Fisheries Dynamics of Modified Floodplains in Southern Asia

Database User Manual

Project R.5953

Fisheries Management Science Programme
managed by MRAG under the ODA
Renewable Natural Resources Research Strategy

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Table of Contents

Introduction

This document provides a simple user guide to the 'XMFDB' database written for the ODA FMSP project R.5953 'Fisheries Dynamics of Modified Floodplains in S. Asia'.

The database is primarily intended for the entry and storage of the key scientific data collected at the Indonesian and Bangladeshi field sites, including:

catch and effort data,
fish length frequency data,
mark and recapture (tagging) data,
biological data,
and hydrological data.

Sampling objectives and data collection methodologies for the above data have previously been reported in the Survey Methodologies project document (November 1994).

The data are entered and stored in separate database 'tables', with different tables for each data-entry form. A single record comprises one 'row' in a table, while the 'columns' contain the various data included in that record.

The XMFDB database includes a menu-driven 'application' which provides the following basic facilities for managing the data and extracting information:

entering and editing the data,
printing reports on the data entered,
exporting the data for analysis,
transferring the data to the project headquarters in London,
and making backup copies of the database.

This manual provides a guide to the facilities included in this application. When used with the RBase software (outside the application), the database provides powerful facilities for examining, displaying and selecting data for further analysis.

Overview of the XMFDB Database

Installing the Database

To Install the XMFDB database, first insert the RBase RunTime disk 1 into the A: drive, type A:\INSTALL *Enter*[1], and follow the on-screen instructions. The restricted-use RBase software will be loaded on to the C: hard disk drive (select the default directory name of C:\RTIME).

Secondly, place the XMFDB database disk for the appropriate field site into the A: drive and again type A:\INSTALL *Enter*. The XMFDB database and associated files will be copied to directory C:\RTIME\XMFDB.

Starting the database

To start the XMFDB database the user should type the following at the DOS prompt;

C:\XMFDB *Enter*

This command will run the RBase RunTime software, load up the XMFDB database and start the menu-driven application automatically.

Note that the database can NOT be run within the Microsoft WINDOWs environment.

Menu System

The database begins by displaying the 'level-1' menu of nine available options.

Options may be selected by typing the appropriate number, or by using the arrow keys followed by the *Enter* key. The menu then changes to the higher 'level-2' menu with specific choices relevant to each topic. Further choices are available for one option in a 'level-3' menu.The full menu tree layout of the various options is given in figure 1.

To return to the lower level menus (eg to go from level-2 back to level-1), the user should press the *Esc* key.

Data Entry and Forms

The sample data recorded on paper forms 'CE2', 'CE3' etc (see Survey Methodologies Document) should be entered into the database via on-screen forms accessed by the Add...Data menu options. Most of the data entry forms have a standard format, with a menu bar at the top of the screen, a data section in the middle, and a status line at the bottom (see figures 2 to 9). To access the menu bar options press the *Alt* key or use the mouse; short-cut 'function' keys (eg *F9, F10*) are also available for some options. The data sections contain column descriptions next to blank spaces or 'fields' into which the data are entered. The status line gives the names of the form, the table and the column (field) in which the cursor is currently positioned.

Adding New Data

New data should be added to the database by selecting one of the Add...Data menu options. When all the data are entered into the appropriate fields, the row should be saved into the database by pressing *F10*, or by selecting Add Row from the Edit Menu in the top left hand corner

[1] Italic characters refer to single keys on the keypad

of the screen. The completed row will be saved and the spaces will be cleared ready for a new row to be entered. Some of the spaces (eg the date) are not erased, and can be accepted for the next row of data or typed over with a different value if necessary. The Duplicate Row menu option (*Alt*-D) may also be used to enter a new row which requires only a few changes from the last row.

When data entry is finished, exiting from the Add/Edit...Data options gives an RBase message 'Do you want to save your changes?' This question applies only to the last row of data currently on the screen, all previous rows are saved as they are entered. Entering 'N' drops the last (empty) row, but keeps the previously entered ones.

Data Entry Rules

The XMFDB database contains internal 'rules' to prevent the entry of impossible, or unlikely data values. When such data are entered, the database gives a message requesting the data to be corrected or changed. The rules for each column in each table are listed in Table 1.

Editing Data

Previously entered data may be edited or viewed by selecting one of the Edit...Data menu options. New data may be added using these options, as in the Add...Data forms, but the Duplicate Row facility is not available in Edit...Data.

The up and down arrow keys move the cursor between the different data fields on the screen. The left and right arrow keys move been characters in a field. The Next Row and Previous Row (or *F7* and *F8*) menu options move between different rows of data in the table. For editing, the data are usually displayed sorted by date, in reverse order.

To assist data editing in the CE2, CE3, LF and Biology forms, each separate row of data is automatically given a unique identifier by the database. The identifier is displayed in the top right corner of the form screens.

Deleting Data

If necessary, incorrect rows can be deleted from the database by selecting the Delete Row menu option or by pressing *F9*, in either the Add...Data or the Edit...Data forms. A warning message will request confirmation: pressing 'Y' deletes the row.

Popup Menus

The word <POPUP> next to a data field on a form indicates that a menu of choices is available for that field. A Popup Menu may be called by pressing the *Shift* and *F3* keys together, and an item then selected by using the arrow and *Enter* keys. These menus are commonly used for fields requiring coded entries, eg CS for the snakehead, *Channa striatus* (see section 2.4.5 of the Survey Methodologies Document for further details on codes). When the correct code is known, it can alternatively be entered directly without using the popup menu. Database rules (see later) prevent the entry of any incorrect codes.

Double-Table Forms

Three of the data entry forms have a 'tiered' system of data entry: for 'CE3' catch species composition data, length frequency data, and biological data. These forms contain two separate regions for different types of data from a single sample. The upper region receives a single row of data, with the date and location etc of the sample. The lower region contains one or more rows of data associated with the same header row, eg for the percentages of the different fish species in a CE3 sample. The cursor may be moved between the two regions by clicking the right mouse button inside the region; by selecting Next Section or Previous Section from the Goto menu; or by pressing Shift-*F7* or Shift-*F8*. When data have been entered into both regions of the form, the cursor should be returned to the upper region before adding the row.

On exiting from one of the double-table forms, the database checks that the data have been correctly entered into both regions. A message is displayed: 'Computing checking variables... please wait'. When errors are detected (eg for a length frequency header row with no

accompanying data rows), a message announces the number of incorrect rows, and displays each row for correction using the form.

Other Database Facilities

In addition to data entry and editing, the XMFDB database has menu options for printing reports on collected information; for exporting selected data, eg to the printer or a file; for downloading data to a floppy disk for transferring to London; and for checking the database and making backup copies. These features are described in the following 'Step by step guide to the XMFAPPL application'.

'WHERE' Clauses in Commands

The Edit...Data and Data Export menu options display a message 'Enter WHERE clause' to allow the user to specify which data rows should be edited or exported. Rows are selected where they meet all the criteria given in the WHERE clause. Simple WHERE clauses could select all the data for the years before 1996, or for the species *C. striatus* using:

```
        YEAR<96
or      SPECCODE='CS'
```

For these WHERE clauses, one of the table columns (see table 1) is compared to a specific value. Note that values for text columns such as the species codes must be enclosed in quotation marks, such as 'CS'. More complicated WHERE clauses can be built up using AND, OR and NOT operators or other more complicated 'SQL' commands (see database manuals). For example, all the data *except* the 1995 CS and MN data could be selected by typing in the WHERE clause:

```
NOT (YEAR=95 AND (SPECCODE='CS' OR SPECCODE='MN'))
```

If no WHERE clause is entered (by instead pressing *Enter* or *Esc*), all data will be selected.

Displaying and Printing Reports

The Data Reporting and Export options can display data either on the screen, or the printer, or send it to a file for later printing or saving. At the appropriate point, a menu box requests the user to choose one or more of these three destinations. Destinations should be selected using the arrow and *Enter* keys. The *F2* key should be pressed when the correct choice has been made.

When the 'Create text file' option is selected, a further box requests a file name to be entered. If the file already exists, the contents of the file will be replaced by the new data.

Routine Use of the Database

For routine data entry and reporting, the different features of the database should be used in the following order and frequency:

1. *At the start of each data-entry session*, any new codes for locations, species, gear types or food types should be entered into the Reference Tables with full descriptions. Such codes will not be accepted in the main data tables until they have been entered into the Reference Tables. This ensures that all codes are correctly entered, and fully described in the database.

2. Any new data should then be entered into the main tables using the Add...Data menu options. Previously entered data may be viewed or corrected using the Edit...Data options.

3. *At the end of each data-entry session*, say at the end of a day, the database should be backed up on to a floppy disk. Backup discs should be stored safely away from the machine location. At least two backups should be kept with the oldest copy being overwritten by the latest version.

After making a backup, the database should be checked using the Database Self-Check option. If errors are detected, the database should be reloaded from an earlier un-corrupted backup, and the new data re-entered.

4. *At the end of each half-month sampling period*, after all the data have been entered, the Data Collection Report should be printed. The report should be checked to ensure that the correct numbers of rows have been entered into the database for the period.

5. *At the end of each month*, the two half-month Data Collection Reports should be faxed to London for central monitoring of data collection.

6. *At the end of each quarter*, when all the data have been entered and checked, and the database has been Self-Checked, the Data Transfer to London menu option should be run. The floppy disk with the downloaded data should finally be posted to London, with photocopies of the hand-written data sheets for the quarter.

XMFDB Database Files

The XMFDB database is contained in three RBase files XMFDB.RB1, 2 and 3. These files are updated by RBase each time the database is opened and new data are entered or viewed.

The RBase menu system for the database is written in a file named XMFAPPL.APP. Some of the menu options are produced by programmes in separate command files called by XMFAPPL when selected. The various files included on the XMFDB installation disk are described briefly in table 2. The XMFAPPL and *.COM files should not be modified or deleted by the user.

Menu Option (1) Catch and Effort Data

This menu option provides access to the on-screen forms for adding and editing CE2 Catch & Effort Respondent (CER) data and CE3 Species Composition data. The on-screen forms for adding these data are illustrated in figures 2 and 3.

As with all the forms, the Add...Data option should be used to enter new data. The Edit...Data forms should be used to edit existing data. Rows can be added or deleted with either form, but the Duplicate Row option is only available for the Add...Data option, and only after at least one new row has been fully entered.

Both the CE2 and CE3 forms have unique identifiers for each row of data, to assist editing. These are created automatically by the database, and displayed as numbers in the top right corner of the screen. They can not be modified by the user.

Entries for the year in all the date fields should be entered as two-digit figures, eg as 95, not 1995. Rules prevent the entry of any invalid, or unlikely values (see table 1) for this and other data fields.

The CE3 form is a double-table form in which one row with the date and location etc of the sample should be entered into the CE3HEADER table in the upper region, followed by one *or more* rows of species percentages into the CE3DATA table in the lower region. The cursor moves automatically into the lower region after all the data have been entered into the upper region. The mouse, Alt-menu and Shift-F7/Shift-F8 keys can also be used to move between regions. The cursor should be moved back to the upper region before the fully entered data are saved (eg by pressing F10). Saving the data clears the data fields (except for those with default values), ready for a new sample to be entered. When data entry is finished, the form may be closed by pressing *Esc*. A data checking routine prompts the user to correct any rows with invalid entries.

Menu Option (2) Length Frequency Data

This menu option provides access to the on-screen forms for adding and editing Length Frequency (LF) data. Like the CE3 form, the LF form has a double-table structure, with the lengths and frequencies being entered into the LFDATA table in the lower region. The above comments on the CE3 double-table form also apply to this form. The form is illustrated as figure 4.

Menu Option (3) Biological Data

This menu option allows entry and editing of Biological data. The on-screen Biological form (figure 5) also has a double-table structure with the header information for table BIODATA_B taking up most of the screen. One or more rows of data on stomach contents (percentages of each food type) should be entered into the BIOFOOD table in the small lower region.

Menu Option (4) Mark and Recapture Data

This menu option provides access to the on-screen forms for adding and editing tagging data in the MR1 mark release form (figure 6), and the MR2 mark recapture form (figure 7). Similar data are entered into both forms, with the recapture form also containing information on the names and addresses of those fishermen returning tags.

Menu Option (5) Hydrological Data

This menu option provides access to the on-screen forms for adding and editing daily and weekly hydrological data (figures 8 and 9). Daily hydrological data (water heights) are entered as single rows on a multi-row screen. For the more complicated weekly hydrological data, each weekly record is displayed separately. The records in both forms can still be scrolled through by using the *F7* and *F8* keys.

Menu Option (6) Standard Reports and Data Export

This menu option enables information in the database to be displayed either as standard reports or basic data tables. Standard reports are available for data collection activities, coding systems, and tag releases. Data can be exported from either a single table, or a 'view' of each pair of double-tables holding the CE3, LF and Biological data. Both reports and data can be sent to the screen, the printer, or a file.

The level-2 menu for this option has seven choices, described in the following sections.

Menu Option (6.1) Print Species List

This option prints a reference list of all the fish species entered into the database reference table SPECIES, via menu option 8.1.1 (see later). The report gives the common, local and scientific names of each fish in addition to the species codes (see example in table 3). Species codes will not be accepted by the main database tables until they have been entered into the reference list. This approach ensures that only one correct code is consistently used in the database for each type of coded data.

Menu Option (6.2) Print Locations List

This option prints a reference list of all the locations entered into the database reference table LOCATIONS, via menu option 8.1.2 (see later). The report shows the codes allocated for each location, sorted into individual waterbodies (see example in table 4).

Menu Option (6.3) Data Collection Summary

This option prints a report on the sample sizes of data collected in a selected half-month sampling period (see example in table 5).

Menu Option (6.4) Length Frequency Summary

This option prints a cross-tabulation of number of LF counts in the database for each fish species. A WHERE clause can be used to select certain species or time periods etc. An example of the length frequency summary is given in table 6.

Menu Option (6.5) Mark Release Summary

This option prints a report on the release details for all the fish tagged during a selected month, sorted by tag type and tag number. The release details include the tag number, date, species and location (see example in table 7). The monthly reports will build into a full list of all the tags released to date, with which recapture details can be quickly compared.

Menu Option (6.6) Export Data - Tables

This option enables data to be sent from the database to the screen, to the printer or a file. A menu system is used to select the appropriate tables and columns of data (see lists of data columns in table 1), and a WHERE clause may be used to restrict the data to selected rows.

Menu Option (6.7) Export Data - Views

This option enables data to be sent from the database as in option 6.6, but from a combined 'view' of data from each pair of associated double-tables. The menu system provides access to the FULLCE3, FULLLF and FULLBIO views for the CE3, LF and Biological data double-tables (see table 1).

Menu Option (7) Data Transfer to London

This option copies data from the database on to a floppy disk for transfer to the central London office. The level-2 menu has three choices, as described in the following sections.

Menu Option (7.1) Data Transfer to London

This option selects all the data input (1) since the database was first used or (2) since the last data transfer, and downloads it to a blank floppy disk for transfer to London. The process is automatic, with screen messages requesting actions and confirming the result.

Menu Option (7.2) Repeat Previous Transfer

This option enables a previously transferred batch of data to be copied to floppy disk again. This facility enables a second copy of the data to be sent to London when the original copy is either lost in the post or corrupted on the way.

To select the correct data, the database displays a menu of dates on which previous data transfers were made. The required date should be selected by using the arrow and *Enter* keys. The *F2* key starts downloading the selected data to disk.

Menu Option (7.3) Exit Without Transfer

This option allows the user to return to the main menu without making a transfer. This is the same as pressing the *Esc* key.

Menu Option (8) Database Maintenance

This option allows the data code reference tables to be updated, and the database to be checked and backed up to a floppy disk. There are four level-2 menu options, as described in the following sections.

Menu Option (8.1) Edit Reference Tables

This option provides access, via a level-3 menu, to the on-screen forms for adding and editing the reference tables for the coded data on (1) species, (2) locations, (3) markets, (4) samplers, (5) gear types and (6) food types. Each of the options has their own simple data entry and editing form, which all use the standard menus and function keys. New codes for these data types must be entered into the reference tables before they can be used in the main data forms.

Menu Option (8.2) Database Self-Check Routine

This option should be used at the end of every data entry session to check if the database has been corrupted in any way. If any problems are detected, a message appears on the screen: 'AUTOCHK has found errors in the database!'. If this occurs, the Reload option (see below) must be used to return to an older but uncorrupted backup version of the database. The data entered since the date of the backup must then be re-entered and re-checked.

Menu Option (8.3) Backup Database

This option makes a backup of the whole database on to a floppy disc. Backup copies should be made at the end of each data-entry session, say at the end of the day. Backup discs should be

stored safely away from the machine location. At least two backups should be kept with the oldest copy being overwritten by the latest version.

Menu Option (8.4) Reload Old Backup

This option should only be used when an error has been found by the above Self-Check Routine. The floppy disc holding the backup database should be inserted into the A: drive when prompted with a screen message. The database will return to its state at the time of the backup, and all the data entered since the backup will have to be re-entered.

Menu Option (9) Exit Database

Selecting this option closes the database, and returns the computer to the MS-DOS prompt. All entered and edited data are saved automatically.

Tables

Table 1. List of tables, columns and rules in the XMFDB database[2]

Table Name, Data Content

	Column	Data type[3], max. chars.	Default value	Rules (allowed values, ranges, conditions)
CE2 Table, Catch-Effort respondent (CER) data				
	CE2ID#	int, auto		
	YEAR	int		94 to 97
	MONTH	int		1 to 12
	HALFMONTH	int		1 or 2
	SITE	text, 1	I / B	
	MARKET	text, 4		
	CER_CODE	text, 6		Must be entered
	SAMPLER_CODE	text, 4		
	INTERVIEW_DATE	date		Must be entered
	RECALL	int		-7 to +15
	CER_HOURS	real		0 to 168
	GEARTYPE	text, 2		If entered, must already exist in GEARS table
	GEARSIZE	text, 40		
	GEARMESH	int		
	GEARUNITS	int		
	SOAKHOURS	real		
	MENINTEAM	int		
	LOCACODE	text, 8		If entered, must already exist in LOCATIONS table
	CE2CATCH	real		≥0, must be entered
	CE2COMMENT	note		
	TRANLOND	text, 1	0	
	TRANDATE	date		
CE3HEADER Table, CE3 Catch species composition data, sample details (single row per sample)				
*	CE3ID#	int, auto		
*	SITE	text, 1	I / B	
*	CE3DATE	date		Must be entered
*	SAMPLER_CODE	text, 4		
*	MARKET	text, 4		
*	GEARTYPE	text, 2		Must be entered; must already exist in GEARS table
*	LOCACODE	text, 8		If entered, must already exist in LOCATIONS table
	CE3HTRANLOND	text, 1	0	
	CE3HTRANDATE	date		
	SUMSPECIES	computed		Sum of CE3DATA SPECPERCENTAGE rows (should = 100)
CE3DATA Table, CE3 Species composition data, percentages of species (multiple rows per sample)				
*	CE3ID#	int		
*	SITE	text, 1	I / B	
*	SPECCODE	text, 2		Must be entered; must already exist in SPECIES table

[2] NB: For further information on data collected, refer to the Survey Methodologies Document

[3] Data types: int = integer, auto = autonumbered

*	SPECPERCENTAGE	real		
	CE3DTRANLOND	text, 1	0	
	CE3DTRANDATE	date		

NB: View **FULLCE3** includes above columns marked * from **CE3HEADER** and **CE3DATA**

LFHEADER Table, Length Frequency data, sample details (single row per sample)

*	LFID	int, auto		
*	SITE	text, 1	I / B	
*	LFDATE	date		Must be entered
*	SAMPLELOCATION	text, 8		
*	SAMPLER_CODE	text, 4		
*	MARKET	text, 4		
*	SPECCODE	text, 2		Must be entered; must already exist in SPECIES table
*	GEARTYPE	text, 2		Must be entered; must already exist in GEARS table
*	GEARMESH	int		
*	LOCACODE	text, 8		If entered, must already exist in LOCATIONS table
	LFHTRANLOND	text, 1	0	
	LFHTRANDATE	date		

LFDATA Table, Length Frequency data, counts at length (multiple rows per sample)

*	LFID	int		
*	SITE	text, 1	I / B	
*	LFSIZECLASS	real		
*	LFSIZECOUNT	int		
	LFDTRANLOND	text, 1	0	
	LFDTRANDATE	date		

NB: View **FULLLF** includes above columns marked * from **LFHEADER** and **LFDATA**

MARKRECAP1 Table, Mark release data

SITE	text, 1	I / B	
MRDATE	date		Must be entered
SPECCODE	text, 2		Must be entered; must already exist in SPECIES table
TAGNUM	text, 8		Letter T/S/P/X/B + number 0001-9999
LOCACAUGHT	text, 8		
LOCARELEASED	text, 8		Must be entered; must already exist in LOCATIONS table
GEARTYPE	text, 2		
FORKLENGTH	int		If entered, 0 - 1,000
TOT_LENGTH	int		If entered, 0 - 1,000
MARKCOMMENT	note		
TRANLOND	text, 1	0	
TRANDATE	date		
TAGTYPE	computed	Letter of TAGNUM	

MARKRECAP2 Table, Mark recapture data

SITE	text, 1	I / B	
MRDATE	date		Must be entered; must be > MR1 first MRDATE
SPECCODE	text, 2		Must be entered; must already exist in SPECIES table; must be same SPECCODE in MR1 table
TAGNUM	text, 8		Letter T/S/P/X/B + number 0001-9999; must exist in MR1 table
LOCACAUGHT	text, 8		Must be entered; must already exist in LOCATIONS table
GEARTYPE	text, 2		
FORKLENGTH	int		If entered, 0 - 1,000
TOT_LENGTH	int		If entered, 0 - 1,000 and > (MR1 TOT_LENGTH * 0.95)
MARKCOMMENT	note		
FISHERNAME	text 50		

	FISHERADDRESS	note		
	TRANLOND	text, 1	0	
	TRANDATE	date		
	TAGTYPE	computed	Letter of TAGNUM	

BIODATA_B Table, Biological data, sample details and fish characteristics (single row per sample)

*	BIOID#	int, auto		
*	SITE	text, 1	I / B	
*	BIODATE	date		Must be entered
*	SPECCODE	text, 2		Must be entered; must already exist in SPECIES table
*	GEARTYPE	text, 2		
*	LOCACODE	text, 8		If entered, must already exist in LOCATIONS table
*	TAGNUM	text, 8		
*	FORKLENGTH	int		0 - 1,000
*	TOT_LENGTH	int		If entered, 0 - 1,000
*	SEX_CODE	text, 1		I, F or ?
*	MAT_CODE	text, 1		I, M, R or S
*	TOTALWT	real		0 - 10,000
*	GONADWT	real		0 - 2,000
*	OJ#	int		
*	STOMACH	int		0 - 10
*	HPENVELOPE	int		
*	HARDPARTS	text, 8		
*	TIMELANDED	time		
*	BIOCOMMENT	note		
	BIOBTRANLOND	text, 1	0	
	BIOBTRANDATE	date		
	SUMFOOD	computed	Sum of BIOFOOD FOODPERCENT rows (should be 100)	

BIOFOOD Table, Stomach content food composition data (multiple rows per BIODATA_B sample)

*	BIOID#	int		
*	SITE	text, 1	I / B	
*	FOODTYPE	text, 2		
*	FOODPERCENT	real		1 - 100
	BIOFTRANLOND	text, 1	0	
	BIOFTRANDATE	date		

NB: View **FULLBIO** includes above columns marked * from **BIODATA_B** and **BIOFOOD**

HYDRO_DAILY Table, Daily hydrological data (water heights)

SITE	text, 1	I / B	
LOCACODE	text, 8		If entered, must already exist in LOCATIONS table
HYDATE	date		Must be entered
HYHEIGHT	real		-200 to +10,000
TRANLOND	text, 1	0	
TRANDATE	date		

HYDRO_WEEKLY Table, Weekly hydrological data (water flow and quality)

SITE	text, 1	I / B	
LOCACODE	text, 8		If entered, must already exist in LOCATIONS table
HYDATE	date		Must be entered
HYCURRENT	real		Must be entered
HYDISSOXY	real		
HYTURBIDITY	int		
HYCONDUCT	int		
HYDISSSOLIDS	int		
HYBOD	int		

HYPH	real		
HYTEMP	real		
TRANLOND	text, 1	0	
TRANDATE	date		

Reference tables for data codes

LOCATIONS, Codes and descriptions of field sampling locations

SITE	text, 1	I / B	
LOCACODE	text, 8		Must be unique
LOCADESC	text, 30		
LAT_DEG	int		
LAT_MIN	real		
LONG_DEG	int		
LONG_MIN	real		
LONG_HEM	text, 1		
LOCANOTE	note		
TRANLOND	text, 1	0	
TRANDATE	date		
WBODY	computed	First (waterbody) part of full location code	

SPECIES, Codes and full names for fish species

SITE	text, 1	I / B	
SPECCODE	text, 2		Must be unique
SPECNAME	text, 30		
SPECLATIN	text, 40		
SPECLOCAL	text, 30		
KEYSPECIES	int		
TRANLOND	text, 1	0	
TRANDATE	date		

GEARS, Codes and full names for fishing gears

SITE	text, 1	I / B	
GEARTYPE	text, 2		Must be unique
GEARDESC	text, 20		
EFFORTUNIT	text, 20		
TRANLOND	text, 1	0	
TRANDATE	date		

FOODCODES, Codes and descriptions of foods in fish stomach contents

SITE	text, 1	I / B	
FOODTYPE	text, 4		Must be unique
FOODDESC	text, 40		
TRANLOND	text, 1	0	
TRANDATE	date		

MARKETS, Codes and names for fishing markets

SITE	text, 1	I / B	
MARKET	text, 4		Must be unique
MARKETNAME	text, 40		
MARKETCOMM	note		
TRANLOND	text, 1	0	
TRANDATE	date		

SAMPLERS, Codes for field samplers (project staff)

SITE	text, 1	I / B	
SAMPLER_CODE	text, 4		Must be unique
SAMPLER_NAME	text, 40		
TRANLOND	text, 1	0	

TRANDATE	date

CODES, Allowed codes for fish sex, maturity, sites etc...

SEX_CODE	text, 1
SEX_DESC	text, 8
MAT_CODE	text, 1
MAT_DESC	text, 8
SITE	text, 1
SITEDESC	text, 20
HPCODE	text, 1
HPDESC	text, 30
YEAR	int
MONTH	int
HALFMONTH	int

Table 2. List of programme files in the XMFDB database

Database / application files

XMFDB.RB1	XMFDB database structure
XMFDB.RB2	XMFDB database data
XMFDB.RB3	XMFDB database indexes on key columns
XMFAPPL.API	XMFDB application in binary code (used by RBase for generating application)
XMFAPPL.APP	XMFDB application in ASCII text (created by RBase from .API file)
XMFAPPL.APX	XMFDB application in executable code (compiled .APX file, to run application)
XMFDB.BAT	MS-DOS batch file to run RBase with XMFDB database
RBASE.CFG	Sets default settings each time RBase is run
XMFDB.DAT	'Startup' file to connect to XMFDB and run XMFAPPL application when RBase is run
INSTALL.BAT	MS-DOS batch file to install XMFDB files from A: drive to C:\RTIME\XMFDB directory

Command Files for Data Entry / Editing

EDITCE2.COM	Loads form to edit CE2 data, with WHERE clause and validity check
EDITCE3.COM	Loads form to edit CE3 data, with WHERE clause and validity check
DELCE3.COM	On exit from CE3 form, deletes rows from CE3DATA table without CE3HEADER row and requests re-editing of any rows in CE3HEADER without associated CE3DATA rows, or with CE3DATA sum %s <> 100
RECALC.EEP	Fills in calculated Sum% fields for CE3 and BIO forms
EDITLF.COM	Loads form to edit LF data, with WHERE clause and validity check
DELLF.COM	On exit from LF form, deletes rows from LFDATA table without LFHEADER row; requests re-editing of any rows in LFHEADER without associated LFDATA rows
EDITMR1.COM	Loads form to edit MARKRECAP1 data, with where clause and validity check
EDITMR2.COM	Loads form to edit MARKRECAP2 data, with where clause and validity check
EDITBIO.COM	Loads form to edit BIOLOGICAL (B) data, with where clause and validity check
DELBIO.COM	On exit from B form, deletes rows from BIOFOOD table without BIODATA_B header row, and requests re-editing of any rows in BIODATA_B table with STOMACH>0 but with no BIOFOOD rows, or with STOMACH=0 but with BIOFOOD rows, or with BIOFOOD sum %s <>100

Command Files for Reports & Data Export

STANREPS.COM	Prints standard bimonthly report on data collection / entry (report variables filled by *VAR.COM files below; prints reports LF3, BIORP, MRREP)
LFVAR.COM	Selects data on days sampling LF data
MRVAR.COM	Selects data on MR releases/recaptures
BIOVAR.COM	Selects data on B sample sizes
LFCHECK.COM	Crosstabulates LF data by species, with where clause and validity check
TAGSUM.COM	Prints report TAGREL on tag releases for selected year & month
SELEXPO.COM	Exports data from a TABLE from chosen columns, with WHERE clause and validity check
SELVIEW.COM	Exports data from a VIEW from chosen columns, with WHERE clause and validity check

Command Files for Data Transfer to London

TRANLOND.COM	Downloads all new data to eg A:\INDONESI.UNL, and updates transfer fields
TRANPREV.COM	Re-Downloads data from previous transfer of specified date

Command Files for Database Maintenance

XMF_CHK.COM	Checks database for errors, and compresses fragmented files
XMFBACK.COM	Backups database (BACKUP ALL) to eg A:\XMFINDO.BAK
XMFRELO.COM	Reloads old backup copy (RESTORE A:\XMFINDO.BAK) if XMFDB is corrupted

Table 3. Example Species List produced by the Reports Menu

List of Species Caught at site : Indonesia

Code	Common Name	Local Name	Scientific Name
AT	Climbing perch	Betok	Anabas testudineus
BM		Baung munti	Bagroides milopterus
BS	Tinfoil barb	Lampam	Barbodes schwanefeldi
C	Silurid (glass) catfish	Lais / Bulu tulang	Cryptopterus spp
CA	Silver barb	Sebaras	Cyclochelichthys apogon
CB	Air breathing catfish	Keli (ikan lele)	Clarias batrachus
CK	Blackwater snakehead	Serkoh	Channa bankanensis
CL	Forest snakehead	Bujuk	Channa lucius
CM	Giant snakehead	Toman	Channa micropeltes
CO		Siamis	Chela oxygastroides
CS	Banded snakehead	Gabus	Channa striatus
DO	Dangila ocellata	Lambak	Dangilla ocellata
HM	Transverse-bar barb	Sebarau	Hampala macrolepidota
HT	Kissing gouramy	Tembakang	Helostoma temincki
L	Others	Lain-lain	Others
LH	Hoeven's carp	Jelawat	Leptobarbus hoeveni
MA	Eel	Belut	Monopterus albus
MN	Yellow mystus	Baung	Mystus nemurus
MR	Freshwater Giant Shrimp	Udang galah	Macrobrachium rosenbergii
MU	Spiny eel	Tilan	Mastacembelus unicolor
MV	Striped mystus	Berengit	Mystus vittatus
NC	Spotted featherback	Belido (belida)	Notopterus chitala
NN	Grey featherback	Putak (belida)	Notopterus notopterus
O		Buing	Osteochilus spp
OG	Giant gouramy	Guramy	Osphronemus goramy
OH	Bony-lipped barb	Palau	Osteochilus hasselti
OM	Marbled goby	Betutu	Oxyleotris marmoratus
OV		Tembelikat	Osteochilus vittatus
P	Shrimps	Udang	Palaemon spp
PF	Striped tiger nandid	Sepatung	Pristolepis fasciatus
PG	Java barb	Tawes	Puntius gonionotus
PH	Belontid	Selincah	Polycanthus hasselti
PM		Riu	Pangassius micronema
PP		Juaro	Pangassius polyuronodon
PS		Kemurian	Puntius fasciatus
PT		Pirikelang	Puntius tetrazona
R	Mixed species	Rucah	Mixed small fish
RA	Rasbora spp	Darkina	Rasbora spp
S	Various	Sampah kecil	Mixed small cyprinids
TP	Thynnichthys polylepis	Damaian	Thynnichthys polylepis
TR	Trichogaster pectoralis	Sepat siam	Snakeskin gouramy
TT	Two spot gouramy	Sepat merah mata	Trichogaster trichopterus
WL	Giant silurid catfish	Tapa	Wallago leeri

43 species found

Table 4. Example Locations List produced by the Reports Menu

Location Codes in use at study site: Indonesia
Report prepared on Date: 17/03/1995

Water Body	Location Code	Location Description
GT	GT	Galah Tanah
ID	ID	Ilir Dusun
LK	LK	Lebung Kuali
LLL	LLL	Lubuk Lampam Lebak
LLL	LLL,B1	Lubuk Lampam Lebak, Lebung Suak Buaya
LLR	LLR	Lubuk Lampam Rawang
LLS	LLS	Lubuk Lampam Sungai
LLS	LLS,P	Lubuk Lampam Sungai, Penetak
BBU	BBU,P	Belanti, Batang Hari Ulu, Penetak
DBT	DBT	Danau Besar, Teluk Bangko
DBT	DBT,P	Danau Besar, Teluk Bangko, Penetak
LKB	LKB	Lubuk Kemudi, Batang Hari Besar
LLL	LLL,UTR	Lubuk Lampam Lebak, Ulu & Tengah, Right
LLS	LLS,I	Lubuk Lampam Sungai, Ilir
LLS	LLS,X	Lubuk Lampam Sungai, From Tagging Experiment
LST	LST,LI	Lebung Sulit, Lebak, Ilir (d/s Penetak)
LST	LST,P	Lebung Sulit, Penetak
SA	SA,P	Sungai Aur, Penetak
SKI	SKI	Batang Hari Sipin, Kapak Ilir
SPG	SPG	Sarang Elang Pakuadji, Lebak Grubing
SPT	SPT,R	Sarang Elang Pakuadji, Talang Tengah, Right

Table 5. Example Data Collection Report produced by the Reports Menu

Site = Indonesia, Year = 1995 Month = 3 HalfMonth = 2

Days sampling CE2 data 5 Days sampling CE3 data 3
Number CERS interviewed 43 Number of CE3 samples 11

Number of rows by gear type - CE2 data

geartype	Number of Occurrences
BB	7
BK	9
CO	1
EL	3
JR	8
KL	3
TL	10
TU	2
-0-	25

Number of rows by gear type - CE3 data

geartype	Number of Occurrences
BB	2
BK	2
C0	1
JR	2
KL	1
TL	2
TU	1

	Species					
	CS	MR	OH	MN	HT	Other
Days Sampling by species	4	1	3	3	1	0

LF sample sizes by species and geartype

geartype	CS	HT	MN	MR	OH	(Total)
JR	33	0	29	0	199	261
KL	0	249	0	0	50	299
TL	583	0	13	0	0	596
TU	0	0	4	13	0	17
	616	249	46	13	249	1173

Biological / Marking Data

	Species					
	CS	MR	OH	MN	HT	Other
Days Sampling by Species	0	0	0	0	0	0
Sample Sizes by Species	0	0	0	0	0	0
Hard Part Samples - Scales	0	0	0	0	0	0
Otoliths	0	0	0	0	0	0
Opercula	0	0	0	0	0	0
Vertebrae	0	0	0	0	0	0
Pect. Spine	0	0	0	0	0	0
Dors. Spine	0	0	0	0	0	0

	Species					
	CS	MR	OH	MN	HT	Other
Number of marks released	66	24	0	15	0	0
Number of marks recaptured	2	4	0	1	1	0

Table 6. Example Length Frequency Report produced by the Reports Menu

Length Frequency Data Check
Data Check on 21/08/95

lfsizecl	AT	CS	HT	MN	MR	OH	(Tota
1.	10	0	0	0	0	0	10
2.5	0	0	0	1	0	0	1
3.5	2	0	3	0	0	0	5
4.	5	0	4	1	1	0	11
4.5	11	0	5	0	0	0	16
5.	20	0	9	0	1	1	31
5.5	8	0	14	0	3	0	25
6.	4	0	19	0	0	1	24
6.5	3	0	24	0	7	0	34
7.	3	0	41	0	5	8	57
7.5	1	0	38	0	9	3	51
8.	0	0	53	0	9	12	74
8.5	0	0	40	0	5	3	48
9.	0	0	31	0	4	21	56
9.5	0	0	21	0	6	21	48
10.	1	1	26	3	4	38	73
10.5	0	0	4	0	2	33	39
11.	0	0	19	4	4	50	77
11.5	0	0	0	0	1	21	22
12.	6	0	29	9	0	49	93
12.5	0	0	0	1	2	20	23
13.	5	2	25	14	2	77	125
13.5	0	1	0	4	0	24	29
14.	7	1	14	17	2	116	157
14.5	0	2	0	11	0	29	42
15.	2	3	17	30	2	122	176
15.5	0	6	1	8	0	12	27
16.	2	0	28	17	0	118	165
16.5	0	1	3	2	0	8	14
17.	1	4	36	22	1	74	138
17.5	0	10	1	2	0	2	15
18.	0	17	32	28	0	26	103
18.5	0	9	6	10	0	1	26
19.	0	12	29	20	0	12	73
19.5	0	11	7	0	0	0	18
20.	0	13	23	15	0	1	52
20.5	0	17	2	0	0	0	19
21.	0	24	16	15	0	2	57
21.5	0	14	1	2	0	0	17
22.	0	24	15	22	0	0	61
22.5	0	20	0	0	0	0	20
23.	0	66	9	21	0	0	96
23.5	0	19	1	0	0	0	20
24.	0	28	2	14	0	0	44
24.5	0	23	0	0	0	0	23
25.	0	20	2	4	0	0	26
25.5	0	23	0	0	0	0	23
26.	0	41	0	2	0	0	43
27.	0	29	0	2	0	0	31
28.	0	38	0	5	0	0	43
29.	0	22	0	6	0	0	28
30.	0	22	0	2	0	0	24
31.	0	25	0	1	0	0	26
32.	0	27	0	2	0	0	29

33.	0	11	0	2	0	0	13
34.	0	41	0	5	0	0	46
35.	0	11	0	4	0	0	15
36.	0	3	0	5	0	0	8
37.	0	0	0	5	0	0	5
38.	0	0	0	7	0	0	7
39.	0	1	0	1	0	0	2
40.	0	0	0	2	0	0	2
46.	0	0	0	1	0	0	1
54.	0	0	0	1	0	0	1
	91	642	650	350	70	905	2708

Table 7. Example Tag Summary Report produced by the Reports Menu

Summary of Tags Released during Month : 1
Year : 1995

Tag Type	Tag Number	Date (dd/mm/yy)	Species	Gear	Location Caught	Location Released
P	P0009	12/01/95	MR	BB	SKI	SKI
P	P0010	12/01/95	MR	BB	SKI	SKI
P	P0011	12/01/95	MR	BB	SKI	SKI
P	P0013	12/01/95	MR	BB	SKI	SKI
P	P0014	12/01/95	MR	BB	SKI	SKI
P	P0015	12/01/95	MR	BB	SKI	SKI
P	P0025	12/01/95	MR	BB	SPT,R	SPT,R
Total tags	7					

Tag Type	Tag Number	Date (dd/mm/yy)	Species	Gear	Location Caught	Location Released
S	S0001	12/01/95	HT	CO	LLS,P	LLS,I
S	S0002	12/01/95	HT	CO	LLS,P	LLS,I
S	S0003	12/01/95	OH		LLS,X	LLS,I
S	S0004	12/01/95	OH		LLS,X	LLS,I
S	S0005	12/01/95	OH		LLS,X	LLS,I
S	S0006	12/01/95	OH		LLS,X	LLS,I
S	S0007	12/01/95	OH		LLS,X	LLS,I
S	S0008	12/01/95	OH		LLS,X	LLS,I
S	S0009	12/01/95	OH		LLS,X	LLS,I
S	S0010	12/01/95	OH		LLS,X	LLS,I
S	S0011	12/01/95	OH		LLS,X	LLS,I
Total tags	11					

Tag Type	Tag Number	Date (dd/mm/yy)	Species	Gear	Location Caught	Location Released
T	T0001	12/01/95	CS	BK	SPG	SPT,R
T	T0002	12/01/95	CS	BK	SPG	SPT,R
T	T0003	12/01/95	CS	BK	SPG	SPT,R
T	T0004	12/01/95	CS	BK	SPG	SPT,R
T	T0005	12/01/95	CS	BK	SPG	SPT,R
T	T0006	12/01/95	CS	BK	SPG	SPT,R
T	T0007	12/01/95	CS	BB	SKI	SKI
T	T0008	12/01/95	CS	BB	SKI	SKI
Total tags	8					

Figures

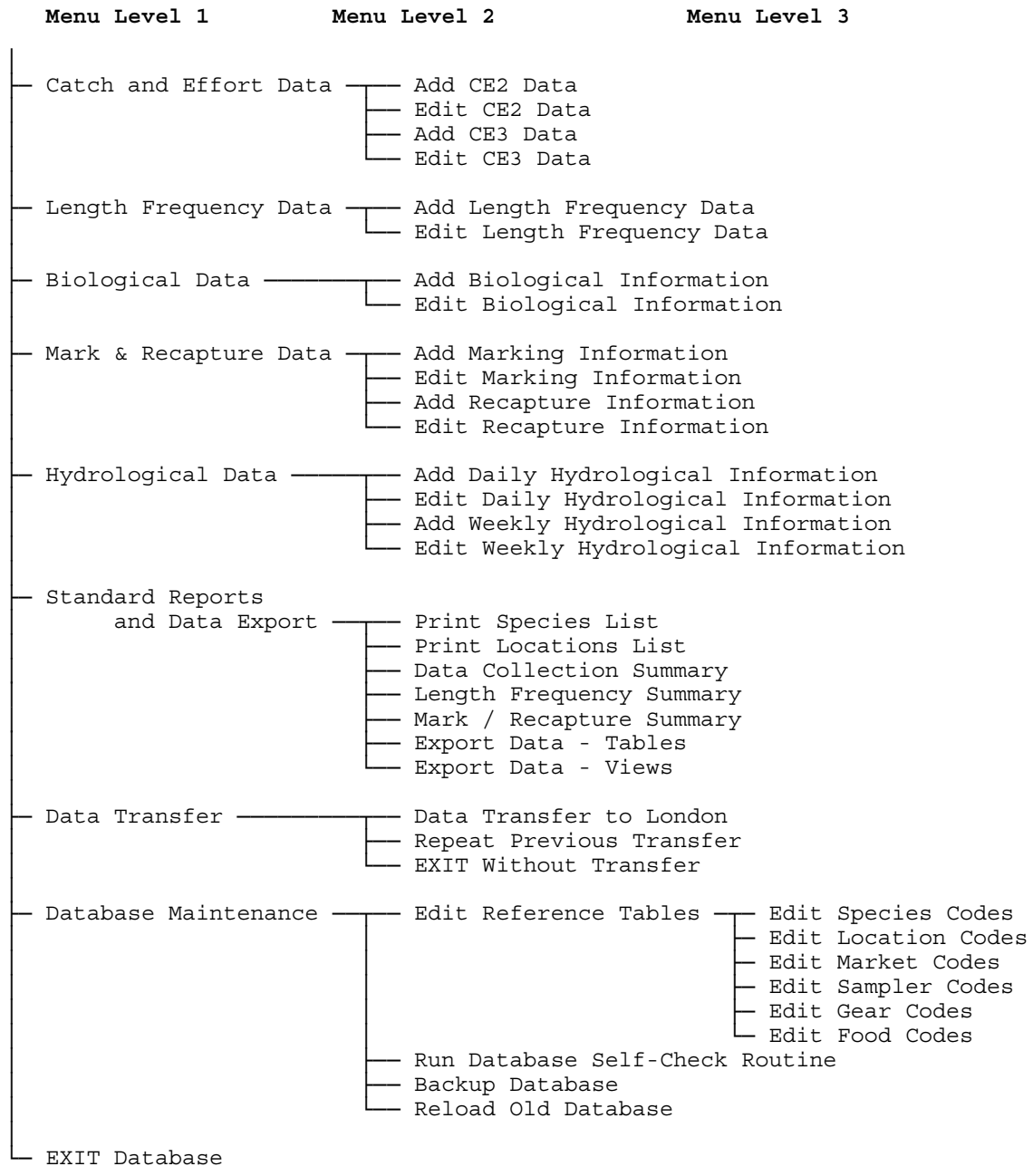

Figure 1. XMF Database Application Menu Tree

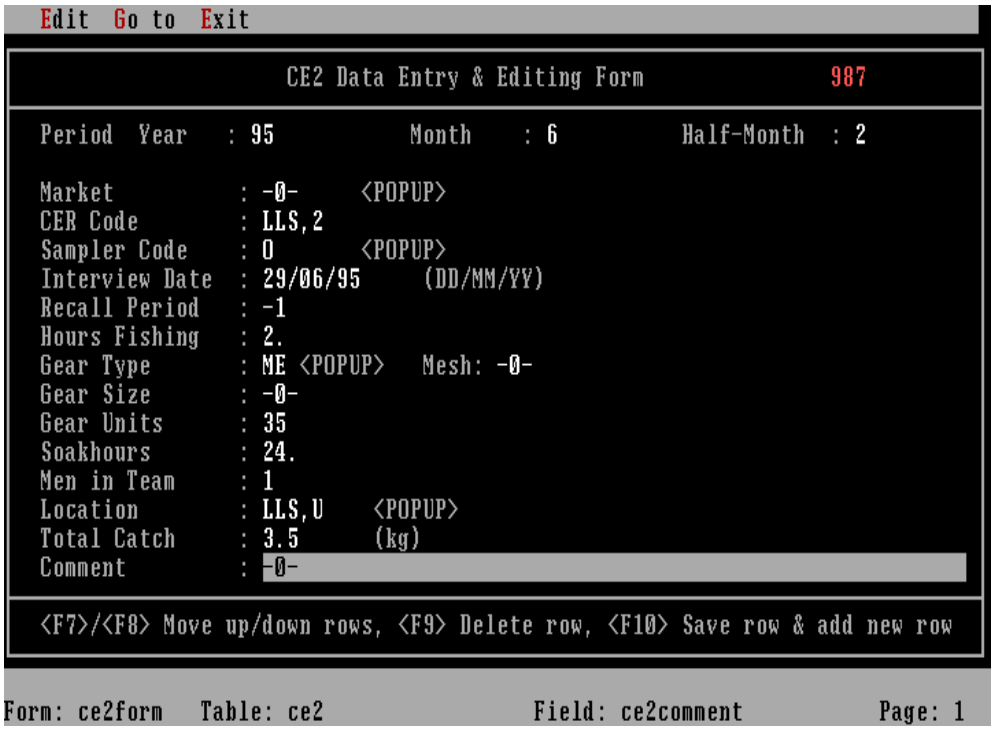

Figure 2. Catch-Effort respondent (CE2) data entry / editing form.

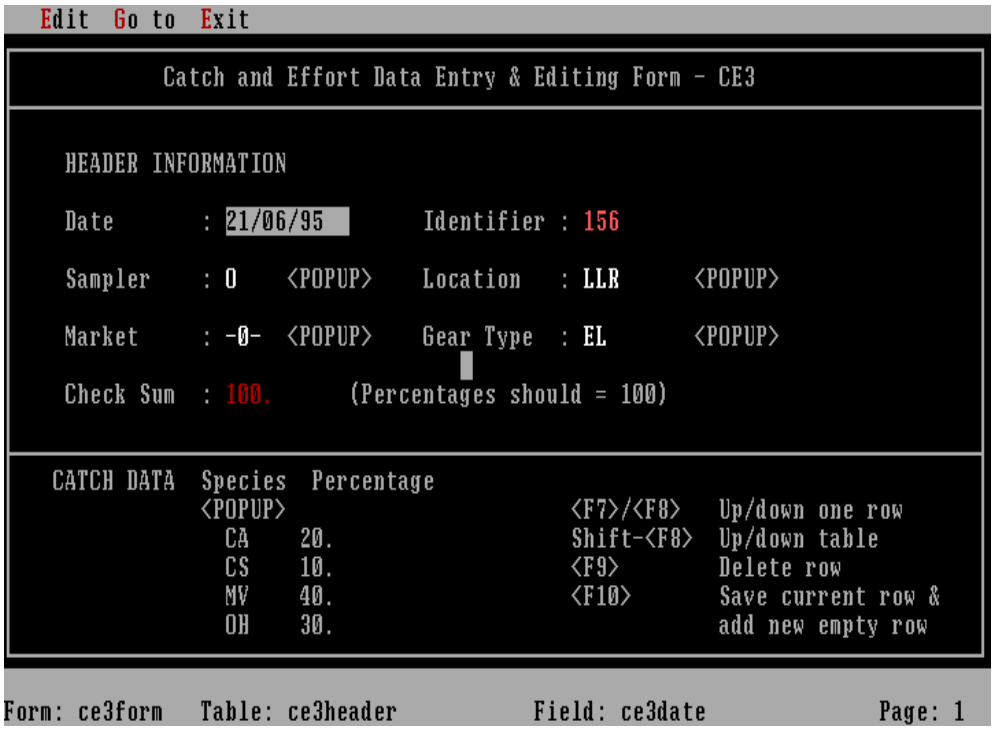

Figure 3. Catch species composition (CE3) data entry / editing form.

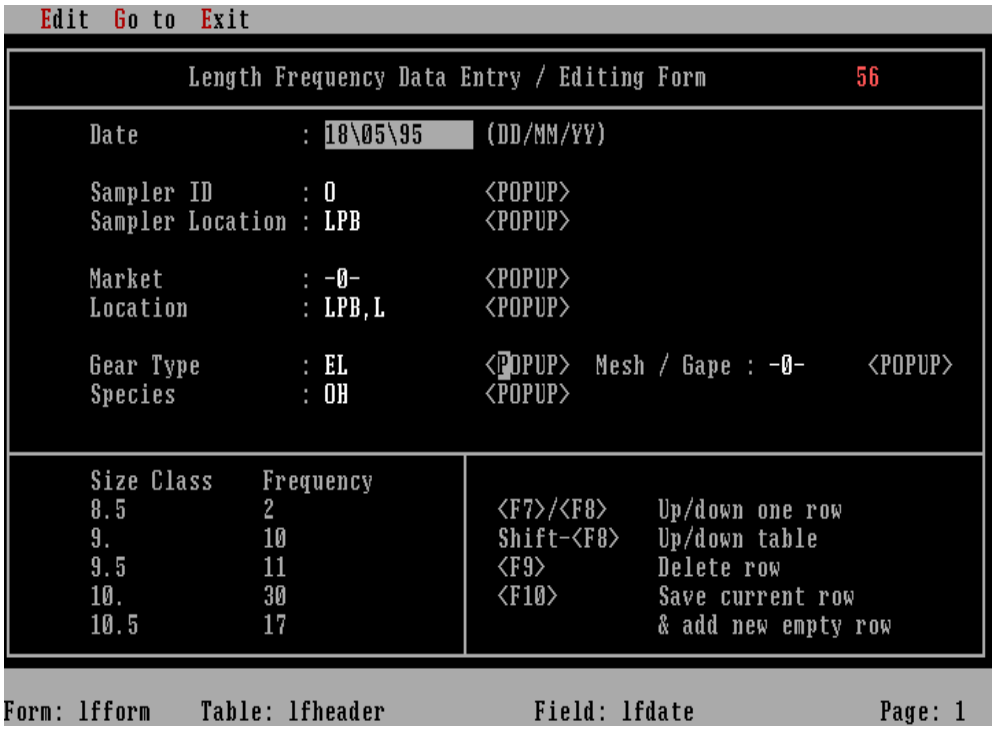

Figure 4. Length frequency data entry / editing form.

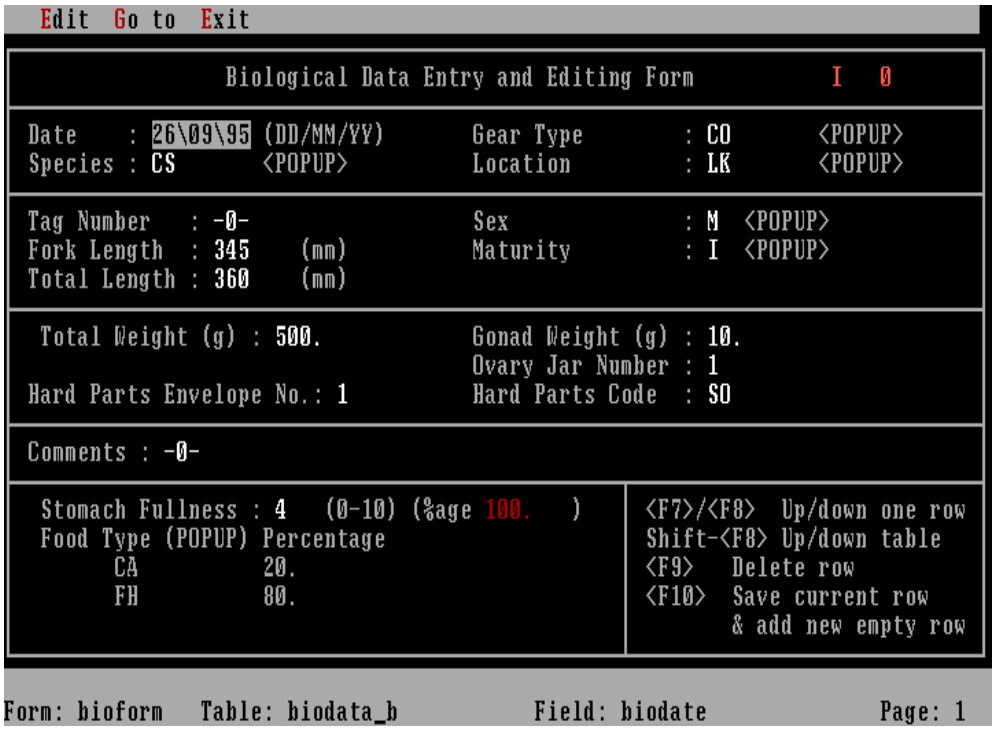

Figure 5. Biological data entry / editing form.

Figure 6. Mark release data entry / editing form.

Figure 7. Mark recapture data entry / editing form.

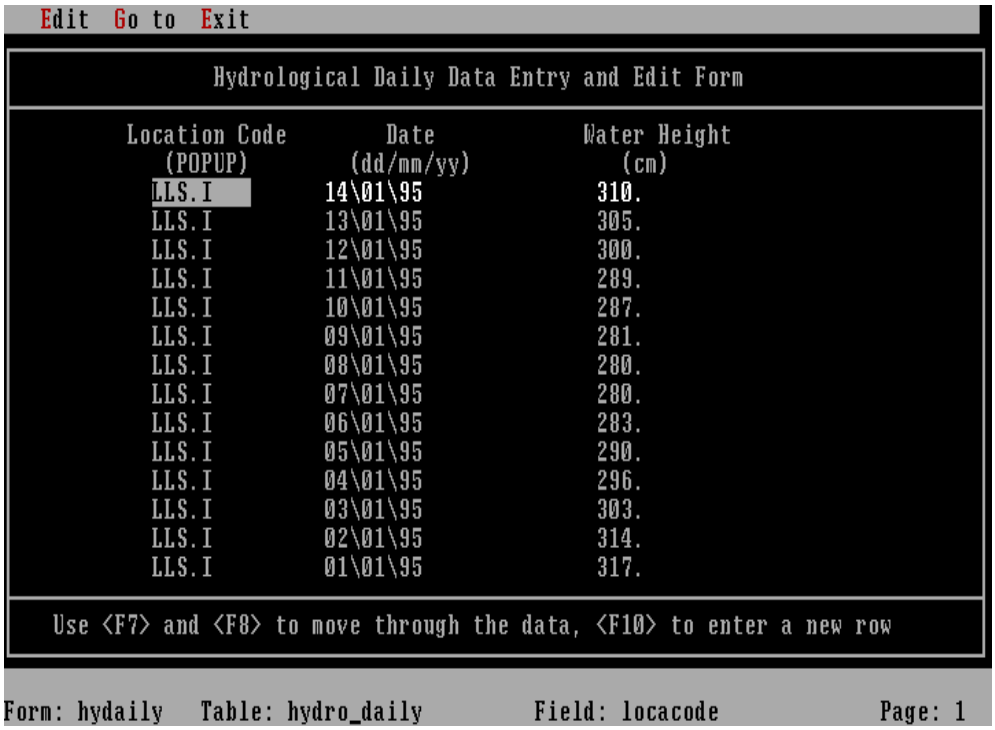

Figure 8. Daily hydrological data entry / editing form.

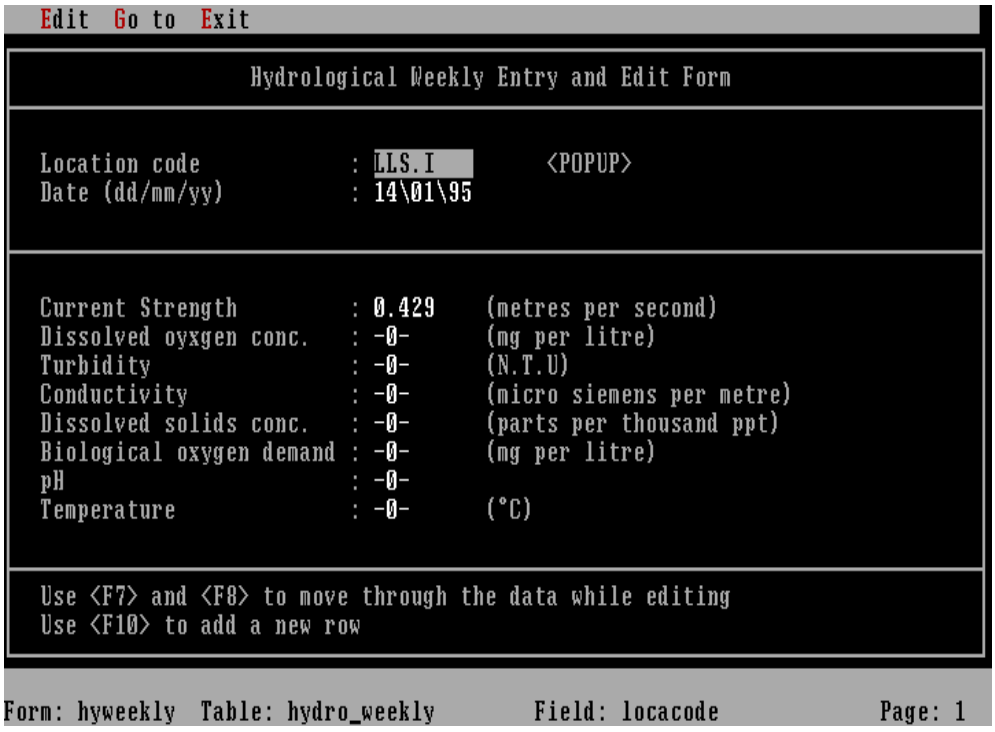

Figure 9. Weekly hydrological data entry / editing form.