

GIS MANUAL
THE STUDY ON MAPPING AND LAND COVER ASSESSMENT OF MANGROVE AREAS

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THE STUDY ON MAPPING AND LAND COVER ASSESSMENT OF MANGROVE AREAS IN THE PHILIPPINES

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National Mapping and Resource
Information Authority



Department of Environment and
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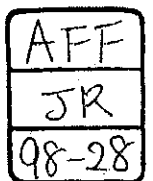
Japan International
Cooperation Agency



Japan Overseas Forestry
Consultants Association



Aero Asahi Corporation



Mangrove Forest Resource Information System

The Mangrove Forest Resource Information System (MAFRIMS) is a Geographic Information System (GIS) designed to run on a personal computer and is mainly used in searching for and analyzing mangrove forests.

Characteristics of the program include the following.

a. Simple Operation

This high level program is designed with a simple user interface for ease of operation.

b. High Level Functions

MAFRIMS is based on ArcView GIS 3.0a. As attribute data is exported in Microsoft Excel format, high level analysis of attribute data is possible.

c. Expandability

As this system is based on ArcView GIS 3.0a, which can be fully customized, it is possible to make changes to the user interface by adding additional data and functions.

About this Manual

This manual consists of two parts, the Operation Manual and the Maintenance Manual.

a. Operation Manual

This manual explains how to operate the system. First time users will find the detailed explanations invaluable.

b. Maintenance Manual

This manual provides information regarding system management operations for systems administrators. Please take the time to read it if this applies to you.

OPERATION MANUAL

**THE STUDY ON MAPPING AND LAND COVER ASSESSMENT
OF MANGROVE AREAS IN THE PHILIPPINES**



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1 Database Specifications

This chapter explains the specifications of the database used by MAFRIMS. Data contained in MAFRIMS are classified into two categories, image data and attribute data. This chapter provides a more detailed explanation of these two kinds of data.

1-1 Database structure

Data structured are shown in Figure 1-1.

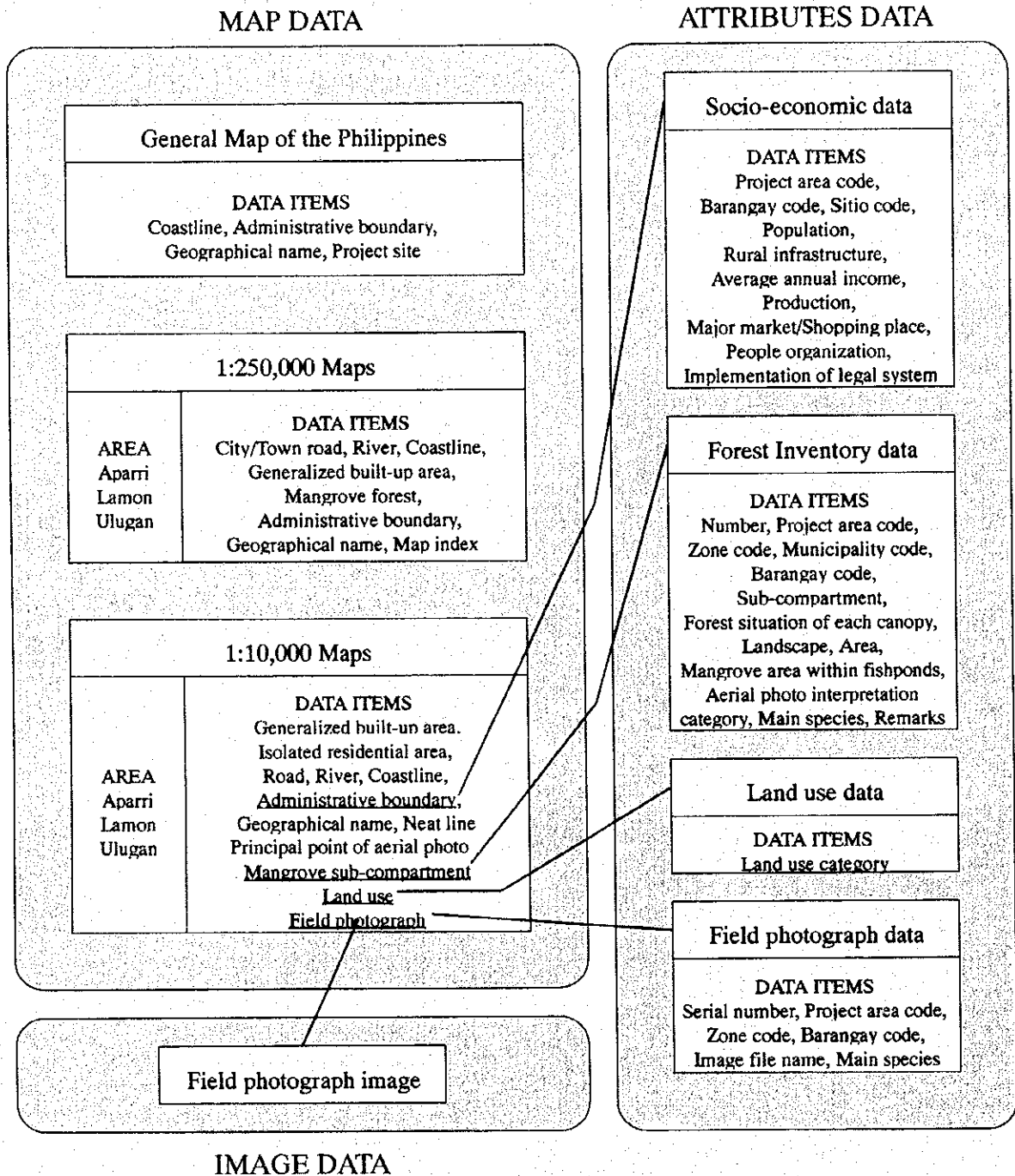


Figure 1-1 Database Structure Diagram

1-2 Image Data

The Map data used by MAFRIMS is shown in Chart 1-1. "Minimum" refers to minimum display reduction and "Maximum" refers to maximum display enlargement. "None" means that nothing has been designated for that particular item. Maximum and Minimum values are used to control the display of whole area maps, index maps, and base maps.

Chart 1-1 Map Data

Theme Name	Source File	Minimum	Maximum
Camera	camera.shp	NONE	1:913772
Mangrove	mangrove.shp	NONE	1:50799
Label(LandUse)	geotextd.shp	NONE	NONE
AreaName	geotextd.shp	NONE	1:50799
BaseMap No.	geotextd.shp	1:10000	1:913772
Label(Index)	idxtextd.shp	1:50799	1:913772
Label(Philippine)	philtexd.shp	1:913772	NONE
Aerial Photo	bsld.shp	NONE	1:50799
BaseMapLine	bsld.shp	NONE	1:50799
shoreline(Line)	bsld.shp	NONE	NONE
Road	bsld.shp	NONE	1:50799
River(Single)	bsld.shp	NONE	1:50799
Barangay	bspd.shp	NONE	1:50799
Municipality	bspd.shp	NONE	1:50799
Province	bspd.shp	NONE	1:50799
Region	bspd.shp	NONE	1:50799
River(Double)	bspd.shp	NONE	1:50799
Building	bspd.shp	NONE	1:50799
Lake/Pond	bspd.shp	NONE	1:50799
Mangrove Zone	bspd.shp	NONE	1:50799
Land Use	bspd.shp	NONE	1:50799
ShoreLine	bspd.shp	NONE	1:50799
Basesheet	bspd.shp	NONE	1:50799
Index-Line	idxld.shp	1:50799	1:913772
Index-Polygon	idxpd.shp	1:50799	1:913772
Index	idxpd.shp	1:913772	NONE
Indexsheet	idxpd.shp	1:50799	1:913772
Administrative Boundary	philld.shp	1:913772	NONE
Philippine	philpd.shp	1:913772	NONE
Sea	deg30.shp	1:913772	NONE
Background	deg30.shp	NONE	NONE

1-3 Attribute Data

Camera symbol (attached with the photo attribute data) and Mangrove forest inventory (attached with the mangrove sub-compartment polygon) are prepared as the database table in this system for supporting data changes, saving and new additions. Please refer to 2-2-3 Attribute Reference section for details of how to make changes to such tables.

It is also possible to refer to socio-economic surveys by designating administrative boundary data. The relationship between these two items is explained below.

1-3-1 Forestry Inventory Book

Forestry inventory data is linked with each mangrove polygon. The types of data provided by such surveys are shown in the chart below.

Chart 1-2 Forestry Inventory Book

No	fieldname	Alias	width	precision	type
001	Shape	Shape	8		FIELD_SHAPEPOLY
002	No	Number	6		FIELD_CHAR
003	Pcode	Area Name	7		FIELD_CHAR
004	Zonecode	Zone Name	11		FIELD_CHAR
005	Mcode	Municipality Name	7		FIELD_CHAR
006	Bcode	Barangay Name	7		FIELD_CHAR
007	Compart	Compartment	10		FIELD_CHAR
008	Subcomp	Sub compartment	10		FIELD_CHAR
009	Uccdc	Upper canopy crown density class	7		FIELD_CHAR
010	Ucmeanh	Upper canopy mean height	10		FIELD_CHAR
011	Mccdc	Middle canopy crown density class	7		FIELD_CHAR
012	Lccdc	Lower canopy crown density class	7		FIELD_CHAR
013	Lcmeanh	Lower canopy mean height	9		FIELD_CHAR
014	Tclow	Tidal class low	7		FIELD_CHAR
015	Tcmid	Tidal class middle	6		FIELD_CHAR
016	Tchigh	Tidal class high	8		FIELD_CHAR
017	Eldown	Esturine location downstream	8		FIELD_CHAR
018	Elinter	Esturine location intermediate	8		FIELD_CHAR
019	Elup	Esturine location upstream	5		FIELD_CHAR
020	Others	Others	8		FIELD_CHAR
021	Area	Area	6	2	FIELD_DECIMAL
022	Mawithfish	Mangrove Area within Fishponds	12		FIELD_CHAR
023	Phcateg	Aerial Photo Interpretation Category	9		FIELD_CHAR
024	Mspc	Main species	13		FIELD_CHAR
025	Ufldint	User integer number field	8		FIELD_CHAR
026	Ufldreal	User real number field	10		FIELD_CHAR
027	Ufldchar1	User character field1	11		FIELD_CHAR
028	Ufldchar2	User character field2	11		FIELD_CHAR
029	Remarks	Remarks	32		FIELD_CHAR
030	Mslink_odb	Mslink-ODBC	12		FIELD_DECIMAL
031	Kind	Kind	5		FIELD_CHAR

1-3-2 Photo Attribute Data

Photo Attribute data is linked with each mangrove polygon. The types of data provided by such photo attributes are shown in the chart below.

Chart 1-3 Photo Attribute Data

No	Fieldname	Alias	width	precision	type
001	Shape	Shape	6		FIELD_SHAPEPOINT
002	Angle	Angle	3		FIELD_DECIMAL
003	No	serial No.	4		FIELD_DECIMAL
004	Imagefile	Image file name	40		FIELD_CHAR
005	Mainspc	Main species	20		FIELD_CHAR
006	Prjcode	Project area code	10		FIELD_CHAR
007	Zonecode	Zone code	25		FIELD_CHAR
008	Compartment	Compartment	5		FIELD_CHAR
009	Subcomp	Sub-compartment	5		FIELD_CHAR
010	Expl	Explanation	254		FIELD_CHAR
011	Mcode	Municipality code	10		FIELD_CHAR
012	Bcode	Barangay code	10		FIELD_CHAR

1-2-3 Socio-economic Surveys

The way in which socio-economic data is linked with other items is different from the way in which mangrove polygons and photo attributes are linked with other items. Such data is linked using the following rules:

The Barangay Theme is the administrative boundary layer used to display socio-economic data in ArcView. Socio-economic data is provided from three types of sheets and includes data by region and data by village. For details regarding the display of socio-economic data please refer to 3-3.

The Barangay.txt file ties together the Barangay theme displayed in the view, with the socio-economic data. The Barangay.dbf theme attribute file and the Barangay.txt file are linked together by MsLink-ODBC values while the Barangay.txt file and Sheet 1 of the socio-economic data are linked together by the Barangay code. The content of the socio-economic data is searched according to the Barangay code acquired from what the user selects on the screen.

Chart 1-4, Chart 1-5 and Chart 1-6 show three types of sheets containing items in CSV format.

Chart 1-4 Socio-economic Survey Sheet 1

No	Fieldname	Details	Type
001	AREACODE	Project area code	FIELD_CHAR
002	MCODE	Municipality code	FIELD_CHAR
003	BCODE	Barangay code	FIELD_CHAR
004	BNAME	Barangay name	FIELD_CHAR
005	MNAME	Municipality name	FIELD_CHAR
006	HOUSHOLD	Number of household	FIELD_DECIMAL
007	FAMILY	Average number of family member	FIELD_DECIMAL
008	RURALINF	Rural infrastructure	FIELD_CHAR
009	SOSIALINF	Social infrastructure	FIELD_CHAR
010	INCOME	Average annual income	FIELD_DECIMAL
011	FORESTRY	Forestry production	FIELD_CHAR
012	FISHERY	Fishery production	FIELD_CHAR
013	AGRI	Agriculture production	FIELD_CHAR
014	OTHERS	Others production	FIELD_CHAR
015	MARKET1	Major market/Shopping place	FIELD_CHAR
016	MARKET2	Peoples organization	FIELD_CHAR
017	COASTAL	Coastal environmental program	FIELD_CHAR
018	FPONDNUM	Number of fishpond (private)	FIELD_CHAR
019	FPONDLEASE	Fishpond lease agreement	FIELD_CHAR
020	REFOREST	Mangrove reforestation project	FIELD_CHAR
021	STEWARD	Mangrove stewardship agreement	FIELD_CHAR
022	COMMUNITY	Community-based forest management	FIELD_CHAR

Chart 1-5 Socio-economic Survey Sheet 2

No	Fieldname	Details	Type
001	AREACODE	Project area code	FIELD_CHAR
002	MCODE	Municipality code	FIELD_CHAR
003	BCODE	Barangay code	FIELD_CHAR
004	SITIO	Sitio code	FIELD_CHAR
005	FAMILY	Average of family member	FIELD_DECIMAL
006	DIALECT	Dominant language/dialect	FIELD_CHAR
007	INCOME	Average monthly income	FIELD_DECIMAL
008	FISHYSEC	Major source income percent of fishery sector	FIELD_DECIMAL
009	PRODUCT	Dominant products	FIELD_CHAR
010	AGRISEC	Major source income percent of agricultural sector	FIELD_DECIMAL
011	PRODUCTS2	Dominant products	FIELD_CHAR
012	OTHERSR	Major source income percent of other sources	FIELD_DECIMAL
013	EXPENSE	Average monthly expense	FIELD_DECIMAL
014	SELFCONSU	Percentage of self-consumption of products	FIELD_DECIMAL
015	AVAILLOAN	Percentage of being avail of loan/credits	FIELD_DECIMAL
016	JOINCOOP	Percentage of joining cooperatives/organizations	FIELD_DECIMAL
017	OWNHOUSE	Percentage of having own houses	FIELD_DECIMAL
018	ELECTRIC	Availability of electricity	FIELD_DECIMAL
019	WATER	Availability of water	FIELD_DECIMAL
020	FUELWOOD	Using fuelwood as major fuel	FIELD_DECIMAL
021	HAVEFPOND	Percentage of having fishpond	FIELD_DECIMAL
022	OWNFPOND	Percentage of owing fishpond	FIELD_DECIMAL
023	INTTOHAVE	Intention to have fishpond	FIELD_DECIMAL

Chart 1-6 Socio-economic Survey Sheet 3

No	Fieldname	Details	Type
001	AREACODE	Project area code	FIELD_CHAR
002	MCODE	Municipality code	FIELD_CHAR
003	BCODE	Barangay code	FIELD_CHAR
004	SITIO	Sitio code	FIELD_CHAR
005	POFENTER	Percentage of entering mangrove area in the past one year	FIELD_DECIMAL
006	POFCOL	Percentage of collecting mangrove trees as the reason on enter	FIELD_DECIMAL
007	POFHAVING	Percentage of having negative sense to collect mangrove trees	FIELD_DECIMAL
008	POFUSING	Percentage of using mangrove trees at present	FIELD_DECIMAL
009	CUTTING	By entering and cutting	FIELD_DECIMAL
010	COLLECTING	By collecting fallen trees	FIELD_DECIMAL
011	BUYING	By buying trees	FIELD_DECIMAL
012	PURPOSE	Purpose of use	FIELD_CHAR
013	WITHIN3	Percentage of having used mangrove trees within past three years	FIELD_DECIMAL
014	MORETHAN3	Percentage of having used mangrove trees for more than past three years	FIELD_DECIMAL
015	FUTURE	Percentage of having intention to use mangrove trees in the future	FIELD_DECIMAL
016	ASNURSERY	Percentage of using mangrove forest as fish nursery	FIELD_DECIMAL
017	ASWINDBK	Percentage of using mangrove forest as windbreak	FIELD_DECIMAL
018	ASDISP	Percentage of using mangrove forest as wave dispersant	FIELD_DECIMAL
019	POFMAIN	Percentage of finding importance in maintaining mangrove forest	FIELD_DECIMAL
020	POFPROTECT	Percentage of willingness to protect mangrove forest in active way	FIELD_DECIMAL
021	POFGRANT	Percentage of granting mangrove cutting as source of living	FIELD_DECIMAL

1-4 Other data

Aside from photograph attribute data, the camera symbol has an image file of a photograph prepared in JPEG format. This corresponds to the file name written in the Imagefile field in the Photograph attribute record.

2 An Outline of Functions

This chapter provides an overview of what can be achieved through this system.

2-1 Display of map

Map data is displayed on the screen. This can be enlarged, reduced, or moved around freely.

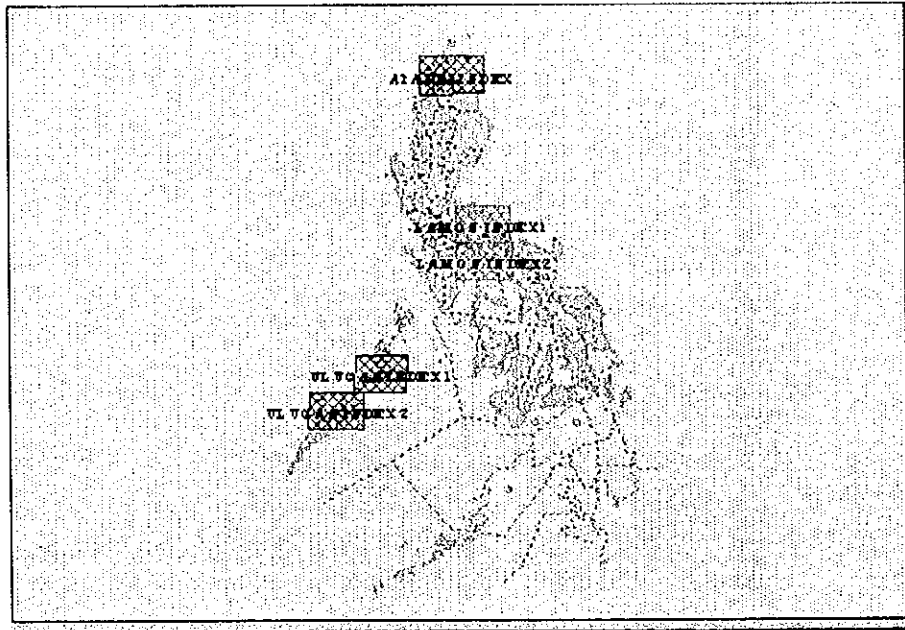


Figure 2-1 General map of the Philippines



Figure 2-2 1:250,000 Map

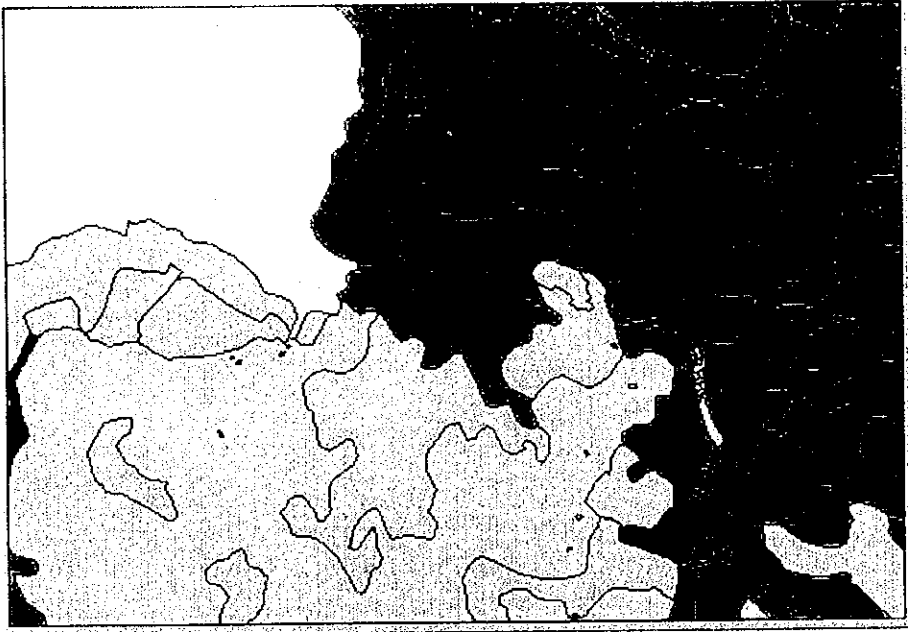


Figure 2-3 1:10,000 Map

2-2 Reference of photograph and attribute data

Clicking on the camera symbol on a map will display photographs of that area.

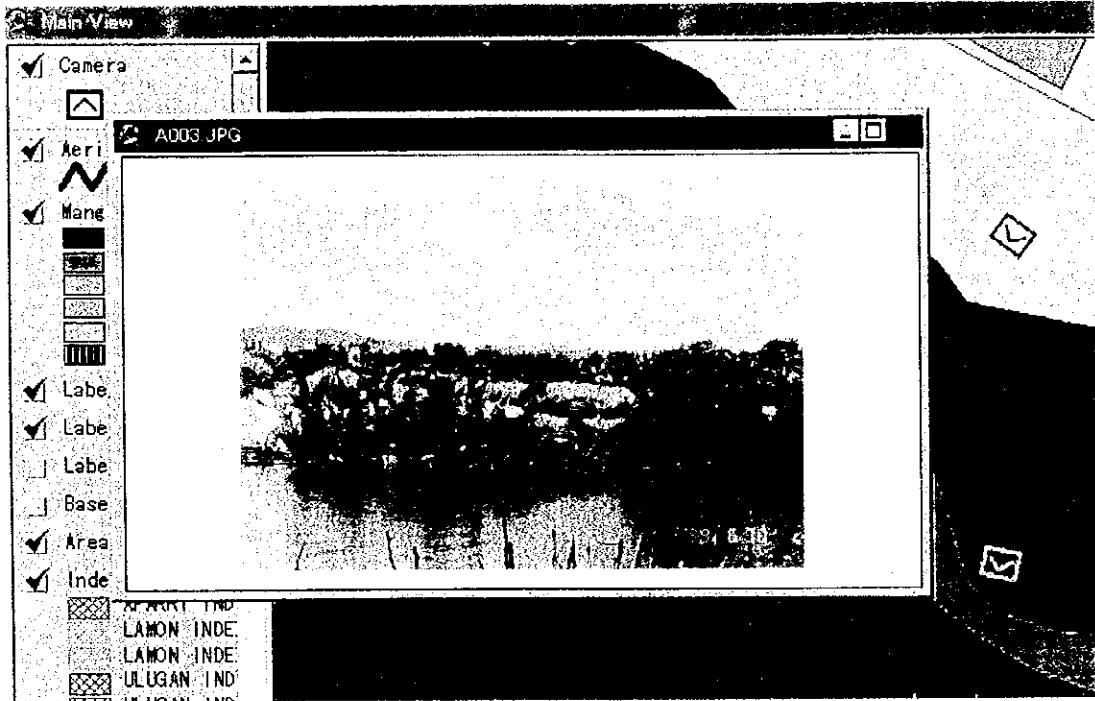


Figure 2-4 Field Photograph

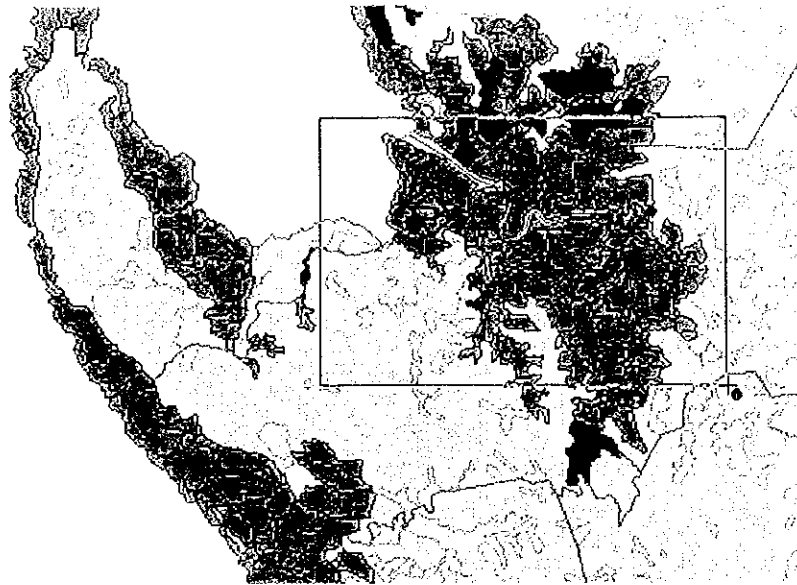
You can also examine other information linked to that image.

serial No		Explanation	Vegetation recovered
Project area code	A		
Zone code	BGE	Municipality code	BGY
Compartment	603	Barangay code	MLW
Sub-compartment	F28	Angle	167
Main species	FISHPOND	Image file name	APARRIAD03.JPG

Close Save Photo Revert

Figure 2-5 Information linked to the site photo

Both photos and attribute data windows can be opened at the same time.



Search by Area

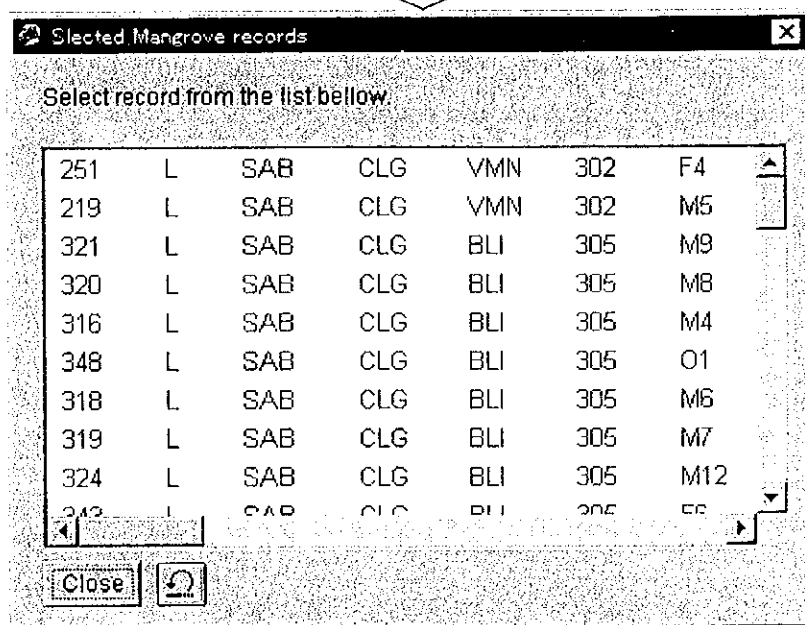


Figure 2-7 A list of areas found through searching by area.

When you want to search in a particular area on the map, select "?" from the "Search" menu and then use the mouse to drag a box over the area you want to search. Any mangrove sub-compartment in that box will be displayed in the search window. Click on the area you want will display the attributes for that area.

It is possible to refer to and make changes to attribute data in individual mangrove sub-compartment.

Number	Lower canopy mean height	Main species
L	4.0	Li,Sh,Xg,Ct
Area Name	Tidal class low	User integer number field
L	0.0	
Zone Name	Tidal class middle	User real number field
SAB	0.0	
Municipality Name	Tidal class high	User character field 1
CLG	100.0	
Barangay Name	Estuarine location downstream	User character field 2
DLI	0.0	
Compartment	Estuarine location intermediate	
307	0.0	
Sub compartment	Estuarine location upstream	
M15	0.0	
Upper canopy crown density class	Others	
0	100.0	
Upper canopy mean height		Remarks
	15.72	
Middle canopy crown density class	Upper canopy mean height	
0		
Lower canopy crown density class	Area	
D4	LLX	
Close	Save	Print

Figure 2-8. Attribute data for a particular mangrove sub-compartment.

2-4 Renewal of mangrove sub-compartment data

The Feature Tool is used to create the polygons, etc. New mangrove sub-compartment can be added to existing areas when they border on such areas. Borders can be moved without the areas losing their specific attributes. Existing shapes can also be cut and pasted to other areas, making the feature tool a very useful tool in any situation.

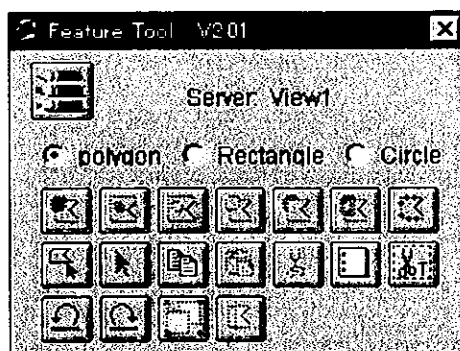


Figure 2-9 The Feature Tool window.

2-5 Display of Socio-Economic Survey Data

Clicking on a village on the map brings up the socio-economic survey data for that particular place.

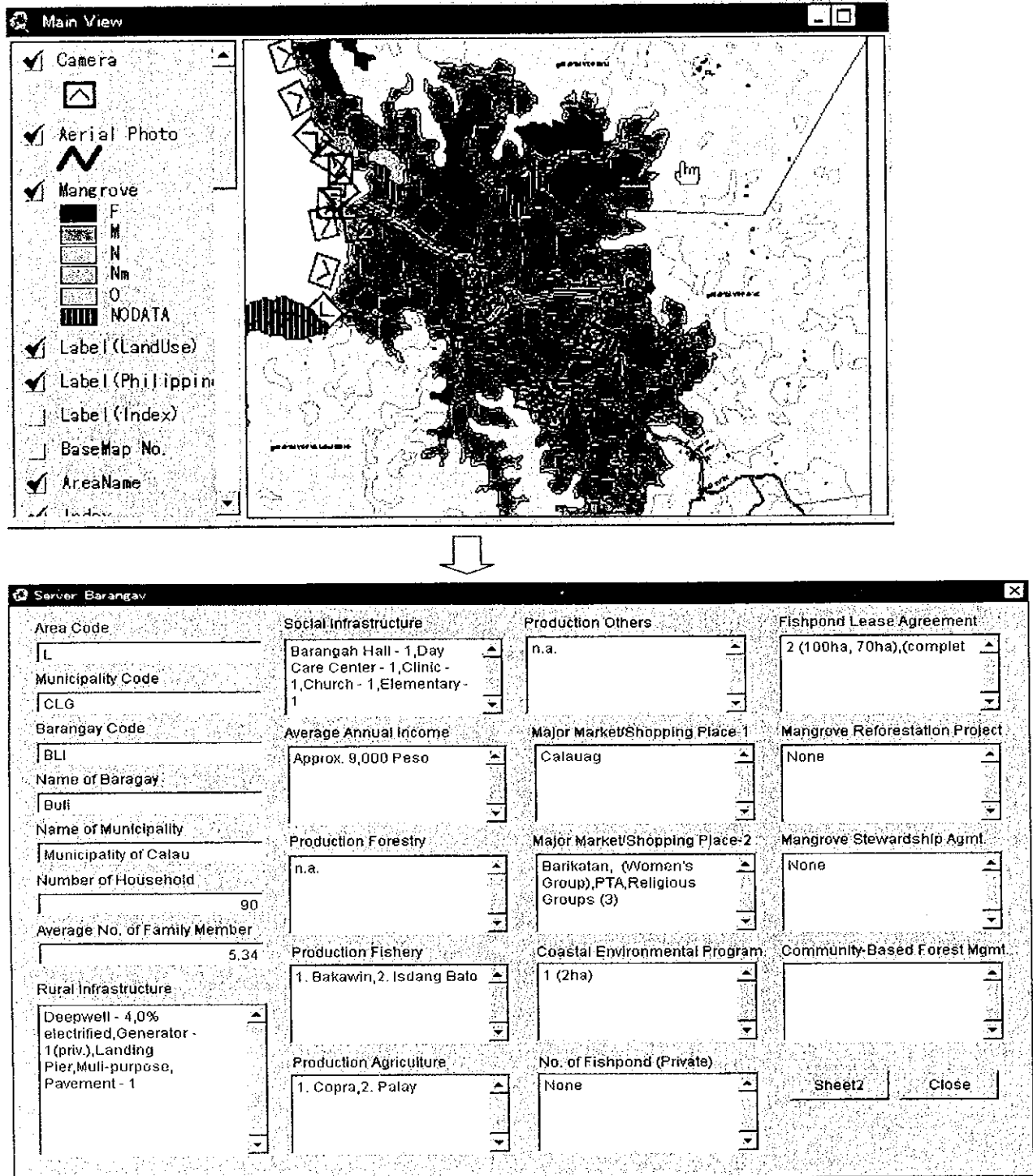


Figure 2-10 An example of socio-economic survey data for a particular area.

2-6 Production of thematic map

Maps showing forest types can be created by using different fill patterns and colors to designate specific types of mangroves, etc.

Legend of mangrove land use type

F	Fishpond
M	Mangrove
N	Nipa
Nm	Nipa-mangrove
O	Others

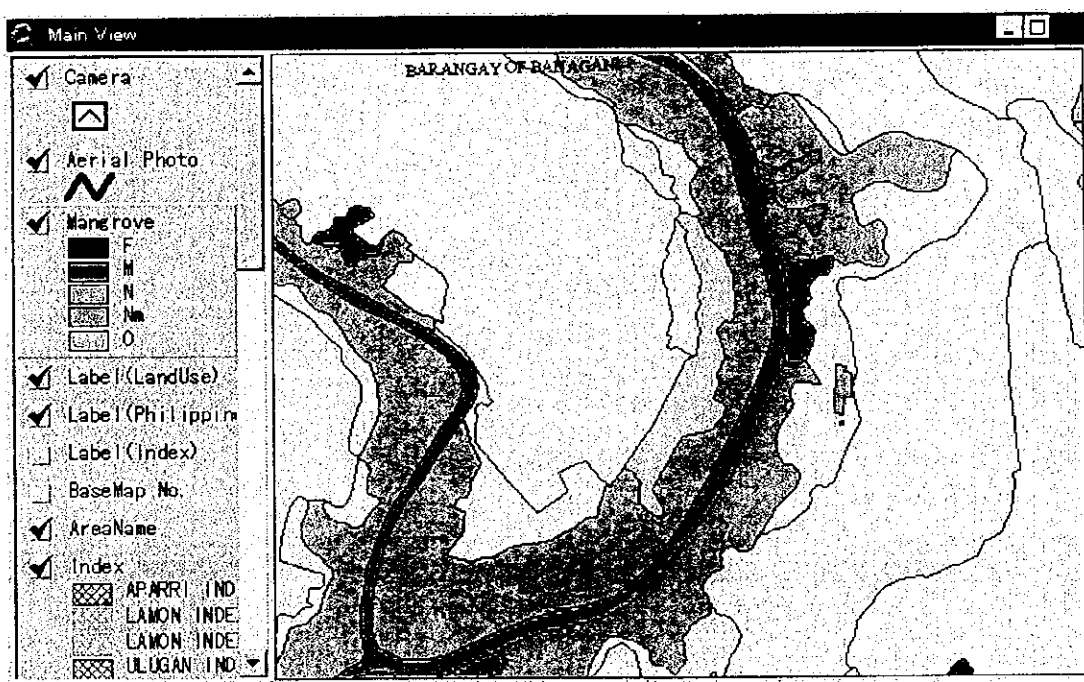


Figure 2-11 A map showing mangrove forest types.

Land use polygons can be colored and filled according to type.

Legend of land use type

- S Soil
- W Water
- FO Forest
- Mg Mangrove
- FP Fishpond
- DL Dry land
- AL Arable land
- Etc.

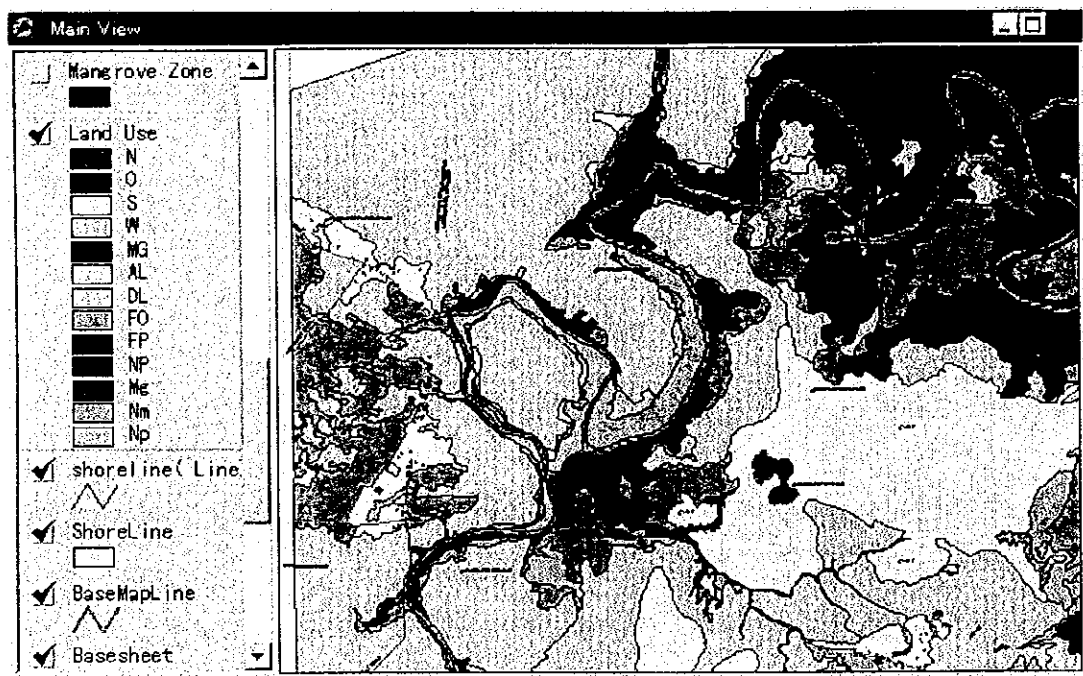
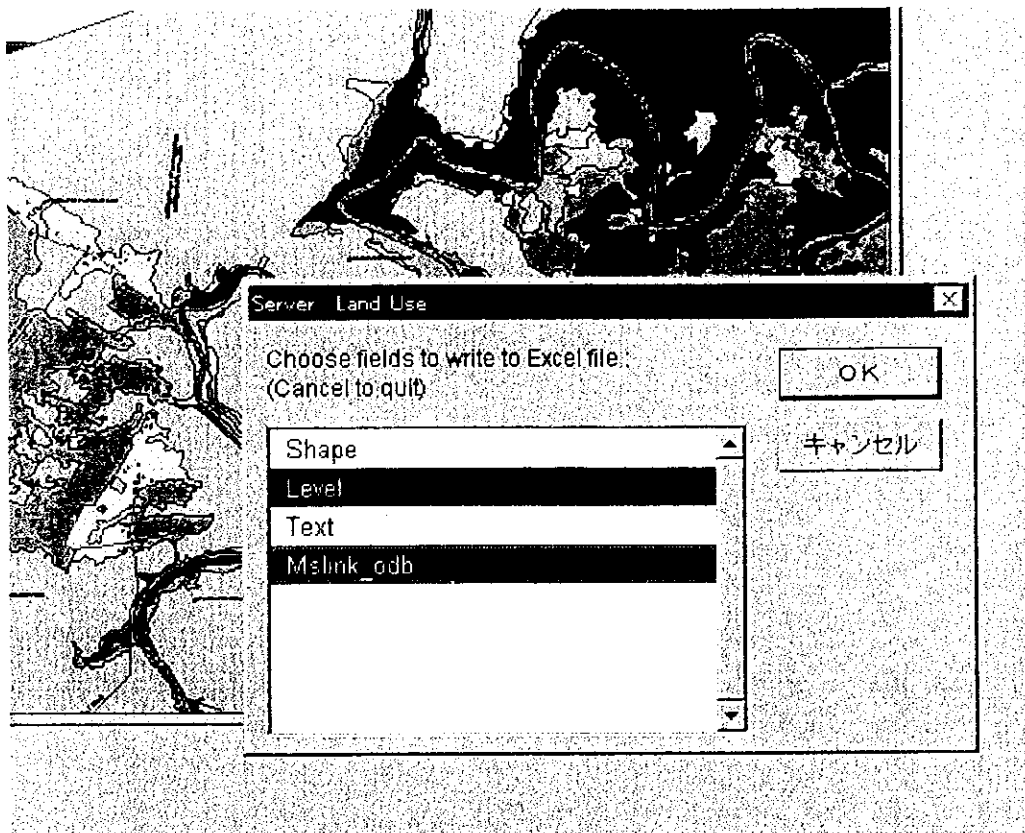


Figure 2-12 A map showing land use.

2-7 Export of attribute data

Search results and the attribute data of selected polygons can be exported directly to Microsoft Excel. Fields to be exported are selected from the list view and then the communications function of the program is used to export those items.



	1	2	3	4	5
1	Main View	Land Use			
2	Level	Text	Mslink_gdb		
3		30	20294		
4		30	19521		
5		30	26445		
6		30	19521		
7		30	19521		
8		30	20550		
9		30	28750		
10					
11					
12					
13					

Figure 2-13 An example showing data being selected above and then as it appears after it has been exported below.

2-8 Print of map

Theme maps and search results, etc. can be printed using the layout function.

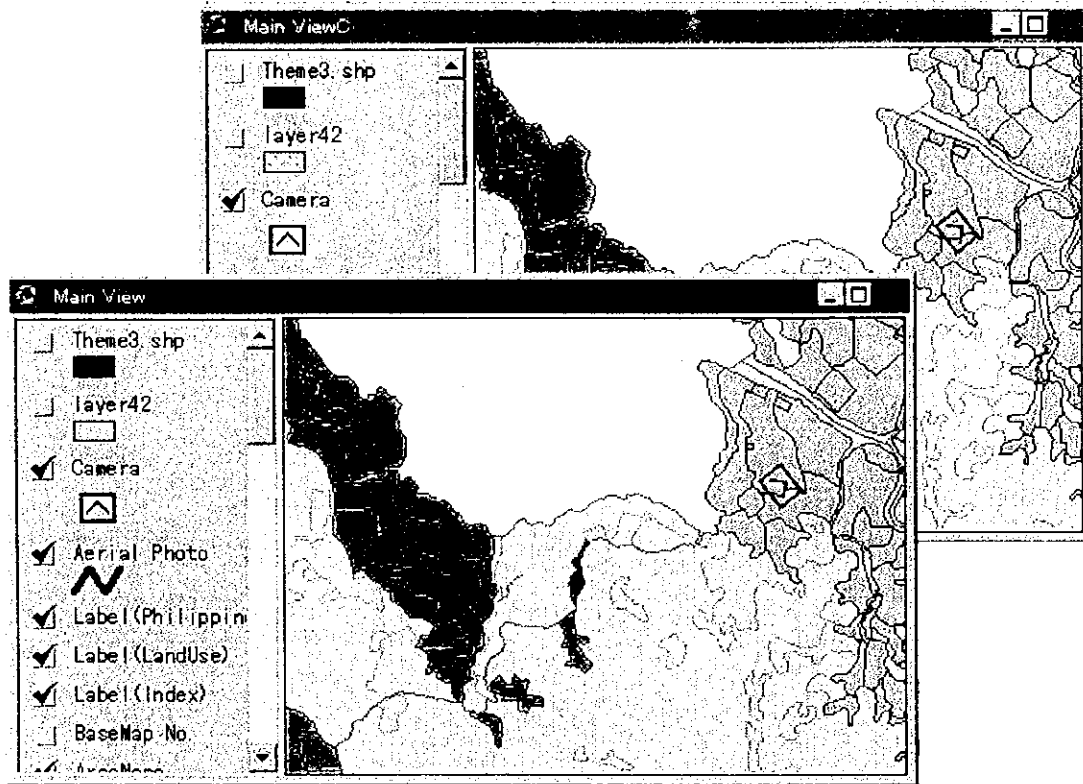


Figure 2-14 A variety of print and save functions are available. This is a copy of a map found as a result of a search.

Maps can be freely laid out and printed. When laying out maps, it is possible to change direction information, add titles, change the printing direction, and location of the map on the page, etc.

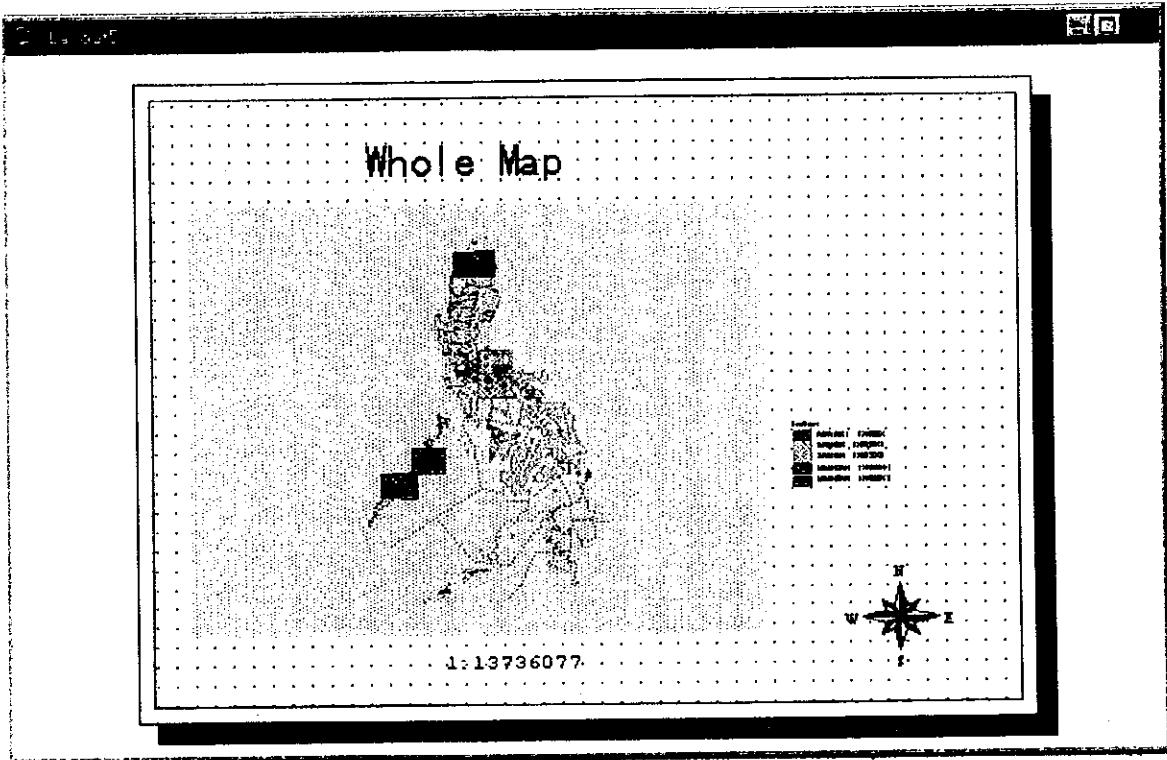
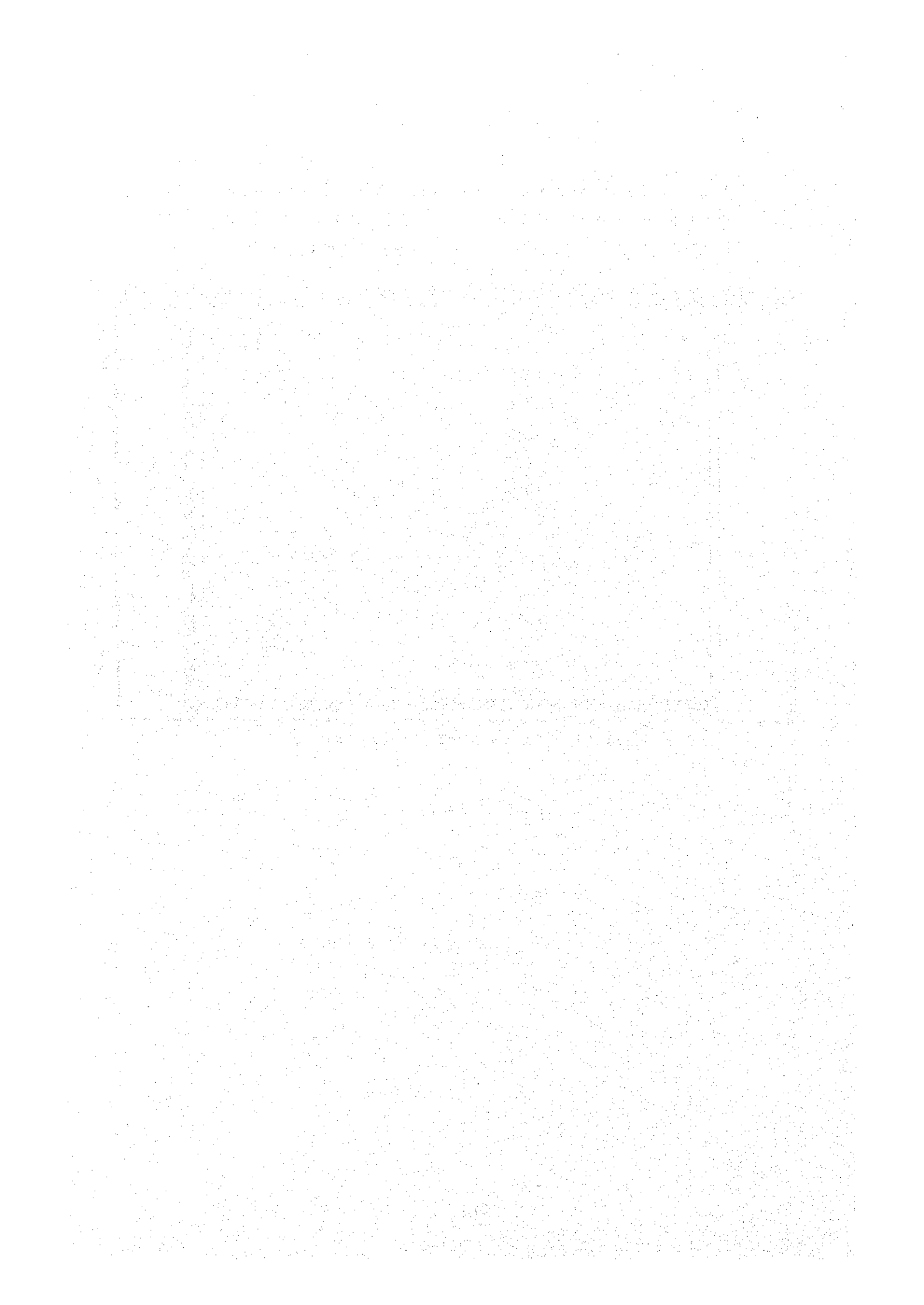


Figure 2-15 An example from a layout window.



3 Quick Start Tutorial

This chapter introduces the basic functions and operations of the MAFRIMS program and is designed for people using MAFRIMS for the very first time. This chapter will introduce you to drawing maps and searching data, etc.

3-1 Maps

3-1-1 Starting the system

Double-click on the "Mangrove" icon on the desktop to start the program. After startup the first thing you will see is a map of the Philippines.

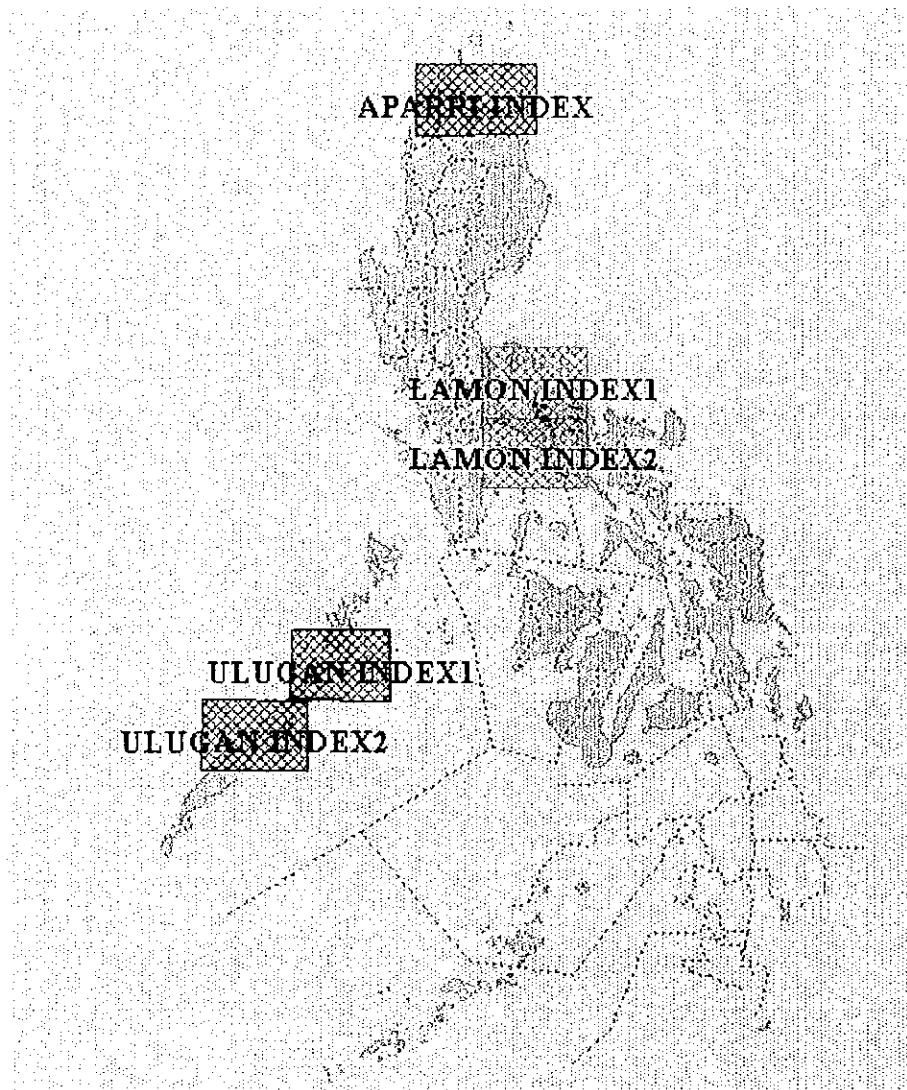


Figure 3-1 General Map of The Philippines.

3-1-2 Display of map

Various project areas are shown on the map. Click on the area you want to look at.

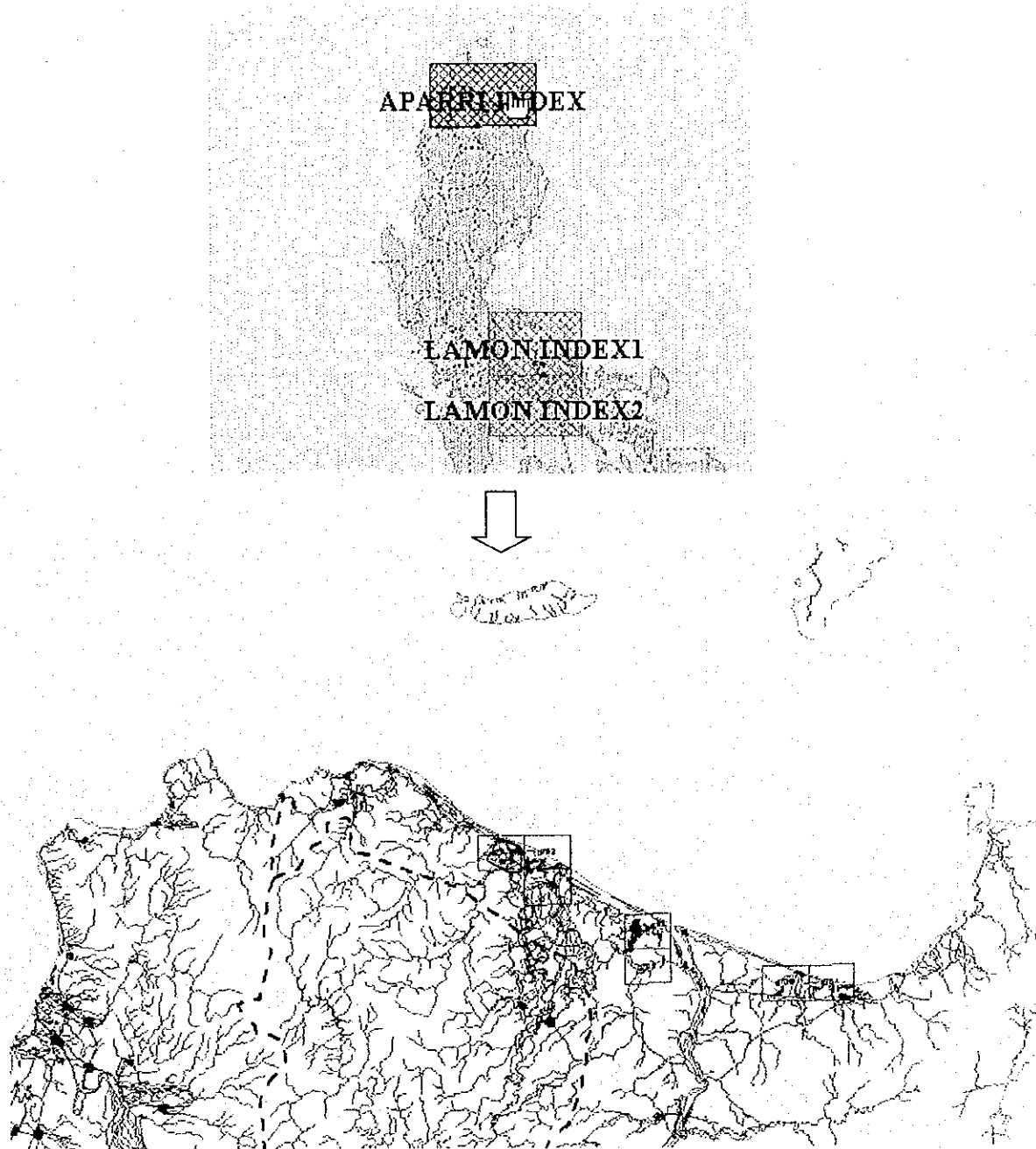


Figure 3-2 This shows the cursor positioned over a 1:250,000 Project Area Index Map (above) and the more detailed map displayed after clicking on that particular project (below).

Select the "Zoom In" tool from the Tool Bar. Use the mouse to select an area by dragging a box over it and then releasing the mouse button. This will bring up the base map.

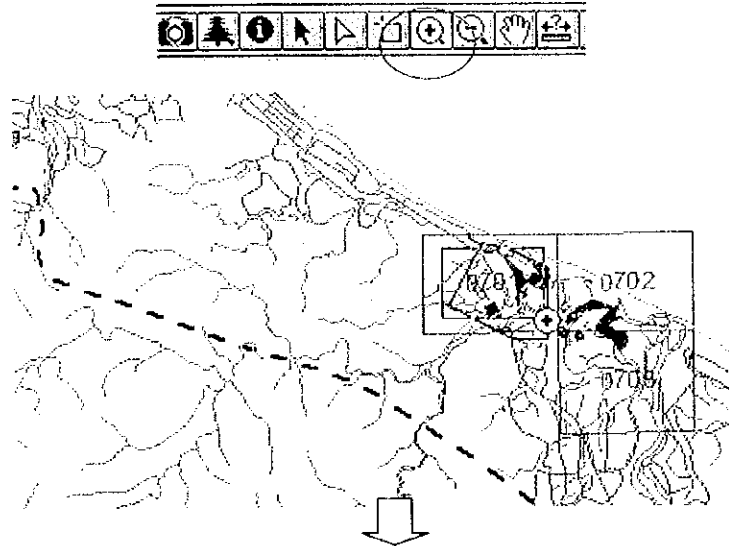
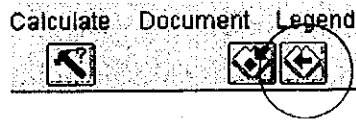


Figure 3-3 This shows a box being drawn over an area in the 0701 index map (above) and the 1:10,000 base map displayed after releasing the mouse button.

The base map number displayed on the screen will disappear as you zoom in closer. You can also choose not to display this information by selecting "Off" in the theme check box next to "Base Map No."



Clicking on the "Zoom to Previous Extent" button will display the previous scale selected.

3-1-3 Registration of screen

Select "Entry" from the "Region" menu to save maps at any time in order to save particular features you have displayed. To recall maps, select "Reference Table" from the "Region" menu.

3-1-4 Quitting the system

After you have finished using the program select "Quit" from the "File" menu. Don't forget to save your work before you quit.



Save Button

3-2 Viewing Data

3-2-1 Searching for a map using geographical name

It is possible to search for maps by name using "Geographical Search" from the "Search" menu. Enter the name of the area you are looking for in the dialog box and a list showing that name or similar names will appear in the window below. Use the mouse to select the name of the area from the list and then click the "OK" button. Maps show an area of approximately 500m².

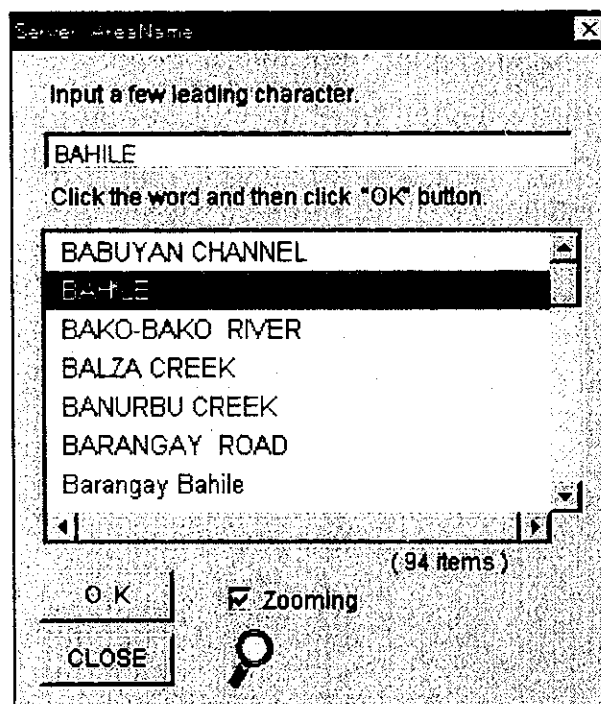


Figure 3-4 The geographical name search dialog box.

When more than one item with the same name exist, the latitude and longitude of each of those locations is displayed so that you can find the particular location you are looking for.

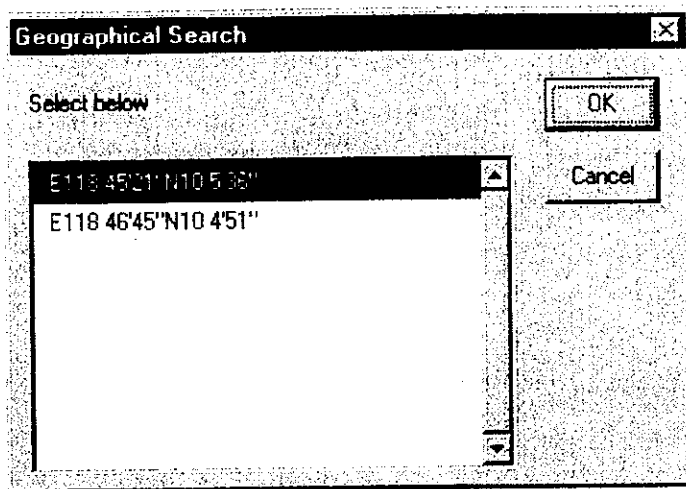


Figure 3-5 This shows a geographical search box with latitude and longitude information for areas with the same name.

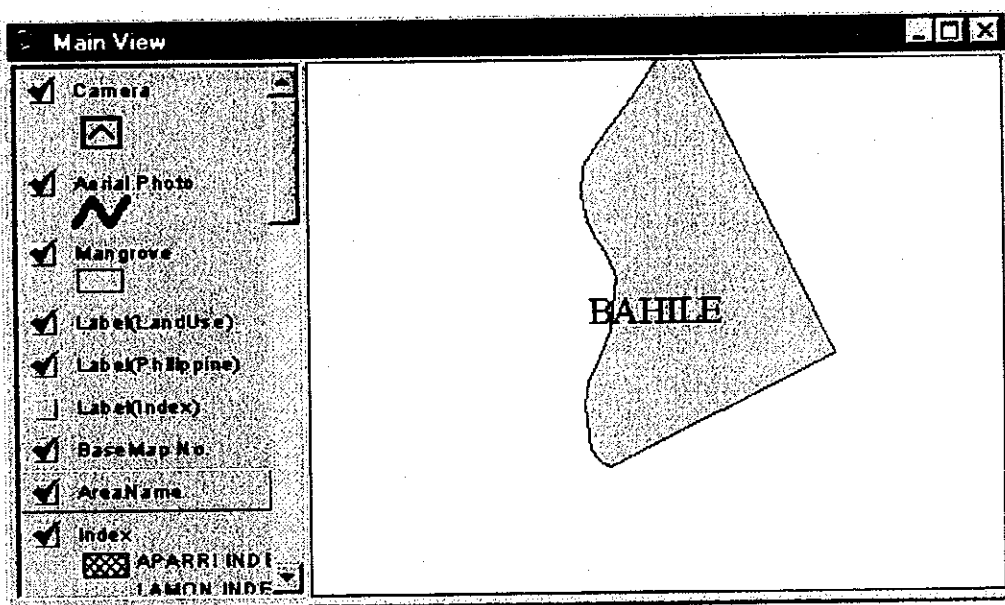


Figure 3-6 The area selected from the geographical search box is displayed.

3-2-2 Search of data from given condition

(1) Searching using Photo Attribute Data.

Selecting "Photo" from the "Search" menu will bring up the dialog box associated with the camera symbol as shown below. Select the particular attributes required to start the search. Search results are displayed in the box at the top from which you can make your selection.

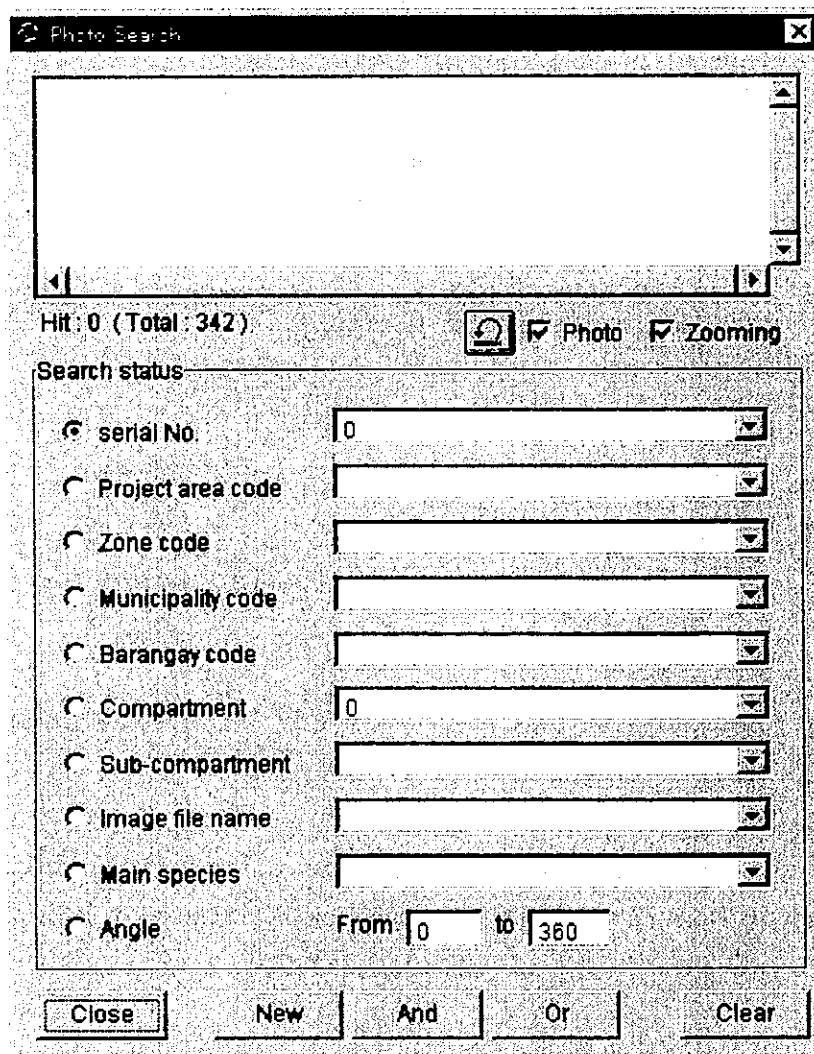


Figure 3-7 The photo attribute search dialog box.

(2) Forest inventory Condition Search

Selecting "Mangrove" from the "Search" menu will bring up the dialog box associated with mangrove sub-compartment. Select the particular attributes required to start the search.

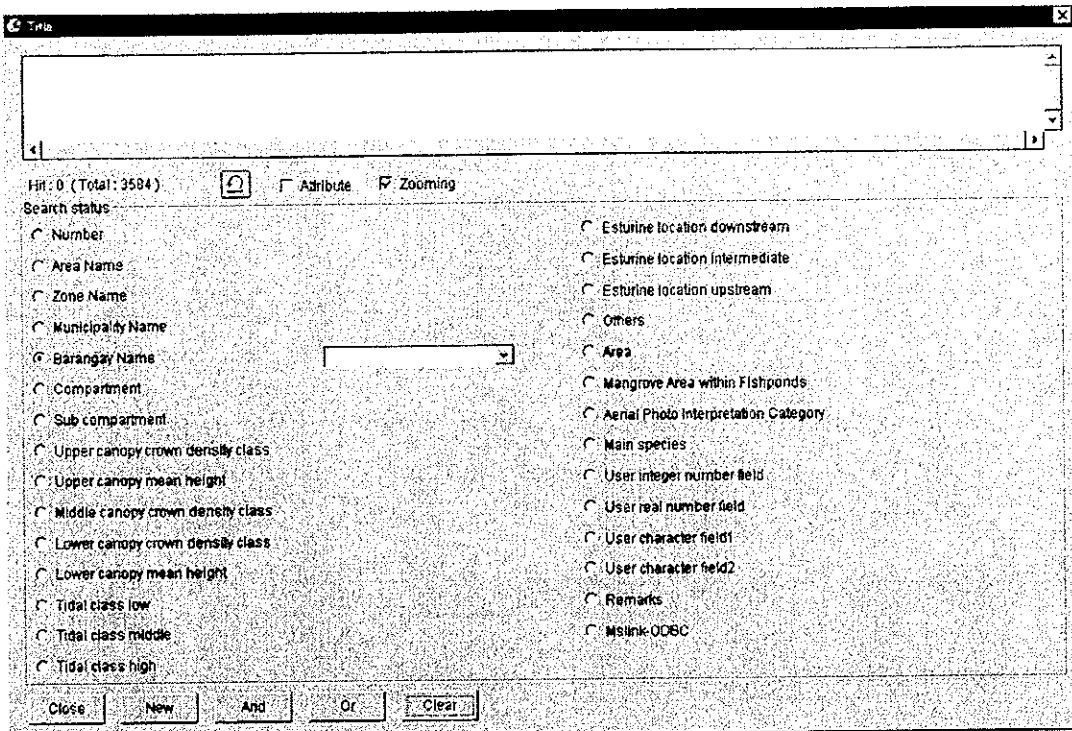


Figure 3-8 The forest inventory condition search dialog.

Search results are displayed in the box at the top from which you can make your selection. If you need to carry out more detailed searches by directly inputting values, etc., use ArcView's original search function.



Query Builder Button

3-2-3 Reference of attribute data

(1) Camera Symbol

The Attribute Reference Tool is used to refer to the attribute data of maps, etc.



After selecting this tool, the camera symbol in the area you wish to view can be selected by mouse dragging. The attribute reference data will then be displayed.

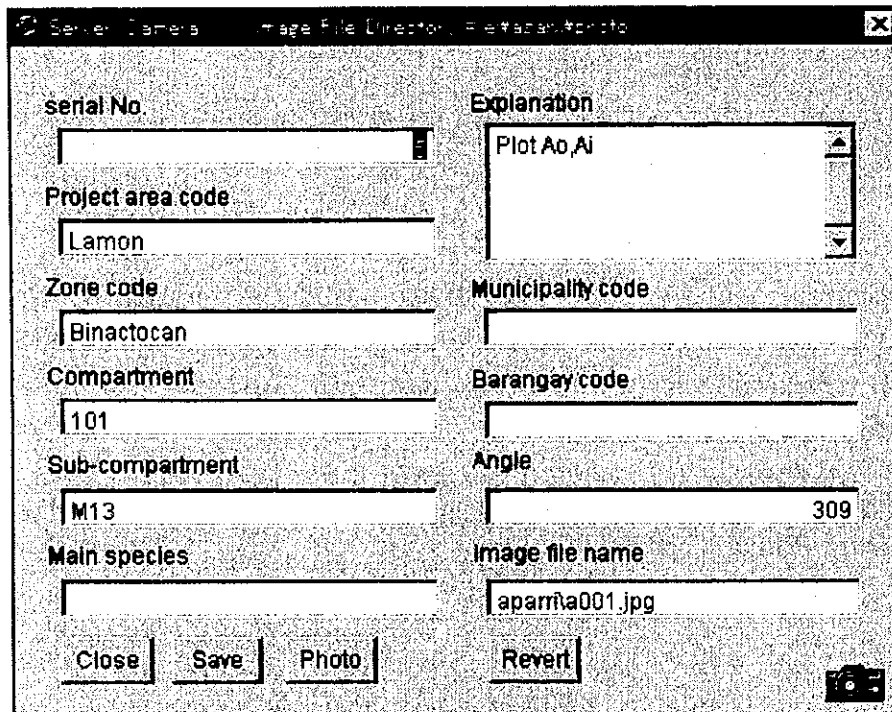
A screenshot of a software dialog box titled "Server Camera" and "Image File Director: Patacanphoto". The dialog box contains several input fields and buttons. The fields are arranged in two columns. The left column contains: "serial No" (empty), "Project area code" (Lamon), "Zone code" (Binactocan), "Compartment" (101), "Sub-compartment" (M13), and "Main species" (empty). The right column contains: "Explanation" (Plot Ao, Ai), "Municipality code" (empty), "Barangay code" (empty), "Angle" (309), and "Image file name" (aparrita001.jpg). At the bottom, there are four buttons: "Close", "Save", "Photo", and "Revert". A camera icon is visible in the bottom right corner of the dialog box.

Figure 3-9 The Photo Attribute Data dialog box.

It is possible to make changes to the information contained in the photo attribute data dialog box. Click on the "Save" button after any changes have been made. Click on "Revert" to revert to the data contained in the dialog box when you first opened it. Click on the camera symbol to view the photo linked with this data.



Figure 3-10 This shows the photo linked with the data shown in Figure 3-9.

In order to close the photo window, click on the right mouse button and select "Close" from the popup menu that is displayed or click on the "Close Photo" button.

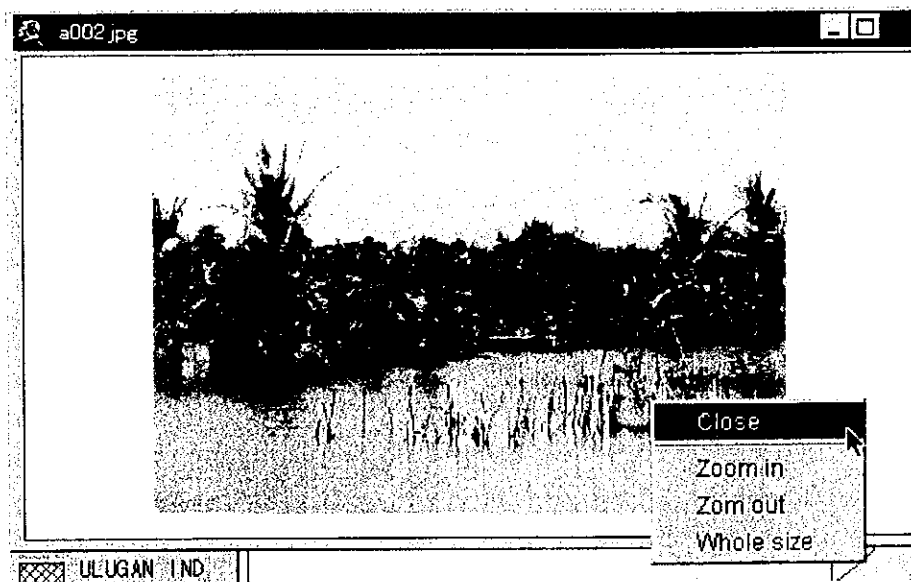


Figure 3-11 The photo window can be closed from the popup menu.

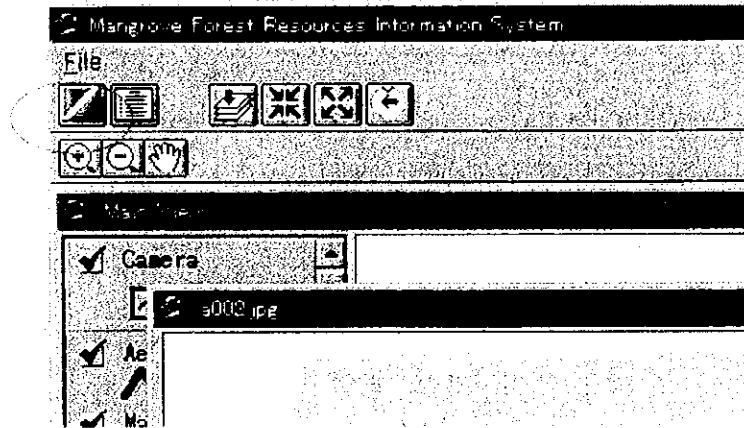


Figure 3-12 The photo window can also be closed by using the "Close Photo" button.

When more than one photo symbol has been selected with the Attributes Reference tool, only data from one photo can be displayed.

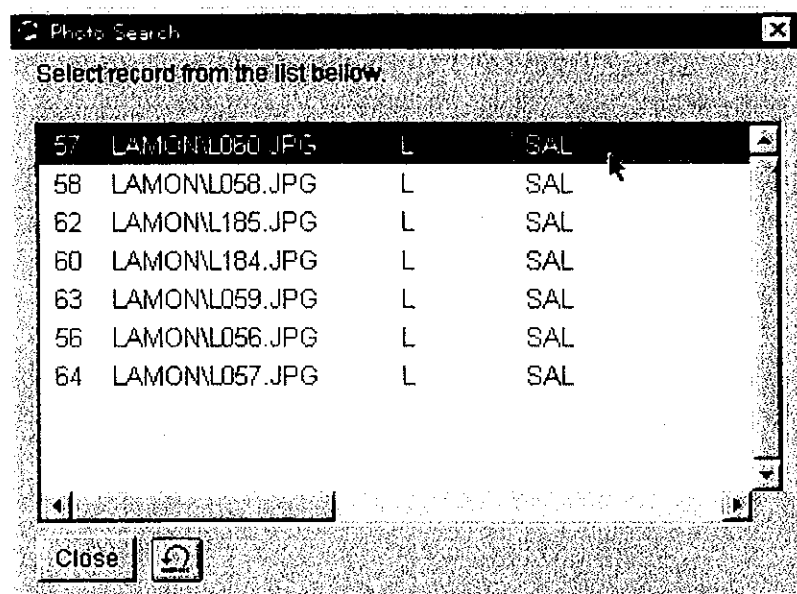


Figure 3-13 This is the photo attribute data dialog box.

If the previously selected button is clicked after data has been selected, the initial search data will again be displayed.



Return to Previous Selection button.

It is also possible to access photos directly by using the "Photo Display" tool. Click on this button and then drag with the mouse to select any camera symbols in the desired area. Any photos in that area will then be displayed. In the same way as for the "Attribute Reference" function, it is possible to select more than one camera symbol.

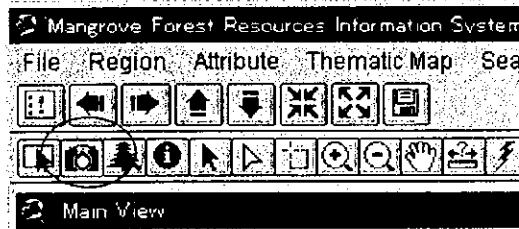


Figure 3-14 An example of a photo displayed using the "Photo Display" tool.

When only the photo window is displayed, click on the "Attribute Display" button to display data associated with the photo.

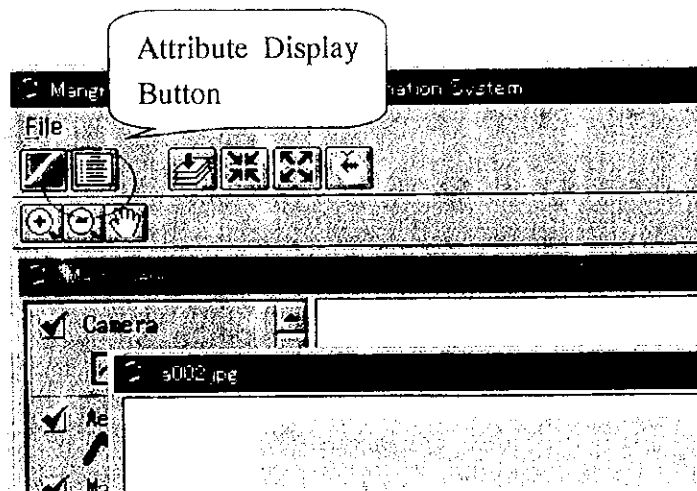
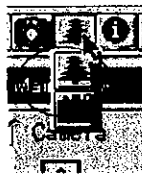


Figure 3-15 The "Attribute Display" button.

(2) Mangrove sub-compartment

Use the "Attribute Reference" tool to refer to attribute data.



Select this tool and then click within any of the mangrove sub-compartment displayed on the map. Associated forest inventory data will then be displayed.

Number	Lower canopy mean height	Main species
L	4.0	LI,Sh,Xg,Ct
Area Name	Tidal class low	User integer number field
L	0.0	
Zone Name	Tidal class middle	User real number field
SAB	0.0	
Municipality Name	Tidal class high	User character field1
CLG	100.0	
Barangay Name	Estuarine location downstream	User character field2
BLI	0.0	
Compartment	Estuarine location intermediate	Remarks
307	0.0	
Sub compartment	Estuarine location upstream	
M15	0.0	
Upper canopy crown density class	Others	
0	100.0	
Upper canopy mean height	Area	
	15.72	
Middle canopy crown density class	Mangrove Area within Fishponds	
0		
Lower canopy crown density class	Aerial Photo Interpretation Category	
D4	LLX	

Close Save Revert

Figure 3-16 Forest inventory Display dialog box.

It is possible to change data in the Forest inventory Display dialog box. Click on the "Save" button after any changes have been made. Click on "Revert" to return to the data contained in the dialog box when you first opened it.

With this tool it is possible to select more than one area of mangroves and to display data from one of the areas selected. If more than one area of mangroves is selected, a list of those items selected will be displayed. Click on the desired item in the list to display the data.

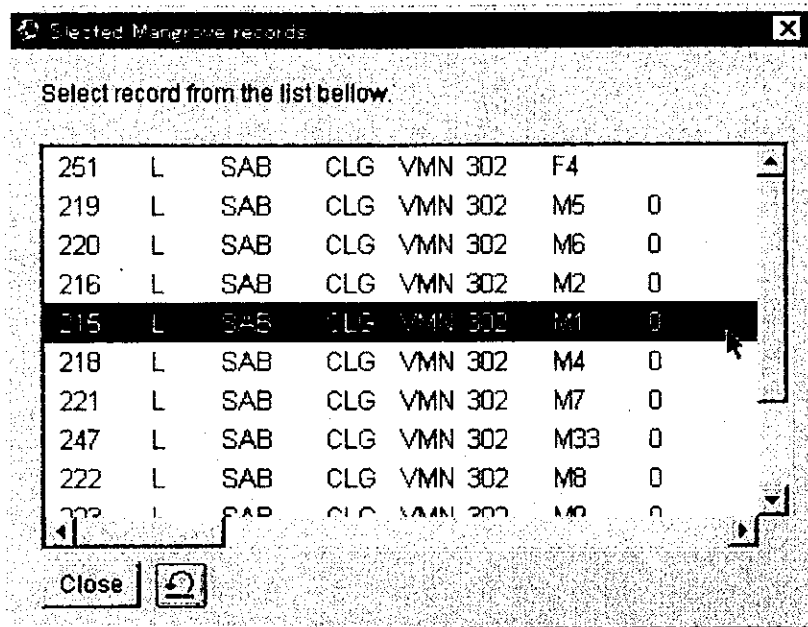


Figure 3-17 The Forest inventory Data Selection dialog box.

If the "Return to Previous Selection" button is clicked after specific forest inventory data has been displayed, the initial selection list will again be displayed.



Return to Previous Selection Button

3-2-4 Calculating of data

Select "Total Area Selected" from the "Calculate" menu in order to calculate the total land area of the mangroves selected.

Let's illustrate this procedure by calculating the land area of an area of mangroves located in Barangay.

First activate the Barangay theme, then pick the "Select Mangrove" tool and click within the Barangay area.

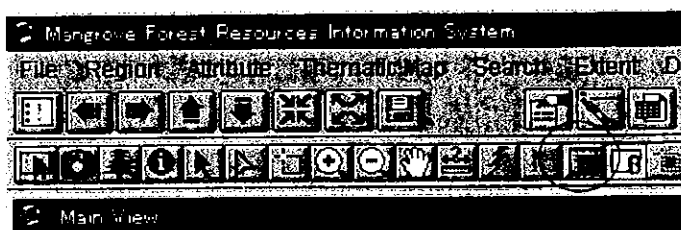


Figure 3-18 The "Select Mangrove" tool.

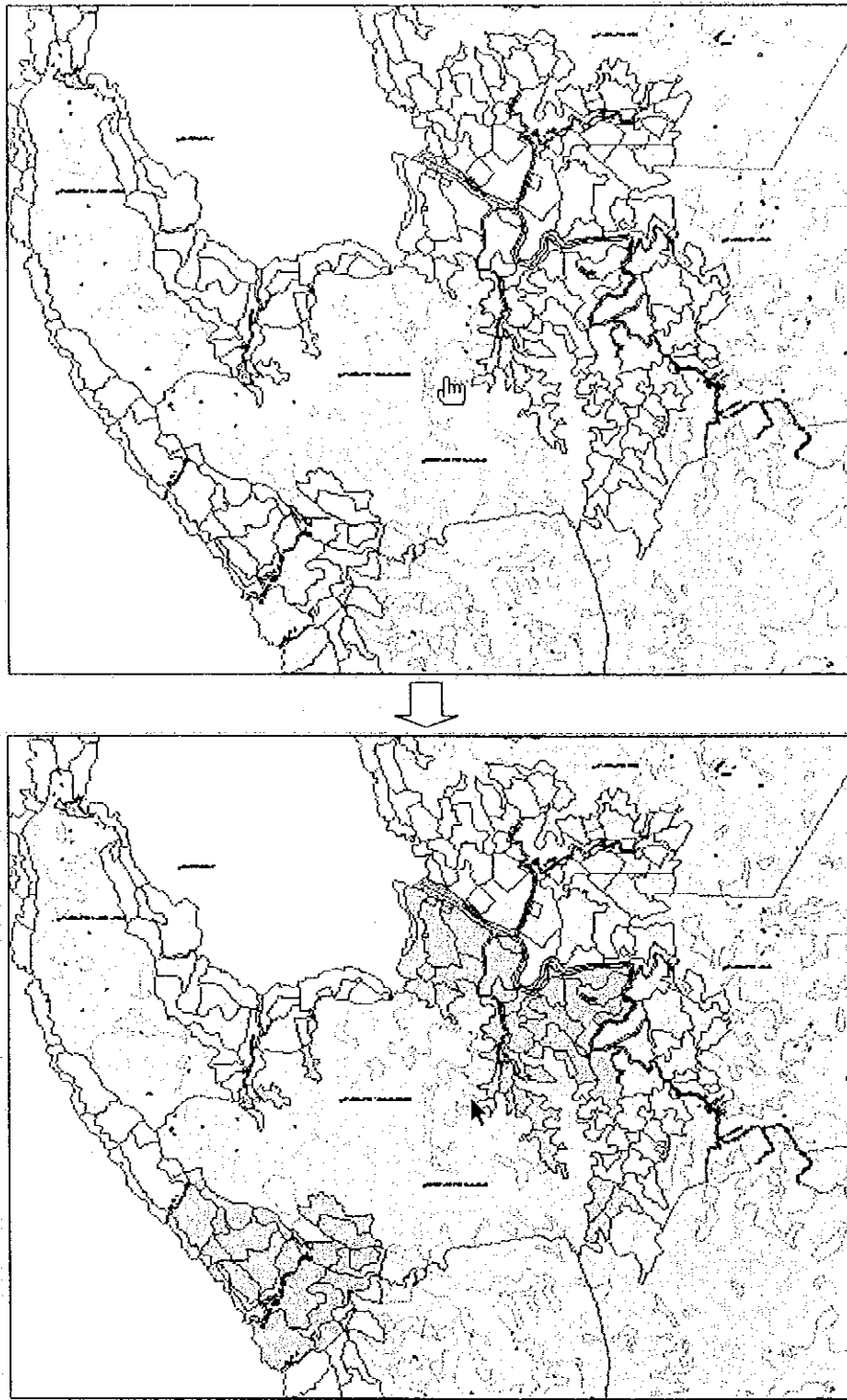


Figure 3-19 This shows mangrove sub-compartment within the Barangay area.

Select "Total Area Selected" from the "Calculate" menu to calculate the total land area of the mangrove sub-compartment selected. The data in brackets is the number of mangrove sub-compartment selected.

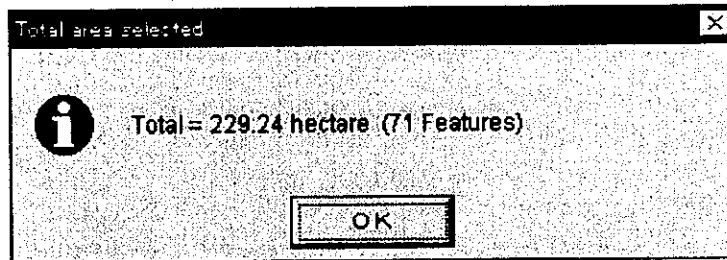


Figure 3-20 The Total Area Selected dialog box.

Two types of mangrove selection tools are available using administrative boundaries:



The upper tool is used to select mangrove areas in the single administrative area while the lower tool is used to select mangrove areas covering several administrative areas.

3-3-5 Export of attribute data

Not only is it possible to refer to selected results from the attribute data display dialog but it is possible to export them as Excel data. After activating the themes you want to export, select "Export to Excel" from the "Attribute" menu. When selection results do not exist, it is not possible to export data.

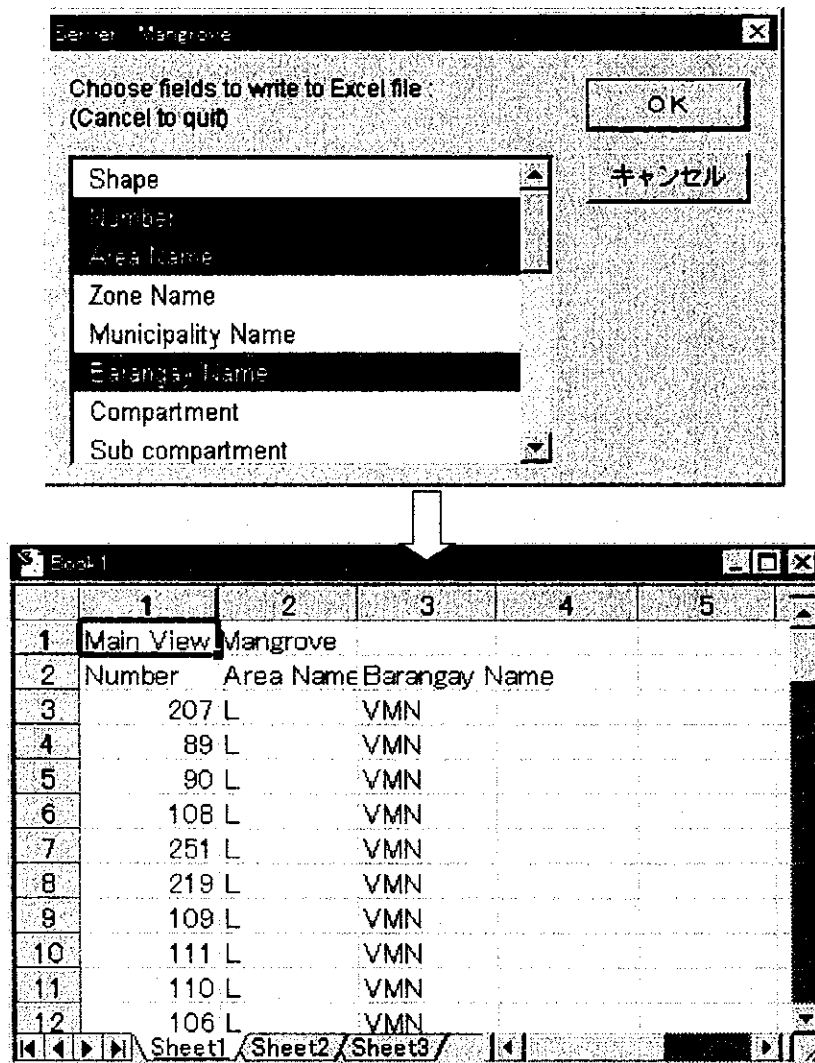


Figure 3-21 This shows fields being selected for export (above) and the results after such fields have been exported as Excel data.