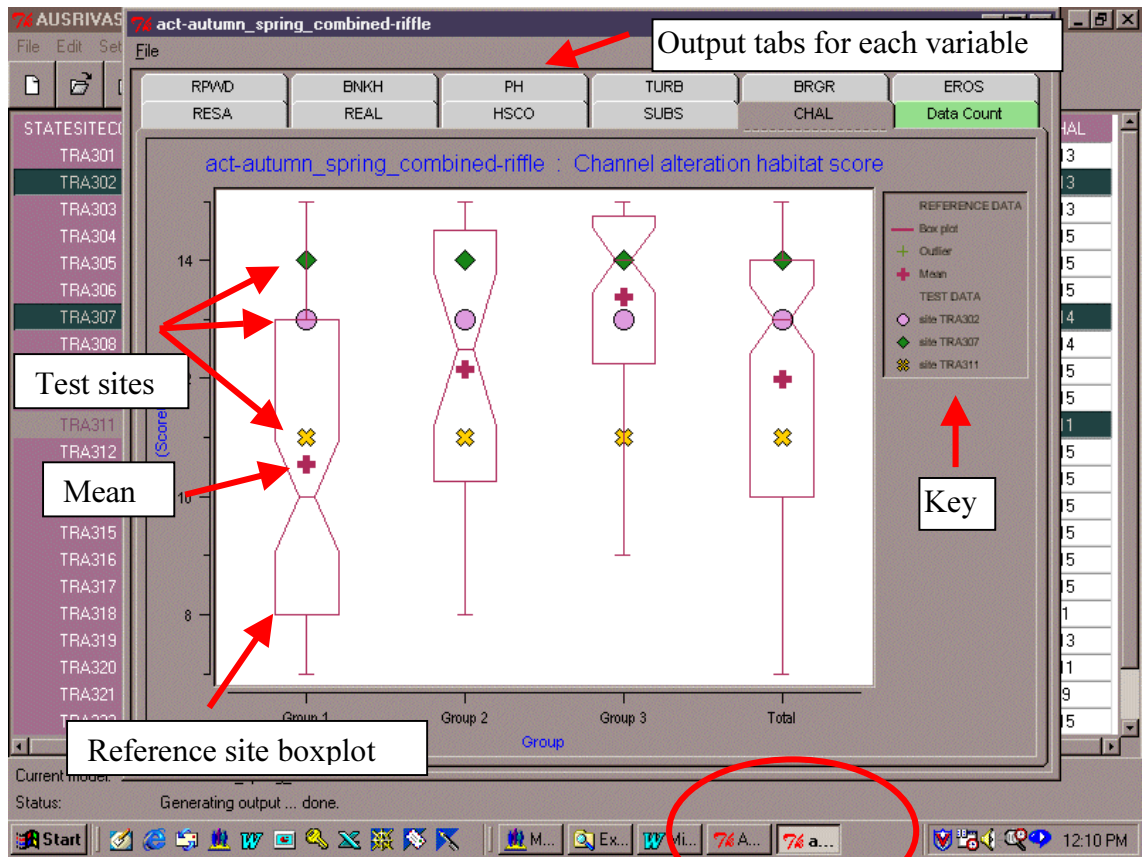# 5 OUTPUTS

Part 4 explained the process of loading and submitting test data for analysis. Using the test data set portrayed in Part 4, lets run through an example output. In this test data set, we wish to test all variables from Sites TRA302, TRA307 and TRA311. Selection of these sites gives the following display:

5.1 What are the outputs?

Submission of these three sites for analysis brings up the following output. Each variable is displayed on a separate tab. The user can peruse different variables by clicking on the required tab. Note that the output creates a new window.

Note creation of new window

In addition to the tab for each variable, the output also includes tabs that detail data count, unused variables and out of range variables. Each component of the output will be explained in the following sections.

5.1.1   Continuous variable tabs

The output of any continuous variable is a boxplot, calculated using the reference site data. The test site values are then arrayed on to this box plot. Note that all three test sites selected for analysis are arrayed onto the plot. Thus, it is important to limit the number of sites tested in any analysis to 5-10, so that plot symbols can be viewed accurately. **Information on the interpretation of box plots is provided in Part 6**.

Four box plots are presented on the x axis of this example. The ACT combined riffle AUSRIVAS model contains three classification groups, and a box plot is presented for each of these. A box plot is also presented for all the sites included in the ACT combined riffle model, regardless of classification group. The y axis details the units of measurement and the scale.

Units and
scale

Key

By classification group

For all sites
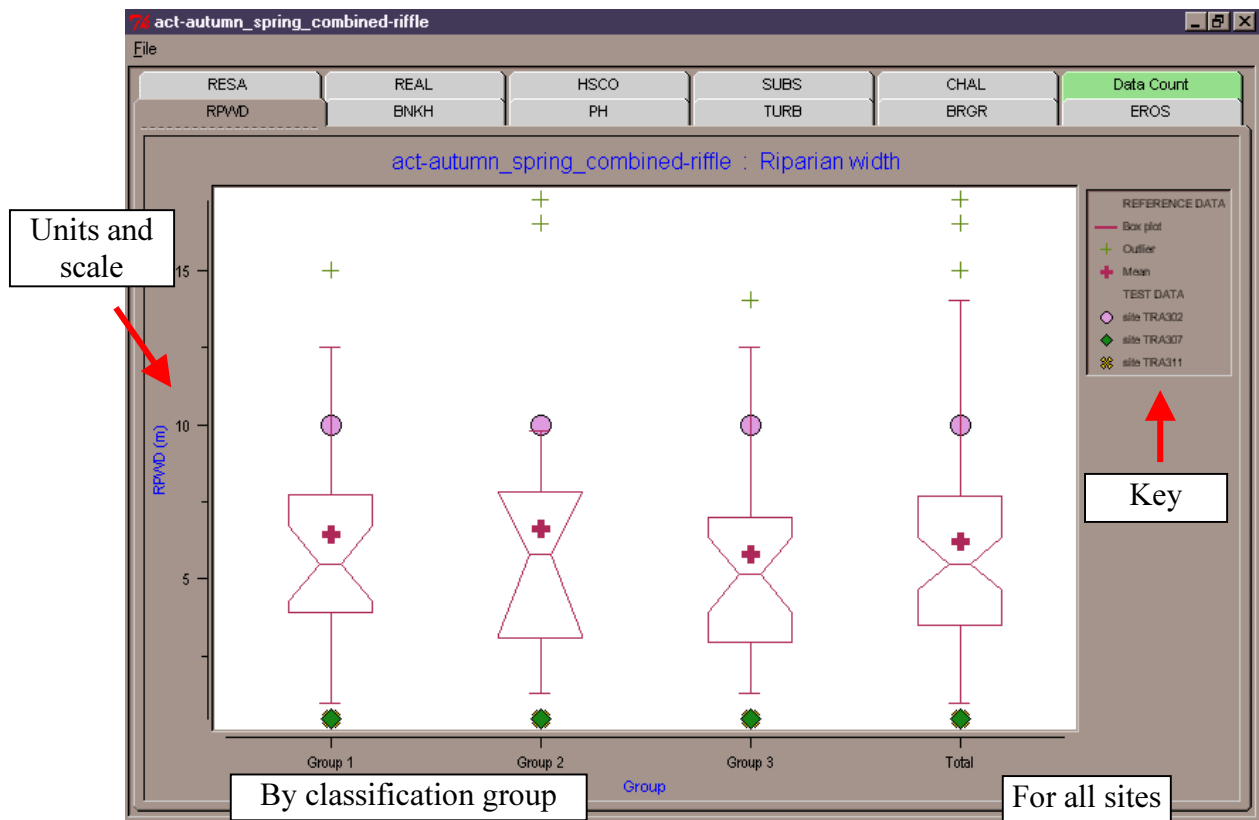
5.1.2   Categorical variable tabs

The output for any categorical variable consists of three components. The first is a frequency table, calculated using the reference site data. This frequency table displays the number of reference sites in each classification group that belong to each data category. It also displays the total number of reference sites that belong to each data category. The second component displays the data category recorded at each selected test site. The third component explains the data categories. **Information on the interpretation of frequency tables is provided in Part 6.**

5.1.3 Data count tab

The data count tab details the number of REFERENCE SITES in each group, for each variable. It also details the number of REFERENCE SITES that contain missing

data (i.e a -999 value). The data count tab forms an important adjunct to the boxplots and frequency tables because it is important to know the properties of the data that form these outputs. For example, a classification group may have 24 members, but 12 of these contain missing data for a particular variable. Thus, the user must decide whether a box plot or frequency table created from only 50% of sites in that classification group is valid. Information on missing data in a reference data set is provided in Section 7.2.1.1.

5.1.4   Unused variables tab

In the present example, the unused variables tab does not appear because all the selected variables were present in the reference data set. However, in cases where test site variables do not appear in the reference data set, these are returned on the unused variables tab. As mentioned in Section 3.2.4, it is not a problem to include additional variables in the test data set. However, variables returned onto the unused variables tab may indicate an error in entry of an acronym and should be checked accordingly (see Section 5.1.6 common errors). The unused variables tab resembles the following:
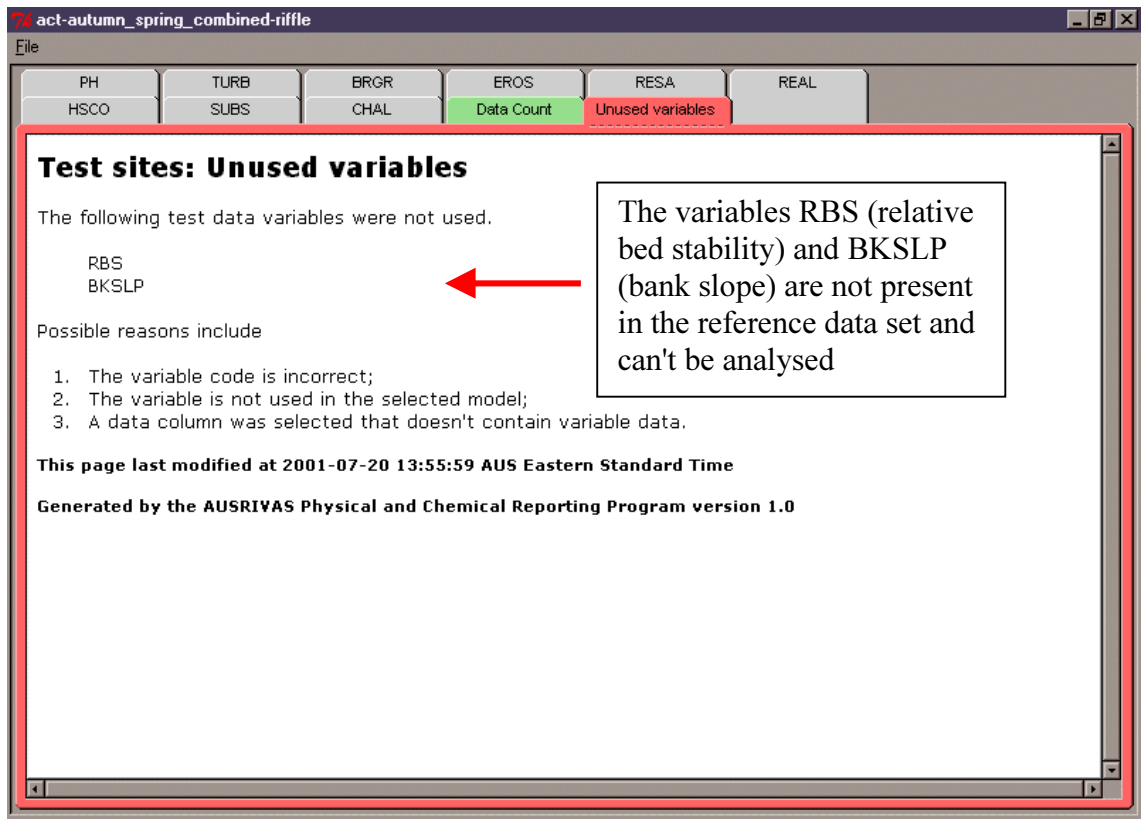
5.1.5 Out of range variables tab

In the present example, the out of range variables tab does not appear. However, in cases where the entered value of any variable is outside the expected range, these cells are returned to the out of range variables tab. **These out of range variables are included in the boxplots and frequency table outputs, so it is important for the user to check the test data set if the out of range variables tab appears. Values should then be corrected in the test data set and resubmitted for analysis.** Further information on the setting of valid ranges on the reference variables information sheet is provided in Section 7.3.

Warning: Test Data Out of Range

The following test site data are outside the expected range:

Test Data Variable Code	Test Site	Value	Expected Range
REAL	TRA303	0	1:2:3:4:5
HSCO	TRA303	155	>=0:<=135

NOTE: These data are **included** in the results given.

This information is supplied as a warning to allow the detection of gross errors.

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Reach algae categories are 1-5. A category of 0 is an invalid entry.

The USEPA habitat assessment score should be between 1 and 135.

5.1.6   Common problems with outputs

Some problems that may be encountered in the outputs are detailed in the following sections.

Analysis of missing data

Analysis of missing data cells in continuous variables (i.e. cells containing -999 values) will result in skewed box plots. For example, analysis of turbidity at all sites is selected as follows:

And results in the following output, where data values are skewed to include the test site value of -999 that occurs at site TRA312.
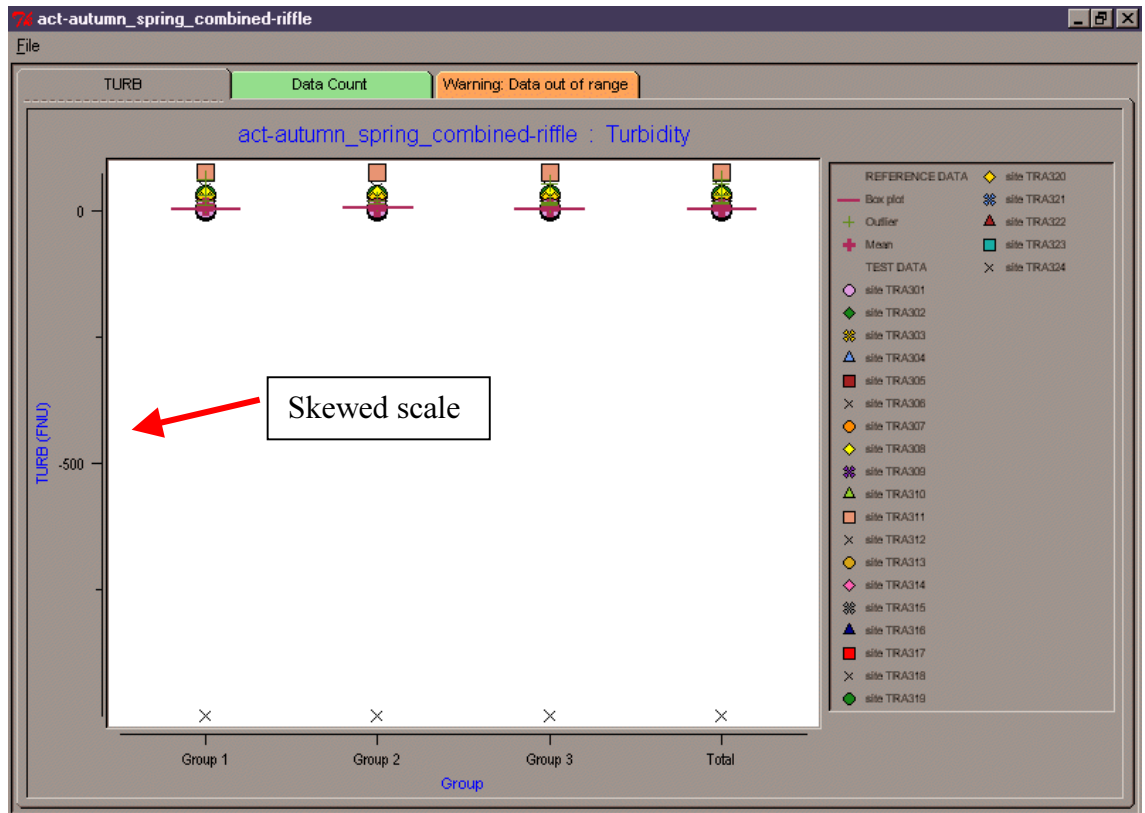
The **solution** is to only highlight cells without missing data, by holding down the <CONRTOL> key and clicking on the cells required.

Error in acronym name

An error in any acronym name contained in the test data set will be returned to the unused variables tab.

The **solution** is to check the acronym names used in the test data set against those in the reference data set. This is done by viewing the **reference variables information sheet.** The reference variables information sheet is accessed via the "View" menu (see also Section 3.2.2).

The acronym for reach sand cover should be RESA not RESAND

Boxplots difficult to view

As discussed in Section 5.1.1, selection of more than 5-10 sites for analysis will result in a boxplot that is difficult to view, because some symbols will be hidden behind others.
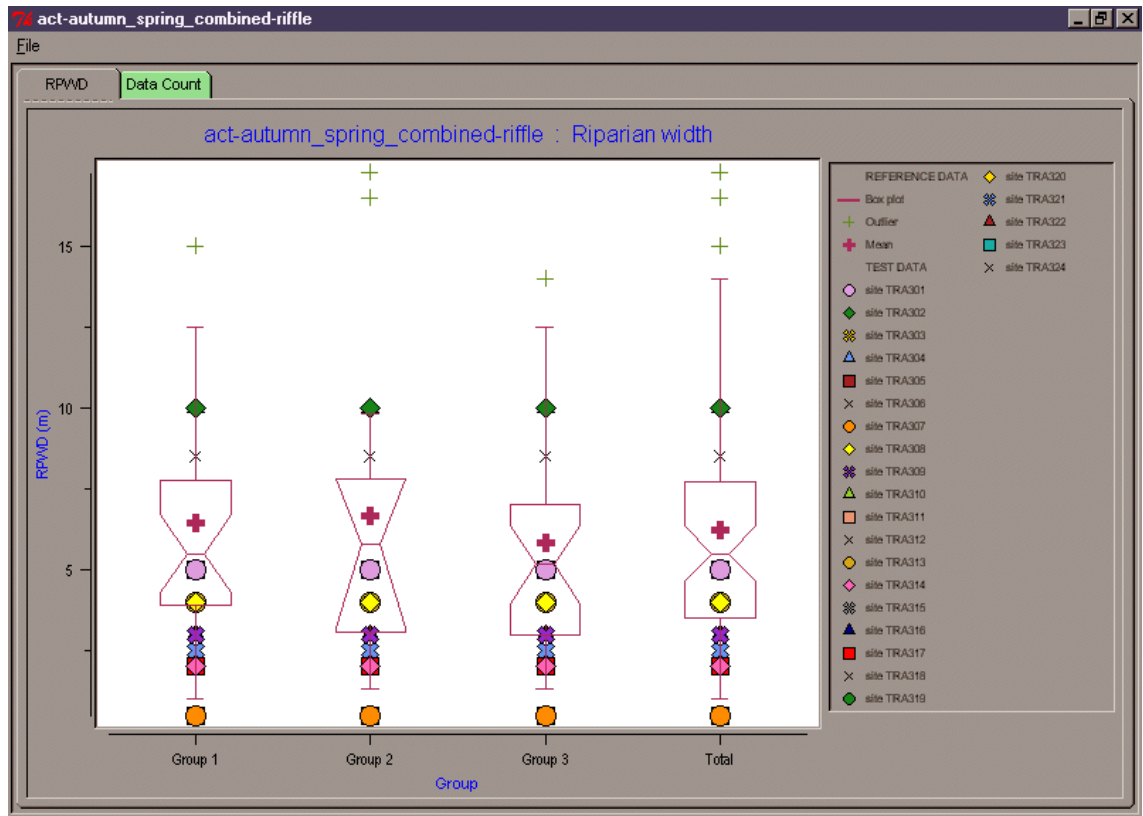
If the output is difficult to read, the **solution** is to submit fewer sites per analysis.

5.2   Saving and printing the outputs

The procedure for saving and printing outputs differs for continuous and categorical variables. Each procedure will be detailed in the following sections.

5.2.1   Saving and printing outputs from continuous variables

To save or print the output of a continuous variable (i.e. graphs), the output needs to first be saved as an encapsulated postscript (.eps) file. Each continuous variable output is saved as a separate .eps file. Move to the tab that you wish to save and choose "Print to file" from the "File" menu.
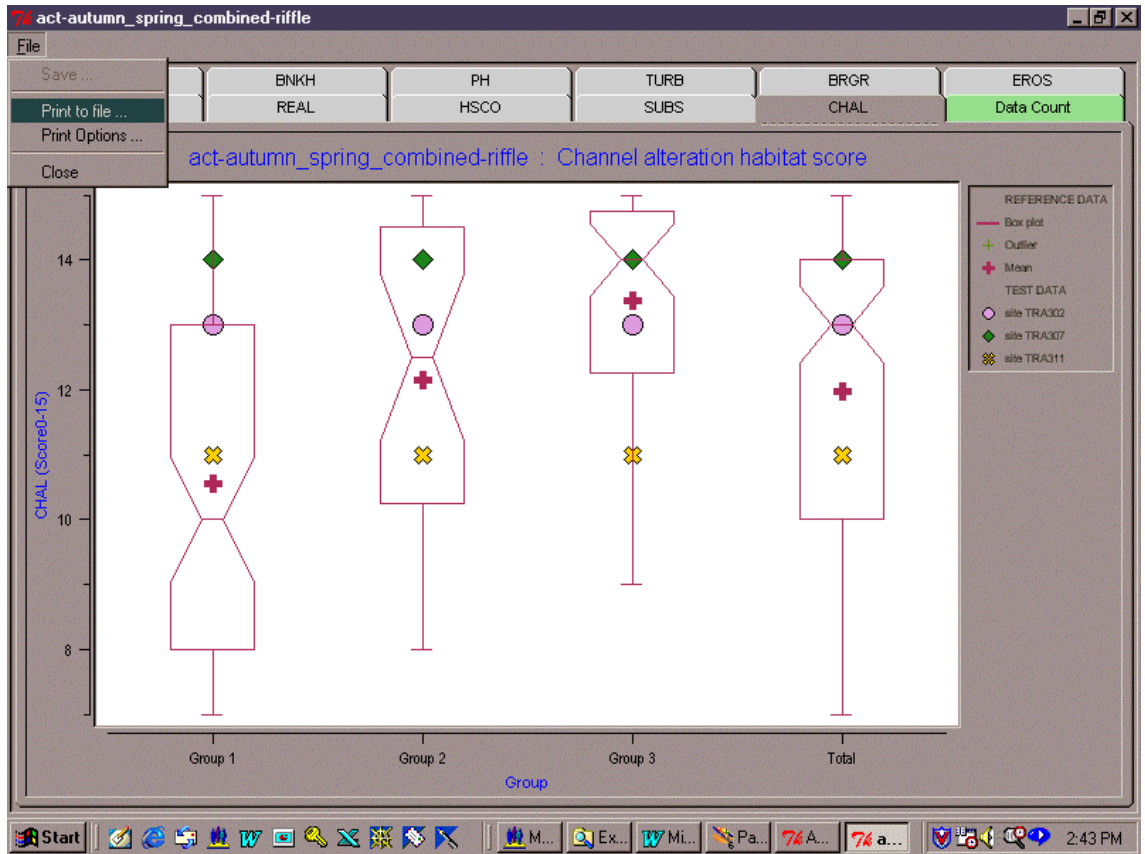
A standard file browser is displayed. Find the location for the save. Type in the file name (it is recommended that this name includes details of the sites analysed and the variable) and choose the (*.eps) file type from the "Save as type" menu.


Include site numbers and variable name
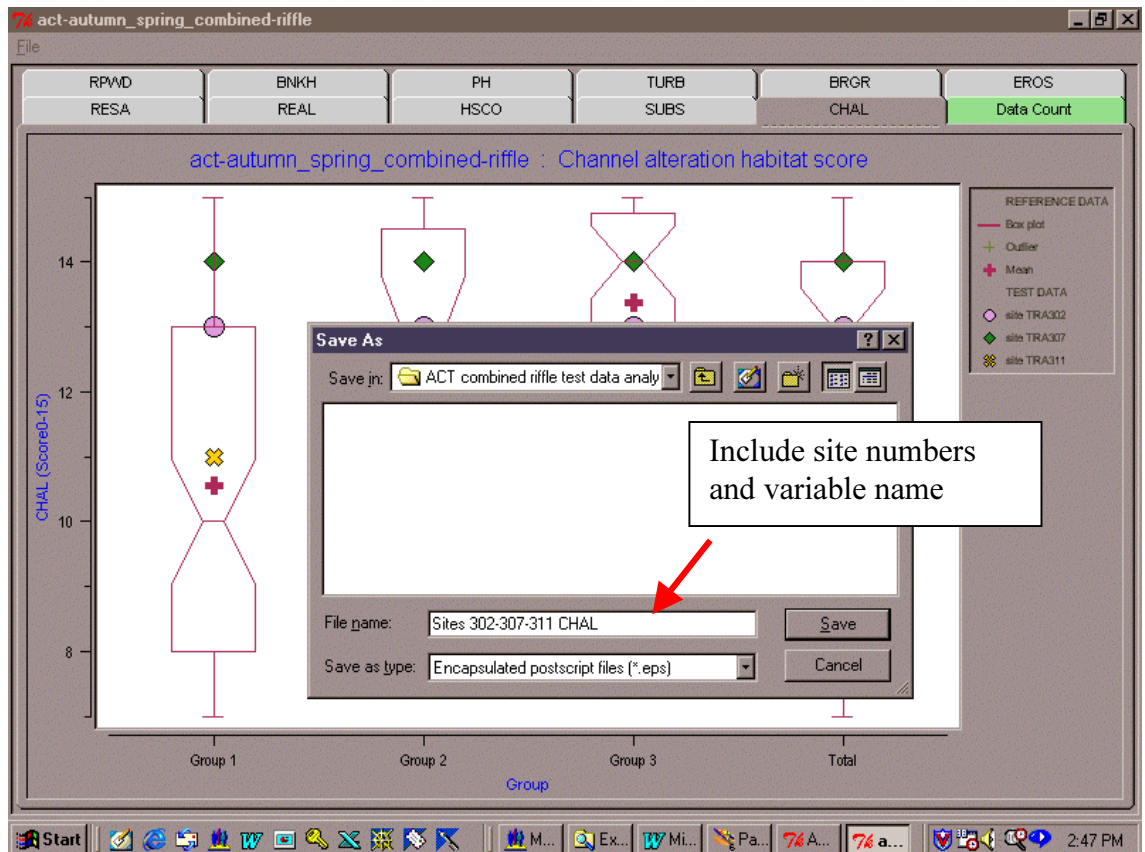
This saved .eps format file can then be opened and printed in a number of applications, as follows.

<u>Graphics packages</u>

The .eps file can be opened directly into graphics packages such as Paint Shop Pro or Adobe Acrobat (not Acrobat reader). Another package that is useful for viewing .eps files is GSView. This program (Version 3.6) is free and can be down loaded from the Internet at:

<div align="center">

http://www.ghostscript.com

</div>
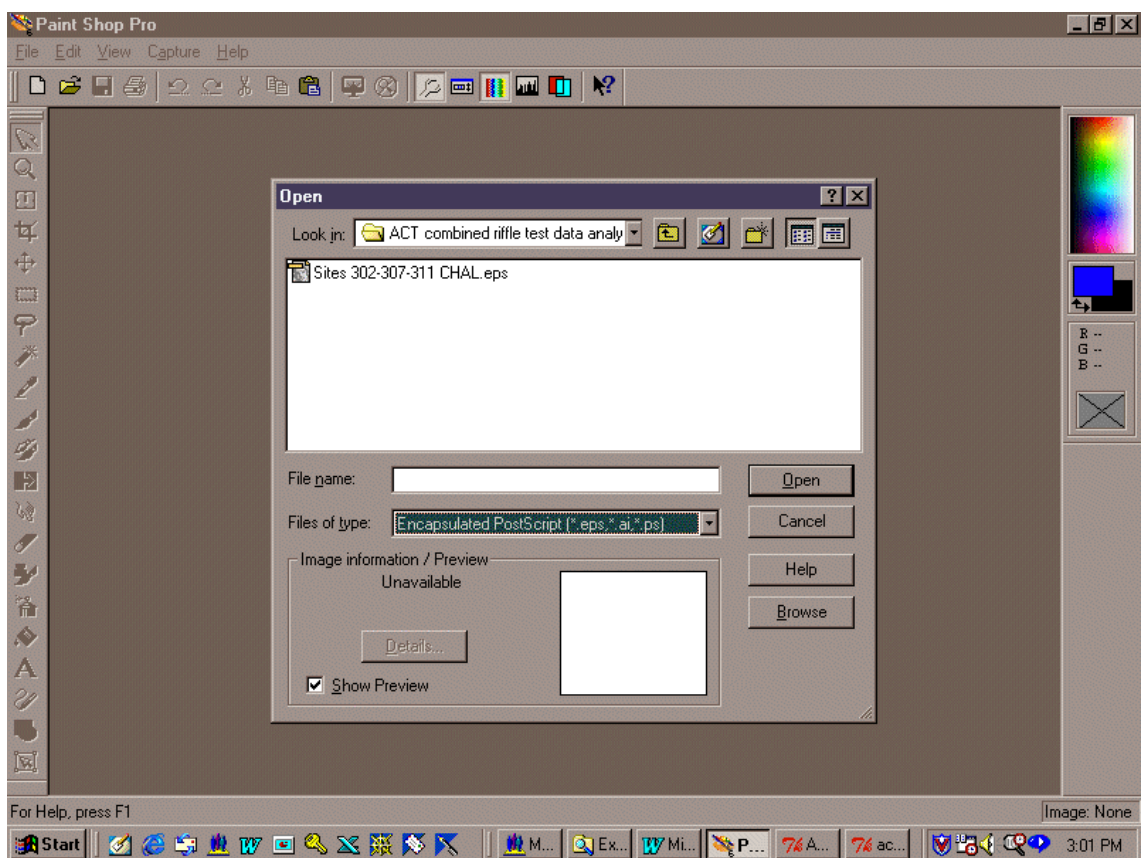
The print function of the graphics package is then used to print the file.
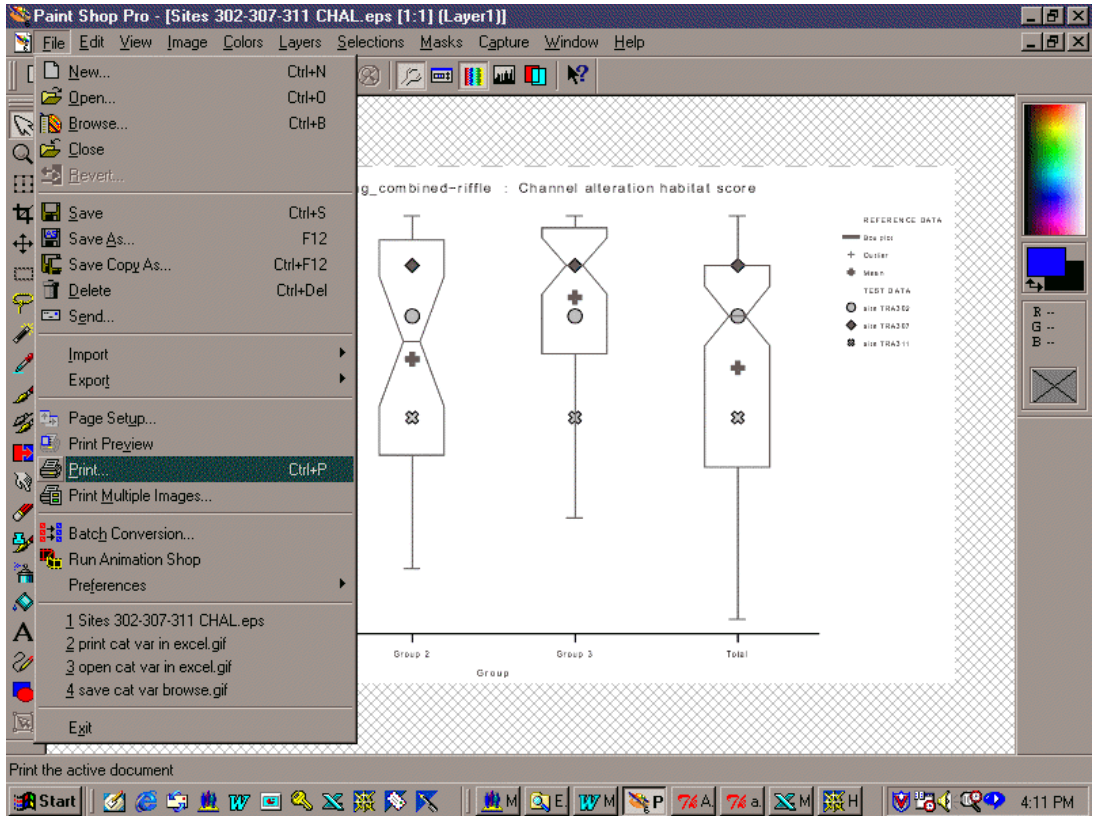
## Microsoft Word or Powerpoint

The .eps file can be printed in Word and Powerpoint. However, the .eps file can not be viewed in these packages because they do not 'know' how to display encapsulated postscript files. To print a saved .eps file from Word or Powerpoint, first insert the file as a picture:

Graph not displayed as preview
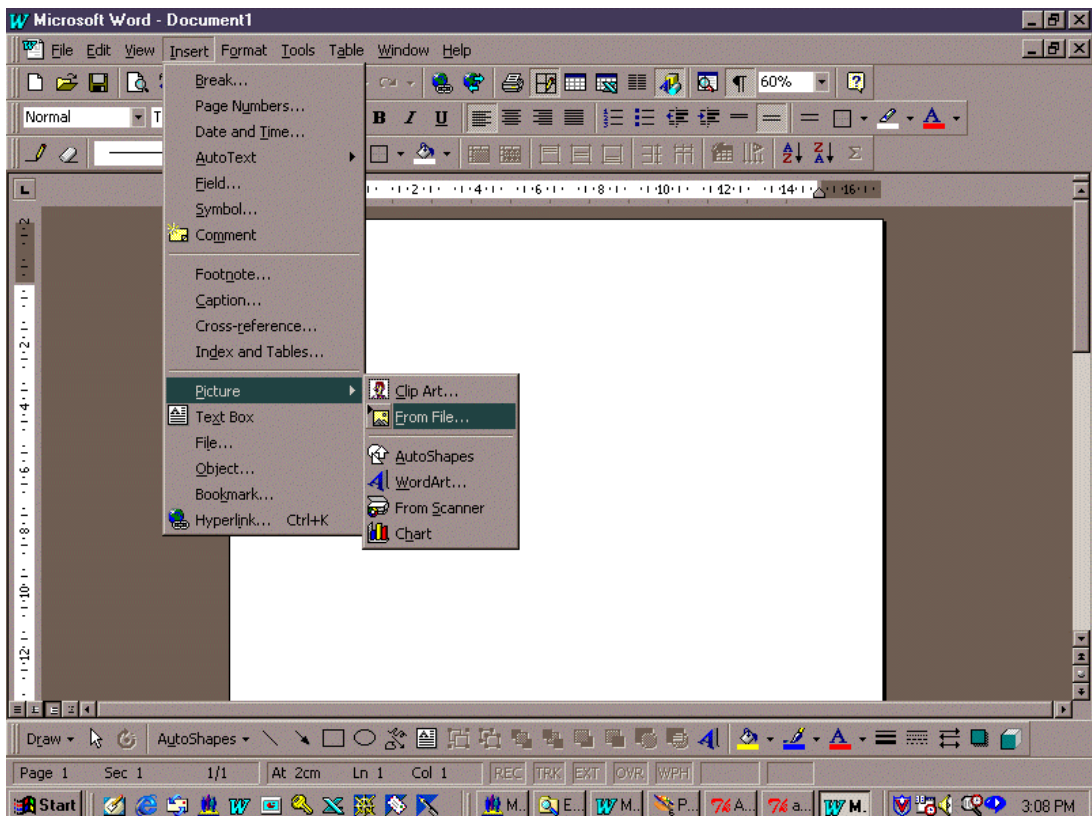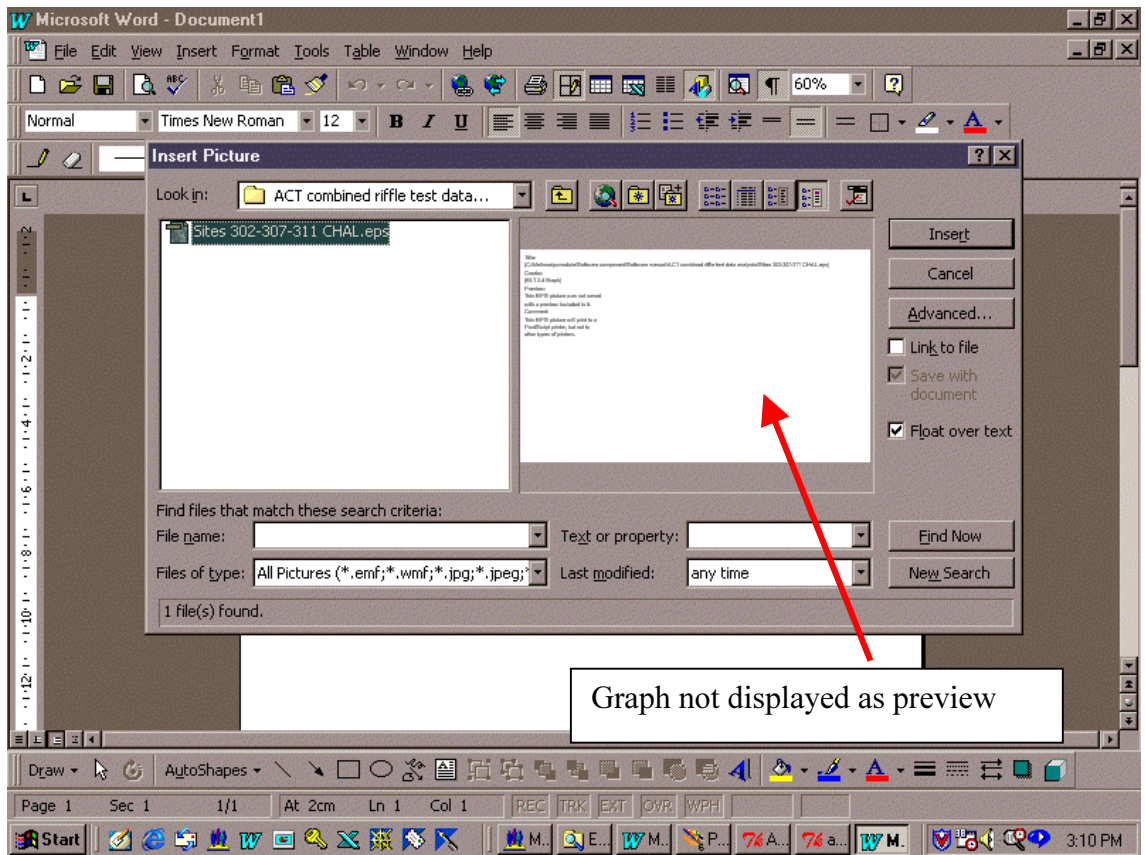
Note that the graph is not displayed as the preview. However, proceed to insert this file, which will look similar to the following.

The .eps file sits within a word document as a picture object.
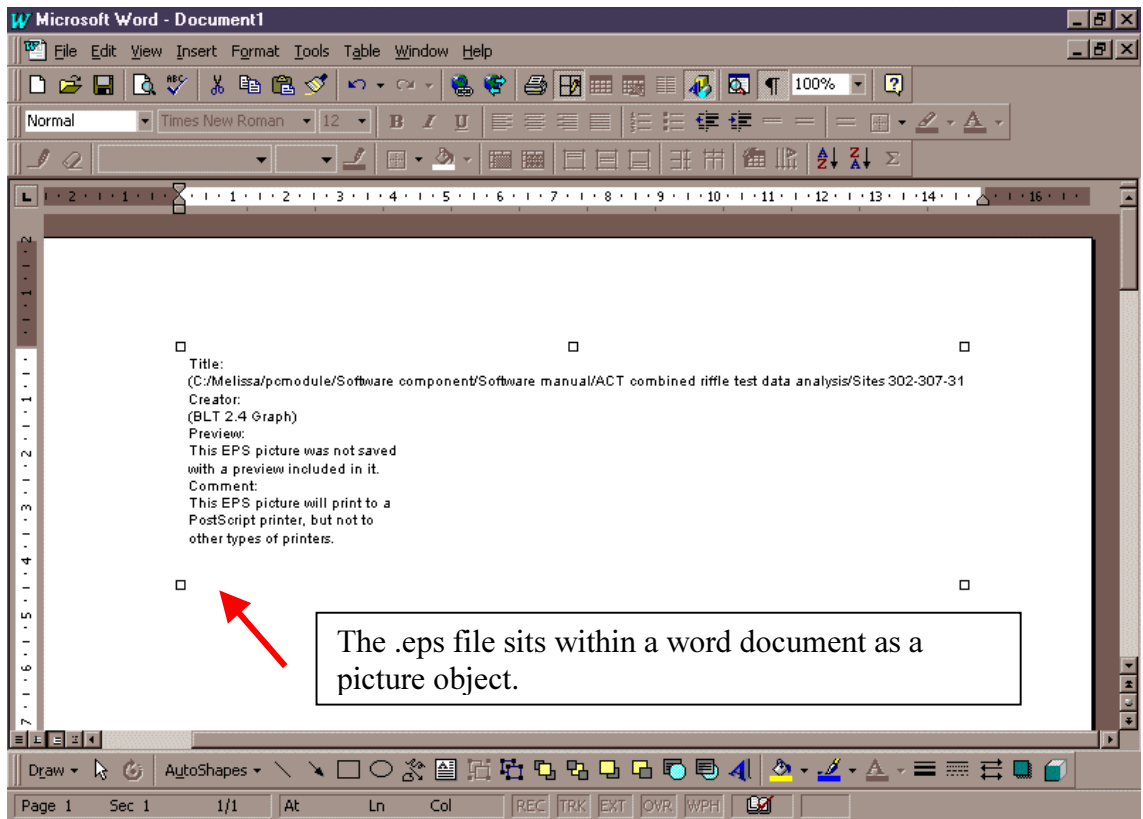
Use the print function of the package to print what you see on the screen. This will allow the graph to be printed, because the package 'knows' how to read the inserted .eps file.
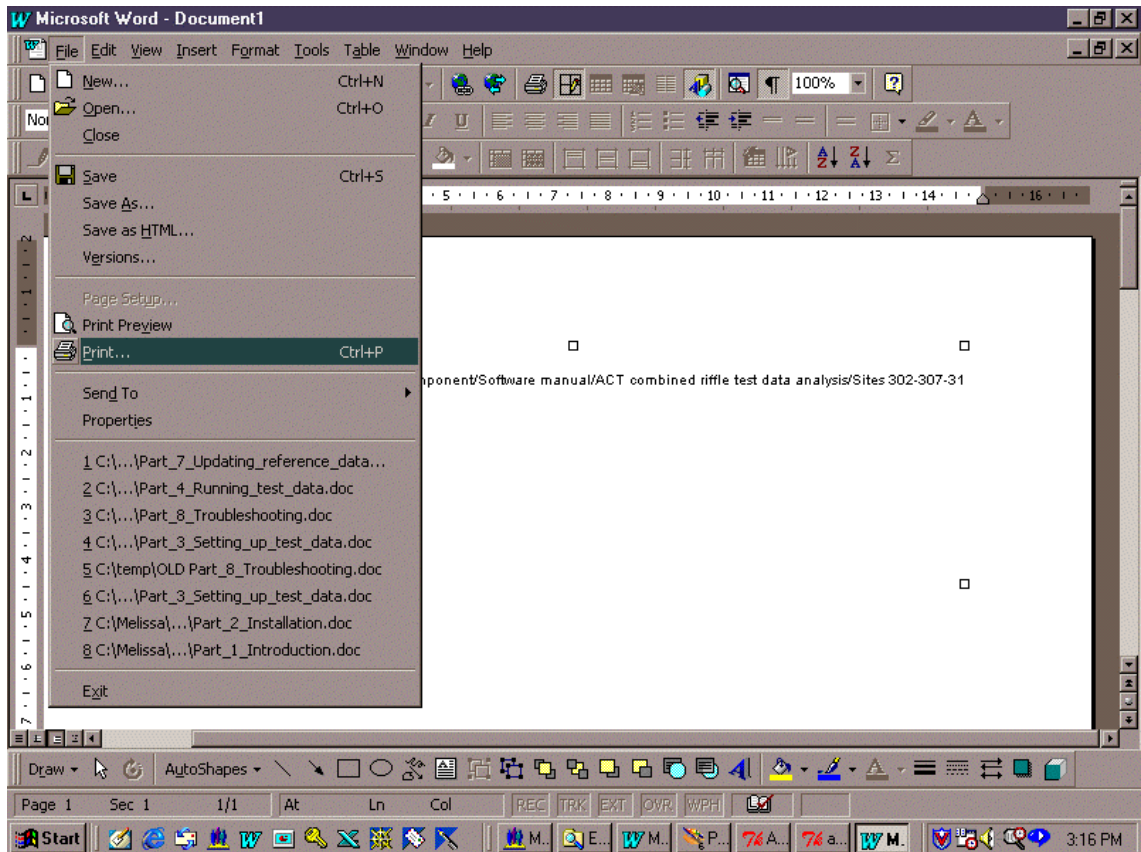

5.2.2 Saving and printing categorical variable outputs

To save or print the output of a categorical variable (i.e. frequency tables), the output needs to first be saved as either a Hyper Text Markup Language (.html) or a comma delimited (.csv) file. Each categorical variable output is saved as a separate file. Move to the tab that you wish to save and choose "Save" from the "File" menu.
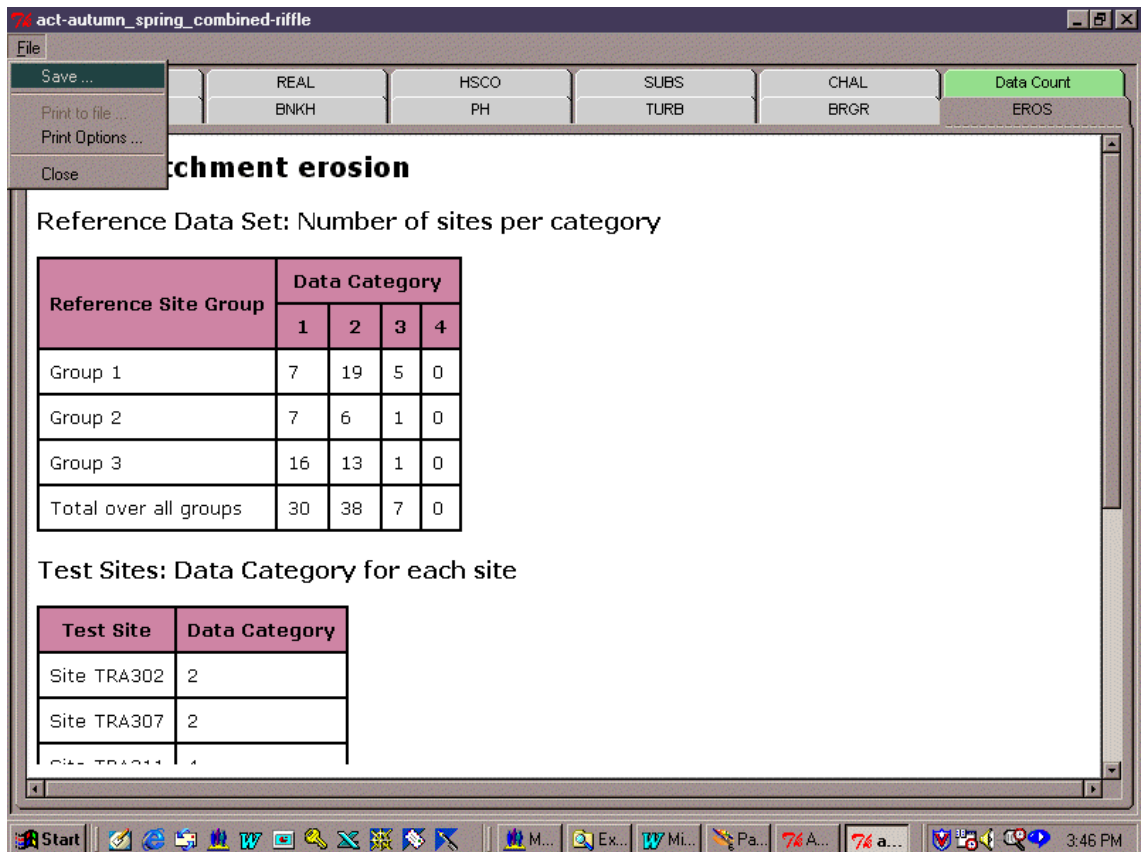
A standard file browser is displayed. Find the location for the save. Type in the file name (it is recommended that this name includes details of the sites analysed and the variable) and choose the required file type from the "Save as type" menu.
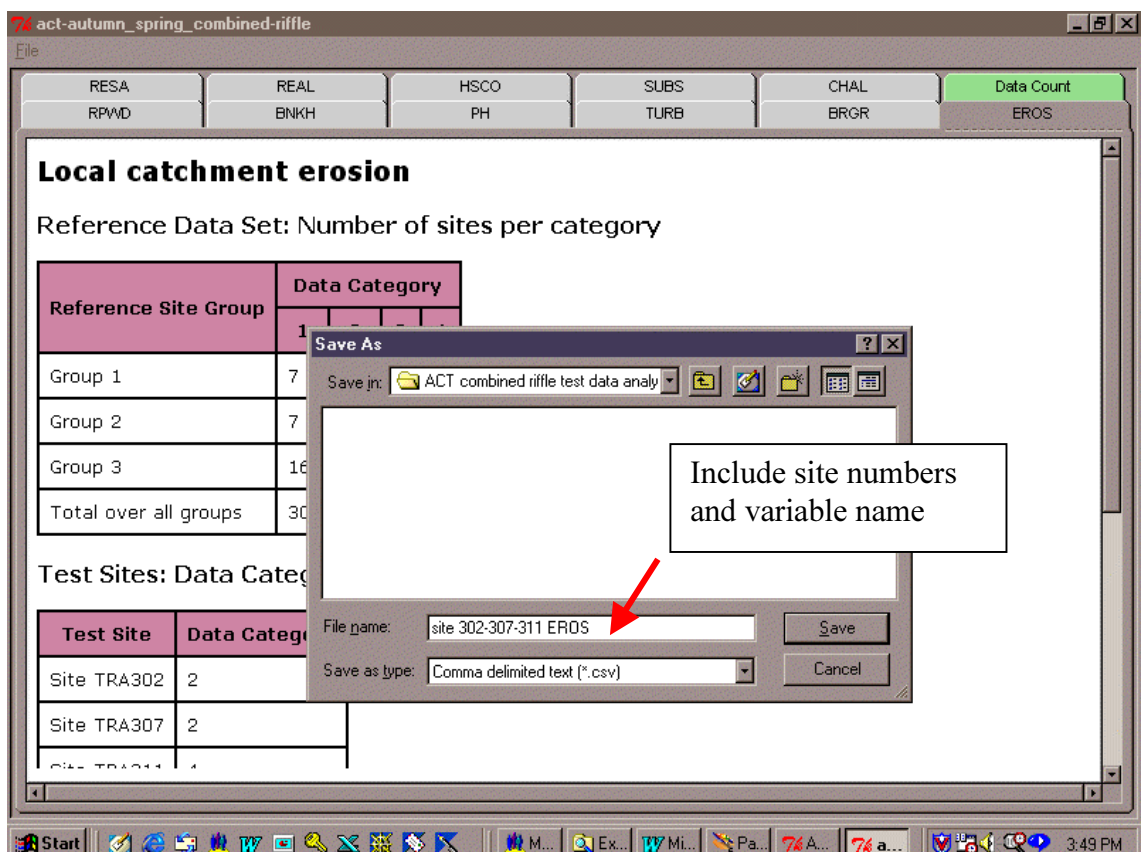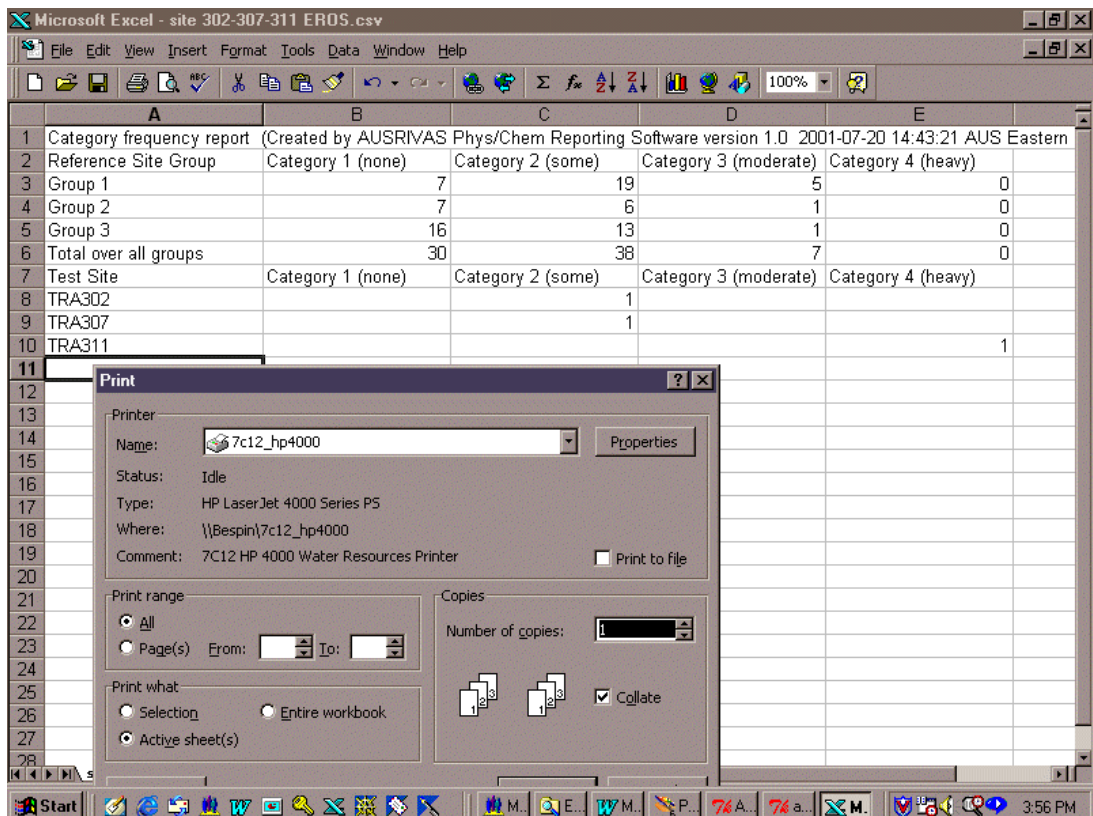

The saved .html or .csv file can then be opened and printed as follows.

.CSV Files

The .csv file can be opened and viewed in Excel (or a similar spread sheet package).
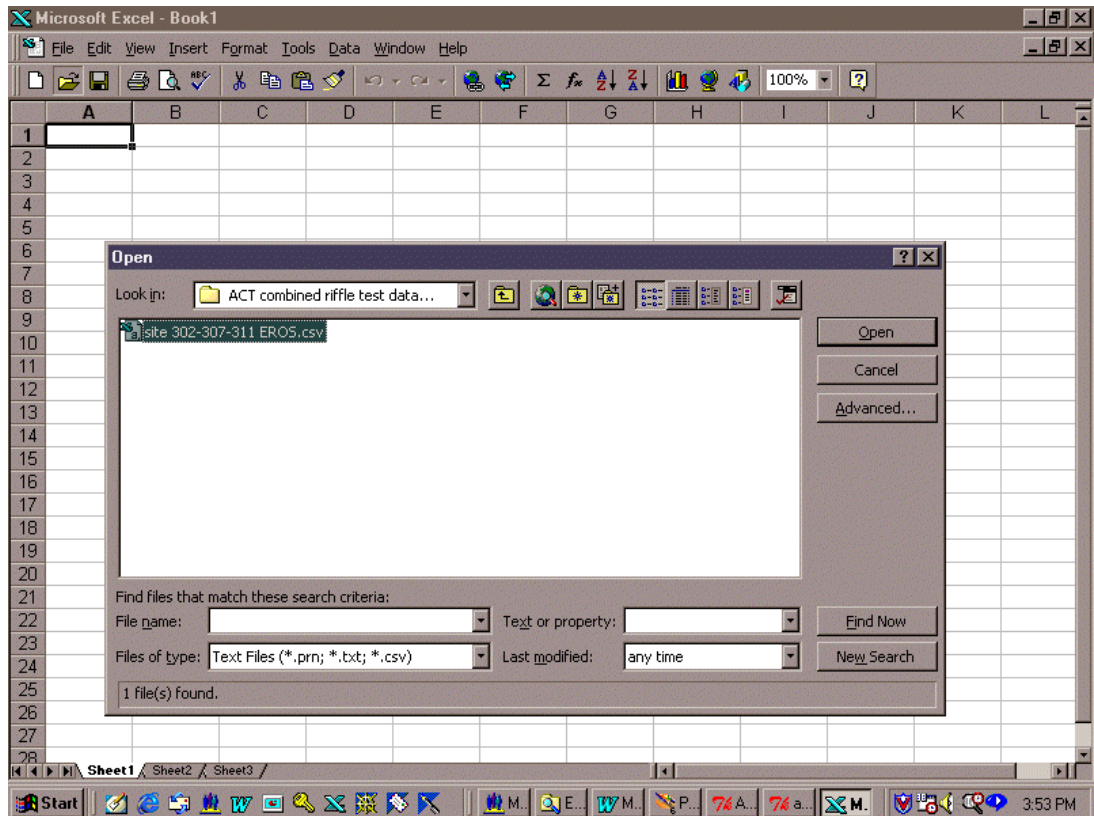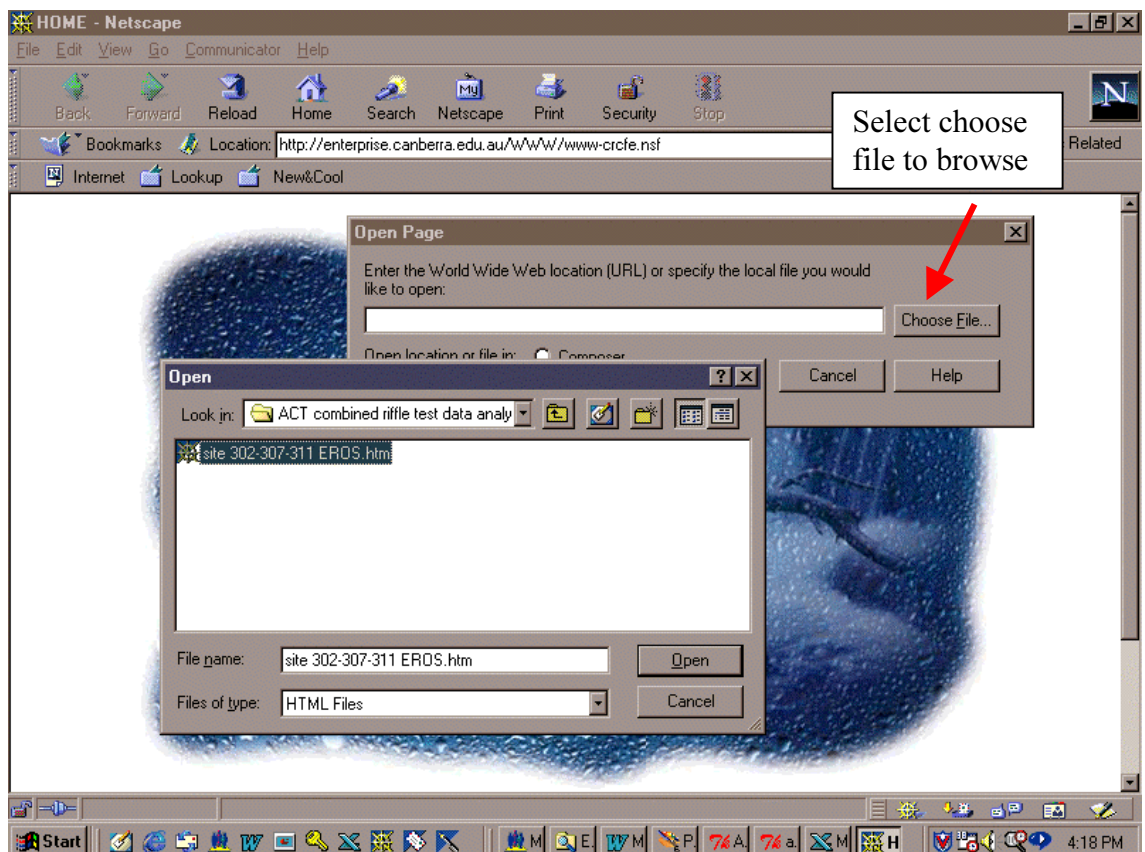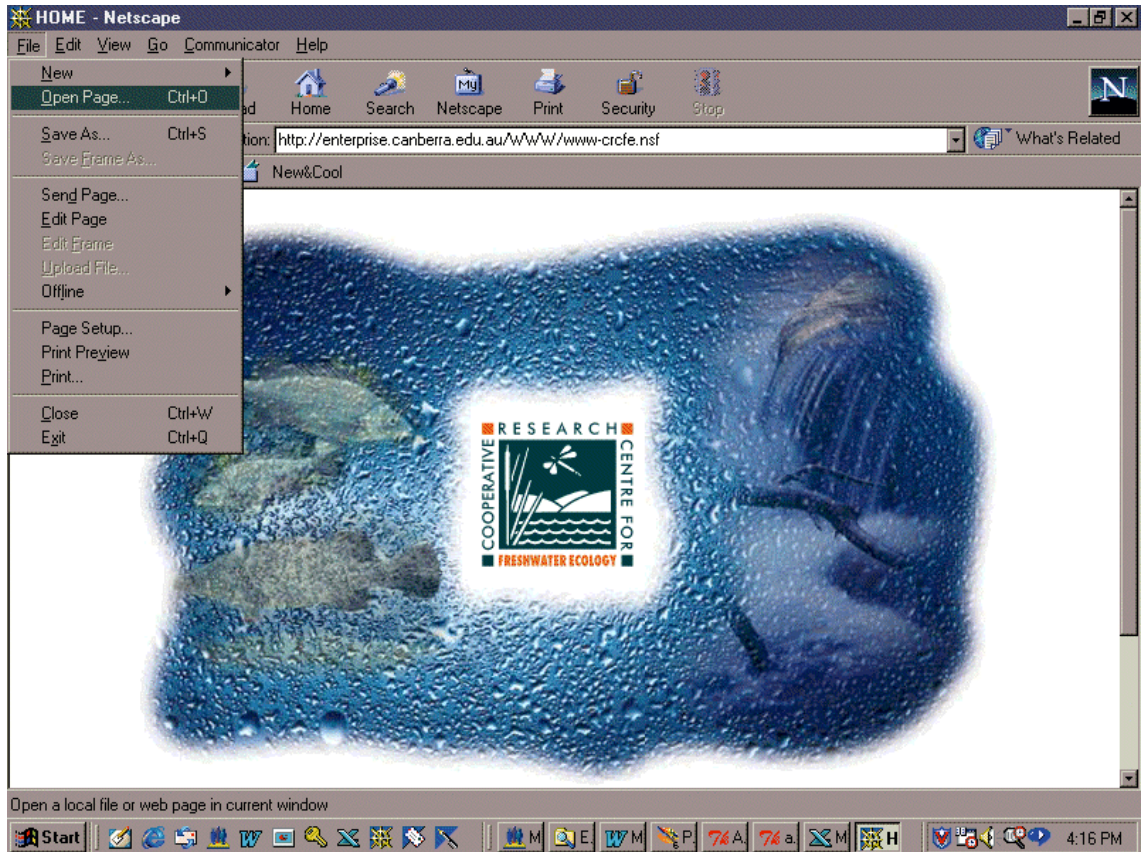

The file can then be printed or saved into spreadsheet format.
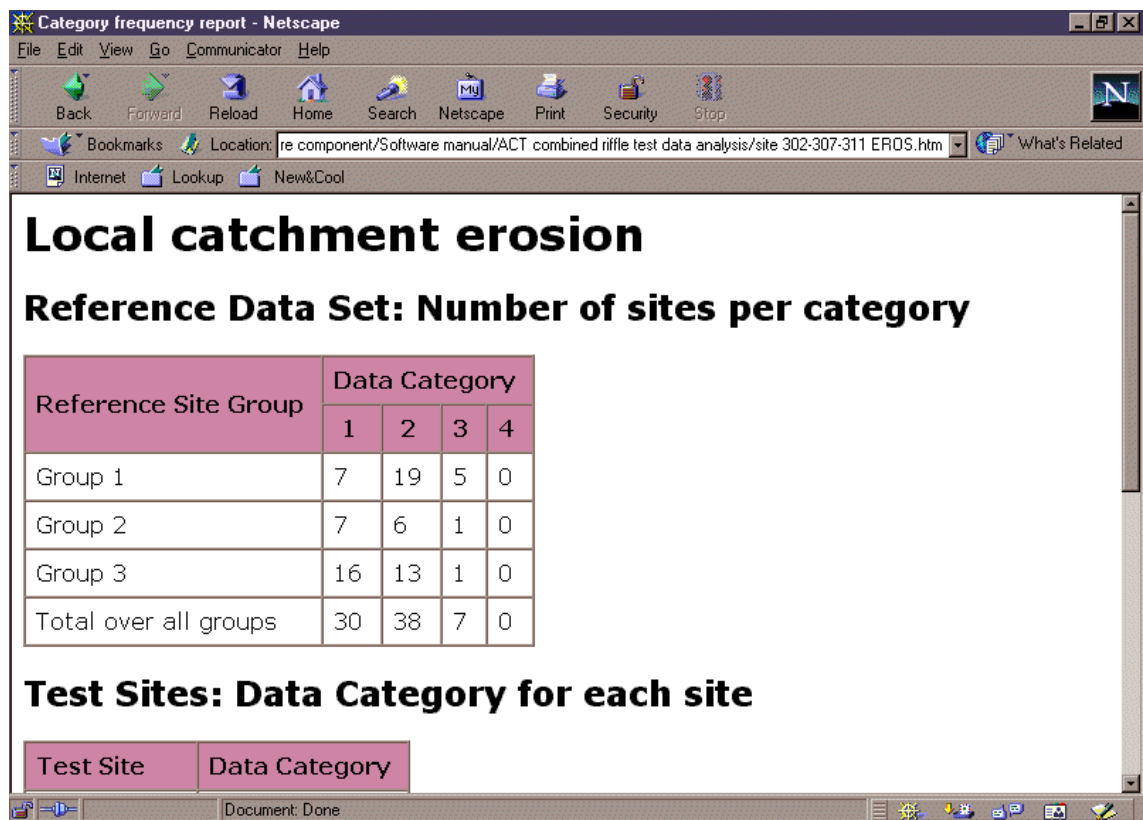
.HTML Files

The .html files can be opened in an Internet browser.

Files are displayed in the browser in the same format as the output tab.

The print function of the Internet browser is then used to print the output.

5.2.3   Saving and printing outputs of other tabs

The data count, unused variables and out of range tabs are saved in the same way as any categorical variable output (i.e. as a .csv or .html file).