

Geographical Fisheries System

QE95003



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Northern Fisheries Centre
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***Geographical
Fisheries System
GFS***

Visualising fisheries data

Users Guide

Department of Primary Industries, Queensland

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Introduction

Background

Geographical Fisheries System (GFS) was developed as part of a project jointly funded by the Fisheries Research and Development Corporation, Queensland Fisheries Management Authority and the Department of Primary Industries, Queensland and based at the Northern Fisheries Centre, Cairns. The project ‘Small prawn habitat and recruitment study’ (FRDC 92/7) ran from July 1992 to June 1995. GFS was developed during the period August 1994 to June 1995 as an animated, interactive model for displaying the data collected during this project. It can also display other user’s data, making GFS a more flexible tool.

What GFS can do for you

Geographical Fisheries System (GFS) is an interactive, animated tool for visualising fisheries data. It is able to read *Map Info* mif files for importing maps, whilst *Access*, *Paradox*, *SQL Server*, *Btrieve*, *Excel* and text files can be read for data input. The data can then be displayed on a map. GFS has the facility to track movement through time on the map (such as in tagging data). GFS also has thematic mapping functions (such as densities or species composition at each site mapped through time). Although GFS is set up to be specific to this project, it has been developed to be flexible enough for many different applications depending on the data input.

Contents of GFS package

The Geographical Fisheries System contains :

- hard-cover holding box
- loose-leaf Users Guide in folder
- software licence agreement
- six (6) computer floppy disks (3 1/2") as follows:
 - four (4) 3 1/2" GFS disks
 - two (2) 3 1/2" PrawnEd disks

Installing GFS

Computer requirements

GFS will run on any IBM-compatible PC with at least :

- 386 CPU
- DX 33 MHz
- VGA monitor
- 10 Mb free hard disk space
- Windows 3.1
- 8 Mb RAM

Installing GFS

Installation

1. Ensure no other applications are running.
2. Insert GFS Diskette 1 into Drive A.
3. Type "a:setup" and press enter.

During the setup you will be prompted to select from a list of ODBC drivers. You may choose any drivers you please, but it is recommended that you choose the Microsoft Access Driver to use with the sample database provided.

A program manager icon will be created automatically.


Quick start

To help you off to a quick start GFS is provided with a Sample Project called *TurtleG*. This Project contains displays of the following fisheries research data collected in the Turtle Group region of Queensland's north-east coast in 1993 and 1994:

- *Turtle Group Prawn Tagging*
- *Turtle Group Commercial Prawn Species Composition*
- *Turtle Group Commercial Prawn Size Composition*
- *Turtle Group Juvenile Prawn Species Composition*

To open one of the Sample Analyses, choose the file *TurtleG.prj* from the File menu. Next, choose the Analyses tab of the Project window. A list of available Analyses will be displayed. Choose an Analysis and click the Open button.

Quick help

GFS contains comprehensive on-line Help. Help may be obtained by choosing the Help Contents command from any menu. Additionally, you can use the Context Help command  to obtain detailed help on any part of GFS. When you choose the Toolbar's Context Help button, the mouse pointer will change to an arrow and question mark. When you click somewhere in the GFS window, such as a Toolbar button, the Help topic will be shown for the item you clicked. When a dialog box is active, F1 must be pressed to use help.

Geographical Fisheries System

Projects

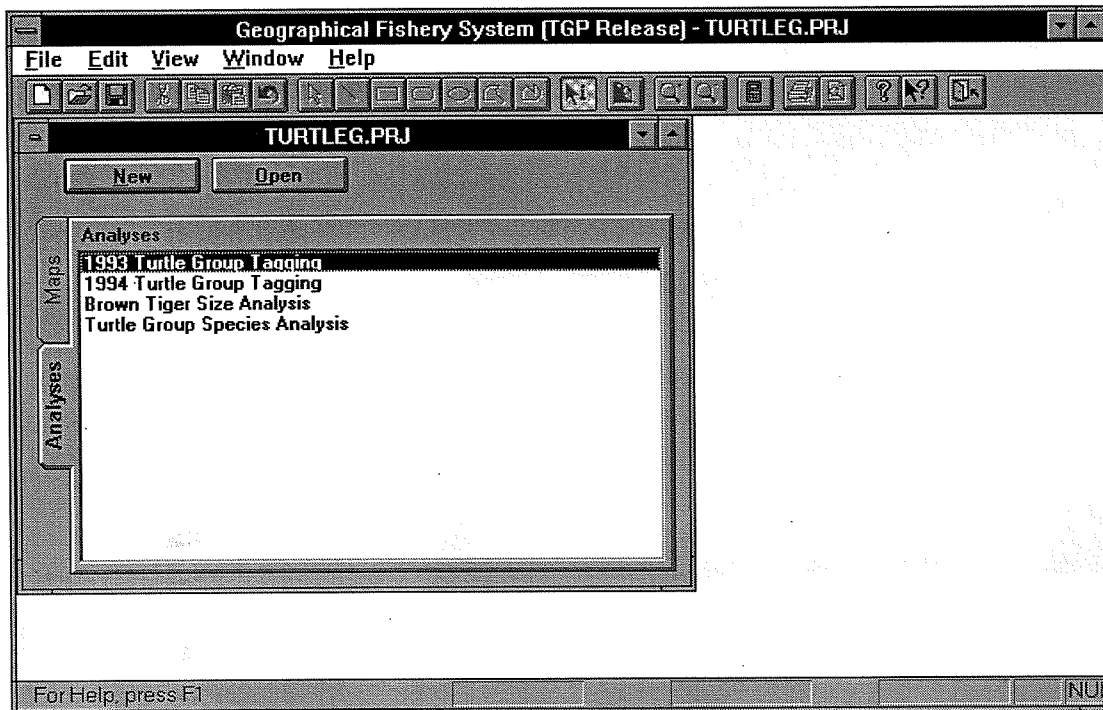
Project window

The Project window keeps track of the files (Maps and Analyses) associated with a particular Project. An example of a project is the sample Turtle Group Project file which includes the Turtle Group map and various analyses. A Project can have more than one Map or Analysis associated with it, and a Map or Analysis may be associated with more than one Project.

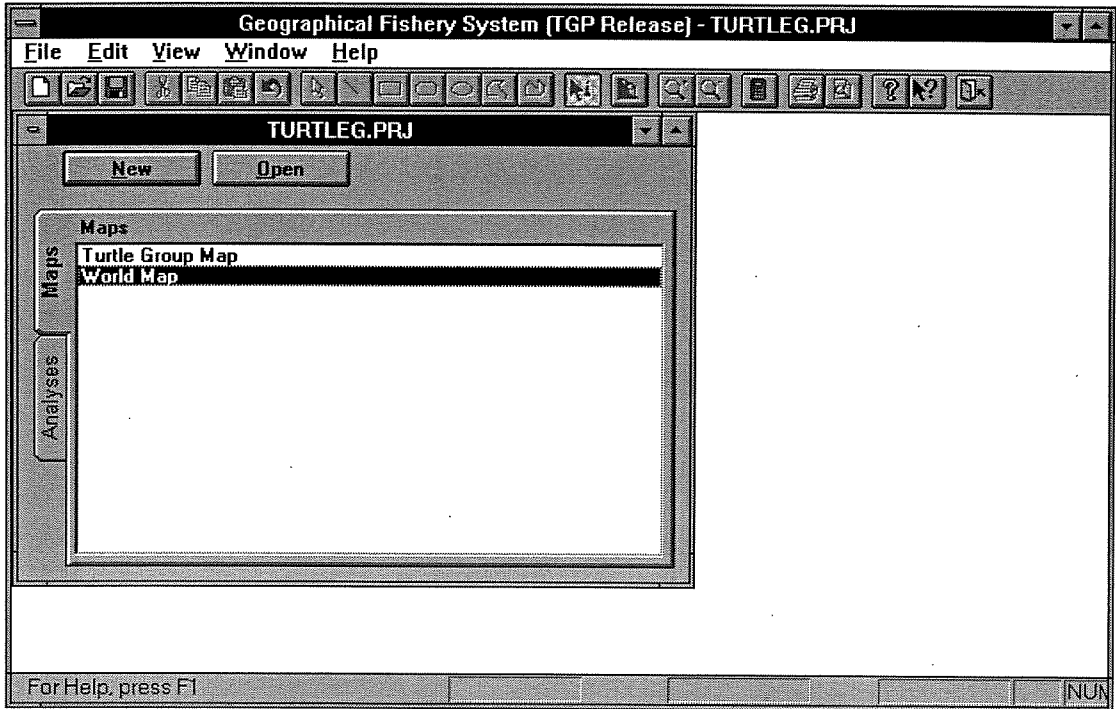
Users can open an existing Project by choosing Open Project from the File menu, or create a new Project by choosing New Project from the File menu.

From within the Project window, users can choose the GFS Maps tab to open or create a Map, or the GFS Analyses tab to open or create an Analysis. A Project can be saved by using the File Save command or File Save As command. Following are two examples of Project windows. The first example shows the Analyses tab, while the second shows the Maps tab.

Maps can be added or removed by using the Add files or Remove file from the File menu.



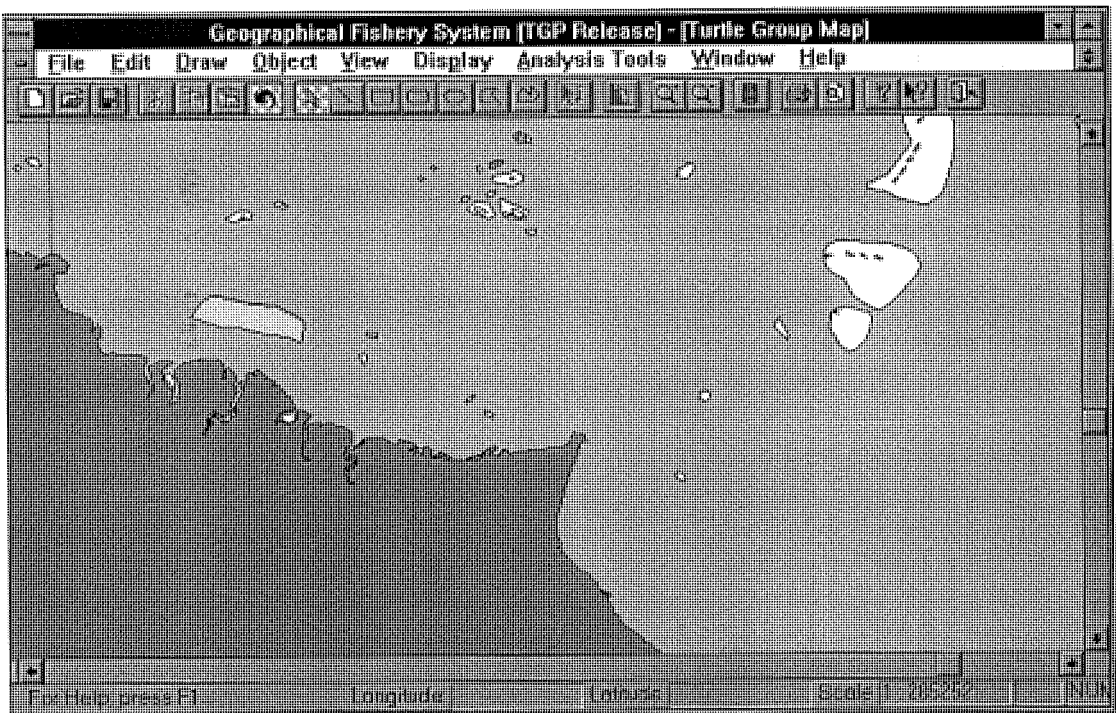
A Project window with the Analyses tab visible



A Project window with the Maps tab visible

GFS Maps

The major interface element of GFS is the Map window. It is used to display both the map and any temporal and/or spatial elements created by GFS. GFS allows users to import *Map Info* maps, or modify existing ones. Users can also create (draw) their own maps with GFS, however this is not recommended. Rather, we encourage you to experiment with existing or imported maps by adding new features if these are required.



An example of a GFS Map.

Opening an existing Map

Existing maps can be opened from within the Project window. Maps are also opened automatically by Analyses during visual analysis functions, such as view tag data in a Tag Analysis.

Creating a new map

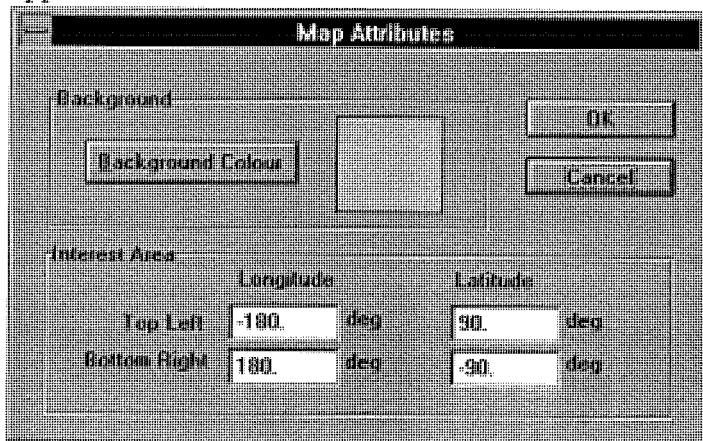
To create a new map choose the Maps tab in the Project window and press the New button. This will create a new blank map. New features can be added using any of the mapping tools. We recommend, however, that you only use existing or imported maps, and add new features to these with the map tools.

Changing the View

The way the map is viewed in GFS is left for you, the user, to decide. You may change the scale of the map, or even the background colour. You may change your view location and modify various map object styles such as colour, line type or even fill patterns. One of the things you may wish to change is the Map Settings.

Map Settings

The Map Setting dialog can be found under the File menu. The following dialog will appear.



Map Settings Options

Background Colour - This is used to select the background colour. Most users generally prefer either white or blue (to represent the ocean).

Interest Area - The interest area in GFS is the area that can be moved to by using the scroll bars. It is also used in the Zoom Out - Fit to Window option. GFS allows maps to be any size you require, however you may only want to concentrate on a small area. This can be achieved by setting the bounds for the area. This does not delete any objects that aren't in the interest area, it just prohibits the user from scrolling into non-interest areas. You may change the interest bounds any time.

Gridlines (View menu)

Grid Lines enhance the ability for you, the user, to be able to determine your location on a map. This is particularly useful for people familiar with navigation charts. There is, however, some variation between GFS maps and navigation charts because GFS projects the map in a latitude/longitude projection system which doesn't take into account the earth's curvature. This should only pose a problem if your interest area is either very south or north. Future versions of GFS will allow different map projections to help overcome these problems.

The Gridlines command shows map gridlines with the following options:

Large - A gridline at every degree

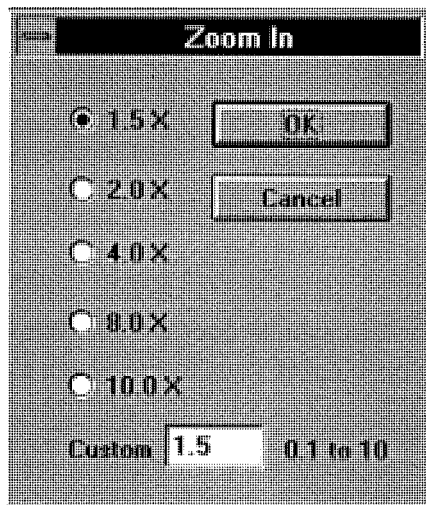
Small - A gridline at every six minutes.

You may turn the gridlines on or off by choosing the command from the Menu.

Changing the scale and position of Maps

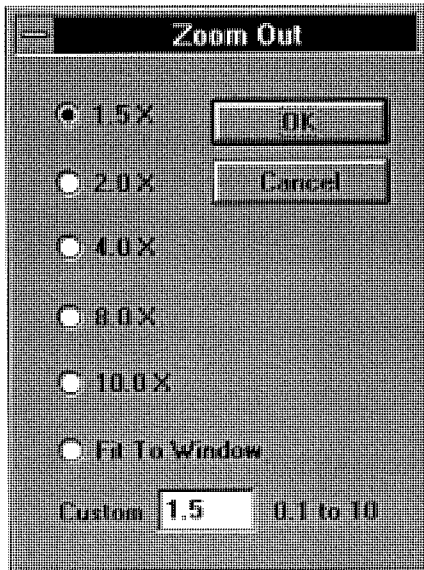
The scale and position of the map can be changed by using any of the following commands in the Display menu.

Zoom In



This command allows you to Zoom in on a map. The dialog box offers a range of zoom ratios, including a custom entry. The zoom ratio of the current map will change according to the choice (or custom entry) made. The center of the map will remain constant during the Zoom.

Zoom Out



This command allows you to Zoom out and displays the Zoom Out dialog box. This dialog box offers a range of zoom ratios, including a custom entry. The zoom ratio of the current map will change according the choice (or custom entry) made. Additionally, 'Fit To Window' restricts the user to the bounds of the map interest area. The interest area can be modified in the Map Settings dialog. As with the Zoom In function, the center of the map remains constant.

ZOOM OUT

This command will zoom the user out to the previous zoom that is further away than the current Zoom. If there are no previous zooms then you must either use the Map Settings dialog or the Zoom Out command.

Zoom Tool

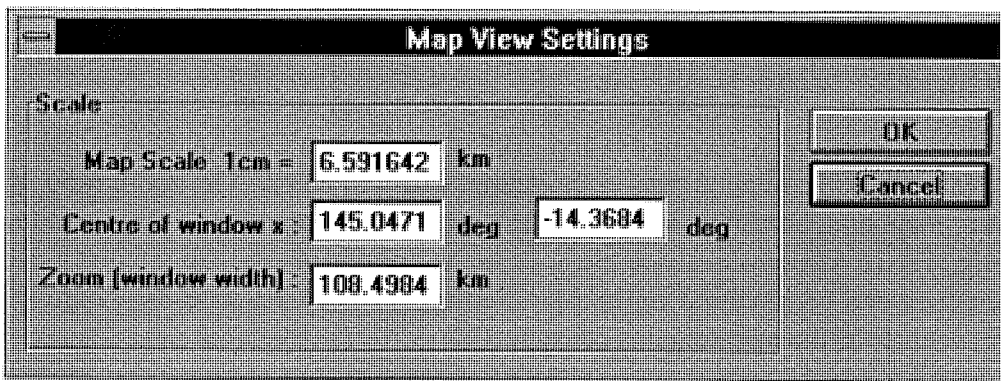
The zoom tool allows you to interactively zoom in on a map area by creating a rectangle on the map indicating the area you wish to zoom in on.

Refresh Screen

Choose this command to repaint the screen. Use when the screen image appears disjointed, unclear, messy, etc.

Map View Settings (Display menu)

The map view settings dialog contains several options for setting the view.



Map Scale

Use to set the ratio of screen view (cm) to real world (km). This will change Zoom (Window width) automatically

Centre Of Window

Displays the geographical position of the centre of the Map window.

Zoom (window width)









Use to set the width (in km) of the zoom window. This will change Map Scale automatically

Importing Maps (Advanced users only)

GFS is able to import maps created in *Map Info 3*. To import a map load the map in *Map Info* and save it as a MIF file with a Latitude/Longitude projection, you should then be able to import the map. GFS maps are limited to approx 15000 map objects, with polygons limited 15000 points. The maximum size of a GFS map is also limited by available memory. Should you be unable to import a map, try increasing the windows swap file size as GFS takes advantage of Windows Virtual Memory. Future versions will overcome these limitations.

Map Tools (Advanced users only)

GFS allows users to draw their own maps and objects on maps. The Draw menu contains the following commands.

	Select	Use for selecting objects
	Line	Use for creating line objects
	Rectangle	Used for creating rectangular objects
	Round Rectangle	Used for creating round rectangular objects.
	Ellipse	Used for creating elliptical objects
	Polygon	Used for creating polygon objects
	Polyline	Used for creating polyline objects
	Text	Used for creating text labels

All of the above commands are also available on both the Draw menu and as buttons on the Toolbar. Use Select to select an existing object. Use the remaining commands to select the type of drawing tool for creating new map objects.

Select Tool



Use this command to select an object and manipulate existing objects. Existing objects can be manipulated by grabbing (holding the left mouse button down) object handles and moving them to new locations.

Changing the placement of Objects

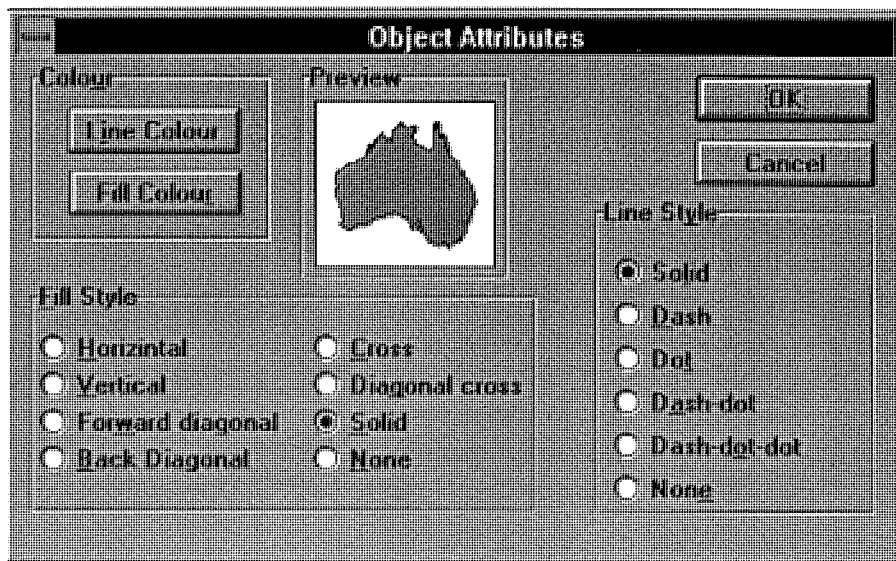
The placement of objects can be changed. When objects are created each new object is placed in front of all previous objects. If you wish to change the location of an object you can do this by using the Object Menu Commands.

The Object menu contains the following commands:

Object properties	Set object properties.
Move To Front	Move object to front.
Move To Back	Move object to back.
Move Forward	Move object one step closer to front.
Move Back	Move object one step closer to back.

Object properties

Object properties command allows you to change the properties of the selected object. This dialog can be started by choosing Object Properties from the menu or by double clicking on an object.



Use this command to set/change the properties of an object. The options are self explanatory.

Information Tool



The Information Tool becomes active when the cursor is positioned over GFS Maps while GFS Analyses are in progress.

By double-clicking an object on the map, the user is provided with details about that object (eg a tagged prawn, closure lines or thematic data from a sampling site).

GFS Analyses

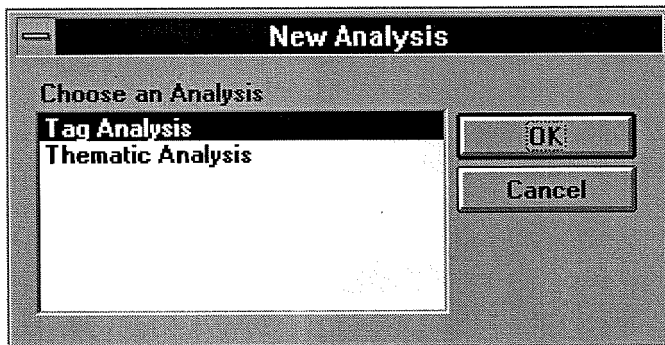
GFS Analyses are designed to spatially (geographically) display data.

Starting GFS Analyses

To start a GFS analysis, select the Analyses tab in the Project window. Either open an existing analysis by clicking the Open button or create a new analysis by clicking the New button.

If you choose a new analysis, the New Analysis dialog will open. There are two types of analyses available in GFS:

- Tag analysis - Use to analyse movement data.
- Thematic Analysis - Use to analyse data other than movement data.



As GFS Analyses are spatially (geographically) based, they must be associated with appropriate GFS Maps. If necessary, GFS prompts the user to choose a map at the appropriate stage during analyses. The user can change the currently selected map by using the Choose Map command in the File menu.

Tag analysis

Tag Analyses are used to spatially (geographically) view movement data through time. This is a visual analysis and data is displayed in an animated form. This analysis was designed primarily for tag return data, however it can also be used for other movement data provided the data is in an acceptable format.

Starting a Tag Analysis

Users can open an existing analysis or create a new analysis, by either choosing New or Open respectively in the Projects window. Below is an example of an existing tag analysis. If you create a new tag analysis, the form will be empty until the Add Record command is chosen.

The screenshot shows a software window titled "Tag1". At the top, there are "Record" and "Next Record" buttons, and a display showing "1 of 130". Below this is a section for "Minimal Data Required" with the following fields:

- Release Date: 25 / 1 / 1993 (format: dd/mm/yyyy)
- Release Position: 145.14516666, -14.75866666
- Return Date: 11 / 3 / 1993 (format: dd/mm/yyyy)
- Return Position: 145.4, -15.16666666

Below these fields is a "Route" button and a display showing "Number of Nodes : 59".

The "Optional Data" section includes the following fields:

- Tag ID: C20540
- Sex: F
- Species: PE1
- Size at Release: 27.3
- Return Size: 30.

On the right side of the interface, there are several control buttons: "Add Record", "Delete Record", "Update Record", "Import Data", "Run", and "View All".

Creating Tag Records

Tag records can be created in two main ways, either using the form-based input screen, or by using the Import Data Wizard.

Form based Data Entry

Data can be added by choosing the Add New button or choosing Add New from the record menu. A blank record will then be available for entering the tag data. The data consists of the following.

Minimal Data Required :

- Release date (dd/mm/yyyy)
- Release position (decimal latitude & longitude)
- Return date (dd/mm/yyyy)
- Return position (decimal latitude & longitude)
- Route (draw a movement path for each tagged animal)

Optional Data :

- Tag_ID - Enter an identifier for each tagged animal.
- Sex - Enter the gender of each tagged animal.
- Species - Enter a species name for each tagged animal.
- Size At Release - Enter the size at release for each tagged animal.
- Return Size - Enter a size at recapture for each tagged animal.

Once you have entered the details of the Tag you may choose a route for the tag to follow. A route is a path which the tagged prawn will follow from the release to the return position. This enables you to plot a path that avoids obstacles such as islands or coastline.

Drawing the route

An icon (the default icon is a red prawn) will appear on the map at the release and return positions for the current record. Place the mouse over the release icon and, holding the left mouse button down, draw a line to the return icon. The line can take any path between the release and return positions. Release the left mouse button when the mouse is positioned over the return icon. This must be done for every tag record including records imported using the Tag Import Wizard if you wish to use the Run command. The View All command, however, will show straight line paths.

Record Command Buttons

Previous record - Returns to the previous record in the database.

Next Record - Moves to the next record in the tag database.

Add Record - Adds a record to the tag database.

Delete Record - Deletes a record from the tag database.

Update Record - Choose to update an existing record in the tag database.

Import Data - Choose Import Data to import data into a tag analysis.

Run - Choose Run to show an animated output of tag data on the appropriate map.

View All - Choose View All to show all tag release and return positions with movement direction vectors on the appropriate map.

Displaying Tag Data

Tag data may be displayed in two ways. Use the View All command to display all the prawns at once, or the Run command to show the prawns moving through time.

Using the View All Command

The view all command will show all the tagged prawns at once, with a vector spanning from its release position to its return position. Vectors may pass through land depending on the release and return positions.

Using the Run Command

To view the tag analysis temporally, click the Run button. The Time control will appear on the Map. Use this to start the animated display of movement data by clicking the Play button.

Each data point (eg a tagged animal) will move from its geographical release position to its geographical recapture position at a rate determined by its release and recapture dates. Each data point in GFS is represented by a red prawn icon. The path that each icon takes is determined by the route that was drawn using the Route command - if no route was chosen the tagged animal will not be displayed.

When each icon reaches its recapture position, it disappears. At any stage in the analysis, the user can double click an icon for an update on the movement information for that particular moving data point. This action will display the Tag Data dialog (See Below) for that icon. You can view all the available data for an tagged animal by clicking the View Complete Data button in the Tag Data dialog. This action will display the Complete Tag Data dialog.

Tag Data

Species: PE1 Sex: M

Current Status:

Current Date: 29 January 93

Current Position: 145.160362 -14.77013993

Distance Traveled to Date: 2.14469059499867 km

No of Days Travelled: 3

Percentage of Journey Complete: 4.16907 %

Estimated Size: 0.

View Complete Data OK

Tag Data Dialog - Obtained by double clicking a tagged Prawn

Importing Tag Data

Tag Data can be imported into a Tag Analysis by using the Tag Import Wizard. However you still must use the Route command to add a tag route.

Tag Import Wizard

The Tag Import wizard assists the user with importing data from an external source into a GFS tag analysis. This wizard is activated when the Import Data button in Tag Analysis dialog options is clicked.

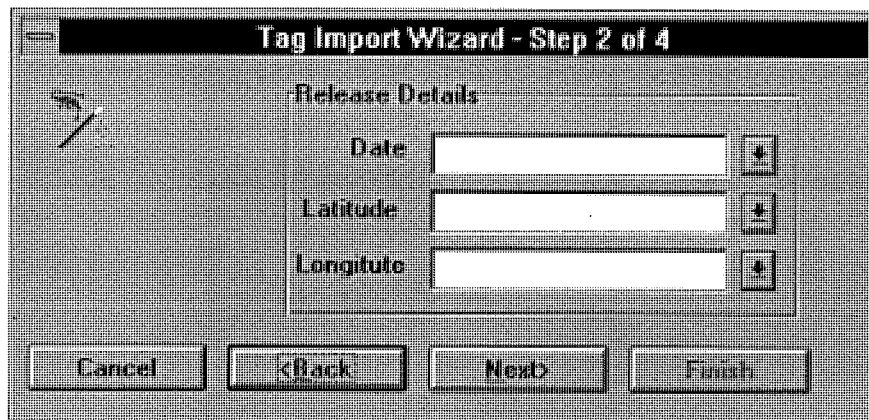
A series of four dialogs appear. Pick an option and then proceed to the next dialog by clicking the Next button. If you make a mistake, click the Back button to go back one step (or else Cancel). The procedure for using the wizard is as follows:

Importing Tag Data - Step 1



Choose an existing tag document file to import, or enter a custom SQL statement. If you choose to import an existing tag document file, the Choose File button will become active. If you choose to enter an SQL statement, the Data Source button will become active. Clicking the Data Source button activates the Enter Query dialog box. This dialog offers the choice of entering an SQL statement, or clicking the MS Query button. Users who have MS Office may use MS Query to create the SQL statement and ODBC connection. You can configure custom data sources for GFS by using the ODBC Administrator in Windows Control Panel. These data sources can include MS *Access*, *Paradox*, *Excel*, *Btrieve* and text files, depending upon the drivers installed on your computer system.

Importing Tag Data - Step 2



Select fields for the Release Details dialog. Date must be a true date field (not a string). Latitude and Longitude must be in decimal notation.

Importing Tag Data - Step 3

Select fields for the Return Details dialog. Date must be a true date field (not a string). Latitude and Longitude must be decimal. The dialog is very similar to the dialog above in step 2.

Importing Tag Data - Step 4



The screenshot shows a dialog box titled "Tag Import Wizard - Step 4 of 4". It contains an "Optional Data" section with five input fields, each with a dropdown arrow on the right:

Field Name	Value
Tag ID	TAGNO
Sex	SEX
Species	SPP
Size at Release	SIZEREL
Return Size	SIZERET

At the bottom of the dialog are four buttons: "Cancel", "<Back", "Next>", and "Finish".

Select fields for the Optional Data dialog. This data is not mandatory for a tag analysis. TagID, Sex and Species are alphanumeric fields. Size At Release and Return Size must be decimal numbers.

Click the Finish button to end the data import procedure. Now that you have imported the data you must add the tag routes. See the prior section about adding routes.

Thematic Analysis

Thematic Analysis command (Analyses window)

Use this command for a spatial (geographical) analysis of data other than movement data. This analysis was designed primarily for monthly sampling data collected from a prawn fishery, but can be used for any data of a suitable format. The Thematic Analysis dialog outlines the data required for a Thematic Analysis.

Starting a Thematic Analysis

Users can open an existing analysis or create a new analysis.

Opening an existing Analysis

Choose the Analyses tab in the Project window. Existing Analyses will be displayed. Double click on an existing Analysis to open it.

Creating a new Analysis

To create a new Thematic Analysis, choose the Thematic Analysis option in the New Analysis dialog. This will open the Thematic Analysis dialog which enables you to choose data options. You will also be prompted to choose one of the available GFS Maps. The time steps of the Analysis can be set using the Set Persistence command which will be discussed later in this section.

Data display

When a Thematic Analysis is opened, the Thematic Analysis dialog will appear. Click the Show Data button to proceed with the Analysis.

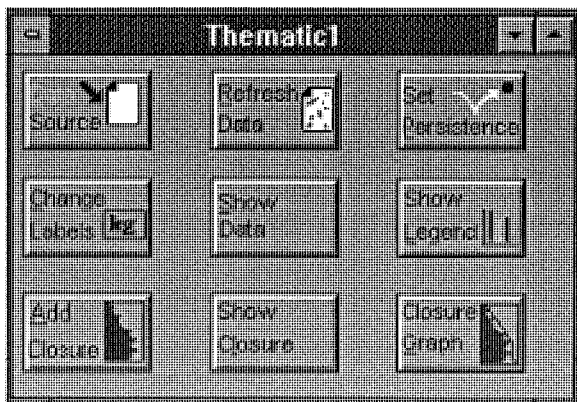
Thematic data objects in the form of coloured circles will appear on an associated map. The colour of the circle indicates the dominant data group (eg species) at each sampling site. Colour codes for data groups appear in a Legend. GFS supports 16 colours. If you have more than 16 data groups, GFS will "wrap around" and reuse colours already in use. The size of the circle indicates the relative magnitude of the thematic object (eg prawn density at that site). An 'X' on the map signifies that a site was not sampled.

The Information Tool can be used to display details (eg prawn species composition at a sampling site) about a thematic object on the map. Users can choose to have this information displayed in either bar or pie chart format. Double click a closure line to display a comparison of data groups from inside and outside the closure. Click the Closure Graph button on the Thematic Analysis display to display a summarised comparison of all current closures.

The Time control will also appear on the map. This is used to run the analysis through time and can be moved and re-sized. Users can Zoom to any area of the map using the Zoom Tool. Closure lines can be added to analyse the data.

Thematic Analysis dialog

This dialog box appears when a Thematic Analysis is opened or created. It contains the following options for Thematic database manipulation and display:



Data Source

Click the Data Source button to choose a database to import. This action opens the Data Import Wizard. GFS can import data from any ODBC source for which the user has a drivers. Examples of compatible data files include *Access*, *Paradox*, *Excel* and text files.

Refresh Data

Click the Refresh Data button if you have updated your data source and do not wish to reimport. This action will update the data in GFS. You will, however, have to reset the Persistence (the time groups of your data).

Show Data

Shows the thematic Objects on the map, the time control is also started.

Closure Graph

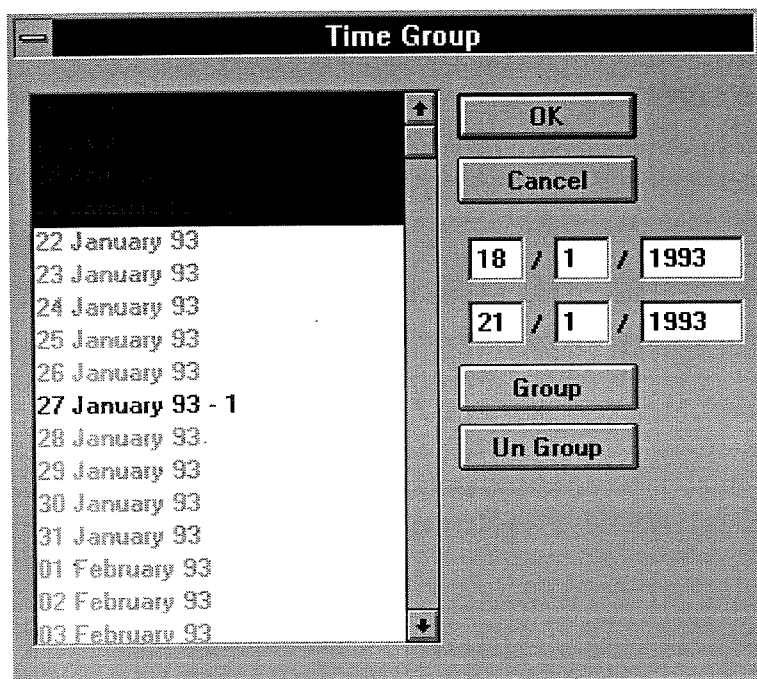
Click this button to display a summarised comparison of all closures defined in the current Thematic Analysis.

Show Closure

Click this button to display closures which have been added to a Map.

Set Persistence

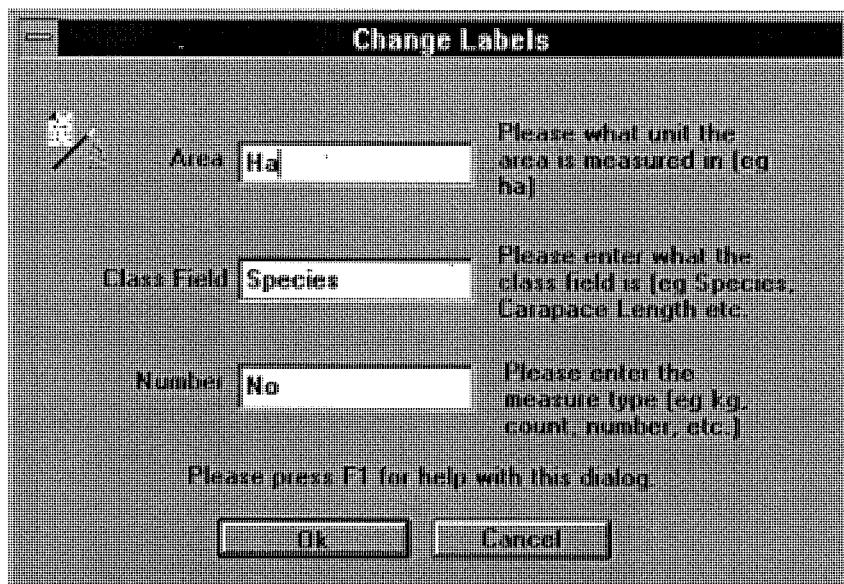
Set Persistence command (Thematic analysis dialog options)



Use Set Persistence to define the time groups of your data. This command is especially useful if data was collected in a "lumped" fashion (eg sampling took place over several days each month) or irregularly (eg sampling took place at irregular intervals through the course of a year). If the time groups are chosen appropriately, temporal data will be displayed on GFS Maps with appropriate time steps.

Upon choosing this command, the Time Group dialog will appear with a list of dates. Dates that are black or red contain a data sample. Click the first date that you wish to include in a data group and drag the mouse to the last date that you wish to include in the group. Click the Group button. Selected dates that contain data will now appear red and a group number will appear next to the grouped dates in the date list. The range of grouped dates will also appear in the dialog. Repeat this procedure for each temporal group that you wish to create. Use the Ungroup button to undo a group. If you select dates that are already grouped they will reset to the new group (ie they don't need to be ungrouped).

Change Labels



Change Labels

Area Please what unit the area is measured in (eg ha)

Class Field Please enter what the class field is (eg Species, Carapace Length etc.)

Number Please enter the measure type (eg kg, count, number, etc.)

Please press F1 for help with this dialog.

This command allows you to change the labels used for displaying graphs.

Show Legend

The Legend appears when a Thematic Analysis is opened. Thematic data groups which appear in an analysis are defined in the Legend. GFS supports 16 colours. If you have more than 16 data groups, GFS will "wrap around" and reuse colours already in use. The Legend can be moved by selecting the Title Bar and dragging to a new position, and re-sized by dragging the handles.

Add closure

Click this button on the Thematic Analysis dialog to draw a closure on a Map. Please read the section on the *information tool*.

The Map will be displayed and the cursor will appear as the Closure Line Tool when it is positioned on the map. The closure must be drawn as a polygon, not just a line from one point to another. In other words, you need to draw the inner bounds of the closure (eg trace along the coastline) as well as the outer bounds. Click the left mouse button to begin drawing the closure. As you move the cursor, it will appear as a cross, and a polygon (the closure) will form. Clicking the mouse as you move it adds nodes to the closure. You can later modify any closure by clicking and dragging nodes. Double click or press Escape to stop drawing the closure. Then move the cursor off the closure line and the cursor will change to the Information Tool. Double clicking the Information Tool on the closure line will display a graphical comparison of data from the closed area(s) and the open area.

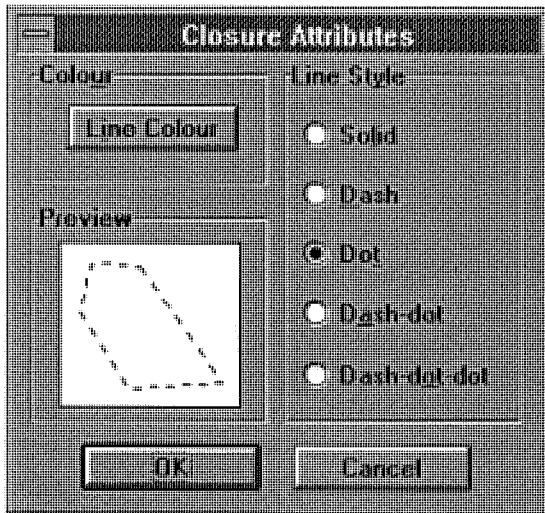
You may also import a closure from an existing Analysis using the Import Closures menu command.

Modifying a closure



Select the Closure Line Tool from the Toolbar or the Analysis Tools Menu Commands. Click once on the closure line. This makes the nodes on the closure line visible. Click and drag a node to modify the closure line. You can add nodes by holding down the Control key and clicking on the closure line. Holding down the Control key and clicking on an existing node will delete that node. To move the entire closure Polygon, click on the closure line (not on a node) and drag to a new position. To remove a closure, click on the closure line once with the Closure Line Tool, then press the Delete key. If you wish to add a different closure, you must return to the Thematic Analysis dialog and click the Add Closure button again. Pressing the Shift key and clicking on the closure line creates a copy of the current closure.

The style of the closure can be changed by double clicking on the closure line with the closure tool, this will start the closure attribute dialog box.



Import Closures

Use the file import menu command to import a closure from an existing Thematic Analysis. This is useful if you wish to have the same closure in different Analyses. A file open dialog will appear allowing you to import closures from any thematic view (*.thm files).

Data Import Wizard

The Data Import Wizard is activated when users click the Data Source button in the Thematic Analysis dialog. A series of three dialogs appear. Pick an option and then proceed to the next dialog by clicking the Next button. If you make a mistake, click the Back button to go back one step (or else Cancel). The procedure for using the Wizard is as follows:

Step 1



Choose a data source. Clicking the 'Data Source' button activates the 'Enter Query' dialog box. This dialog offers the choice of entering an SQL statement, or clicking the 'MS Query' button. Users who have MS Office may use MS Query to create the SQL statement and ODBC connection. You can configure custom data sources for GFS by using the ODBC Administrator in Windows Control Panel.

Step 2

Data Import Wizard - Step 2 of 3

Sample Details

Date	DATE	+
Latitude	Lat	+
Longitude	Long	+
Area	MaxDITOTAREA	+
ID (opt)	Site	+

Class Field: Spp

Number: CountOfCL

Please press F1 for help with this dialog.

Cancel <Back Next> Finish

Exit from your successful Query. This will return you to the Data Import Wizard. Click the Next button. This opens a dialog in which the user enters the following sample details:

Date - Date sample taken. Must be true date field data.

Latitude - Must be a field containing decimal latitudes. Latitudes south of the equator must be negative.

Longitude - Must be a field containing decimal longitudes. Longitudes West of zero must be negative.

Area - The area of the sample (eg a trawl sample might cover an area of 4 ha). If no area is entered, raw numbers (rather than densities) of each class field will be plotted.

ID - Optional identifier for location of sampling site (eg site 1).

Class field - Choose the way in which the data is grouped (species, size classes, etc).

Number - The number in each class field (data group).

Step 3

Click the Next button. This opens a dialog in which users enter:

Data Import Wizard - Step 3 of 3

Area Please enter the unit the area is measured in (eg ha)

Class Field Please enter what the class field is (eg Species, Carapace Length etc)

Number Please enter the measure type (eg kg, count, number, etc.)

Please press F1 for help with this dialog

Cancel <Back Next> Finish

Area - Enter the unit that the sample area is measured in.

Class field - Enter the name of the class field (data group).

Number - Enter the number type (count, weight, etc).

Click the Next button. This will return you to the Thematic Analysis dialog to proceed with the Analysis.

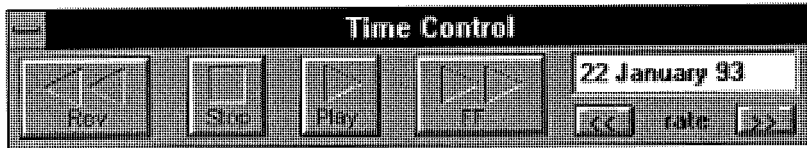
Missing data

Missing data can be incorporated into the Analysis by entering zeros in the Area and Number fields of your database. For example, if site 'A' was not sampled at a particular date, make sure a zero is entered in the area and number fields of your database for that date. An entry will also be required in the latitude, Longitude and Class fields. Such a record in your database will produce an 'X' on the Map during the Analysis, which signifies missing data.

Import errors

Inconsistencies and detected errors in imported data are reported in the Import Errors dialog box. The error explanations are available at run time.

Time control



The Time Control dialog appears when temporal objects (eg tagged prawn or monthly sampling data) are present on GFS Maps. Use the Time Control to browse through data temporally. The control has the following options:

Rev Runs GFS Analyses back through time fast.

Stop Stops analyses. This can be especially useful if you want to use the Information Tool to display details about several thematic data objects on the Map.

Play Runs analyses.

FF Runs analyses forwards through time fast.

fast (>>) Speeds up the rate at which the analysis proceeds.

slow (<<) Slows down the rate at which the analysis proceeds.

Date The date is displayed as dd/month/yyyy. Users can change the date by clicking on it and the Set Time dialog will appear. Type in the date (dd/mm/yyyy) you wish to view and click OK. The display will update immediately to the new date.

Special Analysis Functions

Choose Map

This command allows the user to change the currently selected GFS Maps.

Rename title

Use to rename the title of a an analysis, can also be used to rename map windows. To change the title the analysis or map must be open.

PrawnEd

Introduction

PrawnEd was developed as an educational tool to help people at all levels become more familiar with the biology of prawns caught during the Turtle Group project. It also provides some analysis of the meteorological data of the area during the period of the study. It was intended to aid decision makers, but may also be useful to others such as students and fishers.


Installation

1. Insert PrawnEd Diskette 1 into Drive A.
2. Type "a:setup" and press enter.

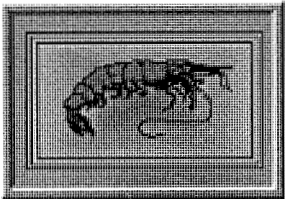
Note : PrawnEd must be run in screen modes that support small fonts.

Using PrawnEd

Getting Started

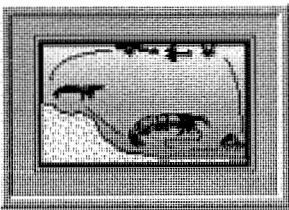
1. Double click your mouse on the PrawnEd icon.  You will arrive at the PrawnEd Menu Gallery. This is in the form of a room that has pictures hanging on the wall, a window, door, 'flying prawns' and a book on the floor.
2. Move your mouse cursor around the room and you will see the names of the various functions available pop-up. These functions are accessed by a single left mouse click when the title appears.

General Information



1. Click on the picture of the prawn to access the General Information section. This section gives you information on different aspects of each prawn species found in the Turtle Group region.
2. Move your mouse cursor over each heading to reveal the information on the prawn species named in the plaque at the top of the picture.
3. Change to the next species using the arrows at either side of the species name. Click once on the arrow and the next species name and picture will appear.
4. To exit the General Information section and return to the PrawnEd Menu Gallery click once with the left mouse button on the exit button.

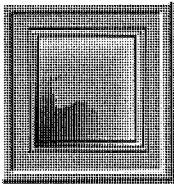
Life Cycle



1. Click on the picture of the prawn life cycle to access this information section. This section gives you an account of each life history stage of each species found in the Turtle Group region.
2. Move your mouse cursor over the picture of the life history stage to reveal information on the prawn species named in the plaques at the top (common) and bottom (scientific) of the picture.

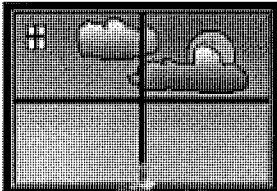
3. To change to the next species click the arrows at either side of the species name and the next name will appear.
4. To exit the Life Cycle section and return to the PrawnEd Menu Gallery click once with your left mouse button on the exit button.

Distribution



1. Click on the picture of the map of Australia to access this information section. This section gives you an account of the Australian distribution of each species found in the Turtle Group region.
2. The map pictured shows the distribution of the prawn species named in the plaque at the top of the picture.
3. To change to the next species click the arrows at either side of the species name and the next name will appear.
4. To exit the Distribution section and return to the PrawnEd Menu Gallery click once with your left mouse button on the exit button.

Meteorological Data



1. Click on the window to access this information section. This section gives you three graphs that describe meteorological characteristics of the Turtle Group region.
2. In the Meteorological Data Menu, move your mouse cursor over the graph name plaques to reveal information on each graph.
3. To view the graph, click your left mouse button on the name plaque of your choice. To view another graph return to the Meteorological Data menu by clicking the exit button.
4. To exit this section and return to the PrawnEd Menu Gallery click once with the left mouse button on the exit button.

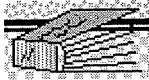
Prawn Size



1. Click on the 'Flying Prawns' to access this information section. This section displays graphs of the frequency of size classes of prawn species found in the Turtle Group region.
2. The graph pictured shows the size frequency of the prawn species named in the plaque at the top of the picture.

3. To change to the next species click the arrows at either side of the species name and the next species name/graph will appear.
4. To exit this section and return to the PrawnEd Menu Gallery click once with the left mouse button on the exit button.

Catch & effort



1. Click on the book on the floor to access this information section. This section gives you three graphs that describe catch and effort information from the Turtle Group region. This is summarised from logbook records.
2. In the Logbook Catch and Effort Menu, move your mouse cursor over the graph name plaques to reveal information on each graph.
3. To view the graph, click your left mouse button on the name plaque of your choice. To view another graph return to the Meteorological Data menu by clicking the exit button.
4. To exit this section and return to the PrawnEd Menu Gallery click once with the left mouse button on the exit button.

Exiting PrawnEd

1. Click on the door to open it. You will be asked "Are you sure you want to exit PrawnEd?" Click on the 'yes' button to exit or 'no' button to remain in the PrawnEd Menu Gallery.

Glossary

MS Query

MSQuery is a visually interactive query tool for developing SQL statements. MS Query is not part of GFS. It is developed by Microsoft and comes with the MS Office suite of software. See MS Office user manuals or MS Query help for further information.

MapInfo

MapInfo is a Geographical Information System.

ODBC

Open Database Connectivity is used for connecting to various Database sources.

SQL

Structured Query Language is a language used for extracting data from a database.

Geographical Fisheries System

GFS is a dynamic tool for fishery managers, fishers, scientists and students.

This package **will allow** you to:

- visualise data on a map through time
- see data from a prawn fishery research project displayed
- manipulate closure lines and view the results
- import MapInfo maps
- read data from Access, Paradox, Excel, text files and more

GFS features include:

- detailed on-line help
- full colour graphics
- easy to use Windows application

PrawnEd educational module included

Minimum system requirements:

- 8mb RAM
- 10mb of free hard disk space
- 386 DX33
- Windows 3.1

