age data The EU data directive (Commission Regulation 1639/2001) appears not ensure this. The WG therefore recommends that all fisheries/métiers with substantial catch should be sampled (including by-catches in the industrial fisheries) and that catches landed abroad should be sampled and information on these samples should be made available to the national laboratories.

WG comments to data requirements:

As the advice on exploitation of the marine fish and shell fish stocks gradually changes from single species advice to multi fisheries advice, it is necessary to have data by fishery/metier. As a first step the HAWG has defined the fisheries that exploit the herring stocks which are assessed by the WG

The regional fisheries data collection coordination and co-operation groups as well as the national laboratories are recommended to take the WG suggestion for fishery definition into account when setting up sampling schemes for 2006.

It should be noticed that this fishery/metier definition is on a lower level of aggregation than prescribed in the EU data directive. In order to be able to give multi fisheries advice it is necessary to harmonize the data directive accordingly.

Completed by:	Jørgen Dalskov

Stock:	Herring in Division VIa (North)
WG name:	Herring Assessment Working Group for the Area South of 62^0N

WG data aggregation level:

Temporal and segmentation:	**Spatial:**
By quarter and fishery/métier	By ICES Sub-division

DCR data aggregation level:

Temporal and segmentation:	**Spatial:**
By quarter and fishing technique	By ICES Division: VIa (North)

WG comments to the data quality:

The number of samples used to allocate an age-distribution for the VIa (N) catches has steadily decreased from 52 in 2002, 37 in 2003 down to 10 in 2004. This is due to two problems;

i.) The difficulty of targeting sampling on vessels that fish in this area because these vessels fish in other herring areas and there may be no prior knowledge of the fishing intentions of the vessel before departure from port.

ii.) The area misreporting recorded of catch taken in other in other areas and reported as VIa (N) can result in successfully collected samples being subsequently reallocated correctly to their true area thus loosing numbers of samples from the sampling program.

In the past concern has been raised over the quality of sampling of commercial catch. It was suggested in the 2001 ACFM technical minutes that an analysis of catch by quarter and country might shed some light on the variability in the catch information. In practice the fishery is often dominated by a single quarter catch, and a single country dominates sampling. Thus such an analysis is impossible. Although sampling is relatively poor the analysis indicated that sampling for age information was not the major source of variability in the assessment at that stage.

WG comments to data requirements:

As the advice on exploitation of the marine fish and shell fish stocks gradually changes from single species advice to multi fisheries advice, it is necessary to have data by fishery/metier. As a first step the HAWG has defined the fisheries that exploit the herring stocks which are assessed by the WG

The regional fisheries data collection coordination and co-operation groups as well as the national laboratories are recommended to take the WG suggestion for fishery definition into account when setting up sampling schemes for 2006.

It should be noted the mixing of species in this fishery is not perceived as a problem in VIa (N) and is not a consideration.

PGCCDBS comments to improvement of the data collection:

Closer cooperation in sampling between England, Germany, Netherlands and France (freezer trawler fleet) and an increase in sampling from Scotland.

Completed by:	Stephen Keltz

Stock:	Herring in Division VIa (South) and VIIb,c
WG name:	Herring Assessment Working Group for the Area South of 62^0N

WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter and fishery/métier	By ICES Sub-division: Via (South), VIIb,c

DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter and fishing technique	By ICES Division

WG comments to the data quality:

The management of the Irish fishery in recent years has tightened considerably and the accuracy of reported catches in recent years is believed to have improved. The level of sampling is quite high relative to three years ago. There is a need, however, to achieve a better coverage of VIIb, especially in the first quarter. Also, better coverage of large RSW trawlers that target this stock spasmodically is required.

WG comments to data requirements:

IT is vitally important that historic and current catch data for herring in industrial fisheries in this area be made available. This may account for considerable unknown mortality.

PGCCDBS comments to improvement of the data collection:

The DCR has to be changed so it has the same segmentation as required by the ICES Assessment Working Group.

Completed by:	Maurice Clarke

Stock:	Herring in Division VIIa (North)
WG name:	Herring Assessment Working Group for the Area South of 62^0N

WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter and fishery/métier	By ICES Sub-division: VIIa

DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter and fishing technique	By ICES Division

WG comments to the data quality:

There was a suggestion that the landings data for herring in Division VIIa(N) were un-reliable between 1998 and 2001. A re-examination of these data by the institute where most of the landings occur, resulted in the conclusion that the landings data for this time period are no more un-reliable than landings data in any adjacent management area. There are still no estimates of discarding or slippage of herring in the Irish Sea fisheries that target herring. Biological sampling of this fishery remains high (approximately 1 sample per 270 t landed, however, there is a suggestion that there may need to be some revisions for the 2003 data. All sampling was undertaken by Northern Ireland.

WG comments to data requirements:

As the advice on exploitation of the marine fish and shell fish stocks gradually changes from single species advice to multi fisheries advice, it is necessary to have data by fishery/metier. As a first step the HAWG has defined the fisheries that exploit the herring stocks which are assessed by the WG

The regional fisheries data collection coordination and co-operation groups as well as the national laboratories are recommended to take the WG suggestion for fishery definition into account when setting up sampling schemes for 2005.

It should be noticed that this fishery/metier definition is on a lower level of aggregation than prescribed in the EU data directive. In order to be able to give multi fisheries advice it is necessary to harmonize the data directive accordingly.

PGCCDBS comments to improvement of the data collection:

The DCR has to be changes so it has the same segmentation as required by the ICES Assessment Working Group.

Completed by:	Jørgen Dalskov

Stock:	Herring in the Celtic Sea
WG name:	Herring Assessment Working Group for the Area South of 62^0N
WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter and fishery/métier	By ICES Sub-division: VIIaS, VIIg and VIIj.
DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter and fishing technique	By ICES Division
WG comments to the data quality:	
Data quality are very good, with high level of sampling. This is achieved by collaboration with fishermen and processors. The fact that the assessment is conducted during the period when the fishery is still open and sampling continues right up to the time of the group means that it is difficult to turn Q1 in year samples into data in sufficient time.	
WG comments to data requirements:	
It is essential to get historic and current evaluations of the level of freezer trawler effort, mainly French, especially in VIIj.	
PGCCDBS comments to improvement of the data collection:	
The DCR has to be changed so it has the same segmentation as required by the ICES Assessment Working Group.	
Completed by:	Maurice Clarke

Stock:	Sprat in the North Sea
WG name:	Herring Assessment Working Group for the Area South of 62^0N

WG data aggregation level:

Temporal and segmentation:	**Spatial:**
By quarter and fishery/métier	By ICES Division:

DCR data aggregation level:

Temporal and segmentation:	**Spatial:**
By quarter and fishing technique	By ICES rectangle

WG comments to the data quality:

The sampling level in 2004 was lower than in previous years. In Denmark the provisions in the EU regulation 1639/2001 have been implemented. This provision requires 1 sample per 2000 t landed. This sampling level is lower than the guidelines (1 sample per 1000 t) previously used by the HAWG, but as the fishery was carried out in a limited area, the recommended sampling level can be regarded as adequate.
The recommended sampling levels for species composition were achieved.

WG comments to data requirements:

As the advice on exploitation of the marine fish and shell fish stocks gradually changes from single species advice to multi fisheries advice, it is necessary to have data by fishery/metier. As a first step the HAWG has defined the fisheries that exploit the herring stocks which are assessed by the WG

The regional fisheries data collection coordination and co-operation groups as well as the national laboratories are recommended to take the WG suggestion for fishery definition into account when setting up sampling schemes for 2006.

It should be noticed that this fishery/metier definition is on a lower level of aggregation than prescribed in the EU data directive. In order to be able to give multi fisheries advice it is necessary to harmonize the data directive accordingly.

PGCCDBS comments to improvement of the data collection:

The DCR has to be changes so it has the same segmentation as required by the ICES Assessment Working Group.

Stock:	Sprat in Division IIIa
WG name:	Herring Assessment Working Group for the Area South of 62^0N

WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter and fishery/métier	By ICES Sub-division: IIIaN and IIIaS

DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter and fishing technique	By ICES Division

WG comments to the data quality:

The sampling level in 2004 was lower than in previous years. In Denmark the provisions in the EU regulation 1639/2001 have been implemented. This provision requires 1 sample per 2000 t landed. This sampling level is lower than the guidelines (1 sample per 1000 t) previously used by the HAWG, but as the fishery was carried out in a limited area, the recommended sampling level can be regarded as adequate.
The recommended sampling levels for species composition were achieved.

WG comments to data requirements:

As the advice on exploitation of the marine fish and shell fish stocks gradually changes from single species advice to multi fisheries advice, it is necessary to have data by fishery/metier. As a first step the HAWG has defined the fisheries that exploit the herring stocks which are assessed by the WG

The regional fisheries data collection coordination and co-operation groups as well as the national laboratories are recommended to take the WG suggestion for fishery definition into account when setting up sampling schemes for 2006.

It should be noticed that this fishery/metier definition is on a lower level of aggregation than prescribed in the EU data directive. In order to be able to give multi fisheries advice it is necessary to harmonize the data directive accordingly.

PGCCDBS comments to improvement of the data collection:

The DCR has to be changes so it has the same segmentation as required by the ICES Assessment Working Group.

Completed by:	Lotte Worsøe Clausen

6. Pandalus Assessment Working Group

Stock:	Pandalus IIIa & IV East, Pandalus IV (Fladen) and Pandalus I & II (Pandalus IVb (Farn Deeps) no landings in recent years)
WG name:	WGPAND
WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
Quarter/Year	IIIa & IV East, IV (Fladen), Pandalus I & II
DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
III a and IV: Quarter I and II: Year	ICES/NAFO divisions
WG comments to the data quality:	

IIIa and IV East

- LPUE series are probably biased due to lack of information in EU logbooks on how many trawls used.
- Discard estimates are at present considered too inaccurate to be included in assessments, but the WG expects that better discard data will be available through the current discard sampling programmes
- Overall sampling level in 2003 was around 15 kg (2500 specimen) per 1000 t landed. Variations in the intensities between countries and between seasons indicate that improvements could be made.

I and II (Barents Sea and Svalbard area)

- Authorities should enforce the accurate completion of logbook data in Norway, especially the use of single, double and triple trawls
- Length and sex data from commercial catches should be provided by all nations involved in the fishery.

WG comments to data requirements:

IIIa and IV East

- Assessment method in recent years: production model. Main input data to this model is provided from a Norwegian trawl survey. In 2003 there was a significant break in the data series. Because of this no update assessment could be done in 2004.
- The WG has so far maintained a view that Pandalus caught on the Fladen (IV) constitute a stock separated from Pandalus caught in IIIa and IV east. A close connection between the shrimps in the two areas has, however, been postulated by earlier investigations. It is recommended by the WG that data for genetic analyses should be provided from the Norwegian trawl survey in order to elucidate this stock separation problem.

I and II (Barents Sea and Svalbard area)

- It is highly recommended that the Russian shrimp survey time series is re-established. The lack of Russian survey data is considered a big problem when doing the assessment. It is impossible to evaluate the stock in the Kola Coast and Goose Bank areas.
- Scientists should evaluate the procedures used in estimating the shrimp consumed by cod.
- Data on discards of small shrimp in the Barents Sea and Svalbard should be presented in 2005.

PGCCDBS comments to improvement of the data collection:

- In the present DCR discard sampling is only required on a tri-annual basis.

Completed by:	Katja Ringdahl

7. North-Western Working Group

General comments

There is no chapter in general or in the stock chapters on data deficiencies or data quality. This information has to be retrieved from sections of the report on assessment relevant parameters.

Faroe stocks

Faroe Plateau cod and Faroe Bank cod are not covered by the DCR. Deficiencies are catch at age data, maturity ogives and recruitment estimates.
Faroe saithe and haddock are covered by the DCR. Haddock assessment suffers from non sufficient catch at age data. Faroe saithe assessment suffers from low sampling, missing catch at age for some fleets and recruitment estimates.

Greenland stocks

For cod all relevant assessment parameters are needed. WG comments on the contrary results of commercial cpue and survey cpue.
For Greenland halibut there is knowledge missing on the lifecycle of Greenland halibut. There are also problems on age reading.

Iceland stocks

All stocks at Iceland handled by the NWWG are not covered by the DCR. All relevant parameters for an analytical assessment are requested.
For cod and saithe there is inadequate sampling for the maturity ogives. Concerning haddock there is currently no consistent set of catch at age on a fleet.

Redfish stocks

For all redfish stocks there is a prevalent problem on age reading which prevents analytical assessment. Landings are not separated by species. Therefore, commercial cpue and fishery independent surveys are important data sources. For the pelagic redfish stock results of the acoustic survey are inconsistent. The knowledge on migration of redfish in this area is insufficient.

Stock:	Faroe Bank Cod	
WG name:	North-Western Working Group	
WG data aggregation level:		
Temporal and segmentation:		**Spatial:**
By quarter and fishing technique		Vb1 and IIa Faroes Exclusive Economic Zone
DCR data aggregation level:		
Temporal and segmentation:		**Spatial:**
Not requested		Not requested
WG comments to the data quality:		
WG comments to data requirements:		
No sufficient catch at age data for an analytical assessment		
PGCCDBS comments to improvement of the data collection:		
Completed by:	HPCornus	

Stock:	Faroe Haddock
WG name:	NWWG
WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter and fishing technique	Vb1 and IIa Faroes Exclusive Economic Zone
DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
Fishing technique, yearly	Division
WG comments to the data quality:	
WG comments to data requirements:	
No sufficient catch at age data for an analytical assessment	
PGCCDBS comments to improvement of the data collection:	
Completed by:	HPCornus

Stock:	Faroe Plateau Cod
WG name:	NWWG

WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter and fishing technique	Vb1 and IIa Faroes Exclusive Economic Zone

DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
Not requested	Not requested

WG comments to the data quality:

WG comments to data requirements:

All landings from Faroes EEZ
The sampling strategy is to have length, length-age, and length-weight samples from all major gears during three periods: January-April, May-August and September-December. In the period 1985–1995, the year was split into four periods: January-March, April-June, July-September, and October-December.
Age composition for foreign fleets, yearly maturity ogives, early knowledge on recruiting year classes for short term prediction,

PGCCDBS comments to improvement of the data collection:

Completed by:	

Stock:	Faroe Saithe
WG name:	NWWG
WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter and fishing technique	Vb1,Vb2 and IIa Faroes Exclusive Economic Zone
DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
Fishing technique, quarterly	Not requested
WG comments to the data quality:	
Not officially reported landings from foreign countries high quality commercial cpue data series	
WG comments to data requirements:	
Samples by fleet and season, catch at age data from foreign countries, yearly maturity ogives, fishery independent estimates of recruiting yearclasses	
PGCCDBS comments to improvement of the data collection:	
Completed by:	HPCornus

Stock:	Cod off Greenland (offshore Component)
WG name:	NWWG
WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
gear, Jan-May, June-Dec	Va N and S
DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
Fishing technique, quarterly	division
WG comments to the data quality:	
Commercial cpue data and survey cpue data show controverse results	
WG comments to data requirements:	
Cpue series, catch in numbers at age by fleet, length weight relationship, maturity ogives,	
PGCCDBS comments to improvement of the data collection:	
Completed by:	HPCornus

Stock:	Cod off Greenland (inshore Component)	
WG name:	NWWG	
WG data aggregation level:		
Temporal and segmentation:		**Spatial:**
gear		ICES XIVb, NAFO SA1 inshore and offshore
DCR data aggregation level:		
Temporal and segmentation:		**Spatial:**
Fishing technique, quarterly		division
WG comments to the data quality:		
WG comments to data requirements:		
Catch at age and weight at age data, recruitment survey		
PGCCDBS comments to improvement of the data collection:		
Completed by:	HPCornus	

Stock:	Greenland halibut in subareas V and XIV
WG name:	NWWG

WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
gear	XIV, V

DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
Fishing technique, yearly	division

WG comments to the data quality:

A summary of the current state of knowledge on Greenland halibut in the above-mentioned waters shows
that key information on the life cycle is lacking (Woll, 2000). Information on the spawning location and spawning time of the stock is very limited

SA XIV
Otoliths have been sampled from the Icelandic fishery in 2003 but due to changes in the age-reading staff at MRI no readings were available at the time the WG met. The only available aged otoliths were from the Greenland survey in East Greenland. As this survey mainly catches younger fish than the commercial fishery, *i.e.* below age 8–9 and as length composition by age in the survey is expected to differ from the commercial fishery, attempts were not made to establish catch-at-age for the total catches. Since 2000 no age-disaggregated assessment have been conducted for Greenland halibut and the lack of a catch-at-age matrix do thus not prevent an update of stock assessment. When the otoliths sampled by Iceland is age-read, the catch-at-age matrix will be updated accordingly

Div V
Trawl cpue for assessment

WG comments to data requirements:

CPUE, Surveys,

PGCCDBS comments to improvement of the data collection:

Completed by:	HPCornus

Stock:	Icelandic Cod
WG name:	NWWG
WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
fishing technique	Va
DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
Not requested	Not requested
WG comments to the data quality:	
Inadequate sampling for maturity ogives	
WG comments to data requirements:	
Cpue series, catch in numbers at age by fleet, length weight relationship, maturity ogives,	
PGCCDBS comments to improvement of the data collection:	
Completed by:	HPCornus

Stock:	Icelandic Haddock
WG name:	NWWG
WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
gear, Jan-May, June-Dec	Va N and S
DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
Not requested	Not requested
WG comments to the data quality:	
There does not currently exist a fully consistent set of catch-at-age data on a per-fleet basis	
WG comments to data requirements:	
Cpue series, catch in numbers at age by fleet, length weight relationship, maturity ogives,	
PGCCDBS comments to improvement of the data collection:	
Completed by:	HPCornus

Stock:	Saithe in Icelandic Waters
WG name:	NWWG
WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter and fishing technique	Va
DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
Not requested	Not requested
WG comments to the data quality:	
Inadequate sampling for maturity ogives	
WG comments to data requirements:	
Cpue series, catch in numbers at age by fleet, length weight relationship, maturity ogives,	
PGCCDBS comments to improvement of the data collection:	
Completed by:	HPCornus

Stock:	Pelagic Sebastes mentella
WG name:	NWWG
WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
gear	ICES XIV, XII, V and NAFO SA 1
DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
Fishing technique, quarterly	division
WG comments to the data quality:	
age reading problems still not solved, acoustic survey results inconsistent	
WG comments to data requirements:	
catch at age by subarea, commercial cpue and survey cpue, migration information, IUU catches, effort of fleets	
PGCCDBS comments to improvement of the data collection:	
Completed by:	HPCornus

Stock:	Sebastes Marinus V,VI,XII and XIV
WG name:	NWWG
WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
gear	XIV, XII, VI, V
DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
Fishing technique, quarterly	division
WG comments to the data quality:	
Redfish landings not separated by species, age reading problems still not solved,	
WG comments to data requirements:	
Species separation by samples, also separation by pelagic mentella and shelf mentella, by-catch of small redfish in other fisheries, catch at age by subarea, commercial cpue and survey cpue, migration information,	
PGCCDBS comments to improvement of the data collection:	
Completed by:	HPCornus

Stock:	Deep-Sea Sebates mentella on the continental shelf V,VI,XII and XIV
WG name:	NWWG

WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
gear	XIV, XII, VI, V

DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
Fishing technique, quarterly	division

WG comments to the data quality:
Redfish landings not separated by species, age reading problems still not solved,

WG comments to data requirements:
Species separation by samples, also separation by pelagic mentella and shelf mentella, by-catch of small redfish in other fisheries, catch at age by subarea, commercial cpue and survey cpue, migration information,

PGCCDBS comments to improvement of the data collection:

Completed by:	HPCornus

8. WG on the Assessment of Southern Shelf Demersal Stocks

Landing data deficiencies

The main inadequacy in landings data is the unknown level of misreporting (misallocation + underreporting).

Age and length sampling of the landings

For most stocks assessed in WGSSDS sampling levels are assumed to be adequate. In some cases, member states sample more intense than is set in the DCR.

Age and length sampling of the discards

Routine discard sampling programmes should be in place for all WGSSDS stocks since 2003, however at the time of the WGSSDS meeting there were still some stocks for which no discard data were gathered and for which discarding is believed to be considerable. Available discard data were mostly used in a qualitative manner, and not directly included in the assessment. The Working Group recommended that consideration should be given to the appropriate inclusion of discard data into stock assessments.

Biological parameters

Most stocks in WGSSDS use maturity ogives derived from research vessel sampling. These ogives are applied to all years and do not take into account growth trends over time. Under the DCR maturity data are routinely collected and the WG recommended that maturity sampling should be co-ordinated by a group such as the Regional Co-ordination Meeting (especially when the data are gathered once every three years) and that investigations on appropriate use of varying maturity data should take place.

Surveys

The WG was very concerned on the lack of fishery-independent data for some stocks (e.g. Celtic Sea Cod, Bay of Biscay sole). This is because the available surveys are not designed to estimate a abundance indices for certain stocks, or no surveys take place in the stock area. New Q4 surveys have been initiated by UK and Ireland, and it is hoped that these developments will alleviate the WG's concerns on lack of survey data.

Sampling areas vs stock areas

For WGSSDS stocks there is no mismatch between sampling and stock area, although for some stocks, data are gathered on a lower aggregation level compared to the DCR. The mismatch between stock area and management units is a problem for some gadoids and plaice stocks.

Stock:	Cod in Divisions VIIe–k
WG name:	WG on the Assessment of Southern Shelf Demersal Stocks

WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
Quarterly and fleet	ICES Divisions VIIfgh / VIIe / VIIjk Combined to VIIe-k

DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
Quarterly and fishing technique	ICES Divisions VIIb–k

WG comments to the data quality:

Age and length sampling of the landings
Sampling data of countries receiving the majority of the TAC are adequate. One fleet is dominating the landings matrix.

Age and length sampling of the discards
No discard data available. Discarding can be considerable (*e.g.* in 2003, when quota became restrictive, cod was heavily discarded).

Surveys
The available surveys are not designed for cod abundance estimation (*e.g.* the abundance indices for one survey were based on 19 cod caught in total).

Mis- and non-reporting issues
As for most stocks, underreporting is thought to occur, but there are no estimates of the magnitude of the problem. As the TAC become more restrictive in recent years, the underreporting may have increased.

WG comments to data requirements:

Age and length sampling of the landings
No specific requirements

Age and length sampling of the discards
There is a need for discard data.

Surveys
New surveys have commenced in the Celtic Sea and they may be suitable for cod abundance estimation.

Mis- and non-reporting issues
…

PGCCDBS comments to improvement of the data collection:

Completed by:	Wim Demaré

Stock:	Haddock in Division VIIb-k (Celtic Sea and West of Ireland)
WG name:	WG on the Assessment of the Southern Shelf Demersal Stocks
WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
Quarterly and fleet	ICES Division VIIbc / VIIe / VIIfgh / VIIjk Combined to VIIb-k
DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
Quarterly	ICES Division VII (minus VIIa and VIId)
WG comments to the data quality:	
Age and length sampling of the landings Sampling levels of the landed catch considered being sufficient. **Age and length sampling of the discards** Discard estimates available from VIIg and VIIj and are major. The length composition of haddock landings from VIIb also indicates a substantial discarding. Discarding is very dependent on area, of year class strength and fleet. **Surveys** Five surveys used in the assessment, but none of them covers the whole stock area. **Mis- and non-reporting issues** Not considered to be a major problem since the TAC is in excess of the landings. However the TAC has become more restrictive in recent years and some fleets may be restricted by their individual quota allocation.	
WG comments to data requirements:	
Tentative assessment. There is a lack of ability for the tuning data used, none of which covers the entire area, to tune for all ages for the assessment and any signal from area specific indices may be masked when combined. **Age and length sampling of the landings** Sampling levels were not available per fishery/métier and the WG was therefore unable to evaluate whether or not current sampling levels are sufficient to support fishery/métier disaggregated assessment approaches. **Age and length sampling of the discards** Not all areas and fleets covered. **Surveys** **Mis- and non-reporting issues** No requirements	
PGCCDBS comments to improvement of the data collection:	
Completed by:	Wim Demaré

Stock:	Plaice in West of Ireland (Division VII b,c)	
WG name:	WG on the Assessment of Southern Shelf Demersal Stocks	
WG data aggregation level:		
Temporal and segmentation:		**Spatial:**
Quarterly and fleet		ICES Division VIIbc
DCR data aggregation level:		
Temporal and segmentation:		**Spatial:**
Yearly and fishing technique		ICES Division VIIbc
WG comments to the data quality:		
There is a short time series of available data and a lack of independence between catch and tuning data. Therefore it was not possible to carry out an acceptable assessment.		
WG comments to data requirements:		
PGCCDBS comments to improvement of the data collection:		
Completed by:	Wim Demaré	

Stock:	Plaice in the Western Channel (Division VIIe)
WG name:	WG on the Assessment of Southern Shelf Demersal Stocks
WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
Quarterly and fleet	ICES Division VIIe
DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
Quarterly and fishing technique	ICES Division VIIe
WG comments to the data quality:	
Age and length sampling of the landings Sampling data of countries receiving the majority of the TAC are adequate. **Age and length sampling of the discards** Discard data available but not used in the assessment. **Surveys** Survey information provides consistent estimates of recruitment. **Mis- and non-reporting issues** As for most stocks, underreporting is thought to occur, but there are no estimates of the magnitude of the problem.	
WG comments to data requirements:	
Age and length sampling of the landings No extra requirements. French landings are mainly during the first quarter and it may be possible to sample these in the future **Age and length sampling of the discards** Discard data indicate that discarding of this stock is variable (in 2003 discarding practices only occurred during first quarter). As the time series expands, the WG will be able to better determine the need to include these data in the assessment **Surveys** No extra requests. **Mis- and non-reporting issues** …	
PGCCDBS comments to improvement of the data collection:	
Completed by:	Wim Demaré

Stock:	Plaice in the Celtic Sea (Division VII f and g)
WG name:	WG on the Assessment of the Southern Shelf Demersal Stocks
WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
Quarterly and fleet	ICES Division VIIfg
DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
Quarterly and fishing technique	ICES Divisions VIIfg

WG comments to the data quality:

Age and length sampling of the landings
Sampling levels considered being at a reasonable level.

Age and length sampling of the discards
Discard estimates are not included in the assessment. Discard rates are high

Surveys
One survey used. The survey was designed to estimate flatfish abundance, but performs poorly for estimates of the recruiting age of plaice. Two other surveys are available but do not target flatfish effectively.

Mis- and non-reporting issues
Misreporting is considered to be a problem but there are no estimates on the magnitude of the problem.

WG comments to data requirements:

Age and length sampling of the landings

Age and length sampling of the discards
Most important fleets are sampled for discards, but it is not evident to include these estimates into the assessment.

Surveys
There is a need for improved fishery independent tuning information.

Mis- and non-reporting issues

PGCCDBS comments to improvement of the data collection:

Completed by:	Wim Demaré

Stock:	Plaice in Southwest of Ireland (Division VIIh-k)	
WG name:	WG on the Assessment of the Southern Shelf Demersal Stocks	
WG data aggregation level:		
Temporal and segmentation:		**Spatial:**
Quarterly and fleet		ICES Division VIIh-k
DCR data aggregation level:		
Temporal and segmentation:		**Spatial:**
Yearly and fishing technique		ICES Division VIIh-k
WG comments to the data quality:		
WG comments to data requirements:		
PGCCDBS comments to improvement of the data collection:		
Completed by:	Wim Demaré	

Stock:	Sole in West of Ireland (Division VIIb,c)
WG name:	WG on the Assessment of the Southern Shelf Demersal Stocks
WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
Quarterly and fleet	ICES Division VIIbc
DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
Yearly and fishing technique	ICES Division VIIbc
WG comments to the data quality:	
There is a short time series of available data and a lack of independence between catch and tuning data. Therefore it was not possible to carry out an acceptable assessment. Current survey (WCGFS) is not designed to target flatfish. There has a new survey started which may have improved catchability for sole.	
WG comments to data requirements:	
PGCCDBS comments to improvement of the data collection:	
Completed by:	Wim Demaré

Stock:	Sole in the Western Channel (Division VIIe)
WG name:	WG on the Assessment of the Southern Shelf Demersal Stocks
WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
Quarterly and fleet	ICES Division VIIe
DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
Quarterly and fishing technique	ICES division VIIe
WG comments to the data quality:	
Age and length sampling of the landings Age and length sampling for this stock is adequate with regards to the UK landings (65% of international landings). Since 2002 French landings have been sampled but not yet included in the assessment. **Age and length sampling of the discards** Discards are minor and it is not expected that they will be included into the assessment. (Note however that fishermen experience the TAC for VIIe sole as becoming too restrictive and therefore highgrading is suspected. For misreporting see further.) **Surveys** Survey information, although restricted to a small part of the area of the stock, appears to track recruitment and changes in the abundance of the catch at age well. **Mis- and non-reporting issues** Misallocation from VIIe into VIId is major but has been taken into account into the assessment. As for most stocks, underreporting is thought to occur, but there are no estimates of the magnitude of the problem.	
WG comments to data requirements:	
Age and length sampling of the landings The WG anticipates that a series of four to five years of French landings at age would be necessary before this data can be included in the landing numbers at age **Age and length sampling of the discards** Not required for the assessment. **Surveys** Some expansion of the survey, as well as fisheries independent sampling in French waters, would be helpful in improving the assessment as well as reducing the reliance on the commercial tuning fleets **Mis- and non-reporting issues** …	
PGCCDBS comments to improvement of the data collection:	
Completed by:	Wim Demaré

Stock:	Sole in the Celtic Sea (Divisions VIIf,g)
WG name:	WG on the Assessment of the Southern Shelf Demersal Stocks
WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
Quarterly and fleet	ICES Division VIIfg
DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
Quarterly and fishery technique	ICES Division VIIfg

WG comments to the data quality:

Age and length sampling of the landings
Sampling levels considered being at a reasonable level.

Age and length sampling of the discards
Discards are minor and it is not expected that they will be included into the assessment.

Surveys
One survey available – designed to estimate flatfish abundance.

Mis- and non-reporting issues
Misallocation into VIIhjk has become a growing practice, but has been taken into account where possible.

WG comments to data requirements:

Age and length sampling of the landings
…

Age and length sampling of the discards
Not required for the assessment

Surveys
…
Mis- and non-reporting issues
...

PGCCDBS comments to improvement of the data collection:

Completed by:	Wim Demaré

Stock:	Sole in Southwest of Ireland (Division VIIh-k)
WG name:	WG on the Assessment of the Southern Shelf Demersal Stocks
WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
Quarterly and fleet	ICES Division VIIh-k
DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
Yearly and fishing technique	ICES Division VIIh-k
WG comments to the data quality:	
Assessments of this stock will remain tentative until a longer data and fleet time series is made available and until there is improved independence of the tuning data from the catch at age data. Until such time, the WG will monitor the progress of this stock on an annual basis without an assessment being carried out.	
WG comments to data requirements:	
See above	
PGCCDBS comments to improvement of the data collection:	
Completed by:	Wim Demaré

Stock:	Bay of Biscay sole (ICES Division VIIIab)
WG name:	WG on the Assessment of Southern Shelf Demersal Stocks

WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
Quarterly and fleet	ICES Division VIIIab

DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
Quarterly and fishing technique	ICES Division VIIIab

WG comments to the data quality:

Age and length sampling of the landings
Sampling is considered to be sufficient.

Age and length sampling of the discards
Discards are included in the assessment, but are minor.

Surveys
Surveys have been interrupted in 2002.

Mis- and non-reporting issues
As for most stocks, underreporting is thought to occur, but there are no estimates of the magnitude of the problem.

WG comments to data requirements:

Age and length sampling of the landings
.

Age and length sampling of the discards
.

Surveys
The most important deficiency for the assessment of this stock is the lack of survey indices.

Mis- and non-reporting issues
.

PGCCDBS comments to improvement of the data collection:

Completed by:	Wim Demaré

Stock:	Whiting in Division VIIe–k (Celtic Sea)
WG name:	WG on the Assessment of Southern Shelf Demersal Stocks

WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
Quarterly and fleet	ICES Divisions VIIfgh / VIIe / VIIjk Combined to VIIe-k

DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
Quarterly and fishing technique	ICES Divisions VIIb-k

WG comments to the data quality:

Age and length sampling of the landings
Sampling levels of the landed catch considered being sufficient.

Age and length sampling of the discards
The sampled fisheries were heavily discarding. No discards available for one of the major fleets.

Surveys
Three surveys – with reasonable consistent estimates - available

Mis- and non-reporting issues
Mis-reporting is unlikely to be considerable since the TAC is in excess of the landings

WG comments to data requirements:

Age and length sampling of the landings
Sampling levels were not available per fishery/métier and the WG was therefore unable to evaluate whether or not current sampling levels are sufficient to support fishery/métier disaggregated assessment approaches.

Age and length sampling of the discards
The fisheries that were sampled did have high discarding. No discards available for one of the major fleets.

Surveys

Mis- and non-reporting issues
No requirements

PGCCDBS comments to improvement of the data collection:

Completed by:	Wim Demaré

10. ICES Working Group on Nephrops Stocks (2003)

Stock:	Botney Gut - Silver Pit (FU 5)
WG name:	ICES Working Group on *Nephrops* Stocks (2003)

WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter, all gears combined	By Functional Unit

DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter	By Functional Unit

WG comments to the data quality:

The problems associated with under-reporting of the landings are believed to be adequately resolved, at least as far as the Belgian fleet is concerned. For the other fleets, no such corrections could be made, since there was no verifiable information on the importance of their non-reported landings.

Sampling frequency and sample sizes in the Belgian port sampling program are assumed to be sufficient to produce reliable estimates of the numbers-at-length in the landings of the Belgian fleet. A study currently underway on the SOP-values of raised size distributions, suggests that it would be unwise to reduce the sampling levels (which are now at 200–300 animals per market category), since this would more or less double the risk of obtaining estimated weights of the landings that depart > 10% (plus or minus) from the actual weights (even for the pooled quarterly size distributions).

The lack of discard information in general and of port samples of the Dutch landings (which account for 35–55% of the total landings from the area), puts serious constraints to the reliability of the assessments. However, the Netherlands have recently started a port sampling program on their *Nephrops* fisheries, and discard data on the Belgian *Nephrops* directed fleet are now being collected on a regular basis, and these developments are expected to largely resolve the data problems in FU 5.

Also see general comments on data deficiencies in *Nephrops* assessments.

WG comments to data requirements:

None.

Also see general comments on data deficiencies in *Nephrops* assessments.

PGCCDBS comments to improvement of the data collection:

Completed by:	Frank Redant

Stock:	Farn Deeps (FU 6)
WG name:	ICES Working Group on *Nephrops* Stocks (2003)

WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter, all gears combined	By Functional Unit

DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter	By Functional Unit

WG comments to the data quality:

Landings were moderately well sampled at the major ports in NE England during the main season of the fishery in 2001 and 2002, with an average of 13 samples being taken in each of quarters 1 and 4. This represents a decrease in sampling levels compared with previous years, but is still considered to give an adequate representation of the landings.

The discard sampling program ceased in 1999, owing to uncertainties about the assumptions underlying identification of the discarded portion of total catches. Instead, discards have been estimated from comparison of total unsorted catch samples with landings statistics. The quality of catch data collection in 2001 and 2002 has been maintained at the level of the previous two years, with more than 20 samples taken in each of quarters 1 and 4 of each year.

Catch data have been used to re-estimate discard size distributions and quantities for all years from 1994 onwards. Discards were estimated by a different method before this date, using both catch and discard sampling data. The method used to estimate discards for recent years is to match catch and landings size distributions, using weightings for previous retention at size in the landings, which has been fairly constant from year to year.

There is some uncertainty about the extent to which reported landings reflect the real level of landings from this fishery. To a certain extent, this is countered by the assumption of zero discard survival since 1994, accounting for the suspected unreported landing of small *Nephrops*.

The biological input parameters are either based directly on Farn Deeps observations, derived from other FUs, or determined from Farn Deeps data with reference to estimates for other FUs.

Also see general comments on data deficiencies in *Nephrops* assessments.

WG comments to data requirements:

None.

Also see general comments on data deficiencies in *Nephrops* assessments.

PGCCDBS comments to improvement of the data collection:

Completed by:	Frank Redant

Stock:	Fladen Ground (FU 7)
WG name:	ICES Working Group on *Nephrops* Stocks (2003)

WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter, all gears combined	By Functional Unit

DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter	By Functional Unit

WG comments to the data quality:

There are no details on the accuracy of the landing figures in this fishery. There is some wider evidence however, that landings may have exceeded reported figures within the UK.

Although there have been increases in the amount of information gathered for the Fladen stock, data is still limited in comparison with other Scottish stocks. The addition of discard data for this area has greatly improved the length compositions of the removals although it will take several years before these data can be fully exploited.

Several factors which may affect the accuracy of the TV survey assessments, have been discussed before. The biomass estimate is obviously dependent on the value for the mean weights of *Nephrops* in each stratum. These are derived from trawl samples and may not be fully representative of the whole area and/or population. It should also be noted that the abundance estimates make no allowance for the fact that a proportion of the burrows may be unoccupied. Nevertheless, the time-series has employed the same techniques and "counting" personnel, and so the trends in the abundance are considered realistic. In view of the fact that the use of the same technique on other grounds around Scotland made it possible to consistently distinguish higher and lower density populations, it is considered that the method gives a very good indication of stock condition on the Fladen Ground.

Also see general comments on data deficiencies in *Nephrops* assessments.

WG comments to data requirements:

None.

Also see general comments on data deficiencies in *Nephrops* assessments.

PGCCDBS comments to improvement of the data collection:

Completed by:	Frank Redant

Stock:	Firth of Forth (FU 8)
WG name:	ICES Working Group on *Nephrops* Stocks (2003)
WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter, all gears combined	By Functional Unit
DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter	By Functional Unit
WG comments to the data quality:	
Good sampling of the landings was achieved in this fishery. The level of discard sampling has declined since the two years 1995 and 1996, when EU funding provided additional samples. The current sampling rate may be below optimum, bearing in mind the temporal variability in discard rates. The uniform sedimentary environment in the area means that the input parameters used in the assessments are likely to be more widely relevant for this stock than for some others in the Scottish waters. Also see general comments on data deficiencies in *Nephrops* assessments.	
WG comments to data requirements:	
None. Also see general comments on data deficiencies in *Nephrops* assessments.	
PGCCDBS comments to improvement of the data collection:	
Completed by:	Frank Redant

Stock:	Moray Firth (FU 9)
WG name:	ICES Working Group on *Nephrops* Stocks (2003)
WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter, all gears combined	By Functional Unit
DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter	By Functional Unit
WG comments to the data quality:	
There are no details on the accuracy of the landing figures in this fishery. There is some wider evidence however, that landings may have exceeded reported figures within the UK. In general, the number of landings samples collected for a stock of this size is relatively high, but samples of discards are somewhat lacking. Compared to some other Scottish grounds, there appears to be less biological variation in growth and other parameters. Also see general comments on data deficiencies in *Nephrops* assessments.	
WG comments to data requirements:	
None. Also see general comments on data deficiencies in *Nephrops* assessments.	
PGCCDBS comments to improvement of the data collection:	
Completed by:	Frank Redant

Stock:	Noup (FU 10)
WG name:	ICES Working Group on *Nephrops* Stocks (2003)
WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter, all gears combined	By Functional Unit
DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter	By Functional Unit
WG comments to the data quality:	
Sampling of the landings in this small fishery has been very limited to date. In 1991 and 1992, only three samples were taken each year, and in 1997 and 1998, four samples were taken annually. Recent efforts to sample this stock have been less successful – none were collected in 1999, two in 2000, three in 2001, and one in 2002. No discard sampling has taken place. Biological parameters for the stock are largely unknown. The limited availability of length composition data and biological information precludes stock assessments by analytical methods. Also see general comments on data deficiencies in *Nephrops* assessments.	
WG comments to data requirements:	
None. Also see general comments on data deficiencies in *Nephrops* assessments.	
PGCCDBS comments to improvement of the data collection:	
Completed by:	Frank Redant

Stock:	North Minch (FU 11)
WG name:	ICES Working Group on *Nephrops* Stocks (2003)

WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter, trawl and creel separately	By Functional Unit

DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter	By Functional Unit

WG comments to the data quality:

There are no details on the accuracy of the landing figures in this fishery. There is some wider evidence however, that landings may have exceeded reported figures within the UK.

A reasonable level of port sampling is achieved for the trawl fishery, usually on a monthly basis, but sampling of the discards has only been possible since 1990, and there are gaps in the quarterly discard sampling in some years. Sampling of the creel fishery has been limited to a few samples in most years, although this has increased in 2002.

The biological variability and the heterogeneous nature of the *Nephrops* grounds within the stock makes the choice of biological parameters difficult. The choice of biological inputs is based on observations from other Scottish areas.

Also see general comments on data deficiencies in *Nephrops* assessments.

WG comments to data requirements:

None.

Also see general comments on data deficiencies in *Nephrops* assessments.

PGCCDBS comments to improvement of the data collection:

Completed by:	Frank Redant

Stock:	South Minch (FU 12)
WG name:	ICES Working Group on *Nephrops* Stocks (2003)

WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter, trawl and creel separately	By Functional Unit

DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter	By Functional Unit

WG comments to the data quality:

There are no details on the accuracy of the landing figures in this fishery. There is some wider evidence however, that landings may have exceeded reported figures within the UK.

A reasonable level of port sampling is achieved for the trawl fishery, usually on a monthly basis. Sampling of the discards has only been possible since 1990, but until 1994 sampling levels have been rather low. Sampling of the creel fishery has been limited to a few samples in most years.

As for the North Minch (FU 11), the biological variability and the heterogeneous nature of the *Nephrops* grounds within the stock makes the choice of biological parameters difficult.

Also see general comments on data deficiencies in *Nephrops* assessments.

WG comments to data requirements:

None.

Also see general comments on data deficiencies in *Nephrops* assessments.

PGCCDBS comments to improvement of the data collection:

Completed by:	Frank Redant

Stock:	Clyde (FU 13)
WG name:	ICES Working Group on *Nephrops* Stocks (2003)
WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter, all gears combined	By Functional Unit
DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter	By Functional Unit
WG comments to the data quality:	
There are no details on the accuracy of the landing figures in this fishery. There is some wider evidence however, that landings may have exceeded reported figures within the UK. Data for this FU are separated to show fishery statistics for each side of the Kintyre Peninsula. This enables the Firth of Clyde population to be assessed using a more appropriate set of biological parameters. Sampling in the Sound of Jura has not improved sufficiently to permit separate assessments for this area. Previous WG reports commented on the high prevalence of the parasitic dinoflagellate *Hematodinium* in Clyde *Nephrops*, but this was not taken into account in the choice of the input parameters. Recent surveys have shown current prevalence to be considerably lower than the high rates identified in the early 1990s. Also see general comments on data deficiencies in *Nephrops* assessments.	
WG comments to data requirements:	
None. Also see general comments on data deficiencies in *Nephrops* assessments.	
PGCCDBS comments to improvement of the data collection:	
Completed by:	Frank Redant

Stock:	Irish Sea East (FU 14)
WG name:	ICES Working Group on *Nephrops* Stocks (2003)

WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter, all gears combined	By Functional Unit

DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter	By Functional Unit

WG comments to the data quality:

The quality of fishery statistics collection is believed to be similar to previous years. Since *Nephrops* is a TAC species, the UK Fisheries Inspectorate attempts to census the landings and effort of all vessels landing in the UK. There has been some concern that actual landings to the UK are higher than reported.

Sampling of landings has improved since 1999: between 20 and 25 landings samples were collected annually. In 1999, a catch sampling program was set up to address the lack of discard samples since 1994. Between 12 and 15 catch samples were collected annually between 2000 and 2002.

Owing to the uncertainty over the fate of discards in the Irish Sea East *Nephrops* fishery, the discard survival rate is assumed to be zero.

Also see general comments on data deficiencies in *Nephrops* assessments.

WG comments to data requirements:

None.

Also see general comments on data deficiencies in *Nephrops* assessments.

PGCCDBS comments to improvement of the data collection:

Completed by:	Frank Redant

Stock:	Irish Sea West (FU 15)
WG name:	ICES Working Group on *Nephrops* Stocks (2003)
WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter, all gears combined	By Functional Unit
DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter	By Functional Unit
WG comments to the data quality:	
Sampling of catches, landings and discards by Northern Ireland was sustained during 2001 and 2002 as in earlier years. Because of the relatively small contribution of twin-trawl catches to the total international catch, on the one hand, and the evidence of similar CPUEs for single and twin-trawls, on the other, no attempt was made to disaggregate the Northern Ireland effort data by gear type. Republic of Ireland landings are now available by statistical rectangle, which allows landings into a port from different fishing areas to be distinguished. The numbers of catch and discard samples for Ireland more than doubled in 2002 due to the EU Data Collection Regulation. Discard mortality, natural mortality, size at maturity and growth parameters are based on Irish Sea biological studies, while length/weight relationships are derived from Scottish data. Also see general comments on data deficiencies in *Nephrops* assessments.	
WG comments to data requirements:	
None. Also see general comments on data deficiencies in *Nephrops* assessments.	
PGCCDBS comments to improvement of the data collection:	
Completed by:	Frank Redant

Stock:	Porcupine Bank (FU 16)
WG name:	ICES Working Group on *Nephrops* Stocks (2003)

WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter, all gears combined	By Functional Unit

DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter	By Functional Unit

WG comments to the data quality:

The average length frequency distributions (LFDs) of the landings from the various countries differed considerably. It is not clear whether these differences are due to differences in crew or gear selectivity, or whether they are due to other factors. More data are required on the distribution and population structure of the *Nephrops* resources in this area. This includes data on spatial and temporal variation in size, since these might explain the differences in LFDs.

Investigations of the landings data by statistical rectangle indicate that landings from the different countries are from different areas in this FU, with some overlap. This may indicate that the various fleets exploit different components of the stock. Effort and LPUE data for the Irish fleet is of questionable use as an indicator of stock size. This is mainly because of the opportunistic and seasonal nature of the Irish fishery. Effort and LPUE of the Spanish fleet has been adjusted in recent years as the number of vessels that mainly target *Nephrops* has declined.

Also see general comments on data deficiencies in *Nephrops* assessments.

WG comments to data requirements:

None.

Also see general comments on data deficiencies in *Nephrops* assessments.

PGCCDBS comments to improvement of the data collection:

Completed by:	Frank Redant

Stock:	Aran Grounds (FU 17)
WG name:	ICES Working Group on *Nephrops* Stocks (2003)

WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter, all gears combined	By Functional Unit

DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter	By Functional Unit

WG comments to the data quality:

The data available for this stock in the past were of extremely poor quality. Sampling coverage was seasonally incomplete in several years. Sampling prior to 2001 was only of landings and discarding is high and variable in this stock. Given this variability in discarding, it was considered inappropriate to apply recent discard estimates to retrospective landings data. In addition, derived length frequency distributions of landings in 2001 and 2002 suggest that the component of the landings, which are landed as tails, may have been underestimated in historical "landings only" sampling.

Furthermore, the growth parameters used in the assessment are from other stocks (FUs 15 and 16) since no growth parameters are available for FU 17.

Also see general comments on data deficiencies in *Nephrops* assessments.

WG comments to data requirements:

None.

Also see general comments on data deficiencies in *Nephrops* assessments.

PGCCDBS comments to improvement of the data collection:

Completed by:	Frank Redant

Stock:	Ireland SW and SE coast (FU 19)
WG name:	ICES Working Group on *Nephrops* Stocks (2003)

WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter, all gears combined	By Functional Unit

DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter	By Functional Unit

WG comments to the data quality:

A much improved and longer historical time-series of data is needed to carry out analytical assessment of this stock. It is expected that the sampling required under the EU Data Collection Regulation will significantly improve the quality of the length frequency data for this stock. More data are also required on the distribution of the resources in this area, as *Nephrops* are caught on a large number of spatially discreet small inshore grounds and on some larger grounds further offshore. In that context, future assessments would benefit from a higher spatial resolution of landings and effort data.

Furthermore, the growth parameters used in the assessment are from other stocks (FUs 15 and 16) since no growth parameters are available for FU 19.

Also see general comments on data deficiencies in *Nephrops* assessments.

WG comments to data requirements:

None.

Also see general comments on data deficiencies in *Nephrops* assessments.

PGCCDBS comments to improvement of the data collection:

Completed by:	Frank Redant

Stock:	Celtic Sea (FUs 20-22)
WG name:	ICES Working Group on *Nephrops* Stocks (2003)

WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter, all gears combined	Functional Units 20, 21 and 22 combined This conforms to the usual WG approach

DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter	By Functional Unit

WG comments to the data quality:

French fishing effort is well documented for the Celtic Sea since the EU logbook became compulsory for all vessels fishing in the area.

Length composition data of the landings are collected every month in the main home ports of the French *Nephrops* trawlers operating in the Celtic Sea. Discards, however, could not be sampled every year, because of insufficient technical and financial resources. Applying discard length compositions from years during which a sampling program was performed to years for which there are no discard sampling data, may cause problems of consistency between the different data sets. This can affect the results of the assessments.

An Irish catch sampling program was performed for the first time in 2002, giving length compositions for both landings and discards. In previous assessments, the Irish length compositions were derived from French data. It appears that the Irish fleet catches more small *Nephrops* than the French one, which could be due to a difference in fishing grounds.

Also see general comments on data deficiencies in *Nephrops* assessments.

WG comments to data requirements:

None.

Also see general comments on data deficiencies in *Nephrops* assessments.

PGCCDBS comments to improvement of the data collection:

Completed by:	Frank Redant

Stock:	Bay of Biscay (FUs 23-24)
WG name:	ICES Working Group on *Nephrops* Stocks (2003)

WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter, all gears combined	Functional Units 23 and 24 combined This conforms to the usual WG approach

DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter	By Functional Unit

WG comments to the data quality:

Length frequency data of the landings are available on a monthly basis. Discards however, could not be sampled every year because of insufficient technical and financial resources. Applying discard data from "sampled" to "non-sampled" years, bears the risk of inconsistency between the different data sets.

Estimates of *Nephrops* directed effort are based on information on the landings composition and the number of hours fished per voyage. Voyages are considered to be *Nephrops* directed when > 10% of their revenue is accounted for by *Nephrops* (or > 10% of the weight landed, if the revenue was not recorded). Since most of the vessels involved in this fishery do not comply with the EU logbook regulations, the number of hours trawling per voyage was obtained as follows:

- Up to 1998, from enquiries amongst fishermen.
- From 1999 onwards, the limited effort data available from the logbooks were raised to the whole fleet, using the ratio of total landings over recorded landings in logbooks.

Since the effort data recorded in the logbooks were too scanty to be seen as being representative of the effort by the whole fleet, the effort figures thus obtained must be considered as rough estimates of nominal effort. No reliable information was available to correct the nominal effort figures for changes in gear efficiency in an attempt to obtain estimates of actual effort. It is most likely that, despite the EU decommissioning program, effective effort has increased in recent years, owing to improved gear efficiency.

Also see general comments on data deficiencies in *Nephrops* assessments.

WG comments to data requirements:

None.

Also see general comments on data deficiencies in *Nephrops* assessments.

PGCCDBS comments to improvement of the data collection:

Completed by:	Frank Redant

Stock:	North Galicia (FU 25)
WG name:	ICES Working Group on *Nephrops* Stocks (2003)

WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter, all gears combined	By Functional Unit

DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter	By Functional Unit

WG comments to the data quality:

The monthly sampling program of the landings from this FU is considered to be at a sufficient level of intensity to produce reliable length frequency distributions of the landings. Fishery statistics and fishing effort data are believed to be reliable before 1998. Since then however, the sources of information have changed, and the quality of the data has deteriorated.

Also see general comments on data deficiencies in *Nephrops* assessments.

WG comments to data requirements:

None.

Also see general comments on data deficiencies in *Nephrops* assessments.

PGCCDBS comments to improvement of the data collection:

Completed by:	Frank Redant

Stock:	West Galicia (FU 26) and North Portugal (FU 27)
WG name:	ICES Working Group on *Nephrops* Stocks (2003)
WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter, all gears combined	Functional Units 26 and 27 combined Landings from FU 27 are <10 t/year
DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter	By Functional Unit
WG comments to the data quality:	
The Spanish landing statistics are considered reliable, and the sampling program is assumed to be adequate for the level of the landings. The length composition data for the Portuguese landings are based on very small numbers of samples, which do not cover all months. Fishing effort is directed to a set of target species, dependent upon season, and it is not specifically *Nephrops* directed. Also see general comments on data deficiencies in *Nephrops* assessments.	
WG comments to data requirements:	
None. Also see general comments on data deficiencies in *Nephrops* assessments.	
PGCCDBS comments to improvement of the data collection:	
Completed by:	Frank Redant

Stock:	South-West and South Portugal (FUs 28-29)
WG name:	ICES Working Group on *Nephrops* Stocks (2003)

WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter, all gears combined	Functional Units 28 and 29 combined This conforms to the usual WG approach

DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter	By Functional Unit

WG comments to the data quality:

Since 1995, only the port of Vila Real de Santo António is sampled for *Nephrops*, since almost all trawlers targeting crustaceans land their catches in this port. Sampling frequency in 2002 was at the same level as in the years before. The relatively small size of the samples may be a source of uncertainty, and may artificially increase the level of variation in the estimated length compositions of the landings.

So far, it has been assumed that there are no discards in this fishery. A sampling program started at the end of the year 2000 on board the crustacean fleet will provide an estimate of the discards to be included in future assessments.

The quality of the logbook data must be improved in order to produce a more reliable estimate of effort.

Also see general comments on data deficiencies in *Nephrops* assessments.

WG comments to data requirements:

None.

Also see general comments on data deficiencies in *Nephrops* assessments.

PGCCDBS comments to improvement of the data collection:

Completed by:	Frank Redant

Stock:	Gulf of Cádiz (FU 30)	
WG name:	ICES Working Group on *Nephrops* Stocks (2003)	
WG data aggregation level:		
Temporal and segmentation:		**Spatial:**
By quarter, all gears combined		By Functional Unit
DCR data aggregation level:		
Temporal and segmentation:		**Spatial:**
By quarter		By Functional Unit
WG comments to the data quality:		
Stock-specific biological data or length compositions for this FU were only available for 2002, and no assessments were carried out. Also see general comments on data deficiencies in *Nephrops* assessments.		
WG comments to data requirements:		
None. Also see general comments on data deficiencies in *Nephrops* assessments.		
PGCCDBS comments to improvement of the data collection:		
Completed by:	Frank Redant	

Stock:	Cantabrian Sea (FU 31)
WG name:	ICES Working Group on *Nephrops* Stocks (2003)

WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter, all gears combined	By Functional Unit

DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter	By Functional Unit

WG comments to the data quality:
In view of the unavailability of length composition and fishing effort data for 2002, the assessment performed in 2002 was not repeated. Also see general comments on data deficiencies in *Nephrops* assessments.
WG comments to data requirements:
None. Also see general comments on data deficiencies in *Nephrops* assessments.
PGCCDBS comments to improvement of the data collection:

Completed by:	Frank Redant

Stock:	Norwegian Deep (FU 32) - Stock outside EU waters
WG name:	ICES Working Group on *Nephrops* Stocks (2003)

WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter, all gears combined	By Functional Unit

DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter	By Functional Unit

WG comments to the data quality:
The existing data are not considered suitable for any analytical assessments. Also see general comments on data deficiencies in *Nephrops* assessments.
WG comments to data requirements:
None. Also see general comments on data deficiencies in *Nephrops* assessments.
PGCCDBS comments to improvement of the data collection:

Completed by:	Frank Redant

Stock:	Off Horn Reef (FU 33)
WG name:	ICES Working Group on *Nephrops* Stocks (2003)
WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter, all gears combined	By Functional Unit
DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter	By Functional Unit
WG comments to the data quality:	
Since there are no length frequency data for this stock, no analytical assessments were made. Also see general comments on data deficiencies in *Nephrops* assessments.	
WG comments to data requirements:	
None. Also see general comments on data deficiencies in *Nephrops* assessments.	
PGCCDBS comments to improvement of the data collection:	
Completed by:	Frank Redant

11. Northern Pelagic and Blue Whiting Working Group (WGNPBW)

Stock:	Blue whiting
WG name:	WGNPBW

WG data aggregation level:

Temporal and segmentation:	**Spatial:**
month/fleet	rectangle

DCR data aggregation level:

Temporal and segmentation:	**Spatial:**
quarter	area/division

WG comments to the data quality:

• Comparison of age distributions from surveys and landings originating from different research institutes indicate that there are differences in the interpretation of the structure in the otoliths resulting in different age estimates. The WG recommends that an otolith exchange programme will be carried out in 2004 which makes it possible to investigate the magnitude of the problem.

WG comments to data requirements:

• It is recommended that existing information on discards and by-catch in the fisheries is made available to the WG.

It would be helpful to the working group's deliberations if countries participating in the fishery could enumerate the number, capacity and effort of vessels prosecuting the fishery.

PGCCDBS comments to improvement of the data collection:

The following 2 recommendations were made by the WG with regard to research needs:

• It is recommended to initiate research on the recruitment mechanism of blue whiting and to seek an answer to the question why the productivity of blue whiting in the northeast Atlantic, through higher recruitment, has increased during the last 10 years.
• The WG considers that the basic knowledge of the blue whiting could be strengthened, and it is therefore recommended that more internationally coordinated basic research should be carried out, including surveying the total geographical distribution and studying the structure (age and size distribution) of blue whiting in various sub-regions throughout the year.

Completed by:	Frans van Beek

12. Deep Sea Working Group

Stock:	Deep-sea sharks in Areas V, VI, VII, Vlll and IX Black scabbardfish in Areas 1, .Ill 111 and IV Black scabbardfish in Areas V, VI, VII and XI1 Alfonsinos in Areas 111, IV, V, VI, VII, VIII, IX, X, and XI1 Roundnose grenadier in Areas VI I I, IX, Xt I, XIV Orange roughy in Areas I, 11, Ill, IV, V, V111, IX,. XI Xll and XIV
WG name:	Deep Sea WG

WG data aggregation level:	
Temporal and segmentation:	**Spatial:**

DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**

WG comments to the data quality:

WG comments to data requirements:

PGCCDBS comments to improvement of the data collection:
A dialog between ICES, NEAFC and the EU Commission is ongoing at the moment. It is believed that this will lead to consistency between the sampling of biological information of deep sea species and the demand for assessments as well as additional information of other specific deep sea issues concerning vulnerability etc. Therefore, PGCCDBS has no suggestions for improvements of the data collection.

Completed by:	Henrik Degel

13. Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak (WGNSSK)

Stock:	Demersal fish
WG name:	North Sea and Skagerrak assessment. WGNSSK

WG data aggregation level:

Temporal and segmentation:	**Spatial:**
By quarter / fleet	ICES areas IV, VIId and IIIa

DCR data aggregation level:

Temporal and segmentation:	**Spatial:**
By quarter / fleet	ICES areas IV, VIId and IIIa combined

WG comments to the data quality:

The WG has concerns over the quality of the data and the lack of useable data coming from several countries.
1. Does sampling of subsets (when there is reduced co-operation from the industry over permission to sample some boats catches) bias results?
2.The Scottish demersal discard rates are applied to all other countries data
3. According to the Regulation, discard sampling should be done by all countries. We are not getting the discard data sent to us. Why?
4. Is current sampling covering the new fishery definitions?

FRS and WGFTFB (an ICES group dealing with fishing technology, chaired by Norway) are in collaboration over setting up these definitions. This group includes delegates from ICES, Europe, US, South Africa etc. This group would look at the "appropriateness" of the new fleet definitions being put forward.

ICES, (using INTERCATCH), are proposing to take over the collation of data for working group assessments. As far as is known, there has been no contact with the existing data collators for ideas/comments/information. This is considered a mistake.

WG comments to data requirements:

There is a need to identify stocks where the catch data is unreliable. For example where the landings data is not comprehensive, where there is a lot of mis-reporting or there is a lack of discard data. The assessment group is moving towards using survey data instead of catch data for stocks which lie within these categories.

Discard data is needed from more sources.

ACFM do not produce mixed fishery forecasts now but we still need **data in the usual format** (same datasets) so that the existing programs can be used to produce data used by the assessment Group.

It is the Groups view that it is futile to include estimates of non reported landings. If an estimate IS included then the Group must be transparent by saying who (which vessels) is doing this. It leads to non cooperation and blame.

PGCCDBS comments to improvement of the data collection:

DISCARDS

Although all countries are supposed to have a discard sampling programme, very few provide any data, even though they get funding from the EU.

Below is a list of who provides discard data:

Species	Area	Countries
Cod	IV	Scotland, Denmark, Germany (0 discards!)
Cod	7d	England
Cod	IIIa	Sweden
Haddock	IV	Scotland, Germany, Denmark
Haddock	IIIa	Sweden
Whiting	IV	Scotland, Germany, Denmark
Whiting	7d	NONE
Saithe	IV	Scotland, Denmark

Countries that provide data to the North Sea assessments must be encouraged to provide their discard data – a quarterly figure, not an annual figure.

At the moment the Scottish discard rates are applied to all other countries data for cod, haddock and whiting. This is inappropriate e.g discard rates for cod in the northern north sea, are not the same as discard rates for cod in the southern north sea.

There are some countries who do not provide numbers at length or numbers at age.

There are some countries who borrow other countries age/length keys to apply to their length data – sometimes this is not appropriate.

PGCCDBS needs to reinforce that assessments are only as good as the data used
PGCCDBS needs to ask why MS's do not provide discard data.

Completed by:	M.Bell

14. Working Group on the Assessment of Northern Shelf Demersal Stocks (WGNSDS)

Stock:	Haddock in Division VIa
WG name:	Working Group on the Assessment of Northern Shelf Demersal Stocks (WGNSDS)

WG data aggregation level:

Temporal and segmentation:	**Spatial:**
By quarter and fishery/métier	By ICES Division VIa

DCR data aggregation level:

Temporal and segmentation:	**Spatial:**
	By ICES Division

WG comments to the data quality:

Quarterly catch-at-age data are available from Scotland and Ireland.
Age compositions of haddock landed from Division VIa are estimated from port sampling in Scotland and Ireland. Age and length data from Scottish sampling are applied to all catches except those into Ireland and Northern Ireland, which have Irish sampling applied. Fleet data are raised to total international catches at age (landings plus discards). Rates of discarding by age class are estimated for Scottish ands Irish fleets by on-board sampling, and extrapolated to all other fleets. Discard estimates are available for the years 1965–date.
Two additional abundance indices from survey vessels are available. The Scottish west coast groundfish survey (years 1985 – present) and the Irish groundfish survey (IR-WCGFS): years 1993–2002. The Irish survey has now ceased and has been replaced in 2003 by a 45 day survey on a research vessel with new sampling design. The time-series of indices from the new survey is not yet long enough for it to be used in assessments.

WG comments to data requirements:

Currently they are problems with the Scottish sampling design which is significantly overstratified. Work on the development of a new Scottish estimate-collation scheme is nearing completion, and modified discard estimates will be available next year. The extent of misreporting in the fisheries prosecuting this stock is unknown. No correction has been made to landings data to account for any misreporting. Therefore undermining abundance estimates which are likely to be incorrect as a result. It should be noted that although concerns about misreporting of area VI gadoids have been expressed in the past, in recent years this may not been significant because of low availability of fish relative to quotas.
The major deficiency facing many assessments in 2003 is the poor quality of the input data. This was caused mainly by sectors of the fishing industry in the UK (Northern Ireland) and Ireland denying access to samples. The WG recommends that efforts be made by Research Institutes and Industry organisations to improve cooperation.
It was also noted that there is a general lack of uniformity in data management procedures between the participating nations. This was particularly apparent in the compilation of age based data sets where consistency had not been maintained in the age

range of the data. Considerable work would be required to re-calculate the data for older ages should the plus group be revised up again at any point in the future.	
PGCCDBS comments to improvement of the data collection:	
Completed by:	W Van Hee

15. Baltic Fisheries Assessment Working Group (WGBFAS)

Stock:	Cod in Sub-divisions 22–24
WG name:	WGBFAS

WG data aggregation level:

Temporal and segmentation:	**Spatial:**
By quarter and fishery/métier, discards included	Sub-divisions 22-24

DCR data aggregation level:

Temporal and segmentation:	**Spatial:**
By quarter and fishing technique	By ICES Division

WG comments to the data quality:

Neither the XSA diagnostics nor the retrospective analysis indicate any severe problems for this stock. In addition, the available survey indices appear to give a consistent picture of stock development. On the basis, it would appear that any deficiencies in this assessment are relatively minor.

WG comments to data requirements:

No specific comments

PGCCDBS comments to improvement of the data collection:

Completed by:	T: Raid

Stock:	Cod in Sub-divisions 25-32
WG name:	WGBFAS

WG data aggregation level:

Temporal and segmentation:	**Spatial:**
By quarter and fishery/métier, discards included	Sub-divisions 25–32

DCR data aggregation level:

Temporal and segmentation:	**Spatial:**
By quarter and fishing technique	By ICES Division

WG comments to the data quality:

- There is substantial uncertainty associated with the total catches due to extensive misreporting.
- The age composition data in both the catches and the survey suffer from severe inconsistencies which appear to differ between countries and between years.
- The survey design was changed completely in 2001, and despite extensive sea trials and statistical analyses to estimate correction factors, there still appear to be indications of an increase in catchability corresponding to the change in survey design.

WG comments to data requirements:

Information on maturity at age is lacking from some areas and countries. The age-reading inconsistencies with this stock are a long-standing problem, but it is possible that the recently established ICES Study Group on Ageing issues in Baltic Cod could make progress towards resolving these. The Study Group on Baltic Fish and Fisheries has also highlighted possible ways to make progress in this area. With regard to the survey data, once another one or two years of data are available, it should be possible to use only the data since 2001, thus removing problems associated with the gear change. By that point, the time series of indices from the fourth quarter BITS survey should also be long enough to use in the assessment.

PGCCDBS comments to improvement of the data collection:

Completed by:	T: Raid

Stock:	Cod in Kattegat
WG name:	WGBFAS

WG data aggregation level:

Temporal and segmentation:	**Spatial:**
By quarter and fishery/métier, discards included	Kattegat

DCR data aggregation level:

Temporal and segmentation:	**Spatial:**
By quarter and fishing technique	By ICES Division

WG comments to the data quality:

Discards are not included in the assessments
Mis-reporting by area is assumed to take place due to differences in the TAC allocation schemes between Kattegat and the adjacent areas. The effect can not be quantified but may imply that some catches from Kattegat are ascribed to the Western Baltic.

WG comments to data requirements:

Essential assessment data from Sweden are missing although Sweden takes about 30% of the total catches.

PGCCDBS comments to improvement of the data collection:

Completed by:	T: Raid

Stock:	Gulf of Riga herring
WG name:	WGBFAS

WG data aggregation level:

Temporal and segmentation:	**Spatial:**
By quarter and fishery/métier	Gulf of Riga (28.1)

DCR data aggregation level:

Temporal and segmentation:	**Spatial:**
By quarter and fishing technique	By ICES Division

WG comments to the data quality:

The catches are estimated on the basis of the national official landing statistics of Latvia and Estonia. Since 1993 the official landings of Latvia are increased according to the collected information on misreporting. The number of trap-nets directed at the Gulf herring in the Estonian and Latvian trap-net fishery and the corresponding abundance of Gulf herring in trap-net catches are used for tuning VPA. These data could be very sensitive to changes in market demand, and could be affected by fishery regulation. Therefore, the joint Estonian-Latvian hydro-acoustic surveys were started in 1999 to obtain the additional tuning data, which were implemented for the first time in this year's assessment.

WG comments to data requirements:

No specific comments

PGCCDBS comments to improvement of the data collection:

Completed by:	T. Raid

Stock	Herring in the Sd. 25–29,32 excl. Gulf of Riga
WG name:	WGBFAS

WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter and fishery/métier	Gulf of Riga 25–29,32 (excl. Gulf of Riga)

DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter and fishing technique	By ICES Division

WG comments to the data quality:

The inputs to the assessment are catch-at-age data and age-structured stock estimates from the International Acoustic Survey. There is uncertainty associated with the total catches due to misreporting between herring and sprat catches.

These uncertainties could influence the estimates of absolute stock size and fishing mortality. The trends in stock development are probably more robust, as the comparison with the acoustic stock estimates indicates.

WG comments to data requirements:

PGCCDBS comments to improvement of the data collection:

Completed by:	T. Raid

Stock:	Herring in Sub-division 30
WG name:	WGBFAS

WG data aggregation level:

Temporal and segmentation:	**Spatial:**
By quarter and fishery/métier	Subdivision 30

DCR data aggregation level:

Temporal and segmentation:	**Spatial:**
By quarter and fishing technique	By ICES Division

WG comments to the data quality:

Natural mortality may differ mainly depending on the abundance of cod in the Gulf of Bothnia. In the northern areas also environmental conditions can affect *e.g.*, growth rate and natural mortality. In all calculations, however, a constant natural mortality (0.2) for all periods and age groups was assumed.
Recruitment may be highly dependent on the severity of the winter before the spawning determining the beginning and duration of the spawning period and the feeding conditions of herring larvae.
Due to the lack of recruitment information, short term prediction is slightly affected by the use of geometric mean of recruits of the time series as an input value.

WG comments to data requirements:

No specific comments

PGCCDBS comments to improvement of the data collection:

Completed by:	T. Raid

Stock:	Herring in Sub-division 31
WG name:	WGBFAS

WG data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter and fishery/métier	Sub-division 31

DCR data aggregation level:	
Temporal and segmentation:	**Spatial:**
By quarter and fishing technique	By ICES Division

WG comments to the data quality:
Natural mortality may differ mainly depending on the environmental factors, *e.g*. temperature, in the Bothnian Bay. In all calculations, however, a constant natural mortality (0.15) for all periods and age groups was assumed. Recruitment seems to be determined by environmental variables, *e.g.* temperature, independently of SSB. Due to the lack of recruitment information, short-term prediction is affected by the use of geometric mean of recruits of the time-series as an input value.

WG comments to data requirements:
No specific comments

PGCCDBS comments to improvement of the data collection:

Completed by:	T. Raid

Stock:	Sole in IIIa
WG name:	WGBFAS

WG data aggregation level:

Temporal and segmentation:	**Spatial:**
By quarter and fishery/métier, discards included	Division IIIa

DCR data aggregation level:

Temporal and segmentation:	**Spatial:**
By quarter and fishing technique	By ICES Division

WG comments to the data quality:

The assessment is uncertain because i) reliable survey data do not exist (too few sole captured by surveys), ii) unknown and variable levels of targeting may influence effort indices derived from commercial fisheries, and iii) catch misreporting occurs in some years. The assessment relies only on commercial catch-effort data for XSA tuning. Catches are not accurately known for some years in the early 1990s (*e.g.*, 1991–1993) due to misreporting.

WG comments to data requirements:

No specific comments

PGCCDBS comments to improvement of the data collection:

Completed by:	T: Raid

Stock:	Sprat in Sd. 22-32
WG name:	WGBFAS

WG data aggregation level:

Temporal and segmentation:	**Spatial:**
By quarter and fishery/métier	Sub-divisions 22-32

DCR data aggregation level:

Temporal and segmentation:	**Spatial:**
By quarter and fishing technique	By ICES Division

WG comments to the data quality:

The major problem for this stock is the catch data for clupeids. In the mixed fishery for herring and sprat the separation of herring and sprat catches is imprecise. The sprat in Sub-divisions 22–32, now being assessed as one unit, was previously considered as composed of three stock components: sprat in Sub-divisions 22–25, 26+28, and 27+29–32. An analysis of the impact of merging components on stock assessment has not been conducted since the early 1990s.
The tendency of the assessment to underestimate stock size and overestimate fishing mortality should be inspected.

WG comments to data requirements:

No specific comments

PGCCDBS comments to improvement of the data collection:

Completed by:	T. Raid