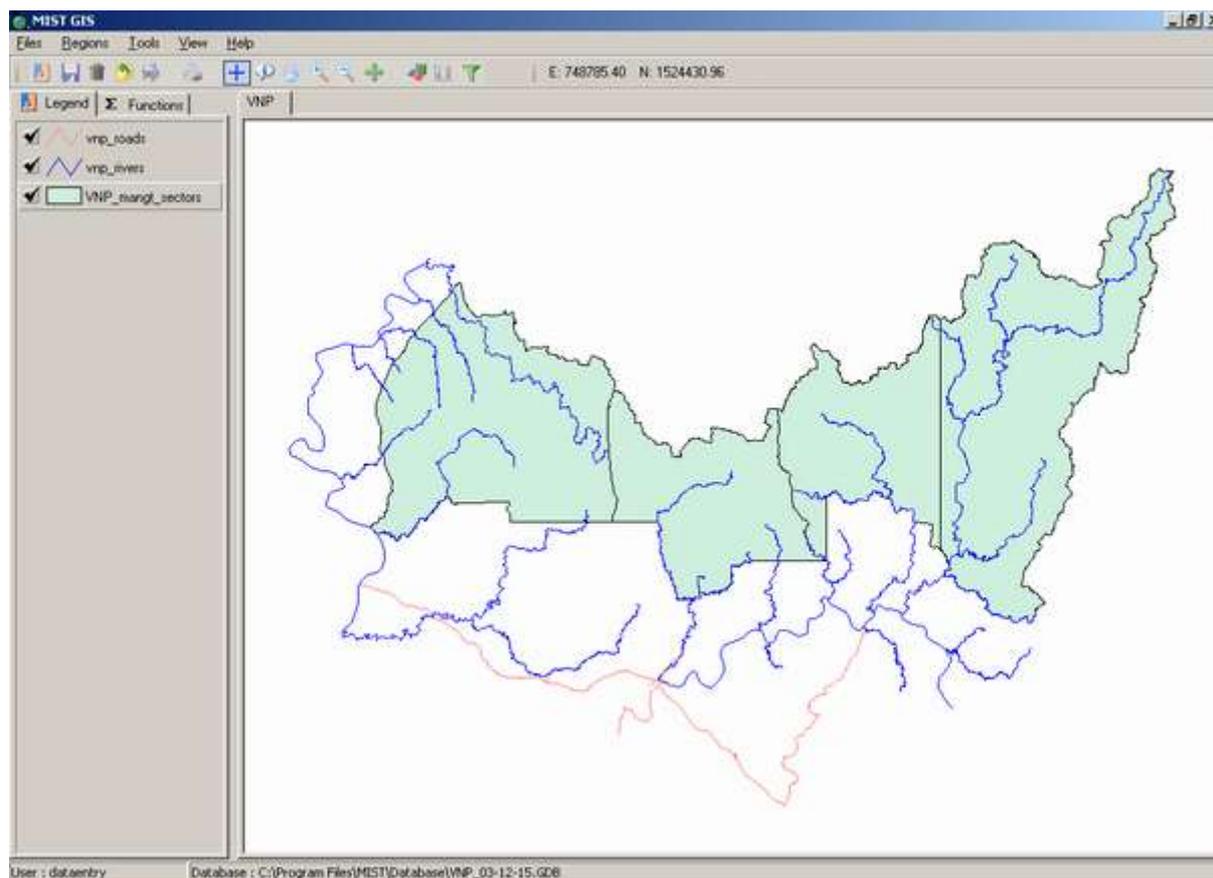


# MIST-GIS Step-by-step User Guide



Ministry of Environment



Biodiversity and Protected  
Areas Management Project



World Bank



Global Environment Facility

Oliver Mannion

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English.doc **Table of contents**

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# Chapter 1 Introduction

---

# **1 Introduction**

## **1.1 *Who is this guide for***

This guide is designed for users of the MIST-GIS software programme in national parks in Cambodia, with little prior computer experience. It provides simple explanations of the different parts of MIST-GIS and shows what buttons to click and steps to follow to perform tasks using MIST-GIS.

## **1.2 *What is MIST-GIS?***

MIST-GIS is a Windows based computer programme for storing and processing geo-referenced data. Geo-referenced data is data that is referenced to a geographical location.

## 2 Introduction to some Windows controls

### 2.0.1 Checkbox example

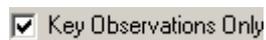
This is an example of an ‘unchecked’ checkbox:



Click inside the box:



and it will become ‘checked’:



Click again inside the box and it will become ‘unchecked’.

### 2.0.2 Drop down box example

This is an example of a **drop down box**:



Click on ▾:



And the box will expand (‘drop down’) to reveal a list of items:



You can then select an item in the list by clicking, eg:



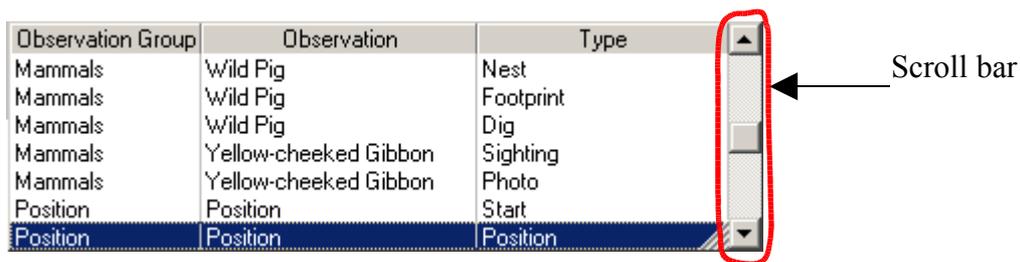
or by typing the first letters of the item's name, eg: **J** then **U**

And the drop down box will contract, changing to display your selection:



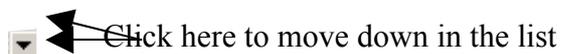
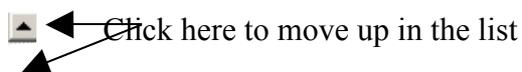
### ***Drop down box with a scroll bar***

A drop down box may have a **scroll bar**, which looks like this:



A scroll bar indicates that there are more items than currently displayed. By operating the scroll bar you can reveal the other items.

To use a scrollbar:



or

Use the following keys on the keyboard to move around in the list:

UP, DOWN, PG UP, PG DN

### **2.0.3 Radio button group example**

This is an example of a **radio button group**:

Report Period:

Monthly
  Quarterly
  Yearly
  From/To

Only one item in a radio button group can be selected at a time.

Select that item by clicking its name or the circle next to it, eg: click on **From/To**:

Report Period:

Monthly
  Quarterly
  Yearly
  From/To

Will change the selection from **Monthly** to **From/To**:

Report Period:

Monthly
  Quarterly
  Yearly
  From/To

## 2.0.4 Tree example

This is an example of a **tree**:

- [-] arrested
  - Vietnamese
  - Lao
  - [-] residents
    - village
  - [+] minorities
    - military police
    - military
    - police
  - action
- [+] weapons/items confiscated
- [+] animals confiscated
- [+] warning letter issued to
  - cautioned
- [+] weapons/items seen

Items with a **[+]** next to the name can be expanded by clicking on the **[+]**, eg:

+	weapons/items confiscated	
+	animals confiscated	

will expand **weapons/items confiscated** to show:

weapons/items confiscated	
	wildlife carry bags
	knife
	poison
	axe
	wire tiger snare
	wire snare
	hand grenade
	mine
	home-made gun
+	automatic weapon

Parts of the tree can be collapsed back again by clicking on ☐

### 3 Starting MIST-GIS



1. Double-click (or highlight and press Enter) this icon on the desktop:



2. Click on the  icon or wait 5 seconds.

3. Click on the globe to start MIST-GIS



4.

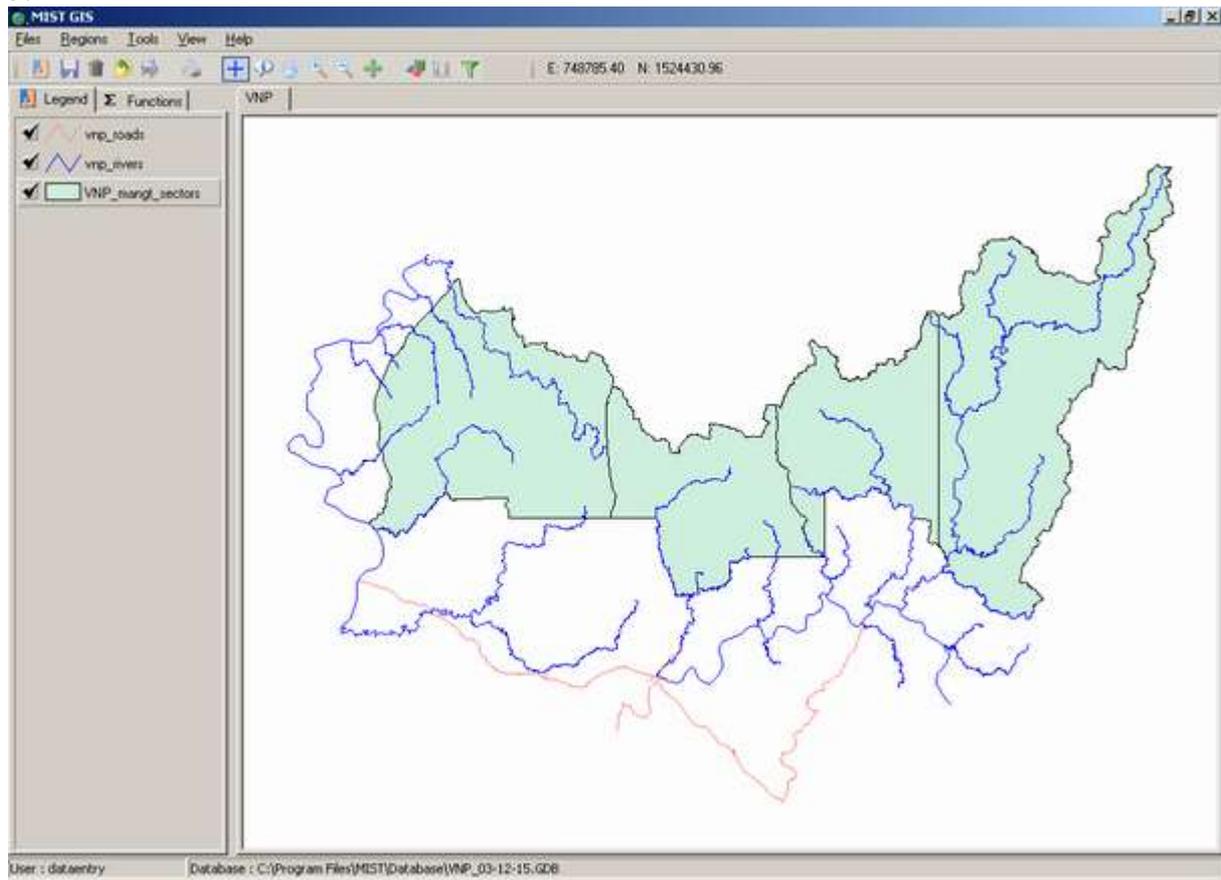


Here type **dataentry**

Here type **Data**

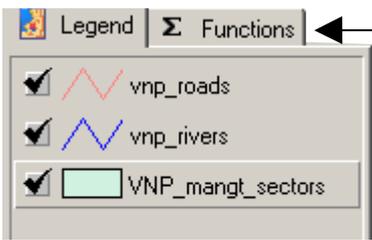
Then click **OK**

5.



Welcome to MIST-GIS!

## 4 Viewing ground patrols

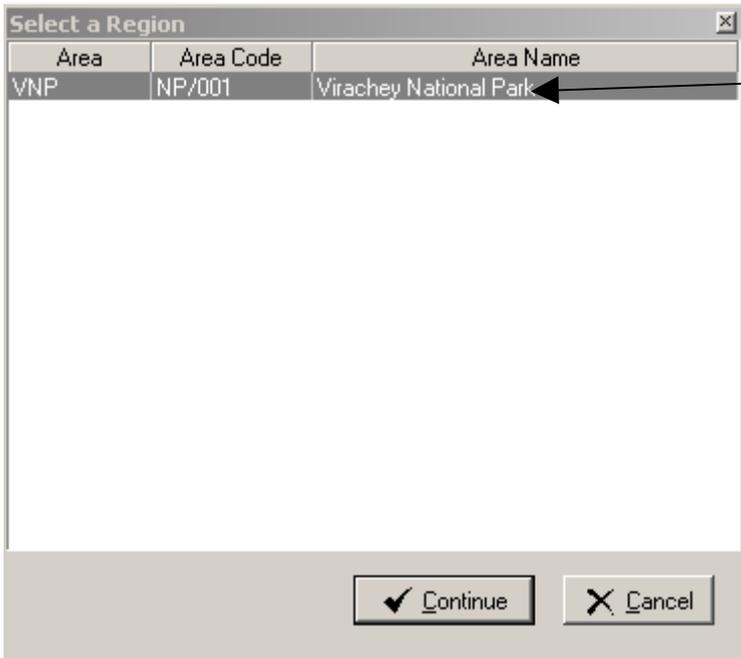
1.  Click on **Functions**

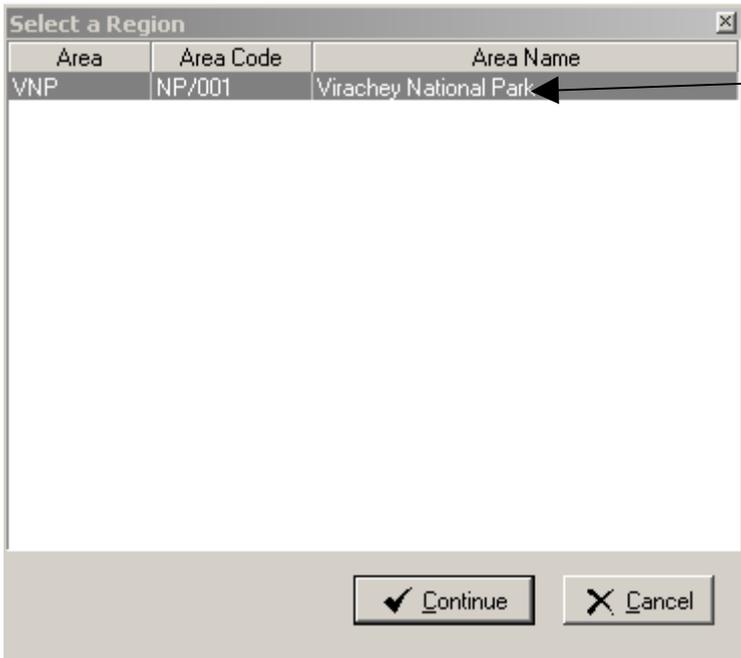


2. Under Data Entry, click **Ground patrols**



3. (Optional) If the **Select a Region** window appears:

a)  Click on **Virachey National Park**



b)  Click on **Continue**



4.

Patrol ID: 24      Start Date: 16/07/2003      End Date: 16/07/2003      Patrol Type: Foot      Rest Time: 0

Waypoint	Locations		Time	Direction (Degrees)	Distance	Observation	Observation Code	Total	Adults		
	Easting	Northing							male	female	Young
1	744309	1565429	08:08:00	---	0	Position	Start	0	0	0	0
2	744975	1565781	08:43:00	---	0	Sambar	Footprint	1	0	0	0
3	746249	1566742	09:20:00	---	0	Sambar	Footprint	1	0	0	0
4	746622	1567357	09:42:00	---	0	Red Muntjac	Sighting	1	0	0	0
5	746248	1567404	10:12:00	---	0	Sambar	Footprint	1	0	0	0
6	746040	1567502	10:24:00	---	0	Position	Position	0	0	0	0
7	746242	1567755	10:51:00	---	0	Position	Position	0	0	0	0
8	746736	1567913	11:51:00	---	0	Position	Position	0	0	0	0
9	746735	1567912	12:50:00	---	0	Position	Position	0	0	0	0
10	747112	1567919	01:19:00	---	0	Sambar	Footprint	1	0	0	0
11	747736	1568330	01:49:00	---	0	Reticulated Python	Sighting	1	0	0	0
12	747797	1568741	02:04:00	---	0	Sambar	Footprint	1	0	0	0
13	747579	1569055	02:34:00	---	0	Position	Position	0	0	0	0
14	747947	1569385	03:20:00	---	0	Position	Position	0	0	0	0

Day 1 | Day 2 | Day 3 | Day 4 | Day 5 | Day 6 | Day 7 | Day 8 | Day 9 | Day 10      Observation Remarks

## 5 Navigating ground patrols

1. Patrol ID: 24

2. Locate

3. Navigation buttons

4. Day selection buttons

Waypoint	Locations		Time	Direction (Degrees)	Distance	Observation	Observation Code	Total	Adults		Young
	Easting	Northing							male	female	
1	744309	1556429	08:08:00	---	---	0 Position	Start	0	0	0	0
2	744975	1565781	08:43:00	---	---	0 Sambar	Footprint	1	0	0	0
3	746249	1566742	09:20:00	---	---	0 Sambar	Footprint	1	0	0	0
4	746622	1567357	09:42:00	---	---	0 Red Muntjac	Sighting	1	0	0	0
5	746248	1567404	10:12:00	---	---	0 Sambar	Footprint	1	0	0	0
6	746040	1567502	10:24:00	---	---	0 Position	Position	0	0	0	0
7	746242	1567755	10:51:00	---	---	0 Position	Position	0	0	0	0
8	746736	1546736	11:51:00	---	---	0 Position	Position	0	0	0	0
9	746735	1567912	12:50:00	---	---	0 Position	Position	0	0	0	0
10	747112	1567919	01:19:00	---	---	0 Sambar	Footprint	1	0	0	0
11	747735	1568330	01:49:00	---	---	0 Reticulated Python	Sighting	1	0	0	0
12	747797	1568741	02:04:00	---	---	0 Sambar	Footprint	1	0	0	0
13	747579	1569055	02:34:00	---	---	0 Position	Position	0	0	0	0
14	747946	1569385	03:20:00	---	---	0 Position	Position	0	0	0	0

1. **Patrol ID:** Each ground patrol has a unique number to identify it, eg: 24

2. **Locate:** Click on **Locate** and the following window appears:

Locate Record

Locate ground patrol ID value of :

24

OK Cancel

Enter the patrol id of the ground patrol to view here, eg: 24 then click **OK**

3. **Navigation controls:**

Go to the first ground patrol

Go to the previous ground patrol

Go to the next ground patrol

Go to the last ground patrol

4. **Days:** Click to change the patrol day

# Chapter 2 Data Entry

---

# 1 Data entry modules in MIST

MIST has different modules for entering data. For observations (geo-referenced data) they are:

- Ground Patrols
- Air Patrols
- Research Observations
- Occasional Observations

MIST also has modules for storing the following non-geo-referenced data, ie: data without location information:

- Daily Visitors
- Resource Use

In addition MIST has special data modules for

- SRF - Systematic Reconnaissance Flights
- Gorilla data

## 1.1 *Observation (geo-referenced data) modules*

An observation is a single piece of geo-referenced data and always consists of the following **standard observation data set**:

- Waypoint - an auto-incremented number assigned successively to each observation
- Locations (Easting/Northing) - a location (eg: UTM co-ordinates)
- Time - a time and date
- Observation and Observation code - an observation name and observation code name taken from the observation domain. The observation domain is the same for all observation data modules.
- Total - a total number for the observation
- Adult (male/female) - the number of male and female adult animals
- Young - the number of young animals

### 1.1.1 **Ground Patrols Module**

The ground patrol observation module is for storing data collected by rangers on multi-day patrols **in the park** according to Ranger Based Data Collection procedures. If data is collected by rangers outside the park, or not as part of a patrol then it is instead recorded in the Occasional or Research Observation module.

#### *Characteristics of the Ground Patrol Data*

The ground patrol data consists of 0 or more patrols.

Each ground patrol consists of 1 or more days.

Each day consists of 1 or more observations.

Each observation consists of the standard observation data set above and:

- Direction - the compass direction of the observation from the ranger
- Distance - the distance from the observation to the ranger

### **1.1.2 Air Patrols Module**

The air patrols module is for storing data collected from an air patrol.

#### *Characteristics of Air patrol data*

Air patrol data consists of 0 or more air patrols.  
Each air patrol consists of 1 or more observations.

Each observation consists of the standard observation data set above.

### **1.1.3 Research Observation Module**

The research observation module is for storing data grouped by researcher. In fact a researcher can be any arbitrary group. It could be an actual researcher, or data collected on a particular visit to the park, or data collected by staff other than rangers, or data received from an external source etc.

#### *Characteristics of Research data*

Research data consist of 0 or more researchers.  
Each researcher may have 0 or more data sets.  
Each data set consists of 1 or more observations.

Each observation consists of the standard observation data set above.

### **1.1.4 Occasional Observation Module**

The occasional observation module is a single table for storing any data. It should be used for storing data that is not associated with any researcher (or research group) or any ranger patrol in the park, or data that is not verified on the ground by park staff.

- Rangers may speak with villagers who tell them about illegal activities. If the illegal activity cannot be observed as part of the patrol, it can be entered as an occasional observation
- Illegal activities may be reported to HQ, their location checked on a map, and a mission sent out to investigate. Mission data can be entered into MIST as an occasional observation

#### *Characteristics of Occasional Observation Data*

Occasional observations consists of 0 or more observations

Each observation consists of the standard observation data set above and:

- Observer - the name of the person/mission who made the observation
- Source - the source of the location information, either a GPS (observation location taken from a GPS unit), or a Map (observation location taken from a verbal or written description and located on the map)
- Quality - This is subjective, but should follow these guidelines:

Good: A picture of the observation or a first hand account of the observation by a villager/tourist backed up by additional evidence such as a second validation by a ranger. A first hand account of an observation by MoE staff, or experienced staff of other government organisations or NGOs receives a Good rating.

Fair: A first hand account of the observation by a villager/tourist of unknown qualification but with little or no other supporting evidence.

Poor: A second hand or unverifiable observation. Any observation that does not have a known Observer (i.e. a value of "Unknown" in the Observer field) should get a Poor rank.

## **1.2 *Non-geo-referenced data modules***

### **1.2.1 Daily Visitors**

For storing information about groups of visitors to the PA.

### **1.2.2 Resource Use**

For storing information about resources used in the PA. Although resource use data is non-geo-referenced (ie: specific co-ordinates are not supplied) resource use data can associated with specific areas of the park as setup by the Administrator.

## **2 Steps for entering data into MIST-GIS from ranger patrols**

1. Download waypoints into MapSource/GPS Utility and save to disk (Task 1/2)
2. Prepare waypoints in MapSource/GPS Utility (Task 1/2)
3. Download waypoints into MIST (Task 3)
4. Check waypoints in MIST against the data sheet, and correct any mistakes (Task 4)
5. Add observation and observation remarks to the data sheet (Task 5)
6. Check observation and remarks have been entered correctly.

## **3 Preparing waypoints from ranger patrols**

Before downloading waypoints from ranger patrols into MIST, the waypoints must be prepared.

### **1.1 Download waypoints into a waypoint manipulation program**

The first step is to use a program like MapSource or GPS utility, and download all the waypoints from the GPS.

### **3.2 Removing waypoints from other days**

Once the waypoints are in MapSource/GPS Utility, take the ground patrol data sheet and note the patrol start and end date.

Remove any waypoints in MapSource/GPS Utility that are outside the patrol start and end date.

### **3.3 Checking the waypoints are in chronological order**

<b>VERY IMPORTANT: The waypoints must be labeled in chronological order, eg: 001, 002, 003 ..... 010, 011.....100, 101..etc.</b>
--

Rangers are responsible for making sure the waypoints are correctly labeled in chronological order. If you receive a GPS with waypoints not correctly labeled, please show the rangers and ask them to label waypoints correctly next time. It is not difficult to do this, you only need to accept the number that the GPS automatically gives a waypoint, in other words:

<b>Rangers must not change the waypoint name on the GPS.</b>
--

If rangers change the waypoint name then waypoints will no longer be in chronological order. You must then change the waypoint names back.

You should use MapSource/GPS Utility to make sure waypoints are in chronological order. You can sort alphabetically in MapSource/GPS Utility by clicking on the field header. Note: if a field contains a date value, it will be sorted alphabetically, NOT chronologically or numerically,

eg: 16-FEB-04 appears before 16-JAN-04, and  
04-SEP-04 10:00:00 appears before 04-SEP-04 8:31:43

You need to make sure that when the waypoint name is sorted alphabetically, the waypoints are in chronological order. If they are not, you need to rename the waypoints so that they will appear in chronological order when you sort by name alphabetically.

### **3.4 Upload modified waypoints back to the GPS**

If you have made any changes, you will need to delete the original waypoints from the GPS and then upload the new ones.

## 4 Preparing waypoints using MapSource

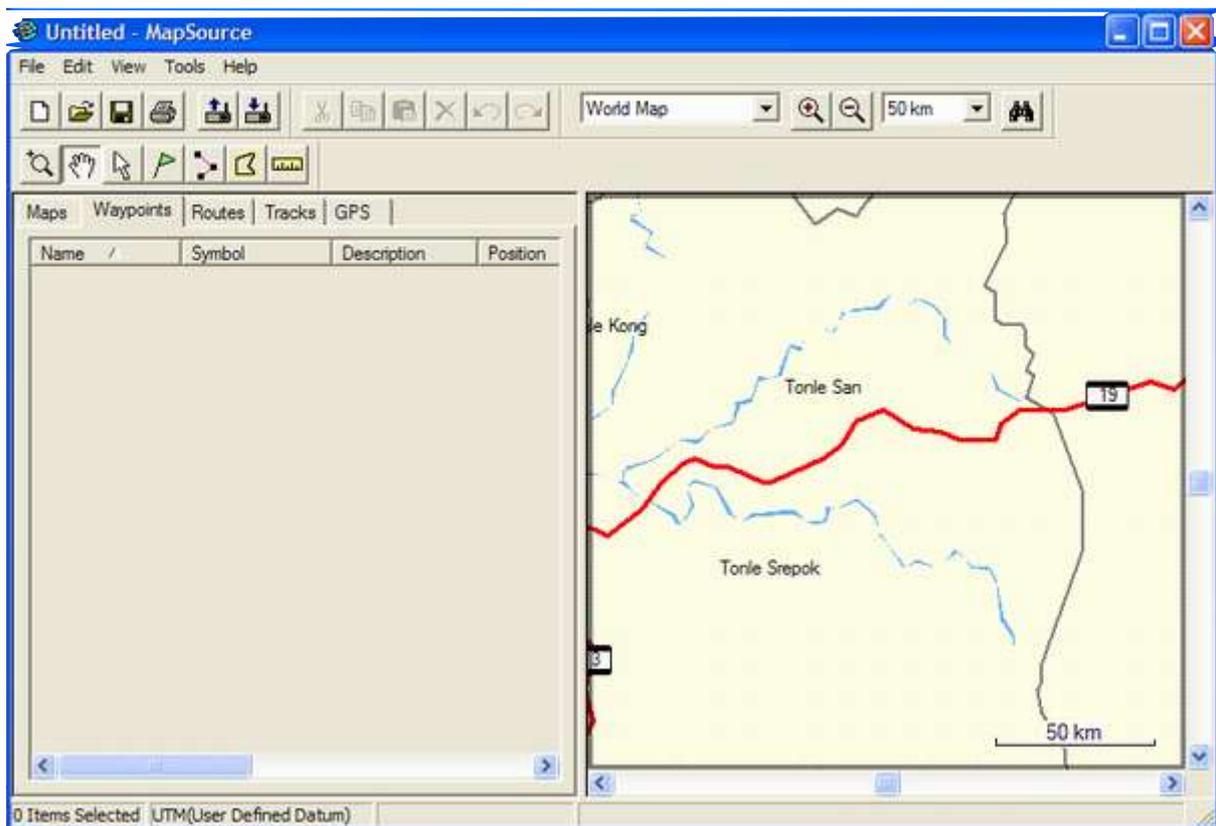
### 4.1 Starting MapSource

1. Start MapSource by clicking on the desktop icon



or from the Start Menu: Programs -> MapSource -> MapSource

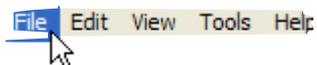
You will see:



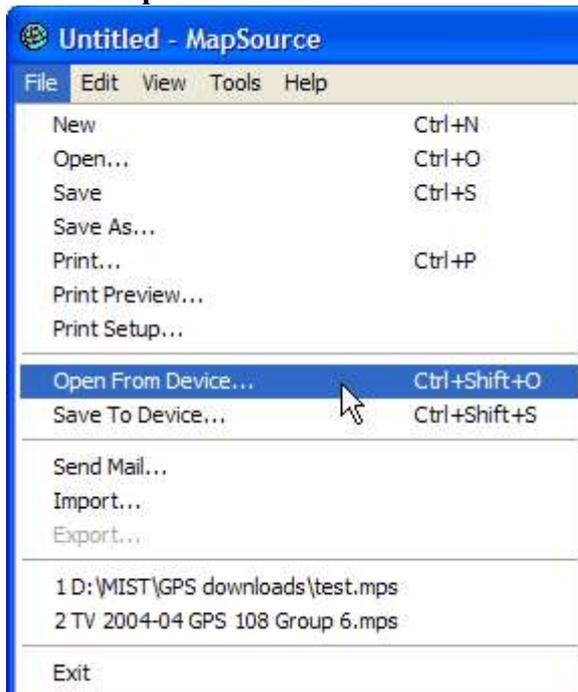
### 4.2 Downloading waypoints from a GPS receiver

1. Connect the GPS to the computer and turn the GPS on.

2. Click **File**



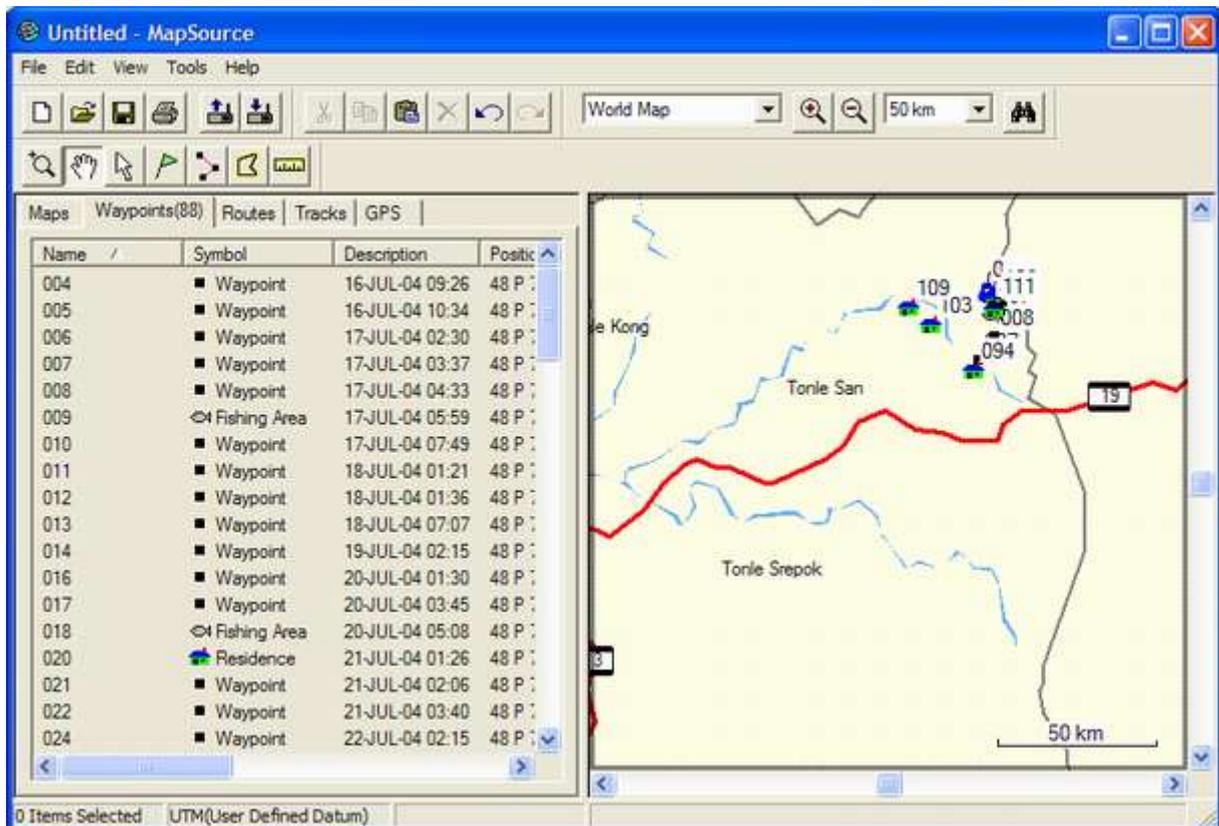
### 3. Click **Open From Device**



### 4. Click **Open**



5. After download you will see the list of waypoints from the GPS on the left hand side:



## 4.3 Saving waypoints to a file

After downloading waypoints, save them to disk.

1. Click **Save**



2. Save in:

```
D:\My Documents\Patrol GPS Downloads\2004  
D:\My Documents\Patrol GPS Downloads\2005  
D:\My Documents\Patrol GPS Downloads\2006 .... etc.
```

The file must be named according to this format:

```
TV 2004-03 GPS 108 Group 3  
SP 2004-01 GPS 116 Group 5  
VS 2004-02 GPS 001 Group 2
```

ie: Station Year-Month GPS Number Group Number.mps

#### **4.4 Checking the waypoints are in chronological order**

**VERY IMPORTANT: The waypoints must be labeled numerically, eg: 001, 002, 003 ..... 010, 011.....100,101..etc. and in chronological order.**

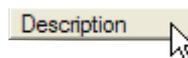
Rangers are responsible for making sure the waypoints are correctly labeled in chronological order. If you receive a GPS with waypoints not correctly labeled, please show the rangers and ask them to label waypoints correctly next time. It is not difficult to do this, you only need to accept the number that the GPS automatically gives a waypoint, in other words:

**Rangers must not change the waypoint name on the GPS.**

If rangers change the waypoint name then waypoints will no longer be in chronological order. You must then change the waypoint names back.

##### **4.4.1 How to check waypoints are in chronological order**

1. Click the **Description** field header:



The waypoints will now be sorted by Description in alphabetical order.

2. Examine the **Name** field.

Are the waypoints names in alphabetical order? eg: 001, 002, 003, 004, 005, 006, .....etc?

If not, you must change the name of waypoints so that the **names** are in alphabetical order.

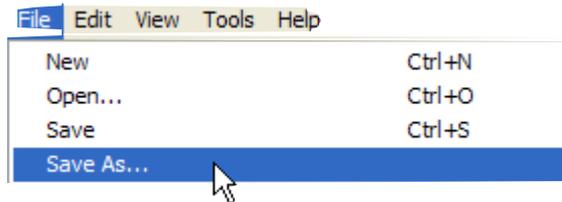
##### **4.4.2 Before changing waypoint names save the file with a new name**

1) Save the file with a new name

a) Click **File**



b) Click **Save as**



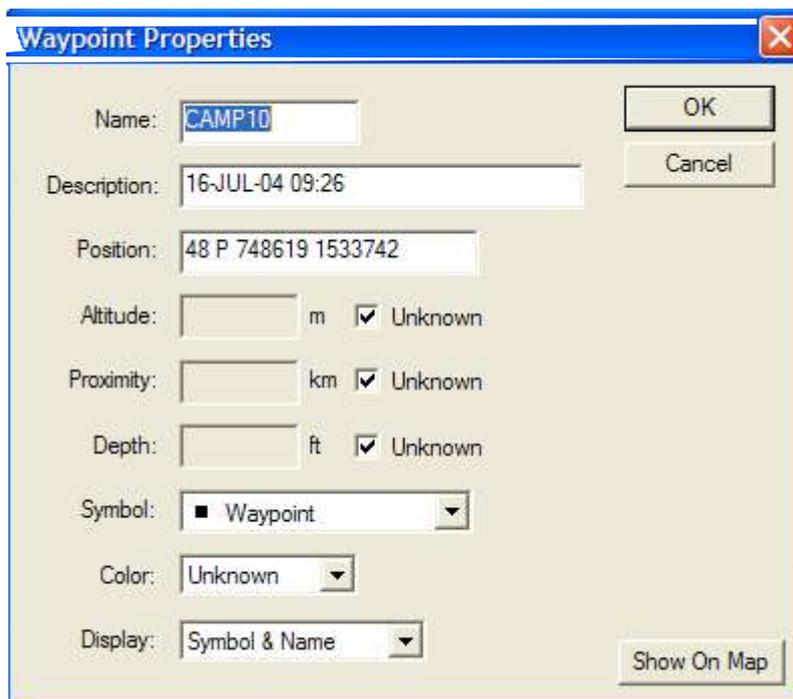
Save the new file to the same location as the original but with `Edit` appended to the name, eg:

```
TV 2004-03 GPS 108 Group 3 Edit
SP 2004-01 GPS 116 Group 5 Edit
VS 2004-02 GPS 001 Group 2 Edit
```

### 4.4.3 Changing the name of a waypoint

a) Double click on the waypoint name, eg: 010CAMP

The **Waypoint properties** window will appear:



b) Type the new name of the waypoint eg: 011a

c) Click **OK**

When renaming waypoints use 001a, 002a, 003a, etc. to avoid getting the error "The waypoint name is in use by another waypoint. Please enter a different name."

### 4.4.4 Upload the modified waypoints to the GPS

1. Delete all waypoints from the GPS. (See GPS instruction manual)
2. Upload the waypoints to the GPS (See next section)

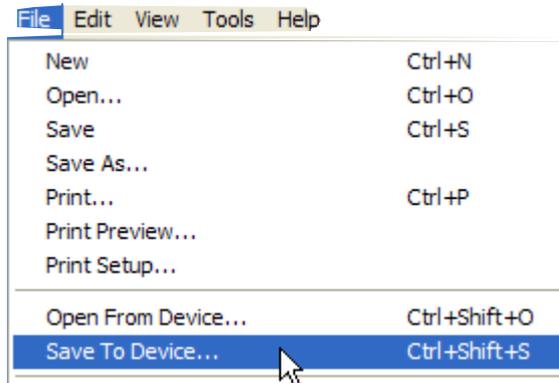
## 4.5 Uploading waypoints to the GPS receiver

1. Connect the GPS to the computer and turn the GPS on.

2. Click **File**



3. Click **Save to device**



4. Click **Save**



## 5 Preparing waypoints using GPS Utility

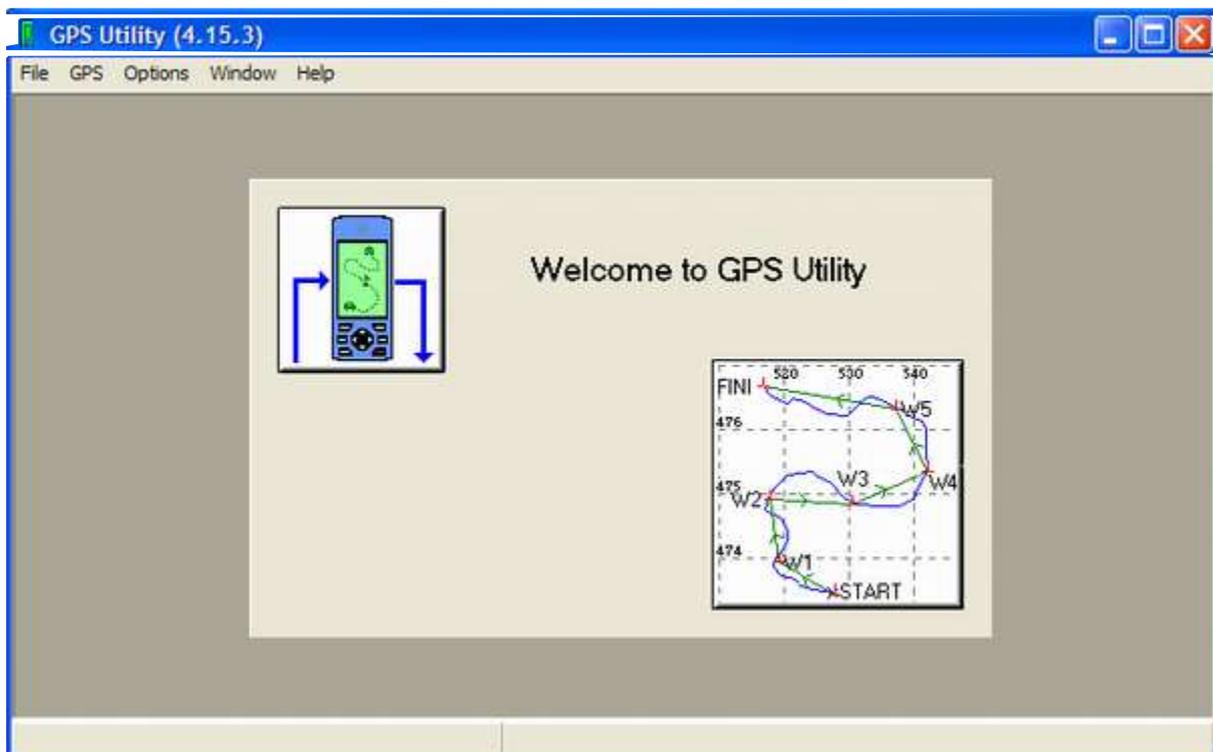
### 5.1 Starting GPS Utility

1. Start GPS Utility by clicking on the desktop icon



or from the Start Menu: Programs -> GPS Utility -> GPS Utility

You will see:



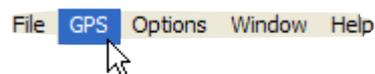
### 5.2 Downloading waypoints from a GPS receiver

1. Connect the GPS to the computer and turn the GPS on.

2. Press CTRL-D

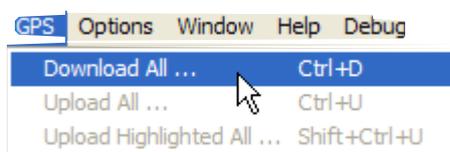
or

a) Click **GPS**,



then

b) **Download All**



You will see:



3. Click **OK**

4. After download you will see the list of waypoints from the GPS:

### 5.3 Saving waypoints to a file

After downloading waypoints, save them to disk.

1. Click **Save** or press CTRL-S



2. Save in:

```
D:\My Documents\Patrol GPS Downloads\2004
D:\My Documents\Patrol GPS Downloads\2005
D:\My Documents\Patrol GPS Downloads\2006 .... etc.
```

The file must be named according to this format:

```
TV 2004-03 GPS 108 Group 3
SP 2004-01 GPS 116 Group 5
VS 2004-02 GPS 001 Group 2
```

ie: Station Year-Month GPS Number Group Number

## 5.4 Checking the waypoints are in chronological order

**VERY IMPORTANT: The waypoints must be labeled numerically, eg: 001, 002, 003 ..... 010, 011.....100,101..etc. and in chronological order.**

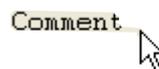
Rangers are responsible for making sure the waypoints are correctly labeled in chronological order. If you receive a GPS with waypoints not correctly labeled, please show the rangers and ask them to label waypoints correctly next time. It is not difficult to do this, you only need to accept the number that the GPS automatically gives a waypoint, in other words:

**Rangers must not change the waypoint name on the GPS.**

If rangers change the waypoint name then waypoints will no longer be in chronological order. You must then change the waypoint names back.

### 5.4.1 How to check waypoints are in chronological order

1. Click the **Comment** field header:



The waypoints will now be sorted by Comment in alphabetical order.

2. Examine the **ID** field.

Are the waypoints names in alphabetical order? eg: 001, 002, 003, 004, 005, 006, .....etc?

If not, you must change the name of waypoints so that the **IDs** are in alphabetical order.

### 5.4.2 Before changing waypoint IDs save the file with a new name

1) Save the file with a new name

Press F12

or

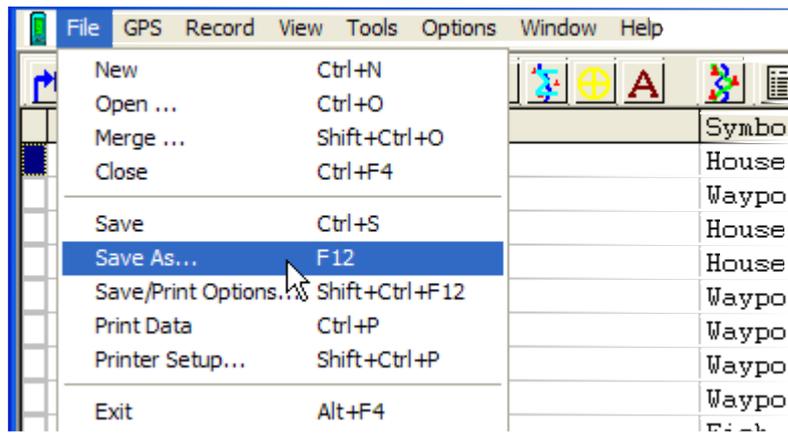
a) Click **File**



b) Click **Save as**

Save the new file to the location as the original with `Edit` appended to name, eg:

```
TV 2004-03 GPS 108 Group 3 Edit
SP 2004-01 GPS 116 Group 5 Edit
VS 2004-02 GPS 001 Group 2 Edit
```

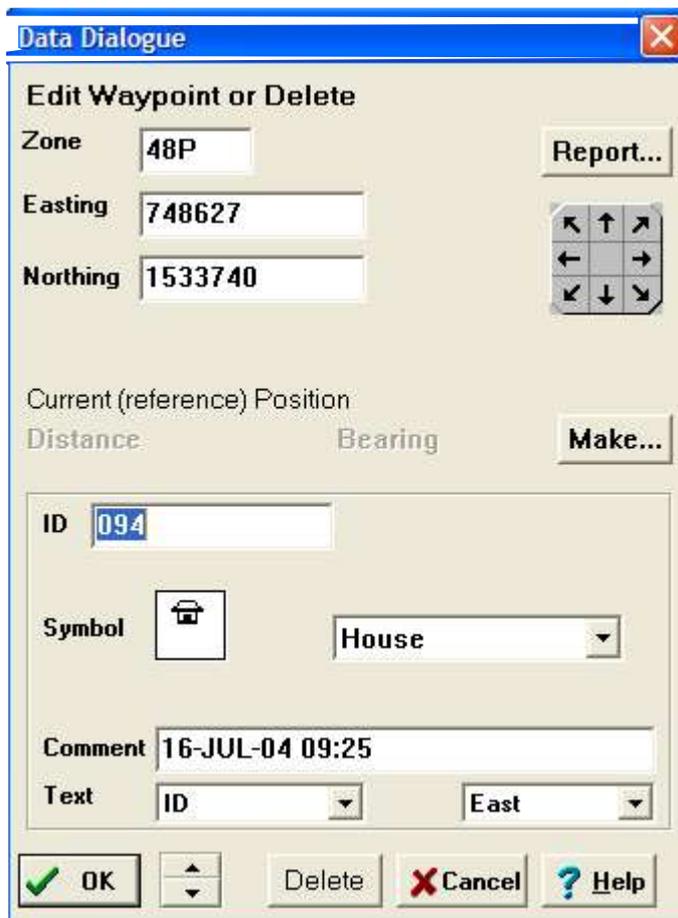


same but the

### 5.4.3 Changing the ID of a waypoint

a) Double click on the waypoint ID, eg: 010CAMP

The **Data Dialogue** window will appear:



b) Type the new name of the waypoint eg: 011a

c) Click **OK**

When renaming waypoints use 001a, 002a, 003a, etc. to avoid getting the error "Waypoint ID already exists"

### 5.4.4 Upload the modified waypoints to the GPS

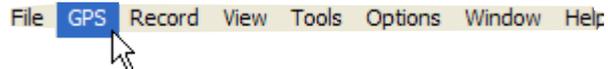
1. Delete all waypoints from the GPS. (See GPS instruction manual)
2. Upload the waypoints to the GPS (See next section)

### 5.5 Uploading waypoints to the GPS receiver

1. Connect the GPS to the computer and turn the GPS on.
2. Press CTRL-U

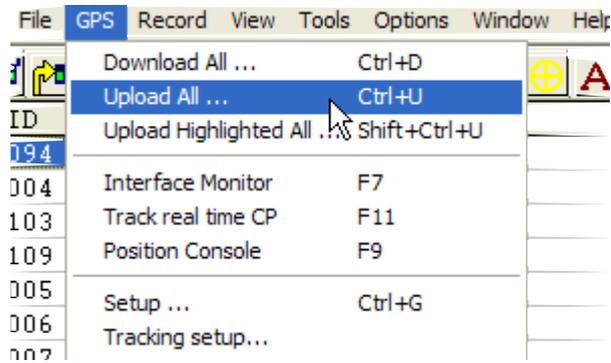
or

a) Click **GPS**



then

b) Click **Upload All**



The **GPS Transfer** window will appear:



3. Click **OK**



## 6 Downloading waypoints into MIST

Waypoint	Locations		Time	Direction (Degrees)	Distance	Observation	Observation Code	Total	Adults		Young
	Easting	Northing							male	female	
1	744309	1556429	08:08:00	---	0	Position	Start	0	0	0	0
2	744975	1565781	08:43:00	---	0	Sambar	Footprint	1	0	0	0
3	746249	1566742	09:20:00	---	0	Sambar	Footprint	1	0	0	0
4	746622	1567357	09:42:00	---	0	Red Muntjac	Sighting	1	0	0	0
5	746248	1567404	10:12:00	---	0	Sambar	Footprint	1	0	0	0
6	746040	1567502	10:24:00	---	0	Position	Position	0	0	0	0
7	746242	1567755	10:51:00	---	0	Position	Position	0	0	0	0
8	746736	1546736	11:51:00	---	0	Position	Position	0	0	0	0
9	746735	1567912	12:50:00	---	0	Position	Position	0	0	0	0
10	747112	1567919	01:19:00	---	0	Sambar	Footprint	1	0	0	0
11	747735	1568330	01:49:00	---	0	Reticulated Python	Sighting	1	0	0	0
12	747797	1568741	02:04:00	---	0	Sambar	Footprint	1	0	0	0
13	747579	1569055	02:34:00	---	0	Position	Position	0	0	0	0
14	747946	1569385	03:20:00	---	0	Position	Position	0	0	0	0

1. In the **Ground Patrol** window click **Waypoints**



2. The **Download GPS Waypoints Wizard** will appear:



3. Connect the GPS receiver to the computer and click **Download Waypoints**.



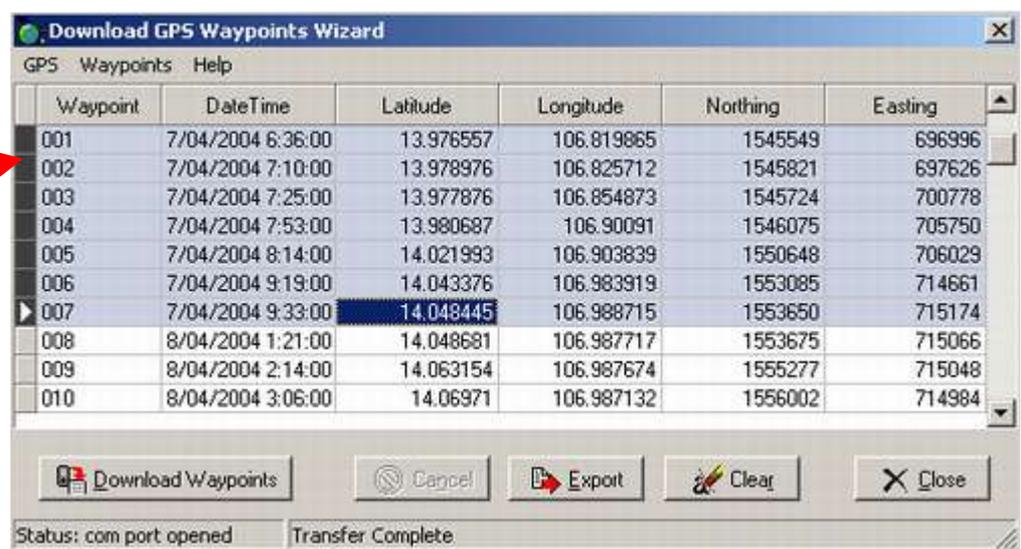
The window will fill up with waypoints from the GPS, like this:



**NB: Waypoints must be in chronological order.**

4. Go to the start of the waypoint list and select the waypoints from the first day of the patrol:

Select waypoints by using shift + click here, or by dragging from anywhere in the table



**NB: Do not download any waypoint with the name GARMIN.**

**NB: If any waypoint has a strange DateTime value, click the value and change it so it is correct.**

5. Click Export



The **Select Patrol Start Day** window will appear. It should have the correct date selected already, if not click on the correct date.



6. Click OK

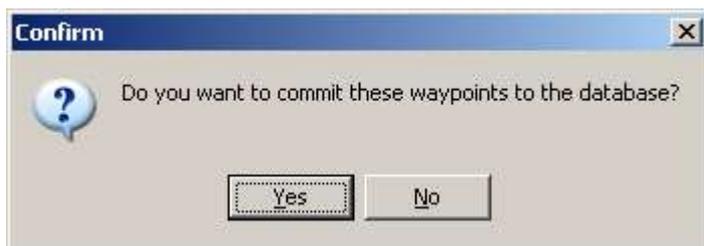
7. The following window will appear:



Selecting **Yes** will add the waypoints to the last patrol, eg: patrol 67.

Selecting **No** will create a new patrol and add the waypoints to that, eg: a new patrol 68. Select **No** when importing the first day of a new patrol.

8. The following window will appear:



Select **Yes** to confirm that you want to add the waypoints.

9. The following window will appear:



Select **Yes** to remove the selected waypoints from the **Download GPS waypoints wizard** window.

10. Repeat steps 4-9 for each day of the patrol.

## 7 Checking waypoints in MIST against the data sheet

After downloading waypoints into MIST you must compare the ground patrol in MIST with the data sheet.

1. Check that the ground patrol in MIST has the same number of days as the data sheet
2. For each day on the data sheet:
  - check that the date of the day in MIST is the same as the date on the data sheet
  - check that the number of waypoints in MIST and on the data sheet are the same
  - check that the first waypoint co-ordinates and time are correct
  - check that the first waypoint co-ordinates and time are correct

Note:

- the Easting co-ordinate may be 1-3m out compared to the data sheet, this is OK
- the Northing co-ordinate may be 15-17m out compared to the data sheet, this is OK
- the time may be 7 hours before the time on the GPS, this is OK. (On the Garmin 12CX when a waypoint is saved, UTC time is used, which is 7 hours before Cambodian time).

If the Easting or Northing are greater than 1-3m/15-17m then the waypoint is wrong

3. If a waypoint is in the GPS & MIST but not on the data sheet, leave it in MIST, and add the waypoint to the data sheet using a red pen.
4. If a waypoint is on the datasheet but not on the GPS or in MIST, add it to MIST
5. If there are no co-ordinates for an observation on the data sheet (Wildlife or Illegal activity but not Position) and the waypoint is not in MIST, then this waypoint must be manually entered using the co-ordinates of the previous or following waypoint.
6. Run the report "GP days with zero distance". If a day in MIST has only one waypoint then the distance travelled for that day will be 0 km. To offset this, take the first waypoint from the next day (if there is a next day) and add it to the patrol day with only one day.
7. Run the Patrolled Areas Query. Do you see any lines on the map that look too long? If so, then the co-ordinates of one of the waypoints is probably wrong.

## **8 Entering observations and observation remarks**

If there is no observation or observation remark in MIST matching what is written on the data sheet, in general, ignore it. If however you think it is important, check with Park Management if they want to record it. If they do, contact the Database Administrator who can add the observation or remark to the database.

If there is no observation for a particular species, check first if there is a general classification. eg: if on the data sheet the ranger recorded Fish Cat, but there is no Fish Cat

## 9 Changing observations in MIST

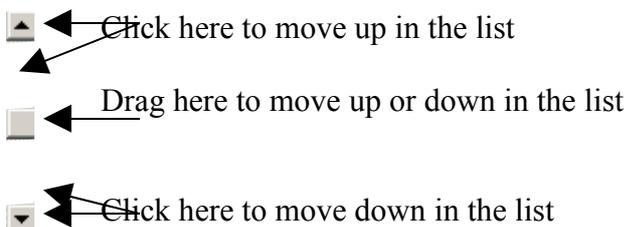
Waypoint	Locations		Time	Direction (Degrees)	Distance	Observation	Observation Code	Total	Adults		Young
	Easting	Northing							male	female	
1	744309	1565429	08:08:00	---	0	Position	Start	0	0	0	0
2	744975	1565781	08:43:00	---	0	Sambar	Footprint	1	0	0	0
3	746249	1566742	09:20:00	---	0	Sambar	Footprint	1	0	0	0
4	746622	1567357	09:42:00	---	0	Red Muntjac	Sighting	1	0	0	0
5	746248	1567404	10:12:00	---	0	Sambar	Footprint	1	0	0	0
6	746040	1567502	10:24:00	---	0	Position	Position	0	0	0	0
7	746242	1567755	10:51:00	---	0	Position	Position	0	0	0	0
8	746736	1567913	11:51:00	---	0	Position	Position	0	0	0	0
9	746735	1567912	12:50:00	---	0	Position	Position	0	0	0	0
10	747112	1567919	01:19:00	---	0	Sambar	Footprint	1	0	0	0
11	747736	1568330	01:49:00	---	0	Reticulated Python	Sighting	1	0	0	0
12	747797	1568741	02:04:00	---	0	Sambar	Footprint	1	0	0	0
13	747579	1569055	02:34:00	---	0	Position	Position	0	0	0	0
14	747947	1569385	03:20:00	---	0	Position	Position	0	0	0	0

1. Click on ▾ next to the observation and the list of all observations appears:

Observation Group	Observation	Type
Mammals	Wild Pig	Nest
Mammals	Wild Pig	Footprint
Mammals	Wild Pig	Dig
Mammals	Yellow-cheeked Gibbon	Sighting
Mammals	Yellow-cheeked Gibbon	Photo
Position	Position	Start
Position	Position	Position

To select an observation:

a) Use the scrollbar:



or

b) Use the following keys on the keyboard to move around in the list:

UP, DOWN, PG UP, PG DN

or

c) Type the first few letters of the observation, eg: for Poaching Hunting type **P O A**

2. To save the change:

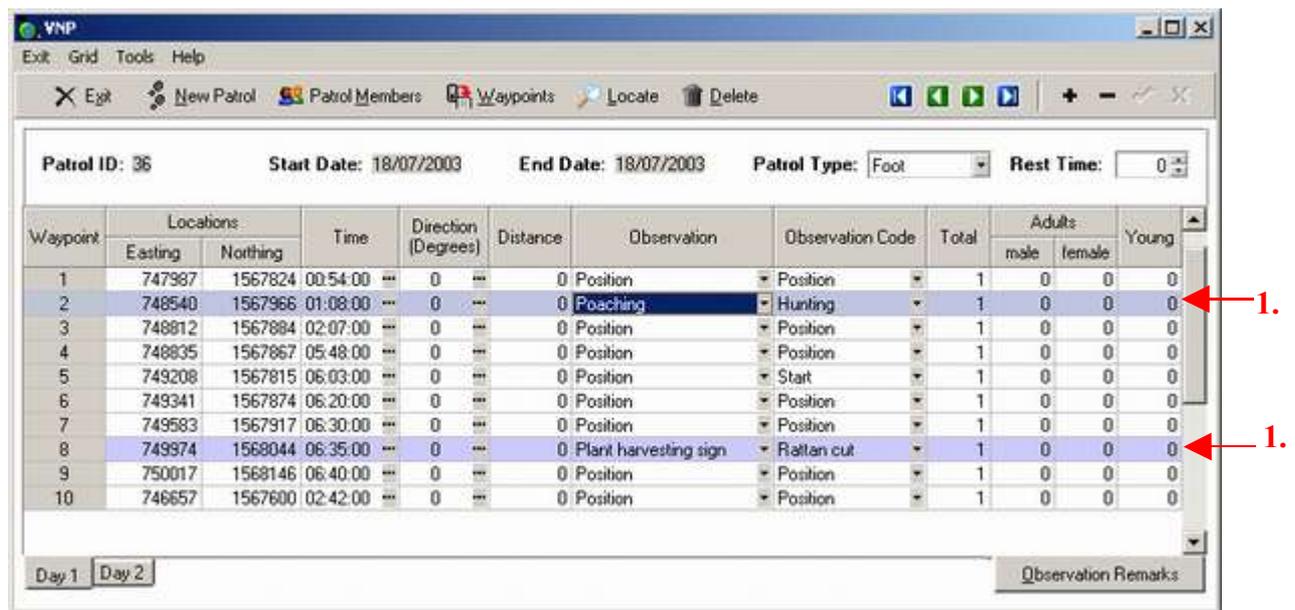
a) Click

*or*

b) Select a different observation

To cancel the change click

# 10 Entering observation remarks in MIST



1. Observations highlighted in blue have observation remarks.

The observations that can have remarks in VNP are:

- Poaching**
- Poaching sign**
- Plant harvesting**
- Plant harvesting sign**

(please see the illegal activities flowchart)

2. To edit the remarks, first select the observation:



then click:





You can expand **every** event at once by clicking:



4. To event a value for an observation remark, **Double click** in the column **observation**:

Event	Observation
<input type="checkbox"/> weapons/items confiscated	
wildlife carry bags	
knife	

a text entry box will appear, and the cursor will change, like this:

Event	Observation
<input type="checkbox"/> weapons/items confiscated	
wildlife carry bags	<input style="width: 100px; height: 20px;" type="text"/>
knife	

you can now enter a numeric value, eg:

Event	Observation
<input type="checkbox"/> weapons/items confiscated	
wildlife carry bags	2
knife	

Here's an example of a completed set of remarks:

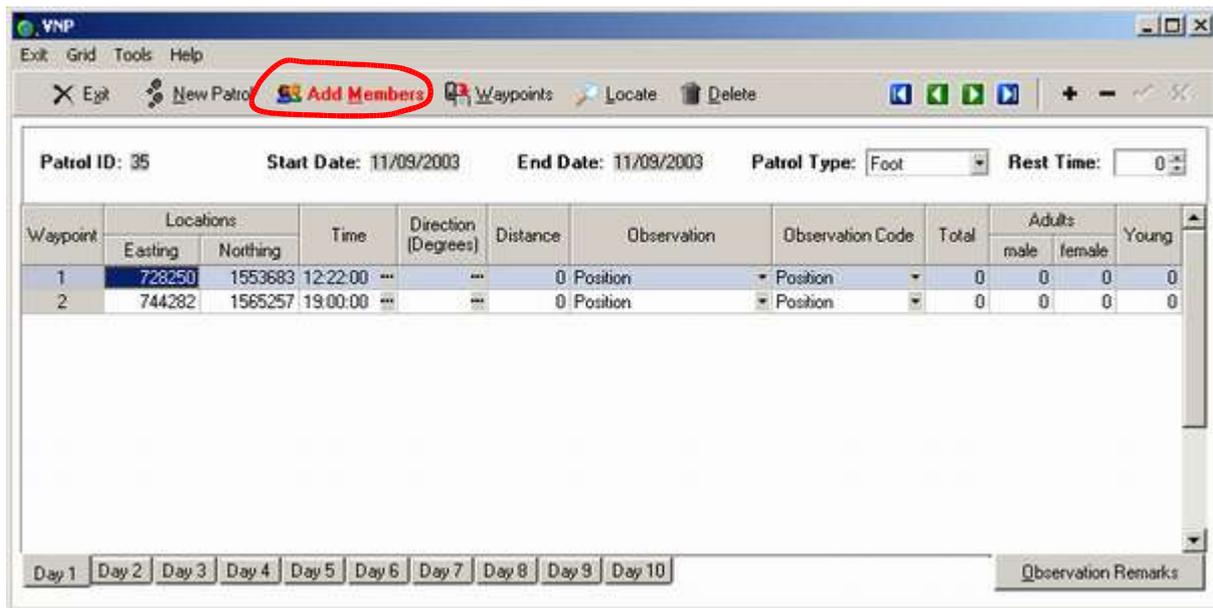
Event	Observation
<input type="checkbox"/> weapons/items confiscated	
wildlife carry bags	2
knife	
poison	
axe	
wire tiger snare	
wire snare	
hand grenade	
mine	
home-made gun	
<input type="checkbox"/> automatic weapon	1
wildlife carry bags	
serial number	145632
<input type="checkbox"/> animals confiscated	
<input type="checkbox"/> Civet sp.	
dead	1

Entering observation remarks

5. When you have finished entering remarks, to save click **Finished**:



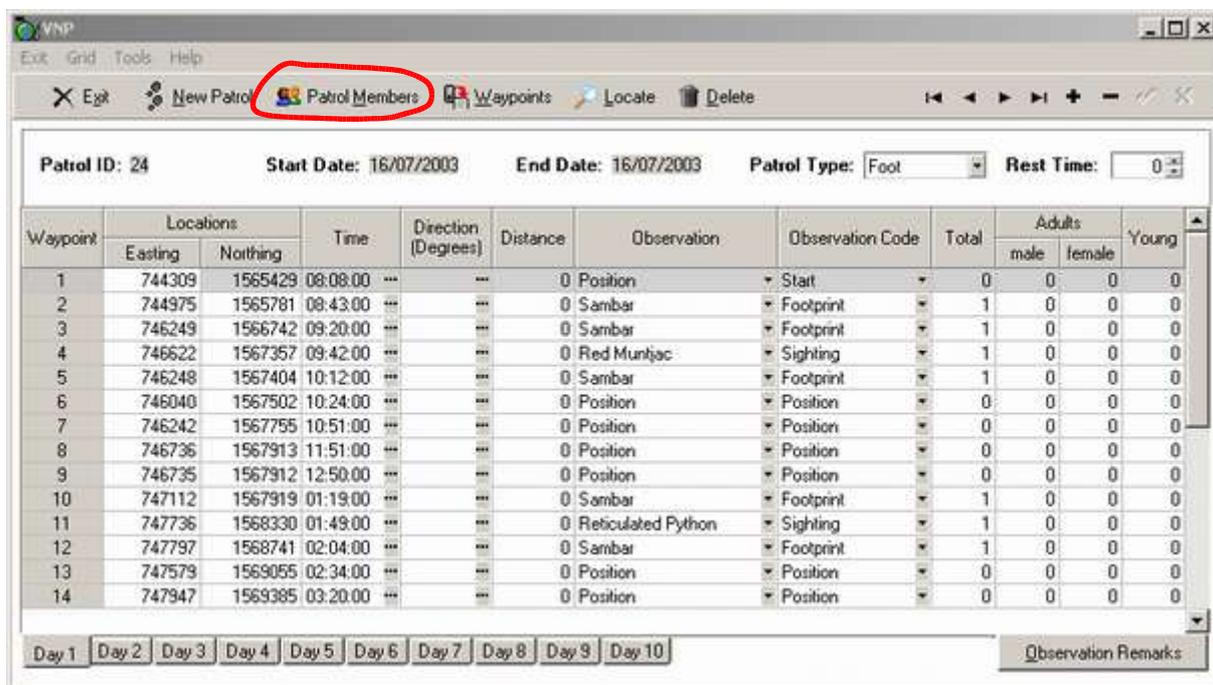
# 11 Adding members to a patrol



Click Add Members

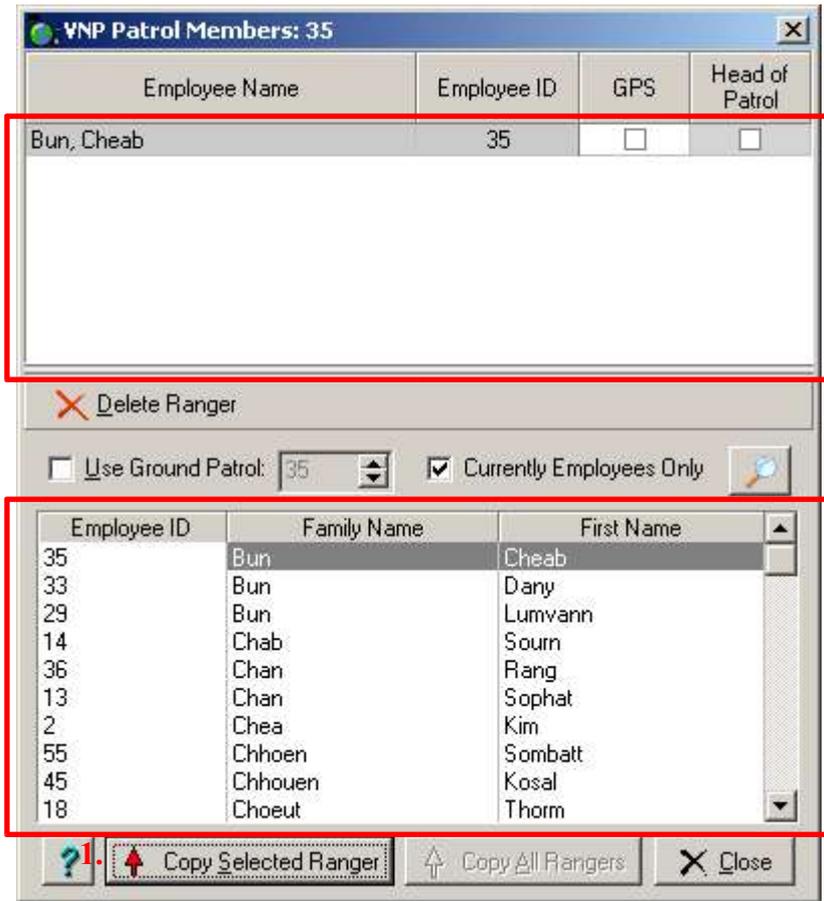
OR

if the patrol already has members click Patrol Members



Adding members to a patrol

The following window will appear:



This is the **Selected Rangers List**. Patrol members already assigned to this patrol appear here

This is the **List of all rangers**.

### 11.1 List of all rangers

You can change the order of rangers in the **List of all rangers**.

If you want to sort by employee ID click on **Employee ID**.

Employee ID	Family Name	First Name
1	Koy	Sokha
10	Phnon	Sopha
11	Main	Luysong

If you want to sort by family name click on **Family Name**.

Employee ID	Family Name	First Name
35	Bun	Cheab
33	Bun	Dany
29	Bun	Lumvann

If you want to sort by first name click on **First Name**.

Employee ID	Family Name	First Name
6	Sienq	Bokham
4	Tep	Borin
8	Wat	Bunloeu

To locate a ranger by family name, click on  then:



1. enter ranger's family name here

2. Click OK

## 11.2 To add a ranger to the patrol

1. Select the ranger in the **List of all rangers**, eg:

Employee ID	Family Name	First Name
35	Bun	Cheab
33	Bun	Dany
29	Bun	Lumvann
14	Chab	Sourn
36	Chan	Rang
13	Chan	Sophat
2	Chea	Kim
55	Chhoen	Sombatt
45	Chhouen	Kosal
18	Choeut	Thorm

2. Click



## 11.3 To remove a ranger from the patrol

1. Select the ranger in the **Selected Rangers List**, eg:

Employee Name	Employee ID	GPS	Head of Patrol
Bun, Cheab	35	<input type="checkbox"/>	<input type="checkbox"/>
Fouy, Vanthong	48	<input type="checkbox"/>	<input type="checkbox"/>
Chea, Kim	2	<input type="checkbox"/>	<input type="checkbox"/>
Chan, Rang	36	<input type="checkbox"/>	<input type="checkbox"/>

2. Click



## 11.4 To add rangers from a previous patrol

If you want to see which rangers were on a previous patrol, and then add those rangers to the current patrol:

1. Click on the checkbox next to **Use Ground Patrol**



2. Change the ground patrol ID to the previous patrol

3. The rangers from the previous patrol will appear in the **List of all rangers**. You can then individually add a member, or add all rangers from the previous patrol by clicking on:



## 11.5 To specify the GPS user

1. In the **Selected Rangers List**, click on the checkbox under GPS to specify the ranger who used the GPS on patrol. You can specify more than one ranger.

Employee Name	Employee ID	GPS	Head of Patrol
Bun, Cheab	35	<input type="checkbox"/>	<input type="checkbox"/>
Fouy, Vanthong	48	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Chea, Kim	2	<input type="checkbox"/>	<input type="checkbox"/>
Chan, Rang	36	<input type="checkbox"/>	<input type="checkbox"/>

## 11.6 To specify the Head of Patrol

1. In the **Selected Rangers List**, click on the checkbox under Head of Patrol to specify the ranger in charge of the patrol. You can specify more than one ranger

Employee Name	Employee ID	GPS	Head of Patrol
Bun, Cheab	35	<input type="checkbox"/>	<input type="checkbox"/>
Fouy, Vanthong	48	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Chea, Kim	2	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Chan, Rang	36	<input type="checkbox"/>	<input type="checkbox"/>

## 12 Updating management sectors

### 12.1 When to update management sectors

If you have added a new patrol, or made changes to an existing patrol, when you close the Ground Patrol Data Entry window you will see the following:

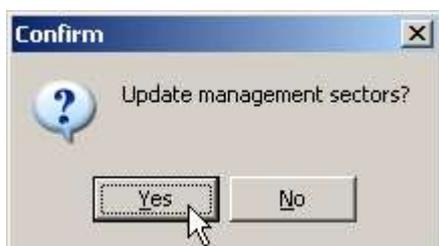


**Updating management sectors** assigns each waypoint to a management sector (eg: Veun Sai, Taveng East, Taveng West, Siem Pang).

You need to update management sectors when you have added new waypoints (eg: manually or from a GPS download), or have changed the co-ordinates of any existing waypoints.

### 12.2 How to update management sectors

1. Click Yes



You will see:



2. Check **All records**. All waypoints will be re-checked and assigned (or updated) to a management sector. This may take a while.



OR

Click **Since**, and select a date. Only waypoints from this day onward will be checked and assigned (or updated) to a management sector.

3. Click Apply



4. Click OK



# **Chapter 3 Producing information**

---

# 1 Introduction

MIST can produce information as

- a report - a report is a table of data that can be printed, saved, or exported
- a map query - information that can be displayed on the map of the PA and then further manipulated (zoomed in/out, moved around, and further information obtained about data on the map)
- a bar chart

The tools for producing information are

- Report builders - provide quick access to reports with a limited set of options
- Query wizard - provides access to reports with a complete set of options, and map queries that do not have associated reports (eg: the Patrolled Areas map query)
- Visual SQL query builder - an advanced tool for producing information from any database table
- Browse Tables - an advanced tool for producing information from any database table

## **2 Types of reports and map queries**

### **2.1 Summary reports**

Summary reports which show the totals for a period (month, quarter, year etc.) can be produced for

- Birds
- Mammals
- Reptiles
- Waypoints (all records) - includes position waypoints. Used for checking data entry has been correct.
- Visitors

### **2.2 Patrol summary**

A report showing for each patrol in the period:

- the duration (number of days) of the patrol
- start and end date
- distance (km) covered by the patrol
- average distance (km) covered per day

### **2.3 Individual ranger report**

A report showing for each ranger during the period:

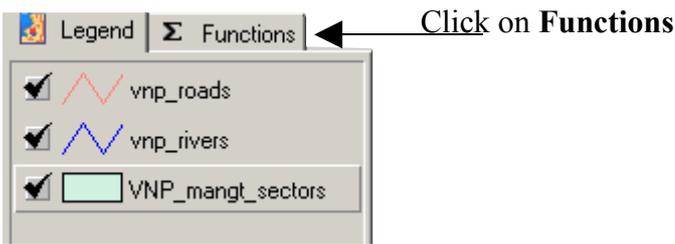
- how many days were spent on patrol
- what distance was covered by the ranger

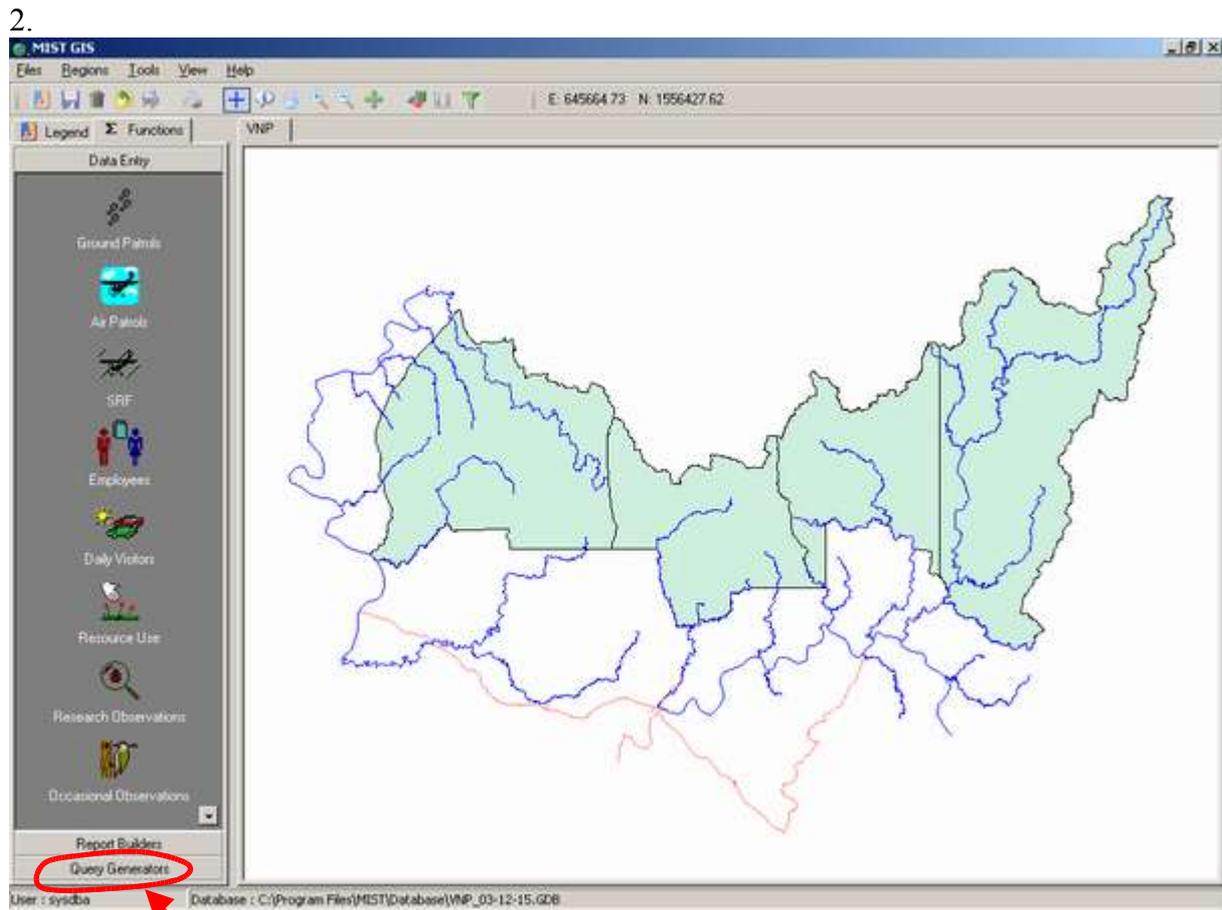
### **2.4 Map queries**

Maps which show the location for a period can be produced for

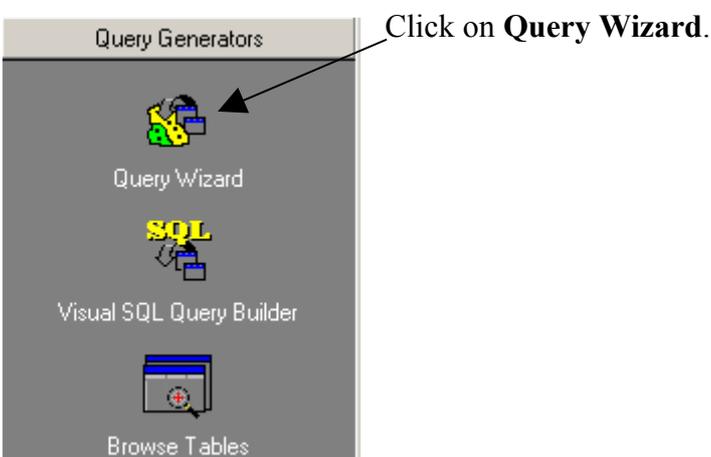
- Birds
- Mammals
- Reptiles
- Waypoints (all records) - includes position waypoints
- Patrolled Areas - those parts of the park which have been covered by patrols

### 3 Starting the Query Wizard

1. 



Click on **Query Generators**.

3. 

## 4 Using the Query Wizard

When using the Query Wizard follow the hand

Start 

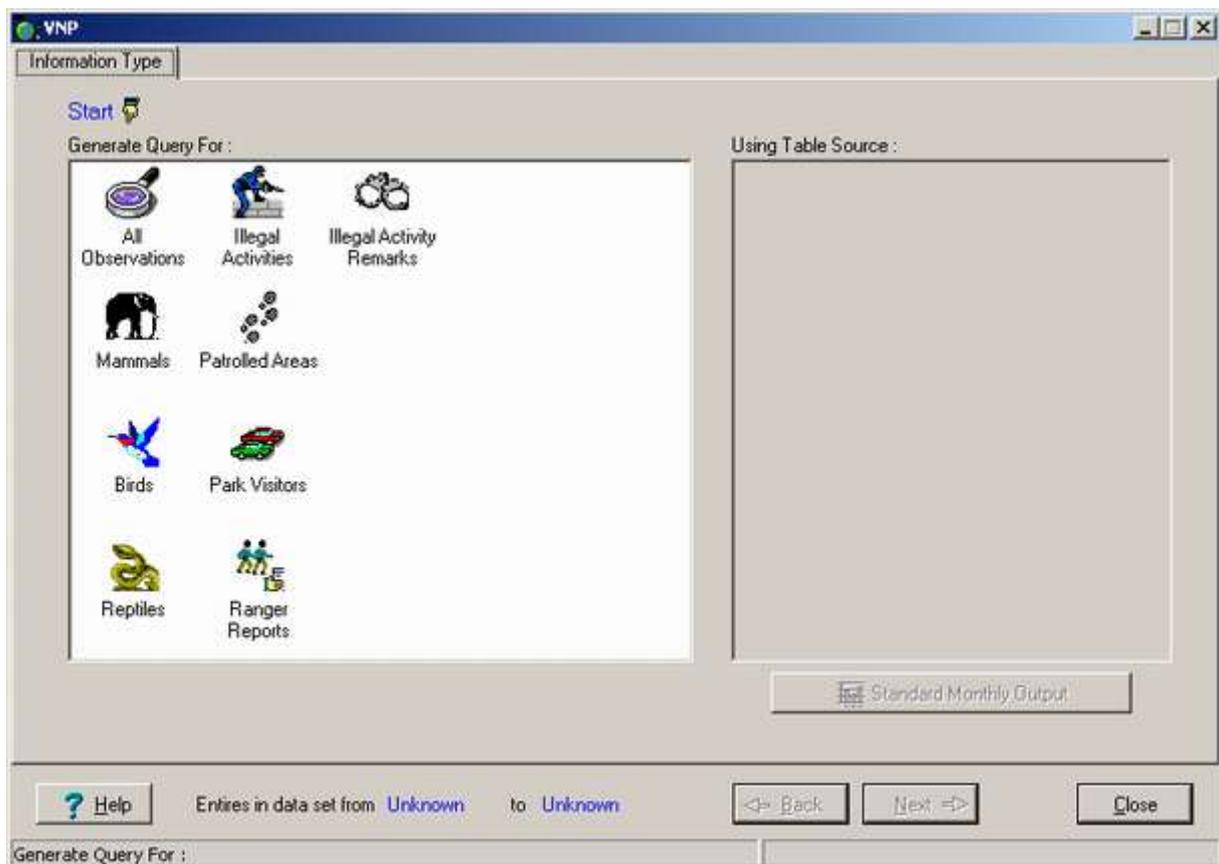
and

Next 

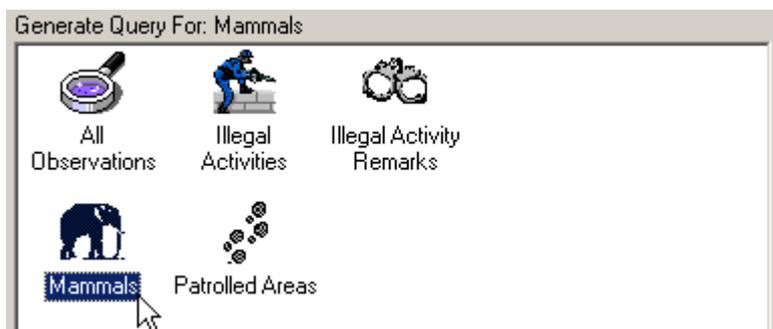
and finally

Next 

### 4.1 Page 1 - Information Type

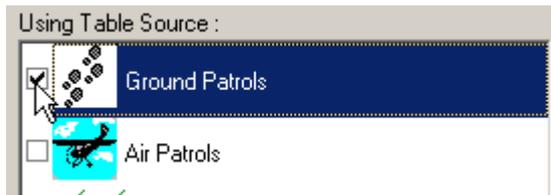


1. Click on a information type, eg: **Mammals**

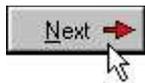


Using the Query Wizard

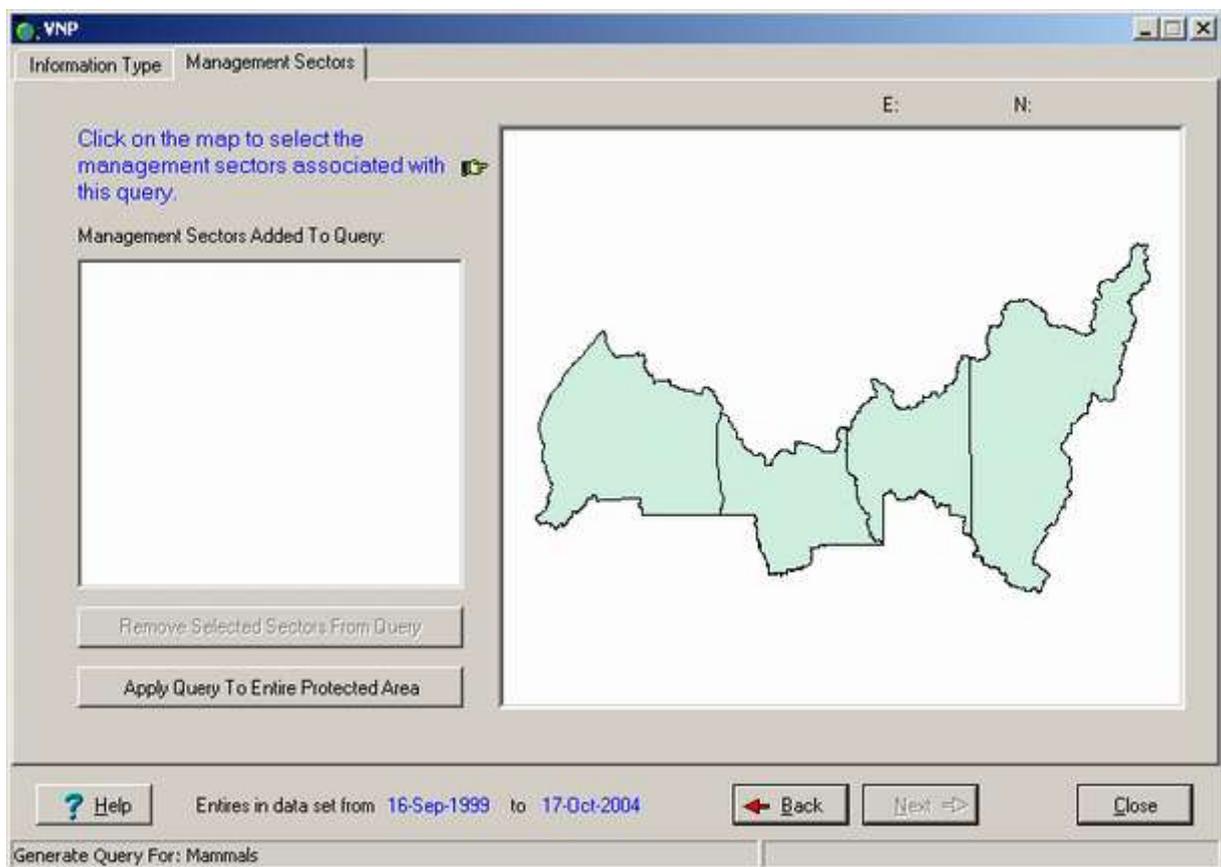
2. Click on the “check box” next to **Ground Patrols**



3. Click **Next**



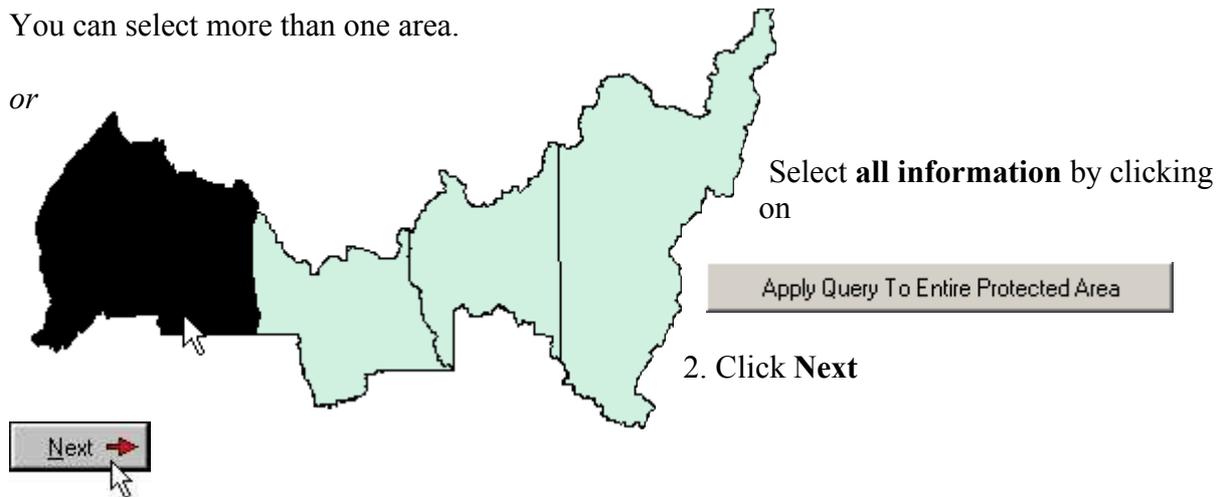
## 4.2 Page 2 – Management Sectors



1. Choose which part of the park you want information for by clicking on that part, eg:

You can select more than one area.

or



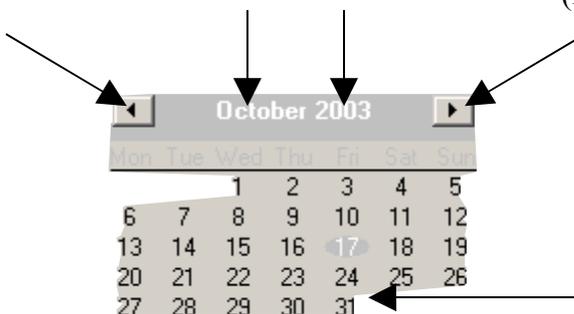
### 4.3 Page 3 – Time Period



1. Choose whether you want data for:

Time Period	
 To-From	a specific time period specified from one date to another eg: 17/02/03 -> 23/05/03
 Monthly	a specific month eg: October 2003
 Quarterly	a specific quarter eg: July – September 2003
 Yearly	a specific year or years eg: 2003, 2002-2004
 Patrol ID	

2. Select the time period eg: October 2003



go to the previous month (September)

change the month

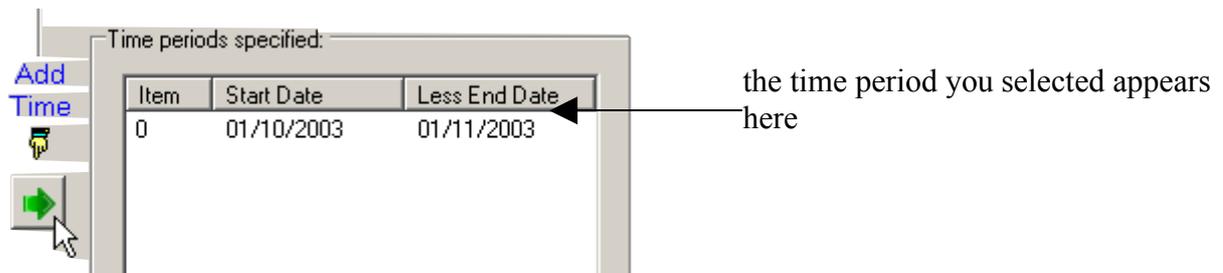
change the year

go to the next month (November)

select an individual date, eg: 31 October (has no effect if a monthly time period was chosen in step 1)

October 2003						
Mon	Tue	Wed	Thu	Fri	Sat	Sun
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

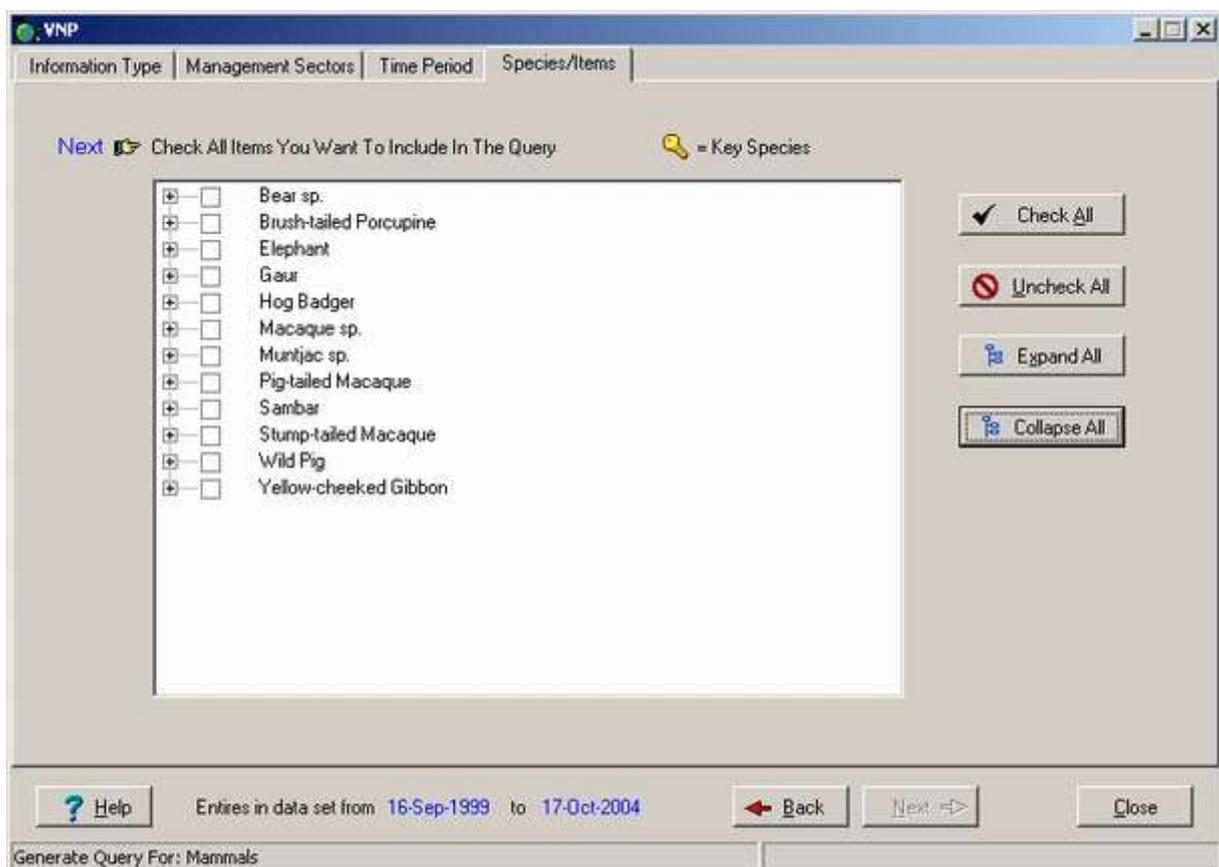
3. Click the arrow under **Add time**



4. Repeat steps 1-3 to add any more time periods.

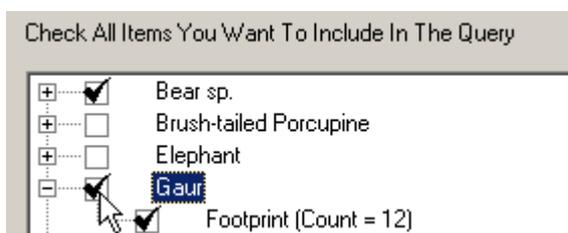
5. Click **Next** 

#### 4.4 Page 4 – Species/Items



Here you can select which particular observations (species/items) you want.  
NB: Page 4 does not appear for some query types, eg: Patrolled Areas

1. You can select individual observation by clicking on the Check box, eg:



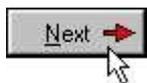
Using the Query Wizard

or

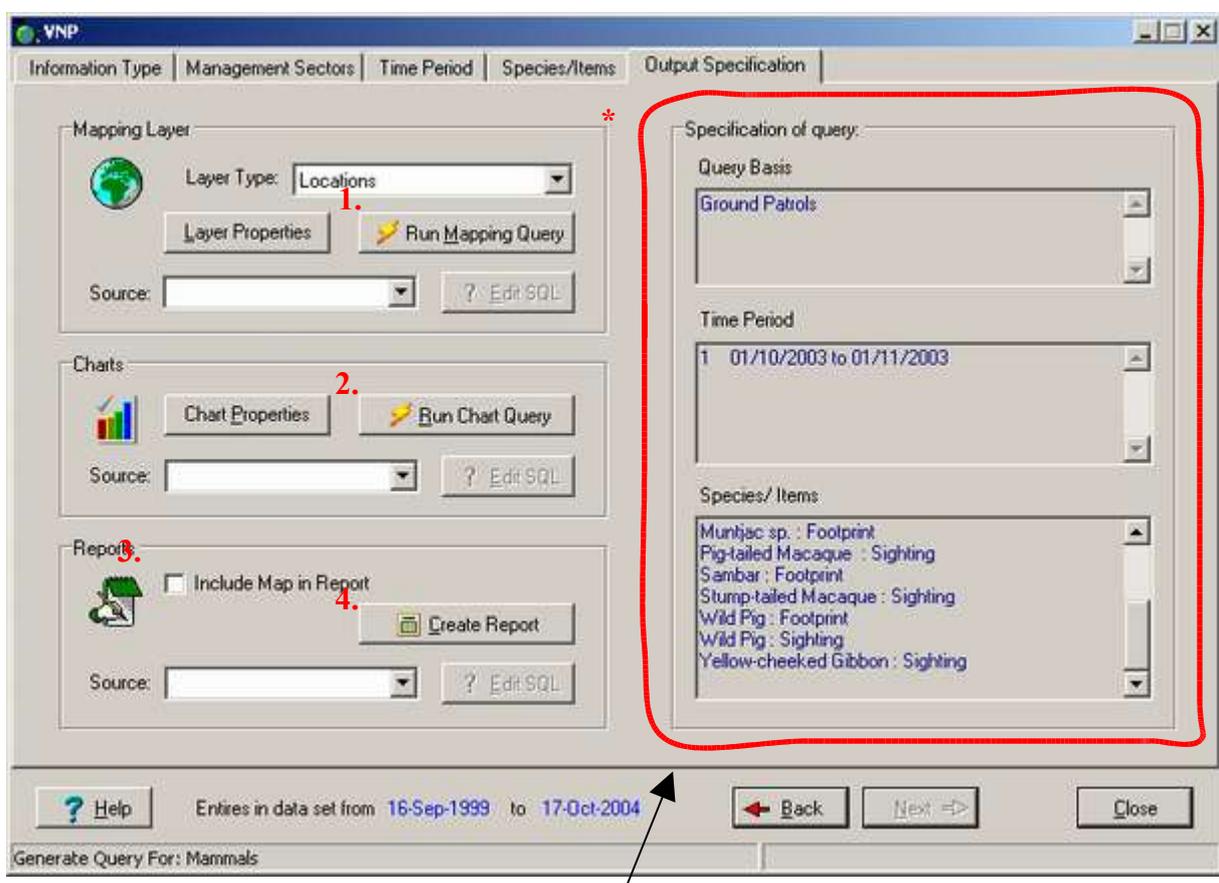
Click **Check All** to select all observations.



2. Click **Next**



#### 4.5 Page 5 – Output Specification



\* Details of what was selected in previous steps appear here

1. Click here to display results on the map. After click **Close** to see the results
2. Click here to display results as a chart
3. Click here to include the map currently on the screen in the report

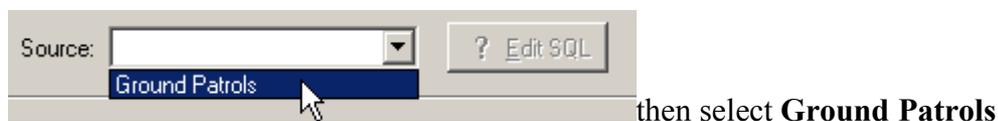
4. Click here to display results in a table (report)

## 4.6 Advanced – displaying information for a specific patrol

If you want to produce information for a specific patrol, for example patrol 24:

1. On **Page 3 – Time Period**, select a time period that includes the patrol, eg: if the patrol is from 17/8/03 to 24/8/03 select August 2003 as the time period

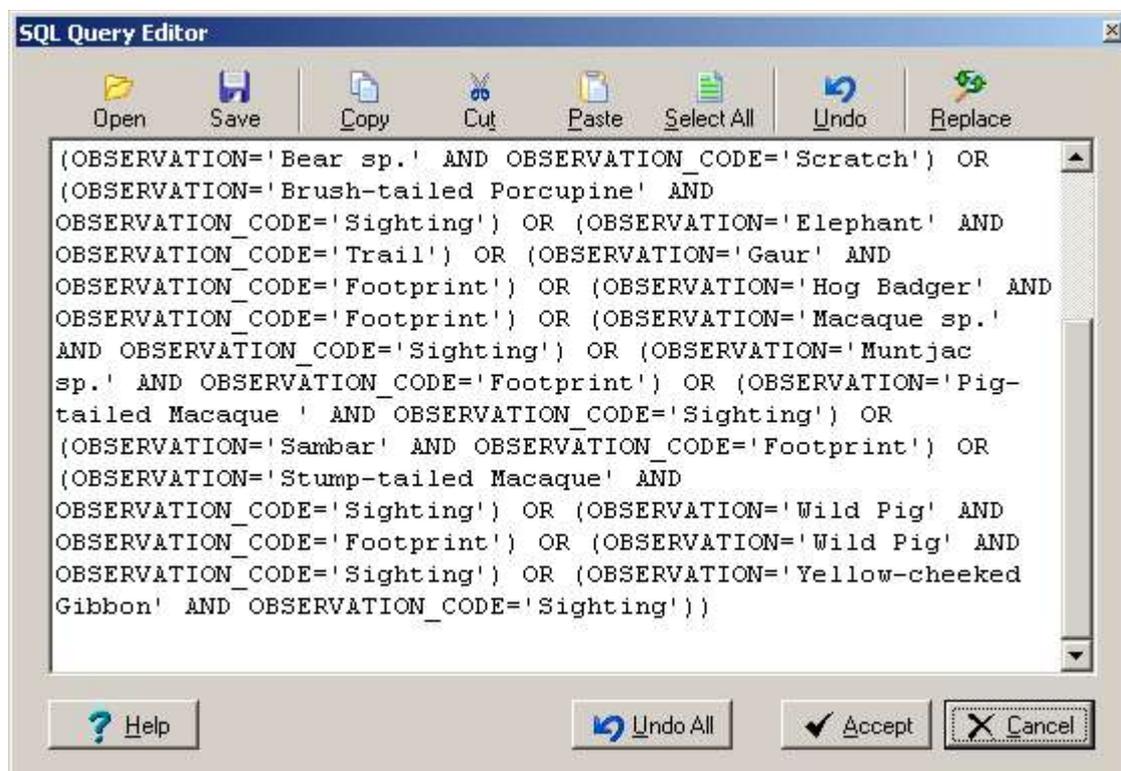
2. When you get to **Page 5 – Output Specification**, select **Ground Patrols** in the **Source** box:



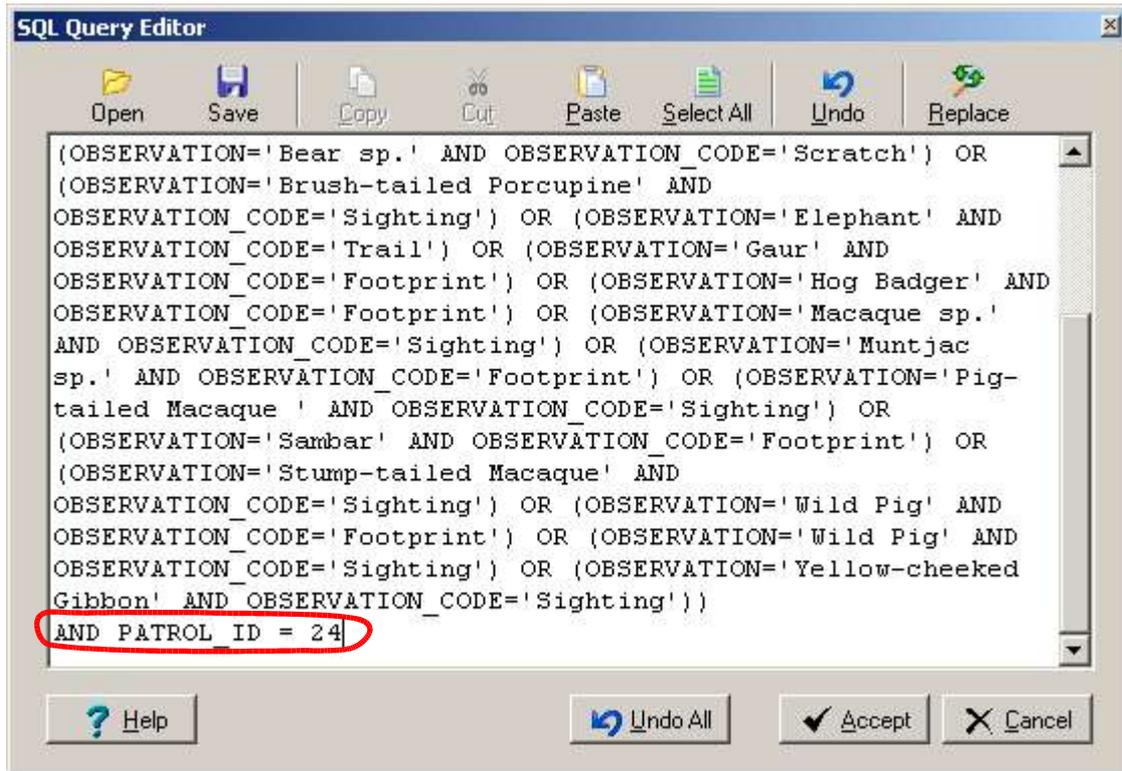
3. Click **Edit SQL**



The **SQL Query Editor** will appear:



5. Click in the text box at the very bottom and type **AND PATROL\_ID = 24:**



6. Click **Accept** and continue as usual



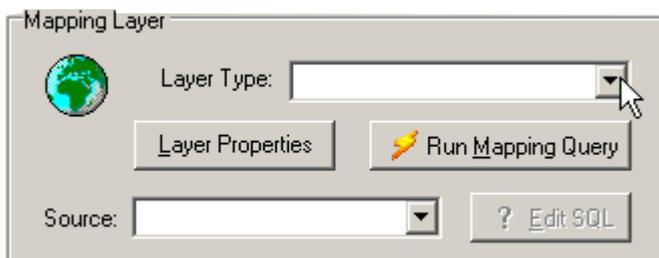
REMEMBER: On Page 3 you must select a time period that includes the date of the patrol

## 4.7 The Patrolled Areas Query

NB: This report shows data for any patrol days inside the period, even if the patrol begins or ends outside the period. Any days of a patrol outside the period are not included.

To produce the Patrolled Areas Query follow the steps for the pages above. However Page 4 (Species/Items) will not appear.

When you get to Page 5:



1. Click here



2. Select **Patrolled Areas**

3. Click **Run Mapping Query**



#### 4.7.1 Producing a patrolled areas query for a specific patrol:

eg: Producing a patrolled areas query for patrol 24

Before Step 3 do the following:

2a. Select **Ground Patrols** in the **Source** box:



Click here

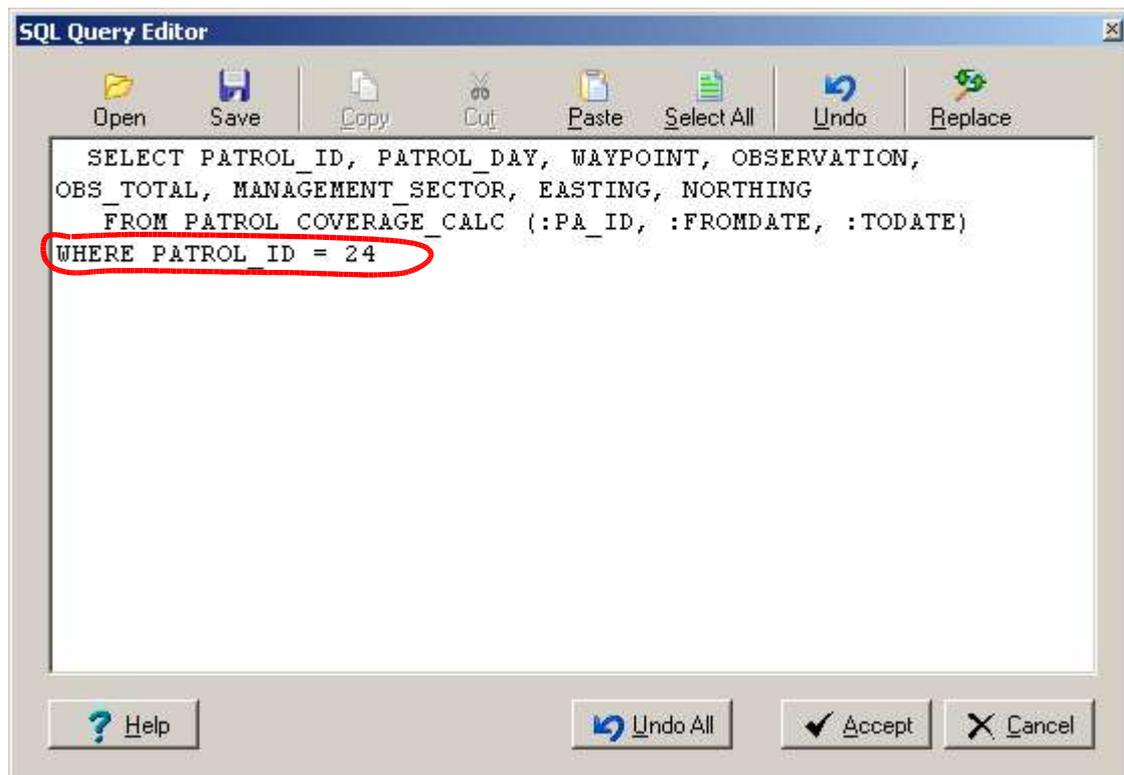


then select **Ground Patrols**

2b. Click **Edit SQL**



2c. At the end of the text type **WHERE PATROL\_ID = 24:**



2d. Click **Accept**, then return to Step 3.

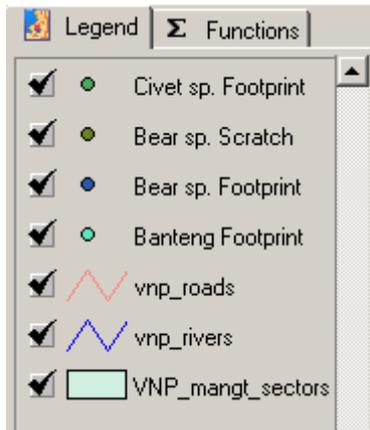


REMEMBER: On Page 3 you must select a time period that includes the date of the patrol

## 5 Working with the map

### 5.1 The legend

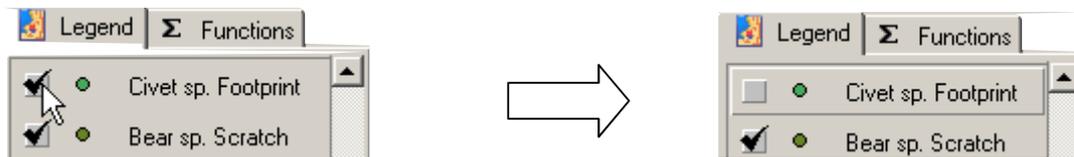
Everything on the map has a corresponding entry in the Legend.



#### 5.1.1 To temporarily remove items from the map

1. Click on the item's corresponding legend entry checkbox.

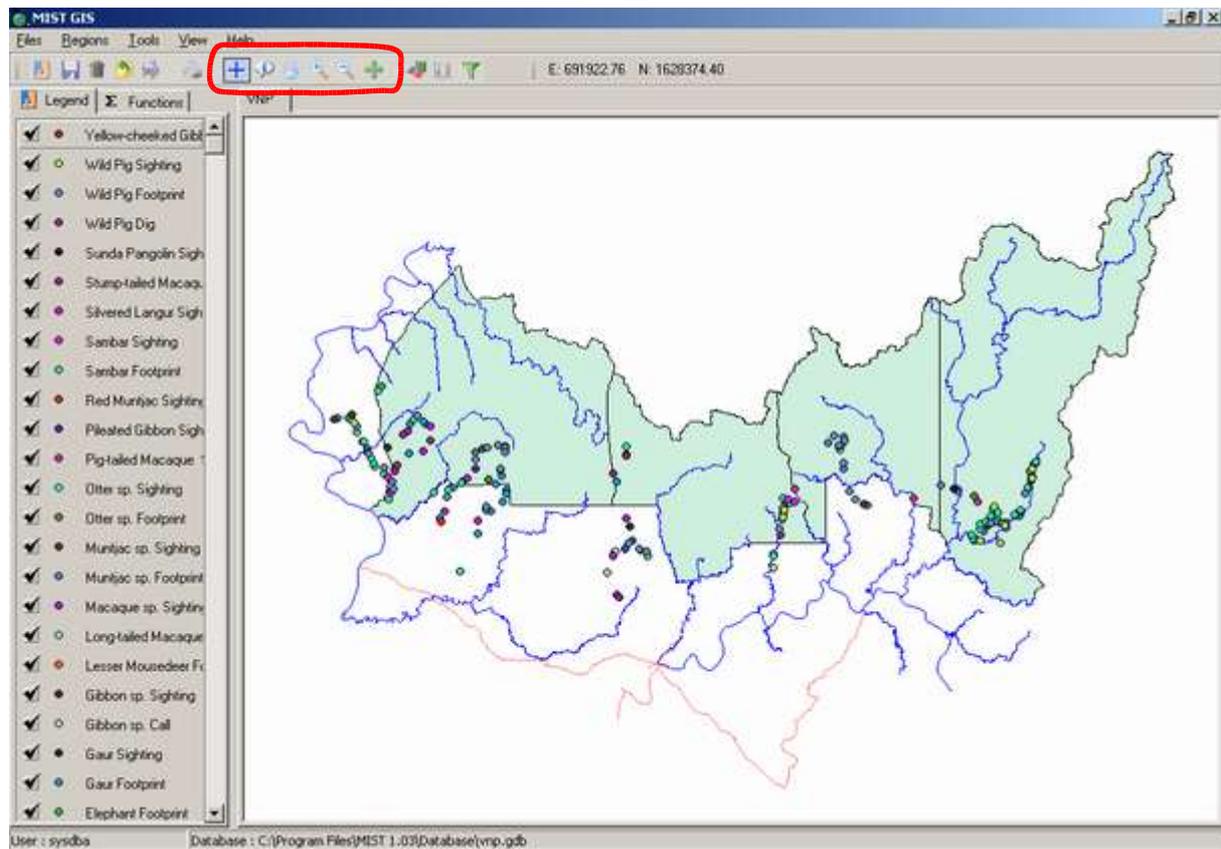
Eg: to remove the **Civet sp. Footprint** observation locations from the map click here:



**Civet sp. Footprint** observations will no longer be displayed on the map.

To display the **Civet sp. Footprint** observations again, click the unchecked checkbox.

### 5.2 The map



You can use the following tools on the map:



### 5.2.1 Default pointer

This tool is the default tool when starting MIST-GIS. It does not do anything to the map.

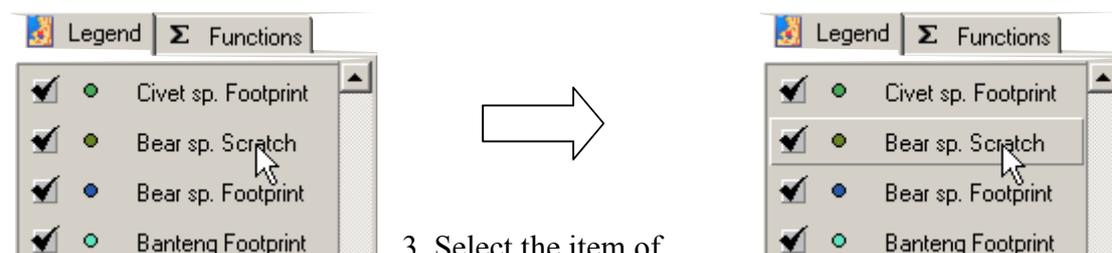
### 5.2.2 Shape information

This tool can be used to get information about something on the map.

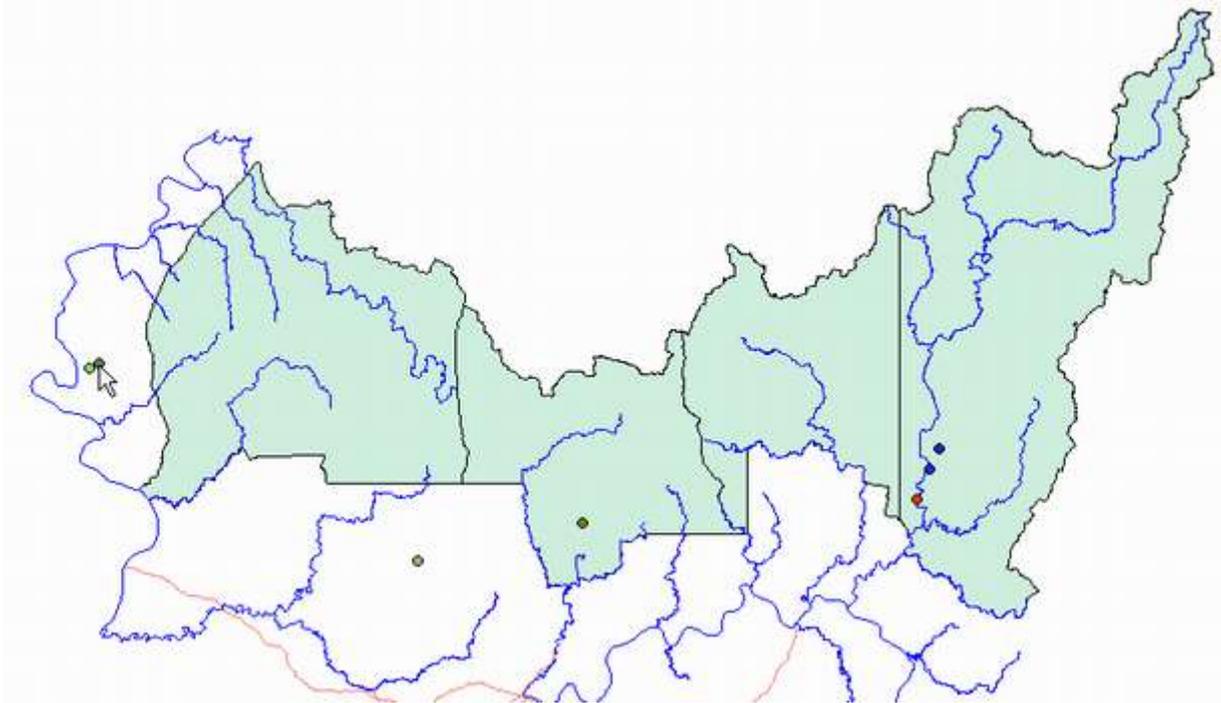
1. Click the **shape information** tool



2. Select the item of interest from the legend by clicking on the item's name.  
eg: Click **Bear sp. Scratch**

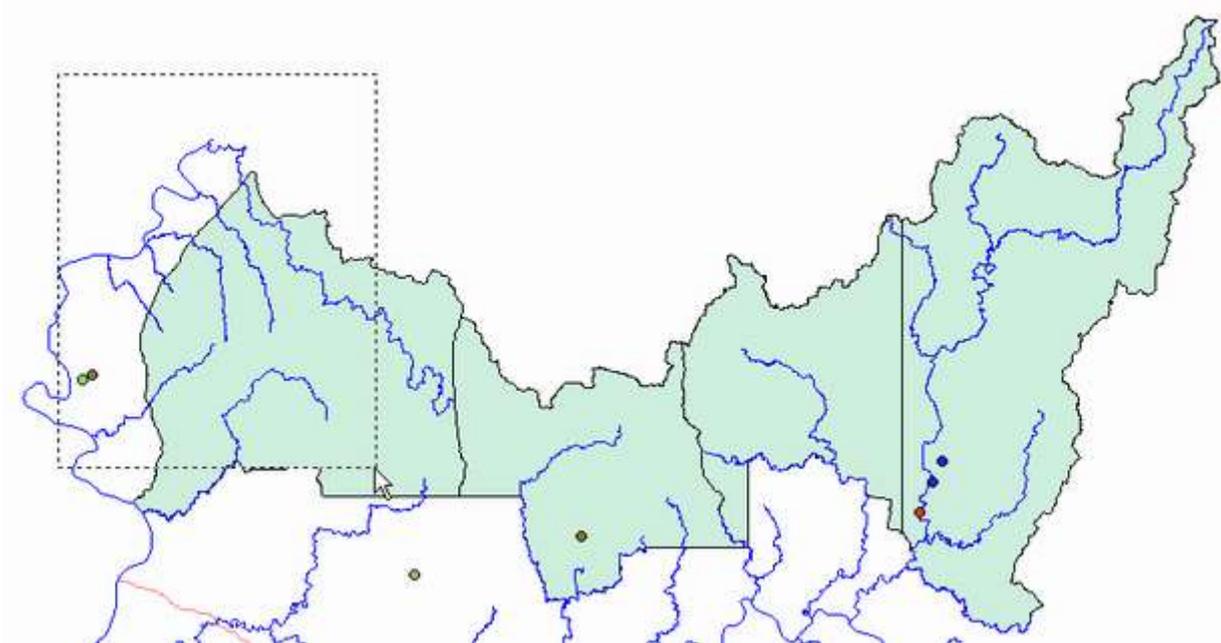


3. Select the item of interest on the map, eg:

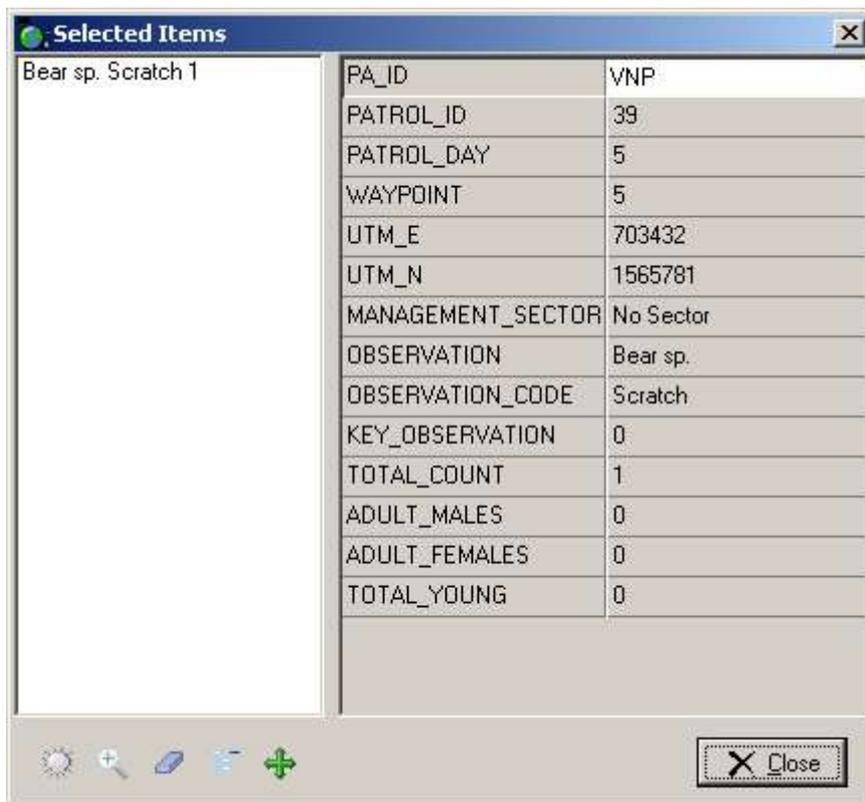


*or*

**drag** a box around an area that contains the item of interest:



Information about that item will then appear, eg:



PA_ID	VNP
PATROL_ID	39
PATROL_DAY	5
WAYPOINT	5
UTM_E	703432
UTM_N	1565781
MANAGEMENT_SECTOR	No Sector
OBSERVATION	Bear sp.
OBSERVATION_CODE	Scratch
KEY_OBSERVATION	0
TOTAL_COUNT	1
ADULT_MALES	0
ADULT_FEMALES	0
TOTAL_YOUNG	0

### 5.2.3 Pan

This tool can be used to move the map around.

1. Click the **pan** tool



2. Click and **drag** on the map to move it around.

### 5.2.4 Zoom in

This tool can be used to enlarge the map

1. Click the **zoom in** tool



2. Click on the map to zoom in

*or*

Click and **drag** a box around an area of the map

### 5.2.5 Zoom out

This tool can be used to shrink the map

1. Click the **zoom out** tool



2. Click on the map to zoom out

### 5.2.6 Full extent

This tool can be used to return the map to its original (full-extent) size.

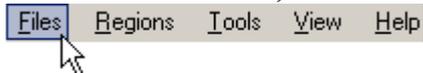
1. Click the **full extent** tool



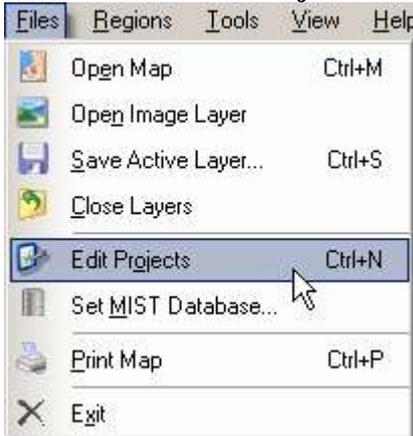
### 5.2.7 To reset the map to its original layers

To restore the map to its original layers, ie: how it looks when you first start MIST, do the following:

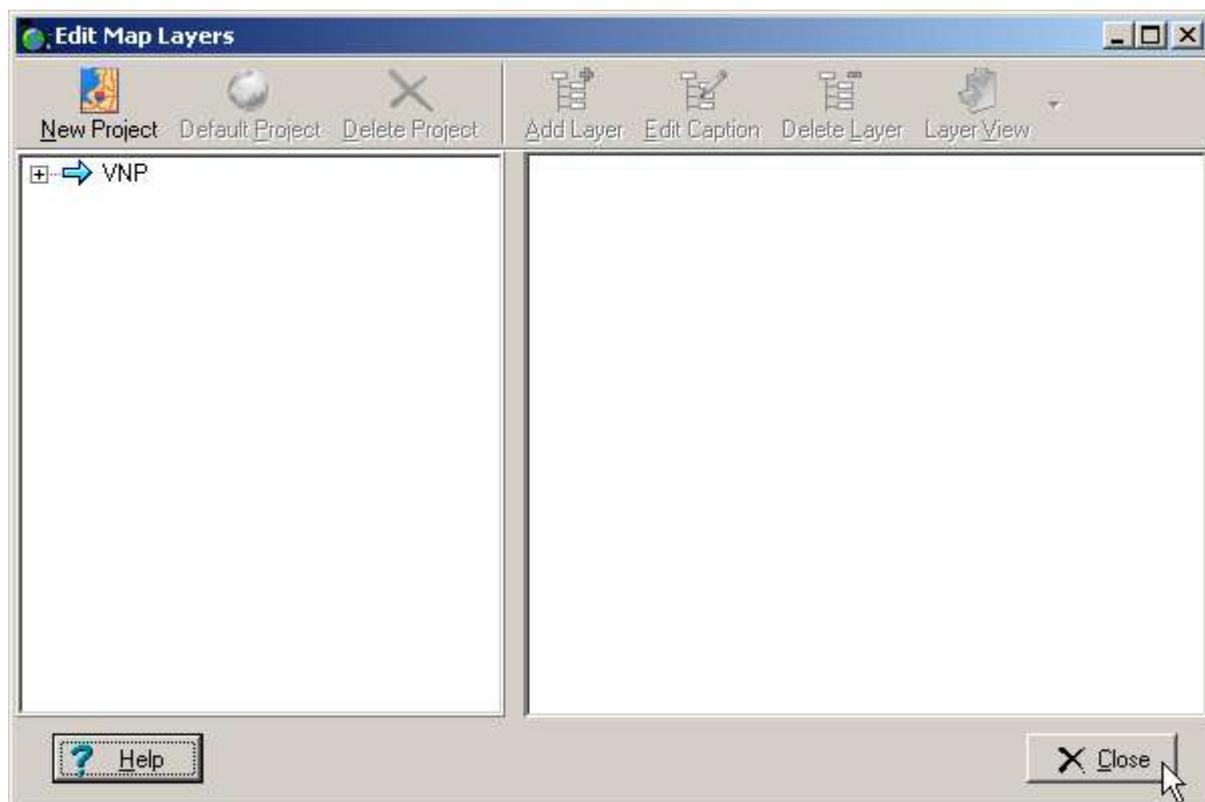
1. On the main menu, click **Files**:



2. Then click **Edit Projects**:

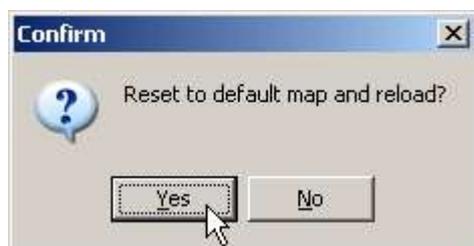


The **Edit Map Layers** window will appear.



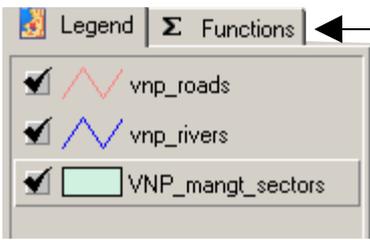
3. Click **Close**.

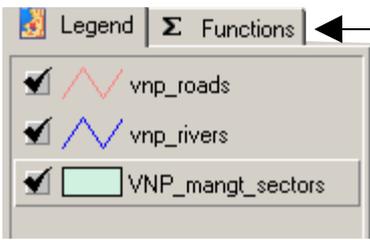
The following confirmation window will appear:



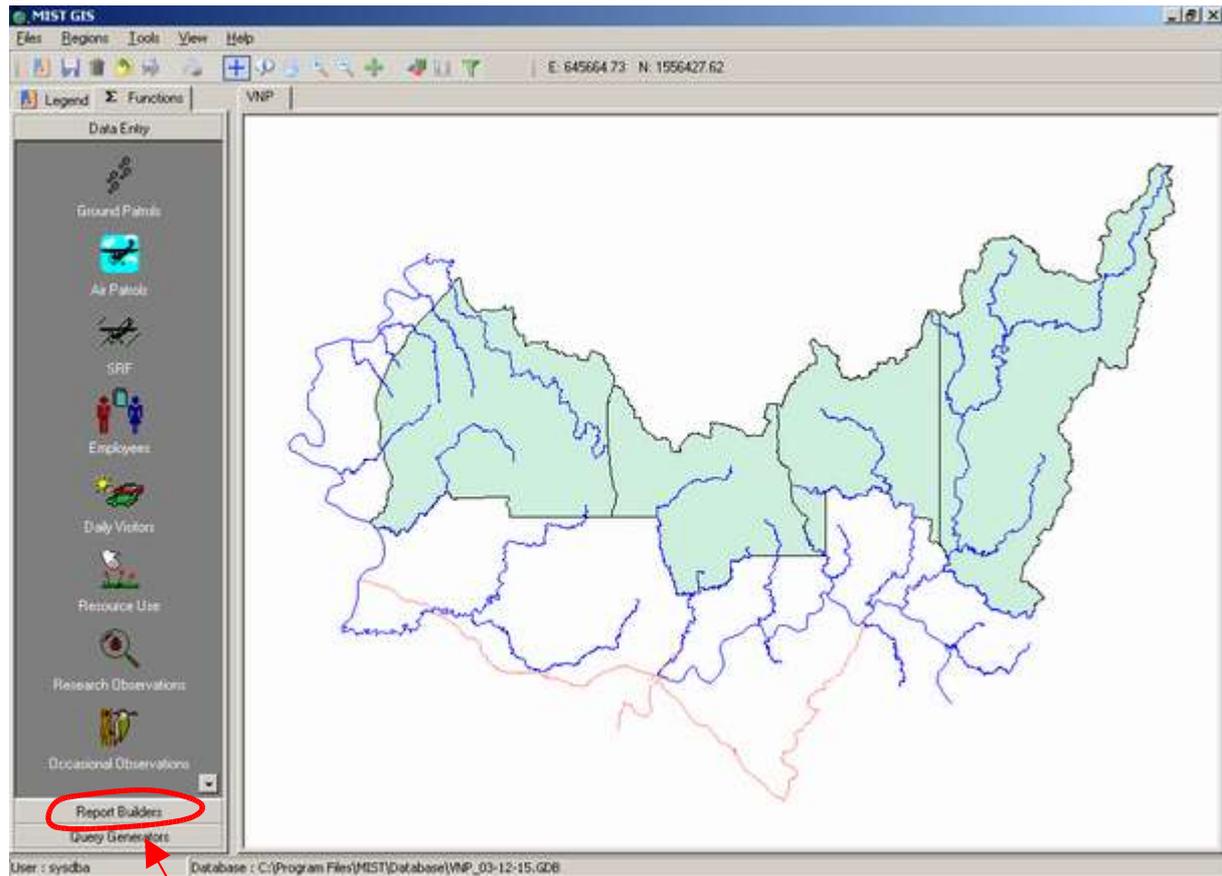
4. Click **Yes**.

## 6 Using the Report Builders

1.  Click on **Functions**



- 2.



Click on **Report Builders**.

You will see the following:



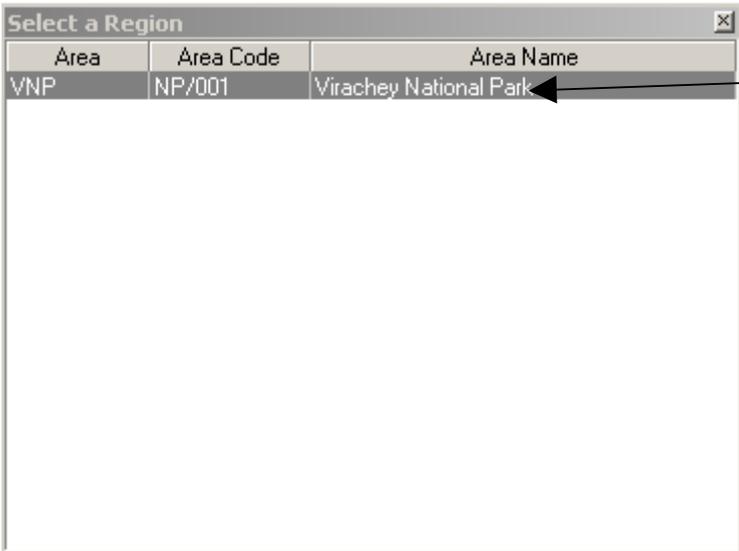
Click here to see more report builders

3. Click on one of the report builders, eg: Mammals



4. (Optional) If the **Select a Region** window appears:

a)



Area	Area Code	Area Name
VNP	NP/001	Virachey National Park

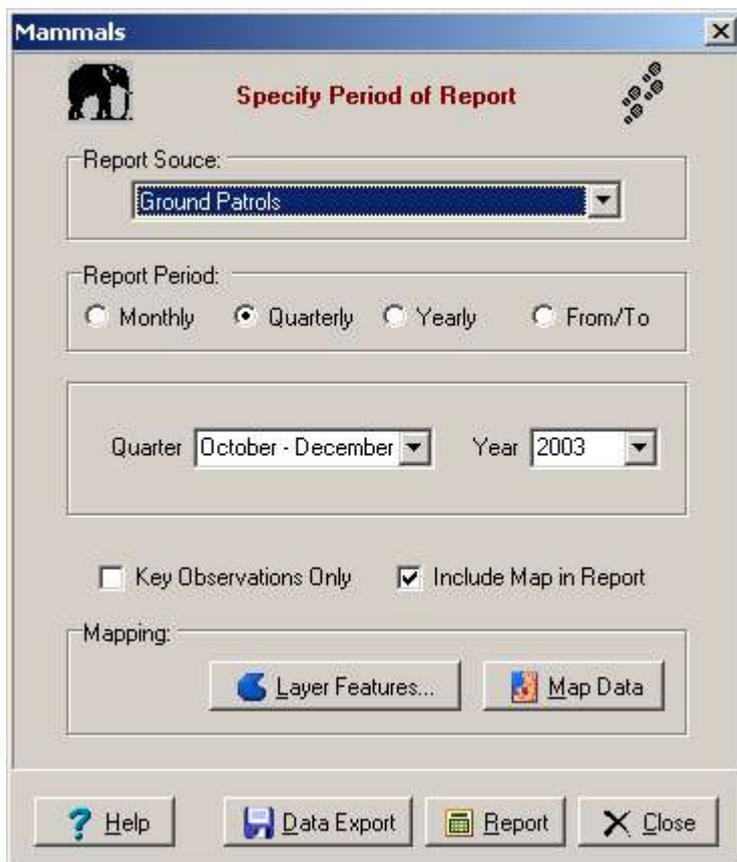
b)



Click on **Virachey National Park**

Click on **Continue**

5. The following will appear:



**Mammals**

**Specify Period of Report**

Report Source:

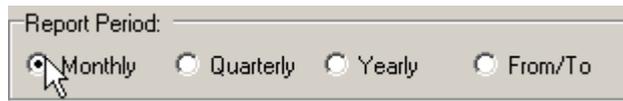
Report Period:  Monthly  Quarterly  Yearly  From/To

Quarter:  Year:

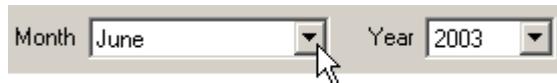
Key Observations Only  Include Map in Report

Mapping:

6. Select the length of time you want the report for, eg: Month



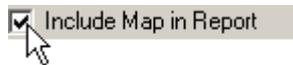
7. Select the date, eg: June 2003



8. (Optional) If you want to display only observations designated as 'key observations', check the **Key observations only** checkbox.



9. (Optional) If you want to include a map in the report output, check 'Include map in report'



10. To display the observations on the map, click:



11. To produce a report, click:



# **Chapter 4 Database Backup & Restore**

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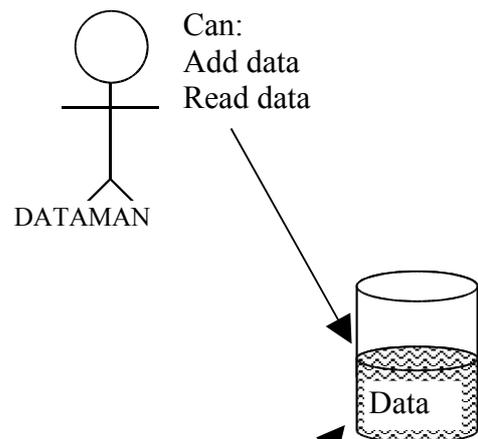
# 1 Database Concepts - Database Users

## 1.1 What is a user?

- a person who uses the database
- different users have different abilities
- when you change users, the data stays the same, but what you can do (abilities) is different

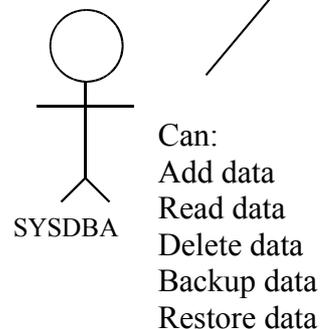
## 1.2 DATAENTRY User

- General purpose user for day to day tasks
- Most of the time, you will use this user
- Can enter data
- Can make reports
- Cannot delete data
- Password is “Data”



## 1.3 SYSDBA User

- The most powerful user
- Can do anything to the database
- Can do everything DATAMAN can do
- But can also backup, restore, delete
- Use only for administration, not day to day tasks
- Whenever using SYSDBA, **be very careful**
- Password is “Bpamp”



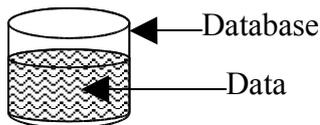
## 2 Database Concepts - Backup & Restore

### 2.1 What does the word Backup mean?

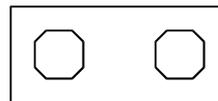
#### 2.1.1 Backup – verb/process

- a process whereby the data in the database is copied to a **different location**.

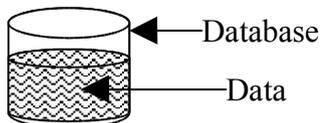
Before



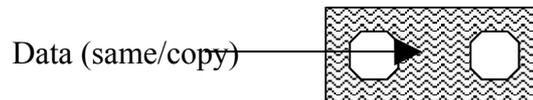
Different location



After backup (verb/process)



Different location

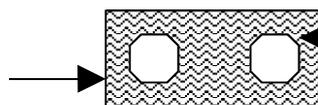


- The **different location** will usually be one or more files and can be stored anywhere - tape, CD, hard-drive, etc.

#### 2.1.2 Backup – noun/object

- a copy of the data
- **Each backup (noun) is from a certain date.** The date is the date the backup (verb) was performed.

Data (same/copy) =  
backup (noun)



Backup has a date, eg:  
August 2003

### 2.2 Why do we Backup?

Something bad could happen to the data in the database, for example:

- We accidentally delete the data
- The computer corrupts the data

Thus we have lost the data.

But if we have a backup (noun) of the data, we can use this. Taking the data from the backup (noun) and putting it back in the database is called **restoring the database**.

### 2.3 Restoring the database

### 2.3.1 Restore (verb/process)

Before restore



Step 1 – the database is emptied



Step 2 – the backup is restored



**Each backup (noun) is from a certain date**, so any data put in the database after the backup (noun) was made will be gone. In the above example, any data entered in September 2003 has been lost.

### 3 Backing up and restoring the MIST database using IBConsole

#### 3.1 Starting IBConsole to backup or restore

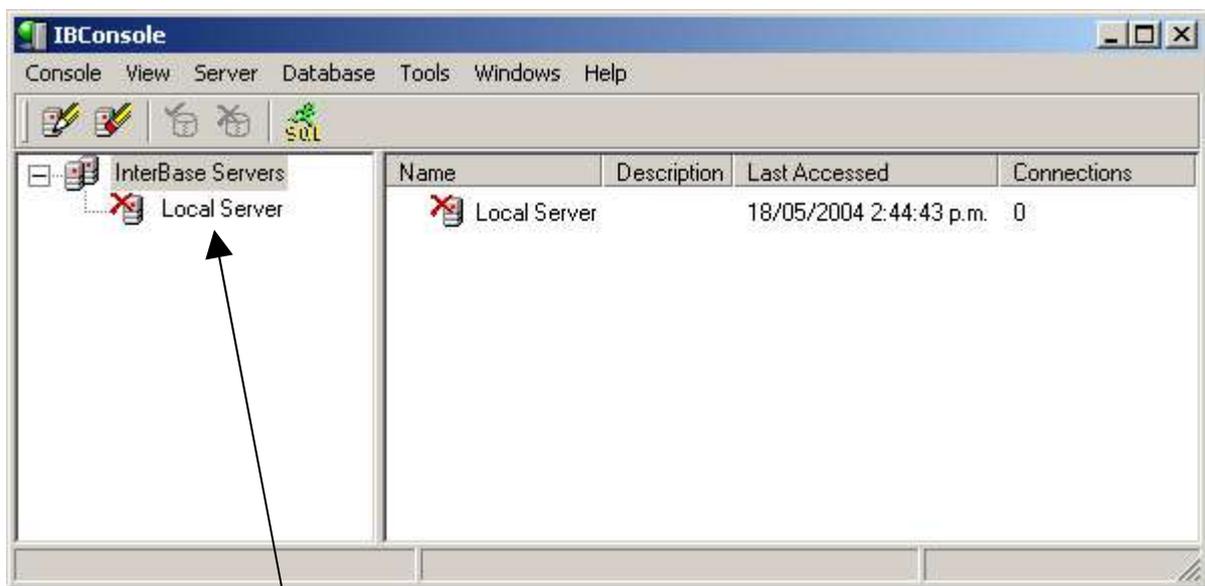
1. Close MIST before backing up the database.

2. Start IBConsole by clicking on the desktop icon



or from the Start Menu: Programs -> Interbase -> IBConsole

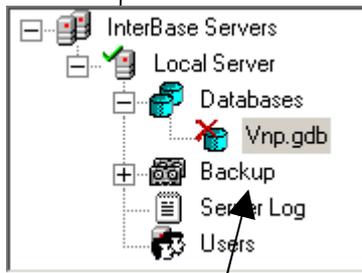
You will see:



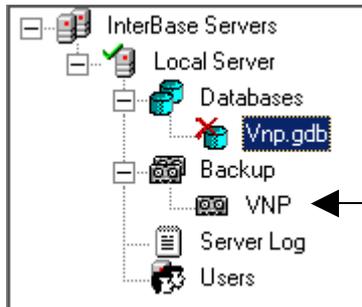
3. Double click **Local Server**



5. Click **Login**



6. Click **+** to expand **Backup**

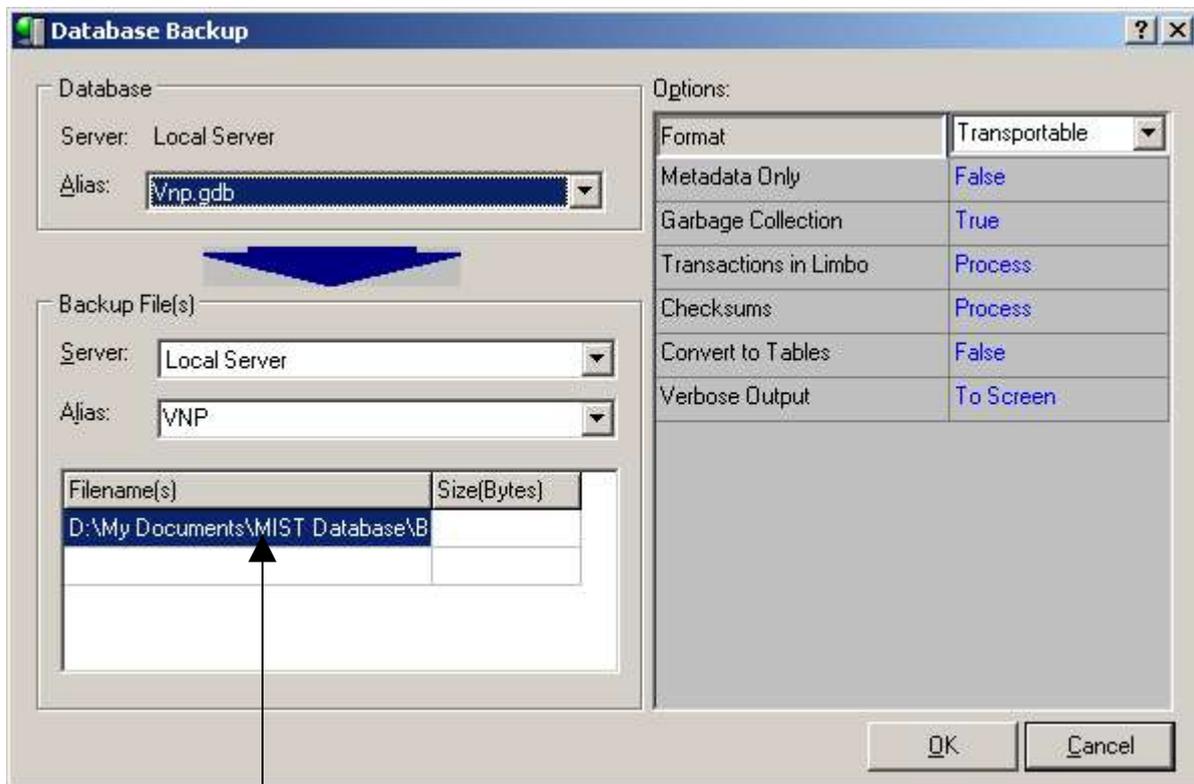


7. Click **VNP**

### 3.2 Backup the database

8. Double-click **Backup**

Action	Description
Backup	Back up an InterBase database
Restore	Restore an InterBase database
Modify Backup Alias	Modify an existing backup alias
Delete Alias	Delete the current backup alias



9. Click on the backup filename

Filename(s)	Size(Bytes)
Database\Backup\vnp_04-05-10.gbk	

10. Click here and type to change the filename.

The date on the filename must be the current date and follow this format:

vnp\_YY-MM-DD.gbk

Where:

YY = the last two digits of the year, eg: 04,05,06,07,08 etc.

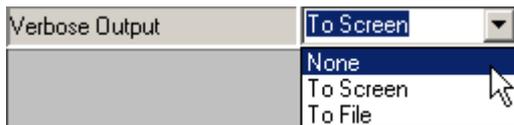
MM = a two digit number representing the month, eg: 01,02,03,04.. etc.

DD = a two digit number representing the day, eg: 08,09,10,11 etc.

eg: vnp\_04-05-10 is a backup done on the 5<sup>th</sup> of October 2004.



11. Click on **To Screen**



12. Change **To Screen** to **None**

13. Click **OK**

When the backup successfully completes you will see:

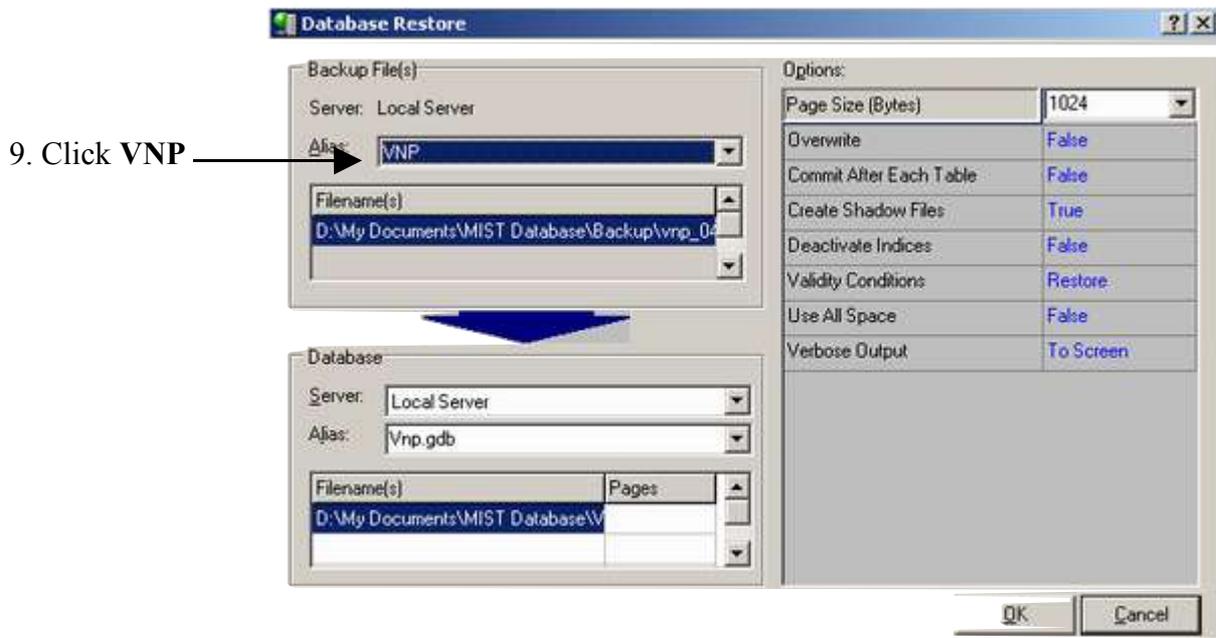


14. Click **OK**.

### 3.3 Restore the database

8. Double-click **Restore**

Action	Description
Backup	Back up an InterBase database
Restore	Restore an InterBase database
Modify Backup Alias	Modify an existing backup alias
Delete Alias	Delete the current backup alias

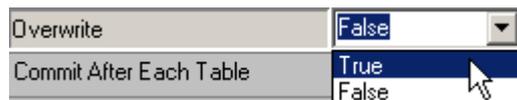


10. Click **File...**

11. Select the file you want to restore from in the window that appears.



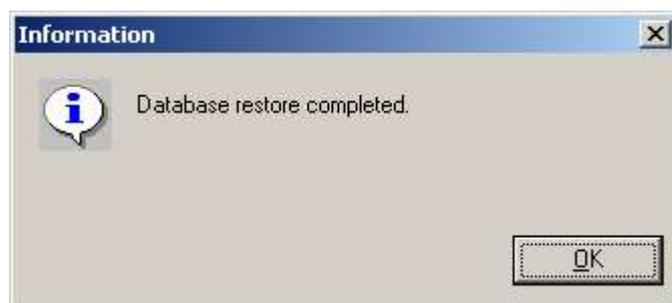
12. Click **False** (next to Overwrite).



13. Click **True**

14. Click **OK**

When the restore successfully completes you will see:



15. Click **OK**