Data input to the ACCESS-2000© database FIDES (Fish Database of European Streams). The FAME project. 2002-06-04

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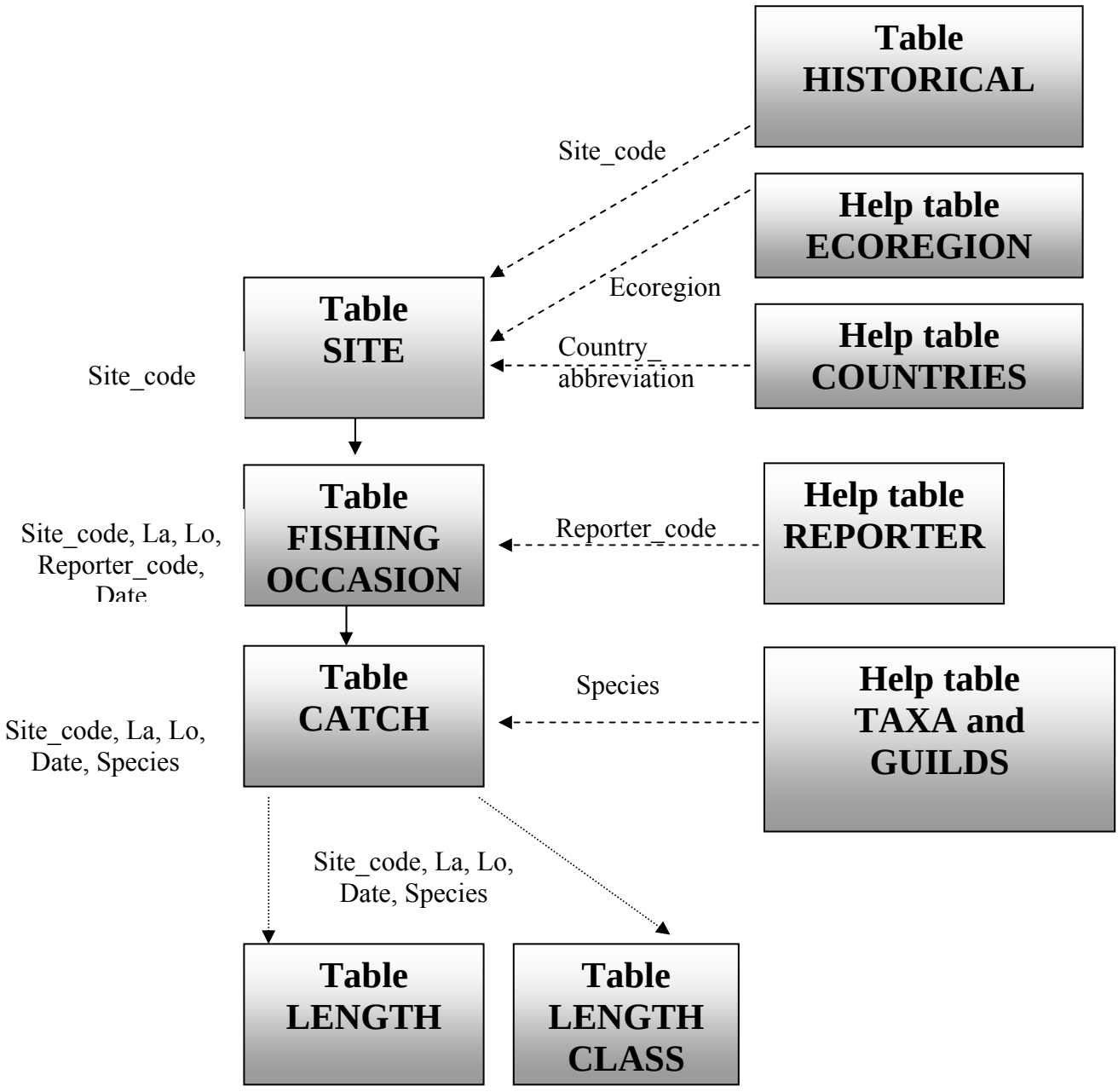

Figure 1. Overview of table structure of the FIDES Access input file.

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Note: variables given in **boldface** are obligatory, whereas variables in *italics* are optional.

Comments to included variables

For each table you will find a description of the variables, definitions and precision required. **Note:** variables given in **boldface** are obligatory, whereas variables in *italics* are optional.

The table **REPORTER** (page 15) holds information about the person who is responsible for the reporting of data from each country. It is not the person who actually fished, it is the person for us to mail if there are questions regarding the data.

Table **SITE** (pages 16-26) refers to the location sampled and the physical characteristics of the site. The information included is such that it does not change within or even between years. The Site_code is unique for each site, as well as Latitude and Longitude are. So the Latitude-Longitude should be redundant data in the other tables. But we are rather safe than sorry and therefore include both the Site_code and Lat-Long in all tables.

There has been some confusion about the coordinates (Lat-Long). Please, check that you understand the format. It is a string (text), not a numerical value. First you give the degrees, then add a decimal point, then the minutes (two digits) directly followed by the seconds (rounded to two digits). Finally, the direction is given as N, E or W (no space in between).

So for a site with a latitude of 54 degrees, 4 minutes and 12 seconds North, the correct input is "54.0412N". Notice the zero (0) ahead of 4.

And for a site with a longitude of 1 degrees, 12 minutes and 6 seconds West, the correct input is "1.1206W". Notice the zero (0) ahead of 6.

For some variables you are supposed to provide the absolute values. It has been stressed as very important for the modelling to provide as many cases as possible with absolute values. If you only have access to classified data we suggest that you use the class mid-point as input. Due to the great importance for modelling, we anticipate that absolute values are available for almost all obligatory data. If some country has to use class midpoints for an obligatory variable, let us know this.

Always try to give the marine confluence area (Main_river_region) for all smaller rivers, i.e. those without English name.

Please, notice that four new variables have been added:

1. Site_name is included as an optional variable for countries where this variable is useful for identifying sites. (This was earlier called Locality_name).
2. Distance_to_mouth_class has been added since this is important for typology, but absolute data was a problem for several countries.
3. Also notice that a new variable River_type has been added. This refers to typology and we do not know at present what the data input is supposed to be. We will have to come back to you about this. Hopefully, the typology can be concluded from the other data that you provide and this variable will not be needed. However, to be sure it is included in this version of FIDES.
4. Other_zonation is the river zonation scheme used nationally (if you have one). This is optional but please provide it if available.

Table **FISHING OCCASION** (pages 27-42) refers to changeable environmental characteristics, the sampling procedure and assessment of the anthropogenic impact. It is understood that each site is sampled only once each day. Should you have several subsamples from a specific site at the same day, you will have to pool the data before adding them to the database.

Notice that five new variables have been added, all these new variables are optional. They are; Day_night (time of sampling during the 24 hours of a day), Conductivity (absolute value), Wattage_used (effect in watt used when fishing), Flora_impact_site (unnatural increase in water vegetation), Weed_cutting_site (if cutting of weeds occur).

To assess anthropogenic impact, 23 variables have been included in the FISHING OCCASION table. The six last variables describing anthropogenic impact are optional, as well as Natural_flow_pattern_site and Natural_flow_quantity_site. The others are obligatory.

One variable was omitted (Water_level) and Maximum_depth_class has been turned into optional due to lack of data in several countries.

Please observe that conductivity is measured in mS/m. This corresponds to μS/cm divided by 10.

The table **HISTORICAL** (page 43) is unaltered from the draft version. In this table all occurrence of species in the past can be recorded. Notice that occurrence of a species can be stated as certain or probable and on different spatial levels (river basin, segment, site) in accordance with the description of reference conditions and impact.

The table **CATCH** (pages 44-46) is used to report the catch in each run, the estimated abundance and the estimated biomass of each species. Note that these data refers to abundance and biomass per hectares. For species of special interest (indicator species) also the catch of 0+ in each run should be given if possible.

Two tables are included for the optional reporting of lengths, **LENGTH** (individual lengths of different species) and **LENGTH CLASS** (number of individuals of each species in each length class). Be sure to clearly state what kind of length data that is provided, i.e. total length or fork length and if the whole catch or a subsample was measured. If length frequencies are reported the length classes (upper and lower limit in mm) must be defined. This will be a laborious work, but we suspect that pre-defined length-classes will not be possible to use due to the variation in data between countries.

Finally, there are some help tables included, most important is **TAXA and GUILDS**. You are not supposed to alter or input data in these help tables. They are there to facilitate data input, almost like a dictionary. The help table TAXA and GUILDS at present just consists of fish species names, pending the finalisation of WP1b.

Scale of variables included in FIDES

There are five levels of scale in FIDES:

Site The sampled site in the stream.

Segment A river segment is defined as:
1 km for small rivers (catchment <100 km^2)
5 km for medium-sized rivers (100-1000 km^2)
10 km for large rivers (>1000 km^2)
A segment for a small river will thus be 500 m up- and 500 m downstream of the sampling site.

Catchment The whole catchment (watershed) upstream of the site.

River basin The river basin up- and downstream of the site.
The river basin stretches down to the sea or a confluence in an equally sized or larger river.
This scale is only used for the variables Land_use_river and Urbanisation_river (in table Fishing occasion).

Whole river basin The river basin up- and downstream of the site. The whole river basin stretches down to the sea.
This scale is only used for the variable Connectivity_river (in table Fishing occasion).

Varible:	Table	Refers to SCALE:
Size_of_catchment	Site	Catchment
Size_of_catchment_class	Site	-"-
Geological_typology	Site	-"-
Geological_formation	Site	-"-
Width_flooded_area	Site	Segment
Gradient_slope	Site	Segment
Huet_zonation	Site	Segment
Other_zonation	Site	Segment
Mean_air_temperature	Site	Site (as close as possible)
Mean_Jan_temperature	Site	Site (as close as possible)
Mean_July_temperature	Site	Site (as close as possible)
Stream_order	Site	Site
Water_source_type	Site	Site (as close as possible, but can be judged from catchment, e.g. glaciers)

Varible:	Table	Refers to SCALE:
Land_use_river	Fishing occasion	River basin
Urbanisation_river	Fishing occasion	River basin
Connectivity_river	Fishing occasion	Whole river basin, i.e. down to confluence with the sea
Land_use_segment	Fishing occasion	Segment of river
Urbanisation_river	Fishing occasion	Segment of river
Riparian_zone_segment	Fishing occasion	Segment of river
Floodplain_lateral…	Fishing occasion	Segment of river
Sediment_load_segment	Fishing occasion	Segment of river
Hydrological_regime_site	Fishing occasion	Site
Natural_flow_pattern_site	Fishing occasion	Site
Natural_flow_quantity_site	Fishing occasion	Site
Upstream_dam_site	Fishing occasion	Site, segment and catchment upstream, distance depending on influence
Morphological_condition_site	Fishing occasion	Site
Salinity_site	Fishing occasion	Site
Toxic_acidification_site	Fishing occasion	Site
Nutrients_organic_input_site	Fishing occasion	Site
Introduction_fish_site	Fishing occasion	Site
Impact_of_stocking_site	Fishing occasion	Site
Exploitation_site	Fishing occasion	Site
Fauna_impact_site	Fishing occasion	Site
Flora_impact_site	Fishing occasion	Site
Weed_cutting_site	Fishing occasion	Site

Instructions

Unfortunately there has been no time to give a live demonstration of the data input procedures. We trust that you have national competence in the matter. If problems occur or if you have questions, please mail us.

Character encoding: First of all, we emphasise that you follow some instructions to enable use of all national characters for FIDES. Many of the TrueType fonts included in Microsoft Office 2000 supports a number of languages with different characters. **Arial Unicode MS** included in the Office package is a complete font containing all of the 40 000 alphabetic characters, ideograph characters and symbols which are defined in the Unicode standard 2.1. The empty FIDES Access database will be prepared using this font. If you did not install the font **Arial Unicode MS** when you installed Microsoft Office 2000 or another Office program, you can **reinstall Office** and choose add/remove functions. Press the plus sign (+) beside Office tools and then on the plus sign beside International support. After that, click the icon at Universal fonts and finally choose the alternative you wish. Reinstall Microsoft Office. To follow this procedure is necessary, as we understand it, for all who are putting in data in the national contributions to FIDES. This is most important for the final FIDES in MS SQL 2000 version to be accessed through Internet later this year.

Possible import methods: This short input manual is not an Access-2000 database manual. We have tried to facilitate for inexperienced users by making a menu which guides you through the data input. For the more advanced users it is also possible to work directly with the tables or to import data from other programs. Additionally we provide you with the opportunity to import data via formatted Excel spreadsheets.

Thus, you have four ways to input the data:
1. Via keyboard using the menu (the form).
2. Via keyboard directly into the data tables.
3. Via keyboard to Excel spread sheets, which are then imported to Access.
4. Directly import files from other applications.

If you are an novice Access user and do not have the data in files already we suggest route 1 above, i.e. keyboard input with the help of the menu, help tables, validity checks and adjusted formats. In this way also all links between tables are established automatically and the risk of input errors are reduced.

If you are a more experienced user and prefer to input data from the keyboard directly into the tables, route 2 is possible, but route 1 is still suggested.

If you choose route 3, the data input into the Excel tables is quite easy, but the import to FIDES is difficult and will have to be performed by a professional database manager.

To import data directly into FIDES, i.e. route 4, will be common among those of you that have the data in digital form already and have a computer wizard at the department.

Definitions

Field	The smallest piece of data in a table.
Record	A collection of all fields occupying a single row of a table.
Table	The "spreadsheet" where the data are stored.
Forms	A method of entering, displaying, and searching data in other than the spreadsheet-like environment of tables and queries (a graphical user interface).
Reports	Summarizes and formats data in the "look" that you want for either table or query data.
Object	Components that make up a database (i.e., tables, forms, queries, reports, macros, & modules).

In FIDES:
The input is made in a form named Site
Subform to the Site form is the form Fishing occasion.
Subform to the Fishing occasion form is the form Catches.
Subforms to Catches are Length and Length class.

The linking of forms and subforms allows you to just put in e.g. Latitude once, but still to have it stored in each table. This way the number of errors are reduced and the tables are directly linked together.

Navigation and essential key combinations

There are numerous ways to maneuver through an Access table. If you want to just look through the table without moving the cursor/highlight, use the scroll bar on the right side of the table. However, if you want to move the highlight as you move down the table, you can use the down arrow <Dn> or the page down <PgDn> keys. The same is true if you are moving up the table - use the up arrow <Up> or the page up <PgUp> keys.

If you want to move the highlight to the very first cell of the table (A1), press <Ctrl-Home>. Conversely, if you want to move the highlight to the very last cell of the table, press <Ctrl-End>. To move the highlight from field to field, use either the <Tab> or <Enter> keys.

To copy a field's value from the previous record to the current record, press <Ctrl-'> [the Ctrl key + the apostrophe key].

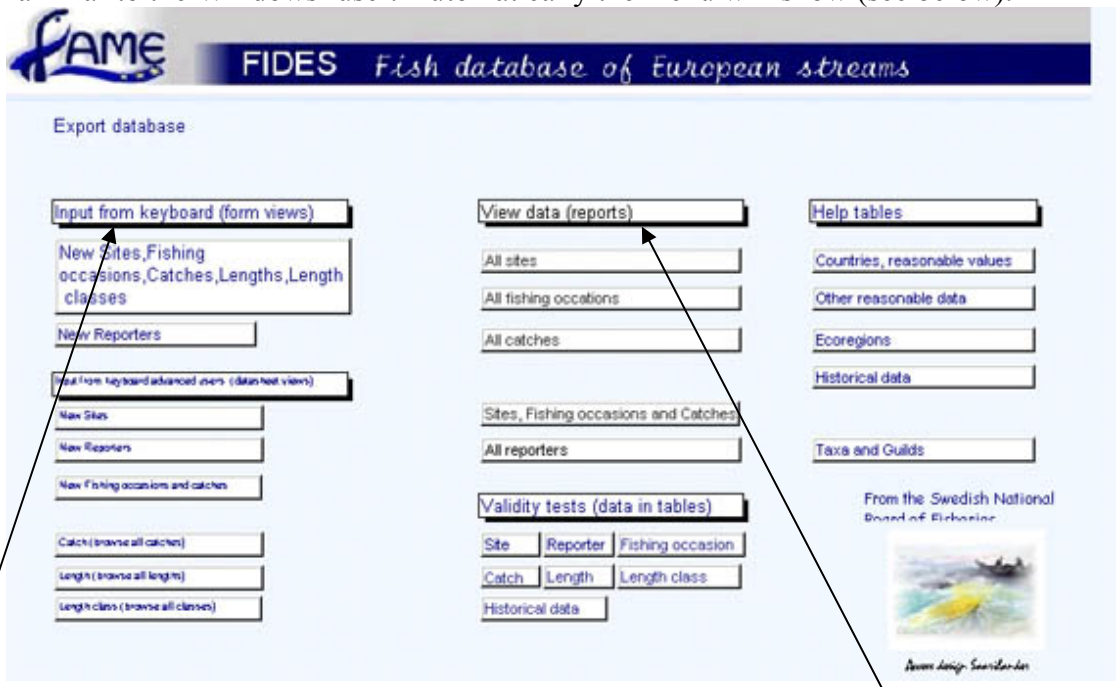
To save instantly, press <Shift-Enter>.

Before you start

Make a copy of the database for training purposes!!
Continue to make back-up copies through out!

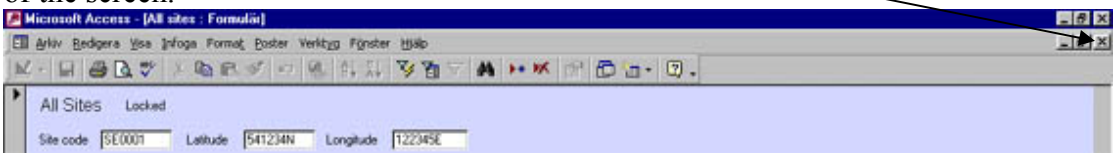
1. Input from keyboard (form view)

Start the program with the file FIDES.mdb. This can be done in many ways, all familiar to the Windows© user. Automatically the menu will show (see below).



This is a form that acts like an interface between you and the tables where data are stored. In the left column are the data input section. Be sure to use the upper left part (input from Keyboard).

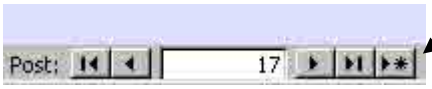
If You want to look at data go to the middle column (upper part) under "View data (reports)". When you push the buttons below each table will be displayed. You can choose between different kinds of views (input view or spreadsheet view). When you are finished looking leave the report by clicking on the lower of the two of the upper x of the screen.



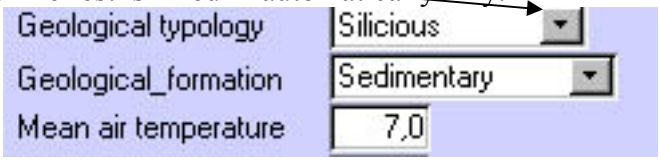
Finally, there is an option to do some validity checking of the data that are in the tables. Try these buttons after the initial data input sessions. You'll find them in the lower part of the middle column.

Adding new data

All the tables that will be displayed are connected. When you open your database for the very first time it will be empty. Now it is easy to just start to add data.
The next time you are putting in data you will see the old data in the input form when you start. To add new data then you must tell the program that new data are coming (New records). The easiest way to do this is to click on the asterisk in the lower part of each screen.



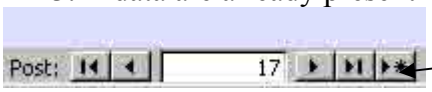
Note that for several variables you will have help list available if you click on the arrow of the right part of the field. In such fields data can also be added by just typing the first letter of the word. The rest is filled in automatically. Try.



Reporter

At the start of the first session begin with adding you as the reporters using the form 'New reporters'.

1. Push the button 'New reporters'
2. If the table is empty (it should be) just start to add data.
3. If data are already present indicate that new data is to be put in by clicking on

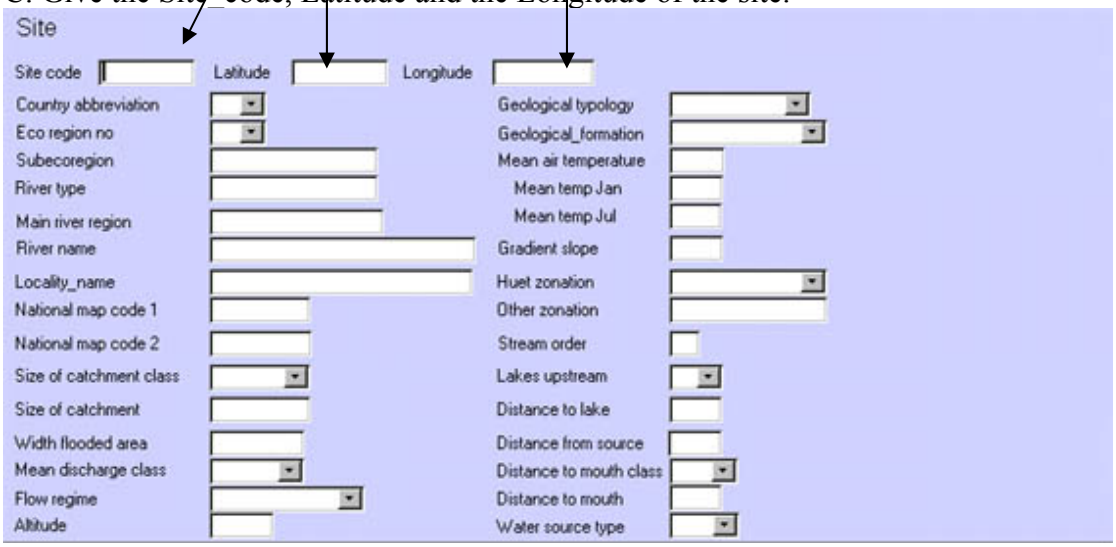


New Sites & Fishing occasions (etc)

A. After you have added yourself as a reporter it is time to open 'New Sites, Fishing occasions, Catches…..' by simply pushing that button.

B. You will start in the upper purple part of the window, i.e with information that will be stored in the Site table. If the table is empty just start to add data. If data are already present (later sessions) indicate that new data are to be put in by clicking on (new record).

C. Give the Site_code, Latitude and the Longitude of the site.

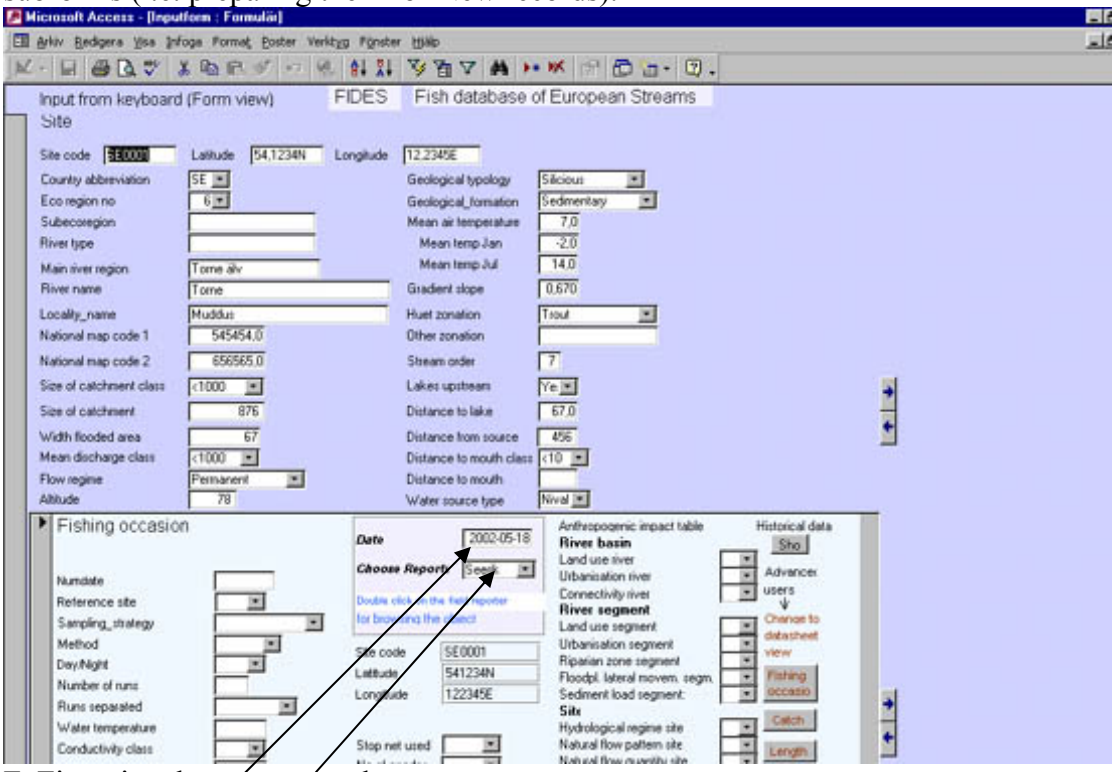


The latter two fields are preformatted. Be sure to be in the very left position before you start to type in data.

D. Continue to add data in all the fields displayed in the site section (upper purple part of the window – See above), from Country abbreviation to Water source type.

E. You are now ready to add data of the Fishing occasion in the mid-section of the window (light blue). If the site has been visited on several occasion it is most convenient to add them all one after another.

If the table is empty is just to add the data. If you have previous data start by clicking on the asterisk (button) indicating "New record". This will also empty subforms (i.e. preparing them for New records).



F. First give the reporter code.

G. Fill in the Date. The format is "YYYY-MM-DD". This is preformatted. Be sure to be in the very left position before you start to type.

H. Now you can fill in the data about the Fishing occasion. Don't be surprised by the fact that you are first obliged to give the date in numerical format (YYYYMMDD). This is just a precaution (see page 27).

Catches

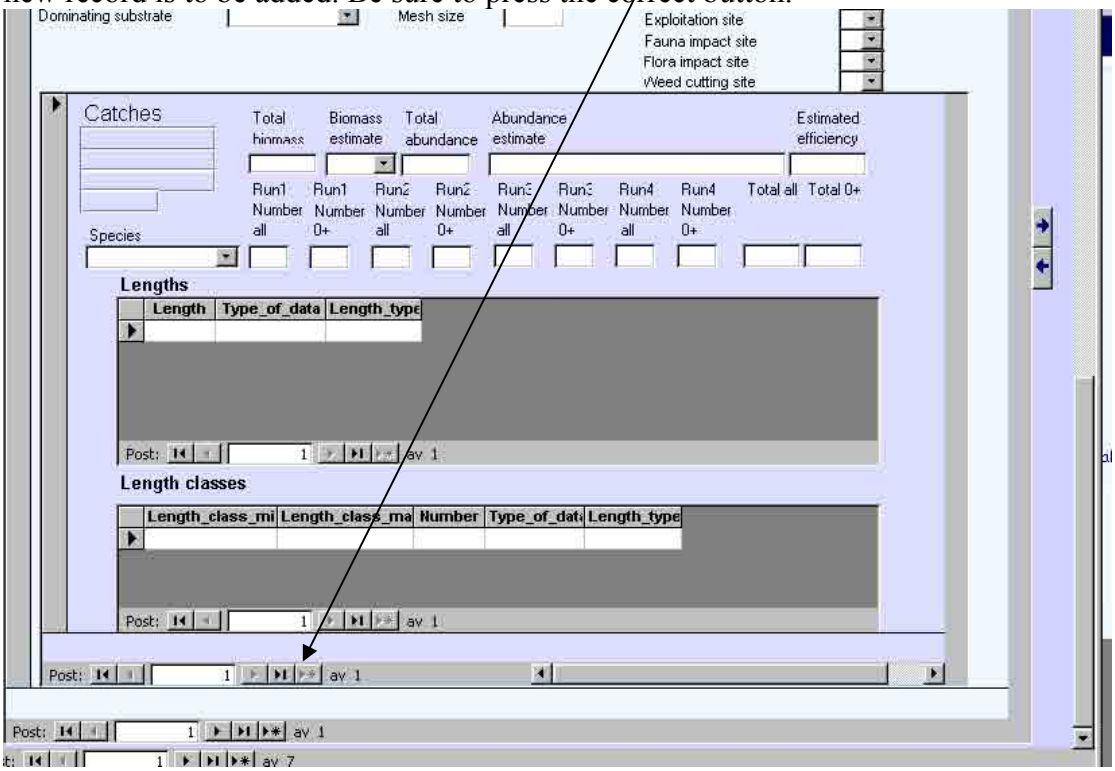
After all data about the fishing occasion has been added (in the light blue region) it is time to put in the catch data for that fishing occasion. Catch is recorded in the lower part (colour light purple) of the input window. As the catch is given species by species you will have to push the asterisk indicating "New record" after the first species is entered.

A. Choose a Species.

B. Now just fill in the data about the catch of that species.

The Id for the Catch (Site_code, Latitude, Longitude, Date and Species) will be transformed automatically to the subforms Length and Length classes.

C. If you have more species caught at that site that day you will have to indicate that a new record is to be added. Be sure to press the correct button.



Length

Adding length data is optional. In the data table one length is stored per record (row). This will produce long tables if you have much data. Be sure to put in the lengths directly when you are adding the species to the catch.

Always give Type of data (All, Subsample, Minmax, Other) and Length type (Total, Fork) before each individual length. It is enough to just write the initial letter in the fields for Type of data and Length type, the rest is filled in automatically. Otherwise you can use Ctrl+' or copy the correct data (whole columns if you want to) or use the help list displayed when you click on the arrow to the right of the input field.

Length class

This table is, although simple, laborious to store data in from the keyboard.

A. You will create a new record Length class by clicking on a line marked with a sign (*) (new record).
B. You fill in all the Lengths classes and number for the species in question.

Check the input!

When you have managed to input the data from the first site and fishing occasion it is important that you leave the input forms and look at the data in the tables- "View data (reports)". This way you can see if things worked out the way they were meant to.

If everything in the tables looks fine you might even try to perform a validity test. Please observe that the validity check just verifies that data has been put in where necessary, that values are reasonable (some fields) and that classes presented are allowed. There are still many possible error-possibilities left!

Deleting a Fishing Occasion

It is not always that data stored are correct. Perhaps you will make some initial mistakes using this programme. That is why there is a way to erase such bad records. If you want to delete a whole fishing occasion:

You will have to delete records in following order:

1. Length and Length class (mark the record/s and Delete)
2. Catches (put the cursor on the field Species, and Delete)
3. Finally the Fishing occasion (Edit, Delete record)

You'll have to close and open the form after a deletion or move to another record and then come back or Refresh the form.

Deleting a Site

You will have to delete records in the following order.

1. Length and Length class (mark the records for the length or/and the Length classes, and Delete).
2. Catches (put the cursor on the Species field, Edit (Topline) and Delete the record).
3. Fishing occasion (put the cursor on any field on the form, Edit, Delete record).
4. Finally the Site (put the cursor on any field on the form, Edit, Delete record).

Note:

1. To repeat the data from a previous field go to the empty field below and type Ctrl + " (or Ctrl + ').
2. You can copy and paste a whole row.

3. Be sure to save a back-up copy of the database after each session. Save the database under a different name. Normally you should have several back-up copies saved. Keep track of what date you saved the copy and how far the data input had advanced.

4. If a problem occurs when recording data using the form Fishing occasion close the form and then open it again. Before you start over check that no erroneous data were stored.

2. Input from keyboard (datasheet views)

(More advanced users)

You will view and edit related records in subdatasheets. When you open a table in datasheet view you will find a + sign at the beginning of the record. If you click on the + sign you will see the records in the subsheet.

To close the table click on the –sign.

Definitions

The Site table is a sheet.

Subsheet to the Site table is the sheetview for the table Fishing Occasion.

Subsheet to Fishing occasion table is the sheetview for the table Catch.

Subsheets to Catch are the sheetviews for the tables Length and Length class.

3. Importing from Excel

(Advanced users)

We assume you have entered your data in the enclosed empty Excel files.

You must then import to FIDES in the following order:

1. Site.xls
2. Reporter.xls
3. Historical_data.xls
4. Fishing_occasion.xls
5. Catch.xls
6. Length.xls
7. Length_classes.xls

Steps to take:
From the main menu choose

1. File
2. Get external data
3. Import
4. Look in the folder where the file is that you will import
5. Choose file of type 'Microsoft Excel (*.xls)
6. Mark the file to import
7. Import
8. Mark "First Row Contains Column Headings"
9. Next
10. In an existing file
11. Choose the file
12. Next
13. Finish
14. You will get the note :'Finished importing file….."
15. OK

If anything goes wrong you will have a note and sometimes you will have an error table in the receiving folder.

Table REPORTER

VARIABLE	EXPLANATION	TYPE, PRECISION	USED FOR	EXAMPLE
Reporter_code	Your own code, always started with the two letters indicating country. E.g. FR001 or FRUdL could both be Université de Lyon in France.	String, 10 positions, always the first two letters capital, the rest as You prefer.	Database QA	SEerik
Responsible_person	Name of person responsible for data supply, and also responsible for QC & QA.	String, 50 positions, First name followed by last name.	Database QA	Erik Degerman
Company_University	If applicable.	String, 50 positions.	QA	National Board of Fisheries
Institute_Agency	Name of Your institute or governmental agency.	String, 50 positions.	QA	Institute of Freshwater Research
Street_POB	Street address or post box number if applicable.	String, 50 positions.	QA	
City	Name of city.	String, 30 positions.	QA	Drottningholm
State_province	If applicable.	String, 30 positions.	QA	
Postal_code	Zip or postal code including country abbreviation	String, 20 positions.	QA	SE 178 93
Country	Name of the country in English	String, 20 positions.	QA	Sweden
Email	Email address of the responsible person.	String, 50 positions.	QA	erik.degerman@ fiskeriverket.se

Table SITE

VARIABLE	EXPLANATION	TYPE, PRECISION	USED FOR	EXAMPLE
Site_code	Country abbreviation + your own code of the site, e.g. GE0001 could be site 1 in Germany. GEBA001 could instead be used and would perhaps mean site number 1 in Bavaria, Germany.	String, 15 positions, first two letters always capital.	Database	GEBA0001
Site_name	Your national name identifying the site. Optional.	String, 30 positions.	Database	
Latitude	Latitude in Degrees.MinutesSeconds. Degrees followed by decimal point and then Minutes and Seconds, two digits each, written after one another as decimals. Note: if more than four decimals (i.e. decimals of Seconds), the number should be rounded to four decimals. Latitude is always followed by N (no space in between). Measure preferably from the downstream beginning of the site.	String, 8 positions	Database	54.3501N
Longitude	Latitude in Degrees.MinutesSeconds. Degrees followed by decimal point and then Minutes and Seconds, two digits each, written after one another as decimals. Note: if more than four decimals (i.e. decimals of Seconds), the number should be rounded to four decimals. Longitude is followed by E or W (no space in between). Measure preferably from the downstream beginning of the site.	String, 8 positions	Database	10.0445E
Country_abbreviation	Country abbreviation, e.g. PL = Poland, PT = Portugal. All available in the menu. Look in help table.	String, 2 positions.	Database, QA	GE

Table SITE

Eco_region_no	Ecoregion according to Illies, from 1 to 25. 1 = Iberian peninsula…25 = Caspic depression. Complete list in Appendix 1.	Numeric, integer, 2 positions, ##	Typology Displaying results	9
Subecoregion	National ecoregions. A free text field for your national codes. Optional.	String, 50 positions, Initial capital letter and then lower-case letters.	Typology	Bayern Tanneregione
River_type	To be completed following WP1a.	String, 50 positions, Initial capital, then lower-case letters.	Typology	
Main_river_region	English name of river system or marine confluence, i.e. marine area where the river ends (meets the sea). It is suggested that river names be used only for rivers basins larger than 25 000 km^2. For smaller basins the marine confluence area should be used as name. Suggested names of marine regions are according to ICES sea area list (see Appendix 2 below). Do not use the numeric code, use the full name.	String, 50 positions, Initial capital letter and then lower-case letters.	Database, Typology, Displaying results	Danube
River_name	National name of the river. For transboundary, small rivers use the name from the country where it confluences, i.e. Semois, Belgium – Semoy – France.	String, 50 positions, Initial capital letter and then lower-case letters.	Matching national data Database	Iller

Table SITE

National_map_code_1	Your national map grid coordinates, first direction (e.g. North-South).	Numeric, decimal point, 13 positions, ######.######	Database, QA	656578.0
National_map_code_2	Your national map grid coordinates, second direction (e.g. East-West).	Numeric, decimal point, 13 positions, ######.######	Database, QA	143567.0
Size_of_catchment_class	Size of the catchment (watershed) upstream of the sampling site. Classes; <10, <100, <1000, <10000, >10000 km^2. (i.e. 0-9, 10-99, 100-999, 1000-9999, 10000-). Obligatory.	String, 6 positions.	Typology	<1000
Size_of_catchment	Absolute size of the catchment upstream of sampling site, given in km^2. Optional, but the goal must be to provide data **for at least 50% of sites**.	Numeric, integer, 7 positions, #######	Model	768
Width_flooded_area	The width of the active floodplain area in metres. Should refer to natural conditions. The area flooded in 50 years intervals should be included. Optional, but important for lowland sections of larger rivers (>10 000 km^2).	Numeric, integer, 5 positions, #####	Model	140
Mean_discharge_ class	Average annual water discharge at site. Could be deduced from maps or from similar or nearby stations. Optional. Classes; <1, <10, <100, <1000, >1000 m^3/s, (i.e. 0-0.9, 1-9.9, 10-99.9, 100-999.9, 1000-).	String, 5 positions.	Typology	<100

Table SITE

Flow_regime	Normal flow pattern for the river. Divided into four classes: Permanent = Never (or extremely rarely) having zero water velocity or low flow. Never drying out. Summer dry = In normal years having extreme summer low flow with no water velocity or even dry conditions. (Mediterranean regime). Winter dry = In normal years having extreme winter low flow with no water velocity or even dry conditions. Episodic = Having extreme low flow with no water velocity (or even dry conditions) at intervals. The timing and length of intervals is unpredictable.	String, 10 positions, Initial capital letter and then lower-case letters.	Typology	Permanent
Altitude	The altitude of the site in metres above average sea level. If the altitude is only available in classes, use class midpoint value.	Numeric, integer, four positions, ####	Model, Typology	345
Geological_typology	According to WFD. Classes: siliceous, calcareous, organic. The definition of organic is still unclear.	String, 15 positions.	Typology	Siliceous
Geological_formation	Additional information on the geology of the catchment upstream of the sampling site. Classes: Igneous, Sedimentary, Metamorphic. See Appendix 3. Optional.	String, 20 positions, Initial capital letter and then lower-case letters.	Typology, Model	Metamorphic

Table SITE

Mean_air_temperature	Yearly average air temperature measured for at least 10 years during the period 1960-2002. Given in degrees Celcius (^{o}C). If the temperature is only available in classes, use class midpoint value.	Numeric, decimal point, five positions, ###.#	Model, Typology	12.3
Mean_Jan_temperature	Average air temperature in January measured for over 10 years during the period 1960-2002. Given in degrees Celcius (^{o}C). If the temperature is only available in classes, use class midpoint value. Optional.	Numeric, decimal point, five positions, ###.#	Model, Typology	-0.1
Mean_Jul_temperature	Average air temperature in July measured for over 10 years during the period 1960-2002. Given in degrees Celcius (^{o}C). If the temperature is only available in classes, use class midpoint value. Optional.	Numeric, decimal point, five positions, ###.#	Model, Typology	18.4
Gradient_slope	Slope of stream bed along stream expressed as per mil (o/oo). Slope is drop of altitude divided by stream segment length. If possible the stream segment should be as close as possible to 1 km for small streams, 5 km for intermediate streams and 10 km for large streams (see definitions in Table Fishing occasion). Preferably the slope is measured from a map (scale 1:50 000 or 1:100 000). If the slope is only available in classes, use class midpoint value.	Numeric, decimal point, 7 positions, ###.###	Model, Typology	6.780

Table SITE

Huet_zonation	River zonation according to Huet (1949), Classification scheme enclosed below. (Appendix 4). Classes: Trout, Grayling, Barbel, Bream. Optional.	String, 10 positions, Initial capital letter and then lower-case letters.	Typology, QA	Trout
Other_zonation	Zonation used within your country. Optional.	String, 50 positions.	Typology Further work	Epi-/Metapotamal
Stream_order	Strahler system of stream classification based on confluent points. Classification from map (scale 1:50 000). Headwater (smallest blue line) = 1, two headwaters joined together = 2 etc. Optional.	Numeric, integer, 1 position.	Typology, QA	4
Lakes_upstream	Are there natural lakes present upstream in the river continuum? Answer Yes or No. Only applicable if the lake affects the site, e.g. by altering thermal regime, flow regime or providing seston. Use national definition of what is a lake. Obligatory.	String, 3 positions, Initial capital letter and then lower-case letters.	Model	Yes
Distance_to_lake	Distance to natural lake upstream affecting site. Given in km. Optional.	Numeric, decimal point, 4 positions, ##.#	Model	1.2

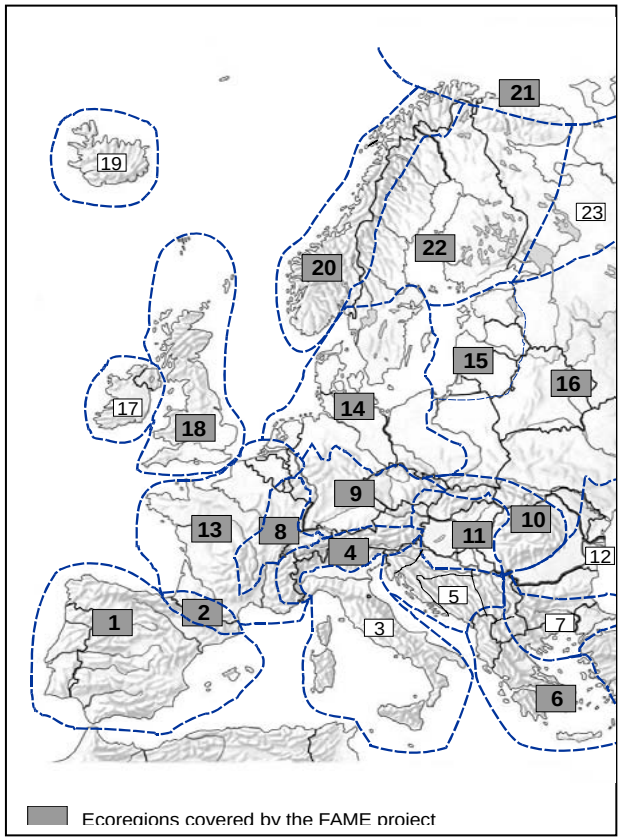
Table SITE

Distance_from_source	Distance (in km) from source (headwater) to the sampling site measured along the river. Measurement shall be made to the furthest away (most distant) upstream source. Obligatory.	Numeric, integer, 5 positions, #####	Model	235
Distance_to_mouth _class	Distance (in km classes) from the sampling site to the sea measured along the river. Classes <10, <50, <100, <500, <1000, >1000 km. Obligatory.	String, 5 positions.	Typology	>1000
Distance_to_mouth	Distance (in km) from the sampling site to the sea measured along the river. Optional.	Numeric, integer, 5 positions, #####	Typology	2345
Water_source_type	The source of the river water should be assigned to one of three classes; glacial, nival, and pluvial. Glacial = >15% glaciated area in the catchment, maximum monthly mean flow during summer. Nival = Yearly flow regime dominated by snowmelt in spring, with spring maximum flow. Pluvial = Yearly flow regime dominated by rainfall, maximum flow often during spring, autumn/winter. Mediterranean areas will fall under pluvial (but often with Flow_regime "summer dry" or "episodic"). If national experts have good reasons for doing so, it is also possible to give combinations Pluvio-nival, Pluvio-glacial, Glacio-nival, Nivo-pluvial etc.	String, 15 positions, Initial capital letter and then lower-case letters.	Typology	Nival

Appendix 1. Ecoregions according to Illies and WFD (Annex XI).

Eco-region according to WFD	*Participating country*
1 Iberian Peninsula	Portugal
2 Pyrenees	France
3 Italy	
4 Alps	Austria, Germany
5 Dinarian Western Balkan	
6 Hellenic Western Balkan	Greece
7 Eastern Balkan	
8 Western Highlands	Germany, France
9 Central Highlands	Germany, Austria, Poland
10 The Carpathians	Poland
11 Hungarian Lowlands	Austria
12 Pontic Province	
13 Western Plains	France, Belgium, The Netherlands

Eco-region according to WFD	*Participating country*
14 Central Plains	The Netherlands, Germany, Sweden, Poland
15 Baltic Province	Lithuania, Poland
16 Eastern Plains	Poland
17 Ireland	
18 Great Britain	United Kingdom
19 Iceland	
20 Borealic Uplands	Sweden
21 Tundra	Sweden
22 Fenno-Scandian Shield	Sweden
23 Taiga	
24 The Caucasus	
25 Caspic Depression	



Appendix 2. Sea areas according to ICES (www.ices.dk/ocean)

Code	Sea area according to ICES (IHB)		Code	Sea area according to ICES (IHB)
1	Baltic Sea		28	Mediterranean Sea
01a	Gulf of Bothnia		28a	Mediterranean Sea, Western Basin
01b	Gulf of Finland		28b	Mediterranean Sea, Eastern Basin
01c	Gulf of Riga		28c	Strait of Gibraltar
2	Kattegat Sound and Belts		28d	Alboran Sea
3	Skagerrak		28e	Balearic Sea (or Iberian Sea)
4	North Sea		28f	Ligurian Sea
5	Greenland Sea		28g	Tyrrhenian Sea
6	Norwegian Sea		28h	Ionian Sea
7	Barents Sea		28i	Adriatic Sea
8	White Sea		28j	Aegean Sea
18	Inland Sea off the West Coast of Scotland		29	Sea of Marmara
19	Irish Sea and the St. George's Channel		30	Black Sea
20	Bristol Channel		31	Sea of Azov
21	English Channel			
21a	Celtic Sea			
22	Bay of Biscay			
23	North Atlantic Ocean			
23a	NE Atlantic Ocean (Limit 40W)			

Appendix 3. Criteria to define geology of catchment bedrock (variable geological_formation).

The bedrock could be characterised from origin (formation processes) and acid/base content.
We could distinguish between three major formation processes:

Igneous — Igneous rocks formed by direct crystallization of minerals from a magma melt. Intrusive (plutonic) rocks crystallize at depth, whereas extrusive (volcanic and pyroclastic rocks) rocks crystallize after the magma reaches the earth's surface. In general, extrusive rocks have a finer grained texture than intrusive rocks.

Sedimentary rocks — Sedimentary rocks are those rocks which form at or near the earth's surface at relatively low temperatures and pressures by either: deposition (by water, wind or ice) or precipitation from solution (may be biologically mediated); and /or growth in position by organic processes (e.g. limestone formed from carbonate reefs).

Metamorphic rocks — Metamorphic rocks form from other rocks by changes in mineralogy and/or texture as a result of a change in chemical and/or physical environment.

Out of the classes required by the WFD, calcareous is found in the sedimentary rocks, whereas siliceous may be present in all the formation processes. Hence, it is necessary to also define the acid/base status or the proportion of SiO_2 in the mineral to decide the classification according to WFD typology.

Igneous_siliceous — A percentage (in weight) of SiO_2 above or equal to 63% would refer to a siliceous (acid) rock. This would include for instance granite, granodiorite, rhyolite and dacite.

Igneous_basic — A percentage (in weight) of SiO_2 less than 63% would refer to a basic rock. This would include for instance gabbro, basalt, komatiite, peridotite, andesite, diorite.

Sedimentary_acid — Siliciclastics (silicicate-rich breccias, sandstones, mudrocks)

Sedimentary_basic — Precipitates and allochems (limestone = Calcareous, dolostones, cherts)

Metamorphic-acid — E.g. gneisses

Metamorphic-basic — E.g. several slates.

But! When the WFD typology is used (obligatory) it is sufficient to just state the formation process of the bedrock. By combining the variables geological_typology and geological_formation a more precise definition of the bedrock is achieved. Hence three classes are suggested;

Igneous, Sedimentary, Metamorphic.

Appendix 4. Criteria to define the river zonation according to Huet 1949.

Stream width (m)	Slope ‰	zone	Slope ‰	zone	Slope ‰	zone	Slope ‰	zone
≥ 100	<0.25	bream	≥ 0.25	barbel	<4.5	grayling	≥4.5	trout
≥60	<0.33	bream	<1.25	barbel	<4.5	grayling	≥4.5	trout
≥30	<0.45	bream	<1.5	barbel	<5	grayling	≥5	trout
≥25	<0.5	bream	<1.75	barbel	<5.5	grayling	≥5.5	trout
≥20	<0.5	bream	<2	barbel	<5.7	grayling	≥5.7	trout
≥15	<0.6	bream	<2	barbel	<6	grayling	≥6	trout
≥10	<0.7	bream	<2.3	barbel	<6.5	grayling	≥6.5	trout
>4.5	<1	bream	<2.7	barbel	<7	grayling	≥7	trout
≤4.5	<1	bream	<3	barbel	≥3	upstream *	≥7	trout

* Includes trout and grayling zone

VARIABLE	EXPLANATION	TYPE, PRECISION	USED FOR	EXAMPLE
Reporter_code	See Table REPORTER			
Site_code	See Table SITE			
Reference_site	On a national basis by FAME partners considered as a reference site at time of sampling. Yes or No. Definite selection of reference sites to be decided later.	String, 3 positions.	Database, Model	No
Latitude	See Table SITE	String, 8 positions.	Database	54.3501N
Longitude	See Table SITE	String, 8 positions.	Database	10.0445E
Date	Date of sampling given as Microsoft date format. Format YYYY-MM-DD.	Date format, 10 positions.	Database	2002-05-14
Numdate	Date of sampling given as a numeric integer. Format YYYYMMDD. For safety until we are sure that date format (previous variable) works.	Numeric, Integer, 8 positions.	Database	20020514
Sampling_strategy	Definition of how the section was sampled. Whole river width or partial, and if partial adopted sampling strategy. Codes: Whole = Whole river width and section. Partial1bank = Partial, one bank Partial2banks = Partial, both banks Partialrandom = Partial, random sites Partialprop = Partial, each habitat type proportionally sampled Other = Unknown or other strategy.	String, 15 positions, Initial capital letter and then numbers or lower-case letters.	Sampling	Whole

Method	Electric fishing by Wading or Boat.	String, 6 pos., Initial capital letter then lower-case letters.	Sampling	Wading
Day_night	Sampling period Day (daylight) or Night (darkness). Optional.	String, 6 pos., Initial capital letter then lower-case letters.	Sampling	Day
Number_of_runs	Number of runs (passages, removals) carried out.	Numeric, integer, 1 position, #	Sampling	3
Runs_separated	Is the catch reported separately for each run or as a total (cumulative) for all runs? Answer Separated or Total. If only one passage has been carried out the answer must be Total.	String, 6 positions, Initial capital letter and then lower-case letters.	Database	Separated
Water_temperature	The temperature of the water (depth 0.2-2 m) at sampling given in degrees Celcius (^{o}C). Optional.	Numeric, decimal point, 5 positions, ###.#	Sampling	19.4

Conductivity_class	Specific conductivity of the water at sampling. Given as **mS/m**. Classes: <10, <50, <500, >500 (i.e. 0-9.9, 10-49.9, 50-499.9, 500-). **Note:** 1 mS/m = 10 µS/cm.	String, 5 positions.	Sampling Typology	<50
Conductivity	Specific conductivity value of the water at sampling. Given as **mS/m**. **Note:** 1 mS/m = 10 µS/cm.	Numeric, decimal point, 4 positions, ####.#	Sampling Typology Model	18.5
Locality_length	Fished length (sampled length) of the stream in metres.	Numeric, decimal point, 6 positions, ####.#	Database	140.0
Locality_width	Estimated fished width of sampled locality given in metres. Could be derived from the previous and the following variable and is therefore Optional.	Numeric, decimal point, 6 positions, ####.#	Sampling	10.0
Fished_area	Area of the section that has been sampled (locality_length * locality_width) given in m^2.	Numeric, integer, 6 positions, ######	Sampling Database	1400
Wetted_width	The wetted width of the stream (representative width of the section) given in metres. Wetted width is normally calculated as the average of several transects across the stream. Wetted_width = Locality_width if the whole stream section was sampled. Could be replaced by average width if only such data are available.	Numeric, decimal point, six positions, ####.#	Sampling Typology Model	10.0

Average_depth	The average depth is given in metres for the **sampled** area. Note that the precision is down to centimetres. Same as average depth of site if whole length and width of site was sampled.	Numeric, decimal point, six positions, ###.##	Sampling	0.56
Maximum_depth_class	The maximum depth in metres is given for the **surveyed river section**, i.e. the deepest spot even if this was not sampled. Note, not the segment. Classes: <1, <2, <5, >5 m. Optional.	String, 3 positions.	Sampling Model	<1
Dominating_substrate	The dominating substrate type at the sampled area of the stream. Classes; Silt, Sand, Gravel, Pebble, Cobble, Boulder, Rock and FineSand, GravelPebble, PebbleCobbble, CobbleRock and BoulderRock. See definitions in Appendix 1. Optional.	String, 20 positions, Initial capital letter and then lower-case letters.	Model Typology Sampling	Sand

Stop_nets_used	State if stop nets (block nets) were used to delimit the sampling site. Codes: Yes = Both up- and downstream Up = Only upstream Down = Only downstream No = No nets used.	String, 4 positions, Initial capital letter and then lower-case letters.	Sampling	No
No_of_anodes	Number of anodes used. One, Two, Three, Four,…., Multiple.	String, 10 positions, Initial capital letter and then lower-case letters.	Sampling	One
Type_of_anode	Ring, Rectangular, Boom, Other.	String, 6 positions, Initial capital letter and then lower-case letters.	Sampling	Ring
Size_of_anode	Obligatory if applicable. For ring (circular) anodes the ring diametre is given in metres. For boom anodes the maximum length of the active anode. Otherwise the maximum length of the anode.	Numeric, decimal point, six positions, (precision centimetres), ###.##	Sampling	0.25
Type_of_current	The type of current used for fish sampling; AC = Alternating current (God forbid!) DC = Dead current (rippled) PDC = Pulsed dead current.	String, 3 positions, all letters capital.	Sampling	PDC
Voltage_used	The voltage used given in Volt. Optional.	Numeric, Integer, 4 positions.	Sampling	400
Wattage_used	The wattage used given in Watt. Optional.	Numeric, Integer, 5 positions.	Sampling	1200

Mesh_size	Mesh size (not stretched net) of the net used for sampling fish given in mm. If possible given as a single digit, e.g. 4 (mm), but interval is also acceptable, e.g. 4-6 (mm). The interval should be given using minimum and maximum mesh size separated by "-", i.e. 4-6.	String, 5 positions, #####	Sampling	4-6
Land_use_river	Impact of agriculture & silviculture on the river basin level, i.e. whole catchment also downstream of segment. Down to confluence with other river or the sea. Classes 1 to 5. See Appendix 2.	Numeric, integer, #	Reference cond. Assessment	2
Urbanisation_river	Impact of urbanisation on river basin level. Down to confluence with other river or the sea. Classes 1 to 5. See Appendix 2.	Numeric, integer, #	Reference cond. Assessment	3
Connectivity_river	Impact of artificial migration barriers within river basin preventing diadromous fish from accessing river segment. Down to confluence with the sea. Classes 1 to 5. See Appendix 2.	Numeric, integer, #	Reference cond. Assessment	4
Land_use_segment	Impact of agriculture & silviculture on the river segment level. Classes 1 to 5. Segments are defined as: 1 km in streams <100 km^2. 5 km in streams 100-1000 km^2. 10 km in streams >1000 km^2. Classes 1 to 5. See Appendix 2.	Numeric, integer, #	Reference cond. Assessment	2
Urbanisation_segment	Impact of urbanisation on river segment level. Classes 1 to 5. See Appendix 2.	Numeric, integer, #	Reference cond. Assessment	2

Riparian_zone_segment	Deviation from natural state of riparian zone of the river segment (vegetation zone adjacent to stream). Classes 1 to 5. See Appendix 2.	Numeric, integer, #	Reference cond. Assessment	3
Floodplain_lateral_ movements_segmen t	Deviation from natural possibilities for movements of biota and water within active floodplain on the segment scale. Classes 1 to 5. See Appendix 2.	Numeric, integer, #	Reference cond. Assessment	5
Sediment_load_segment	Deviation from natural sediment load (both transported in water column and deposited in stream bed) on the segment scale. Classes 1 to 5. See Appendix 2.	Numeric, integer, #	Reference cond. Assessment	1
Hydrological_regime_site	Deviation from natural hydrological state (both flow pattern and quantity) of the investigated site. This variable is obligatory, whereas the next two are optional and would ideally be a more precise description of the present variable. Classes 1 to 5. See Appendix 2.	Numeric, integer, #	Reference cond. Assessment	1
Natural_flow_pattern_si te	Deviation from natural flow pattern of the investigated site. Classes 1 to 5. See Appendix 2. Optional.	Numeric, integer, #	Reference cond. Assessment	1
Natural_flow_quantity_si te	Deviation from natural flow quantity of the investigated site. Classes 1 to 5. See Appendix 2. Optional.	Numeric, integer, #	Reference cond. Assessment	1
Upstream_dam_site	Artificial lenthic water body upstream of the investigated site affecting the site. Classes 1 to 5. See Appendix 2.	Numeric, integer, #	Reference cond. Assessment	1
Morphological_condition _site	Deviation from natural state of stream bed and banks of the investigated site. Classes 1 to 5. See Appendix 2.	Numeric, integer, #	Reference cond. Assessment	3
Salinity_site	Deviation from natural saline state of the investigated site. Classes 1 to 5. See Appendix 2.	Numeric, integer, #	Reference cond. Assessment	1

Toxic_acidification_site	Deviation from natural state of the investigated site. Classes 1 to 5. See Appendix 2.	Numeric, integer, #	Reference cond. Assessment	1
Nutrients_organic_input_site	Deviation from natural state of P, N and TOC of the investigated site. Classes 1 to 5. See Appendix 2.	Numeric, integer, #	Reference cond. Assessment	4
Introduction_of_fish_site	Impact on natural fish populations by species new to the river basin on the investigated site. Classes 1 to 5. See Appendix 2.	Numeric, integer, #	Reference cond. Assessment	2
Impact_of_stocking_site	Impact of stocked fish, i.e. already present within river basin, on natural fish fauna on the investigated site. Classes 1 to 5. See Appendix 2.	Numeric, integer, #	Reference cond. Assessment	2
Exploitation_site	Impact of human exploitation, e.g. fishing, on the investigated site. Classes 1 to 5. See Appendix 2.	Numeric, integer, #	Reference cond. Assessment	4
Fauna_impact_site	Effects on fish fauna on the investigated site from introduced species, invasive species or rapidly increasing species (not fish), e.g. predation, parasitism, competition. Classes 1 to 5. Appendix 2.	Numeric, integer, #	Reference cond. Assessment	1
Flora_impact_site	Unnatural increase in water vegetation including helophytes (reeds) and submerged macrophytes on the investigated site. Classes 1 to 5. Appendix 2.	Numeric, integer, #	Reference cond. Assessment	2
Weed_cutting_site	Cutting of weeds on the investigated site. Classes 1 to 5. Appendix 2.	Numeric, integer, #	Reference cond. Assessment	1

Appendix 1. The lowest common particle denominator, or how to classify substrate FAMEwise.

All measurements are in mm and refer to particle diameter. The suggestion for FAME is in boldface below. Note that apart from the simple classes as "Sand" or "Rock" it is also permitted to use compound classes, e.g. PebbleCobble. Allowed classes are in **boldface** below.

Class	CEN	Baden-Württenberg	Sweden	AQEM	U.S. Colorado	U.S. Indiana
Organic	Text definition	Not defined	Not defined	Not defined	Not defined	Not defined
Clay	Text definition	Not defined	Not defined	Not defined	<0.004	<0.002
Silt	Text definition	Not defined	<0.2		0.004-0.06	0.002-0.02
Sand	<2	<2	0.2-2	<2	0.06-2	0.02-4.8
Gravel	2-16	2-20	2-20	2-20	2-20	4.8-75
Pebble	16-64	20-63	20-100	20-60	20-64	Not defined
Cobble	64-256	63-500	100-200	60-200	64-256	75-300
Boulder	>256	>500	200-2000	200-400	>256	>300
Rock	Continuos		>2000	>400		
	rock					

FAME

Classes		Note:
Fine	<0.2	Or as close as national standard permits
Sand	0.2-2	Or as close as national standard permits
Gravel	2-20	Or as close as national standard permits
Pebble	20-60	Or as close as national standard permits
Cobble	60-200	Or as close as national standard permits
Boulder	>200	Or as close as national standard permits
Rock	Continuos	Or as close as national standard permits
	rock	

Additional classes allowed	
FineSand	<2
GravelPebble	2-60
PebbleCobble	20-200
CobbleRock	>60
BoulderRock	>200

Appendix 2. Suggestion for classification of impact variables.

Impact classes:
5 – bad status: severe impact on fish fauna
4 – poor status: strong impact on fish fauna
3 – moderate status: moderate impact on fish fauna
2 – good status: slight impact on the fish fauna
1 – high status = reference conditions: only minor, negligible alterations

Guidance for classification of impact follows each variable.

River basin The whole river basin, also downstream of the site. All the way down to the confluence in another river or the sea.

1. **Land_use_river** – impact of agriculture/silviculture on the river basin level.
Agriculture:
>40% cultivated land (intensive, crops), severe impact – impact class 5
>40% cultivated land, strong impact – impact class 4
<40% moderate impact – impact class 3
<40% low impact – impact class 2
<10% – impact class 1

Silviculture: must be assessed on a national level. As a suggestion, if more than 30% of the available forested area is used for commercial forestry, the impact class should be 4 or 5. Extent of clear cutting and whether natural tree species composition is altered should also be taken into consideration.
Combined impact of agriculture and silviculture should be assessed with expert judgement.

2. **Urbanisation_river** – impact of urbanisation on the river basin level (down to confluence).
>15% urban land, severe impact – impact class 5
>15% urban land, strong impact – impact class 4
<15% moderate impact – impact class 3
<15% low impact – impact class 2
<1% – impact class 1

3. **Connectivity_river** – migration barriers within the river basin (down to confluence in another river or the sea) preventing access for diadromous species to river segment (segment is defined below).

Definite artificial barrier	– impact class 5
Passage for single species occasionally	– impact class 4
Passage for certain species or certain years	*– impact class 3*
Passage for most species most years	– impact class 2
No barriers or functioning bypass/similar device	– impact class 1

River segment

A river segment is defined as: 1 km for small rivers (catchment <100 km^2)
5 km for medium-sized rivers (100-1000 km^2)
10 km for large rivers (>1000 km^2).

A segment for a small river will thus be 500 m up- and 500 m downstream of the sampling site.

4. **Land_use_segment** – impact of agriculture/silviculture on the river segment level, in this case referring to the catchment upstream.

Agriculture:

>40% cultivated land, (intensive, crops), severe impact	– impact class 5
>40% cultivated land, strong impact	– impact class 4
<40% moderate impact	– impact class 3
<40% low impact	– impact class 2
<10%	– impact class 1

Silviculture: must be assessed on a national level. As a suggestion, if more than 30% of the available forested area is used for commercial forestry, the impact class should be 4 or 5. Extent of clear cutting and whether natural tree species composition is altered should also be taken into consideration. Impact should increase with proximity of forestry activities to the river segment.

Combined impact of agriculture and silviculture should be assessed with expert judgement.

5. **Urbanisation_segment** – impact of urbanisation on the river segment level, in this case referring to catchment upstream.

>15% urban land, severe impact	– impact class 5
>15% urban land, strong impact	– impact class 4
<15% moderate impact	– impact class 3
<15% low impact	– impact class 2
<1%	– impact class 1

6. **Riparian_zone_segment** – deviation from natural state (adjacent vegetation zone, normally 30-50 m on each shore) of the segment.

<25% of shore length (both sides) in natural state	– impact class 5
<50% of shore length (both sides) in natural state	– impact class 4
<75% of shore length (both sides) in natural state	– impact class 3
<90% of shore length (both sides) in natural state	– impact class 2
>90% of shore length (both sides) in natural state	– impact class 1

7. **Connectivity_segment** – migration barriers preventing free migration of potadromous species to segment.

Definite artificial barrier	– impact class 5
Passage for single species occasionally	– impact class 4
Passage for certain species or certain years	– impact class 3
Passage for most species most years	– impact class 2
No barriers or functioning bypass/similar device	– impact class 1

8. **Floodplain_lateral_movements_segment** – deviation from natural floodplain/river-system and possibilities for movements of biota and water to and within floodplain water body types (only for floodplain rivers).

no floodplains	– impact class 5
<10% in natural state, most types missing	– impact class 4
<25% in natural state, some types missing	– impact class 3
>50% in natural state, all types present	– impact class 2
>90% in natural state, all types present	– impact class 1

9. **Sediment_load_segment** – deviations from natural sediment load (increase) in the segment.
Expert judgement.

Site, i.e the investigated section, where the samples are taken, of the stream/river.

10. **Hydrological_regime_site** – deviation from natural state at the site (obligatory).
Expert judgement.
Use highest value of impact from variables 11. **Natural_flow_pattern_site** and 12. **Natural_flow_quantity_site**, if available.

11. **Natural_flow_pattern_site** – deviation from natural flow pattern (optional).
<50% level and strong deviation from natural yearly
variation in flow regime – impact class 5
<50% level and deviation from natural yearly
variation in flow regime – impact class 4
>50% level and near–natural duration of flooding periods – impact class 3
>75% level and near–natural duration of flooding periods – impact class 2
>90% level and natural duration of flooding periods – impact class 1

12. **Natural_flow_quantity_site** – deviation from natural flow quantity (optional).
<10% of mean annual discharge – impact class 5
<15% of mean annual discharge – impact class 4
>15% of mean annual discharge – impact class 3
>30% of mean annual discharge – impact class 2
>90% of mean annual discharge – impact class 1

13. **Upstream_dam_site** –Artificial (man-made) lenthic water body upstream affecting the site with respect to e.g. altered thermal regime, decreased sediment load etc.
Expert judgement.

14. **Morphological_condition_site** – deviation from natural state of river channel and banks, e.g. channelization, at the site.

canal – impact class 5
channelized, most natural habitat types missing – impact class 4
channelized, some natural habitat types missing – impact class 3
most of natural channel form maintained,
all habitat types present – impact class 2
negligible morphological alteration – impact class 1

15. **Salinity_site** – deviation from natural state at the site.

Constant or long periods (months) of strong deviations from normal
salinity range – impact class 5
– impact class 4
Occasional deviations (single measurements) from normal
salinity range – impact class 3
– impact class 2
Salinity range within normal variation – impact class 1

16. **Toxic_acidification_site** – deviations from natural state of toxic conditions including acidification and oxygen levels at the site.

Constant/long periods (months) or frequent reoccurrence of strong deviations from normal
undisturbed conditions (e.g. pH<5.0) – impact class 5
(e.g. pH<5.5) – impact class 4
Occasional deviations (single measurements, episodes) from normal
undisturbed conditions (e.g. single pH <5.5) – impact class 3
(e.g. single pH <6.0) – impact class 2
Conditions within normal variation – impact class 1

Suggestions regarding oxygen levels **applicable for at least grayling and trout zones**:

<2 mg/l O_2 or lowest measured oxygen saturation <70% – impact class 5
2-5 mg/l O_2 or lowest measured oxygen saturation 70-80% – impact class 4
<5 mg/l O_2 or lowest measured oxygen saturation >80%) – impact class 3
<7 mg/l O_2 or lowest measured oxygen saturation 80-90% – impact class 2
>7 mg/l O_2 or lowest measured oxygen saturation >90% – impact class 1

17. **Nutrients_organic_input_site** – deviations from natural state (including humic substances, fish farming etc.) at the site.
Conditions deviate more than 300% of established national background levels
of P, N and TOC concentrations – impact class 5
Occasional deviations more than 300% – impact class 4
Conditions within 150–300% of established national background levels
of P, N and TOC concentrations – impact class 3
Occasional deviations more than 150% – impact class 2
Conditions within 150% of established national background levels
of P, N and TOC concentrations – impact class 1

18. **Introduction_of_fish_site** – impact from species new to river basin at the site. Optional.
Expert judgement (assessment of impact on natural fish fauna).
Self-reproducing populations with high numbers (impact 4 or 5) should be compared to not reproducing species in low numbers (impact = 2 or 3).

19. **Impact_of_stocking_site** – impact of species already present in river basin at the site. Optional.
Expert judgement (assessment of impact on natural fish fauna, genetic effects not considered).

20. **Exploitation_site** – impact of human exploitation, e.g. fishing, at the site. Optional.
Expert judgement (assessment of impact on present fish fauna).

21. **Fauna_impact_site** – Effects on fish fauna at the site from introduced species, invasive species or rapidly increasing species (not fish), e.g. predation, parasitism, competition. Classes 1 to 5. Expert judgement (assessment of impact on present fish fauna). Optional.

22. **Flora_impact_site** –Unnatural increase in water vegetation at the site including helophytes (reeds) and submerged macrophytes. Classes 1 to 5. Expert judgement. Optional.

23. **Weed_cutting_site** – Cutting of weeds at the site. Classes 1 to 5. Expert judgement. Optional.

Performed several times a year	– impact class 5
Performed on average once a year or every second year	– impact class 4
Has been performed within the last five years	– impact class 3
Has been performed more than five years ago	– impact class 2
Never performed	– impact class 1

Table HISTORICAL

VARIABLE	EXPLANATION	TYPE, PRECISION	USED FOR	EXAMPLE
Site_code	See Table SITE.			
Period_start	Starting year of specific period from which data originate.	Numeric, integer, 4 positions, ####	Database Model	1600
Period_end	Ending year of specific period from which data originate.	Numeric, integer, 4 positions, ####	Database Model	1699
Period_string	More specific definition of period. Optional.	String, 25 positions	Database Model	1650's to 1680's
Species	Scientific name of species (see Table TAXA AND GUILDS).	String, 30 positions, first letter of genus name always capital, remaining letters normally in lower-case letters.	Database Model	Salmo salar
Status_scale_class	0 = not found 1 = probably present in river basin 2 = present in river basin 3 = probably present in river segment 4 = present in river segment 5 = probably present at site 6 = present at site	Numeric, integer, 1 position. #	Database Model	5
Abundance_class	Optional. 3 = high abundance 2 = medium abundance 1 = low abundance	Numeric, integer, 1 position. #	Database Model	2

VARIABLE	EXPLANATION	TYPE, PRECISION	USED FOR	EXAMPLE
Site_code	See Table SITE.			
Latitude	See Table SITE.			
Longitude	See Table SITE.			
Date	Date of sampling given as Microsoft date format. Format YYYY-MM-DD.	Date format, 10 positions.	Database	2002-05-14
Species	Scientific name of species (see Table TAXA AND GUILDS).	String, 30 positions, first letter of genus name always capital, remaining letters normally in lower case letters.	Database Model	Atherina boyeri
Run1_number_all	All caught individuals (incl 0+) of the species in run 1.	Numeric, integer, 5 positions, #####.	Database Model Sampling	12
Run1_number_ 0_plus	All caught 0+ of the species in run 1. **Note:** Only used for species of special interest.	Numeric, integer, 5 positions, #####.	Database Model Sampling	5
Run2_number_all	All caught individuals (incl 0+) of the species in run 2.	Numeric, integer, 5 positions, #####.	Database Model Sampling	6
Run2_number_ 0_plus	All caught 0+ of the species in run 2.	Numeric, integer, 5 positions, #####.	Database Model Sampling	1

Run3_number_all	All caught individuals (incl 0+) of the species in run 3.	Numeric, integer, 5 positions, #####.	Database Model, Sampling	3
Run3_number_ 0_plus	All caught 0+ of the species in run 3.	Numeric, integer, 5 positions, #####.	Database Model Sampling	0
Run4_number_all	All caught individuals (incl 0+) of the species in run 4.	Numeric, integer, 5 positions, #####.	Database Model Sampling	
Run4_number_ 0_plus	All caught 0+ of the species in run 4.	Numeric, integer, 5 positions, #####.	Database Model Sampling	
Total_number_all	All caught individuals (incl 0+) of the species in all runs (cumulative total).	Numeric, integer, 5 positions, #####.	Database Model Sampling	21
Total_number_ 0_plus	All caught 0+ of the species in all runs (cumulative total).	Numeric, integer, 5 positions, #####.	Database Model Sampling	6

Total_biomass	Estimated biomass of the species in kg per hectare (=10 000 m^2). It is understood that the biomass is calculated from the estimated abundance. E.g. 3 kg was caught in the sampling of the species and the number of caught individuals was 10. The estimated abundance was calculated to 100 individuals/ha. Then the Total_biomass should be 30 kg/ha.	Numeric, decimal point, 9 positions, #####.###, Note that allowed precision is down to gram.	Database Model	32.450
Biomass estimate	Define if biomass was estimated by weighing or length-weight-conversion. Code: WE or LW. Optional.	String, 2 positions, use only capital letters.	Sampling	WE
Total_abundance	Estimated abundance (no. of individuals) of the species per hectare (=10 000 m^2).	Numeric, integer, 6 positions, ######.	Database Model	1200
Abundance_estimate	Method used for the abundance estimation. When successive removal (multiple runs) has been carried out you should preferably give a short reference (e.g. Zippin 1958, Carle & Strub 1978, Bohlin et al. 1979, Junge & Liboswarsky 1965, Higgins 1985, Gerdeaux 1987, de Lury 1958). When only one passage (one run) was carried out state if just an average p-value (catch efficiency) was used (Average p). All references used should be given in full to the Swedish partner to allow for a help table with this information to be produced. Optional.	String, 50 positions.	Sampling	Zippin 1958
Estimated_efficiency	State the catch efficiency (p-value) calculated (successive removal) or used (one run). Should refer to the proportion of estimated abundance caught at the first passage (p1). Optional.	Numeric, decimal point, 4 positions, #.##	Sampling	0.51

Table LENGTH – TABLE is OPTIONAL (to be used if individual lengths are available)

VARIABLE	EXPLANATION	TYPE, PRECISION	USED FOR	EXAMPLE
Site_code	See Table SITE.	String, 8 positions, first two letters always capital.	Database	LT001
Latitude	See Table SITE.	String, 8 positions.	Database	55.3501N
Longitude	See Table SITE.	String, 8 positions.	Database	24.0445E
Date	Date of sampling given as Microsoft date format. Format YYYY-MM-DD.	Date format, 10 positions.	Database	2002-05-14
Species	Scientific name of species (see Table TAXA AND GUILDS).	String, 30 positions, first letter of genus name always capital, remaining letters normally in lower case letters.	Database Model	Aspius aspius
Type_of_data	Indicate if the whole catch or a subsample was measured. Codes: All, Subsample, Minmax, Other.	String, 10 positions, first letter always capital and the rest in lower case.	Further work	All
Length_type	Total length or Fork length.	String, 5 positions, first letter always capital and the rest in lower case.	Further work	Total
Length	Length of individual in mm.	Numeric, integer, 4 positions.	Further work	345

Table LENGTH CLASS – TABLE is OPTIONAL (to be used if numbers in length classes are available)

VARIABLE	EXPLANATION	TYPE, PRECISION	USED FOR	EXAMPLE
Site_code	See Table SITE.	String, 8 positions, first two letters always capital.	Database	LT001
Latitude	See Table SITE.	String, 8 positions.	Database	55.3501N
Longitude	See Table SITE.	String, 8 positions.	Database	24.0445E
Date	Date of sampling given as Microsoft date format. Format YYYY-MM-DD.	Date format, 10 positions.	Database	2002-05-14
Species	See Table CATCH			
Type_of_data	Indicate if the whole catch or a subsample was measured. Codes: All, Subsample, Minmax, Other.	String, 10 positions, first letter always capital and the rest in lower case.	Further work	All
Length_type	Total length or Fork length.	String, 5 positions, first letter always capital and the rest in lower case.	Further work	Total
Length_class_min	Give length class lower limit in mm.	Numeric, integer, 4 positions.	Further work	50
Length_class_max	Give length class upper limit in mm.	Numeric, integer, 4 positions.	Further work	99
Number	Number of individuals in this length class.	Numeric, integer, 4 positions.	Further work	2