

User Guide

AML Scripts for Terrestrial Ecosystem Mapping (TEM)
& Wildlife Habitat Ratings (WHR)

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Introduction

Two Arc Macro Language (AML) scripts are available to facilitate the generation of map products from Terrestrial Ecosystem Mapping (TEM) spatial data, TEM database, and associated ratings tables. Specific methodologies for TEM are discussed in *Standards for Terrestrial Ecosystem Mapping in British Columbia (RIC [now RISC], 1998a)*, and methods for developing wildlife ratings are discussed in *British Columbia Wildlife Habitat Rating Standards (RIC 1998b)*.

The first script, `tem_whr` (TEM Wildlife Habitat Ratings), assists in managing ratings tables and scheme files. The second script, `tem_wmr` (TEM Wildlife Habitat Mapping), uses ratings tables and scheme files to assist in generating map products. This user guide describes the `tem_whr` script.

Installation and Set-up

1. Start ARC
2. First make a workspace within which to work. Use the `createworkspace` command from the ARC prompt. For example, type `'createworkspace myworkspace'`.
3. Then move into the workspace with the `'w'` command. For example `'w myworkspace'`.
4. Now put two sets of data into the workspace: (1) TEM ecosystem data and (2) TEM spatial data.

If you are working on a provincial government UNIX box, then the TEM ecosystem and spatial data can be found at `$AW/wld/tem/r*/<project_name>`. Within each `<project_name>`, the spatial data coverage is named `tecp_*`. For example, the ARC coverage for the kirbyville creek TEM is named `$AW/wld/tem/r4/kirbyville/tecp_krb`. Copy this to your workspace with the command `'copy $AW/wld/tem/r4/kirbyville/tecp_krb kirb'`. This will copy the coverage to your workspace and name the coverage `'kirb'`. The spatial data will be in an INFO file titled `kirb.pat`, and the ecosystem data will be in an INFO file titled `kirb.tem`.

If you are not working on a provincial government UNIX box, the the TEM ecosystem and spatial and ecosystem data can be found at:

<http://www.env.gov.bc.ca/esd/distdata/ecosystems/wis/tem/warehouse/>

where the data is organized by region. For example, if you are interested in the data for Klawli, look under Region 7. Click on Klawli, then download the data (tecp_kla.zip) which is stored in e00 format. Using the 'import' command from the Arc prompt will import the data into ArcINFO format. The spatial data will be in an INFO file titled *.pat, and the ecosystem data will be in an INFO file titled *.tem.

5. Now you are ready to run the tem_whr tool. Run the tem_whr tool by typing the command '&r tem_whr'. If you are not working in a provincial government UNIX environment, you may need to copy the tool into your workspace before attempting to run the tool.

TEM_WHR Function

Create an empty ratings table

Creates an empty ratings table which contains the standard attributes required in a ratings table, plus additional user-selected attributes. This empty table can be used in conjunction with the function *Generate a csv file of missing ecosystem units* to produce a list of unique ecosystem units that occur in the TEM database.

Update or create a ratings table

Uses a user-provided Excel-generated comma separated value (csv) file to update or create a new ratings table. If an existing ratings table is updated based upon a csv file, then three kinds of updates may occur. First, ecosystem units and the associated ratings that occur in the csv file but are missing from the ratings table will be added to the ratings table. Second, rating columns occurring in the csv file but missing from the ratings table will be added to the ratings table. Third, all ratings in the ratings table will be updated to conform to the ratings in the csv file.

If the user creates a new ratings table, then a new ratings table will be created and its contents will match the contents of the csv file.

Discussion: During update, all ratings in the ratings table will be updated to conform to the ratings in the csv file. Therefore, be aware that if the csv file contains a blank entry for a specific ecosystem unit and rating column, and the existing ratings table contains a rating for the same ecosystem unit and rating column, then the rating in the ratings table will be removed and be replaced with a blank.

Update or create a ratings table generates an ASCII text file which reports on the updates that occurred. Below is a sample.

Thursday/08-JUL-1999/11:35 AM

NOTE: this summary information is also saved in the current workspace in a text file titled upd_TAB1.RAT.txt.

Finished updating 'TAB1.RAT' based upon 'update.csv'.
Number of ecosystem units represented in 'update.csv': 38
Number of ecosystem units originally in 'TAB1.RAT': 33
Number of ecosystem units added to 'TAB1.RAT': 5
Number of columns in 'update.csv' containing ratings: 9

Of the columns in the new 'TAB1.RAT', the following is a list of which ones were updated or added, and the number of individual ratings updated

Rating columns Number of ecosystem units updated

MALAL_FDW 3

MALAL_FDP 4

MALAL_FDS 0

MALAL_FDF 0

MALAL_STW 0

MALAL_STP 0

MALAL_STS 0

MALAL_STF 0

BPIWO_SHRE 4

Clean a ratings table

Removes duplicate ecosystem units from an existing ratings table and removes ecosystem units that could never occur in a specified project area. The user is required to select the TEM project which is used to test for the occurrence and potential occurrence of ecosystem units. If ecosystem units are to be removed from the ratings table because they don't exist, then the user needs to provide a file name in which to store the non-existent units.

Discussion: Clean a ratings table generates an ASCII text file that reports on the 'cleaning' that occurred. See below.

Thursday/08-JUL-1999/11:45 AM

NOTE: this summary information is also saved in the current workspace in a text file titled `cln_tab1.rat.txt`.

Finished cleaning `tab1.rat` based upon steam TEM.
Saved the non-existent ecosystem units to a csv file titled `deleted.csv`.

Of the original 38 ecosystem units in `tab1.rat`,
6 eus were deleted because they would never occur
in steam TEM.

Of the 32 remaining ecosystem units that could occur
in the steam study area, 0 were duplicate and therefore
deleted. There are 32 ecosystem units remaining
in the ratings table.

Generate a csv file of missing ecosystem units

Generates a csv file that lists ecosystem units found in a specified TEM database but are missing from a specified ratings table. The new csv file can be read by Excel or used to *Update or create a ratings table*. If you are working on a provincial government UNIX box, then the new csv file will contain a list of all potential structural stages that could occur in the TEM database. These potential structural stages are important for capability mapping. The potential structural stages are added by referring to a dbf file titled `tem_whr_structg.dbf` located in `$AMLWHSE`. If you are not working on a provincial government UNIX box, then potential structural stages will be included in the csv file if you have the dbf file named `structg.dbf` in the current workspace.

Create a scheme file

Creates a scheme file, from a csv file, for ratings other than wildlife. A scheme file contains all ratings used in a rating scheme, plus additional information indicating what each rating represents. A scheme file is used by the tem_whm script for generating themes. For example, the standard ratings in the six-class wildlife rating scheme are 1, 2, 3, 4, 5, 6. The structure and contents of the corresponding scheme file are shown in Table 2 below.

Table 2. Structure and contents of scheme file used for the six-class rating scheme

Rating	Mid_Percent	Top_Percent	Meaning	Symbol
' '	0	-9	'No data'	27
6	0	0	'6 - Nil'	50
5	3	5	'5 - Very low'	77
4	16	25	'4 - Low'	90
3	38	50	'3 - Moderate'	111
2	63	75	'2 - Moderately high'	126
1	88	100	'1 - High'	117

The column titled RATING contains all the ratings used in the rating scheme plus an additional quoted space (' '). Ratings may consist of up to five characters. The column titled MID_PERCENT is the mid-point, rounded to the nearest integer, of the range of percentage values that the rating represents. For example, the mid point of class 3 is 38 percent (See Table 4 in *British Columbia Wildlife Habitat Rating Standards (RIC[now RISC] 1998b)*). The column titled TOP_PERCENT is the upper limit of the range of percentage values that the rating represents. For example, the

upper limit of class 3 is 50 percent. The column titled MEANING contains up to 20 characters which describe the meaning of a rating. The column titled SYMBOL indicates the colour that is used when generating a map with tem_whm. When tem_whm is running, the symbol for each rating can be modified. Therefore, the initial values entered in the symbol column are not important.

Discussion: The scheme files for the two-, four-, and six-class wildlife rating schemes are made automatically by the tem_whm script and do not need to be supplied by the user. Scheme files provided by the user may contain ratings that are identical to ratings in other rating schemes.

If there are blanks within a field, then the contents of the field must be quoted. If generating the csv file from Excel, be sure that the quotes appear within the cell containing the data. Excel automatically removes the first quote entered within a cell, but shows a quote in the data entry line. If the first quote is not reentered, an error will occur when attempting to create a scheme file from the Excel-generated csv file.

The row containing ' ' as a rating is mandatory. The MID_PERCENT and TOP_PERCENT of this row must be 0 and -99 respectively. The MEANING of this row can be either 'No data' or 'no data'. The rows in the table must be sorted such that MID_PERCENT and TOP_PERCENT values increase down the table. An example of a scheme file used for generating a theme showing minimum stocking densities is shown in Table 3 below.

References

Resources Inventory Committee. 1998a. Standards for Terrestrial Ecosystem Mapping in British Columbia. Review Draft. Ecosystem Working Group. Victoria, BC. 190 pages.

Resources Inventory Committee. 1998b. British Columbia Wildlife Habitat Rating Standards. Review Draft. Ecosystem Working Group. Victoria, BC. 110 pages.

Appendix A: Technical Background

The tem_whr script was written for Hewlett-Packard UNIX ARC/INFO, and may need to be modified for ARC/INFO on other systems.

Required Files

Tem_whr requires two user-supplied files

1. Spatial data for a Terrestrial Ecosystem Mapping (TEM) project formatted according to RISC[formerly RIC] standards and in ARC/INFO format. See documentation in the tem_whm.aml script for more information.
2. Ecosystem data for a TEM project formatted according to RISC standards and in ARC/INFO format. See documentation in the tem_whm.aml script for more information.

Script Assumptions

See documentation in the tem_whm script for more information.