

TELSA Simulation Guide

Version 1.0

Prepared for

The Nature Conservancy of Montana

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General information

The instructions in this document were prepared using version 3.6.6 of the TELSA Database Editor. All simulations for the 2009-2010 TNC-Montana Invasives project were run on version 3.06.0007 of the TELSA model.

Download TELSA

To obtain the latest version of the TELSA model and Database Editor go to:

<http://www.essa.com/intelsa/>

username: telsa

password: Wilson73

(Please do not distribute this login information.)

Follow the download and installation instructions on the webpage. You will need a second password, **ascaphus5**, to unzip the downloaded zip file. If default installation settings are used, TELSA will install to C:\TELSA and a new item in your Start | Programs menu will appear.

Note that the instructions in this document assume that TELSA databases are located at **C:\TELSADB**. It is recommended that you create this folder and place TELSA databases at this location when modifying them through the DB Editor.

Required data

Template databases

The template databases are located at **ModelPackage\Templates**. The base template for each landscape is provided via FTP. The other template variations (i.e. II-Aware, treatment delay, large patch edge, etc) will be provided on a Model Package DVD.

A log file which contains a brief description of each TELSA template database is located at **ModelPackage\Templates\database.log**. After creating a new TELSA database template, enter the new database name and any relevant notes into the database.log file.

Include the following information:

- The name of the new template database file
- The name of the base template database file from which you created the current template (e.g. “built off ...”)
- Changes made to the current template

Runlist file

ESSA tracks the status of TELSA simulations in an Excel file. An example of this file is located at **ModelPackage\Templates\RunList-2010-January.xls**. It is recommended that you continue to use this file or create a similar file to track the status of additional simulations.

Result queries

The results and mapping sections of this document reference the files located at **ModelPackage\SQL**.

Modifying a TELSA database

General procedures

Setting the TELSA ODBC Connection

Go to **Start | Control Panel | Administrative Tools | Data Sources (ODBC)**. It is recommended that you pin the Data Sources (ODBC) item to your start menu as you will access it often.

If a TELSA_DB data source does not already exist, click **Add**. Choose the **Microsoft Access Driver (*.mdb)**. Enter the Data Source Name as “**TELSA_DB**”. Click OK and exit the ODBC dialog.

In the future, you will open the ODBC dialog and choose **Select** and point to a TELSA database (presumably this database is located at C:\TELSADB). When you open the TELSA DB Editor, the database you selected in the ODBC dialog will be loaded.

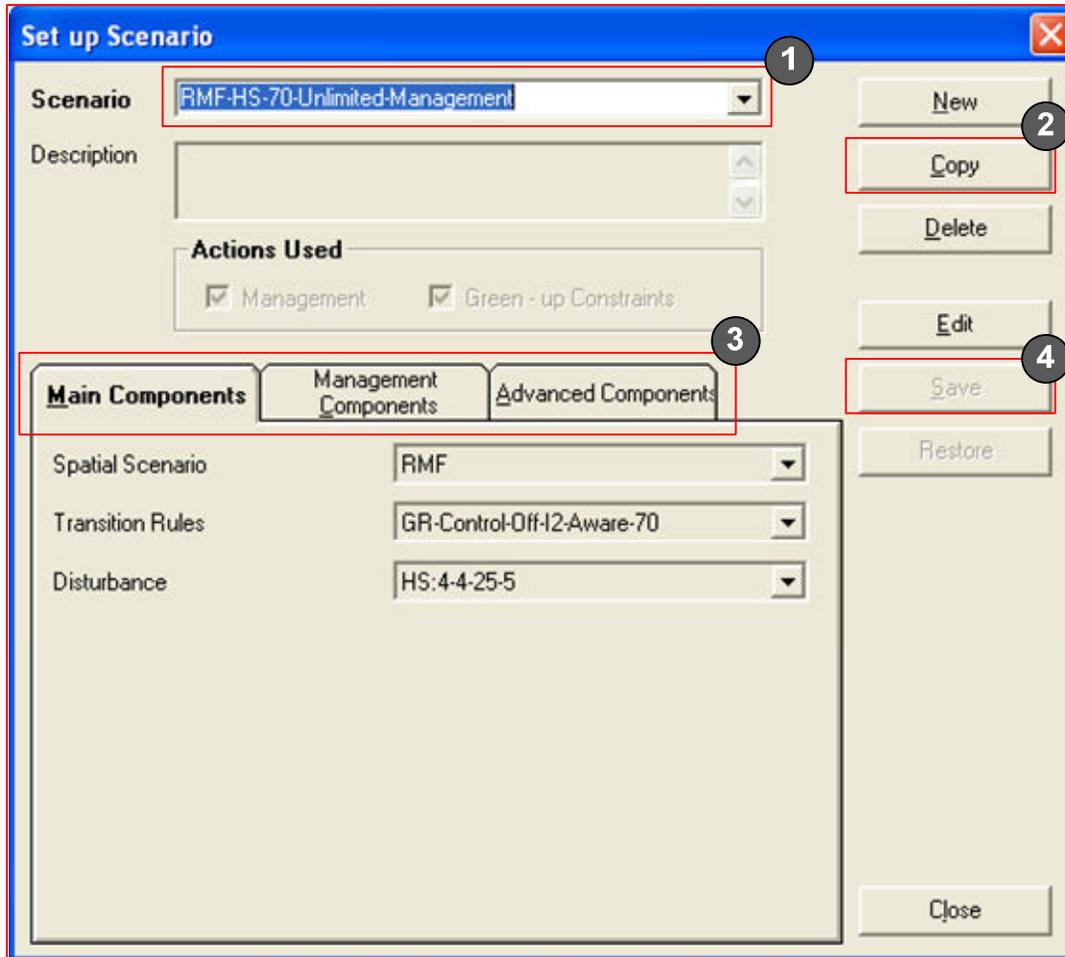
Opening the Database Editor

The template modifications which are described in this document are made using the TELSA Database Editor (DB Editor). To open the DB Editor, go to **Start | Programs | TELSA DB**.

Create a new run scenario

After making one or more of the component modifications described in this document, follow these instructions to create a new run scenario which uses the modified components.

- From the **Run** menu, select **Scenario**.



1. Select a pre-existing scenario.
2. Choose to **Copy** the scenario

Enter a new name for the copied scenario. A standard is to use a format similar to:

[Landscape prefix] – [high or low spread] – [control effectiveness] –
[management ceiling] – [other modifiers]

For example, “RMF-HS-70-100HA”.

Modifiers might include:

“-LPE” to indicate that the large patch edge activity sort method is in use.
“-IIAware” to indicate that the II-Aware modification is in use.

3. After naming the copied scenario, the dialog automatically enters edit mode.

To modify:

Spread rate and/or *biocontrol* – on the **Main Components** tab, select the desired **Disturbance** parameter.

Management/treatment ceiling – on the **Management Components** tab, select the desired **Activity Group Limits** parameter.

Activity sort method – on the **Management Components** tab, select the desired **Activity Sort Method** parameter.

IIAware – on the **Advanced Components** tab, select the desired **TSD Initialization** parameter.

Control effectiveness – on the **Main Components** tab, select the desired **Transition Rules** parameter.

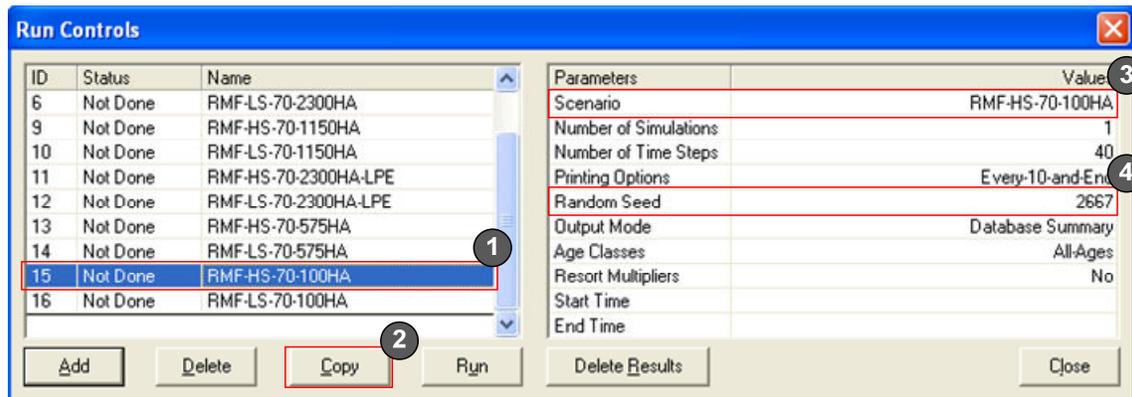
Leave all other parameters as they are.

4. Click to **Save** the new settings and **Close** the dialog.

Create a new run control

After creating a new run scenario, follow these instructions to prepare a run control which uses the new run scenario.

- From the **Run** menu, select **Run Controls**.



1. Select a pre-existing run.
2. Choose to **Copy** the run.
Enter a new name for the copied run. A standard is to use the same name as the run scenario for which you are creating the run control.
3. Choose the appropriate **Scenario**. Pay close attention to whether you want high or low spread as the scenario names will be similar.
4. Enter a new **Random Seed**.

- Close the dialog to continue working with the database or run the new simulation immediately by setting the run **Status** to **Run** and clicking **Run**.

Change the treatment ceiling

Follow these instructions to prepare a simulation with a new treatment ceiling.

- Refer to the template archive and select the desired base template.

This example will use the RMF management template:
RMF-MGMT-TEMPLATE-2009-11-17-Run-Ready

- From the **Management** menu, select **Activity Group Limits**.

Activity Group Limits

Scenario RMF-100HA

Description

Tolerance Level 5 %

Components

PZ	Activity Group	Limit Type
RMF whole landscape	Conventional-Management	Area

Values

Start	End	Area (ha)
1	40	100.

Graph showing Area (ha) vs. Start/End values.

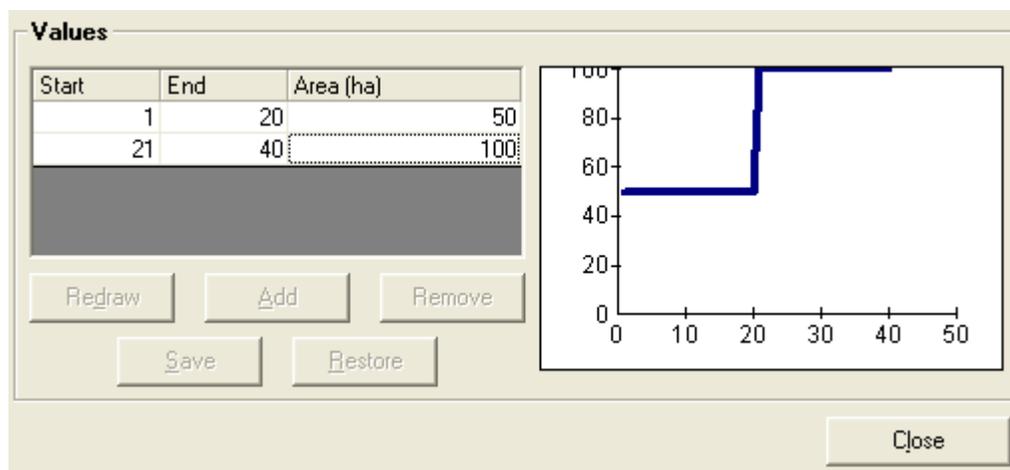
- Select one of the pre-existing scenarios from the **Scenario** drop-down (e.g. RMF-100HA).

2. Choose to **Copy** the scenario.

Enter a new name for the copied scenario. A standard is to use the landscape prefix (RMF, CV or MGP) followed by the ceiling in HA (e.g. RMF-50HA)

3. Select **Edit Values** to enable the value portion of the dialog.
4. Click once in the **Area(ha)** box. Notice the light dotted lines that surround the box. Type a new ceiling value (e.g. 50).

If you wish to vary the ceiling across time, choose **Add** to add additional records to the **Values** table. The example pictured below uses a ceiling of 50HA from years 1 to 20 and a ceiling of 100 HA from years 21 to 40.

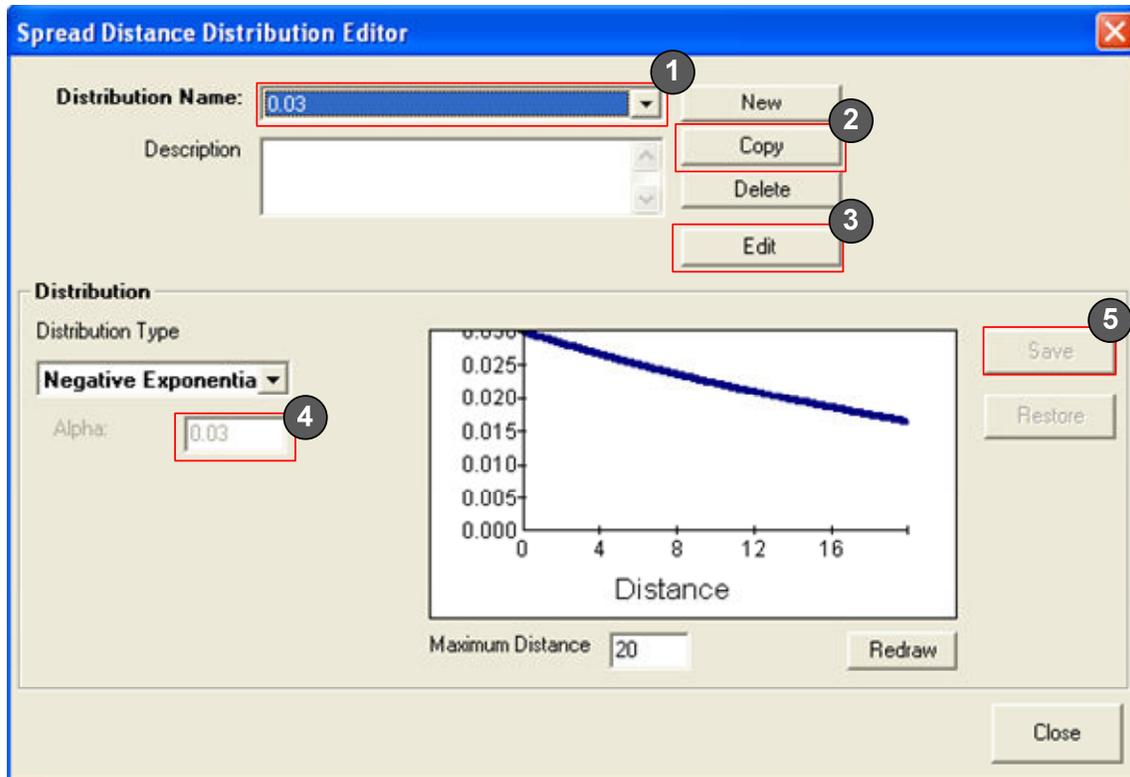


5. Select **Save**. The graph will now refresh to reflect the new ceiling.
- Close the dialog and refer to the General Procedures section of this document to create a new run scenario and run control which uses this Activity Group Limits scenario (you have just created a new option for the Activity Group Limits drop-down on the Management Components tab).

Change the spread rate

Follow these instructions to create a simulation with a different spread rate.

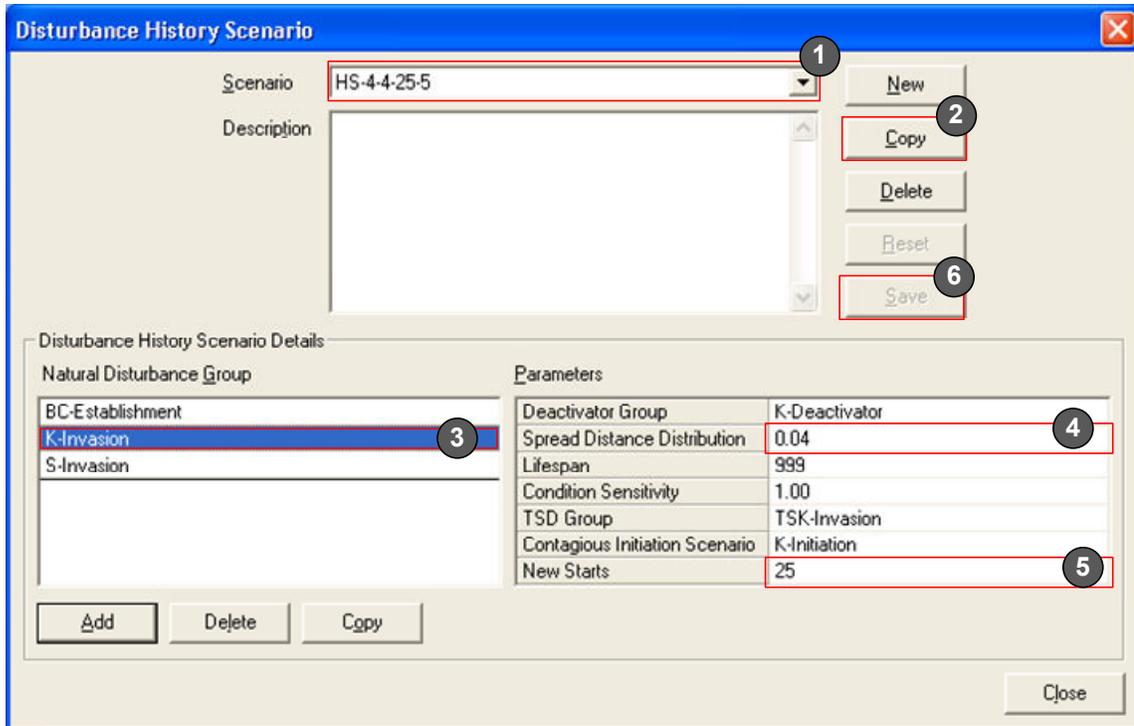
- From the **Natural Disturbance** menu, select **Contagion** and then **Spread Distance Distribution**.



1. Select a pre-existing distribution name.
2. Choose to **Copy** the distribution.

Enter a name for the new distribution. A standard is to use the spread rate value.

3. Click the **Edit** button.
 4. Leave the **Distribution Type** as “Negative Exponential” and enter the new **Alpha** value.
 5. Click **Save** and close the dialog.
- From the **Natural Disturbance** menu, select **Contagion** and then **Disturbance History Scenario**.



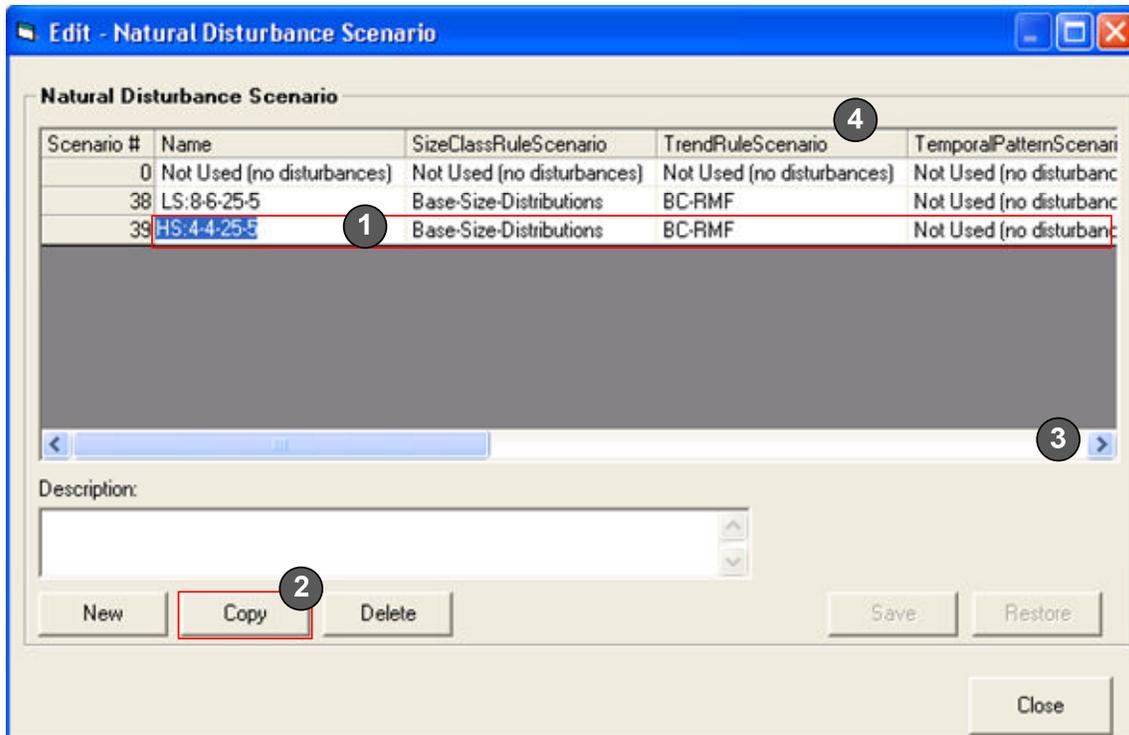
1. Select a pre-existing scenario name.
2. Choose to **Copy** the scenario.

Enter a name for the new disturbance history scenario. A standard is to indicate the knapweed spread rate, spurge spread rate, knapweed introductions from outside the landscape and spurge introductions from outside the landscape.

E.g. “HS-4-4-25-5” indicates that this is considered the high spread scenario and uses a knapweed spread rate of 0.04, spurge spread rate of 0.04, 25 knapweed introductions and 5 spurge introductions.

3. Click on a natural disturbance group to modify its spread rate.
4. Select a new spread rate from the **Spread Distance Distribution** parameter.
5. To modify the number of new introductions from outside of the landscape, enter a new value for the **New Starts** parameter.
6. Click to **Save** these changes and close the dialog.

- From the **Natural Disturbance** menu, select **Natural Disturbance Scenario**.



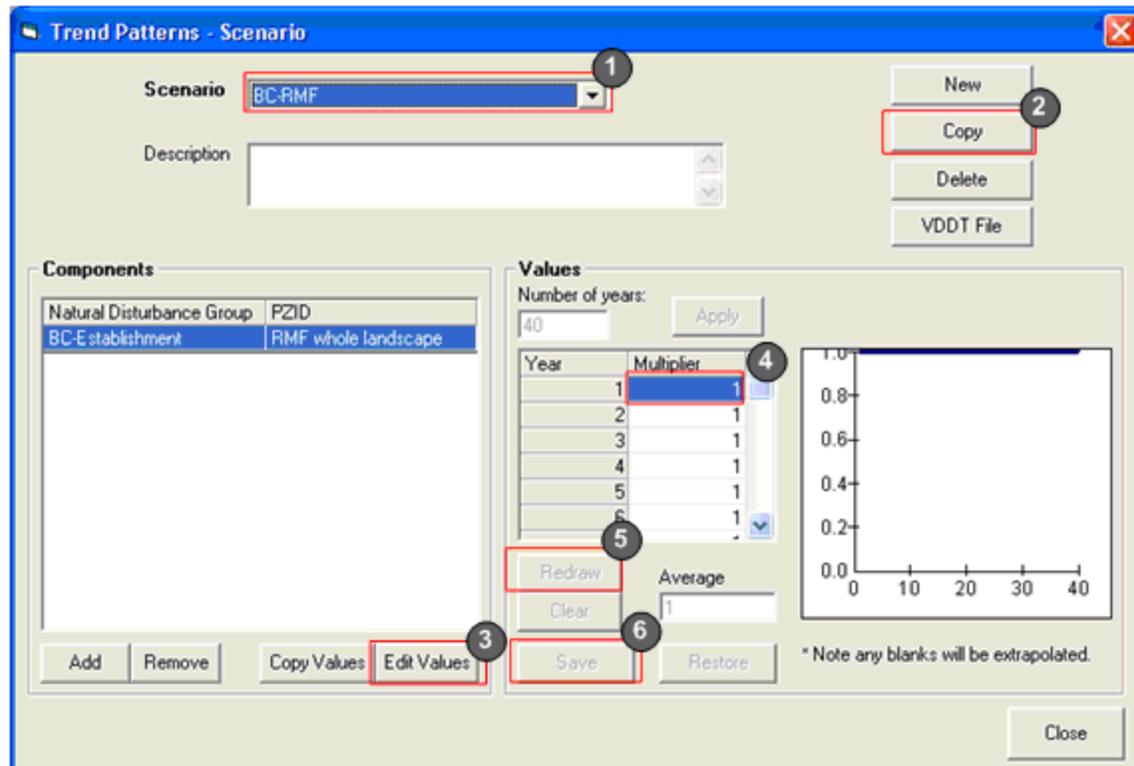
1. Click in the Name column of an existing scenario.
 2. Choose to **Copy** the scenario. Give the scenario a new name.
 3. Scroll to the right of the dialog. Click in the **DisturbanceHistoryScenario** column on the newly created scenario record. From the drop-down, select the desired disturbance history scenario (presumably that which was just created in the previous set of steps).
 4. Scroll back to the left of the dialog. Confirm that the **TrendRuleScenario** is set appropriately for biocontrol on or off (refer to the Biocontrol section of this document).
 5. Repeat steps 1 to 4, but this time for the low spread scenario.
- Close the dialog and refer to the General Procedures section of this document to create a new run scenario and run control which uses this Natural Disturbance scenario (you have just created a new option for the Disturbance drop-down on the Main Components tab).

Turn biocontrol off or on

Follow these instructions to change biocontrol settings.

- From the **Natural Disturbance** menu, select **Variability | Trend**.

If a “No-BC” scenario already exists, skip to the second set of instructions about the Natural Disturbance Scenario. Otherwise, proceed to step 1 below.

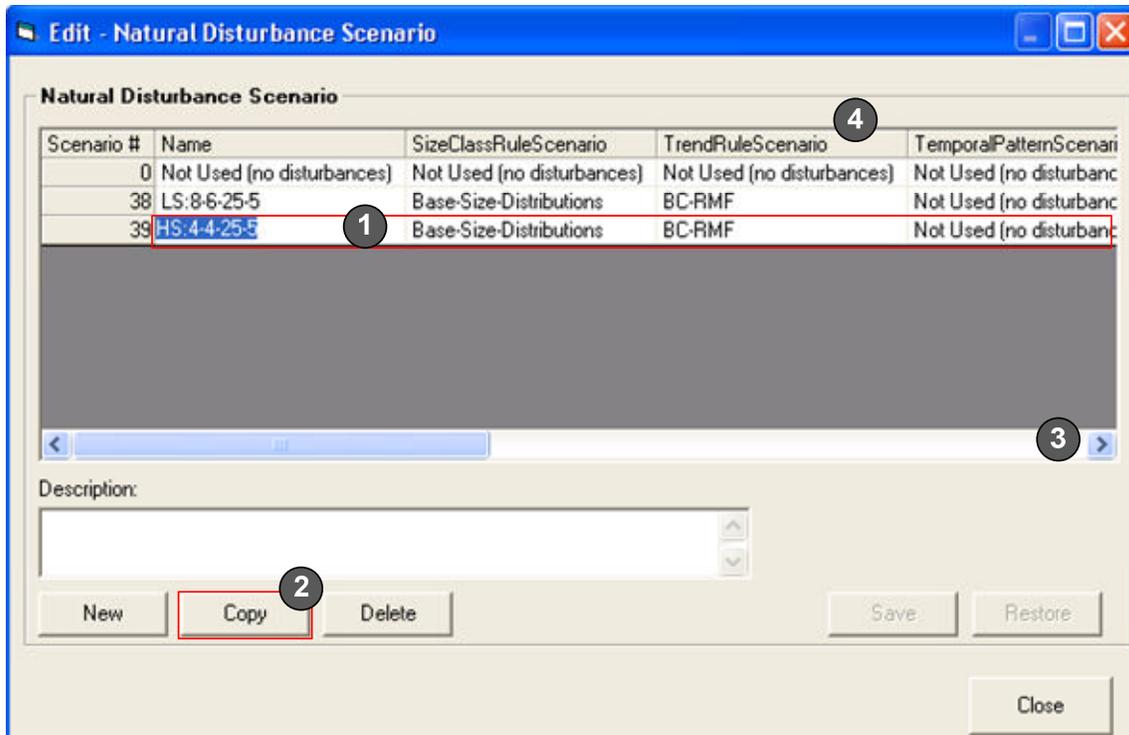


1. Select the existing BC scenario (eg. “BC-RMF”)
2. Choose to **Copy** the scenario.
3. Choose to **Edit Values**. The Values section of the dialog will become active.
4. Click in the first row of the **Multiplier** column and type **0**.

Enter 0 for all rows (years). Use the down-arrow key to quickly move to the next row.

5. Click to **Redraw** the graph. Check that the line draws at 0 for all years.
6. Click to **Save** these changes.
7. Close the dialog.

- From the **Natural Disturbance** menu, select **Natural Disturbance Scenario**.



1. Click in the Name column of the existing HS (high spread) scenario.
2. Choose to **Copy** the scenario.

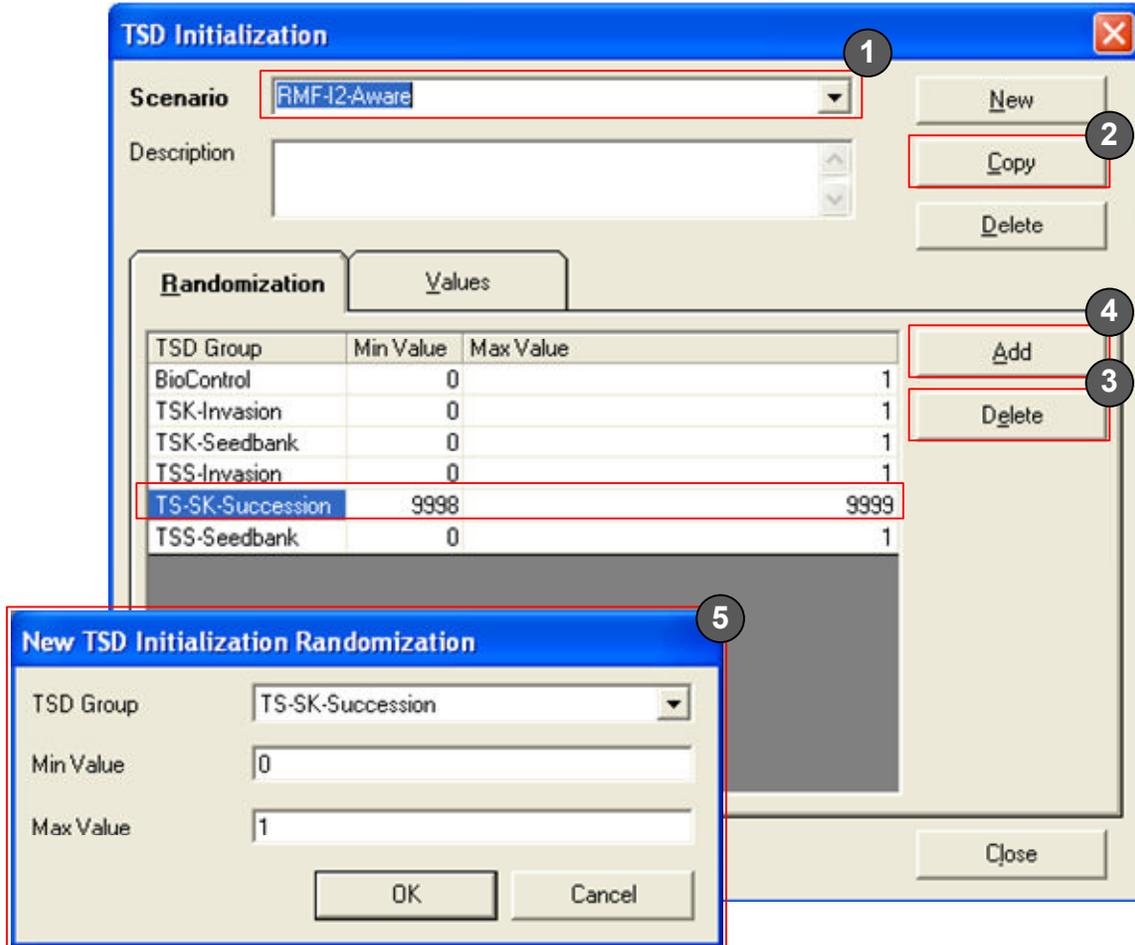
Give it the same name as the scenario being copied but add “-No-BC” to the name (e.g. “HS:4-4-25-5-No-BC”)

3. Scroll to the right of the dialog. Confirm that the desired **DisturbanceHistoryScenario** is selected (refer to the Spread Rate section of this document).
 4. Scroll back to the left of the dialog. Click in the **TrendRuleScenario** column on the newly created scenario record. From the drop-down, select the “No-BC” option (the option may be named differently but it should still indicate that there is no biocontrol).
 5. Repeat steps 1 to 4, but this time for the low spread scenario.
- Close the dialog and refer to the General Procedures section of this document to create a new run scenario and run control which uses this Natural Disturbance scenario (you have just created a new option for the Disturbance drop-down on the Main Components tab).

Create an I1-Aware model

Follow these instructions to create an I1-Aware model.

- From the **Advanced** menu, select **TSD Initialization**.



6. Select the existing I2-Aware scenario.

7. Choose to **Copy** the scenario.

Enter a name for the copied scenario. A standard is to use:

[landscape prefix] – “I1-Aware”

8. On the **Randomization** tab, select the “TS-SK-Succession” record and click **Delete**.

Say yes to the warning dialog.

9. Click **Add**.

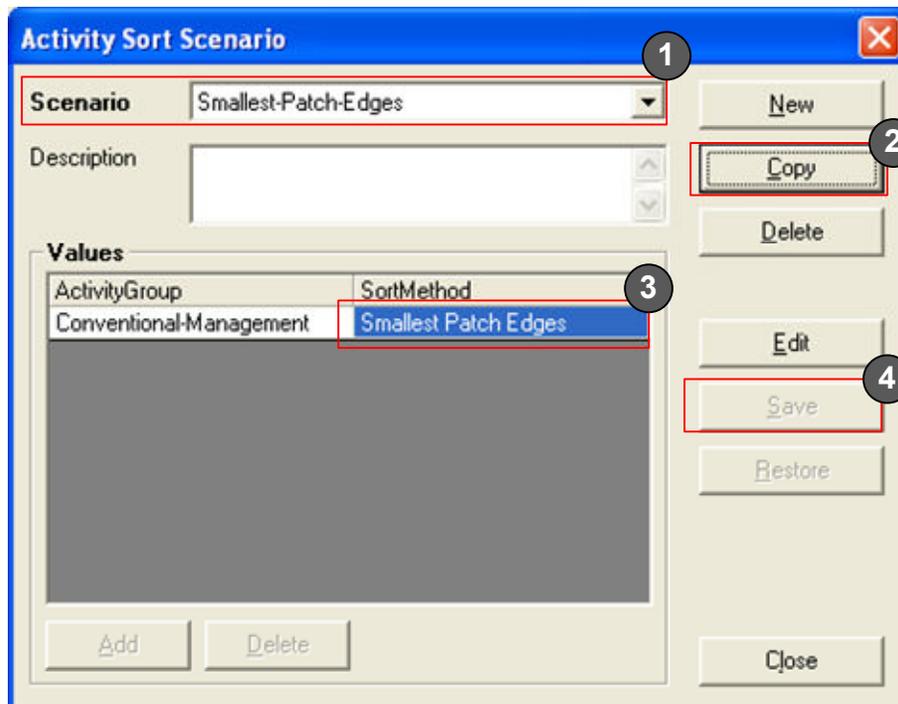
10. Select the **TSD Group** “TS-SK-Succession”. Enter “0” for the **Min Value** and “1” for the **Max Value**. Click **OK**.

- Close the dialog and refer to the General Procedures section of this document to create a new run scenario and run control which uses this TSD Initialization scenario (you have just created a new option for the TSD Initialization drop-down on the Advanced Components tab).

Change the activity sort method

Follow these instructions to run a simulation with a different activity sort method.

- From the **Management** menu, select **Activity Sort Methods**.



1. Select the “Smallest-Patch-Edges” scenario.

2. Choose to **Copy** the scenario.

Enter a name for the copied scenario (e.g. “Large-patch-edges”).

3. After naming the copied scenario, the dialog automatically enters edit mode.

Select the desired **Sort Method** from the drop-down. For a large patch edges scenario, select the sort method “Biggest patch edges”.

4. Click to **Save**.

- Close the dialog and refer to the General Procedures section of this document to create a new run scenario and run control which uses this activity sort method

scenario (you have just created a new option for the Activity Sort Method drop-down on the Management Components tab).

Change the control effectiveness

Refer to the General Procedures section of this document to create a new run scenario and run control which uses the desired control effectiveness transition rules. 95% control effectiveness pathways are available in the RMF and CV templates. 95% control effectiveness pathways were not developed for the MGP landscape.

Processing outputs

The general steps for processing TELSA outputs are as follows:

1. Import and archive the results – import the TELSA output CSV files into the TELSA database. Store the completed database in a folder of archived completed runs.
2. Query the results from the TELSA database into Excel – run a series of SQL queries in Access and copy/paste the results into Excel.
3. Create pivot charts of the results in Excel for general exploration of the results.
4. Copy the results from the simple results workbook into the Economic Analysis workbook.
5. Run a VBA procedure to query the TELSA database for map results.

Importing and archiving the results

1. Open the **Run Controls** dialog and confirm that the run shows “Done”.
2. Note the run end time and update **RunList** excel file.
3. Close the TESLA DB editor.
4. Navigate to C:\TELSADB and rename the template database from “Run-Ready” to “DONE”. Remove the word “TEMPLATE” from the name and replace it with the run that just completed.

For example, change:

“RMF-MGMT-TEMPLATE-2300HA-2010-02-02-TreatDelay-Run-Ready”

to

“RMF-MGMT-HS70-2300HA-05D-2010-02-02-TreatDelay-DONE”

5. Open the database in Access.
6. Choose **File | Get External Data | Import**
7. In the browse dialog, navigate to C:\TELSA\Output and choose **Text Files (*.txt, *.csv, *.tab, *.asc)** from the ‘Files of Type’ dropdown.
8. Double click on the ‘**Disturbed Polygon Output**’ file.
9. The import text wizard opens. Hit **Next** (with delimited selected), hit **Next** (with comma selected and first row contains field names unchecked), select to **import to an existing table** and type **DisturbedPolygonOutput** into the box, hit **Next**, hit **Finish**. The bar at the bottom right will show you the progress.
10. Hit OK to the finished message box that comes up.

- Repeat steps 11 to 15 but for the state output file. The table to import to in step 14 is **StateOutput**.

The StateOutput results will take much longer to import than the DisturbedPolygonOutput results.

- From **Tools | Database Utilities**, select to **Compact and Repair Database**.
- Close the database and zip it up.
- Place the database in a folder archive of “Completed Runs”.
- If you are going to proceed to querying results immediately, leave the unzipped database in your C:\TELSADB, otherwise delete it and retrieve it from the Complete Runs folder when you are ready to query the results.

Querying the results

- Open a new excel document. **Rename** sheets 1, 2 and 3 to: *SimpleAreaInvaded*, *StateArea*, *AreasTransitioning*
- Unzip the desired database to your computer and open it in Access.
- At the left, click **Query**. Start a new query in design view. Close the **Show Table** dialog.
- Click the **SQL** button at the top left or right click at the top of the query window to select SQL view.
- Now you will copy and paste SQL from 3 text files. You can reuse the same SQL window for each query and there is no need to save the query in Access when you are finished.

The 3 output queries to run are:

- 1 SimpleAreaInvaded.txt*
- 2 StateArea.txt
- 3 AreaTransitioning.txt

*Don't select the first line that says "--excludes SS, US, SU".

- Copy the results of each query to the appropriate sheet in Excel.
- Next, run these queries and paste results onto the appropriate Excel sheet:

- 1 SimpleAreaInvaded_InitialConditions.txt (paste results to *SimpleAreaInvaded*)*
- 2 StateArea_InitialConditions.txt (paste results to *StateArea*)*

If you are querying the Roaming Treatments database use the following two queries instead of the two specified above:

- 1 SimpleAreaInvaded_InitialConditions_SS.txt
- 2 StateArea_InitialConditions_SS.txt

After pasting into Excel, update the scenario name from “InitialConditions” to the scenario name for which you are extracting results.

* Note that for CV, the results of these two queries need to be in the Excel file once for each MonteCarlo. These queries are set up for MC 1. The results are identical for all monte carlos, so copy the MC 1 initial condition results and re-paste 4 additional times (updating the MC value each time).

8. Ignore the MapStateOutput queries and the OutputMapResults.bas file for now.
9. If you will be starting a new results workbook in the *Preparing the Area Based Results* section, save this file as “[Landscape]-Area-Based-Results-[YYYY]-[MM]-[DD]”. If you will be adding these results to an existing results workbook, save it as some temporary name (in this case, this workbook is the one to open in step 1 of *Adding results to an existing Excel workbook*).
10. Move on to *Preparing the Area Based Results*.

Preparing the area based results

Starting from an empty Excel workbook

1. Open the Excel file where you saved the Access query results.
2. The SimpleAreaInvaded and StateArea sheets, rename the field **Name** to **Scenario**.
3. Select the block of results on the SimpleAreaInvaded sheet.

Scenario				
A	B	C	D	E
Scenario	MonteCarloID	Year	AreaHA	
1	CV-HS-70-63HA	1	10	385.5917609
2	CV-HS-70-63HA	1	20	1021.942052
3	CV-HS-70-63HA	1	30	2202.976428
4	CV-HS-70-63HA	1	40	4020.036972
5	CV-HS-70-63HA	2	10	382.7076321
6	CV-HS-70-63HA	2	20	1109.663612
7	CV-HS-70-63HA	2	30	2502.405162
8	CV-HS-70-63HA	2	40	4542.625548
9	CV-HS-70-63HA	3	10	441.6724787
10	CV-HS-70-63HA	3	20	1264.871143
11	CV-HS-70-63HA	3	30	2864.459083
12	CV-HS-70-63HA	3	40	5222.144667
13	CV-HS-70-63HA	4	10	374.600869
14	CV-HS-70-63HA	4	20	1082.443461
15	CV-HS-70-63HA	4	30	2519.643182
16	CV-HS-70-63HA	4	40	4875.145642
17	CV-HS-70-63HA	5	10	414.2156286
18	CV-HS-70-63HA	5	20	1248.901897
19	CV-HS-70-63HA	5	30	2739.312333
20	CV-HS-70-63HA	5	40	5071.748898
21	CV-HS-70-63HA	1	0	136.2657925
22	CV-HS-70-63HA	2	0	136.2657925
23	CV-HS-70-63HA	3	0	136.2657925
24	CV-HS-70-63HA	4	0	136.2657925
25	CV-HS-70-63HA	5	0	136.2657925
26	CV-HS-70-63HA	5	0	136.2657925

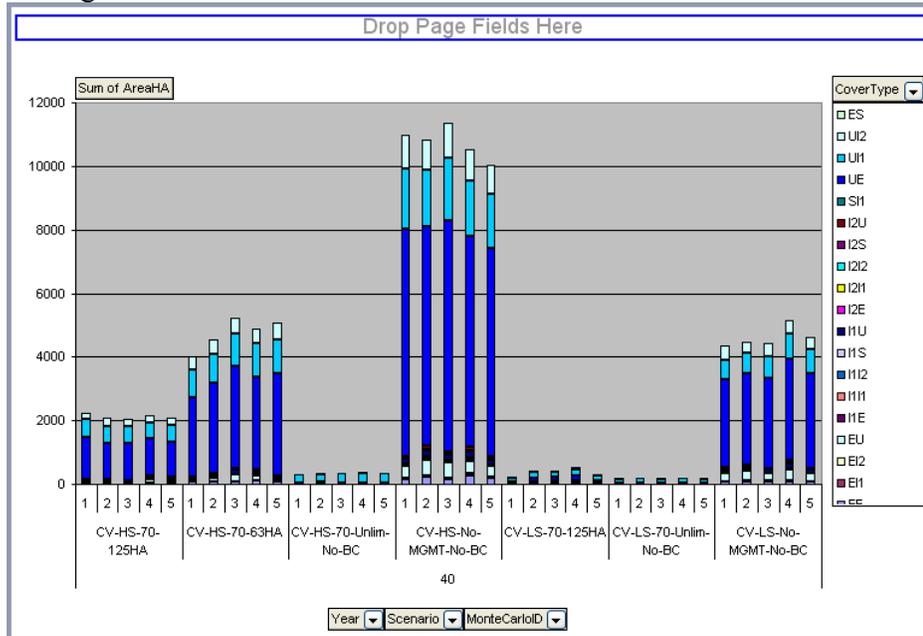
4. From the **Data** menu, select **PivotTable and PivotChart Report**.
5. Leave the top radio button on its default, but in the bottom section choose to create a **PivotChart report (with PivotTable report)**. Click **Next**.
6. Confirm that the result range is correct and click **Next**.
7. Choose to put the PivotTable report on a **new worksheet**. Click **Finish**.
8. Rename the Chart1 sheet to SimpleAreaInvadedChart.
9. Rename the Sheet1 sheet to SimpleAreaInvadedTable.

Arranging the pivot chart fields

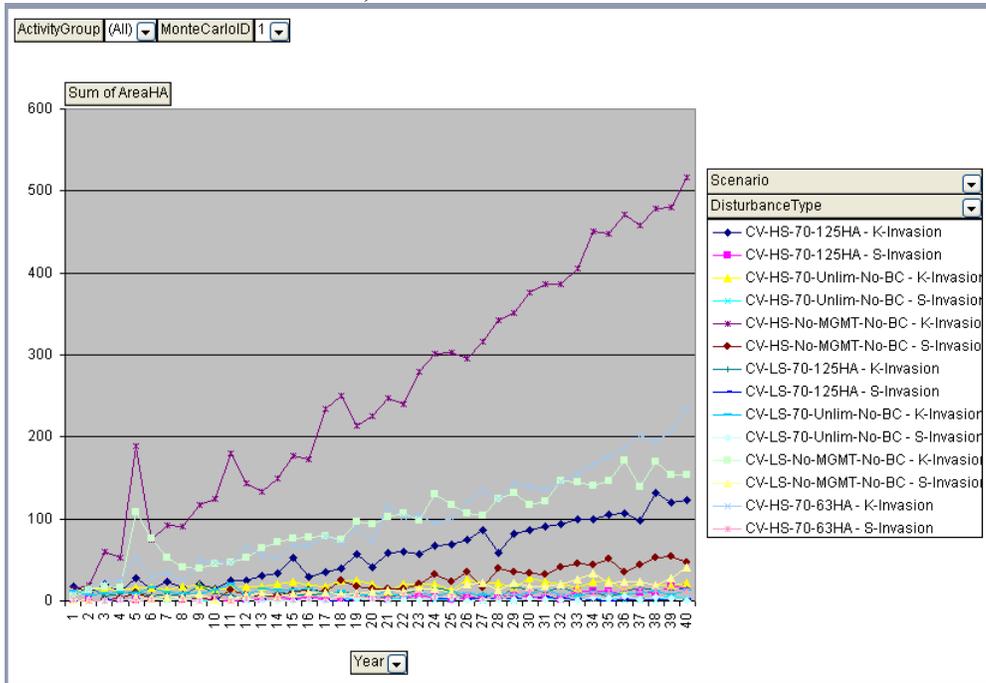
The following are specific instructions for the CV SimpleAreaInvadedChart. If you are creating a different chart, skip to step 17.

10. Click on the chart sheet. From the PivotTable Fields window, drag **Scenario** to the **Drop Series Fields Here** section.
11. Drag **Year** to the **Drop Category Field Here** section.
12. If these are CV results, drag **MonteCarloID** to the bottom next to year as well. If these are RMF or MGP results, drag MonteCarloID to the **Drop Page Fields Here** section at the top.
13. Drag **YearHA** to the chart section, **Drop Data Items Here**. Confirm that the top left of the chart shows **Sum of AreaHA** (if not, double click on whatever it says and select **Sum**).
14. If there is a title on the chart, delete it.
15. Click on the SimpleAreaInvadedTable sheet.
16. Choose **Format | Sheet | Hide**.
17. Repeat steps 3 to 16 for the StateArea and AreaTransitioning sheets (but skip steps 10 to 12 and instead arrange the fields as show below).

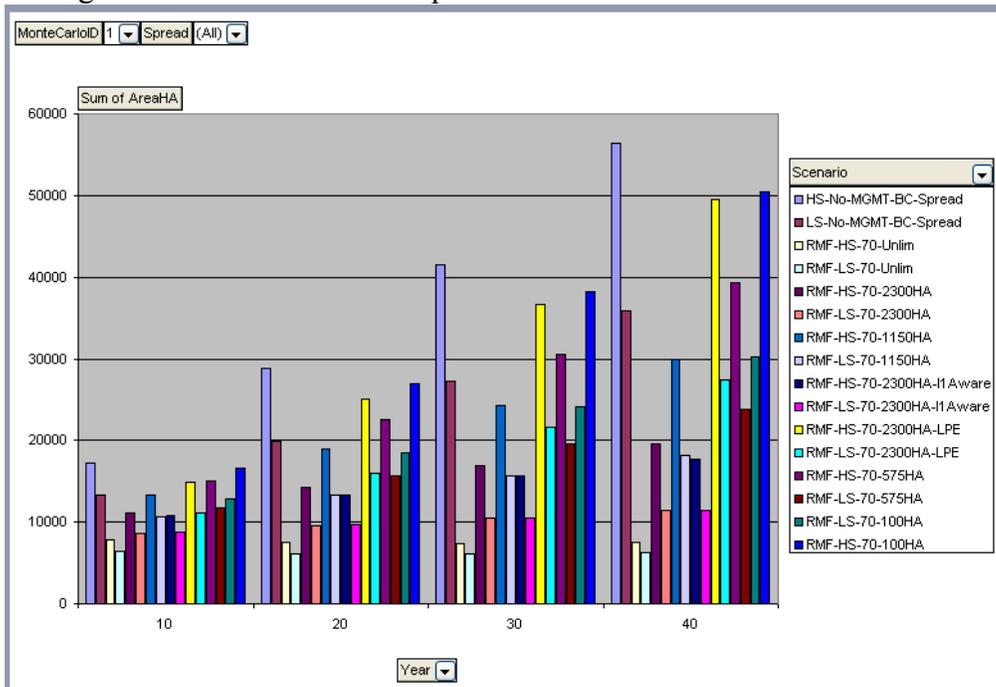
Arrange the CV StateAreaChart fields like this:



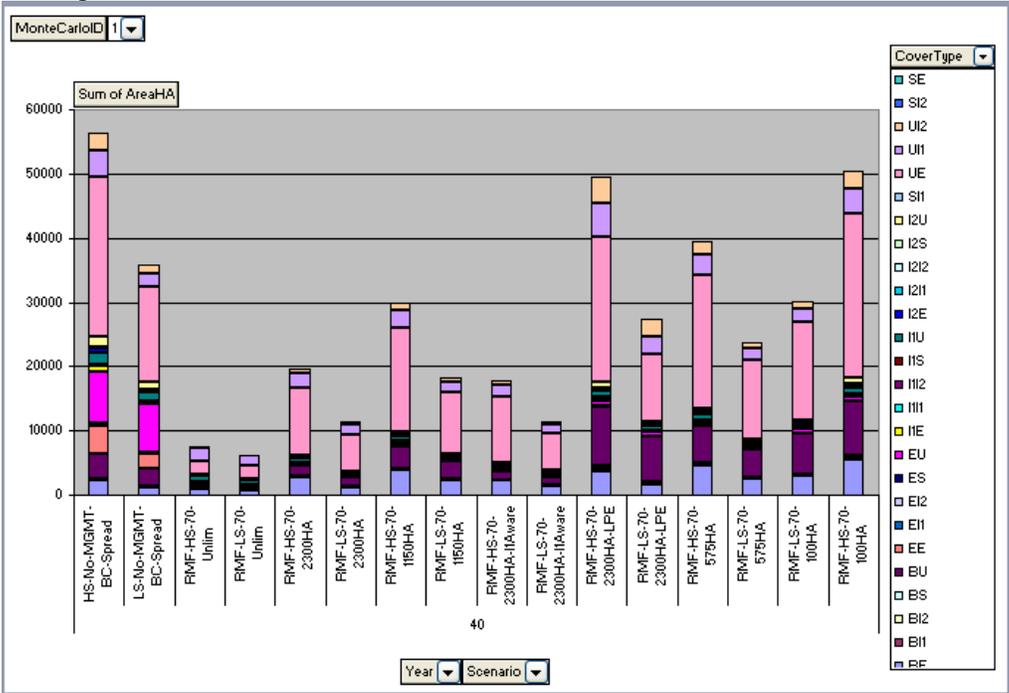
Arrange the **CV AreaTransitioningChart** fields like this:
 (for this chart go to **Chart | Chart Type** to choose the **Line** (with markers displayed at each data value) option).
 (also from the **DisturbanceType** dropdown, uncheck **Select All** and scroll to check on **K-Invasion** and **S-Invasion**).



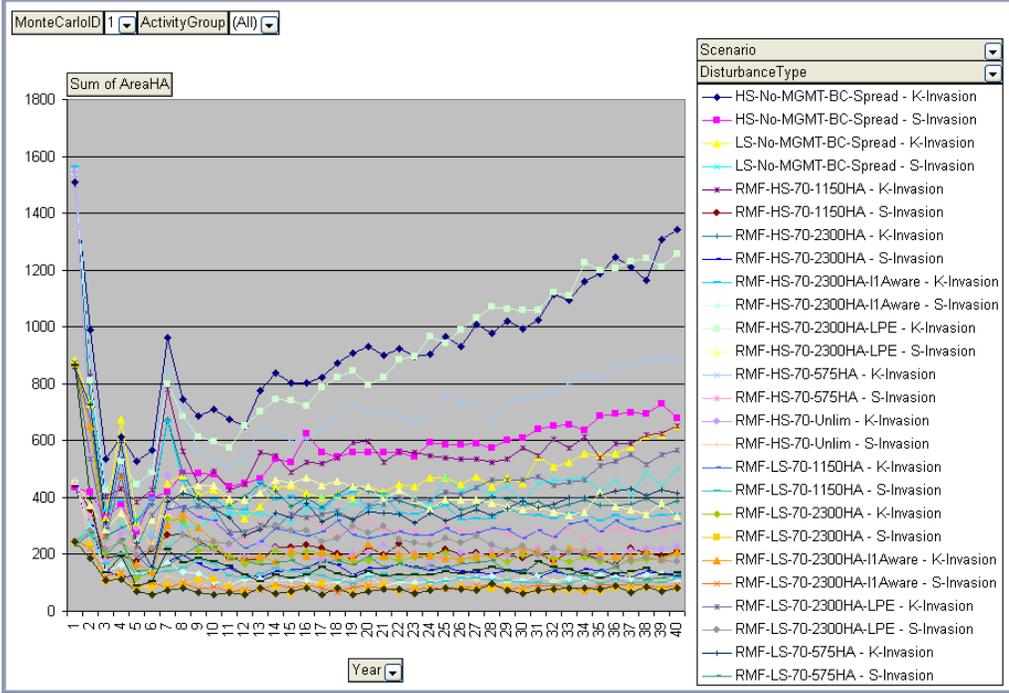
Arrange the **RMF** and **MGP** SimpleAreaInvadedChart fields like this:



Arrange the **RMF** and **MGP** StateAreaChart fields like this:



Arrange the **RMF** and **MGP** AreaTransitioningChart fields like this:
(for this chart go to **Chart | Chart Type** to choose the **Line** (with markers displayed at each data value) option).
(also from the **DisturbanceType** dropdown, uncheck **Select All** and scroll to check on **K-Invasion** and **S-Invasion**).



18. Save the workbook. If you will be adding more results to this workbook (in which case you would continue next time at the *Adding results to an existing Excel workbook* section – this workbook being your “results” workbook), keep the local copy on your machine and skip step 19.
19. If this workbook contains a complete set of results, zip it up and archive it in a folder of “Completed Results”.

Adding results to an existing Excel workbook

1. Open the Excel file where you saved the Access query results in step 9 of the *Querying the results* section (consider this the “staging” workbook).

This “staging” workbook is used as an intermediate/temporary place to collect results from the TESLA database and clean up cell formatting (e.g. turn off “wrap text” for text alignment) before copying the results into the final results workbook. This staging file can be deleted after the results have been copied into the results workbook.

2. Open the existing Excel workbook (one that already has pivot tables built) to which you will be adding results (consider this the “results” workbook).
3. From the results workbook, choose **File | Save As** and update the file name to the current date.
4. Copy the block of AreaTransitioning results (without the column headings) from the staging workbook.
5. In the results workbook, select the first row of AreaTransitioning data underneath the column headings (A2:H2 for AreaTransitioning) and right-click to **Insert Copied Cells**. Choose to **Shift Cells Down**.

You may eventually get an error when you try to insert the records on the AreaTransitioning sheet. This happens when you run out of space in the Excel sheet due to the ~65000 record limit. Each run has around 6000 records for the AreaTransitioning results. If you are unable to insert more records, you will have to start a new results workbook or add a second AreaTransitioning sheet/chart.

6. Repeat steps 3 and 4 for data on the StateArea and SimpleAreaInvaded sheets.
7. Now click on each chart sheet and from the **Pivot Table toolbar** click to **Refresh Data** (the red exclamation mark).

The reason we paste results the way we did (using **Insert Copied Cells** at the top of the results) as opposed to pasting results at the bottom is to avoid having to recreate the pivot tables each time we add new results to the workbook. A pivot table remembers the block of cells that it references and if we paste at the bottom, those results fall outside of the referenced cells. If we insert into the top of the sheet, the referenced cells are automatically expanded to include the new rows.

8. Save the workbook, zip it up and place in a “Completed Results” archive folder.

Preparing the economic results

1. Copy/paste the AreaTransitioning data out of the Area Based Results workbook onto the *TotalAreaTreatedByStateTypeYear* sheet of the economics workbook. Select 3 extra rows to the right of the AreaTransitioning data. Insert the copied data at the top of the *TotalAreaTreatedByStateTypeYear* sheet (as described previously to maintain the pivot table references).
2. Copy the MaxType, CoverMult, and Area Treated (HA) formulas from a previously existing row of data and paste/fill this formula into the new rows of data.
3. Repeat steps 1 and 2 for the StateArea data, pasting to the *TotalAreaByState* sheet in the economics workbook.
4. Switch to the *Area-Invaded-Table* and *Area-Treated-Table* sheets. Note the existing column position of results for the existing scenarios.
5. Refresh these two tables – ensure that the column position of pre-existing results does not change. Note the new column letters for the newly added scenario results.
6. Switch to the *NPVCalculation* sheet.
7. For as many new scenarios as you are adding to the workbook, insert new columns to the right of the invaded HA section (invaded hectares section which reads from the Area-Invaded-Table).
8. Copy the formulas from a pre-existing column of data into the new columns.
9. Update the yellow highlighted formulas using the column positions which you noted in step 5. The yellow highlighted rows contain a formula which references the Area-Invaded-Table – ensure that the referenced table column and row is correct for the given year.
10. Add new columns to the right of the “Not Invaded” section (the same number of new columns you added to the invaded HA section – minus any NMGT scenarios).
11. Fill in the new columns with formulas from a pre-existing column of data (drag/copy to the right). This formula is:

([no-mgmt area invaded] – [area invaded] converted to acres).

12. Update the reference to the No-Management area invaded column appropriately (high spread or low spread) for the year 1 row. Ensure the formula is referencing the correct scenario/column from the invaded HA section and row (year) then copy the updated formula down to year 40.
13. Add new columns to the right of the Nominal \$ retained fees section (the same number of columns added in step 8).
14. Fill in the new columns with formulas from a pre-existing column of data (drag/copy to the right). This formula is:

$([\text{grazing fee}] * [\text{area not invaded}] * [\text{carrying capacity}])$.

15. Ensure that the [area not invaded] column is referencing the correct scenario/column from the not invaded section and row (year).
16. Add new columns to the right of the spray cost section (the same number of new columns you added in steps 8 and 11).
17. Fill in the columns with formulas from a pre-existing column of data (drag/copy to the right). This formula is:

$(-1 * (([\text{Established treated area}] * [\text{Established spray cost}]) + ([\text{I1 treated area}] * [\text{I1 spray cost}]) + ([\text{I2 treated area}] * [\text{I2 spray cost}]))$ converted to AC)

18. This formula references the *Area-Treated-Table*. Carefully update the treated area column and row references for the year 1 row then copy the updated formula down to year 40.
19. For each new scenario, format a new column at the bottom of the table and update the formulas to summarize results for the new scenarios:

Present Values
Ceiling
Spread Rate
I1 Aware?
Total NPV
BCR

20. Add this new block of results to the *Parameters* sheet. This sheet references the results block on the *NPV Calculation* sheet – update the references accordingly
21. Add the results to the tables for the graphs (may be hidden behind the graphs) and update the source data of the graphs appropriately.
22. Save, zip and archive the workbook in a “Completed Results” folder.

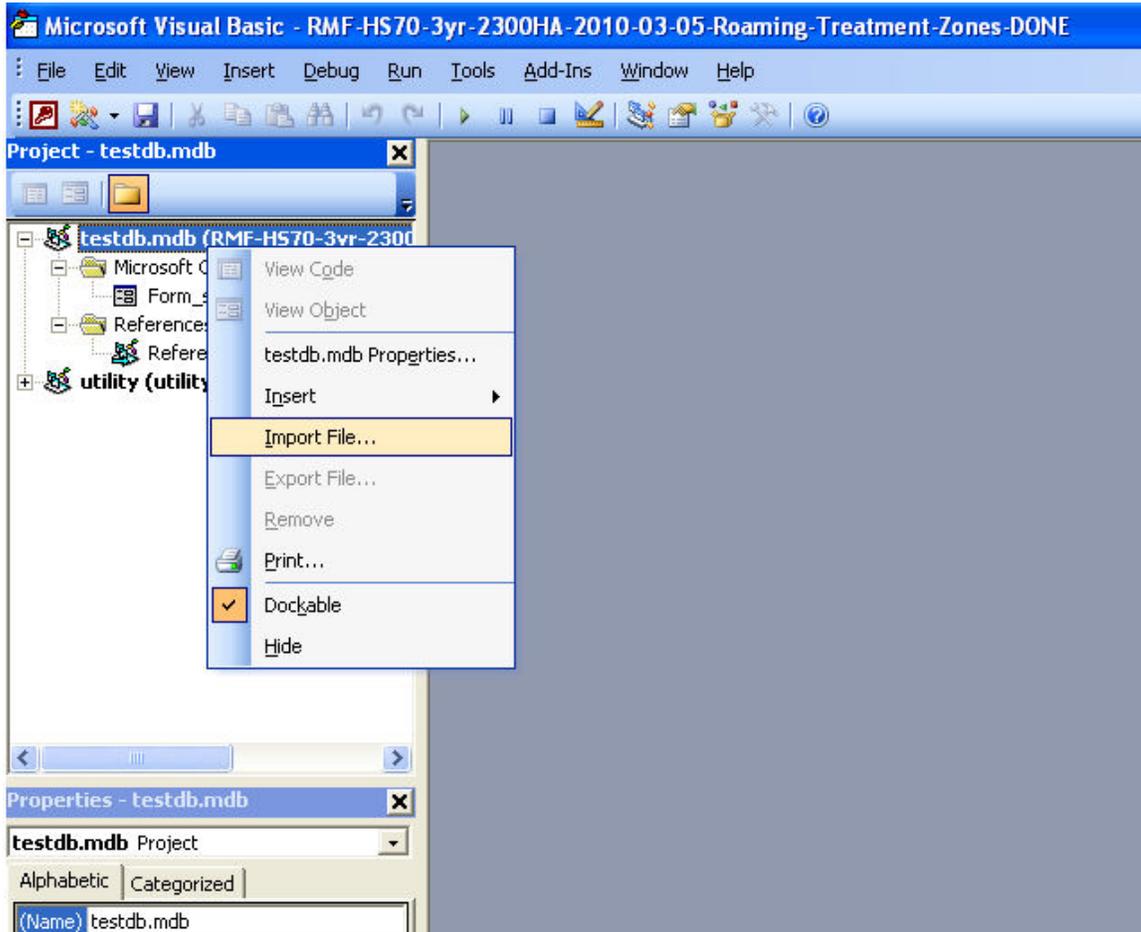
The CV results workbook calculates results for the 5 monte carlos then averages them in the final results block. Pay special attention when updating formula references. Copy the formulas to the right separately for each monte carlo section (as opposed to copying the first monte carlo formulas to the right, and then copying the formulas down to the result of the monte carlos). Pay particular attention to the Area-Treated-Table references in the Spray Cost formula section. The additional monte carlos complicate this table – so ensure the formula properly references the Year 1 row in the Area-Treated-Table a given monte carlo.

Preparing the mapping results

1. Create an Access database named “[Landscape prefix]_Map_Results”. Create this database in the same folder as the TESLA database.
2. Run the SQL query stored in MapStateOutput_Year0.txt to extract the initial conditions mapping results.

If you are extracting results from a roaming treatments database, use the query MapStateOutput_Year0_SS.txt instead of the one specified above.

3. Update the Scenario name from “InitialConditions” to the scenario for which you are extracting results.
4. Save these results as a table in the map results database. Keep the table name to 8 characters or less.
5. In the TESLA database, hit ALT-F11 to open the VBA code editor.
6. Right-click on the project table of contents item and choose to Import File.



7. Import the file “OutputMapResults.bas”
8. Expand the Modules item in the table of contents to reveal the newly imported module “OutputMapResults”. Double-click on the module.

9. Under the “USER DEFINED parameter” section of the code update the **sDatabase** variable to the name of the database you created in step 1. The code assumes that the map results database is positioned in the same folder as the TELSA database – make sure this is the case.
10. Update the variables **sRun** and **IRunSetID** to the RunID of the scenario for which you wish to extract results – look this up from the **Batch Controls** table where Status is “Done”. Specify sRun as a two digit number even if the Batch Controls RunID is only one digit (e.g. for RunID of 1, set sRun = “01” and IRunSetID = 1).
11. If you are extracting results for a CV database (which has multiple monte carlos) set bMCon = True, otherwise leave it as False.
12. Check that the Map Results database which you specified in step 9 is closed. If not, close it.
13. Go to the **Run** menu and select “Run Sub/UserForm”. The code will now query the TELSA database and write the results into the Map Results database you created in step 1.
14. When the code completes (“Export complete” message box appears), close the VBA editor (save the changes if you wish) and close the TELSA database.
15. Open the Map Results database to examine the tables which were just created.
16. Refer to the State-Class-Map-Instructions.doc for a given landscape to prepare the maps in ArcMap using the results which you just extracted.