C-Plan Table Editor User Manual

For Version 3.06, 12th April 2001

Includes Instructions for:

- Importing Fields into the Site and Feature Databases
- Building a New C-Plan Database

The C-Plan Table Editor is an application developed by New South Wales National Parks & Wildlife Service to assist C-Plan users by making it easier to view and manipulate tables which are often too large to fit into spreadsheet programs such as Excel. In addition we have added two 'wizards' which step you through the process of importing fields and data into existing tables and building a new C-Plan database.

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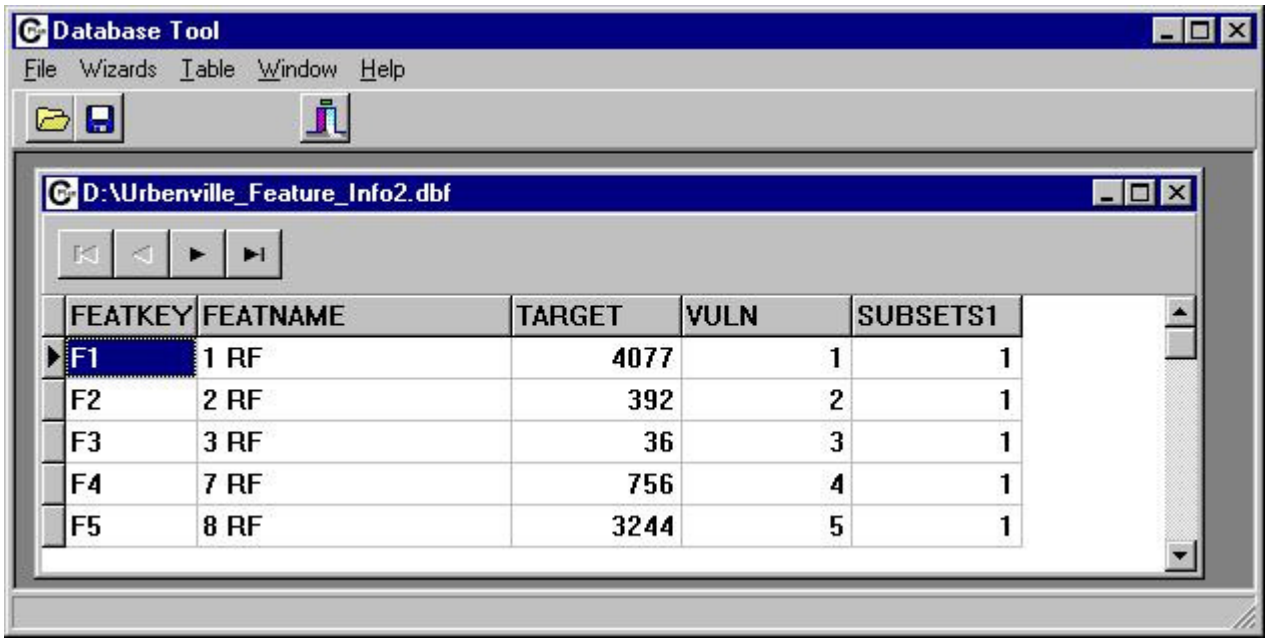
1. Viewing and Manipulating Tables in the Table Editor

The Table Editor can only open and manipulate dBase (DBF) files, but this doesn't mean you can't use other types of data files. You can import and 'save as' other file formats such as comma delimited (CSV) and space delimited (TXT) files. When you import a CSV or TXT file the Table Editor converts this file into a dBase DBF files (which you can name) and performs all the operations on this file. For this reason you will need to use dBase compatible fields where the field name must:

- Be no longer than 10 characters.
- Only contain numbers and letters and no spaces (underscore "_" is acceptable).
- Contain a letter as the first character (they must not contain a number for the first character).
- Be different to the SQL key words (when opening a file you will be notified if you have used one of these words).

In the Table Editor each table will contain 'fields' as columns and 'records' as rows (see Figure 1).

Note:
You cannot edit any of the field names or values in the cells, to alter values you must generate a copy of the field (with the same field name), make the modifications, then import it back into the original table, overwriting the old data.



FEATKEY	FEATNAME	TARGET	VULN	SUBSETS1
F1	1 RF	4077	1	1
F2	2 RF	392	2	1
F3	3 RF	36	3	1
F4	7 RF	756	4	1
F5	8 RF	3244	5	1

Figure 1. Open Table in Table Editor

You can navigate through records by using the arrow keys at the top of the window, the outer buttons will take you to the end (right button) or the beginning (left button) of the records (rows).

You can set the Table Editor 'Working directory' by selecting **File | Set Working Directory** from the menu. The working directory path is used as the default path when opening, importing, saving and exporting files.

You can **Open** and **Save As** the following types of files:

File Type	File Extension
dBase files	*name*.dbf
Paradox files	*name*.db

You can **Import** the following types of files:

File Type	File Extension
Comma delimited text files	*name*.csv
Space delimited text files	*name*.txt
C-Plan Matrix files	*name*.mtx

You can **Export** files in the following file formats:

File Type	File Extension
Comma delimited text files	*name*.csv
Space delimited text files	*Name*.txt

Note:
Table Editor cannot open or import a file with a name that contains spaces or starts with an underscore ("_") or a number (1 to 9).

2. Editing dBase files using Excel – a word of warning!

You should be aware that if you try and edit dBase (or DBF) files using Microsoft Excel you run a very high risk of corrupting your files for the following reasons:

- If you 'autofit' a csv file in Excel and then save it as a DBF file you will lose data because the last couple of characters are truncated. To overcome this you need to set the column width manually using **Format | Column | Width**. If you want to autofit columns you will have to make sure that the font is set to 'Courier'.

- When saving as a DBF file in Excel, if cells contain decimal fractions but are formatted with the 'General' format, the values are rounded to the closest whole number. To preserve numbers to the right of the decimal point, format the cells with the 'Number' format, and then specify the number of decimal places you want saved.

- When saving as a DBF file in Excel, the allocation of field 'type' is based on the first cell under the field header. This can be VERY dangerous if a text field contains a number in the first row the field will be interpreted as a number field and you will lose all the text records in that field.

In preference to editing dBase files in Excel we recommend that you export your dBase file from the Table Editor as a comma delimited CSV file by selecting **File | Export**. You can then edit and save the CSV file in Excel and import the modified file back into the Table Editor by selecting **File | Import**.

3. 'Import into Table' Wizard

This wizard can be used to import any fields into a table, for example importing resource data into the site database. Using the 'Import into Table' Wizard it is possible to:

- Import new fields.
- Import new data into existing fields.

Instructions for Importing Fields & Data using the 'Import into Table' Wizard

Step 1 – Open or Import Table Files

- Open or import the target table (the table you will be importing the data into) and the source table (the table with the data to import) in the Table Editor (see Figure 5, page 21 for an example of a source table).

Caution:
When importing data into a dBase file, any changes, such as importing a new field and/or over-writing old field data, are written directly to the file. For this reason it would be wise to save a backup copy of the target dBase file.

Step 2 – Launch the Wizard and Select the Target Table

- From the menu select **Window | Tile**, this will enable you to see the fields of all the tables.
- From the menu select **Wizards | Import into Table**, this will launch the wizard.
- Click on the table that you want to import data into (target table) from the list.
- Select the correct key field for this table from the drop down list box. Ensure that the key field in the target table is the same as the key field in the source table. They do not have to have the same field name but they must have the same list of key values.
- If you are updating a field with new values and some of the keys are missing from the source table, these missing key values will be treated as either 'empty' in the case of a string field or 'zero' in the case of a number field so the old values will be lost.

Step 3 - Select Fields to Add

- First click the table that contains the source fields and select the correct key field for this table from the drop down list box.
- Select a field that you want to import from the drop down list box and then click the [Add field to list] button.
- To change the name of an import field you can click on the field in the 'New Name' input box to the right of the drop down list box and enter the new name. If you have chosen an illegal field name you will be asked to change the field when you try to add it to the list, (see what constitutes a legal field name in 1. Viewing and Manipulating Tables in the Table Editor, page 3).
- The import fields can be sources from different tables as long as each table contains a key field that corresponds to the key in the target table.
- Click on the [Next] button.

Step 4 - Start Import

- You have finished entering in all the data that the import wizard needs to import the new fields/data.
- Click on [OK] to start the import process.

Step 5 - Check that the Import was Successful

- Visually check that your data has been imported without errors.

4. 'Build C-Plan Database' Wizard

The Build C-Plan Database wizard allows you to build a new C-Plan database. A C-Plan database is made up of the following four files (note that C-Plan will generate other files when it loads and runs the database for the first time):

- Sites by features matrix.
- Site database of 'sites by fields'.
- Feature database of 'features by fields'.
- C-Plan Initialisation file (containing system settings)

By using the Build C-Plan Database wizard you will be guided through the necessary steps and be prompted to locate tables and fields needed to build the C-Plan database. The four component files that make up the database will be created automatically by the wizard using the information you provide. Before starting the Build C-Plan Database wizard you must have open, or know where to find, the following tables and information:

1. Sites by Features Matrix Table (or multiple tables)
2. Site Information Table
3. Feature Information Table
4. Database Information

4.1 Sites by Features Matrix Table

The sites by features matrix contains the amounts of each feature at each site (see Figure 2, page 17 for an example of this file). The first column must contain the site key, each of the following fields should represent features and each feature should have a dBase compatible field name. When the C-Plan extension is loaded you can add this field to your ArcView grid theme table using the 

button. This button adds a new field to the grid table called 'GIS_KEY' that contains a dBase compatible key in the form of: 'F*x*' to 'F($x + n$)' where x is the specified starting number and n is

the total number of features in the grid layer. The data for this matrix will be derived from area reports (**Analysis | Tabulate Areas** reports in ArcView) using the GIS data layers (grid themes) containing one or more features, and the site layer (polygon theme). If you use the 'GIS_KEY' button your GIS data layers must be grid themes.

You can use multiple sites by features tables to build the final matrix as long as each table contains a complete list of site keys. You can add the component matrix tables sequentially to the list in the order that you want them to occur in the final matrix.

If you are using 'Tabulate Areas' in ArcView to derive your component matrix tables, these tables may only contain a subset of sites (those sites that contain the feature being reported). To overcome this problem you can reclassify the 'No Data' category in your data layer to read '0' (zero) to ensure that all sites are present in your report table.

Note:
The site key used by these reports will become the C-Plan 'SITEKEY' when the C-Plan database is built. For this reason the site key for each site must be unique and must be an integer value.

4.2 Site Information Table(s)

The site database contains site related fields (see page 19 for an example of this file), this table will use the same key field as that used in the sites by features matrix. All the tables containing information for the site database must use the same key as the sites by features matrix. You have the option of providing the following three fields from one or more of the loaded tables:

- Site Name
- Site Area
- Site Tenure

Only supply the Site Name if you want the name to be different from the site key, if the name is not specified the wizard will use the site key for the site name.

Site Area can be found in the ArcView shape file (*shape name*.dbf).

Site Tenure can be any classification system used to describe land tenure. The C-Plan Database wizard gives you the option of categorising these tenures (usually reported from a GIS tenure layer) into the three initial tenure classes used by C-Plan. The three initial tenure classes are:

- Initial Available
- Initial Reserved
- Initial Excluded

4.3 Feature Information Table

The feature database contains fields relating to features (see page 19 for an example of this file), this table must use the same feature names as those used in the sites by features matrix. You have the option of supplying the feature name and feature target fields:

Feature Name can be any text string describing the features in the matrix. If you do not supply a new name field then features will be named using the fields in the matrix. If you used the 'GIS_KEY' button to add the feature key in ArcView then this will become the feature name if you don't specify another field.

Feature Target is a user-defined target assigned to each feature in the sites by feature matrix. These targets have to be expressed in the same units as the corresponding feature records in the sites by features matrix. There is also the option of applying a multiplier to the values if the units are not correct.

4.4 Database Information

When the C-Plan database has been built it will contain a C-Plan initialisation file called CPLAN.INI. This file records details of the database such as the database size and its name, it also contains all the C-Plan option settings.

You will be asked to provide two items of information to allow the wizard to complete the CPLAN.INI file, they are:

1. *The number of mutually exclusive features*

To be able to calculate some of the area-based site indices C-Plan needs to know which features (if any) are spatially mutually exclusive (i.e. they do not overlap). To achieve this the subset of

mutually exclusive features must make up the first features in the sites by features matrix, this way you can specify that the first *N* features in the matrix are mutually exclusive.

2. *A name and path for the new database*

To prevent confusion it is best to give the C-Plan database a unique name and its own folder. To enable the link between C-Plan and the GIS you will must include the ArcView site layer (shapefile) in the same folder.

Instructions for Building a C-Plan Database using the 'C-Plan Database Wizard'

Step 1 - Open Source Files

- Open (or import into a DBF) the following tables in the Table Editor:

    * Sites by features matrix table (or component tables)
    * Site information table (name, tenure, area etc.)
    * Features information table (target fields, extant area, vulnerability etc.)

- You may want to select **Window | Tile** to view all the tables and decide which fields you will be using as key fields in the wizard.

Step 2 - Select the Sites by Features Matrix Table or Component Tables

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- From the menu select **Wizard | Build C-Plan Database**, this will launch the wizard.
- From the list of tables select the sites by features matrix or select the first matrix component table.
- For the selected table assign the key field by choosing one of the fields from the drop down list. Use the following fields (or their equivalents) as the key:
- Click on the [Add Table] button to add the table to the list.
- If there is more than one table containing matrix data then add the tables sequentially in the order that you want them to occur in the final matrix.
- Click on the [Next] button.

Step 3 - Select the Site NAME Field

- Select the site NAME field by highlighting the table containing the site information and selecting the table key field and feature name field using the drop down list boxes.
- If you do not select a table and field in this window then the site key will automatically be used as the site NAME.
- Click on the [Next] button.

Step 4 – Specify the number of Mutually Exclusive Features

- To be able to calculate some of the site indices C-Plan needs to know which features (if any) are spatially mutually exclusive (i.e. they do not overlap).
- If all the features are mutually exclusive then enter the total number of features (in the sites by features matrix) in the input box.
- If only a subset of your features are mutually exclusive then you need to enter the number of mutually exclusive features in the matrix.
- These features must be the first (ordered before the non-mutually exclusive features) in the matrix file.
- Click on the [Next] button.

Note:
You can use the 'feature subset' functionality in C-Plan to identify other groups of mutually exclusive features (that do not have to occur at the beginning of the matrix). See the C-Plan Users Manual for instructions on how to do this.

Step 5 - Select the Site AREA Field

- Select the site AREA field by highlighting the table containing the site information and selecting the table key field and site area field using the drop down list boxes.
- If you do not select a field in this window then the site AREA field will be blank and C-Plan will be unable to calculate any of the site indices that use an area weighting.
- Note that it is possible to import the area data at a later stage by selecting the **Wizards | Import into Table** option from the Table Editor menu (see page 5).
- Click on the [Next] button.

Step 6 - Select the TENURE Field

- You need to specify site tenure if any of the sites in your database are part of existing reserves or should be excluded from the analysis.
- Select the site TENURE field by highlighting the table containing the site information and selecting the table key field and site tenure field using the drop down list boxes.
- If you do not select a field in this window then the site TENURE field will be empty and C-Plan will classify every site as 'Initial Available' assuming that there are no pre-existing reserves.
- Click on the [Next] button.

Step 7 - Classify TENURE values into C-Plan 'Initial Tenures'

- You now need to classify each TENURE type into one of the three 'Initial' classes used by C-Plan.
- Classify tenures by highlighting each tenure in turn from the left list box and then moving it into one of the C-Plan initial site classes by clicking on the arrow buttons.
- Using the example site information file (page 19) the tenures can be classified as follows:

Site Tenure:	***Initial C-Plan Class:***
Forestry – Native	Initial Available
National Park	Initial Reserved
Forestry – Plantation	Initial Excluded
Freehold	Initial Excluded

- Click on the [Next] button.

Step 8 - Select the Feature NAME field

- Select the feature NAME field by highlighting the table containing the feature information and selecting the table key field and feature NAME field using the drop down list boxes. (use GIS_KEY for the table key field if this field was added using the  button in ArcView)
- If you do not select a field in this window then the FEATNAME field will use the matrix field names.
- Note that it is also possible to import the feature NAME at a later stage by selecting the **Wizards | Import into Table** option from the Table Editor menu (see page 5). If you do this you will have to name the feature name field "FEATNAME" for it to be imported into the correct field in the features database.
- Click on the [Next] button.

Step 9 - Select the Feature TARGET Field

- Select the feature TARGET field by highlighting the table containing the features information and then select the table key field (GIS_KEY if this field was added using the  button in ArcView) and the user-defined target field from the drop down list boxes.
- If you do not select a field in this window then the user-defined ITARGET field will be empty and C-Plan will calculate feature targets using a flat percentage of the total amount for each feature in the database (by entering a 'Target %' value in the C-Plan Control window).
- You can import multiple user-defined feature target fields into the features database after you have build a database with the 'Build C-Plan Database' wizard using the **Wizards | Import into Table** option from the Table Editor menu (see page 5)..
- Click on the [Next] button.

Step 10 - Select the Database Output Path and Name

- Specify the 'Output Path:' where you want the wizard to build the C-Plan database. You can use the [Browse] button to find this path and to create a new folder.
- Enter a name in the 'Database Name:' text box. The name can be up to 255 characters long.
- Click on the [Next] button.

Note:
Remember that if you are going to link your C-Plan database to an ArcView polygon theme you will need to have a copy of the shapefile files in the same directory as the C-Plan database.

Step 11 - Build C-Plan Database

- You have finished entering in all the data that the C-Plan Database Wizard needs to build the C-Plan database.
- Click on [OK] to start building the C-Plan database.

Running C-Plan with your New Database

- Please refer to the C-Plan Manual section 1.3 'Getting Started - Setting up and Launching C-Plan' to launch C-Plan with your new database.

Importing Feature VULNERABILITY Values

The Vulnerability Ranking is a user-defined raking (from 1 to 5) relating to the 'need for conservation' for each feature and is used in the calculation of the summed irreplaceability vulnerability weighting (see C-Plan User Manual for more details). This field does not have to be present if you cannot derive feature vulnerability rankings.

- Import vulnerability values into the features database by selecting the **Wizards | Import into Table** option from the Table Editor menu (see page 5).
- When Import vulnerability values into the features database it is important that you call the vulnerability field "VULN".

Importing Resource Fields

- Resource fields can be imported into the site database by selecting the **Table | Import Data Field Wizard** option from the Table Editor menu (see 3. 'Import into Table' , page 5).
- When the fields are imported they will be added to the site database. If there are existing fields with the same names the new field data will replace the old (see Figure 5, page 21 for an example of a table containing resource data ready to import).

- Refer to section 3.2.6 ‘Show | Resource’ of the C-Plan user manual for instructions on how to modify the CPLAN.INI file to indicate to C-Plan that these new fields as resource fields.

When importing fields into the site database ensure that the table containing the fields uses the same key as the C-Plan sites by features matrix.

KEY	F1*	F2*	F3*	F4*	F5*	F6*	F7	F8	F9	F10
295	6.25	0	0	1	0	0	76	55.5	0	0
665	83.75	3.5	0	0	0	0	39.25	35.25	2	0
711	44	21.5	0	0	13.25	0	0	29.25	0	0
707	139	2.75	22.5	1.25	0	70	5.75	169	1	0
599	9.5	0	22.25	42.75	0	2.75	282.25	352.25	0	0
619	16	0	0	3.75	0	0	256	232	0	0
597	21.5	0	0	1	23.25	0	144.25	108.25	0	0
525	10.5	0	0	5.75	0	0	400.5	374	0	0
405	0	0	0	6.25	0	0	325.25	333.75	0	1
297	86.5	0	0	21	0	0	176	157.5	0	0
314	81.75	0	0	1	0	0	175	94.25	0	0
385	29.75	0.25	0	5.75	20.25	0	139.25	150.25	0	0
419	4	0	0	30	0	0	352.75	351	0	0
305	0	0	0	0	0	0	0	0	0	0
309	0	0	0	6.75	0	0	627.5	629	0	0
392	20.75	0	0	7.25	0	0	564	389.75	0	1
398	11.75	0	0	42.5	0	0	505.25	474	3	1
446	139.75	0	0	3.25	0	0	230.25	82.25	0	0
654	36.75	0	0	0.25	0	0	8	1.5	0	0
261	0	0	0	0	0	0	0	0	0	0
272	0	0	0	0	0	0	0	0	0	0
278	0	0	0	0	0	0	0	0	0	0

Figure 2. Example of a Sites by Features Matrix ready for use in the C-Plan Database Wizard

***Note that the first six features in this matrix are mutually exclusive - this information is needed by the C-Plan Database Wizard.

SITEKEY	NAME	TENURE	AREA
295	Comp 236	Forestry – Native	94.5
665	Comp 244	Forestry – Native	349
711	Comp 245	Forestry – Native	271.5
707	Comp 246	Forestry – Native	481.5
599	Comp 247	Forestry – Native	516.25
619	Comp 248	Forestry – Native	291.75
597	Comp 249	Forestry – Native	207.25
525	Comp 250	Forestry – Native	407.75
405	Comp 251	Forestry – Native	336.75
297	Comp 252	Forestry – Native	318.25
314	Comp 253P	Forestry – Plantation	245
385	Comp 254P	Forestry – Plantation	298
419	Comp 256P	Forestry – Plantation	356.5
305	Comp 318P	Forestry – Plantation	25.5
309	National Park19	National Park	673
392	National Park29	National Park	761.5
398	National Park31	National Park	508.75
446	National Park35	National Park	503.5
654	National Park40	National Park	125
261	Lot 45	Freehold	127.75
272	Lot 309	Freehold	14.25
278	Lot 21	Freehold	77

Figure 3. Example of a Table containing data used in the C-Plan Database Wizard for generating the Site Database

GIS_KEY	FEATNAME	ITARGET	VULNERABILITY
F1	53 RG	800.00	5
F2	65 RG	10.00	4
F3	71 RG	22.00	4
F4	53 OG	50.00	2
F5	65 OG	25.00	1
F6	71 OG	30.00	1
F7	Acacia brunioides	2000.00	2
F8	Acacia orites	2000.00	2
F9	Koala	4.00	3
F10	Albert's Lyrebird	3.00	1

Figure 4. Example of a Table containing data used in the C-Plan Database Wizard for generating the Feature Database.

SITEKEY	VOL1999	VOL2020
295	10	84
665	35	228
711	27	95
707	48	260
599	52	345
619	29	261
597	21	118
525	41	182
405	34	285
297	32	121
314	25	239
385	30	314
419	36	69
305	3	21
309	67	378
392	76	8
398	51	118
446	50	302
654	13	17
261	13	69
272	1	6
278	8	38

Figure 5. Example of a Table containing resource data (wood volume in this example) used in the Import Data Wizard.