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& DIG

## Report of the Workshop on DATRAS data Review Priorities and checking Procedures (WKDATR)

29–31 January 2013

ICES Headquarters, Copenhagen



**ICES**

International Council for  
the Exploration of the Sea

**CIEM**

Conseil International pour  
l'Exploration de la Mer

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## Executive summary

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The Workshop on DATRAS data Review Priorities and checking Procedures (WKDATR) met in Copenhagen, 29–31 January 2013 and was chaired by Ingeborg de Boois, the Netherlands. 15 participants, representing seven countries and ICES Data Centre, joined the full meeting, two participants joined part of the meeting, mainly to share their experience with DATRAS products. In addition, WKDATR met with WGCHAIRS and collected feedback on DATRAS products from the assessment group chairs. The main goal of WKDATR was to improve data quality in DATRAS by proposing checking procedures to be applied during uploading/reloading processes and detecting errors in existing products.

DATRAS (<http://datras.ices.dk>) is the ICES Database on Trawl Surveys. The database contains data of twelve surveys, all coordinated by one of the three ICES trawl survey working groups, Baltic International Fish Survey Working Group (WGBIFS), International Bottom Trawl Survey Working Group (IBTSWG) and Working Group on Beam Trawl Surveys (WGBEAM).

The assessment working groups rely on outputs from DATRAS, these DATRAS products, such as cpue per haul per length, age–length keys (ALK), have been evaluated in this workshop. As a result, WKDATR created proposals for improvements. Where possible, the proposals are detailed and concrete to facilitate review and agreement by the survey expert groups.

The main themes discussed regarding existing DATRAS products were (Section 3.1 and Annex 4):

- Quality assurance: survey expert groups are responsible for the quality assurance of the calculated DATRAS products, in collaboration with ICES Data Centre. Calculation methods as well as data selections of the current DATRAS products should be checked by the survey working groups;
- Documentation: many problems arise due to lack of information. WKDATR agreed that all documentation about the DATRAS products should be available at the DATRAS webpage, preferably in flow diagrams as well as narrative text;
- Versioning: WKDATR subscribes the importance of clear versioning. For end-users it is important to know if any updates have been done between two calculations. This report contains a proposal to get insight in the effect of re-submission of data;

WKDATR also discussed the submission of data (Section 3.2 and Annex 4):

- Currently, for BITS and IBTS different formats apply for data < 2004 and data from 2004. This results in extra work for data-submitters so it is proposed to allow only one exchange format for a survey;
- Additional checks at submission are proposed by WKDATR: comparison of sum(number at length) vs. reported number, calculated weight vs. total reported weight, total number in sample vs. average individual weight;
- For all surveys the current field ranges and error checks have been reviewed (Annex 5). The WKDATR proposals for modification will be sent to the survey expert groups for the final decision;

- On re-submission the data-uploader will be required to fill-out mandatory information on changes that have been made to the previous file. WKDATR developed a standard form;

Additionally, requests for new products arose, for example (full overview in Section 4):

- Downloading exchange files: improvements can be made in the download facility, like species selection, information about measurement units in the file, create a download service;
- Possibility to combine information of multiple surveys for specific species/groups;
- Weight per species per tow;
- Maturity ogives.

## 1 Opening of the meeting

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The Workshop on DATRAS data Review Priorities and checking Procedures (WKDATR) met in Copenhagen, 29–31 January 2013 and was chaired by Ingeborg de Boois, the Netherlands as Neil Holdsworth had parental responsibilities. 15 participants, representing seven countries and ICES Data Centre, joined the full meeting, two participants joined part of the meeting, mainly to share their experience with DATRAS products. The list of participants is in Annex 1.

## 2 Adoption of the agenda and terms of reference

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The agenda is in Annex 2 and was adopted by the group.

The terms of reference for the meeting were:

The **Workshop on DATRAS data Review Priorities and checking Procedures (WKDATR)**, Co-Chaired by Ingeborg de Boois\*, NL and Neil Holdsworth\*, ICES, will be established and will meet at ICES Headquarters, Copenhagen, 29–31 January 2013 to:

- a) To improve data quality in DATRAS by proposing checking procedures to be applied during uploading/reloading processes and detecting errors by proposing checks related to:
  - i) Detect errors in new data uploads
  - ii) Prevent duplications or incomplete reloads
  - iii) Problems with DATRAS downloadable products
  - iv) Indices and products for assessment
- b) Discuss feasibility of implementing the proposed checks with DATRAS managers and data analysts.

WKDATR will report by 2 April 2013 (via SSGESST) to the attention of SCICOM, IBTSWG, WGBEAM, WGBIFS and DIG.

For ToR a, a full inventory of current issues (Annex 4) has been created. WKDATR developed concrete proposals for improvements during the workshop if possible. The complete list will be sent to WGBIFS (meeting in week 12/13), IBTSWG (meeting in week 15), WGBEAM (meeting in week 17) for feedback and additional information. Feedback from the survey expert groups should be sent to the WKDATR chair and ICES Data Centre before week 19 2013. In week 21 ICES Data Centre will prioritize the list in collaboration with the Data and Information Group.

ToR b has not explicitly been covered in the report, but was done before new proposals were written down.

### 3 Improvement of DATRAS quality

DATRAS (<http://datras.ices.dk>) is the ICES Database on Trawl Surveys. The database contains data of twelve surveys, all coordinated by one of the three ICES trawl survey working groups, Baltic International Fish Survey Working Group (WGBIFS), International Bottom Trawl Survey Working Group (IBTSWG) and Working Group on Beam Trawl Surveys (WGBEAM).

Actions:

- 1) WGBIFS, IBTSWG, WGBEAM to supply polygons
- 2) ICES Data Centre to implement the checking procedure.

Data-uploaders (max. 2 per institute; re-)submit trawl survey data by year-country-ship-quarter to the ICES database independently. A quality check is carried out before submission. The data-uploader may not submit data containing errors and is obliged to accept and act on any warning messages.

Acceptable values which have been defined by the survey expert groups, may vary by survey, and are available at [http://datras.ices.dk/Data\\_products/ReportingFormat.aspx](http://datras.ices.dk/Data_products/ReportingFormat.aspx)

A full overview of all vocabulary used in ICES databases is available at <http://vocab.ices.dk/>.

The DATRAS webpage provides calculated products from the surveys, which are used by ICES fish stock assessment groups, trawl survey expert groups and individual researchers.

#### 3.1 Product related (ToR a-iii and a-iv)

Feedback on products was given by WKDATR participants as well as people from various institutes via WKDATR participants. In addition, WKDATR met with WGCHAIRS and collected feedback on DATRAS products from the assessment group chairs. The feedback has been incorporated in this report. A full overview of product-related improvements is available in Annex 4a.

##### 3.1.1 Length measurement units

Some species are measured to the mm below, others to the half cm below, and others to the cm below. The current products do not reflect this difference.

Action: ICES Data Centre to take the measurement unit as provided in LngtCode as the leading unit for the aggregation of length data.

##### 3.1.2 Wrong allocation of positions to sub-areas in BITS

From a consistency check between DATRAS products and the survey group calculation for the BITS data, it appeared that some stations were allocated to the wrong subdivisions. A new proposal was developed by WKDATR to allocate positions to subdivisions.

Checking of positions will be done based on polygons. Polygons that describe the boundaries of all spatial areas (i.e. division, subdivision, rectangle, round-fish area) need to be created as metadata. These are defined once and signed off by the survey groups. The polygons are then used to assign subdivision to haul. All historical spatial assignments for hauls are cross-checked against the new polygon shapefiles either



directly or by proxy (i.e. comparing haul-based cpue values). Any breaches of the polygon rules raises an error, not a warning when data are submitted.

### 3.1.3 Products affected by data re-submission

It is possible to re-submit data to DATRAS. Data end-users have requested information on the versioning of the dataset and the products. It is necessary to have (1) comments, (2) a summary and (3) the details of the changes in the re-submissions. WKDATR proposes some tools for submitters and end-users to get insight in the effect of a re-submission.

#### 1. Comments

- a) Data-uploaders: when re-submitting data, data-uploaders are obliged to fill in the comment box that appears on re-submission. Comments detailing changes to the data should be mandatory for re-uploads. The comments should be provided as text in a template, to encourage standard terminology. WKDATR proposes the following template:
  - i) A field for each record type (Haul information HH, Length information HL, Age information CA). For each record type there will be predefined tick boxes, not allowing free text, for the three or four most important reporting format fields, plus an "other" selection for all other fields and data where free text is allowed. If a box is ticked, a corresponding comment describing the change must be made in the text box associated with it.
  - ii) HH record: fields Gear, DayNight, Haul, Position, Other.
  - iii) HL record: fields Species, Length, TotalNo, CatCatchWgt, Other
  - iv) CA record: fields Sex, Age, Maturity, Other
  - v) comments should also explain the reason for the change whenever possible
- b) Data end-users: these comments will be attached to downloads of raw data and data products.

Approximately one year after its establishment, the ICES Data Centre will evaluate the usefulness of this template. For this evaluation, information should be retrieved from (a) data-uploaders - regarding their experience filling in the template and (b) data end-users (especially assessment groups) - regarding the relevance and validity of the information for their purpose. The evaluation will be carried out by ICES Data Centre in collaboration with DIG.

#### 2. Summary

Data end-users as well as data-uploaders would like to be informed about the differences between the original data in DATRAS and the revised data. For data-uploaders it is important to know this during or as soon as possible after the re-submission. WKDATR proposes to send a link to a summary (Table 3.1) to the data-uploader by e-mail, showing if there are any differences in cpue per length per haul and cpue per age per haul products between the original and the revised data. The data-uploader is

Action ICES DC: implement this tool ASAP

obliged to accept the summary before the data are finally re-submitted to DATRAS. The summary sheet can be supplied to the data end-users.

ICES Data Centre will put a link to the webpage containing the submission status on the DATRAS download page. The link will also be included in the disclaimer sent with the product. The disclaimer will also contain a recommendation that end-users check the latest submission status prior to finalizing any relevant report.

**Action:**

ICES Data Centre to provide information to surveys groups. WGBIFS, IBTSWG, WGBEAM to review products.

Approximately one year after implementation this facility will also be evaluated by the ICES data centre. For this evaluation, information should be retrieved from (a) data-uploaders, (b) data end-users (especially assessment groups) about the relevance of the information for their purpose.

Developments for future consideration might include sending e-mails to recent downloaders, RSS feed on updates, etc.

**Table 3.1. Example of summary for cpue per Length per haul, comparing original data and re-submission.**

<u>CPUE per Length per Haul</u>												
Survey	Country	Year	Quarter	Subarea	Standard Spp	New Upload Date	Existing Upload Date	New Calculation Date	Existing Calculation Date	Difference	Comments	
NSIBTS	SWE	2012	4	1	PLE	28-1-2013	11-2-2012	28-1-2013	14-3-2012	0		
NSIBTS	SWE	2012	4	2	PLE	28-1-2013	11-2-2012	28-1-2013	14-3-2012	1		
NSIBTS	SWE	2012	4	3	PLE	28-1-2013	11-2-2012	28-1-2013	14-3-2012	0		
NSIBTS	SWE	2012	4	4	PLE	28-1-2013	11-2-2012	28-1-2013	14-3-2012	0		
NSIBTS	SWE	2012	4	5	PLE	28-1-2013	11-2-2012	28-1-2013	14-3-2012	0		
NSIBTS	SWE	2012	4	1	HER	28-1-2013	11-2-2012	28-1-2013	14-3-2012	0		
NSIBTS	SWE	2012	4	2	HER	28-1-2013	11-2-2012	28-1-2013	14-3-2012	1		
NSIBTS	SWE	2012	4	3	HER	28-1-2013	11-2-2012	28-1-2013	14-3-2012	0		
NSIBTS	SWE	2012	4	4	HER	28-1-2013	11-2-2012	28-1-2013	14-3-2012	0		
NSIBTS	SWE	2012	4	5	HER	28-1-2013	11-2-2012	28-1-2013	14-3-2012	0		

### 3. Details of the changes

Data-uploaders and data owners would like to have a detailed overview of changes between original and re-uploaded data. As there is no facility available for this yet, the request has been added to Section 4.2.1.

#### 3.1.4 Quality assurance of existing data products

Since 2011, a workflow is available for new product requests, ensuring clear work-plans and quality assured products (ICES, 2011 and Annex 7). However, for pre-existing DATRAS products there are no clear quality checks available at present. List of the products that should be approved by the survey expert groups are listed in Annex 4c.

To be able to evaluate the current products at the DATRAS webpage and provide constructive feedback, the survey groups need to have insight into the selection criteria currently made by the ICES Data Centre (e.g. inclusion of night hauls, area descriptions) and the calculations performed in calculating the different products.

It should be kept in mind that there are several aspects regarding the checking process, namely (1) the data selection made, (2) the algorithm itself, (3) the outcome.

## 3.2 Submission related (ToR a-i and a-ii)

WKDATR discussed the data ownership, and so, responsibility for the data quality. First, the research institutes responsible for providing the data should be submitting the best quality data they can achieve (see also ICES Data Policy Section 4f, <http://www.ices.dk/datacentre/datapolicy.asp>). Prior to submitting data to DATRAS, a check is carried out by the ICES system (see Section 3.2) and ICES Data Policy Section 6). The data-uploader receives feedback on the file from the DATRAS checking program and is prevented from uploading datasets containing errors. The data-uploader has to accept individual warning messages from the checking system before the data is accepted and consequently uploaded to DATRAS.

Furthermore, the survey expert groups (in this case WGBIFS, IBTSWG and WGBEAM) are responsible for the coordination of the survey (e.g. manual, staff exchange). The survey expert groups are also responsible for the quality assurance of the calculated DATRAS products, in collaboration with ICES Data Centre.

The survey expert groups are the best fora for cross-checking and evaluation of international consistency of DATRAS data. As a consequence, it is recommended that survey groups regularly carry out checks on issues such as misidentification of species.

### 3.2.1 Suggested improvements

#### 3.2.1.1 Field ranges and error checks

WKDATR checked the field ranges and error checks for BITS, NS-IBTS and BTS/BTS VII. Annex 5 contains a full overview of proposed improvements by survey. WGBIFS, IBTSWG and WGBEAM should agree on this proposal before implementation by ICES Data Centre.

#### 3.2.1.2 One check per survey

Currently, for NS-IBTS as well as BITS different checking procedures are applied to data prior to 2004 compared to data from 2004, requiring different exchange formats. It is proposed that only one checking procedure is applied to each survey so data-uploaders can always provide data in the most recent exchange format. Some checks might be conditional on year of sampling (see Annex 5). Before this can be implemented by the ICES Data Centre, IBTSWG and WGBIFS should approve this proposal.

#### 3.2.1.3 Additional checks on submission

A number of simple calculations were discussed in order to trap significant anomalies in submitted data. The idea is not to replicate the national data checking programs and obligations, but rather to focus on basic quality checks of the exchange file. These fields can be involved in raising or partitioning large datasets however, and therefore at the very least it is critical to identify significant outliers.

Calculations for these checks are straightforward, but are being compiled formally for agreement by the relevant survey groups and then forwarded to ICES Data Centre for implementation. Action: IBTSWG, WGBIFS, WGBEAM to agree on the checks at submission.

Four simple checks were agreed as a first pass:

- 1) HL Records – **Sum(Number at Length) vs. Reported Total Number** for each Haul/Species/Sex/Category. In the table below we can see that there is a difference between the reported [TotalNo] and the sum of the [HLNoAtLngt] i.e. (607831 – 605358 = 2473 fish).

**Table 3.2.1. Comparison of sum (number at length) vs.reported total number (example).**

HaulNo	StNo	TotalNo	SpecCode	Sex	CatIdentifier	SubFactor	LngtClass	HLNoAtLngt
18	18	605358	161789	-9	1	1	85	20491
18	18	605358	161789	-9	1	1	90	20491
18	18	605358	161789	-9	1	1	105	10251
18	18	605358	161789	-9	1	1	110	30731
18	18	605358	161789	-9	1	1	115	154798
18	18	605358	161789	-9	1	1	120	103598
18	18	605358	161789	-9	1	1	125	185518
18	18	605358	161789	-9	1	1	130	61451
18	18	605358	161789	-9	1	1	135	10251
18	18	605358	161789	-9	1	1	140	10251
Sum		605358						607831
Difference								2473

- 2) HL Records – **Sample Weight-Condition Index** for each Haul/Species/Category/Sex.

The idea here is to use a simple relationship  $W=L^3$  ( $W$ =weight,  $L$ =length) to predict a very crude weight for each fish in a length frequency sample. The sum of these weights vs. the reported sample weight across all hauls will give an indication of potential errors in the reported sample weight. This is best viewed graphically and a number of submitters are currently using this approach within their national data checking routines. Upper and lower limits as to what constitutes an outlier has yet to be decided, but are for reference only. We are looking to trap obvious anomalies here, not scrutinise the tails of a normal distribution.

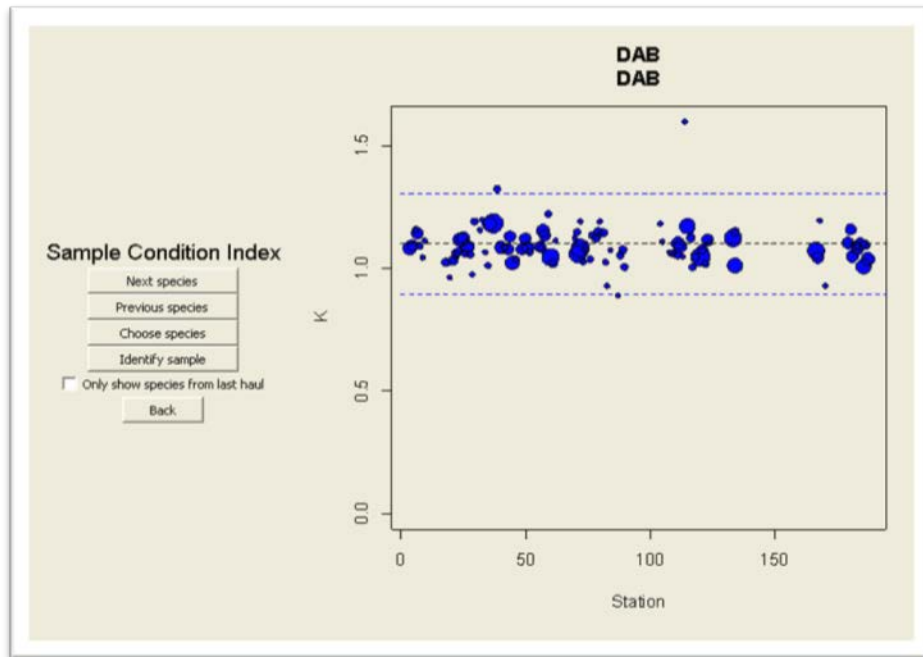


Figure 3.2.1. Output for test on Sample Weight-Condition Index (example).

- 3) CA Records – **Individual Weight Condition Index** for each Haul/Species/Category/Sex is similar to above, but of course individual weights are observed and do not need to be generated.

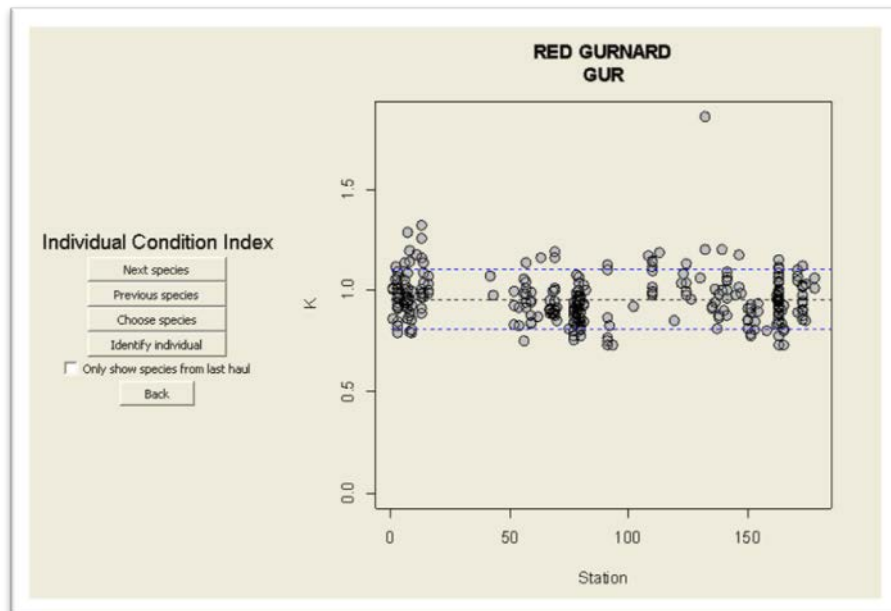


Figure 3.2.2. Output for test on Individual Weight-Condition Index (example).

- 4) HL Records – **No vs. Weight** for each Haul/Species/Category/Sex.

This is simply again a crude division of the category catch weight by the total number of fish in that sample to produce a mean weight per fish across all hauls. This should pick up any major issues with raised numbers vs. reported catch weights in-

cluding mistakes in weight units such g/Kg. The figure below gives data for megrim over a time-series and clearly shows a mean weight per fish in 1990 of 5 grams(?)increasing to 6305 grams(?) in 2009. This can be reviewed over a time-series as well as within a survey year of course.

**Table 3.2.2. Comparison of number vs. weight (example).**

Sum of HLNoAtLngt		Sum of CatCatchWgt		Wt/Count = Avg Wt/Fish per year!!
Year	Total	Year	Total	
1990	22	1990	112	5
1991	14	1991	66	5
1992	32	1992	537	17
1993	44	1993	446	10
1994	481	1994	2397	5
1995	24	1995	181	8
1996	96	1996	1877	20
1997	40	1997	229	6
1998	42	1998	300	7
1999	38	1999	184	5
2000	97	2000	1434	15
2001	8	2001	70	9
2002	24	2002	68	3
2003	78	2003	1084	14
2004	139	2004	185400	1334
2005	130	2005	170700	1313
2007	110	2007	151000	1373
2008	157	2008	469200	2989
2009	220	2009	1386800	6304
2010	95	2010	118500	1247
<b>Grand Total</b>	<b>1891</b>	<b>Grand Total</b>	<b>2490585</b>	

### 3.2.2 Specific action items for survey expert groups in near future

#### 3.2.2.1 Checks on current dataset

New checks being implemented in the current checking system will only be applied to new or re-submitted data. For this, it is important that the survey expert groups check specific fields for completeness or valid coding. The recommended quality control checks are listed below. In all cases data-uploaders should be encouraged by the survey expert groups to re-upload corrected data.

#### Species coding

As DATRAS moved to a different species coding system in 2012 (TSN to Aphia), some unintended errors in species recording may have occurred. It is strongly recommended that WGBIFS, IBTSWG and WGBEAM cross-check the species caught in the 2012 and 2013 surveys list with a historic species list (e.g. 2000–2010).

#### Cross-checks: DataType and Subfactor

ICES Data Centre performed several cross-checks on the DATRAS database, displaying non-consistent input for the DataType-Subfactor combination. ICES Data Centre is to supply a list by survey-year-quarter-country containing datatype and subfactor and other relevant values. WGBIFS, IBTSWG, WGBEAM to check the lists and do more in-depth analysis deriving data from DATRAS directly if required.

### **Cross-checks: speed, distance, shooting and hauling position**

WGBIFS, IBTSWG, WGBEAM to cross-check on speed, distance, haul duration and shooting/hauling positions based on the HH records downloaded from DATRAS.

#### **3.2.2.2 Hydrographical data in relation to fish trawl information**

IBTSWG sent a request about connecting DATRAS information and hydrographical information (<http://ocean.ices.dk>). "It was observed that mapping of hydrographic information by HydroStNo does not work between DATRAS and ICES Oceanographic database. It is recommended to check the mapping in both databases and make it work in future." (ICES, 2012). As this request is also relevant to WGBIFS and WGBEAM, the response from ICES Data Centre is incorporated in this report.

The best procedure depends on the question is being asked. What are the hydrographical data going to be used for? Should the CTD profile exactly correspond to a given trawl or is information on the properties of the water being trawled from other sources sufficient?

In practice, when trawling, the corresponding CTD profile can be deployed either prior to or once the trawl has been completed. In some cases it may also be deployed – for reasons of expediency – at a later date altogether.

##### 1) Specific query

The natural key for a given hydrographical station in the ICES oceanographic database is the combination of platform code, position (latitude/longitude), date/time and station number. If this natural key were submitted along with trawl survey data and stored in the trawl survey database it would be possible to make a specific query into the oceanographic database.

This procedure demands a well-structured system already at the institutional level as well as a change in the trawl survey database and submission procedure.

##### 2) Generic query

Using the trawl start and end time/position it's possible to make a query against ICES oceanographic database and get the closest CTD profile in space and time. This procedure has the benefit of being flexible and should capture the intended CTD profile (providing the CTD profile has been submitted to ICES). No matter what, a profile will be returned and can then either be rejected or accepted depending on the requirement.

It's also possible to make a specific request to the ICES Data Centre on using external data (ARGO data, 3D model data etc.) as supplement to our internal data for a given product. This can be done using the Data Centre request form found at <http://www.ices.dk/datacentre/Submissions/doc/Input-output%20request%20form.xlsx>

## 4 New requests for DATRAS facilities and products

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### 4.1 Facilities

#### 4.1.1 Product-related

Data-users and data experts requested improved facilities for downloads/products:

- a) Option to select species in Exchange data download: currently it is only possible to download the full set of species for a survey. Often data end-users only require information about one or a few species.
- b) Make R tools used for analysis of DATRAS data available to the wider public. The most appropriate place for this might be <https://datras.googlecode.com/svn/trunk/datras> Action ICES Data Centre to provide information how to upload R scripts to the survey groups.
- c) Make background information (aggregation levels like roundfish areas, subdivisions, etc.) for the calculations used of products available at the DATRAS webpage.
- d) Provision of the filling procedure in the ALK, and substitution procedure for missing information in ALK.

#### 4.1.2 Submission-related

Currently, it is not possible to upload CA data for species-length class combinations that do not occur in the HL record. It is now necessary to create so-called “dummy records”, only containing unique key information, added with species and length. This leads to (1) additional workload to data-uploaders and (2) irrelevant information in the database from a user’s perspective. Action: ICES Data Centre to investigate the possibility to upload CA records of a length class that does not occur in the HL records.

### 4.2 Products

Data end-users requested some new products compared to the current suite of products. For good prioritization, it might be necessary to collect additional information from the data requester, following the procedure as given in Annex 7. The requests will be added to the ICES Data Centre work plan if information is sufficient. The following products are requested:

#### 4.2.1 Combine species over surveys

Possibility to combine species information of different surveys (WGNEW and WGEF). WGNEW and WGEF need information from as many surveys as possible as they’re dealing with data-poor stocks, or with species that don’t occur too often in survey catches. Currently, it is difficult for assessment groups to combine information of one species over the different surveys. The general WKDATR opinion is that this request is relevant but should be treated with care as it is difficult to compare results from different surveys.

In the ICES Data Centre work plan for 2013 time is already reserved to put ALK and SMALK data by species from different surveys in one file.

WKDATR proposes to organize a workshop in 2014 to develop products for those groups taking into account the difficulties of combining datasets. Participants should



come from (a) data end-users (WGNEW, WGEF), (b) survey-experts (IBTSWG, WGBIFS, WGBEAM), (c) ICES Data Centre. The proposal will be developed in collaboration with WGNEW/WGEF chairs.

#### 4.2.2 Calculations by swept-area

Calculate swept-area (e.g. for MSFD, Simon Greenstreet), swept-area preferably calculated based on distance and wingspread: this also has consequences for the submission as for all otter trawl surveys wingspread should be filled in. Action: IBTSWG and WGBIFS to check the various datasets on the availability of wingspread information and complete where possible.

#### 4.2.3 Weight per species per tow

Kg per tow as well as numbers per haul (data poor stocks, via JJ Macquire); a data-call to deliver information separate from DATRAS was submitted and was carried out in 2012/2013 by most of the data-uploaders. The original request only required observed weights. As a result, a lot of information was excluded. WKDATR recommends to also create information for this product based on length-weight relationships. The preferred relationships are based on length-weight relationships derived from DATRAS in the season the survey was carried out, and as an alternative published length-weight relationships (e.g. Coull *et al.*, 1989; Robinson *et al.*, 2010) might be used. Action: WGBIFS, IBTSWG and WGBEAM to evaluate the current quality of the catcatchwght against the calculated catcatchweight based on the DATRAS data in the current survey, as well as by using published length-weight relationships and send the comparisons to Ingeborg de Boois and Vaishav Soni. The results will be sent to the product requester to be decided upon the best way to carry out the calculation.

#### 4.2.4 Flat file for HL and CA records (update of cpue per length per haul)

Some data users have had issues using the exchange data format and raised the possibility of a new product. Some numbers at length within a haul would need to be raised to get total number of species at length. Not all users realize this and calculate numbers at length or total numbers and their analysis will be flawed.

There is already a product, "cpue by length by haul", that would give them this raised data however, and this product does not include some valuable information on gear parameters and other data that might be useful for further analysis. To this end a new product with this additional data is suggested.

On the other hand, the current product, "cpue by length by haul", contains columns irrelevant to the end-user, like fields not used in a specific format.

WKDATR suggests a new product in line with "cpue by length by haul" without irrelevant columns and with some additional calculated fields.

#### Example for IBTSWG

Below is the list of fields that are suggested for an IBTS product (individual survey series may require specific gear or environmental data fields): Quarter, Country, Ship, Gear, SweepLngt, DoorType, StNo, HaulNo, Year, Month, Day, TimeShot, Stratum, HaulDur, DayNight, ShootLat, ShootLong, HaulLat, HaulLong, StatRec, Depth, HaulVal, SpeciesSubmitted (New field – 'All' or 'Partial' list), Netopening, Distance, Warplngt, DoorSpread, WingSpread, TowDir, GroundSpeed, SpecCode, SpeciesName (new field - scientific name), SpecVal, Sex, TotalNoforHaul (renamed

NoforHaul), TotalCatchWeight (sum of CatCatchWgt), LngtClass, RaisedHLNoAtLngt (New Field - Calculated from HLnoAtLngt x subfactor).

Action: each survey expert group (WGBIFS, IBTSWG, WGBEAM) to review this request, suggest survey specific fields and if agreement is reached, recommend this product for inclusion via the new product protocol within ICES Data Centre.

#### 4.2.5 Maturity ogives

The maturity ogive used as an annual indices is calculated as the fraction of mature fish within an age group in a given stratum (depth layer or ICES Subdivision, depending on the Survey's type). The mean fraction of matured or spawning fish per length class must be used for converting the length distribution of the cpue within that stratum (as depth layer or subdivision) into a mean fraction of matured individuals at age. This is due to the fact that all individual fish sampled in the surveys are sampled on a length stratified basis, thereby not providing the age structure within the stock. However, this can be accounted for, if the true length distribution, within the used aggregation level, is applied to the maturity fraction by length. This calculation is made on an annual basis by stock assessors using DATRAS exchange data.

**Action:** ICES Data Centre to compute the estimations and provide the data on the DATRAS webpage. In order to do this a concrete proposal, including algorithms and a comprehensive explanation of all the steps made during the estimation, will be submitted by the surveys' working group. However, before submitting the final proposal to DATRAS, it is necessary to inspect the algorithm currently used at the different assessment working groups, i.e. WGBFAS and WGNSSK. This comparison is needed in order to ensure consistency with the maturity ogives estimations used in previous years. WKBALT (Benchmark for stocks in the Baltic Sea) will be conducted in ICES from the 4 February to the 8 February. During this meeting the Baltic cod maturity ogive will be revised and the new indices and the algorithm will be provided to ICES Data Center.

#### 4.2.6 Weight at age in the stock

For weight at age in the stock, a similar request to the one above (maturity ogive) is done. As with the maturity ogive, weight in the stock is by most assessment group calculated on the basis of survey data, for at least the youngest age groups. However as with maturity, the individual fish data is sampled on a length stratified basis and therefore not responding to the true length distribution in the stock. However, if the mean weight by length is multiplied with the length distribution for the same aggregation level (subdivision, stock etc.) then the true mean weight in the stock is calculated.

Action ICES Data Centre to compute the estimations and provide the data on the DATRAS webpage.

## 5 Best database practice

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WKDATR has worked on improvements of the current DATRAS system. That means that the group accepted the current structure as a fact. However, the group also looked ahead and made some comments on current system.

### 5.1 Ambiguity

In general, all fields in a database should have a single unambiguous meaning. In order to avoid refactoring the database it is tempting to overload the semantics of an attribute. For example, in DATRAS, the tow direction should be greater than or equal to 0 and less than 360. However, a value of 360 is allowed to indicate a variable direction. While often convenient, it introduces ambiguity and the overloaded meaning is not immediately obvious or not at all.

### 5.2 Use of -9

The use of -9 as a NULL marker is unsafe practice. For example, a valid longitude of -9 (9W) could be treated as NULL. It can be tricky to distinguish between null values and empty strings. Null value means that no value has been defined. Empty string means a value has been defined but there are no characters in the value, i.e. it is empty. This could arise if you typed a piece of text into a field and then erased the text in the field. Depending on the database used it is possible to distinguish between a null value and an empty string.

## 6 References

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## Annex 1: List of participants

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## Annex 2: Agenda

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### Workshop on DATRAS data Review Priorities and checking Procedures (WKDATR)

**Chair(s):** Co-Chaired by Ingeborg de Boois, NL and Neil Holdsworth, ICES

**Meeting Date:** 29–31 January 2013 (3 days)

**Venue:** ICES, Copenhagen

#### Tuesday 29 January

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**NOTE: The meeting will start at 9am to allow participants from WGCHAIRS to join the first section of the agenda**

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9:00	Aims of the Workshop and practicalities	Chair(s)
	Round table – your role in this workshop	All
9:30	Tor A DATRAS Output iii) Problems with DATRAS downloadable products iv ) Indices and products for assessment	All
	End-users i.e. WGCHAIRS especially to report on issues of quality, consistency, versioning in DATRAS indices and other products (Examples of this would be appreciated in advance of the meeting i.e. raw files, calculation algorithm, outputs)	
11:00	Break for a cup of tea	
11:30	(Presentation of the ‘generic’ calculation procedure of DATRAS products) to be distributed prior to workshop	Vaishav Soni/Henrik Sparholt (ICES)
	Summary of discussion and agreement on the main issues to focus on for DATRAS output	Chair(s)
13:00	Lunch	
14:00-17:30	DATRAS output Assignment of work for the afternoon (possibly in subgroups) to address Tor A iii and iv	All

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**Wednesday 30 January**

9:00	Summary of day 1: DATRAS output, assignment of report tasks for day 3 and if any more input needed from WGCHAIRS	Chair(s)
9:30	Tor A DATRAS Input	
	Presentation of the DATRAS Screening and Uploading steps (DATSU, Data warehouse and versioning)	Vaishav/Frank
	To improve data quality in DATRAS by proposing checking procedures to be applied during uploading/reloading processes and detecting errors by proposing checks related to:  i ) Detect errors in new data uploads  ICES Data Centre to provide documentation of checks for input to WKDATR  - Generic  - By survey  Outcome: Corrections to current checks, or proposals for new checks based on actual use cases/evidence from DATRAS uploaders  ii) Prevent duplications or incomplete reloads  ICES Data Centre to prepare a report that shows some of these duplications  Document of scenarios that can cause duplication  Review the current check on reupload and determine whether it is strict enough	All
Rest of Day 2 to be organized around discussion and investigation of issues arising from i) and ii)		

**Thursday 31 January**

9:00	Summary of day 2: DATRAS input, assignment of report tasks for day 3 and if more time in morning is needed to work before concluding  Revisit DATRAS output and determine if all information is gathered for report writing	Chair(s)
9:30	Tor b ) Discuss feasibility of implementing the proposed checks with DATRAS managers and data analysts.  Timeplan and action for implementing these changes	
10:30	Tea, Coffee, maybe a biscuit	
11:00	Agreement on outline of Workshop report, and assignment of report section authors  REPORT WRITING	All
13:00	Lunch	



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14:00	Reconvene, continue writing and assemble report sections
15:30	Conclude on finished sections, action timetable and any homework including deadlines for completing
16:00	Close of workshop

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### **Annex 3: Recommendations**

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WKDATR did not write down any recommendations, but a full action list is presented in Annex 6.

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## Annex 4: Inventory of issues

### Annex 4a. Product-related

Nr	Type *	Overarching theme	Issue	Survey	Solution	Who will solve it	Status
1	P	Download: Exchange files	Downloading size limited to half a million records	ALL	Download services including database scheme XSD	ICES Data Centre	
2	P	Download: Exchange files	Too many boxes to tick for downloading	ALL	Download services including database scheme XSD	ICES Data Centre	
3	P	Download: Exchange files	No information about measurement units in columns	ALL	Include measurement units in header Exchange file	ICES Data Centre	
4	P	Quality assurance: product calculation	Product calculations are not approved by survey experts	ALL	Review product calculation procedures (full index calculation and other products)	IBTSWG (David), WGBEAM (Ingeborg), WGBIFS (Rainer) based on procedures supplied by ICES Data Centre. Stepwise workplan required if it cannot be achieved in one meeting.	
5	P	Quality assurance: product calculation	Data selections for calculations (e.g. only day hauls, plus-group allocation) are not approved by survey experts	ALL	Review data selections for product calculations	IBTSWG (David), WGBEAM (Ingeborg), WGBIFS (Rainer) based on information supplied by ICES Data Centre. Stepwise workplan required if it cannot be achieved in one meeting.	
6	P	Quality assurance: reference tables	Wrong allocation of position to subdivisions	BITS	Review algorithm	WKDATR (Rainer, Vaishav, Liam)	Proposal ready, see Section 3.1.2

<b>Nr</b>	<b>Type *</b>	<b>Overarching theme</b>	<b>Issue</b>	<b>Survey</b>	<b>Solution</b>	<b>Who will solve it</b>	<b>Status</b>
7	P	Quality assurance: reference tables	Reference tables not approved by survey experts	ALL	Review (e.g. allocating rectangles to rfa's, gear correction factors, etc.)	WGBEAM (Ingeborg), IBTSWG (Brian), WGBIFS (Rainer) based on list provided by ICES Data Centre. Stepwise workplan required if it cannot be achieved in one meeting.	
8	P	Transparency	Data-uploaders do not have an overview of fields used for index calculation	ALL	Send overview of fields used for index calculation to data-uploaders and chairs of the survey EG's Flag fields on the DATRAS webpage.	ICES Data Centre	
9	P	Transparency: documentation	No documentation on the calculation of a specific product supplied with the product	ALL	Add information on calculation procedure for the specific product to the product	ICES Data Centre	
10	P	Transparency: documentation	No documentation available about product calculation for programmers	ALL	Supply source code and unit tests on request NB more databases involved than DATRAS	ICES Data Centre	
11	P	Transparency: documentation	No examples available about product calculation	ALL	Examples of product calculation in textfiles or Excel format	IBTSWG, WGBEAM, WGBIFS based on procedures supplied by ICES Data Centre. Stepwise workplan required if it cannot be achieved in one meeting.	
12	P	Transparency: documentation	No examples available about product calculation for end-users	ALL	Write narrative text about calculation of products	ICES Data Centre in collaboration with survey WGBIFS, IBTSWG, WGBEAM (contact=chairs). Needs more investigation before it can be implemented.	

Nr	Type *	Overarching theme	Issue	Survey	Solution	Who will solve it	Status
13	P	Transparency: version information	No insight in critical updates by data-uploaders	ALL	Provide guidelines how to use the comment field when re-submitting data	WKDATR	Proposal ready, see Section 3.1.3
14	P	Transparency: version information	No insight in critical updates by data-uploaders	ALL	Make information available at website and in metadata file with product	WKDATR	Proposal ready, see Section 3.1.3
15	P	Transparency: version information	No database date stamp available when downloading data	ALL	Supply latest DATRAS upload dates for all survey-year-country-ship combinations	ICES Data Centre	Proposal ready, see Section 3.1.3
16	P	Transparency: version information	No product calculation date stamp available when downloading data	ALL	Supply latest product calculation date with the product	WKDATR	Proposal ready, see Section 3.1.3
17	P	Version management	No version management on assessment related products	ALL	Add version management to products, and for assessment products fix the version used for the assessment	ICES Data Centre	DateofCalculation already available with product
18	P	Version management	Not all updates are stored separately in backups	ALL	Constraints: size, frequency of re-upload, ....	ICES Data Centre (Vaishav) and DIG (Liam)	
19	P	Version management	No automated comparison available between original data and resubmitted data	ALL	Automated comparison between current dataset in DATRAS and newly resubmitted dataset	ICES Data Centre	Is in the ICES Data Centre workplan already Proposal ready, see Section 3.2.1.3

\*(S=submission, P=product)

## Annex 4b. Submission-related

Nr	Type	Overarching theme	Issue	Survey	Solution	Who will solve it	Status
1	S	Quality check: HL/CA	Incorrect species in dataset (e.g. BITS Gadus species)	BITS	If there is a wish for that, survey groups should send in an 'allowed species list' and things can be checked. It is however a responsibility of the country to upload the data. And it is the responsibility of the survey groups to communicate on standardization	WGBIFS (Rainer) to supply closed species list to ICES Data Centre, ICES Data Centre to implement the check	
2	S	Submission: incomplete information	Not possible to upload species without WoRMS coding	ALL	For species that already exist (e.g. Dipturus batis species) just keep the old codes. For new species: create a new taxon coding type: D (for DATRAS) and coding numbers are given by ICES DC	ICES Data Centre, survey expert groups, WoRMS	Not to be incorporated before the problem arises as it needs more discussion.
3	S	Quality check: positions	Positions on land still present in DATRAS	ALL	Change the position check to a shapefile based check.		Proposal ready, see Section 3.1.2
4	S	Quality check: consistency	Inconsistencies between CatCtchWgt and calculated weight	ALL	Provide a graph of catctchwgt against calculated weight (just L3) in the check (HL)	WKDATR	Proposal ready, see Section 3.2.1.3
5	S	Transparency	Not clear how to add dummy records	ALL	Provide an example for dummy HH and HL records to data-uploaders	ICES Data Centre	
6	S	Submission: format	Different exchange formats for one survey	NS- IBTS, BITS	One data check for a survey	WGBIFS, IBTSWG (via chairs) in collaboration with ICES Data Centre	Proposal ready, see Section 3.2.1.2
7	S	Exchange format: documentation	No information about unique key columns	ALL	Add information to <a href="http://datras.ices.dk/Data_products/ReportingFormat.aspx">http://datras.ices.dk/Data_products/ReportingFormat.aspx</a> on unique key	ICES Data Centre	

Nr	Type	Overarching theme	Issue	Survey	Solution	Who will solve it	Status
8	S	Exchange format: documentation	Incorrect information about data type	ALL	Change char in varchar in <a href="http://datras.ices.dk/Data_products/ReportingFormat.aspx">http://datras.ices.dk/Data_products/ReportingFormat.aspx</a>	ICES Data Centre	

\*(S=submission, P=product)

#### Annex 4c. Products to be checked by WGBIFS, WGBEAM and IBTSWG respectively

Group	IBTSWG								
	Survey	EVHOE	IE-IGFS	NIGTS	NS-IBTS	PT-IBTS	ROCKALL	SP-NORTH	SP-PORC
cpue at length per haul	Y	N	N	Y	N	N	N	N	Y
cpue per age per haul	Y	N	N	Y	N	N	N	N	Y
cpue per length per area	Y	N	N	Y	N	N	N	N	Y
cpue per length per stat rec	Y	N	N	Y	N	N	N	N	Y
cpue per age per stat rec	Y	N	N	Y	N	N	N	N	Y
SMALK	Y	N	N	Y	N	N	N	N	Y
ALK	Y	N	N	Y	N	N	N	N	Y
Indices	Y	N	N	Y	N	N	N	N	Y
Bootstrap data	Y	N	N	Y	N	N	N	N	Y
Range divide by medianbootstrap	N	N	N	Y	N	N	N	N	N

**Annex 4c (continued)**

<b>Group</b>	<b>WGBIFS</b>	<b>WGBEAM</b>	
<b>Survey</b>	<b>BITS</b>	<b>BTS</b>	<b>BTS-VIIa</b>
cpue at Length per haul	Y	Y	N
cpue per age per haul	Y	Y	N
cpue per length per area	Y	N	N
cpue per length per stat rec	Y	N	N
cpue per age per stat rec	Y	Y	N
SMALK	Y	Y	N
ALK	Y	Y	N
Indices	Y	Y	N
Bootstrap data	Y	Y	N
Range divide by median bootstrap	N	N	N



## Annex 5: Review of field ranges and error checks

### Error checks

colour	meaning
	ok
	ok, but with questions/comments added
	check in itself correct, but modifications might be necessary when < 2004 and from 2004 BITS and IBTS are put together
	check does not seem correct
	question about the check
	suggestion for new text in error message

Message	Comment	Nature of check	Description of check
DATSU has stopped checking data. Unexpected File Format Error	Maybe add to the message: Please contact ICES Datacentre for more help		
Some data rows were skipped. Checking was aborted after parsing the data	Maybe add which data rows (or the first 5 data rows that were skipped)	Validity	
Field Value is invalid	ok	Validity	DayNight, GearExp, DataType, SpecCodeType, PlusGr
Day/night is NOT within the legal range according to NOAA	See field ranges	range	Hauldur,timeshot,DayNight
If validity code is 4 then TotalNo > 0	ok	Validity	SpecVal, TotalNo
if validity code is 9 then TotalNo, CatchWeight, NoMeasured, LengthClassCode, MinLengthClass and HLNoAtLength = -9	Conditional, only < 2004 BITS and IBTS. Validity code 9 does not exist from 2004	Validity	HaulVal,TotalNo, CatchWeight, NoMeasured, LengthClassCode, MinLengthClass, HLNoAtLength
If validity code is 4 then LengthClassCode, MinLengthClass and HLNoAtLength = -9	ok	Validity	SpecVal
if validity code is 0 then TotalNo, CatchWeight, NoMeasured, LengthCode, MinLengthClass and HLNoAtLength = -9	not true. -9 should be allowed for all fields named but might also be different values	Validity	SpecVal
if validity code is 9 then TotalNo, CatchWeight, NoMeasured, LengthClassCode, MinLengthClass and HLNoAtLength = -9	Conditional, only < 2004 BITS and IBTS. Validity code 9 not allowed from 2004	Validity	LngtCode; LngtClass
If LengthClassCode = 2 then MinLengthClass must be 2 cm units	Conditional, only < 2004 BITS. LngtCode=2 not allowed from 2004 (BITS)	Validity	LngtCode; LngtClass
If LengthClassCode = 5 then MinLengthClass must be 5 cm units	Conditional, only < 2004 BITS and IBTS. LngtCode=5 not allowed from 2004	Validity	LngtCode; LngtClass
If TotalNo = 0 then CatchWeight = 0 and vice versa, unless catch weight < 100g	not true. It is possible to have weight only. See reco for special codes	Validity	TotalNo; CatchWeight
If age = -9 then PlusGr = -9	ok	Validity	AgeRings; PlusGr
If HH has a HL; If year, ship, haul no and species code are the same as previous recorded then quarter, country, gear, rig, doortype and st. no must also be the same	ok	Validity	
Not more than one record per species, length class and sex are allowed	not true. Should be: Not more than one record per CatIdentifier, species, lengthclass and sex are allowed	Validity	SpecCode,SpecVal,LngtClass,HLNoAtLngt
Only one record can be given per haul, species, sex, catidentifier and subfactor with the ValidityCode 4 or 9	ok (also applies to validitycode 5 and the new one for weight only)	Validity	
Only one record can be given per haul, species, sex, catidentifier and subfactor with the ValidityCode 4 or 9	equal to the one above	Validity	
For each species and sex: TotalNo = sum of HLNoAtLength	ok	outlier	
If HH has a CA; If year, ship, haul no and species code are the same as previous recorded then quarter, country, gear, rig, doortype and st. no must also be the same	ok	crosscheck	HaulNo,CA_DoorType,o,CA_StationNo
Per haul, species and length class only the oldest age group can be PlusGr	ICES DC: what does this check do?	Validity	PlusGr; AgeRings
If haulno in CA; Haulno must be found in HL record	ok	crosscheck	haulno
If LengthClassCode = 1 then MinLengthClass must be cm units	ok	Validity	LngtCode; LngtClass
Key Value not recognised	ok	Validity	quarter, country, year

Not in the range specified	ok	range	BotSal; BotTemp; Buoyancy; Depth; Distance; DoorSpread; DoorSurface; DoorWgt; GroundSpeed; HaulDur; HaulLat; HaulLong; HaulNo; Netopening; Quarter; ShootLat; Shootlong; SpeedWater; SurCurSpeed; SurSal; SurTemp; SwellHeight; ThClineDepth; Tickler; TimeShot; TowDir; WarpDia; WarpLngt; WgtGroundRope; WindDir; WindSpeed; WingSpread; Year
Null field	ok	Validity	
Mandatory record	ok	Validity	HH, HL
Duplicate value in record constraint	ok	Validity	Quarter, Country, Ship, Gear, StNo, HaulNo, Year
Record with no Child Records	ok	crosscheck	
Field A is not consistent with field B	not true. No check on quarter-month. What is the field B of maturity?	Validity	Quarter- Month; Gear-DoorType; Gear- GearExp; Maturity
Field A is inconsistent with field B in child record	ok	Validity	Data Type; CatIdentifier
The calculated distance between shooting and haul position is more than 300 m different from the provided distance	see field ranges if limits are still valid for a particular survey	range	shootlat,shootlong,haullat, haullong
Field A is inconsistent with field B in child record (rel)	ok	crosscheck	HaulVal; SpecVal
Field A is not consistent with field B (rel)	ok	Validity	Country, Ship, Gear
Field value is invalid (Rel)	ok	Validity	Gear, ship, doortype, BycSpecRecCode, haulVal, stratum, maturity, AreaType, Doortype,
The TSN code is not found in the species list used for this dataset. Please ask ICES for an update	not true. No TSN	Validity	SpecCode; SpecCodeType
The position is recorded on land (INFORMATIONAL) Number of rows of record type	ok	range	haullat, haullong
If LengthClassCode = 5 then MinLengthClass must be > 60	Conditional, < 2004 vs >= 2004 for BITS and IBTS	Validity	LngtCode; LngtClass
Field B is larger than allowed for the species	ok (can this also be done at a species level?)	range	LngtCode; LngtClass
Inconsistency between species and field B	what does this check do?	Validity	LngtCode; LngtClass
Within one haul and species; when length code = 9 MinLengthClass must have the same value	ok	Validity	LngtCode; LngtClass
A length plus group is found - the LngtCode must therefore be 9	ok	Validity	Lngtcode
The CSV file type was selected but the file does not appear to be delimited values	ok	Validity	
When this field is filled in, the related field must also be filled in	which fields does this apply to?	Validity	
Area code is not consistent with area type	ok	Validity	AreaType; AreaCode
Child Record with no parent record (Orphan)	ok	Crosscheck	Gear, Ship, HaulNo, StNo, SpecCode, SpecCodeType
CA record with no HL record for species and length class	ok	Crosscheck	SpecCode
If validity code is 1 then HLNoAtLngt > 0	ok	Validity	SpecVal, HLNoAtLngt
There is no statistical rectangle matching the hauling position	ok	range	ShootLat; ShootLong
Missing values in mandatory field	ok	Validity	DayNight, Depth, Hydrostationnumber; DataType; HaulNo, HaulDur, TimeShot, rigging, tickler, stratum, LngtClass, LngtCode, SpecVal, maturity, AgeRings, AreaCode; CANoAtLngt; AreaType; PlusGr; HaulNo, LngtClass, LngtCode, sex, CANoAtLngt;
The Shooting Position is not within the reported Statistical Rectangle	ok	range	StatRec
Records referring to the same haul and species must have identical values for a number of fields.	ok	Cross-check	SpecCode, CatCatchWgt, LngtCode, TotalNo,
Not used in this format	ok	Validity	Stratum, tickler, rigging, BotCurSpeed, Doorsurface, KiteDim, NetOpening, SweepLngt, Buoyancy, DoorSpread, DoorWgt, WarpDia, WrpLngt, WgtGroundRope, SurCurDir, SurCurSpeed, ThClineDepth, BotCurSpeed

Field A is not consistent with field B (check)	which fields does this apply to?	Validity	
Data screening not completed, ICES has been informed and will contact you to resolve the error.	does this one still work? Or should we contact ICES ourselves?	Validity	
If a plus group is defined per haul/area and species then all records for this species with age => than the plus group must contain the plus identifier	ok	Validity	PlusGr, AgeRings
Identical species must have identical species validity code	not true. Should be within haul, category and sex	Validity	SpecCode, SpecVal
Field A, code type, is inconsistent with field B, code	which fields does this apply to?	Validity	
Empty Line	?	Validity	
Empty Line	?	Validity	
The minimum length for LngtClass must be greater or equal to 2cm or 20mm	not true. see length class field ranges	Range	LngtClass
If LengthClassCode = . then MinLengthClass must be mm units	what does this check do?	Validity	LngtClass
Too few or too many fields this record	ok	Validity	
Too few fields in HL records	ok	Validity	
Too few fields in CA records	ok	Validity	
More than one ship found in the file, only one is allowed	ok	Validity	Ship
More than one gear found in the file, only one is allowed	ok	Validity	Gear
TimeShot must be 4 integers (zero filled and no blanks)	ok	Validity	TimeShot
Minutes in TimeShot must be less than 60.	ok	Range	TimeShot
Blanks for example ,, , are not allowed	ok	Validity	
More than one quarter found in the file, only one is allowed	ok (as long as no check is carried out between quarter (survey period) and month)	Validity	Quarter
More than one country found in the file, only one is allowed	ok	Validity	Country
More than one year found in the file, only one is allowed	ok	Validity	Year
For each species and sex: TotalNo = sum of HLNoAtLength	ok	range	
Haul duration cannot be -9, please use 0	what about dummy hauls? And historic information without shooting and hauling time?	Validity	Hauldur
Taxon unit is at a higher ranking than species	ok	Validity	SpecCode
Two different maturity scales are detected in the file.	ok	Validity	Maturity
Invalid AphiaIDOR There is no matching AphiaID for given TSN or NODC code	ok	Validity	HaulNo, AreaType
There is a duplicate haul number in HH-records	ok	Validity	
NODC species code is no longer accepted. Please use AphiaID instead.	ok	Validity	SpecCode
AphiaID code does not exist.	ok	Validity	SpecCode
If DataType is S, SubFactor is always >1	ok	Range	Datatype, Subfactor
ITIS TSN species codes are no longer accepted. Please use AphiaID instead.	ok	Validity	SpecCodeType
Subfactor need to be same for same HaulNo,SpecCode,Sex,TotalNo	not true. Subfactor needs to be same for same HaulNo,SpecCode,Sex,Category	Validity	HaulNo,SpecCode,Sex,TotalNo

Field ranges

BITS; HH

RecordType	No	Field	Description	ErrorWarning	comment	should -9 be allowed?
HH	2	Quarter	specified1.0000000000004.0000000000	warning	error	
HH	2	Quarter	Quarter is not consistent with Month	error	REMOVE this check. Rename field 'Survey period'; no check on month-quarter combination	
HH	3	Country	Country is not consistent with Ship (rel)	error		
HH	3	Country	Field value is invalid (Rel)	error		
HH	4	Ship	Ship is not consistent with Gear (rel)	error		
HH	4	Ship	Field value is invalid (Rel)	error		
HH	5	Gear	Gear is not consistent with GearExp	error		
HH	5	Gear	Gear is not consistent with DoorType	error		
HH	5	Gear	Field value is invalid (Rel)	error		
HH	6	SweepLngt	specified0.000000000000999.0000000000	warning		
HH	7	GearExp	Field value is invalid	error		
HH	8	DoorType	Field value is invalid (Rel)	error		
HH	10	HaulNo	specified1.000000000000999.0000000000	warning		
HH	11	Year	specified1900.000000000002099.0000000000	warning	error	
HH	12	Month	specified1.0000000000012.0000000000	warning	error	
HH	13	Day	Max day in month depend on month and year	error		
HH	13	Day	specified1.00000000000031.0000000000	warning	error	
HH	14	TimeShot	0.000000000002400.0000000000	warning	error	
HH	15	Stratum	Field value is invalid (Rel)	error	warning; cross-check between depth and stratum	
HH	16	HaulDur	specified0.00000000000090.0000000000	warning		
HH	17	DayNight	Field value is invalid	error		
HH	17	DayNight	Day/night is NOT within the legal range according to NOAA	warning	ICES DC: legal range should also allow civil day/night calculations (Liam to provide)	
HH	18	ShootLat	specified53.0000000000066.0000000000	warning	error	
HH	18	ShootLat	The position is recorded on land	error		
HH	18	ShootLat	hauling position	error		
HH	19	ShootLong	specified9.0000000000030.0000000000	warning	error	
HH	20	HaulLat	specified53.0000000000066.0000000000	warning	error	
HH	20	HaulLat	The position is recorded on land	error		
HH	21	HaulLong	specified9.0000000000030.0000000000	warning	error	
HH	22	StatRec	The Shooting Position is not within the reported Statistical Rectangle	error	warning	
HH	23	Depth	specified5.00000000000300.0000000000	warning		
HH	23	Depth	The depth is not within a 50% range of the calculated depth from the ETOPO2 dataset	warning		
HH	24	HaulVal	HaulVal is inconsistent with SpecVal in child record (rel)	error	it is possible to have invalid species information in valid hauls, you can't have valid species information in an invalid haul	
HH	24	HaulVal	Field value is invalid (Rel)	error	Conditional; Validity V & N is only possible for TVL and TVS since 2002	
HH	26	StdSpecRecCode	Field value is invalid (Rel)	error		
HH	27	BycSpecRecCode	Field value is invalid (Rel)	error		
HH	28	DataType	Field value is invalid	error		
HH	28	DataType	child record	error		
HH	29	Netopening	specified1.5000000000010.0000000000	warning		
HH	30	Rigging	Not used in this format	error		
HH	31	Tickler	Not used in this format	error		
HH	32	Distance	specified0.00000000000999.0000000000	warning		
HH	32	Distance	The calculated distance between shooting and haul position is more than 300 m different from	warning		
HH	33	WarpLngt	specified75.00000000000999.0000000000	warning		
HH	34	WarpDia	specified10.0000000000060.0000000000	warning		
HH	36	DoorSurface	specified1.0000000000010.0000000000	warning		
HH	37	DoorWgt	specified50.000000000002000.0000000000	warning		
HH	38	DoorSpread	specified48.00000000000180.0000000000	warning		
HH	39	WingSpread	specified12.0000000000030.0000000000	warning		
HH	40	Buoyancy	specified50.00000000000220.0000000000	warning		
HH	41	KiteDim	specified0.500000000002.0000000000	warning		
HH	42	WgtGroundRope	specified0.00000000000800.0000000000	warning		
HH	43	TowDir	Not in the range specified. 1.00000000000360.0000000000	warning	WCBIFS to check the meaning of -1; maybe use the same values for variable direction (BITS and BTS use 360 for variable)	
HH	44	GroundSpeed	specified2.000000000006.0000000000	warning		
HH	45	SpeedWater	specified1.000000000009.0000000000	warning		
HH	46	SurCurDir	specified0.00000000000360.0000000000	warning	error	
HH	47	SurCurSpeed	specified0.0000000000010.0000000000	warning		
HH	48	BotCurDir	specified0.00000000000360.0000000000	warning	error	
HH	49	BotCurSpeed	specified0.0000000000010.0000000000	warning		
HH	50	WindDir	specified 00000000000360.0000000000	warning	error	
HH	51	WindSpeed	specified0.00000000000100.0000000000	warning		
HH	52	SwelDir	specified0.00000000000360.0000000000	warning	error	
HH	53	SwelHeight	specified0.0000000000025.0000000000	warning		
HH	54	SurTemp	1.0000000000030.0000000000	warning	WCBIFS: update limits?	
HH	55	BotTemp	1.0000000000020.0000000000	warning	WCBIFS: update limits?	
HH	56	SurSal	specified5.0000000000030.0000000000	warning		
HH	57	BotSal	specified5.0000000000030.0000000000	warning		
HH	58	ThermoCline	Field value is invalid	error	REMOVE check; not used in this format	
HH	59	ThClineDepth	Not in the range specified5.00000000000100.0000000000	warning	REMOVE check; not used in this format	

colour	meaning
	ok
	change from warning to error
	change from error to warning
	change field range
	remove check
	add check
	suggestion for new text in error message
	check in itself correct, but modifications required
	question about the check

**BITS; HL**

RecordType	No	Field	Description	ErrorWarning	comment	should -9 be allowed?
HL	12	SpecCodeType	Field value is invalid	error		
					WGBIFS to supply closed species list, modify check against this list positive list for Baltic Sea	
HL	13	SpecCode	The TSN code is not found in the species list used for this dataset. Please ask ICES for an update.	error		
HL	13	SpecCode	LngtClass is larger than allowed for the species	warning		
					ICES DC: does not seem to be a valid check as there is no reference available; BIFS to supply list if different length codes are applies for different species	
HL	13	SpecCode	Inconsistency between species and LngtCode	error		
					No matching WoRMS code was found. No checks will be made for this species	
HL	13	SpecCode	No TSN code was found for NODC code. No checks will be made on this species.	error		
HL	13	SpecCode	There is more than one legal TSN code for the used NODC code, please include the correct TSN code	error	REMOVE this check (no TSN and no NODC)	
HL	14	SpecVal	if validity code is 4 then TotalNo > 0	error	If validity code=4 then TotalNo should be larger than 0	
HL	14	SpecVal	if validity code is 9 then TotalNo, CatchWeight, NoMeasured, LengthClassCode, MinLengthClass	error	ICES DC: to supply additional information on this check	
HL	14	SpecVal	if validity code is 4 then LengthClassCode, MinLengthClass and HLNoAtLength = -9	error	TotalNo > 0, NoMeas = 0, HLNoAtLength = -9	
HL	14	SpecVal	if validity code is 0 then TotalNo, CatchWeight, NoMeasured, LengthCode, MinLengthClass and HLNoAtLength = -9	warning	REMOVE this check, -9 should be allowed for all fields named but might also be different values	
					Only one record can be given per haul, species, sex, catidentifier and subfactor with the ValidityCode 4 or 5	
HL	14	SpecVal	Only one record can be given per haul, species, sex, catidentifier and subfactor with the ValidityCode 4 or 5	error		
HL	14	SpecVal	Field value is invalid (Rel)	error		
					If validity code=1 then you should supply HLNoAtLngt (no -9 or 0 allowed) for at least one length class	
HL	14	SpecVal	if validity code is 1 then HLNoAtLngt > 0	error		
HL	15	Sex	Field value is invalid (Rel)	error		
HL	16	TotalNo	specified1.000000000000999999.000000000000	warning		
HL	17	CatIdentifier	specified1.00000000000005.000000000000	warning		
HL	18	NoMeas	specified1.0000000000005000.000000000000	warning		
HL	19	SubFactor	specified1.0000000000001000.000000000000	warning		
HL	20	SubWgt	specified1.000000000000500000.000000000000	warning		
HL	21	CatCatchWgt	Not in the range specified0.000000000000999999.000000000000	warning		
HL	22	LngtCode	Field value is invalid (Rel)	error		
					ICES DC: to supply additional information on this check	
HL	22	LngtCode	A length plus group is found - the LngtCode must therefore be 9	error		
HL	23	LngtClass	If LengthClassCode = 0 then MinLengthClass must be half cm units	error		
					Conditional, only relevant prior to 2004	
HL	23	LngtClass	If LengthClassCode = 5 then MinLengthClass must be 5 cm units	error		
HL	23	LngtClass	be cm units	error		
HL	23	LngtClass	specified1.000000000000999.000000000000	warning		
					Conditional, only relevant prior to 2004	
HL	23	LngtClass	If LengthClassCode = 5 then MinLengthClass must be > 60	error		
					ICES DC: to supply additional information on this check	
HL	23	LngtClass	Within one haul and species; when length code = 9 MinLengthClass must have the same value	error		
					ICES DC: to check with subfactor scheme	
HL	24	HLNoAtLngt	For each species and sex: TotalNo = sum of HLNoAtLength	error		
HL	24	HLNoAtLngt	Not in the range specified1.000000000000999999.000000000000	warning		

## BITS; CA

RecordType	No	Field	Description	ErrorWarning	comment	should -9 be allowed?
CA	13	SpecCode	AgeRings is larger than allowed for the species	warning		
CA	13	SpecCode	LngtClass is larger than allowed for the species	warning		
CA	13	SpecCode	Inconsistency between species and LngtCode	error	ICES DC: to supply additional information on this check	
CA	13	SpecCode	No TSN code was found for NODC code. No checks will be made on this species.	error	No matching WoRMS code was found. No checks will be made for this species	
CA	13	SpecCode	There is more than one legal TSN code for the used NODC code, please include the correct TSN code	error	REMOVE this check	
CA	14	AreaType	Field value is invalid (Rel)	error		
CA	14	AreaType	Area code is not consistent with area type	error		
CA	15	AreaCode	&nbsp;			
CA	16	LngtCode	Field value is invalid (Rel)	error		
CA	16	LngtCode	therefore be 9	error	REMOVE this check; not relevant	
CA	17	LngtClass	If LengthClassCode = 0 then MinLengthClass must be half cm units	error		
CA	17	LngtClass	be 5 cm units	error	REMOVE this check; not relevant	
CA	17	LngtClass	be cm units	error		
CA	17	LngtClass	specified1.000000000000999.000000000000	warning		
CA	17	LngtClass	be > 60	error	REMOVE this check; not relevant	
CA	17	LngtClass	Within one haul and species; when length code = 9 MinLengthClass must have the same value	error	REMOVE this check; not relevant	
CA	18	Sex	Field value is invalid (Rel)	error		
CA	19	Maturity	Field value is invalid (Rel)	error		
CA	20	PlusGr	Field value is invalid	error		
CA	20	PlusGr	Per haul, species and length class only the oldest age group can be PlusGr	error		
CA	20	PlusGr	If a plus group is defined per haul/area and species then all records for this species with age => than the plus group must contain the plus identifier	error		
CA	21	AgeRings	specified0.000000000000999.000000000000	warning	WGBIFS: update limits?	
CA	22	CANoAtLngt	specified1.000000000000999.000000000000	warning		
CA	23	IndWgt	specified1.00000000000099999.000000000000	warning		

NS-IBTS; HH

RecordType	No	Field	Description	ErrorWarn	comments	should -9 be allowed?
HH	2	Quarter	Not in the range specified1.0000000000004.000000000000	warning	should be an error	
HH	2	Quarter	Quarter is not consistent with Month	error	REMOVE this check. Rename field 'Survey period'; no check on month-quarter combination	
HH	3	Country	Country is not consistent with Ship (rel)	error		
HH	3	Country	Field value is invalid (Rel)	error		
HH	4	Ship	Ship is not consistent with Gear (rel)	error		
HH	4	Ship	Field value is invalid (Rel)	error		
HH	5	Gear	Gear is not consistent with GearExp	error	Positive value should be mandatory	
HH	5	Gear	Gear is not consistent with DoorType	error	Positive value should be mandatory	
HH	5	Gear	Field value is invalid (Rel)	error		
HH	6	SweepLngt	Not in the range specified0.000000000000999.000000000000	warning		
HH	7	GearExp	Field value is invalid	error	S1 should not only be "Groundgear C, but "groundgear	
HH	8	DoorType	Field value is invalid (Rel)	error	a positive value should be mandatory	no
HH	10	HaulNo	Not in the range specified1.000000000000999.000000000000	warning		
HH	11	Year	Not in the range specified1900.0000000000002099.000000000000	warning		
HH	12	Month	Not in the range specified1.00000000000012.000000000000	warning		
HH	13	Day	Max day in month depend on month and year	error		
HH	13	Day	Not in the range specified1.00000000000031.000000000000	warning		
HH	14	TimeShot	Not in the range specified1.0000000000002400.000000000000	warning		
HH	15	Stratum	Not used in this format	error	all except NS-IBTS: stratum used and area and depth based, so also cross-check with position and depth	
HH	16	HaulDir	Not in the range specified5.00000000000090.000000000000	warning	minimum set to 15 minutes	
HH	17	DayNight	Field value is invalid	error		
HH	17	DayNight	Day/night is NOT within the legal range according to NOAA	warning	ICES DC: legal range should also allow civil day/night calculations (Liam to provide)	
HH	18	ShootLat	Not in the range specified50.00000000000064.000000000000	warning		
HH	18	ShootLat	The position is recorded on land	error		
HH	18	ShootLat	There is no statistical rectangle matching the hauling position	error		
HH	19	ShootLong	Not in the range specified-4.00000000000013.000000000000	warning		
HH	20	HaulLat	Not in the range specified50.00000000000064.000000000000	warning		
HH	20	HaulLat	The position is recorded on land	error		
HH	21	HaulLong	Not in the range specified-4.00000000000013.000000000000	warning		
HH	22	StatRec	The Shooting Position is not within the reported Statistical Rectangle	error		
HH	23	Depth	Not in the range specified10.000000000000300.000000000000	warning		
HH	23	Depth	The depth is not within a 50% range of the calculated depth from the ETOPO2 dataset	warning		
HH	24	HaulVal	HaulVal is inconsistent with SpecVal in child record (rel)	error		
HH	24	HaulVal	Field value is invalid (Rel)	error		
HH	25	HydroStNo	&nbsp;</TD>			
HH	26	StdSpecRecCo	Field value is invalid (Rel)	error		
HH	27	BycSpecRecCo	Field value is invalid (Rel)	error		
HH	28	DataType	Field value is invalid	error		
HH	28	DataType	DataType is inconsistent with CatIdentifier in child record	error		
HH	29	Netopening	Not in the range specified2.00000000000010.000000000000	warning	IBTSWG: new range 3-6?	
HH	30	Rigging	Not used in this format	error		
HH	31	Tickler	Not used in this format	error		
HH	32	Distance	Not in the range specified1850.0000000000009999.000000000000	warning	IBTSWG: new range? Or range dependent on duration?	
HH	32	Distance	The calculated distance between shooting and haul position is more than 300 m different from the provided distance	warning	IBTSWG: new range? See distancer	
HH	33	WarpLngt	Not in the range specified100.000000000000999.000000000000	warning		
HH	34	WarpDia	Not in the range specified100.00000000000060.000000000000	warning		
HH	36	DoorSurface	Not in the range specified3.00000000000010.000000000000	warning		
HH	37	DoorWgt	Not in the range specified500.0000000000002000.000000000000	warning		
HH	38	DoorSpread	Not in the range specified48.000000000000180.000000000000	warning	warning when both doorspread and wingspread are -9	
HH	39	WingSpread	Not in the range specified12.00000000000030.000000000000	warning	Positive value should be mandatory	
HH	40	Buoyancy	Not in the range specified50.000000000000200.000000000000	warning		
HH	41	KiteDim	Not in the range specified0.5000000000002.000000000000	warning		
HH	42	WgtGroundRe	Not in the range specified0.000000000000300.000000000000	warning	BTSWG: range needs to be checked against reported values - "recommended 705" in reporting format	
HH	43	TowDir	Not in the range specified1.000000000000360.000000000000	warning		
HH	44	GroundSpeed	Not in the range specified2.0000000000006.000000000000	warning	IBTSWG: new range 3-5?	
HH	45	SpeedWater	Not in the range specified1.0000000000009.000000000000	warning	IBTSWG: not used in this format?	
HH	46	SurCurDir	Not in the range specified0.000000000000360.000000000000	warning	error	yes
HH	47	SurCurSpeed	Not in the range specified0.00000000000010.000000000000	warning		
HH	48	BotCurDir	Not used in this format	error		
HH	49	BotCurSpeed	Not used in this format	error		
HH	50	WindDir	Not in the range specified0.000000000000360.000000000000	warning	error	yes
HH	51	WindSpeed	Not in the range specified0.000000000000100.000000000000	warning		
HH	52	SwellDir	Not in the range specified0.000000000000360.000000000000	warning	error	yes
HH	53	SwellHeight	Not in the range specified0.00000000000025.000000000000	warning		
HH	54	SurTemp	Not in the range specified-1.00000000000030.000000000000	warning		
HH	55	BotTemp	Not in the range specified1.00000000000020.000000000000	warning		
HH	56	SurSal	Not in the range specified10.00000000000038.000000000000	warning		
HH	57	BotSal	Not in the range specified20.00000000000038.000000000000	warning		
HH	58	ThermoCline	Field value is invalid	error		
HH	59	ThClineDepth	Not in the range specified5.000000000000100.000000000000	warning		

NS-IBTS; HL

RecordType	No	Field	Description	ErrorWarn	comments	should -9 be allowed?
HL	12	SpecCodeType	Field value is invalid	error		
HL	13	SpecCode	The TSN code is not found in the species list used for this dataset. Please ask ICES for an update.	error	The WoRMS code is not found in the species list used for this dataset. Please ask ICES for an update.	
HL	13	SpecCode	LngtClass is larger than allowed for the species	warning		
HL	13	SpecCode	Inconsistency between species and LngtCode	error	ICES DC does not seem to be a valid check as there is no reference available	
HL	13	SpecCode	No TSN code was found for NODC code. No checks will be made on this species.	error	No matching WoRMS code was found. No checks will be made for this species	
HL	13	SpecCode	There is more than one legal TSN code for the used NODC code, please include the correct TSN code	error	REMOVE this check (no TSN and no NODC)	
HL	14	SpecVal	if validity code is 4 then TotalNo > 0	error	If validity code=4 then TotalNo should be larger than 0	
HL	14	SpecVal	if validity code is 9 then TotalNo, CatchWeight, NoMeasured, LengthClassCode, MinLengthClass and HLNoAtLength = -9	error	If validity code is 5 then TotalNo, CatchWeight, NoMeasured, LengthClassCode, MinLengthClass and HLNoAtLength should be -9	
HL	14	SpecVal	if validity code is 4 then LengthClassCode, MinLengthClass and HLNoAtLength = -9	error	If validity code is 4 then LngtCode, LengthClass and HLNoAtLength should be -9	
HL	14	SpecVal	if validity code is 0 then TotalNo, CatchWeight, NoMeasured, LengthCode, MinLengthClass and HLNoAtLength = -9	warning	REMOVE this check, -9 should be allowed for all fields named but might also be different values	
HL	14	SpecVal	Only one record can be given per haul, species, sex, catIdentifier and subfactor with the ValidityCode 4 or 9	error	Only one record can be given per haul, species, sex, catIdentifier and subfactor with the ValidityCode 4 or 5	
HL	14	SpecVal	Field value is invalid (Rel)	error		
HL	14	SpecVal	if validity code is 1 then HLNoAtLngt > 0	error	If validity code=1 then you should supply HLNoAtLngt (no -9 or 0 allowed) for at least one length class	
HL	15	Sex	Field value is invalid (Rel)	error		
HL	16	TotalNo	Not in the range specified 1.0000000000009999999.000000000000	warning		
HL	17	CatIdentifier	Field value is invalid (Rel)	error		
HL	18	NoMeas	Not in the range specified 1.000000000000999.000000000000	warning		
HL	19	SubFactor	Not in the range specified 1.000000000001000.000000000000	warning		
HL	20	SubWgt	Not in the range specified 1.000000000000500000.000000000000	warning		
HL	21	CatCatchWgt	Not in the range specified 0.000000000001000000.000000000000	warning	minimum value should be 1	yes
HL	22	LngtCode	Field value is invalid (Rel)	error		
HL	22	LngtCode	A length plus group is found - the LngtCode must therefore be 9	error		
HL	23	LngtClass	If LengthClassCode = 0 then MinLengthClass must be half cm units	error		
HL	23	LngtClass	If LengthClassCode = 5 then MinLengthClass must be 5 cm units	error		
HL	23	LngtClass	If LengthClassCode = 1 then MinLengthClass must be cm units	error		
HL	23	LngtClass	Not in the range specified 1.000000000000999.000000000000	warning		
HL	23	LngtClass	If LengthClassCode = 5 then MinLengthClass must be > 60	error		
HL	23	LngtClass	Within one haul and species; when length code = 9 MinLengthClass must have the same value	error		
HL	24	HLNoAtLngt	For each species and sex: TotalNo = sum of HLNoAtLength	error		
HL	24	HLNoAtLngt	Not in the range specified 1.000000000000999999.000000000000	warning		



**NS-IBTS; CA**

RecordType	No	Field	Description	ErrorWarn	comments	should -9 be allowed?
CA	13	SpecCode	AgeRings is larger than allowed for the species	warning		
CA	13	SpecCode	LngtClass is larger than allowed for the species	warning		
CA	13	SpecCode	Inconsistency between species and LngtCode	error		
CA	13	SpecCode	No TSN code was found for NODC code. No checks will be made on this species.	error	No matching WoRMS code was found. No checks will be made for this species	
CA	13	SpecCode	There is more than one legal TSN code for the used NODC code, please include the correct TSN code	error	REMOVE this check	
CA	14	AreaType	Field value is invalid (Rel)	error		
CA	14	AreaType	Area code is not consistent with area type	error		
CA	16	LngtCode	Field value is invalid (Rel)	error		
CA	16	LngtCode	A length plus group is found - the LngtCode must therefore be 9	error		
CA	17	LngtClass	If LengthClassCode = 0 then MinLengthClass must be half cm units	error		
CA	17	LngtClass	If LengthClassCode = 5 then MinLengthClass must be 5 cm units	error		
CA	17	LngtClass	If LengthClassCode = 1 then MinLengthClass must be cm units	error		
CA	17	LngtClass	Not in the range specified1.0000000000009999.000000000000	warning		
CA	17	LngtClass	If LengthClassCode = 5 then MinLengthClass must be > 60	error		
CA	17	LngtClass	Within one haul and species; when length code = 9 MinLengthClass must have the same value	error		
CA	18	Sex	Field value is invalid (Rel)	error		
CA	19	Maturity	Field value is invalid (Rel)	error		
CA	20	PlusGr	Field value is invalid	error		
CA	20	PlusGr	Per haul, species and length class only the oldest age group can be PlusGr	error		
CA	20	PlusGr	If a plus group is defined per haul/area and species then all records for this species with age => than the plus group must contain the plus identifier	error		
CA	21	AgeRings	Not in the range specified0.00000000000015.000000000000	warning		
CA	22	CANoAtLngt	Not in the range specified1.0000000000009999.000000000000	warning		
CA	23	IndWgt	Not in the range specified1.00000000000099999.000000000000	warning		

**BTS; HH**

RecordType	No	Field	Description	ErrorWar	comment	should -9 be allowed?
HH	2	Quarter	Not in the range specified1.0000000000004.000000000000	warning	error	
HH	2	Quarter	Quarter is not consistent with Month	error	REMOVE this check. Rename field 'Survey period'; no check on month-quarter combination	
HH	3	Country	Country is not consistent with Ship (rel)	error		
HH	3	Country	Field value is invalid (Rel)	error		
HH	4	Ship	Ship is not consistent with Gear (rel)	error		
HH	4	Ship	Field value is invalid (Rel)	error		
HH	5	Gear	Gear is not consistent with GearExp	error		
HH	5	Gear	Gear is not consistent with DoorType	error		
HH	5	Gear	Field value is invalid (Rel)	error		
HH	6	SweepLngt	Not used in this format	error		
HH	7	GearExp	Not used in this format	error		
HH	8	DoorType	Not used in this format	error		
HH	10	HaulNo	Not in the range specified1.00000000000999.000000000000	warning		
HH	11	Year	Not in the range specified1900.0000000000002099.000000000000	warning		
HH	12	Month	Not in the range specified1.00000000000012.000000000000	warning	error	
HH	13	Day	Max day in month depend on month and year	error		
HH	13	Day	Not in the range specified1.00000000000031.000000000000	warning	error	
HH	14	TimeShot	Not in the range specified1.0000000000002400.000000000000	warning	error	yes
HH	15	Stratum	Field value is invalid (Rel)	error		
HH	16	HaulDur	Not in the range specified15.00000000000060.000000000000	warning		yes (see also QC)
HH	17	DayNight	Field value is invalid	error		
HH	17	DayNight	Day/night is NOT within the legal range according to NOAA	warning	ICES DC: legal range should also allow civil day/night calculations (Liam to provide)	
HH	18	ShootLat	Not in the range specified48.00000000000062.000000000000	warning		
HH	18	ShootLat	The position is recorded on land	error		
HH	18	ShootLat	There is no statistical rectangle matching the hauling position	error		
HH	19	ShootLong	Not in the range specified-12.00000000000010.000000000000	warning		
HH	20	HaulLat	Not in the range specified48.00000000000062.000000000000	warning		
HH	20	HaulLat	The position is recorded on land	error		
HH	21	HaulLong	Not in the range specified-12.00000000000010.000000000000	warning		
HH	22	StatRec	The Shooting Position is not within the reported Statistical Rectangle	error		
HH	23	Depth	Not in the range specified5.000000000000300.000000000000	warning		
HH	23	Depth	The depth is not within a 50% range of the calculated depth from the ETOPO2 dataset	warning		
HH	24	HaulVal	HaulVal is inconsistent with SpecVal in child record (rel)	error		
HH	24	HaulVal	Field value is invalid (Rel)	error		
HH	26	StdSpecRecCode	Field value is invalid (Rel)	error		
HH	27	BycSpecRecCode	Field value is invalid (Rel)	error		
HH	28	DataType	Field value is invalid	error		
HH	28	DataType	DataType is inconsistent with CatIdentifier in child record	error		
HH	29	Netopening	Not used in this format	error		
HH	30	Rigging	Field value is invalid	error		
HH	31	Tickler	Not in the range specified0.00000000000008.000000000000	warning		yes
HH	32	Distance	Not in the range specified1850.0000000000007500.000000000000	warning		yes
HH	32	Distance	The calculated distance between shooting and haul position is more than 300 m different from the provided distance	warning	change range; 800 meters difference, also problems when -9 is filled in distance	
HH	33	WarpLngt	Not in the range specified30.000000000000400.000000000000	warning		yes
HH	34	WarpDia	Not used in this format	error		
HH	35	WarpDen	Not used in this format	error		
HH	36	DoorSurface	Not used in this format	error		
HH	37	DoorWgt	Not used in this format	error		
HH	38	DoorSpread	Not used in this format	error		
HH	39	WingSpread	Not used in this format	error		
HH	40	Buoyancy	Not used in this format	error		
HH	41	KiteDim	Not used in this format	error		
HH	42	WgtGroundRope	Not used in this format	error		
HH	43	TowDir	Not in the range specified1.000000000000360.000000000000	warning		
HH	44	GroundSpeed	Not in the range specified3.5000000000004.500000000000	warning		
HH	45	SpeedWater	Not in the range specified1.00000000000090.000000000000	warning	Not used in this format	
HH	46	SurCurDir	Not in the range specified0.000000000000360.000000000000	warning	error	yes
HH	47	SurCurSpeed	Not in the range specified0.00000000000010.000000000000	warning		
HH	48	BotCurDir	Not used in this format	error		
HH	49	BotCurSpeed	Not used in this format	error		
HH	50	WindDir	Not in the range specified0.000000000000360.000000000000	warning	error	yes
HH	51	WindSpeed	Not in the range specified0.000000000000100.000000000000	warning		
HH	52	SwellDir	Not in the range specified0.000000000000360.000000000000	warning	error	yes
HH	53	SwellHeight	Not in the range specified0.00000000000005.000000000000	warning		
HH	54	SurTemp	Not in the range specified-1.00000000000030.000000000000	warning		
HH	55	BotTemp	Not in the range specified1.00000000000020.000000000000	warning		
HH	56	SurSal	Not in the range specified10.00000000000038.000000000000	warning		
HH	57	BotSal	Not in the range specified20.00000000000038.000000000000	warning		
HH	58	ThermoCline	Not used in this format	error		
HH	59	ThClineDepth	Not used in this format	error		

**BTS; HL**

RecordType	No	Field	Description	ErrorWar	comment	should -9 be allowed?
HL	12	SpecCodeType	Field value is invalid	error		
HL	13	SpecCode	The TSN code is not found in the species list used for this dataset. Please ask ICES for an update.	error	The WoRMS code is not found in the species list used for this dataset. Please ask ICES for an update.	
HL	13	SpecCode	LngtClass is larger than allowed for the species	warning		
HL	13	SpecCode	Inconsistency between species and LngtCode	error	ICES DC: does not seem to be a valid check as there is no reference available	
HL	13	SpecCode	No TSN code was found for NODC code. No checks will be made on this species.	error	No matching WoRMS code was found. No checks will be made for this species	
HL	13	SpecCode	There is more than one legal TSN code for the used NODC code, please include the correct TSN code	error	REMOVE this check (no TSN and no NODC)	
HL	14	SpecVal	if validity code is 4 then TotalNo > 0	error	If validity code=4 then TotalNo should be larger than 0	
HL	14	SpecVal	if validity code is 9 then TotalNo, CatchWeight, NoMeasured, LengthClassCode, MinLengthClass and HLNoAtLength = -9	error	If validity code is 5 then TotalNo, CatchWeight, NoMeasured, LengthClassCode, MinLengthClass and HLNoAtLength should be -9	
HL	14	SpecVal	if validity code is 4 then LengthClassCode, MinLengthClass and HLNoAtLength = -9	error	If validity code is 4 then LngtCode, LengthClass and HLNoAtLength should be -9	
HL	14	SpecVal	if validity code is 0 then TotalNo, CatchWeight, NoMeasured, LengthCode, MinLengthClass and HLNoAtLength = -9	warning	REMOVE this check, -9 should be allowed for all fields named but might also be different values	
HL	14	SpecVal	Only one record can be given per haul, species, sex, catIdentifier and subfactor with the ValidityCode 4 or 9	error	Only one record can be given per haul, species, sex, catIdentifier and subfactor with the ValidityCode 4 or 5	
HL	14	SpecVal	Field value is invalid (Rel)	error		
HL	14	SpecVal	if validity code is 1 then HLNoAtLngt > 0	error	If validity code=1 then you should supply HLNoAtLngt (no -9 or 0 allowed) for at least one length class	
HL	15	Sex	Field value is invalid (Rel)	error		
HL	16	TotalNo	Not in the range specified1.000000000009999999.000000000000	warning		
HL	17	CatIdentifier	Not in the range specified1.0000000000005.000000000000	warning		
HL	18	NoMeas	Not in the range specified1.000000000009999.000000000000	warning		
HL	19	SubFactor	Not in the range specified1.000000000001000.000000000000	warning		
HL	20	SubWgt	Not in the range specified1.00000000000200000.000000000000	warning		
HL	21	CatCatchWgt	Not in the range specified0.000000000001000000.000000000000	warning	minimum value should be 1	yes
HL	22	LngtCode	Field value is invalid (Rel)	error		
HL	22	LngtCode	A length plus group is found - the LngtCode must therefore be 9	error	REMOVE this check, no plus groups for beam trawl survey	
HL	23	LngtClass	If LengthClassCode = 0 then MinLengthClass must be half cm units	error		
HL	23	LngtClass	If LengthClassCode = 5 then MinLengthClass must be 5 cm units	error	REMOVE length class 5 from allowed values, and remove check	
HL	23	LngtClass	If LengthClassCode = 1 then MinLengthClass must be cm units	error		
HL	23	LngtClass	If LengthClassCode = - then MinLengthClass must be mm units	error	ADD this check	
HL	23	LngtClass	Not in the range specified1.000000000001300.000000000000	warning	Only use this check for LngtCode 1 and 0	
HL	23	LngtClass	Not in the range specified1.00000000000180.000000000000	warning	ADD this check and use this check for LngtCode .	
HL	23	LngtClass	If LengthClassCode = 5 then MinLengthClass must be > 60	error	REMOVE	
HL	23	LngtClass	Within one haul and species; when length code = 9 MinLengthClass must have the same value	error	REMOVE (9 is not allowed anyway in this survey)	
HL	24	HLNoAtLngt	For each species and sex: TotalNo = sum of HLNoAtLength	error		
HL	24	HLNoAtLngt	Not in the range specified0.10000000000999999.000000000000	warning		

**BTS; CA**

RecordType	No	Field	Description	ErrorWar	comment	should -9 be allowed?
CA	13	SpecCode	AgeRings is larger than allowed for the species	warning		
CA	13	SpecCode	LngtClass is larger than allowed for the species	warning		
CA	13	SpecCode	Inconsistency between species and LngtCode	error	WGBEAM: all CA records are by mm?	
CA	13	SpecCode	No TSN code was found for NODC code. No checks will be made on this species.	error	No matching WoRMS code was found. No checks will be made for this species	
CA	13	SpecCode	There is more than one legal TSN code for the used NODC code, please include the correct TSN code	error	REMOVE this check	
CA	14	AreaType	Field value is invalid (Rel)	error		
CA	14	AreaType	Area code is not consistent with area type	error		
CA	16	LngtCode	Field value is invalid (Rel)	error		
CA	16	LngtCode	A length plus group is found - the LngtCode must therefore be 9	error	REMOVE this check	
CA	17	LngtClass	If LengthClassCode = 0 then MinLengthClass must be half cm units	error		
CA	17	LngtClass	If LengthClassCode = 5 then MinLengthClass must be 5 cm units	error	REMOVE length class 5 from allowed values, and remove check	
CA	17	LngtClass	If LengthClassCode = 1 then MinLengthClass must be cm units	error		
CA	17	LngtClass	If LengthClassCode = - then MinLengthClass must be mm units	error	ADD this check	
CA	17	LngtClass	Not in the range specified1.000000000001300.000000000000	warning		
CA	17	LngtClass	If LengthClassCode = 5 then MinLengthClass must be > 60	error	REMOVE this check	
CA	17	LngtClass	Within one haul and species; when length code = 9 MinLengthClass must have the same value	error	REMOVE (9 is not allowed anyway in this survey)	
CA	18	Sex	Field value is invalid (Rel)	error		
CA	19	Maturity	Field value is invalid (Rel)	error		
CA	20	PlusGr	Not used in this format	error		
CA	21	AgeRings	Not in the range specified0.0000000000025.000000000000	warning		
CA	22	CANoAtLngt	Not in the range specified1.00000000000999.000000000000	warning		
CA	23	IndWgt	Not in the range specified1.0000000000025000.000000000000	warning		

## Annex 6: Action list

Nr	Description	Section	Who	When	Status
1	take the measurement unit as provided in LngtCode as the leading unit for the aggregation of length data	3.1.1	ICES Data Centre (Vaishav)	To be decided upon in Data Centre workplan	
2	Supply polygons of aggregation areas other than StatRec	3.1.2	WGBIFS, IBTSWG, WGBEAM	Before May 2013	
3	Implement checking procedure cross-check position and aggregation areas based on GIS	3.1.2	ICES Data Centre (Vaishav, Frank, Anna)	To be decided upon in Data Centre workplan	
4	Implement the standard lay-out for the commenting box for re-submitted data	3.1.3	ICES Data Centre (Vaishav, Frank, Anna)	As soon as possible	
5	Carry out evaluation of commenting box for re-submission of data	3.1.3	DIG, ICES Data Centre	2014	
6	Put link to the submission status webpage on the DATRAS download page, include the link in the disclaimer sent with products, add line in disclaimer recommending that end-users check on the submission status before finalizing their report.	3.1.3	ICES Data Centre (Vaishav, Frank, Anna)	As soon as possible	
7	Provide relevant information to WGBIFS, IBTSWG, WGBEAM for checking DATRAS products	3.1.4	ICES Data Centre (Vaishav)	As soon as possible, and before WGBIFS 2013	
8	Check DATRAS products (data selection, algorithms and results)	3.1.4	Chairs WGBIFS, IBTSWG, WGBEAM	At 2013 meetings. If not all can be achieved, provide work plan to ICES Data Centre (Vaishav)	
9	Review proposal for new field ranges/changes in checks and send final proposal to ICES Data Centre (Vaishav, Frank, Anna)	3.2.1.1	Chairs WGBIFS, IBTSWG, WGBEAM	At 2013 meetings	
10	Review proposal 'one check per survey' and if approved, send confirmation to ICES Data Centre (Vaishav, Frank, Anna)	3.2.1.2	Chairs WGBIFS, IBTSWG	At 2013 meetings	

<b>Nr</b>	<b>Description</b>	<b>Section</b>	<b>Who</b>	<b>When</b>	<b>Status</b>
11	Review proposed new checks on submission and send a final proposal to ICES Data Centre (Vaishav, Frank, Anna)	3.2.1.3	Chairs WGBIFS, IBTSWG, WGBEAM	At 2013 meetings	
12	Supply a list by survey-year-quarter-country containing species and numbers caught to WGBIFS, IBTSWG, WGBEAM	3.2.2.1	ICES Data Centre (Vaishav)	As soon as possible, and before WGBIFS 2013	
13	Check species list for inconsistencies due to shift to WoRMS coding	3.2.2.1	Chairs WGBIFS, IBTSWG, WGBEAM	At 2013 meetings	
14	Supply a list by survey-year-quarter-country containing datatype and subfactor and other relevant values	3.2.2.1	ICES Data Centre (Vaishav)	As soon as possible, and before WGBIFS 2013	
15	Check list from item 14 for inconsistencies	3.2.2.1	Chairs WGBIFS, IBTSWG, WGBEAM	At 2013 meetings	
16	Cross-check on speed, distance, haul duration and shooting/hauling positions based on the HH records downloaded from DATRAS	3.2.2.1	Chairs WGBIFS, IBTSWG, WGBEAM	At 2013 meetings	
17	Provide information on DATRAS webpage how to upload R scripts to the survey groups	4.1.1	ICES Data Centre (Vaishav)	To be decided upon in Data Centre workplan	
18	Investigate the possibility to upload CA records of a length class that does not occur in the HL records.	4.1.2	ICES Data Centre (Vaishav)	To be decided upon in Data Centre workplan	
19	Write proposal for workshop to develop products incorporating more than one survey	4.2.1.1	Ingeborg de Boois, Neil Holdsworth in collaboration with WGEF and WGNEW chairs	June 2014	
20	Check for wingspread	4.2.1.2	Chairs WGBIFS, IBTSWG	At 2013 meetings	
21	Evaluate the current quality of the catcatchwght against the calculated catcatchweight based on the DATRAS data in the current survey, as well as by using published length-weight relationships	4.2.1.3	Chairs WGBIFS, IBTSWG, WGBEAM	At 2013 meeting	
22	Review new product "flat file" and send final proposal to ICES Data Centre (Vaishav)	4.2.1.4	Chairs WGBIFS, IBTSWG, WGBEAM	At 2013 meetings	

<b>Nr</b>	<b>Description</b>	<b>Section</b>	<b>Who</b>	<b>When</b>	<b>Status</b>
23	Compute the estimations for weight at age and provide the data on the DATRAS webpage	4.2.1.5	ICES Data Centre (Vaishav)	To be decided upon in Data Centre workplan	
24	Compute the estimations for weight at age and provide the data on the DATRAS webpage	4.2.1.6	ICES Data Centre (Vaishav)	To be decided upon in Data Centre workplan	
25	Provide examples of product calculation in text files or Excel format	Annex 4a, nr 11	Chairs IBTSWG, WGBEAM, WGBIFS	At 2013 meetings. Stepwise workplan if it cannot be achieved in one meeting.	
26	Investigate the possibilities for different back-up methods	Annex 4a item 18	ICES Data Centre (Vaishav) and DIG (Liam)	To be decided upon in Data Centre workplan	
27	Supply closed species list to ICES Data Centre	Annex 4b item 1	WGBIFS (Rainer)	After 2013 meeting	

## Annex 7: Protocol for new data services (ICES, 2011)

### Input

Outline of steps to be taken when a request for a new data service facility is received

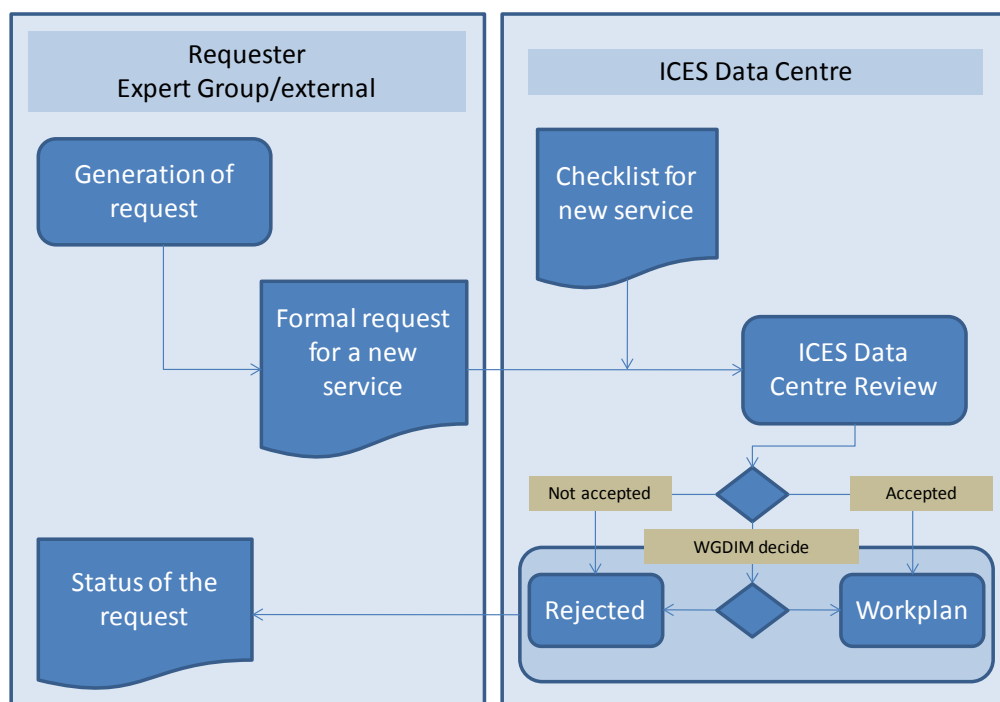


Figure 8.1. Flowchart of the decision-making process of new data storage at ICES.

### Checklist for the request of new data services at ICES Data Centre

The framework used to identify the relevant information were the what, why, when, who, how questions. From this, a checklist for data service requests was developed.

The access to data should always be in line with ICES Data Policy, ICES Data Centre Guidelines.

- 1) Request justification:
  - Relevance / Rationale for the requester
  - Relevance / Rationale for the Expert Groups
  - Strategic importance for ICES
- 2) Request description:
  - (Online) Database (options, more than one possible):
    - Data housing
    - Data checking (if yes, valid variable ranges, mandatory variables should be provided)
    - Automatic uploading facility
    - Output interface (if yes, a description should be provided)
  - Other

- 3) Database definition:
  - Metadata information
  - Basic dataset description
  - Description of existing systems
  - Repository of the originator
  - External linkages (e.g. to vocabularies)
- 4) Database delivery deadline
- 5) Definition of responsibilities:
  - Database maintenance
  - Data update
  - Data quality
  - Data conversion (if relevant)
  - Expert Group's own resources
- 6) Customer definition:
  - Contact person
  - Data owner (options):
    - Personal (individual researchers, students, etc.)
    - Organization
    - Project (like EU projects)
    - ICES working groups or expert groups
  - Data end-use description:
    - Who
    - How
    - What

Prioritizing of requests was not discussed as it is assumed that this is part of the ICES Data Centre's review process.

### **Output**

The subgroup was tasked with discussing how the ICES Data Centre should handle product requests from requesters inside and outside ICES, including the ICES expert groups and ICES advisory groups.

### **Outline of steps to be taken when a request for data output is received.**

- 1) The request should be forwarded to the ICES Data Centre.
- 2) If the product is available through the website or the product could be produced by automated processes on the website the ICES Data Centre gives advice on how this can be extracted.
- 3) If the product isn't available through the website the ICES Data Centre sends a set of predefined questions to the data requester. Predefined questions are outlined below.
- 4) Based on the answers given by the data requester the ICES Data Centre decides **whether** this product can be produced by ICES or if the requester ought to be given information about other places to attain the product.



The predefined questions are a mechanism to prioritize the requests. For equal request priorities, the Head of the ICES Data Centre should be consulted before any decision is made.

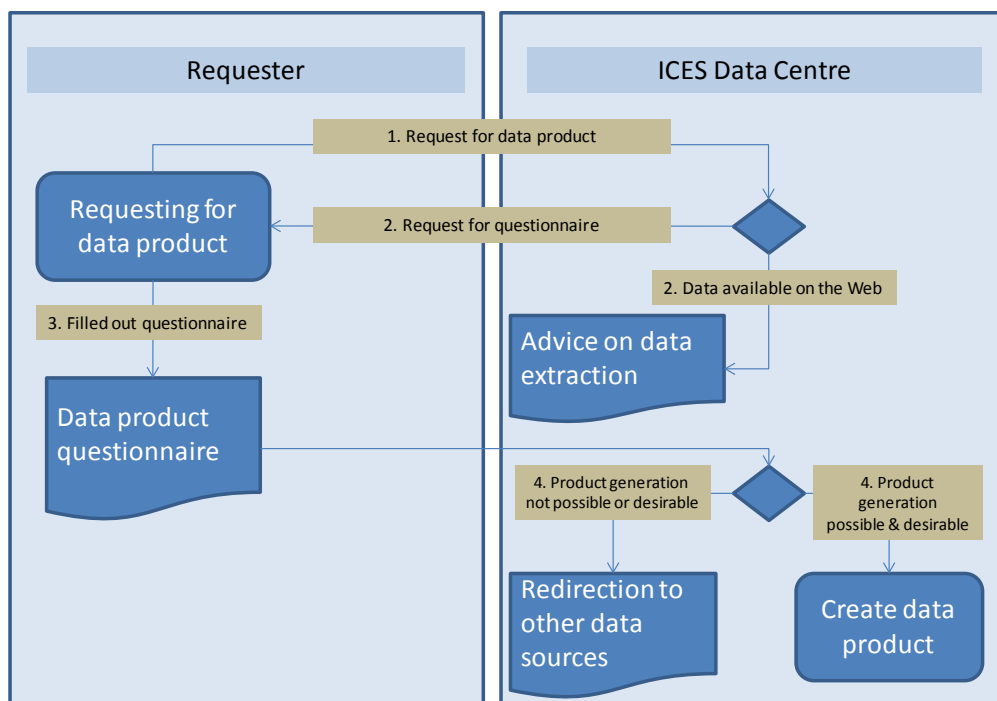


Figure 8.2. Flowchart of the decision-making process of new data output from ICES.

### Checklist for the request of data output from ICES Data Centre

The following checklist to handle product requests is suggested:

- 1) Data selection definition:
  - Parameters
  - Geographical area
  - Period
- 2) Output definition:
  - Product description (options):
    - Raw data
    - Calculated data (e.g. indices)
    - Other output (e.g. maps)
  - Output format required
- 3) Output delivery deadline
- 4) Customer definition:
  - Contact person
  - Type of request (options):
    - Personal request (individual researchers, students, etc.)
    - Organization request
    - Project request (like EU projects)
    - ICES working groups or expert groups request
    - Commercial use request