ADDITIONAL TOPICS

DETERMINING GRID CELL SIZE

All data sets that are derived and used in analysis in NatureServe Vista are in raster format. (For an explanation of raster data, please see Environmental Systems Research Institute [ESRI] help files). The grid cell size (pixel size) to be used as the default for rasters throughout the project is specified in the Project Properties window. While it is possible to select a different cell size for each NatureServe Vista analysis, it is recommended that the project default be used unless a different size is warranted by particular circumstances (e.g., having a large input data set and limited hard disk space). In such cases, it is important to select the grid cell size that will produce the most reliable results for the analysis. In determining cell size there are several considerations, listed and then described in detail below.

- Resolution of inputs
- Snap raster
- Space requirements
- Processing time

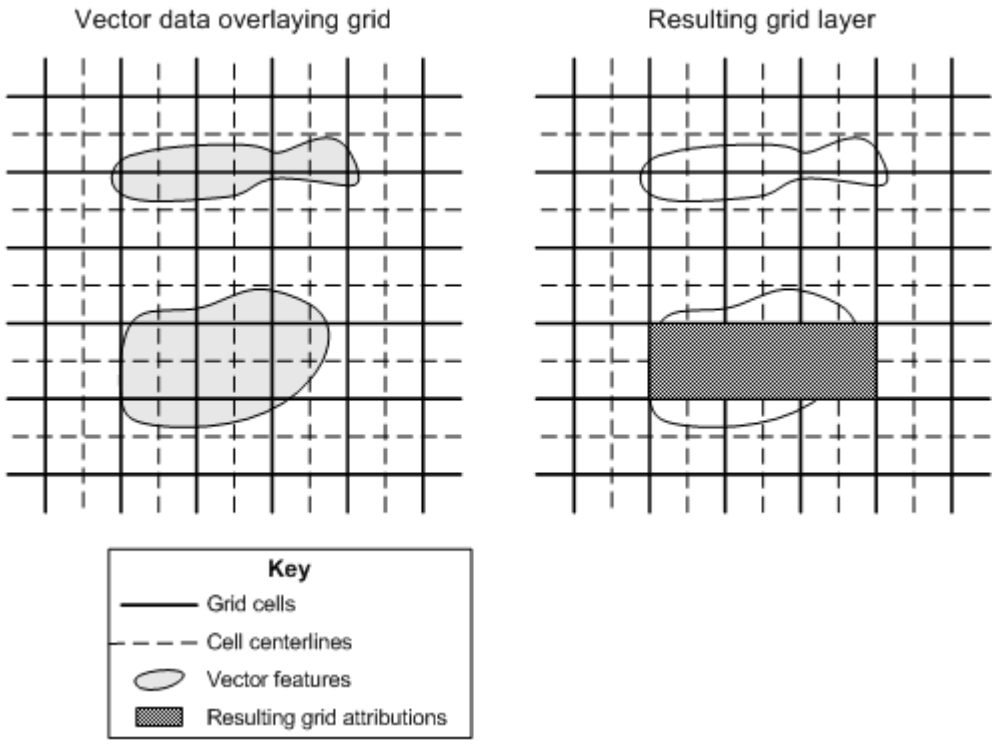
Resolution of inputs

No data set can be more precise and accurate than the original source data. If the input data have a cell size of 100 meters, it would be impossible for any derivative data set to be more precise than that 100 m. So, selecting a cell size smaller than this (i.e., <100 m) would cause unnecessary processing without increasing the reliability of the data. Similarly, if the input source data are in vector format, selecting a cell resolution that represents a scale more precise than the input data sets would result in unnecessary processing, and could falsely imply more precision than is actually represented in the data set.

On the other hand, selecting a cell size that is too large for input data can cause the ”loss" of information. When a vector layer is rasterized, it is possible for an entire vector feature to be positioned in the new grid such that it completely disappears from the data set. The process implemented by a GIS system to determine which cells will be attributed with a vector's value works like this:

- An imaginary line is drawn horizontally through the grid cells
- Any cell whose centerline is overlapped by a vector feature is attributed with that feature's attribute

The following example illustrates how a cell size that is too large for the input data can cause information to be unrepresented in the resulting raster. The upper polygon completely disappears from the resulting raster data set because of its size and position in the grid.



Snap raster

NatureServe Vista utilizes the snap raster functionality in ESRI's ArcView application to tie spatial data layers as closely as possible so that relationships can be maintained between the layers throughout analyses, and results will be reliable. To insure this, the same cell size as that in the snap raster, or an even subdivision of that size (a power of 2, i.e., 1/8, 1/4, 1/2, 2, 4, 8) should be used for layers in analyses. (See the section on Snap Raster for more details.)

Space requirements

Using a larger cell size means that fewer cells are required to cover the project area. Fewer cells correspond to less space required on the hard drive for each analysis. For example: Halving the cell size used for a data set may increase the disk space required to house it by up to 4 times (depending on storage type).

Processing time

Since using smaller cell sizes requires more cells to be used to cover a project area, the cell size directly affects the processing time required for each analysis. More cells mean longer processing time. A decrease in cell size can cause a dramatic increase in the time that it takes for an analysis to run.

Assessing space and time requirements for analyses

While it is very important that the results of analyses are as precise as possible, determining the cell size to be used for an analysis will likely be dependant to some degree on the speed of the processor and the space available on the computer to be used for running analyses, as well as on the cell size used for snap raster. The objective in selecting a cell size is to, then, balance the need for precision against the practical factors of disk space and processing speed.

There are different methods for determining the ”best” cell size to be used for a particular analysis, described below. It should be recognized, however, that because of the great variability in input data - both element distributions as well as land use and policy layers - used to develop rasters, using these methods may, at best, provide only a very rough estimate of the time and space requirements for the analysis using a particular cell size.

Conservation Value Analyses:

1. Determine the smallest feature in the distribution layers for elements to be included in the analysis that needs to be represented in the raster developed for the analysis. This will help to ensure that all the input data is represented in the resulting rasters.
2. Divide the area of that feature by 4, or its length by 2 if it is an arc.
3. Adjust this value slightly as needed for snap raster. This will be the cell size to be evaluated.
4. Develop an Element Conservation Value (ECV) layer for a representative element using this cell size and take note of the time required to finish processing.
5. Browse to the resulting layer on the computer hard drive and take note of its size.
6. Inspect the resulting layer to insure that occurrences were not "lost."

This method will provide a baseline cell size for the analysis. If the decision is made to use this cell size for the Element Conservation Value rasters to be included in a Conservation Value Summary (CVS), a rough calculation of the space and time required for developing the layers can be calculated as follows:

# of elements * baseline processing time

or

# of elements * baseline size of resulting raster

If the estimated time and/or space requirements for the analysis are impractical, increase the cell size and re-evaluate. The cell size that strikes an appropriate balance between precision and processing requirements is the size appropriate for use in the analysis.

Note that unless specifically set, a Conservation Value Summary will utilize the minimum cell size of the raster Element Conservation Value layers that are used as input. This size should only be changed if there are problems with disk space and/or processing time. In cases when the cell size is changed, it should be changed consistently for all Conservation Value Summaries that cover the same area.

Scenario Evaluations:

1. Determine the smallest feature in the distribution layers for elements to be included in the analysis, and the smallest planning unit on which decisions will be based (e.g., parcel), and then use the smaller of these two features. This will help to ensure that all the input data is represented in the resulting rasters.
2. Divide the area of that feature by 4, or its length by 2 if it is an arc.
3. Adjust this value slightly as needed for snap raster. This will be the cell size to be evaluated.
4. Define a scenario (land use and/or policy depending on the scenario evaluation to be performed) using this cell size and take note of the time required to finish processing.
5. Then evaluate the scenario using a single element, again taking note of the time required to finish processing.
6. Browse to the resulting layers on the computer hard drive and take note of their sizes individually.

This method will provide a baseline cell size for the analysis. If the decision is made to use this cell size for defining and evaluating scenarios, a rough calculation of the space and time required for each part of the analysis can be computed as follows:

Defining scenarios:

# of scenarios to be defined * baseline processing time for import process

or

# of scenarios to be defined * baseline size of resulting raster(s)

Evaluating scenarios:

# of elements * baseline processing time for evaluation * # of scenarios evaluated (considering different goal sets)

or

# of elements * baseline size of resulting raster(s) * # of scenarios evaluated (considering different goal sets)

The total estimated space and processing time for scenario evaluation analyses might then be calculated by summing the values for the separate scenario processes of defining and evaluating scenarios. Note that it may be complicated to determine accurate totals for scenario evaluations due to the fact that different numbers of elements can be evaluated with the same or different scenarios, using the same or different goal sets.

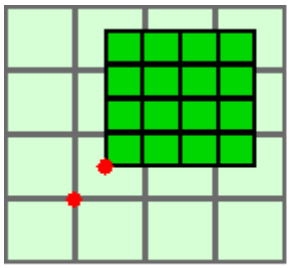
If the estimated time and/or space requirements for the analysis are impractical, increase the cell size and re-evaluate. The cell size that strikes an appropriate balance between precision and processing requirements is the size appropriate for use in the analysis.

It should be recognized that there can be great variability in the input data - both element distributions as well as land use and policy layers - used to develop rasters, and so using either of the above methods may, at best, provide only a very rough estimate of the processing time and space requirements for an analysis using a particular cell size.

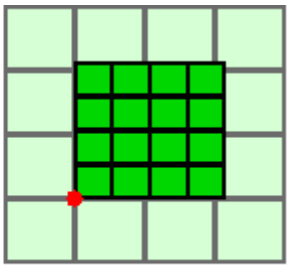
Snap Raster

Internally, all analyses in NatureServe Vista utilize layers in raster format. The information a user can designate for element distributions or scenario inputs, however, can be either in raster or vector format. (For information on raster and vector data, see the Environmental Systems Research Institute (ESRI) help files.) Vista converts all vector data layers received into raster layers before processing them during an analysis. This conversion can lead to the introduction of positional error. To minimize this error, Vista utilizes the snap raster functionality in ESRI's ArcView application.

It is important to tie the differing layers in space as closely as possible so that relative spatial relationships can be maintained throughout analyses and results will be reliable. To accomplish this, each imported layer is "snapped" to the raster layer designated in the **Snap Raster** field of the Project properties window. When a snap raster is utilized, the extents of an imported layer are essentially rounded off so that a corner falls exactly on a cell boundary of the snap raster, specifically the closest intersection of four cells in the snap raster, as illustrated below.

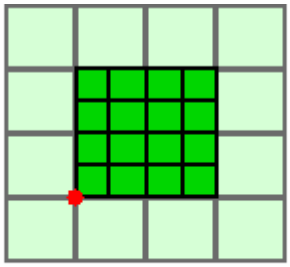


Layers associated without snap raster.



Layers aligned using snap raster.

While a snap raster improves the correspondence between different data layers, the results of analyses become even more reliable the closer the cell size designated for imported layers is to that of the snap raster. The best way to insure alignment of spatial data for analyses is to use the same cell size as the snap raster, or an even subdivision of that size (a power of 2, i.e., 1/8, 1/4, 1/2, 2, 4, 8) for imported layers, as illustrated below.



Layers aligned better using an even division of snap raster cell size.

If the snap raster and analysis cell sizes are the same, the layers will line up exactly even if the original extent of the data layer did not.

When selecting a snap raster, make sure that the cell size is appropriate for the project.

METADATA

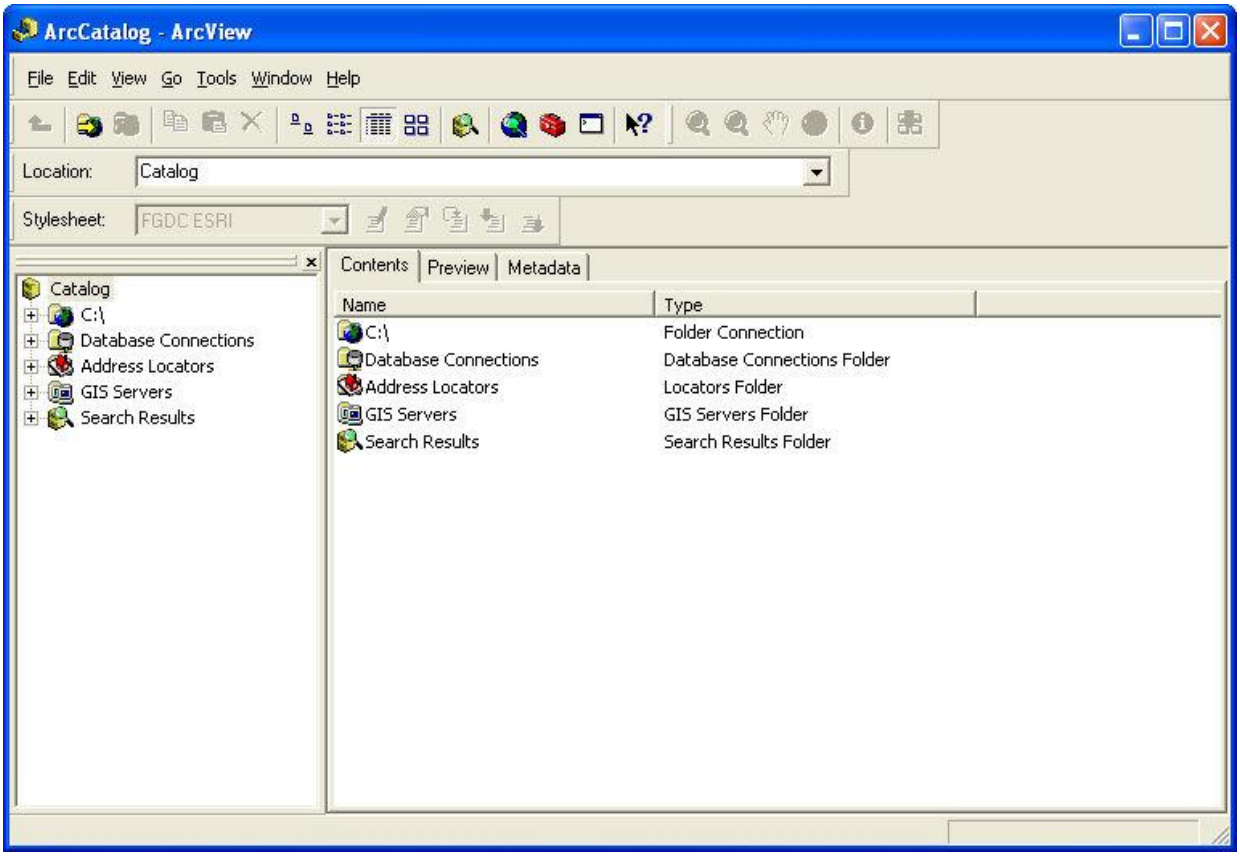
Metadata is data about data. More specifically, metadata provides a user of the data with information on all of the important characteristics of the data set (e.g., when it was created, what its limitations are, what attributes are stored in the data, etc).

The metadata created by Vista conforms to the metadata standards developed by the Federal Geographic Data Committee (FGDC), referred to as the FGDC Content Standard for Digital Geospatial Metadata (CSDGM). The CSDGM standard has been adopted by all federal agencies, and is quickly becoming the most widely-used and accepted metadata standard in the United States. (Additional information on the FGDC can be found at http://www.fgdc.gov.)

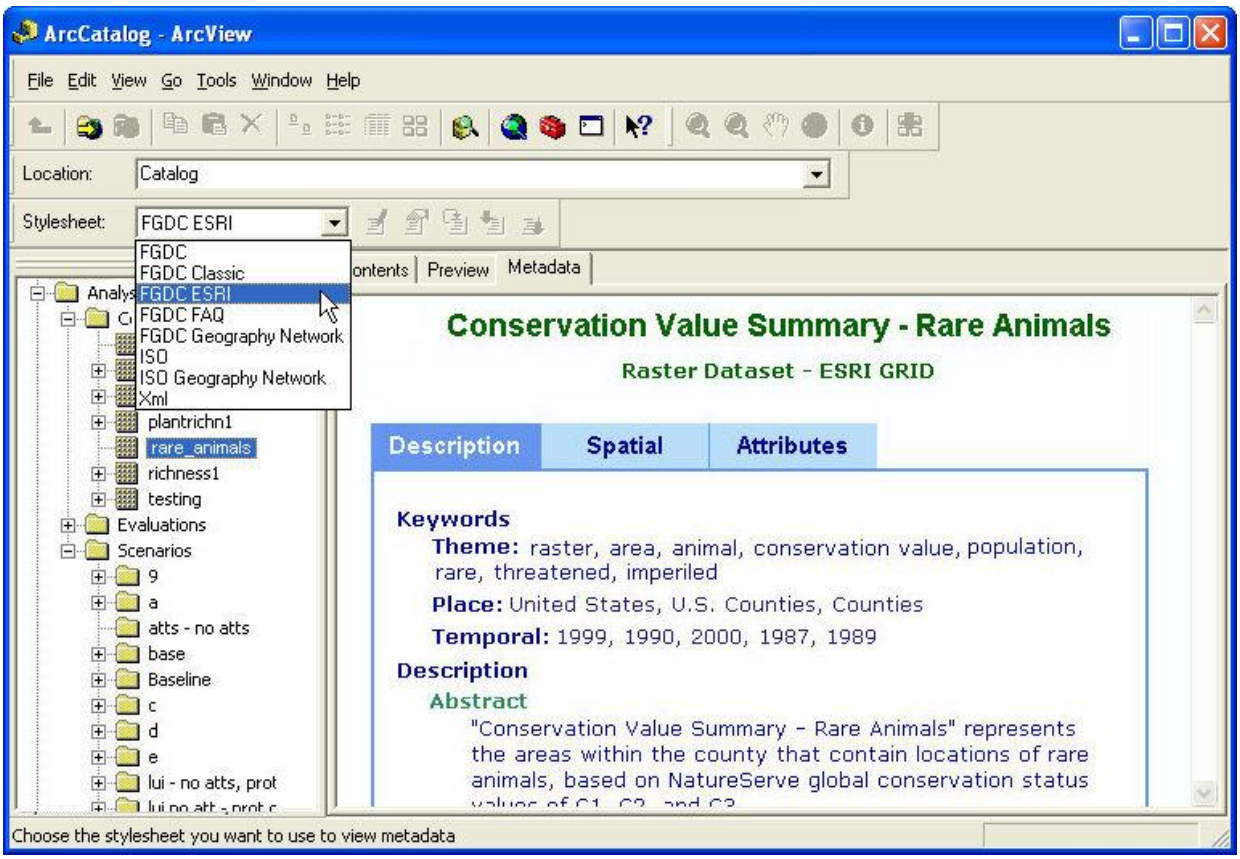
The metadata for derived layers in Vista are stored with the data set they describe. Since all the derived layers are in raster format, the files are found within the raster's directory and are named ”metadata.xml." The format of these files is extensible markup language (xml), so they can be read by any xml reader software. One such reader is included in the Environmental Systems Research Institute (ESRI) ArcCatalog software.

To display metadata associated with a Vista data set in an easily readable form:

1. Open ArcCatalog (AC) from the Tools menu or using the  ArcCatalog button.



2. Navigate to the raster data set through the directory hierarchy in the left portion of the AC window, and double-click to select the data set.
3. In the right hand section of the window, choose the metadata tab.



4. Select the desired format for viewing the metadata from the **Stylesheet:** drop-down list.

Different metadata can be viewed for the data set by selecting the **Description**, **Spatial**, and **Attributes** labels displayed in the right portion of the AC window.

PROJECT MANAGEMENT FUNCTIONS

DETACH / ATTACH A VISTA PROJECT

When a Vista project is created, it is associated with an ArcView map document. Whenever this map document is opened, the Vista project will be loaded. However, a map document can be either detached from or re-attached to a Vista project, as described below:

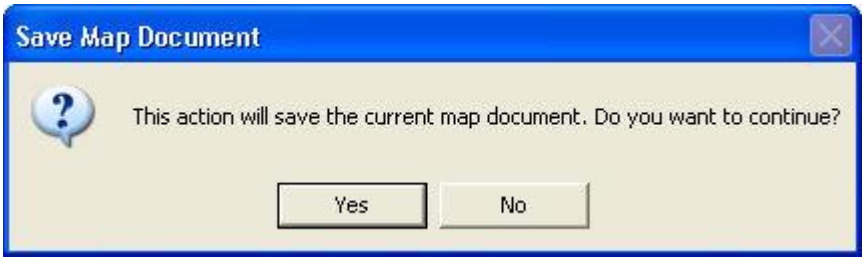
Detach a Vista project

To detach a Vista project from its associated map document, select **Project ▸Detach...** from the NatureServe Vista menu. Detaching the project will cause the map document to become a regular map document (i.e., opening the map document will not cause a Vista project to load).

Click **Yes** in the Save Map Document window to finalize the detach process.

Attach a Vista project

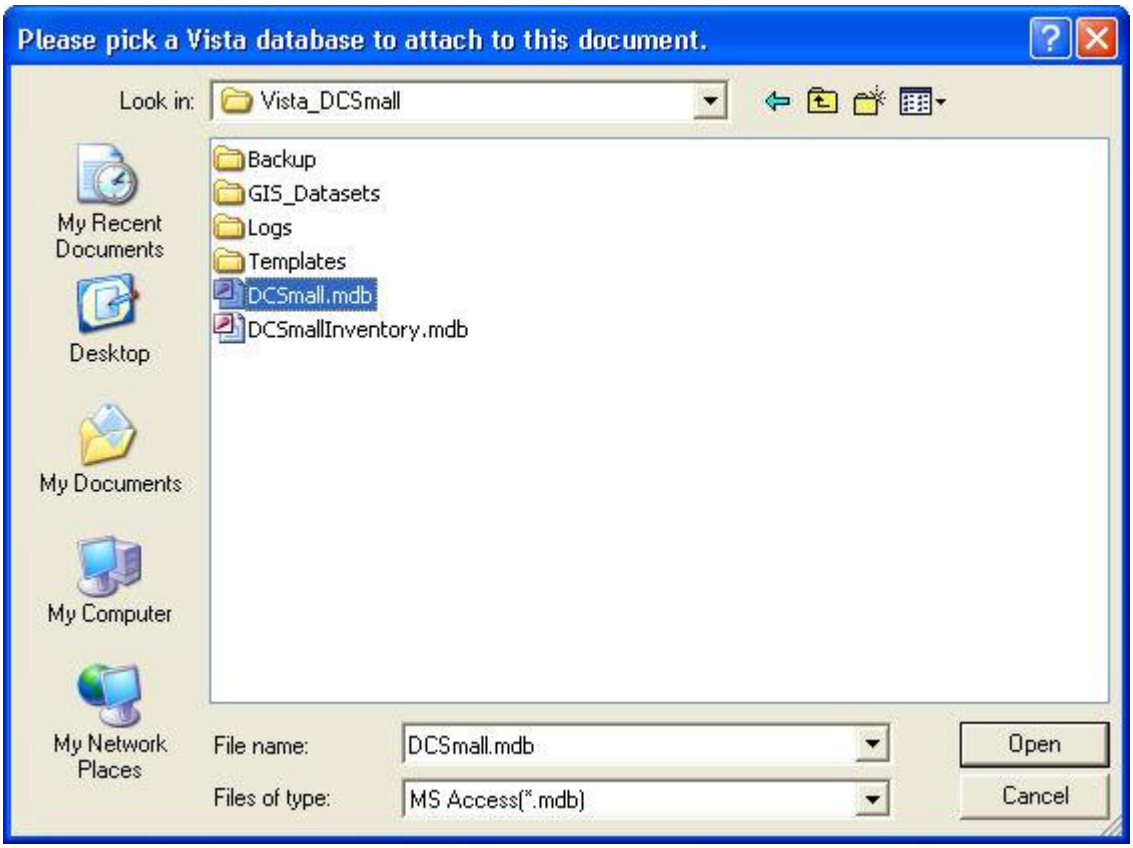
To re-attach a map document to a Vista project, select **Project ▸Attach...** from the NatureServe Vista menu.



Click **Yes** in the Save Map Document window to continue the attach process.

A window will open for browsing to the Vista project database; typically the window will open to the appropriate folder for the Vista project. In some cases, however, the application may be unable to find the Vista project database that

was associated with the map document; this typically results when the individual Vista project database or map document has been moved. However, if an entire directory containing both the map document and the project database is moved, then the application should be able to find the Vista project.



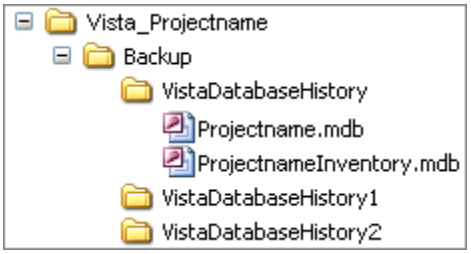
Navigate to the Vista project database, select the appropriate database file, and click **Open**. Once the correct Vista project database has been opened, it will be attached to the map document automatically.

BACKUP AND RESTORE A VISTA PROJECT

Backup a Vista project

Every time a Vista project is opened or created, backup copies of the database are created automatically as two Microsoft Access files: Projectname.mdb and ProjectnameInventory.mdb. These files are stored in the Vista project location in the **VistaDatabaseHistory** folder within a **Backup** folder. When a new set of

backup files are created, those in the VistaDatabaseHistory folder are replaced by the more current backup files, and those that were in that folder are moved to the VistaDatabaseHistory**1**, while those in the VistaDatabaseHistory**1** folder are moved to the VistaDatabaseHistory**2** folder. This process, then, automatically stores the last three backups of the database.



The actual replacement of backup database files with more current edited versions only occurs when the ArcMap document for the Vista project is saved (that is, **Yes** is selected in the Save Vista Project window). However, if ArcMap is exited without saving the revised project data, or if **No** is selected in the Save Vista Project window, then any changes made after the last ArcMap save will be rolled back. A Vista project will also roll back to the most recent backup database if ArcMap crashes for any reason.

Restore a Vista project

The backup databases for Vista projects described above can be used in worst case scenarios, such as when the current Vista database becomes corrupted or is accidentally deleted. In such cases, the database files in VistaDatabaseHistory folder can be copied to the Vista project location to replace the missing or corrupted database.

Summary List of Vista Windows

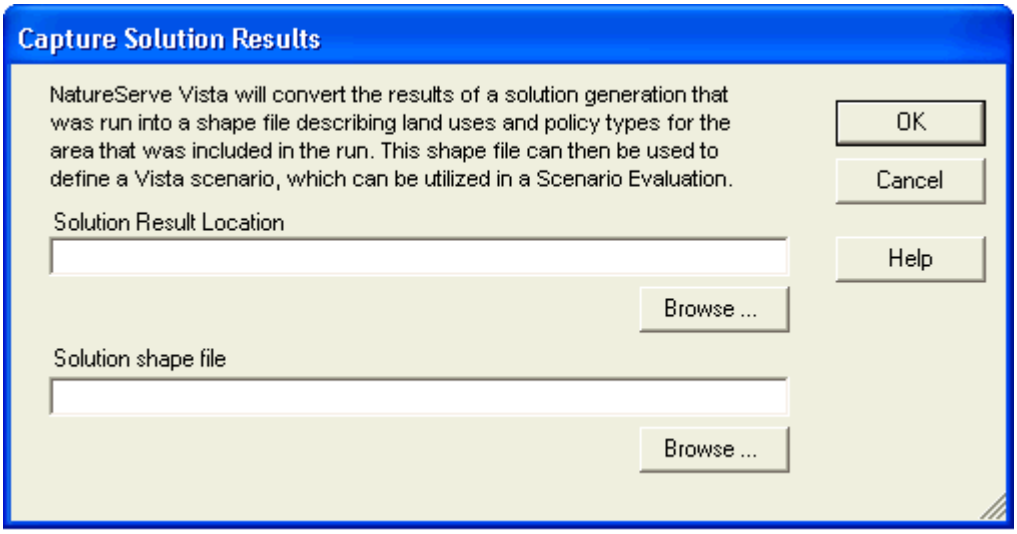
Capture Solution Results Window

The **Capture Solution Results** window is displayed by selecting **Capture Conservation Solution...** from the NatureServe Vista menu. This window is used to load results generated by external conservation solution software, specifically MARXAN and SPOT (the Spatial Portfolio Optimization Tool). These applications evaluate different units of land according to criteria to determine which sets, when combined into larger units (e.g., portfolios or reserve systems) result in optimal conservation solutions in terms of several factors, including cost and representation of conservation targets. The results used in Vista can consist of separate runs identifying analysis units that were selected for the solution, or can be a summed solution that indicates, for each unit, the number of runs in which it was selected. In capturing results generated by an external software, Vista produces a shape file that can be used to more easily visualize the results, as well as to define new Vista scenarios, which can then be utilized in Scenario Evaluations.

For more detailed information on the MARXAN and SPOT applications, see http://www.ecology.uq.edu.au/marxan.htm and http://www.conserveonline.org/workspaces/spot, respectively.

Capture solution results:

1. Specify the location of the solution results generated from the external application in the **Solution Result Location** field, or click the **Browse** button to navigate to the location and select it.
2. Specify the location to be used for shape file that will result from conversion of the generated solution in the **Solution shape file** field, or click the **Browse** button to navigate to the location. Enter a file name, and click **Save**.



3. Click **OK** to convert the conservation solution results into a shape file.

CATEGORY SYSTEM LIST WINDOW

The **Category System List** window is displayed by selecting **Lists ▸Category System List...** from the NatureServe Vista menu. This window lists all the category systems that have been created for the project. See the Category Systems section for more detailed information on the development and use of category systems in analyses.

Button functions:

New... displays a new Category System Properties window that can be used to develop a new category system to be used in the project.

Properties... displays the Category System Properties window showing details and allowing edits to the category system selected in the list.

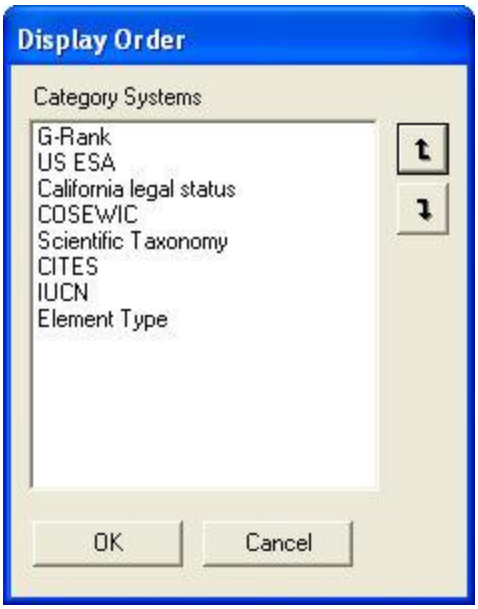
Delete... deletes the category system selected in the list.

A **Confirm Delete** window is displayed before the deletion is implemented.

A **Cannot Delete** window is displayed in cases when the category system is referenced by another item used in project analyses, as shown in the following example.

Report... displays a report for the selected category system that lists the categories within that system. See the Reports section for more details on Category System reports.

Display Order... results in a Display Order window, which can be used to edit the order that the category systems are listed in the Category System List window. Category systems are moved up or down in the order using the appropriate arrow button.



Help opens the on-line documentation.

Close closes the window.

Columns displayed:

Name - name of the category system.

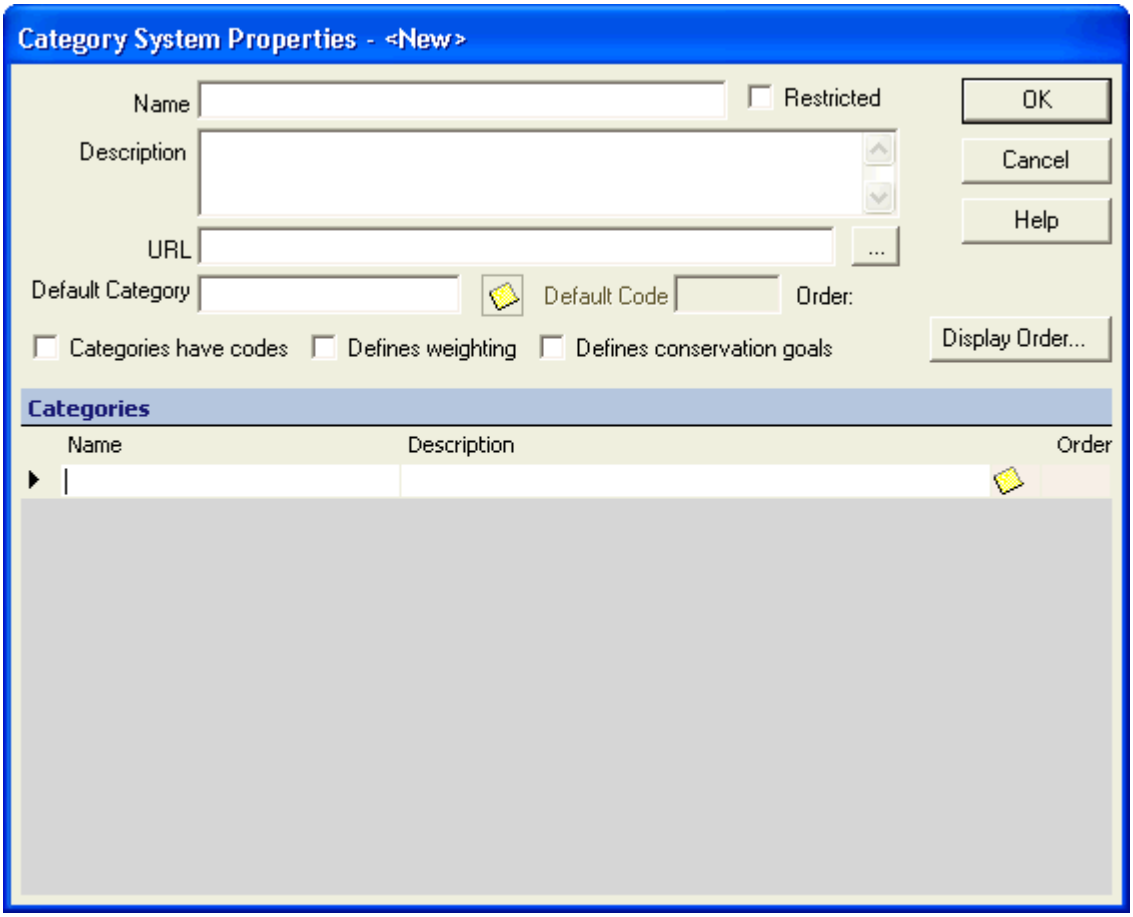
Description - description of the category system, if any.

Order - number indicating the display order sequence assigned to the category system.

CATEGORY SYSTEM PROPERTIES WINDOW

The **Category System Properties - <New>** window is displayed by clicking the **New...** button on the Category System List window. The new properties window is used to create a category system for use in the project. See the Category Systems section for more detailed information on the use of category systems in developing filters, goal sets, and weighting systems.

Note that the button located next to an item can be used to record additional information related to that item (see the Documentation Window topic for more details).



Create a category system:

1. Specify a name for the new category system in the **Name** field. The **<New>** on the window title will change to the name of the new category system as the entry is typed in.
2. If the ability to edit the category system should be limited to members of the data development team, place a check in the **Restricted** checkbox.
3. Enter a brief description of the category system in the **Description** field, if desired.

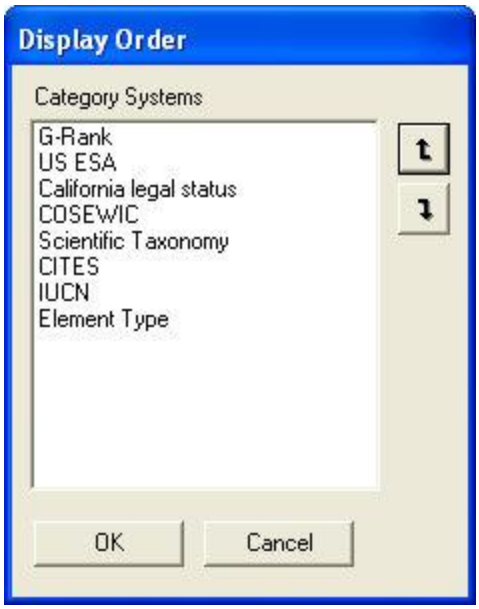
4. Enter a web address in the **URL** (Uniform Resource Locator) field. The  button can be used to open an explorer window that goes directly to the URL entered in the field, or if there is no address specified, the explorer default window will open.
5. Enter the category to be used as the default for elements not explicitly categorized in this system in the **Default Category** field. For example, if an element does not have an assigned global NatureServe conservation status, in the category system G-Rank that element would have an assigned category of Unknown (which would be the value entered in this Default Category field for the G-Rank category system). Most category systems utilize "Unknown" or "Unranked" as the default category.
6. If codes will be assigned to categories in this category system, place a check in the **Categories have codes** checkbox. Checking this item will result in the addition of a Code column to the Categories table, shown in the window below. Note that this box can be checked at any time if it is later determined that codes should be assigned for categories in the category system.
7. If codes are to be assigned for categories within the system (indicated using the checkbox described in item 6 above), then enter a code in the **Default Code** field to be used for elements not explicitly categorized in this system. The default code indicated in this field is based on the entry in the Default Category field (described in step 5 above). For example, if the default category is "Unknown", the default code entered could be "UK", as shown below.
8. If the category system will be used to define a weighting scheme, place a check in the **Defines weighting** checkbox. (See the Weighting Systems section for detailed information on weighting.) Checking this item will result in the addition of a Weighting column to the Categories table in the lower half of the window. However, this will not automatically cause weights to be added to elements during the process of creating a Conservation Value Summary, but will aid in the creation of weighting schemes later. Note that this box can be checked at any time if it is later determined that the category system will be used to define a weighting scheme.
9. If the category system will be used to define conservation goals, place a check in the **Conservation goals** checkbox. (See the Goal Sets section for detailed information on goals.) Checking this item will result in the addition of a Goal column to the Categories table in the lower half of the window. However, this will not automatically cause goals to be added to elements during the process of creating scenarios for use in Scenario Evaluations, but will aid in the creation of goal sets later. Note that this box can be checked at any time if it is later determined that the category system will be used to define conservation goals.
10. Using the Categories table in the lower half of the window, enter the name of each category in the new category system, along with a brief description, if desired. In addition, entries should be made as appropriate

in any columns added for defining codes, goals, and/or weightings associated with each category. Note that if a value for code is not assigned for a particular category, Vista will use the default code specified in step 7 above. The value in the Order column of the Categories table is automatically generated as each new category is entered.

11. If it is necessary to delete a category, move the cursor to the column to the left of the Name column in the Categories table and click next to the entry to be deleted; the entire line for the category should be highlighted. Click the **Delete** button on your keyboard to delete the category. A **Cannot Delete** window is displayed in cases when the category is referenced by another item used in project analyses, as shown in the following example.

12. If the order that the different categories within the category system are listed needs to be changed, use the **Display Order...** button to invoke the Display Order window. Although an order column is shown in the Categories table on the Category System Properties window, changes to the order of listed categories can only be made using the Display Order window. Categories are moved up or down in the order using the appropriate arrow button.

13. The value displayed for Order (located to the right of the Default Code field) indicates the position of the default code in the list of categories for the system. For example, if the category system is G-Rank, the default category is "Unknown," and the display order for categories was set by the user to be G1, G2, Unknown, G3, G4, then the value would be "Order: 3" indicating that the default category and code are in the third position in the display order. If there is no order specified for the default category, then the value for Order is automatically set to the last position in the category sequence.



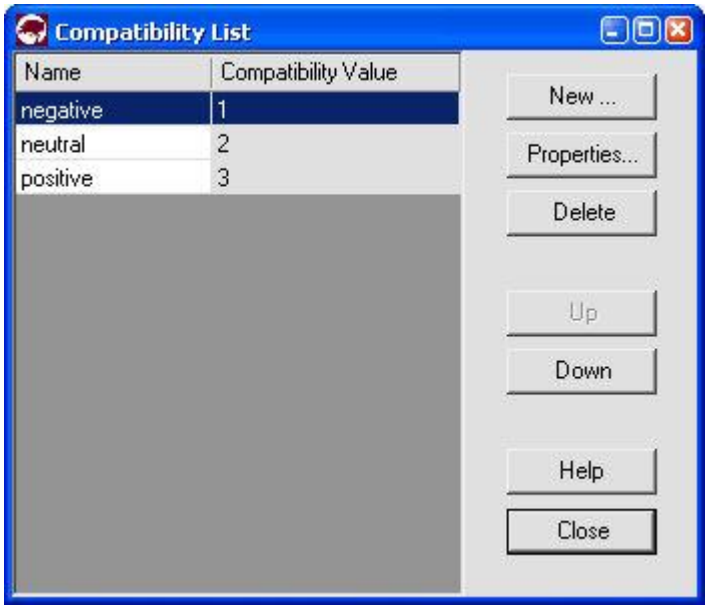
14. To close the window and save the data entered for the category system click **OK**; otherwise, click **Cancel**.
15. To review details on the new (saved) category system, select the system on the Category System List window and click the **Report** button. Settings for the category system, as well as goals and/or weights assigned to specific categories will be displayed. See the Reports section for more details on Category System reports.

Edit a category system:

1. Select the category system from the list on the **Category System List** window (e.g., Element Type) and click the **Properties...** button. The resulting properties window displays data for each category in the category system.
2. Data for the existing category system displayed in this window can be edited using the processes described above for creating a new category system as guidelines.
3. To close the window and save any changes made to the category system click **OK**; otherwise, click **Cancel**.

COMPATIBILITY LIST WINDOW

The **Compatibility List** window is displayed by clicking the **Responses...** button on the Compatibility tab of the Element Properties window, and is used to create and edit the set of Land Use Intent (LUI) compatibility responses used for Scenario Evaluations. For more details on compatibility, see the Land Use and Conservation Scenario Evaluations section.



Button functions:

New... displays an Edit Compatibility Response window that can be used to develop a new compatibility response to be used in the project analyses.

Properties... displays the Edit Compatibility Response window showing details of existing compatibility responses and allowing edits to the response selected in the list.

Delete deletes the compatibility response selected in the list.

A window is displayed in cases when the compatibility response is assigned to one or more LUI categories in the Element Properties window and cannot be removed.

Up Moves the selected compatibility response higher in the list of responses, and changes the associated sequential number accordingly. The resulting order of responses is displayed on the Compatibility tab of the Element Properties window.

Down Moves the selected compatibility response lower in the list of responses, and changes the associated sequential number accordingly. The resulting order of responses is displayed on the Compatibility tab of the Element Properties window.

Help opens the on-line documentation.

Close closes the window.

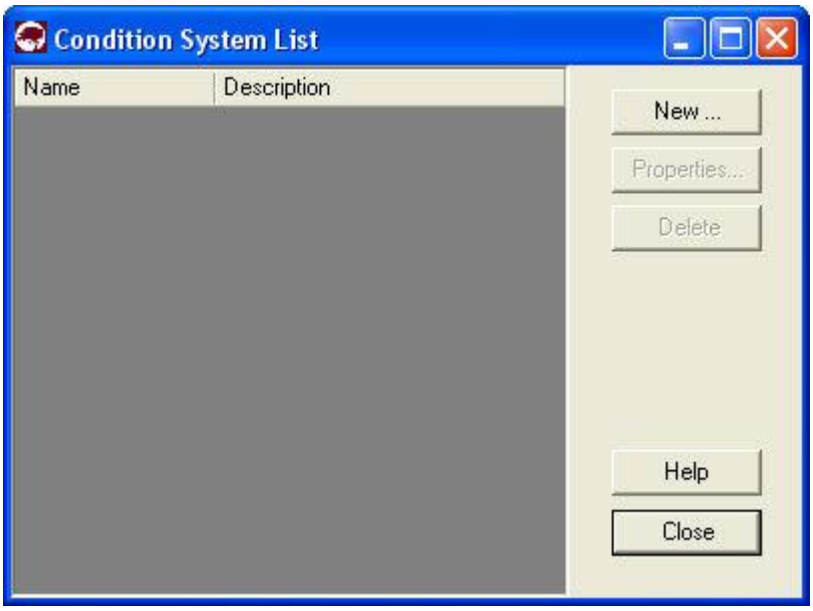
Columns displayed:

Name - name of the compatibility response.

Compatibility Value - sequential number associated with a particular compatibility response.

CONDITION SYSTEM LIST WINDOW

The **Condition System List** window is displayed by selecting **Lists ▸Condition Systems List** from the NatureServe Vista menu. This window lists all the condition models that have been created in the project. See the Landscape Condition Models section for more detailed information on condition models.



Button functions:

New... displays a new Edit Condition System window that can be used to create a condition model.

Properties... displays the Edit Condition System window showing details and allowing edits to the condition model selected in the list.

Delete deletes the condition model selected in the list.

Help opens the on-line documentation.

Close closes the window.

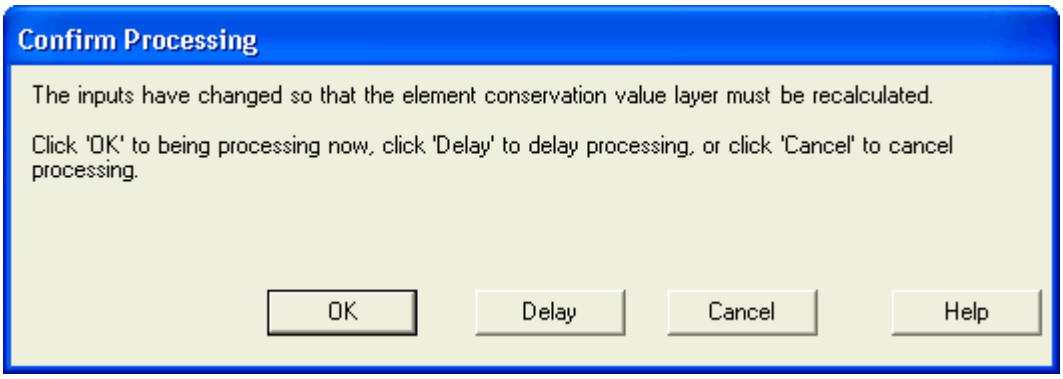
Columns displayed:

Name - name of the condition model.

Description - description of the condition model, if any.

CONFIRM PROCESSING WINDOW

Message displayed by Vista when the layer used to represent an element's distribution, specified on the Spatial tab of the Element Properties window, has been changed such that the Element Conservation Value (ECV) layer needs to be recalculated using the new layer.



Button functions:

OK causes the recalculation process for the ECV layer to begin.

Delay defers the recalculation process to a later time.

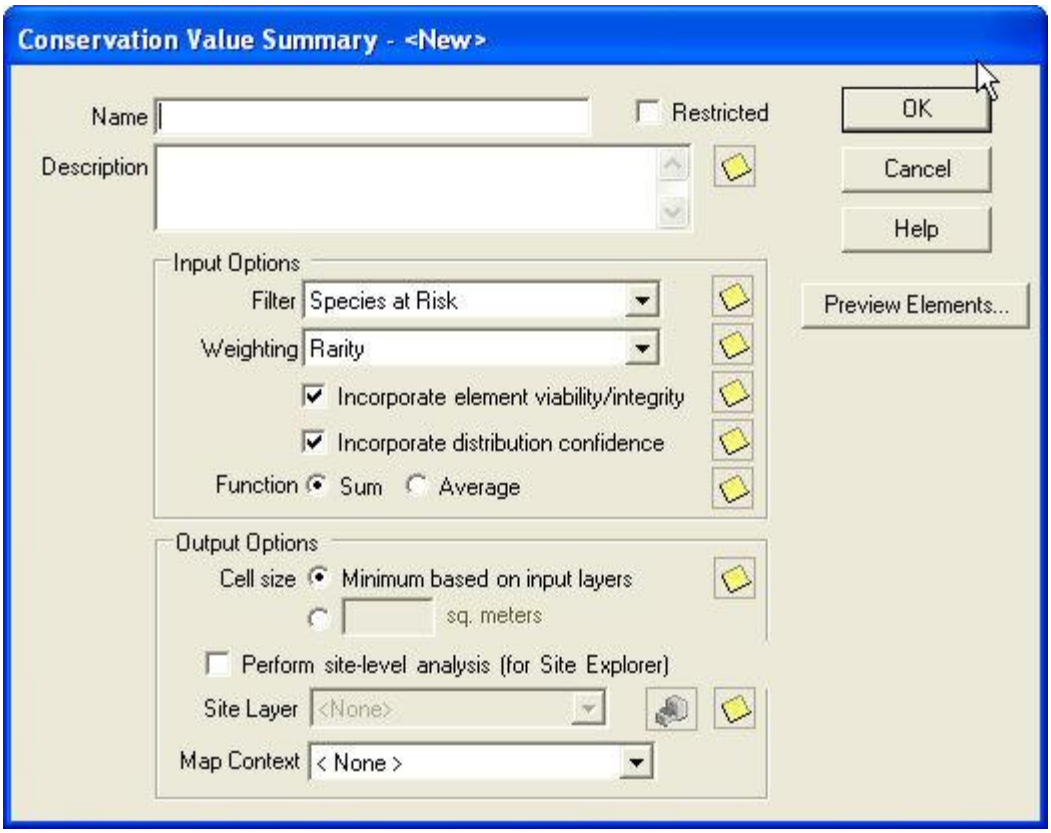
Cancel closes the window without retaining any changes.

Help opens the on-line documentation.

CONSERVATION VALUE SUMMARY WINDOW

The **Conservation Value Summary - <New>** window is displayed by selecting **Summarize Conservation Value...** from the NatureServe Vista menu. This window is used to create Conservation Value Summaries, which indicate the conservation value of specific locations in the planning region based on attributes of elements and/or their occurrences. For more detailed information on the use of weightings, and the viability/integrity and confidence attributes in creating a Conservation Value Summary and their influence on the results, see the Different Types of Conservation Value Summaries section.

Note that the button located next to an item can be used to record additional information related to that item (see the Documentation Window topic for more details).



Create a Conservation Value Summary:

1. Enter a name for the Conservation Value Summary (CVS) being created in the **Name** field. The **<New>** on the window title will change to the name of the new CVS as the entry is typed in.
2. Enter a brief description for the new CVS in the **Description** field.
3. If the ability to edit the CVS should be limited to members of the data development team, place a check in the **Restricted** checkbox.
4. Select the filter to be applied to the data set from the drop-down menu of the **Filter** field located in the *Input Options* group box, or select the **<Add New...>** value to create a new filter, or the **<Show List...>** value to display all existing filters (in order to select and modify an existing filter).
5. Select the weighting system(s) to be applied to the data set from the drop-down menu of the **Weighting** field located in the *Input Options* group box, or select the **<Add New...>** value to create a new weighting system, or the **<Show List...>** value to display all existing weighting systems (in order to select and modify an existing system).
6. Click the **Preview Elements...** button to see a Filtered Weighting System Report showing the set of elements to be included in the summary and the weightings that have been set for these elements, based on the values selected in the **Filter** and **Weighting** fields. This knowledge can be helpful prior to running the CVS. The greater the number of elements included in a

summary, the longer it will take to process; adjusting/creating a filter that will limit the CVS to just those elements that are needed will ensure the most efficient use of processing time.

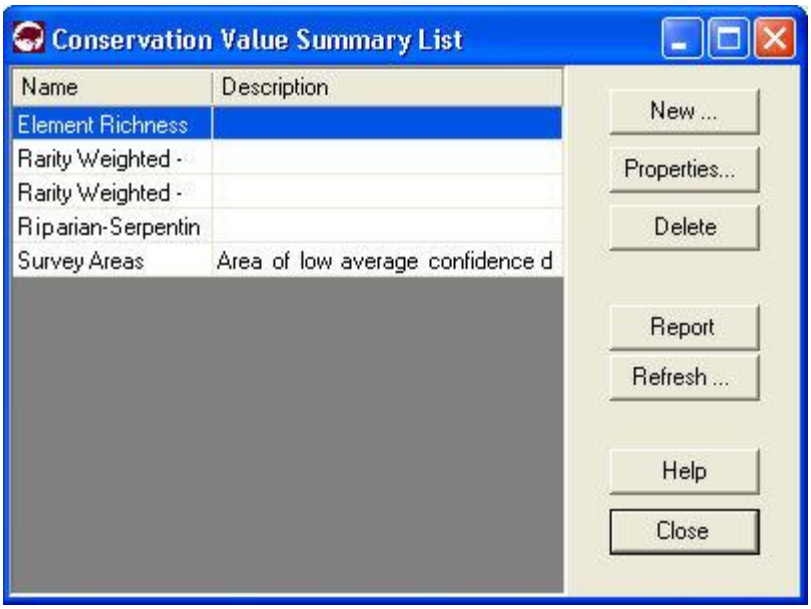
7. If element viability/integrity values are to be included in the new CVS, place a check in the **Incorporate element viability/integrity** checkbox.
8. If confidence is to be included in the new CVS, place a check in the **Incorporate distribution confidence** checkbox. The confidence attribute can be useful in determining if sufficient information exists to make conservation decisions for a particular location.
9. Indicate the function to be used in determining values for grid cells in the CVS by selecting either the **Sum** or **Average** radio button. Note that if confidence is to be incorporated in the CVS and the operation selected is **Average**, richness will not be calculated in the CVS.
10. Select the appropriate radio button to indicate whether the grid cell size in the CVS output is to be the **Minimum based on input layers**, or if the size is to be a specified area; if the latter, the system will automatically display the default cell set for the project in the Project Properties window. If an alternate cell size is desired, enter the area to be used for a grid cell. For more detailed information on cell sizes, see the Determining Grid Cell Size topic.
11. If the CVS will be used in Site Analyses, place a check in the **Perform site-level analysis (for Site Explorer)** checkbox.
12. If appropriate, specify a layer to be used in Site Analyses from the drop-down menu of the **Site Layer** field, or by using the  ArcCatalog button to browse to the layer. The land units in the layer selected will be used for detailed examination of conservation value by unit, and the contributing biodiversity elements present in those units.
13. Select a map context to be used in creating the CVS report from the **Map Context** drop-down menu, or select the **<Add New...>** value to create a new map context, or the **<Show List...>** value to display all existing map contexts (in order to select and modify an existing context).
14. Generate the CVS by clicking **OK;** otherwise press **Cancel**. Results are displayed in a CVS report. See the Conservation Value Summary Report for more detailed information.

Edit a Conservation Value Summary:

1. Select the CVS from the NatureServe Vista Table of Contents (TOC), right-click, and choose **Conservation Value Summary Properties...** from the context window. The resulting window displays the CVS.
2. Edit the CVS using the processes described above for creating a new Conservation Value Summary as guidelines.
3. Generate the revised CVS by clicking **OK**; otherwise click **Cancel**.

CONSERVATION VALUE SUMMARY LIST

The **Conservation Value Summary List** window is displayed by selecting **Lists ▸Conservation Value Summary List...** from the NatureServe Vista menu. This window lists all the Conservation Value Summaries (CVS) that have been created for the project. See the Conservation Value Analyses section for more detailed information on this analysis.



Button functions:

New... displays a new Conservation Value Summary window that can be used to develop a new CVS for the project.

Properties... displays the Summarize Conservation Value window showing details and allowing edits to the CVS selected in the list.

Delete deletes the CVS selected in the list.

A **Confirm Delete** window is displayed before the deletion is implemented.

Report displays a report for the selected CVS that lists the settings for the summary as well as details on the individual elements that were included. See the Reports section for more details on Conservation Value Summary reports.

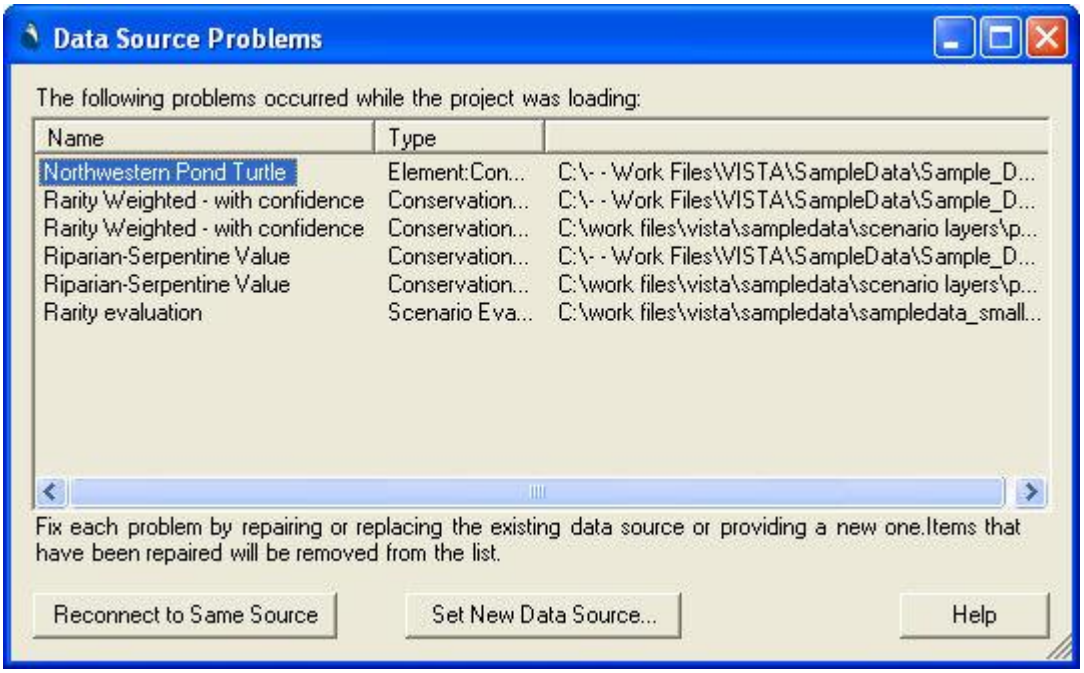
Refresh... displays the Refresh Selected Results window that can be used to refresh the data for selected CVS analyses.

Help opens the on-line documentation.

Close closes the window.

DATA SOURCE PROBLEMS WINDOW

The **Data Source Problems** window may appear when a project is opened. It indicates that there is an issue with Vista accessing one of the data layers it needs. This may be a result of files being moved on the server on which the data is held, a network problem, a deletion of data, or a possible change in drive lettering. In order for Vista to proceed without errors, the application must be redirected to find the files in question.

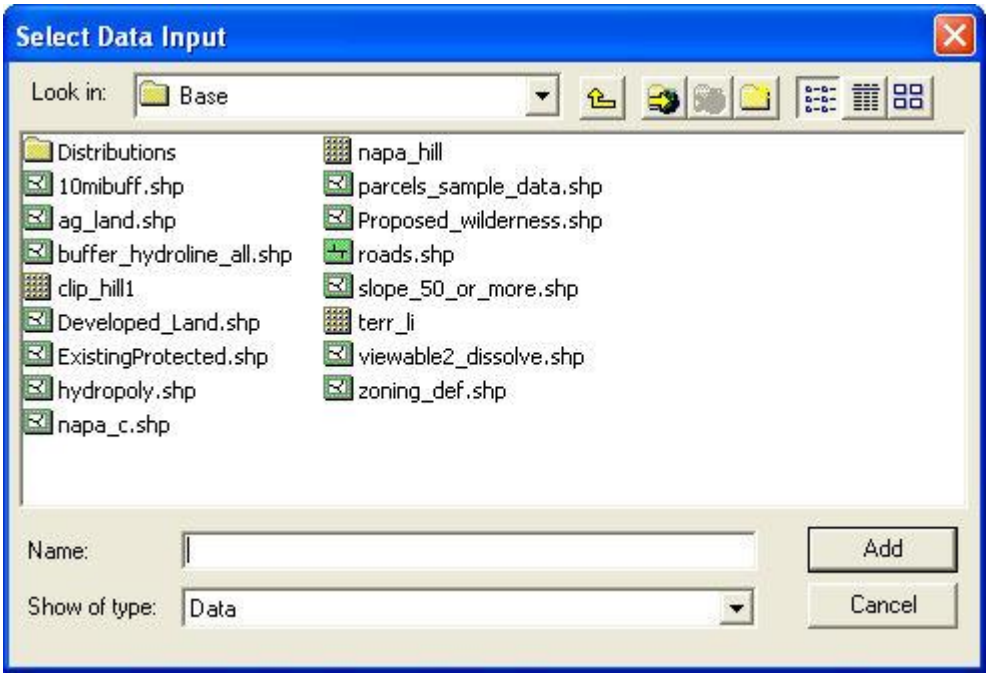


To fix a data source problem:

1. Select the name of a layer to be fixed from the list in the window. If the problem has been corrected and the application can access the file without any changes to the database (e.g., fixing a drive letter on the server), then clicking the **Reconnect to Same Source** button will allow another attempt by Vista to access the file in question.
    - If the file is found, a Repaired Datasources window will be displayed; click **OK** to close.

- However, if the file still cannot be found, an Unrepaired Datasources window will be displayed. If this happens, click **OK** to close the window and continue with step 2.

2. A change must be made in the database to allow Vista to locate the file (e.g., the file has been moved to another location on the server). Click the **Set New Data Source...** button to open up the Select Data Input window. Browse to the desired file, select, and click **Add**.



- If the new data source can be substituted for the old one, the information will be saved to the database and layer will disappear from the list in the Data Source Problem window. To resolve a datasource issue for another file, select the file and click the **Set New Data Source...** button again to continue.
- If the new data source cannot be substituted for the old one, an informational error message will appear to diagnose the problem. To resolve a datasource issue for another file, click the **Close** button on the Error window. Then press the **Set New Data Source...** button again.

3. To close the Data Source Problems window, click the **X** in the upper right corner of the window.

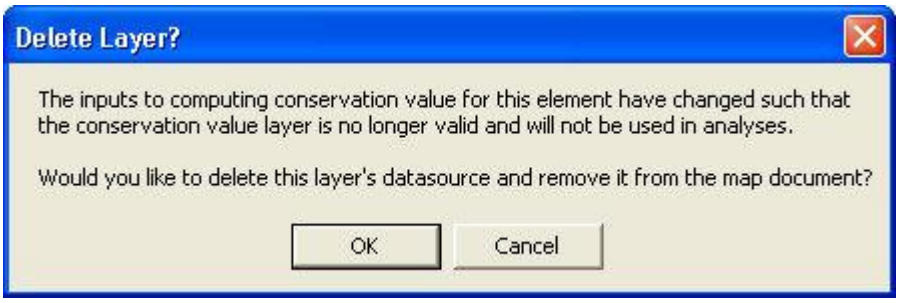
To fix a data source problem after the project has opened completely:

1. Select the layer to be fixed in the Vista Table of Contents (TOC) and right-click. A context menu will be displayed and if there is a data source problem, the **Repair Spatial Data...** option in the menu will be enabled.

2. Select the **Repair Spatial Data...** option to display the Data Source Problems window. Use the steps described above to fix the data source problem.

DELETE LAYER?

Message displayed by Vista when the layer used to represent an element's distribution, specified on the Spatial tab of the Element Properties window, has been changed to one that is invalid for use in calculating an Element Conservation Value layer.



Button functions:

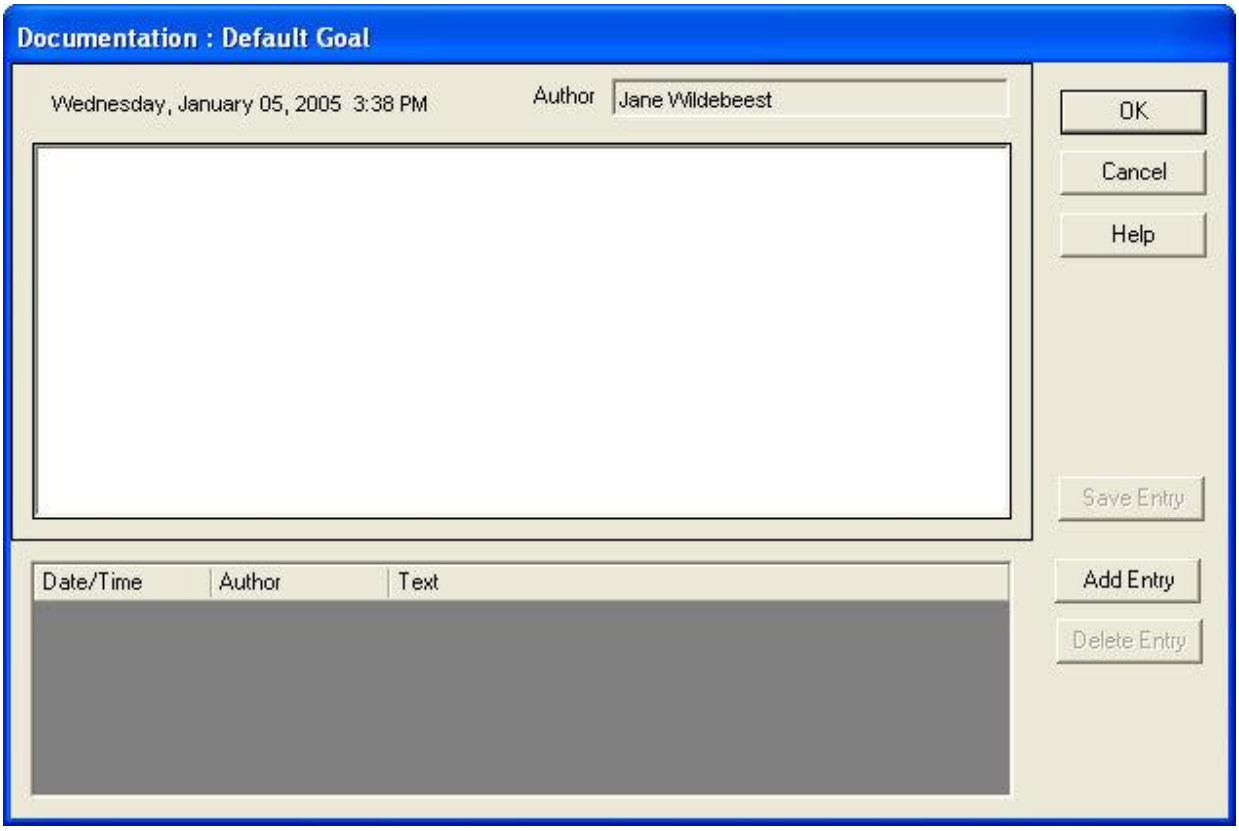
OK &endash; deletes the distribution layer associated with the element and remove it from the map document.

Cancel &endash; closes the window without retaining any changes.

DOCUMENTATION WINDOW

The Documentation window is displayed by clicking the button located next to a data field in a window. Note that the title of the window includes the name of the associated field.

Entries in the Documentation window can be optionally included in various reports (see the topic How to Include Associated Documentation in Reports).



Documentation is entered in the upper portion of the window. As information is added to the grid in the lower half of the window, the system automatically populates the Date/Time and Author columns. In this way, documentation can be added over time as data in the project changes.

Button functions:

OK saves changes made to the documentation and closes the window.

Cancel closes the window without saving any documentation changes.

Help opens the on-line documentation.

Save Entry saves the documentation entered to a row in the grid below.

Add Entry saves the documentation entered to a row in the grid below.

A **Confirm** window is displayed before moving the entry to the grid.

Delete Entry deletes the selected row in the grid.

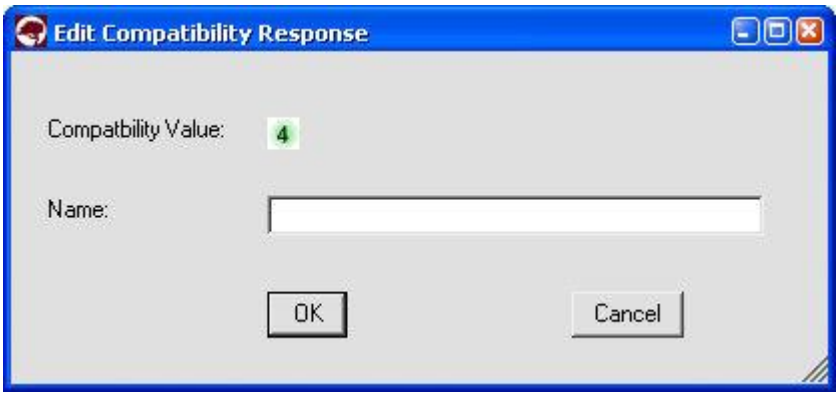
A **Confirm** window is displayed before removing the row.

After information has been saved and the window closed, the button image next to the field changes to  indicating that related documentation has been recorded.

The Documentation window may be useful for entering descriptive information related to attributes values and decisions made (see examples).

EDIT COMPATIBILITY RESPONSE WINDOW

The **Edit Compatibility Response** window is displayed by clicking the **New...** or **Properties...** buttons on the Compatibility List window, and is used to create and edit Land Use Intent (LUI) compatibility responses used for Scenario Evaluations. For more details on compatibility, see the Land Use and Conservation Scenario Evaluations section.



Create a compatibility response:

1. When the Edit Compatibility Response window opens to create a new response, the next numeric compatibility value to be associated with a compatibility response is automatically displayed. Enter the label for the new response in the **Name** field.
2. To close the window and save the new compatibility response, click **OK**; otherwise, click **Cancel**.

Edit a compatibility response:

1. Select the compatibility response to be changed on the Compatibility List window and click the **Properties...** button. The resulting edit window displays the response name and sequential numeric value.
2. Edit the label for the response as desired in the Name field.

Note: The numeric compatibility value cannot be edited in this window. However, this sequential value will automatically change for a particular compatibility response by changing the order of the responses using the **Up** and **Down** buttons on the Compatibility List window.

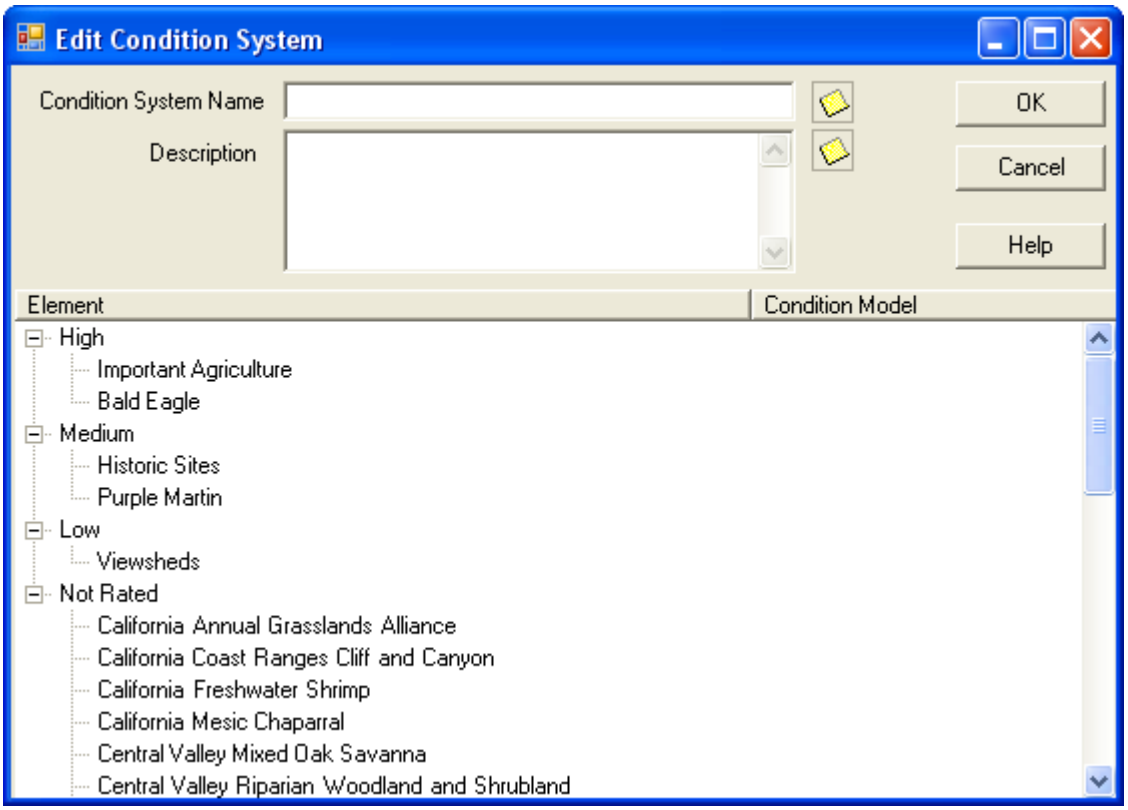
3. To close the window and save any changes made to the compatibility response click **OK**; otherwise, click **Cancel**.

EDIT CONDITION SYSTEM WINDOW

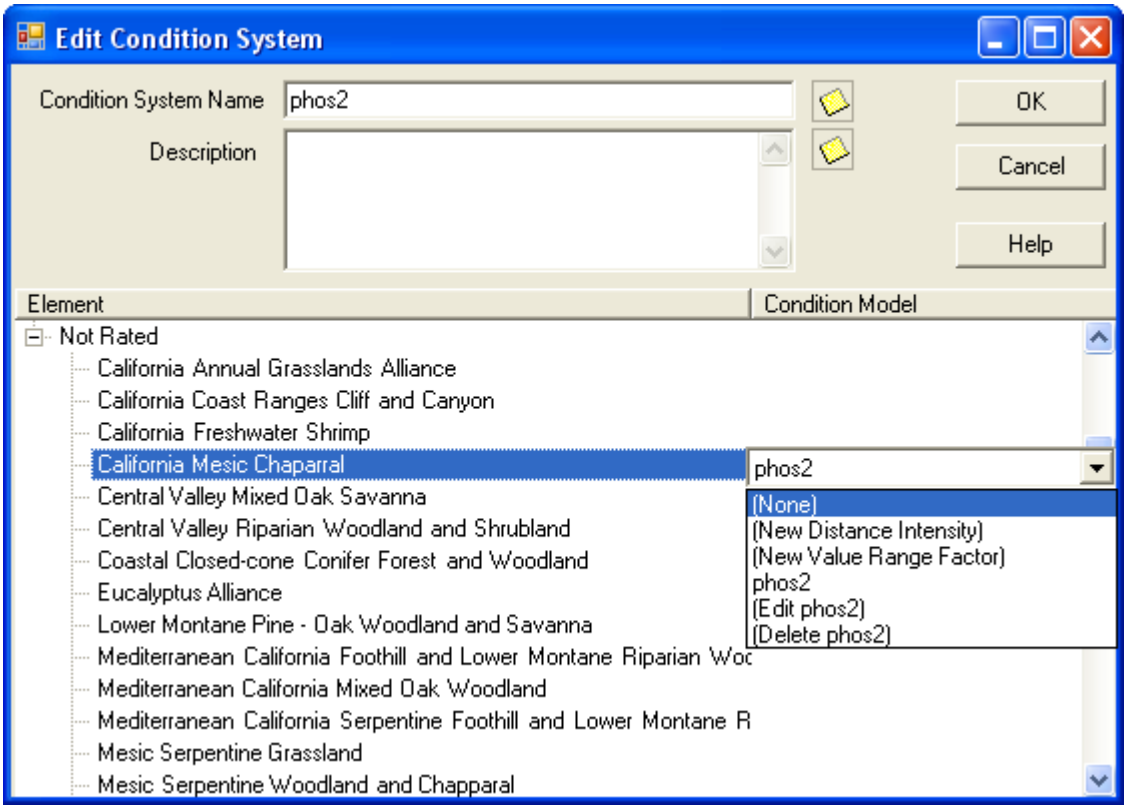
The **Edit Condition System** window is displayed by clicking the **New...** or **Properties** buttons on the Condition System List window. This edit window is

used for applying individual condition models to elements. When a new condition system is being created for the first time, Vista will ask you to select or create a default category system. Categories are assigned when creating elements and provide a system whereby elements are grouped and viewed. This can be changed later if you wish to create different condition system lists on another category type; which is defined in the Vista pulldown (Vista -> Project -> Preferences -> Default Category System). User may vary the Element display sort.

Note that the  button located next to an item can be used to record additional information related to that item (see the Documentation Window topic for more details).



Create or modify a condition model by clicking the blank area in the condition model to the right of an element. The user options are to select an existing condition model, new Distance Intensity, new Value Range Factor,and edit an existing model, or delete a model.



See Using the Condition Systems window for instructions on data entry for this window.

EDIT LAND-USE INTENT WINDOW

The **Edit Land-use Intent** window is displayed by selecting **Lists ▸Land Uses List...** from the NatureServe Vista menu. This window displays the default Vista land use intent (LUI) categories (described in Appendix F), which are utilized in land use and conservation Scenario Evaluations.

This window is used to customize the LUI categories in order to better capture the important conservation impacts of specific land uses and/or management practices in the planning region. LUI categories are used specifically in assigning land use compatibility for elements (described under the Compatibility tab section of the Element Properties window), and for developing translators that are used to define land use scenarios (described in the Translators section, with details on creating translators found in the Translator Properties window topic).

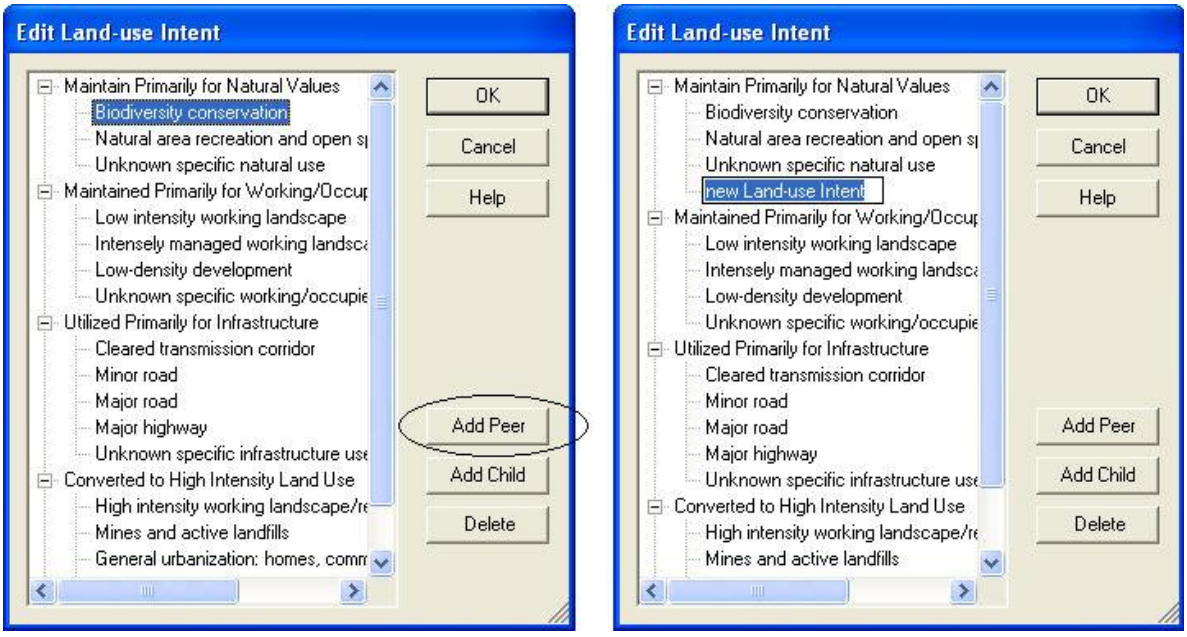
Button functions:

OK saves changes made to the LUI categories and closes the window.

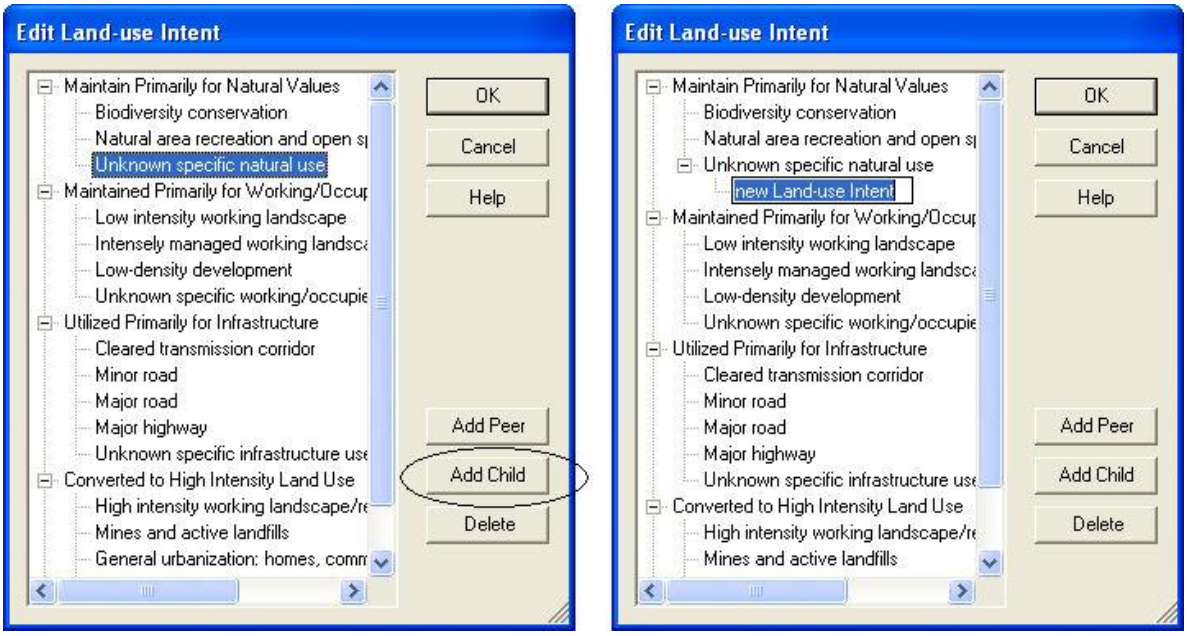
Cancel closes the window without saving any changes made to the LUI categories.

Help opens the on-line documentation.

Add Peer adds a new LUI category at the same hierarchical level as that of the selected land use. The new category will appear as a new entry at the end of existing LUI categories at that level, and can then be labeled as desired. In the following example, selecting the minor category "Biodiversity conservation" and clicking the **Add Peer** button will result in a new LUI category at the same level, added after those already existing beneath the "Maintain Primarily for Natural Values" major category to which it belongs.



Add Child adds a new LUI category within, or under, the hierarchical level of the selected land use. The new category will appear as a new entry at the end of any existing child categories beneath the selected category, and can then be labeled as desired. In the following example, selecting the LUI category "Unknown specific natural use" and clicking the **Add Child** button will result in a new child land use category within/under that selected LUI.



Delete deletes the land use category selected in the LUI hierarchy.

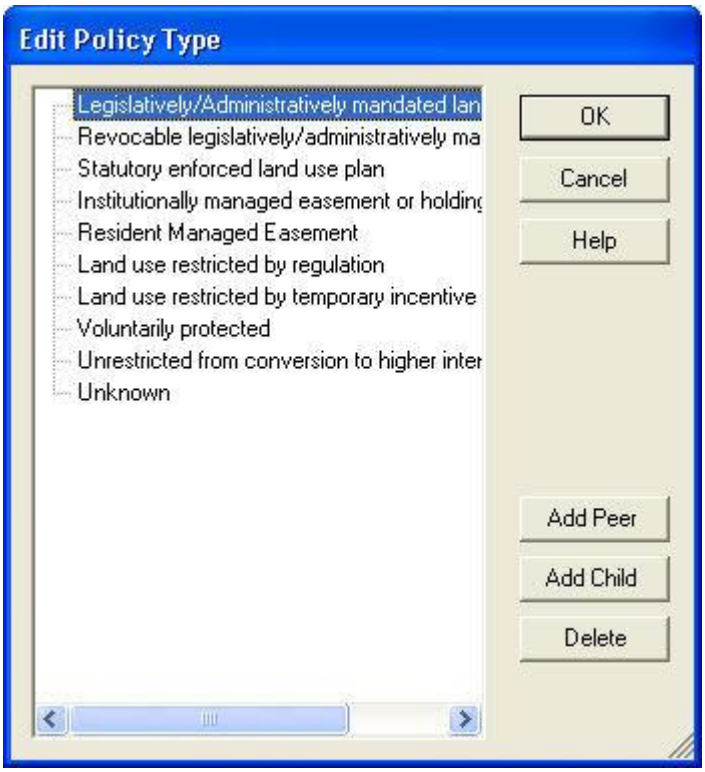
A **Confirm Delete** window is displayed before the deletion is implemented. In cases when the LUI selected for deletion contains child (minor) categories, the **Confirm Delete** window informs the user so that inadvertent deletion of these subcategories can be avoided.

A **Cannot Delete** window is displayed in cases when the LUI category is referenced by one or more items, as shown in the following example.

EDIT POLICY TYPE WINDOW

The **Edit Policy Type** window is displayed by selecting **Lists ▸Policy Type List...** from the NatureServe Vista menu. This window displays the default Vista policy type (PT) categories (described in Appendix G), which are utilized in land use and conservation Scenario Evaluations.

This window is used to customize the PTs in order to better capture the important conservation impacts of specific policy mechanisms in the planning region. PTs are used specifically for developing translators that define policy scenarios (described in the Translators section, with details on creating translators found in the Translator Properties window topic).



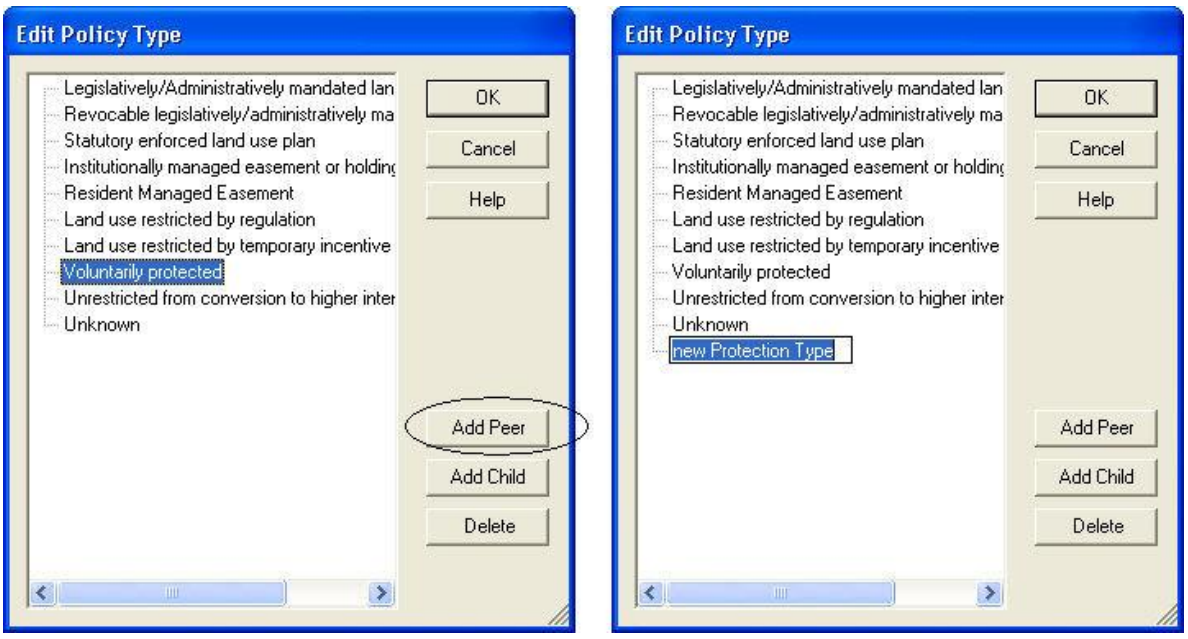
Button functions:

OK saves changes made to the PTs and closes the window.

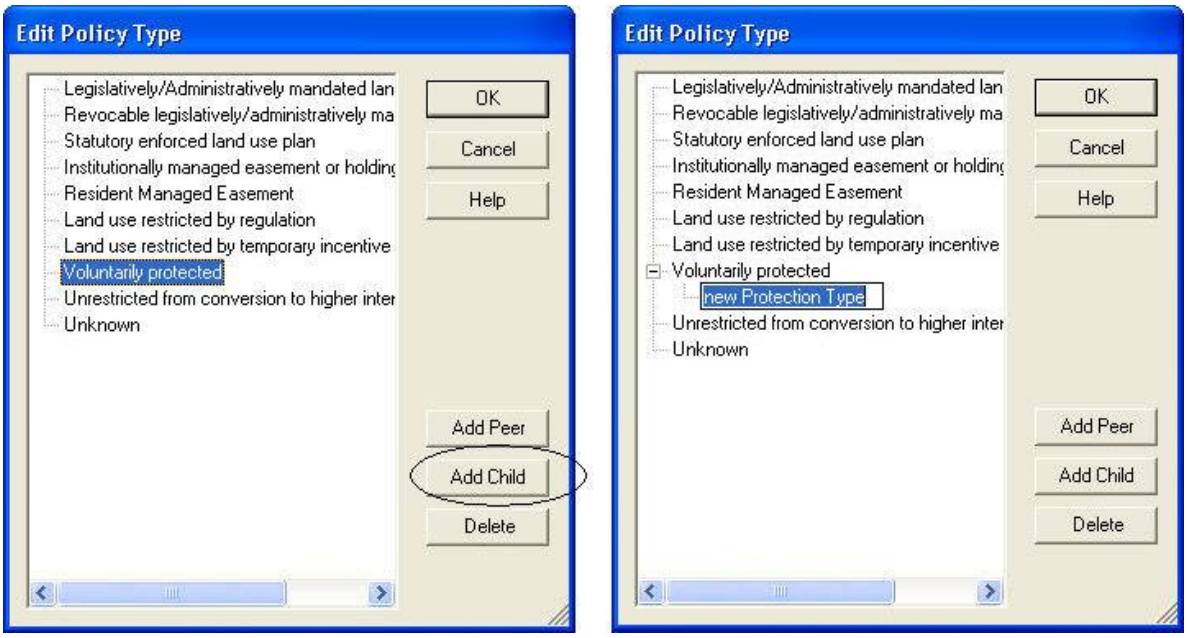
Cancel closes the window without saving any changes made to the PTs.

Help opens the on-line documentation.

Add Peer adds a new PT at the same hierarchical level as that of the selected type. The new PT will appear as a new entry at the end of existing PTs at that level, and can then be labeled as desired. In the following example, selecting the type "Voluntarily protected" and clicking the **Add Peer** button will result in a new PT at the same level, added after those already existing.



Add Child adds a new PT within, or under, the hierarchical level of the selected type. The new PT will appear as a new entry at the end of any existing child types beneath the selected PT, and can then be labeled as desired. In the following example, selecting the PT "Voluntarily protected" and clicking the **Add Child** button will result in a new child PT within/under that selected type.

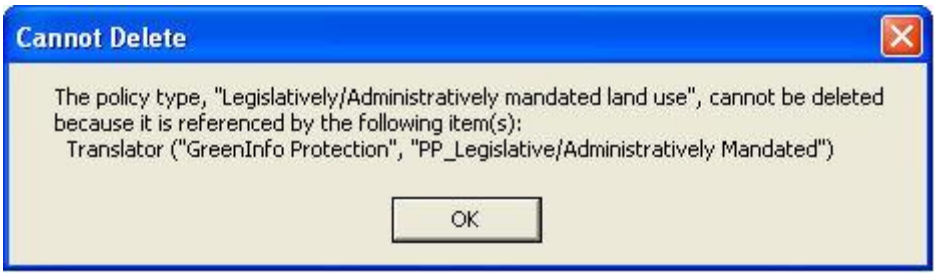


Delete deletes the PT selected.

A **Confirm Delete** window is displayed before the deletion is implemented. In cases when the PT selected for deletion contains child types, the **Confirm**

Delete window informs the user so that inadvertent deletion of these subtypes can be avoided.

A **Cannot Delete** window is displayed in cases when the PT is referenced by one or more items, as shown in the following example.



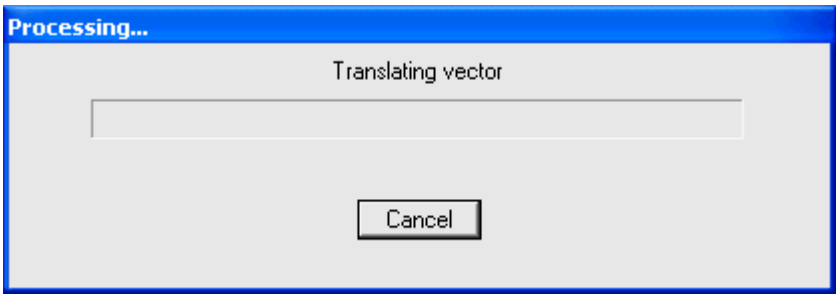
EDIT SUB-REGIONAL GOAL SET WINDOW

The **Edit Sub-Regional Goal Set** window, displayed by clicking the **Sub-goals...** button on the Goal Set List window, is used to create a new set of conservation goals for a defined group of elements in a specific area of interest within the planning region. Goal sets can be utilized in Land Use and Conservation Scenario Evaluations for comparing existing land use statuses and scenarios for future land uses, and tracking conservation progress over time. See the Goal Sets section for more detailed information on the development and use of goals in analyses.

Create a sub-goal set:

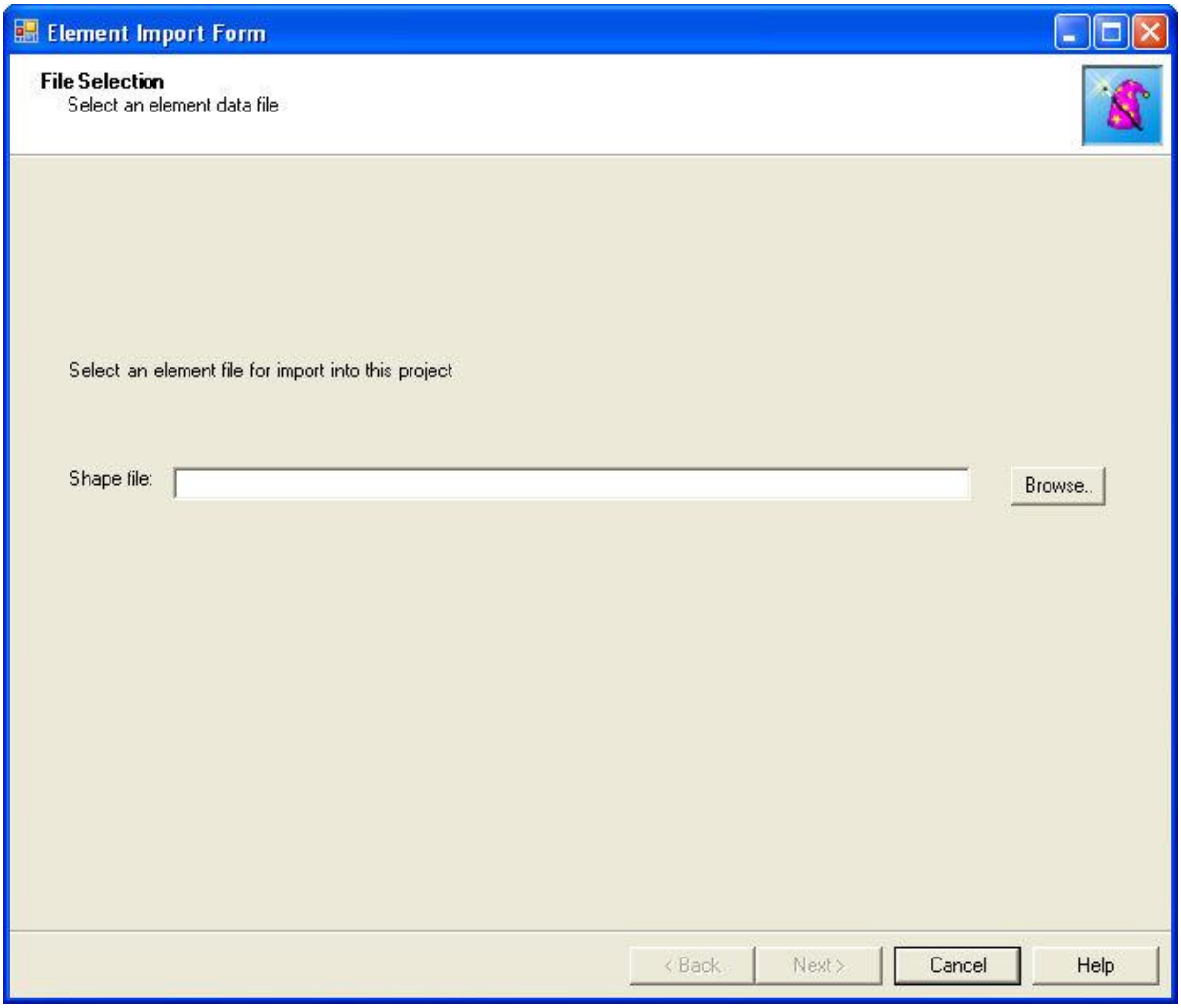
1. The value in the **Source Goal Set Name** field will default to the goal set selected in the Goal Set List window, but can be changed using the drop-down menu, which includes the option to use **< None >**, create a new goal set (**<Add New...>**), or to open the Goal Set List window displaying all existing goal sets (**<Show List...>**) in order to select and modify an existing set of goals.

2. Choose the filter to be used, if any, to define the new sub-regional goal set by changing the default value of **<Unfiltered>** to the appropriate choice from the **Source Filter** drop-down menu. The setting selected will restrict the elements that will be included in the sub-regional goal set to those permitted by that filter. The menu includes the option to create a new filter (**<Add New...>**), or to open the Filter List window displaying all existing filters (**<Show List...>**) in order to select and modify an existing filter.
3. Use the **Sub-Regional Layer** field to indicate the spatial layer to be used to define specific areas within the planning region for use in sub-regional goal sets. Although the default value in the field is **<None>**, a layer is required to create a sub-regional goal set. Select a layer from the drop-down menu, or by using the  ArcCatalog button to browse to the layer. To add additional values to the drop-down menu, add a layer to the table of contents. Note that the layer used must contain more than one polygon feature (e.g., parcels) in order to be used to define a sub-regional goal set.
4. To close the window, saving the sub-regional goal set click **OK** to begin processing; otherwise, click **Cancel**.



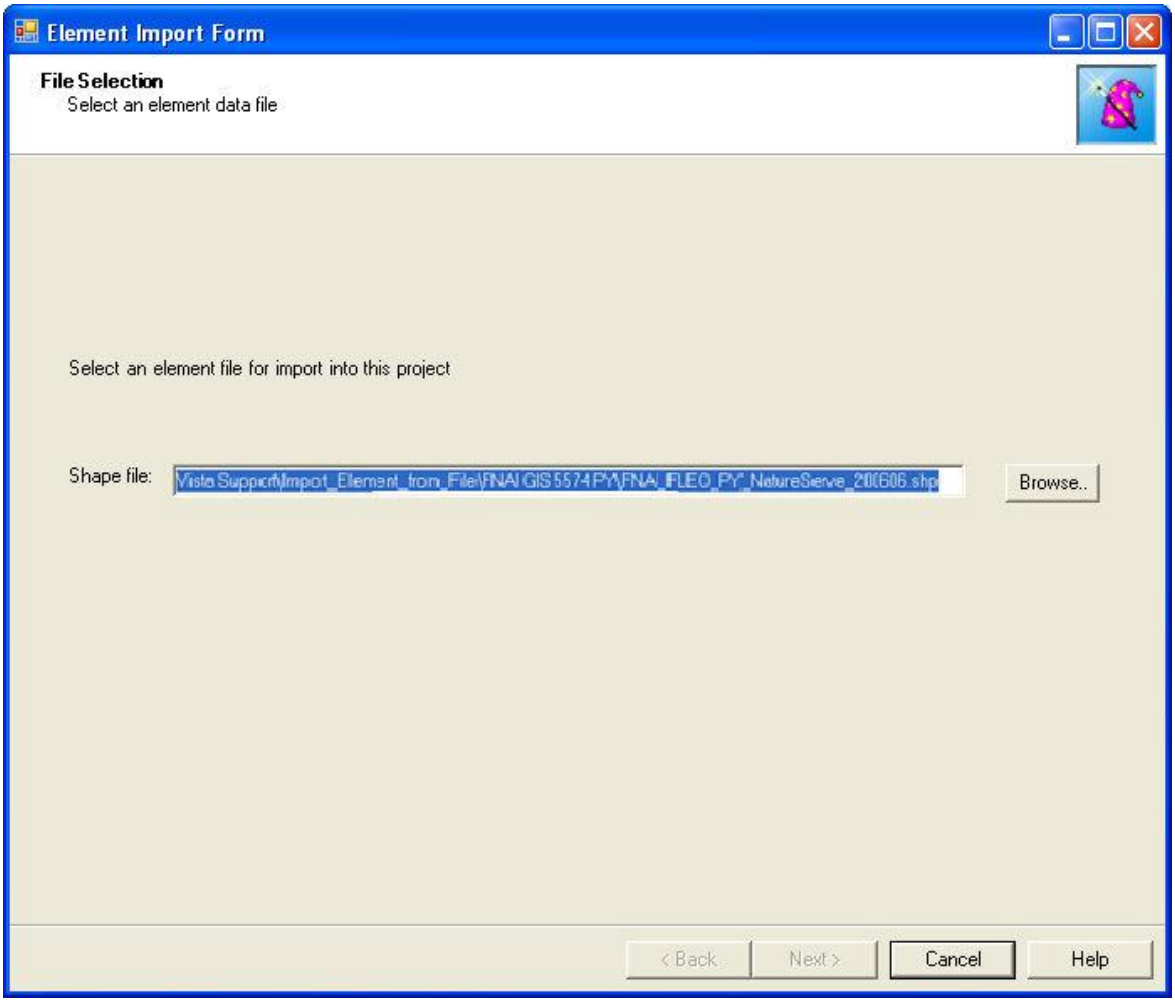
ELEMENT IMPORT FORM

The **Element Import Form** is displayed by clicking **Project ▸ Import Element Properties from File...** from the Vista menu. The form is used to import properties from multiple elements using a shapefile containing their attributes.

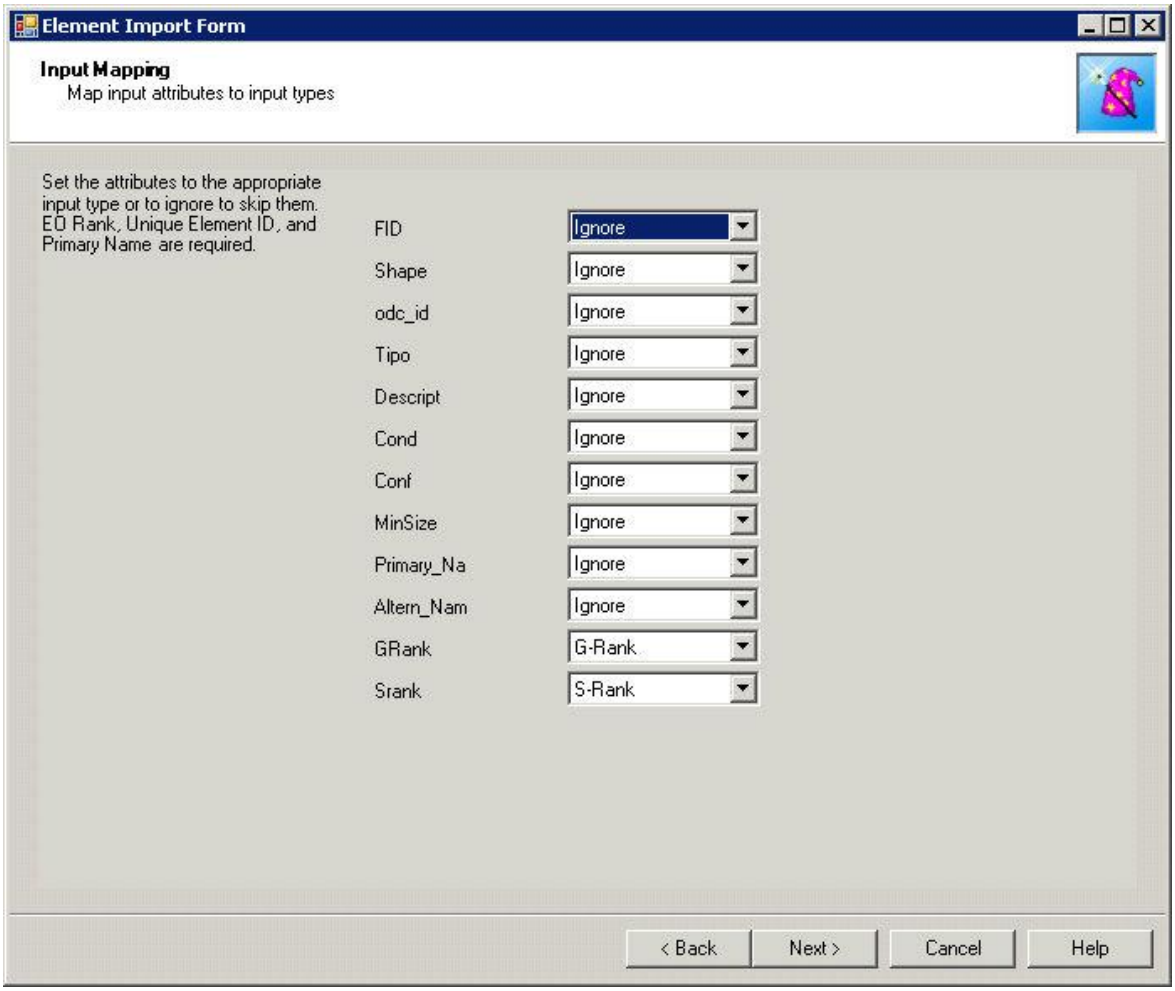


Import element properties:

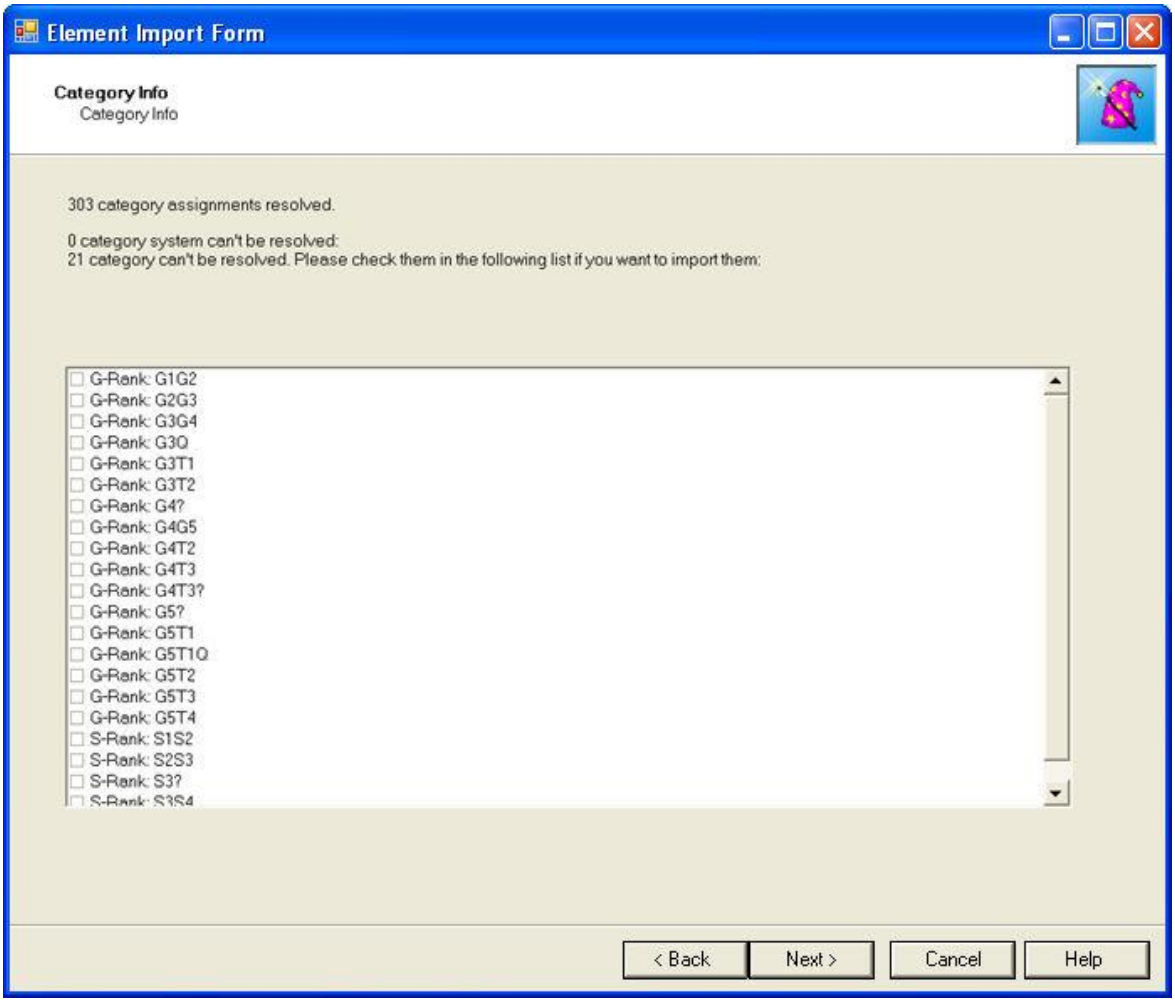
1. Click the **Browse...** button to navigate to a shapefile containing one or more element distributions, select the file, and click **Open,** or alternatively, enter the name of a shapefile directly into the **Shape File** field. Click **Next>**.



2. Edit EO rank to quality/integrity score conversions. Click **Next>**. CAM THIS IS AS FAR AS I GOT



3. Review the attributes that Vista cannot parse, and designate which to import manually. Click **Next>**.

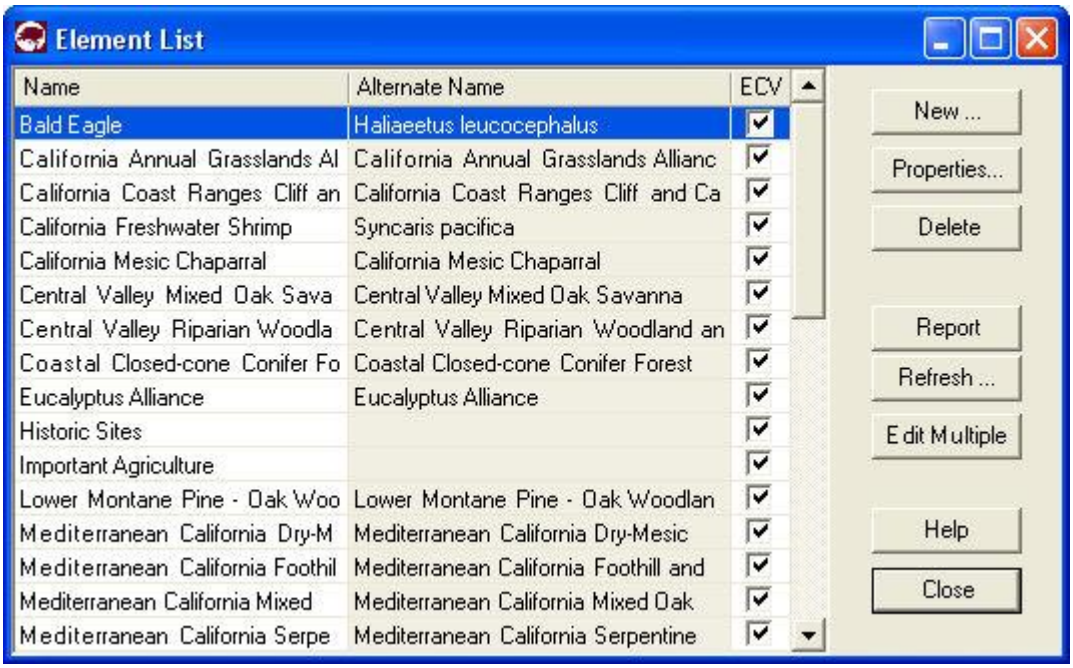


4. After the import process, separate element records will be created for each element in the shapefile. A spatial distribution layer must be specified for each element record before the element can be used in any Vista analyses. By opening the Element Properties window for each element, or by using the **Edit Multiple...** button on the Element List window, additional information can be added or edited.
5. Once the import process has completed and any related data have been entered, all of the elements must be processed by clicking the **Refresh...** button on the Element List window. See Refresh Selected Results for additional information on refreshing elements in Vista.

Element List Window

The **Element List** window is displayed by selecting either **Lists ▸Element List...** or **Manage Elements...** from the NatureServe Vista menu. This window lists all of the elements that have been entered into Vista for use in the project. See the

Element Selection section for more detailed information on elements to be included in a project.



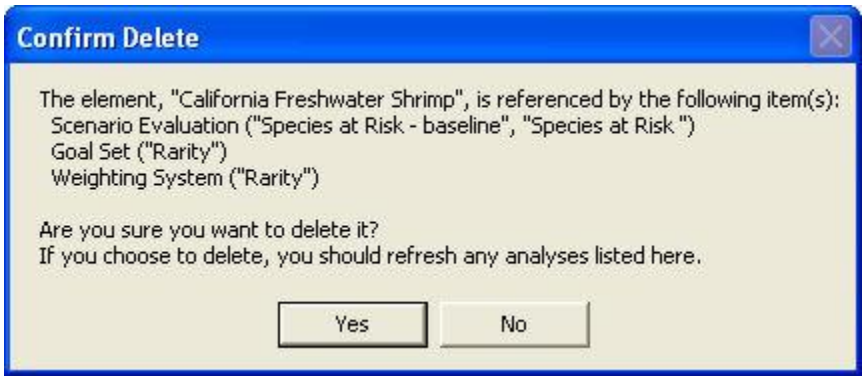
Button functions:

New... displays a new Element Properties window that can be used to add a new element to the project.

Properties... displays the Element Properties window showing details and allowing edits to the element selected in the list.

Delete deletes the element selected in the list.

A **Confirm Delete** window is displayed before the deletion is implemented, which includes information on any analytical tools and/or analyses that reference the element to be deleted, as shown in the following example.



Report displays a report for the selected element that provides data related to the element, including its spatial attributes and distribution, as well as its

inclusion in category systems used in analyses. See the Reports section for more details on Element Details reports.

Refresh... displays the Refresh Selected Results window that can be used to refresh the data for selected elements.

Edit Multiple displays the Multi-Element Property Edit window that can be used to set the value for a selected property across a specified group of elements at the same time.

Help opens the on-line documentation.

Close closes the window.

Columns displayed:

Name - name of an element that will be used in Vista input windows; this is typically the common name for the element.

Alternate Name - secondary name of the element, frequently the scientific name for the element.

ECV - checkbox that indicates that an Element Conservation Value layer has been created for the element.

Element Properties Window

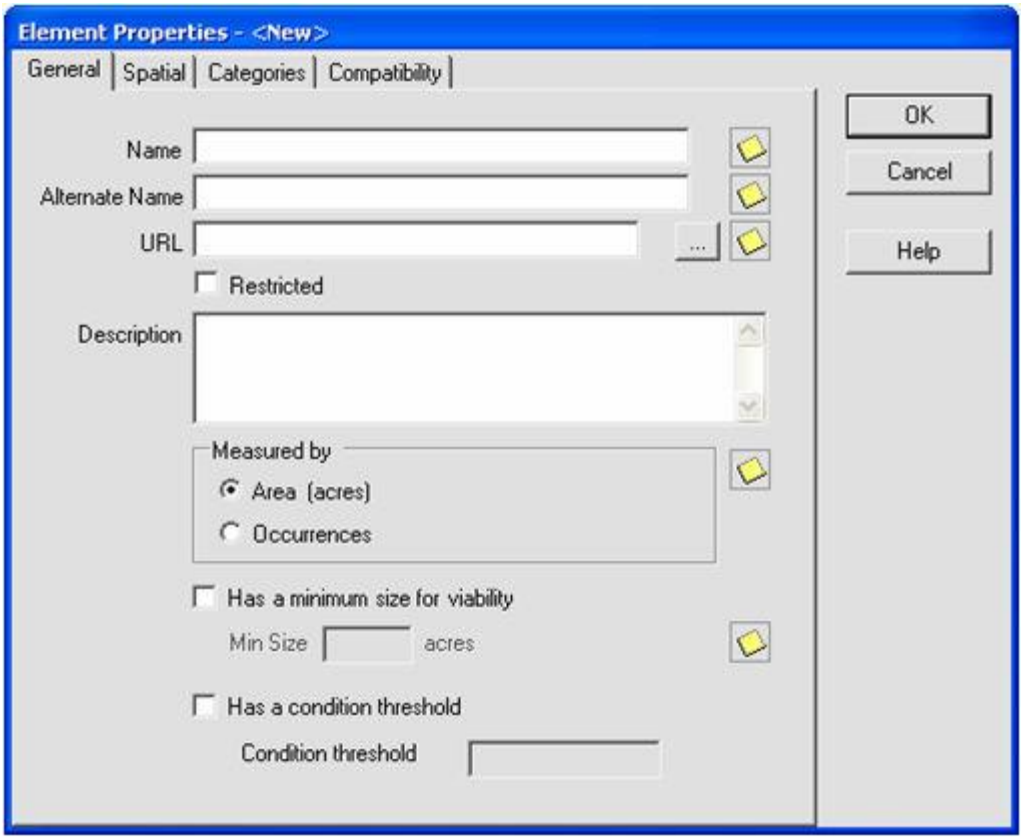
The **Element Properties - <New>** window is displayed by either clicking the **New...** button on the Element List window or choosing **Selection ▸New Element** from the NatureServe Vista menu while an element is highlighted in the Vista Table of Contents. The new properties window is used to add a new element, along with associated distribution layers and attribute data, to the project for use in analyses.

The Element Properties window consists of four tabs for recording specific types information on elements General, Spatial, Categories, and Compatibility. Depending on the analyses to be performed, different fields may be used, and data input may occur at different times. Specifically, some of the items on the General and Spatial tabs are completed for Conservation Value analyses only, while the Compatibility tab is used strictly for Land Use and Conservation Scenario Evaluations.

Note that the  button located next to an item can be used to record additional information related to that item (see the Documentation Window topic for more details).

Add an element:

General tab input



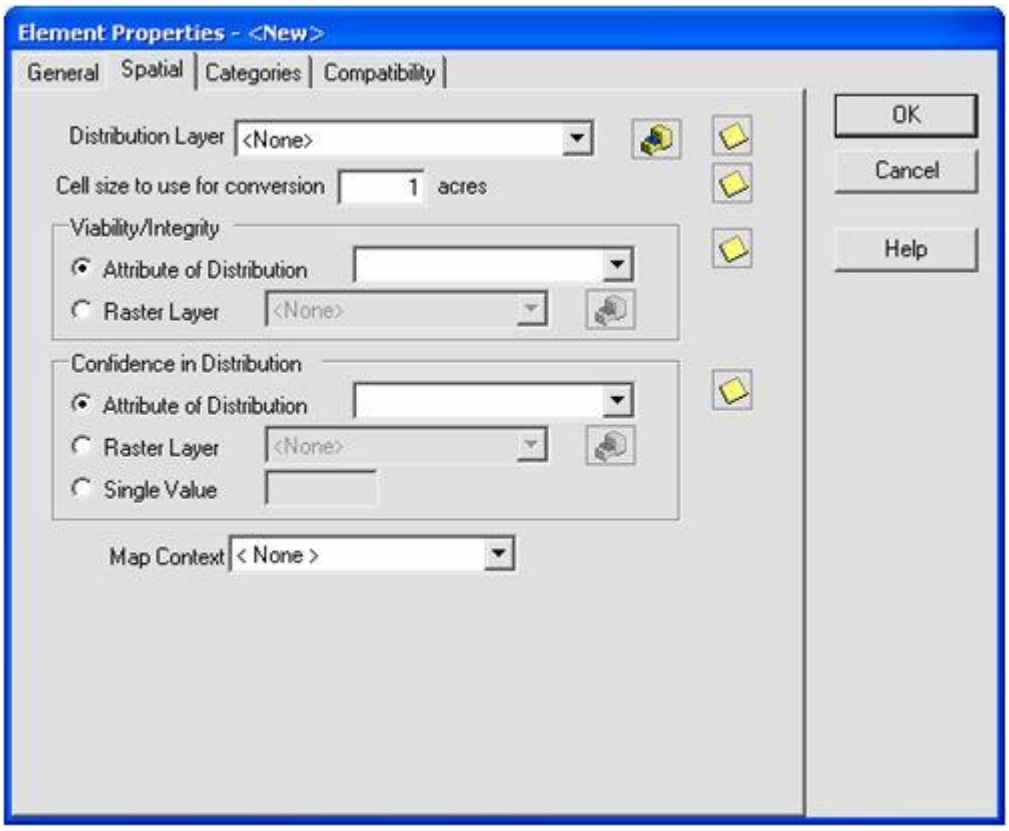
1. Specify a name for the element in the **Name** field. Typically this will be the common name used for the element. The **<New>** on the window title will change to the name of the new element as the entry is typed in.
2. Specify another name for the element in the **Alternate Name** field. Provided that the previous Name field contains the common name for the element, this field is generally used for its scientific name.
3. Enter a web address in the **URL** (Uniform Resource Locator) field that provides information related to the element (e.g., NatureServe Explorer). The ... button can be used to open an explorer window that goes directly to the URL entered in the field, or if there is no address specified, the explorer default window will open.
4. If the ability to edit the element data should be limited to members of the data development team, place a check in the **Restricted** checkbox.
5. Enter a brief description of the element in the Description field, if desired.

Note: If records are being created for selected elements before additional data has been obtained/developed, data entry for the remaining fields on this tab, as well as for the Spatial tab and Compatibility tab (if needed), can be deferred until distribution layers have been developed for elements (see the process for developing distribution layers), and any attributes have been assigned (see processes for assigning viability/integrity values and confidence values). It may be a more effective use of data entry time to open each element record only once

to enter all of this information at the same time, rather than repeating the process several times to enter each of these items separately.

6. Indicate whether the distribution of the element is represented by area or by distinct occurrences using the appropriate **Area** or **Occurrences** radio button.
7. Indicate whether there is a minimum size required for viability of the element in the checkbox, and if so, enter the **Minimum Size**. This minimum size value is used to exclude occurrences (i.e., 1 occurrence = 1 record in a distribution shapefile) that do not overlap with both a "compatible" land use and a "reliable" policy in Scenario Evaluation analyses, AND that fail to meet the element's condition threshold, from the total to be compared with the minimum size. If the area of the occurrence is less than the designated minimum size, the entire occurrence is not considered to be viable and is excluded from analyses.
8. Indicate whether there is a threshold for condition of the element in the checkbox, and if so, enter a value (ranging from 0.0 to 1.0, low to high threshold, respectively) for **Condition Threshold**. The condition threshold value is used to exclude data to be included in analyses on the basis of failing to meet minimum condition requirements to be considered viable. Condition threshold values specified in this field should result from running models in the system, rather than from element quality data.
9. To close the window and save the data entered in the element record click **OK**; otherwise, click **Cancel**.

SPATIAL TAB INPUT



1. Select the distribution layer for the element from the drop-down menu of the **Distribution Layer** field, or by using the  ArcCatalog button to browse to the layer. (Layers will be displayed in the drop-down menu only if the layer is the correct feature type and is included on the Display Type tab of the Table of Contents [TOC].) See the Element Distributions section for more details on distribution layers.
2. Enter a value indicating the cell size to be used for conversion. For a discussion of optimal cell size to be used for a planning project, see the Determining Grid Cell Size topic.

   Note: If Land Use and Conservation Scenario Evaluations are to be performed, the grid cell size used to create the visualization layers generated by a Scenario Evaluation is set in this field. If this cell size differs greatly from the cell size specified for the scenario used in the evaluation (set in the Scenario Properties window), the visualization layers may not overlay the scenario correctly.

If Conservation Value analyses are to be performed, data entry for the fields contained in the *Viability/Integrity* and *Confidence in Distribution* group boxes (described in the following steps 3 and 4) can be deferred until values for these attributes have been assigned (see the sections on Viability/Integrity and Confidence for details on these attributes).

3. **If Conservation Value analyses are to be performed**, indicate whether the viability/integrity value is an **attribute of the distribution**

layer for the element, or is represented by a **raster layer** using the appropriate radio button.

If a raster layer is used, select the layer from the drop-down menu associated with the raster layer, or browse to the layer using the ArcCatalog button.

See the Viability/Integrity section for more details on this attribute.

4. I**f Conservation Value analyses are to be performed**, indicate whether the confidence value is an **attribute of the distribution** layer for the element, is represented by a **raster layer**, or will consist of a single assigned value for all occurrences of the element, using the appropriate radio button.

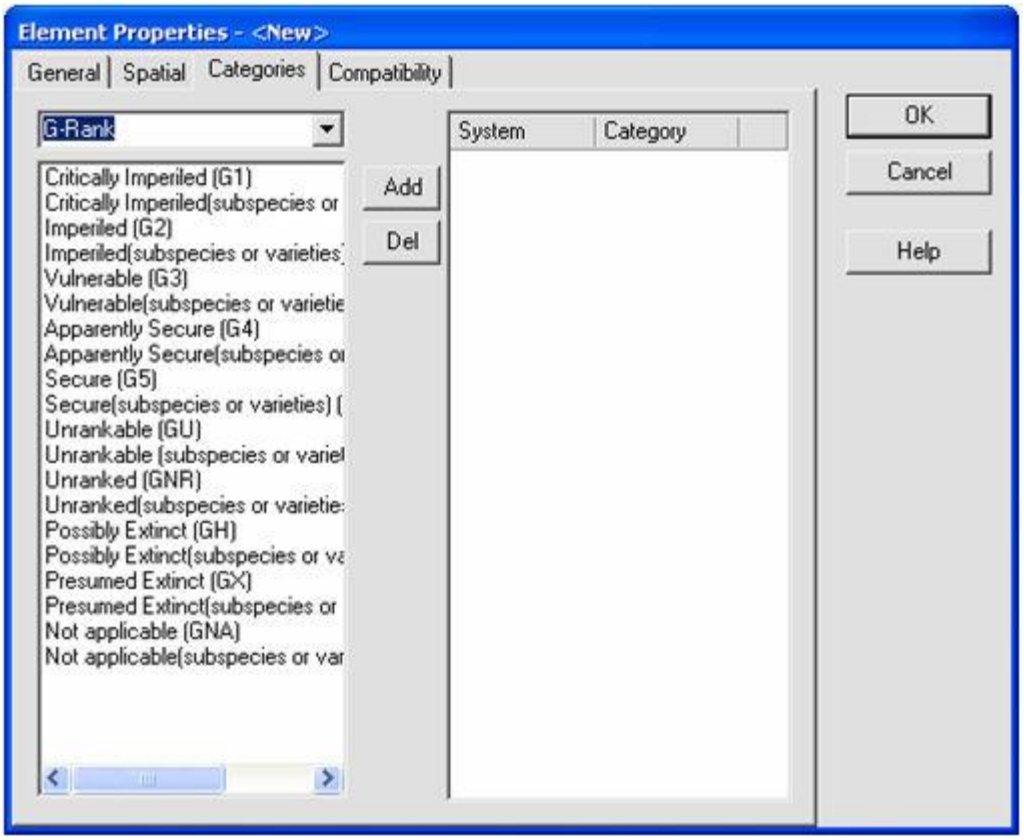
   If a raster layer is used, select the layer from the drop-down menu associated with the raster layer, or browse to the layer using the ArcCatalog button.

   If a single value for confidence is to be used, record that value in the field next to the **Single Value** radio button.

   See the Confidence section for more details on this attribute.

5. Select from the **Map Context** drop-down menu an existing context to be used in creating reports for the element, if any. If a map context needs to be created for the element, see the topic entitled Map Context Properties Window.
6. To close the window and save the data entered in the element record click **OK**; otherwise, click **Cancel**.

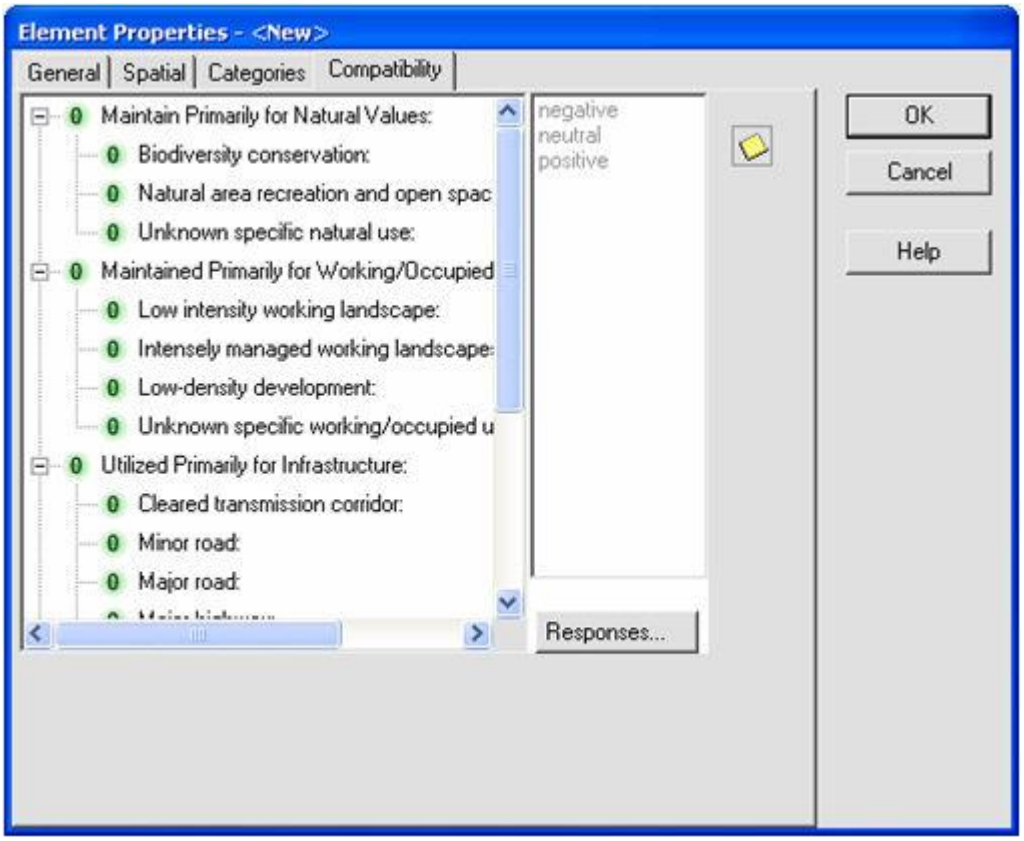
CATEGORIES TAB INPUT



Information on Category Systems to which an element belongs can be entered at any time once the element record has been created. Several default categories are provided in Vista, so it may be useful to indicate any of the default categories that apply initially, and then create additional categories and assign elements later as needed for developing Filters, conservation Goal Sets, and Weighting Systems, and performing analyses. To create a new category system, see the Category System Properties window section for details.

1. To specify a category system to which the element belongs, select the Category System from the drop-down list in the upper left of the window. A list of the categories within that system will be displayed below the system name.
2. Select the category to which the element belongs, and then click the **Add** button. The name of the system and category to which the element belongs will be displayed in the right pane of the window.
3. Repeat the system/category selection and add process to specify additional categories as needed.
4. To delete an element from a category system, select the system and category in the right pane and click the **Del** button.
5. To close the window and save the data entered in the element record click **OK**; otherwise, click **Cancel.**

COMPATIBILITY TAB INPUT



An indication of the degree to which implementation of a specific Land-use Intent (LUI) category (described in Appendix F) is compatible with an element - that is, will permit the element to persist - is recorded using this window. More specifically, implementation of compatible LUIs will permit a species to remain viable or an ecological element to maintain ecological integrity. Scenario Evaluations, used to assess element compatibility with various land use scenarios in terms of meeting conservation goals, are dependent upon these compatibility assignments for accurate results, so it is strongly recommended that only experts on the element assign compatibility. Any decisions related to compatibility should be recorded (using the button to access the associated Documentation Window) to allow peer review and/ or legal review.

For more details on compatibility, see the Land Use and Conservation Scenario Evaluations section.

1. **If Land Use and Conservation Scenario Evaluations are to be performed**, indicate the degree to which the element is compatible with each of the NatureServe Vista LUI categories by clicking on the LUI to be assigned, and selecting the appropriate compatibility response from the list in the column to the right.

   Assigning a response value to a major LUI category (e.g., "Maintain Primarily for Natural Values") will cause the system to automatically assign the entire category the same value (i.e., both the major category name and

all of its associated child [minor] categories). However, assigning a compatibility response for a minor category LUI (e.g., "Biodiversity conservation") will not cause any other items in the category to be automatically designated.

2. To edit or add a new value to the list of compatibility responses, click the **Responses...** button to open the Compatibility List window.
3. To close the window and save the data entered in the element record click **OK**; otherwise, click **Cancel**.

Edit Element Information:

Element properties can be edited either individually, or for multiple elements simultaneously, as described below.

Edit an individual element:

1. Navigate to the Element Properties window populated with existing data for the element by either right-clicking the element name in the NatureServe Vista table of contents and selecting **Element Properties...** from the resulting menu, or by clicking **Manage Elements...** from the Vista menu, selecting the element in the Element List window that opens, and clicking the **Properties...** button. The resulting properties window displays data for the element.
2. Edit element properties data using the processes described above for adding an element as guidelines. More detailed descriptions of elements and related data can be found in the Element Selection, Element Distributions, Viability/Integrity Attributes, and Confidence Attributes sections.
3. To close the window and save any changes made to the element record click **OK**; otherwise, click **Cancel**.

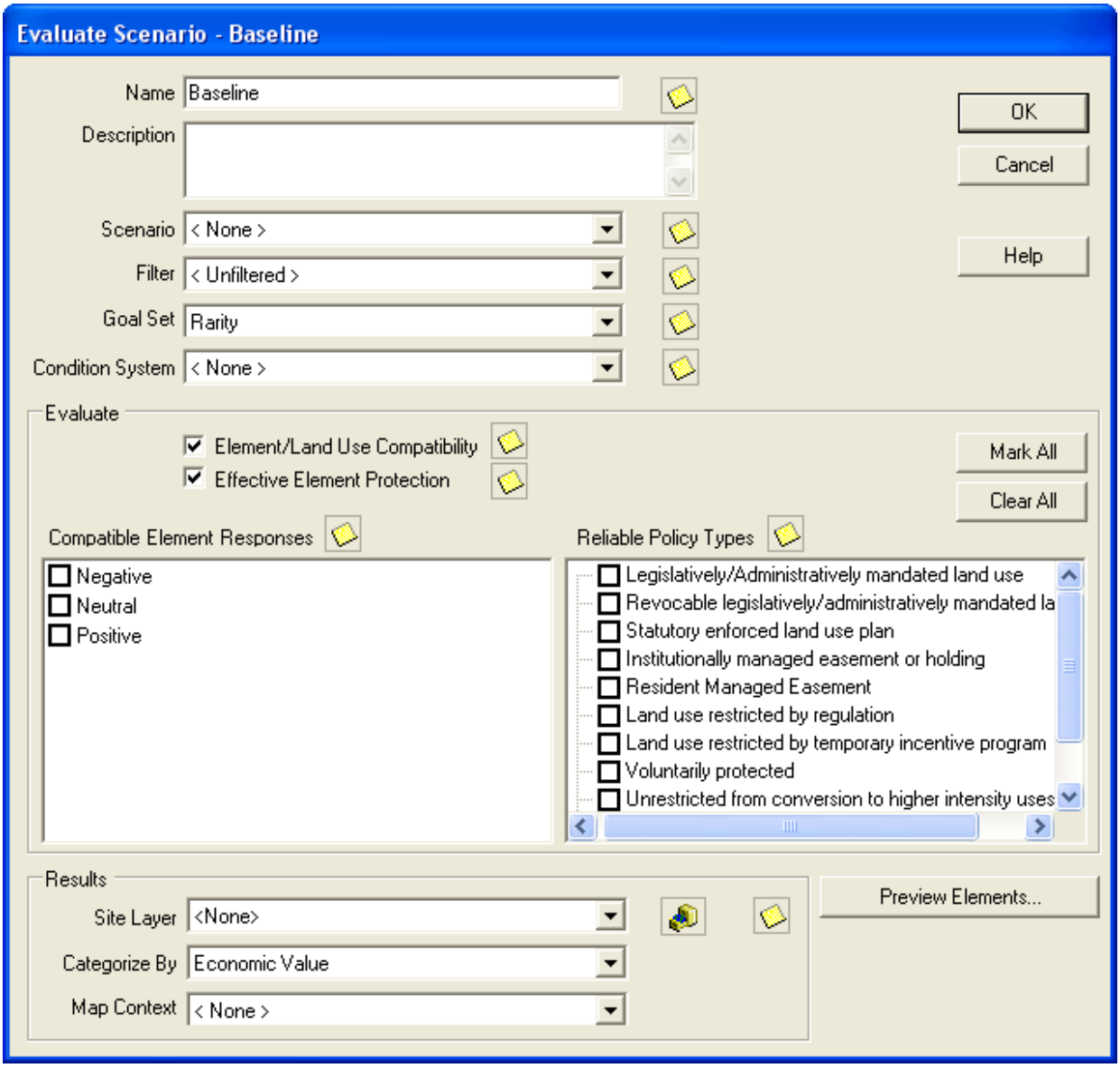
Edit multiple elements:

1. Click **Manage Elements...** from the Vista menu to open the Element List window, and click the **Edit Multiple...** button to set property values for a designated set of elements simultaneously. See the Multi-Element Property Edit window for details on the process for editing properties for a group of elements.

EVALUATE SCENARIO WINDOW

The **Evaluate Scenario- <New>** window is displayed either by selecting **Evaluate Scenario...** from the NatureServe Vista menu or clicking the **Evaluate...** button on the Scenario List window. This window is utilized for evaluating different land use and conservation scenarios (see the Scenario Evaluations section for more detailed information).

Note that the button located next to an item can be used to record additional information related to that item (see the Documentation Window topic for more details).



Evaluate a scenario:

1. Enter a name for the evaluation being performed in the **Name** field. The **<New>** on the window title will change to the name of the new scenario evaluation as the entry is typed in.
2. Enter a brief description for the new evaluation in the **Description** field.
3. Select the scenario to be evaluated from the **Scenario** drop-down list, or select the **<Add New...>** value to develop a new scenario, or the **<Show**

List...> value to display all developed scenarios (in order to select and modify an existing scenario).

4. Select the Filter (which determines the elements to be included in the evaluation) from the **Filter** drop-down list, or select the **<Add New...>** value to create a new Filter, or the **<Show List...>** value to display all existing filters (in order to select and modify an existing filter).
5. Select the Goal Set for the evaluation (which will be used to assess whether viable element occurrences are adequately conserved in different locations) from the **Goal set** drop-down list, or select the **<Add New...>** value to create a new Goal Set, or the **<Show List...>** value to display all existing goal sets (in order to select and modify an existing set of goals). Note that to evaluate multiple goal sets, a separate evaluation will need to be created for each set.
6. Click the **Preview Elements...** button to see a Filtered Goal Set Report showing the set of elements to be included in the evaluation and the goals that have been set for these elements, based on the values selected in the **Filter** and **Goal Set** fields. This knowledge can be helpful prior to running the scenario evaluation. The greater the number of elements included in an evaluation, the longer it will take to process; adjusting/creating a filter that will limit the evaluation to just those elements that are needed will ensure the most efficient use of processing time.
7. Indicate whether the scenario will be evaluated for compatibility of elements with the land uses (indicated on the Compatibility tab of the Element Properties window) and/or for protection in the region by checking one or both of the **Element/Land Use Compatibility** and **Effective Element Protection** checkboxes.
8. If element protection will be evaluated (denoted using the **Effective Element Protection** checkbox in the previous step), indicate which policy types are considered to reliably protect viable occurrences if elements in the scenario during the planning time frame by utilizing the appropriate checkboxes in the **Reliable Policy Types** section. To check all the boxes with one keystroke, click the **Mark All** button; clicking the **Clear All** button will remove any checkmarks from the boxes. At least one protection type must be selected as valid for the evaluation or an error indicator will be displayed.

This is a subjective process that separates scientific knowledge (land use intent [LUI] compatibility) from sociopolitical considerations (policy types [PT]). Whether a particular policy provides adequate protection for viable occurrences of elements is determined by judging the degree to which the policy mechanism guides the implementation of LUI designations, allowing or preventing land uses of greater intensity (that would fail to protect viable occurrences). For example, a zoning policy may be generally reliable in enforcing a particular land use but, because it can be changed with relative ease, it may not effectively insure implementation of a particular LUI over the planning time frame; thus, it may not offer adequate protection for

viable occurrences from a conservation perspective. In comparison, lands held by nongovernment conservation organizations are typically managed for much less intense uses than are allowed under the local zoning regulations; such lands would, thus, offer better protection for viable occurrences than the allowable uses that would likely occur with different ownership/management.

Any assumptions made in designating specific PTs as reliable for protection should be documented (e.g., "zoning is now more strictly enforced than it was in previous years, and so was designated 'reliable' in this project"). The ability to designate different PTs as reliably providing protection can be used to test the benefits of enforcing particular policies in the planning region by creating separate evaluations for different combinations of reliable PTs and then comparing the results.

9. Specify a layer to be used in Site Analyses from the drop-down menu of the **Site Layer** field, or by using the  ArcCatalog button to browse to the layer. The land units in the layer selected will be used for detailed examination of land use/policy type and element goals by unit.
10. Indicate how the Scenario Evaluation report should be summarized by selecting a category system from the **Categorize By** drop-down list, or selecting the **<Add New...>** value to create a new system, or the **<Show List...>** value to display all existing category systems (in order to select and modify an existing system).
11. Select a map context to be used in creating the scenario evaluation report from the **Map Context** drop-down menu, or select the **<Add New...>** value to create a new map context, or the **<Show List...>** value to display all existing map contexts (in order to select and modify an existing context).
12. Generate the Scenario Evaluation by clicking **OK**; otherwise press **Cancel**. Results are displayed in a Scenario Evaluation report. See the Scenario Evaluation report for more detailed information.

Note: The grid cell size used to create the visualization layers generated by the Scenario Evaluation is set on the Spatial tab of the Element Properties window. If that cell size differs greatly from the cell size specified for the scenario used in the evaluation (set in the Scenario Properties window), the visualization layers may not overlay the scenario correctly.

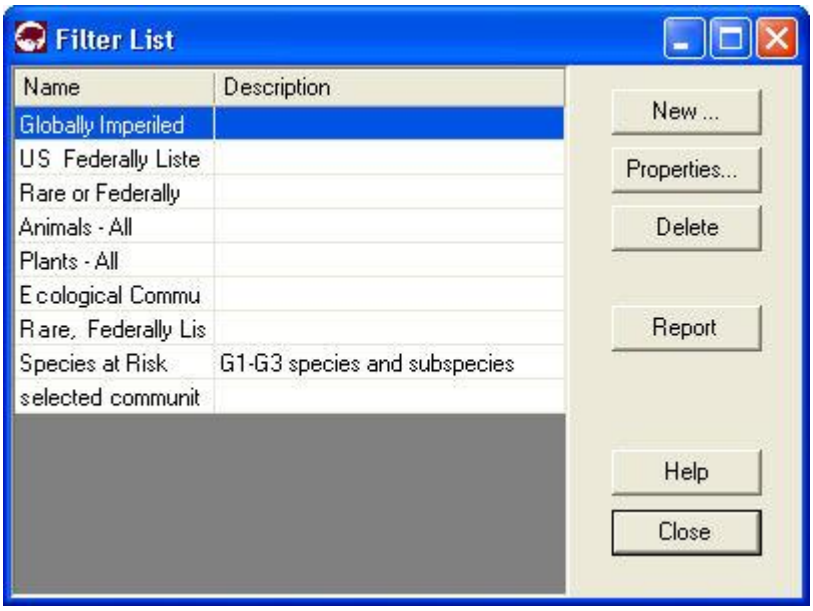
Edit a Scenario Evaluation:

1. Select the Scenario Evaluation from the NatureServe Vista Table of Contents (TOC), right-click, and choose **Scenario Evaluation Properties...** from the context window. The resulting window displays the evaluation.

2. Edit the Scenario Evaluation using the processes described above for creating a new evaluation as guidelines.
3. Generate the revised Scenario Evaluation by clicking **OK**; otherwise press **Cancel**.

FILTER LIST WINDOW

The **Filter List** window is displayed by selecting **Lists ▸Filter List...** from the NatureServe Vista menu. This window lists all the filters that have been created for the project. See the Filters section for more detailed information on the development and use of filters in analyses.



Button functions:

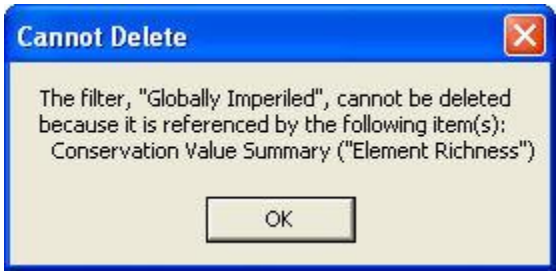
New... displays a new Filter Properties window that can be used to develop a new filter to be used in the project.

Properties... displays the Filter Properties window showing details and allowing edits to the filter selected in the list.

Delete deletes the filter selected in the list.

A **Confirm Delete** window is displayed before the deletion is implemented.

A **Cannot Delete** window is displayed in cases when the filter is referenced by another item used in project analyses, as shown in the following example.



Report displays a report that describes the selected filter and lists the elements that are included for analysis when the filter is applied. See the Reports section for more details on Filter reports.

Help opens the on-line documentation.

Close closes the window.

Columns displayed:

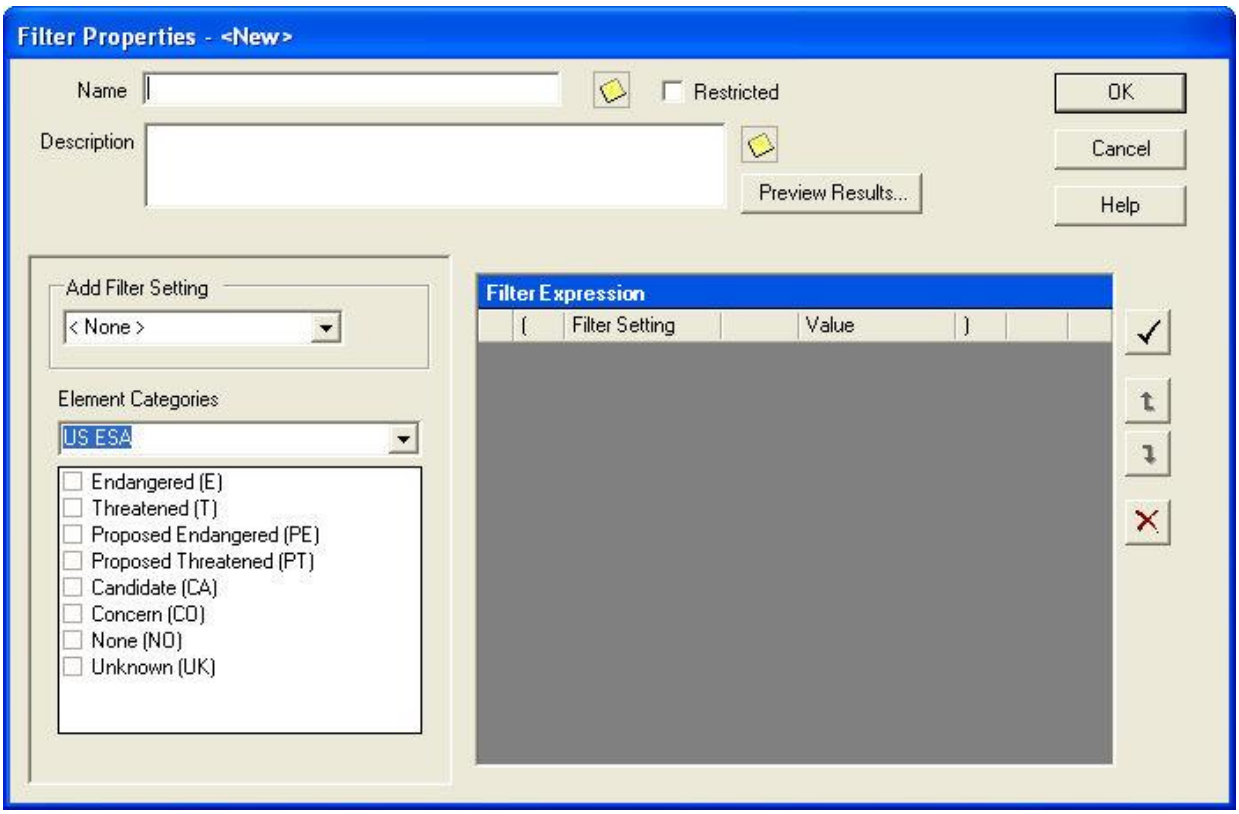
Name - name of the filter.

Description - description of the filter, if any.

FILTER PROPERTIES WINDOW

The **Filter Properties - <New>** window is displayed by clicking the **New...** button on the Filter List window. The new properties window is used to create a filter that can be used to define the set of elements to be included in analyses. See the Filters section for more detailed information on the development and use of filters in analyses.

Note that the  button located next to an item can be used to record additional information related to that item (see the Documentation Window topic for more details).



Create a filter:

1. Specify a name for the filter in the **Name** field. The **<New>** on the window title will change to the name of the new filter.
2. If the ability to edit the filter should be limited to members of the data development team, place a check in the **Restricted** checkbox.
3. Enter a brief description of the filter in the **Description** field, if desired.
4. Choose the expression to be used to define the new filter by selecting the appropriate type from the **Add Filter Setting** drop-down menu. The setting selected will restrict the values that can be used to create that expression to those permitted by that filter. Available settings are as follows:
    - **Element Categories** - used to select categories of elements
    - **Individual Elements** - used to select specific elements
    - **Spatial Filter** - used to designate a specific area within which elements must be located
    - **Existing Filter** - used to select an existing filter
5. Select the appropriate value(s) to be used to define the elements and/or area to be included in an analysis. This process may differ based on the setting identified in the previous step, as follows:

Element Categories setting will cause a drop-down menu to be displayed containing all of the category systems defined in Vista. Select the category system to be used, and the categories within that system will be displayed with checkboxes. Check the box(es) for the category(ies) to be used in the expression. The categories selected will be automatically added as a row in the **Filter Expression** table. If desired, select another category system from the drop-down list and select categories from that system; another row will be added to the table.

Individual Elements setting will cause the list of elements in the Vista database to be displayed with checkboxes. Check the box(es) for the element(s) to be used in the expression, and the elements selected will be automatically added as a row in the Filter Expression table.

Spatial Filter setting will result in radio buttons that indicate the area to be used in the filter expression. The Project Boundary, or Default Boundary, is automatically included in all analyses and does not need to be selected from the spatial filter menu. To designate an area smaller than the project boundary, use the **Sub-Region** radio button to select a layer from the drop-down menu, or by using the  ArcCatalog button to browse to the layer. Note that if a sub-region is to be specified, the layer used must contain only a single feature (e.g., the county shape), and that only one layer can be used in the filter expression. Selecting another layer will result in its substitution for the layer originally chosen for the expression. In addition, spatial filters cannot be nested or included in sub-expressions, and can only be related to other rows in the **Filter Expression** table using the **AND** operand (see step 7 for information about operands).

Existing Filter setting will cause a drop-down menu to be displayed containing all of the filters already defined in Vista. Select the filter to be used and the expressions within that filter system will be displayed, and the filter automatically added as a row in the Filter Expression table. If desired, select another filter from the drop-down list and another row will be added to the table.

6. Repeat steps 4 and 5 as needed to create additional rows in the **Filter Expression** table. In some cases, different values from the same filter setting need to be represented by separate rows in the filter expression (e.g., when different operands need to be applied). In such cases, after selecting the values to be included in a row, reset by selecting a different filter setting and then select the desired setting again. Check off the desired values, and these will be displayed in a separate row in the **Filter Expression** table.
7. Once there is more than one row in the table, relationships between criteria in the different rows should be indicated. Click on the last column to the right in the table (before the column displaying the documentation icons) and select the appropriate operand, if any, to be used for different

rows, with **AND** indicating that all criteria defined in that row and following one must be met and **OR** indicating that criteria in at least one of the two rows must be met. Note, however, that **AND**s and **OR**s cannot be mixed in the same sub-expression. Click in the appropriate **(** and **)** columns to add brackets where needed in the expression. Entire rows can be moved up and down using the arrow buttons. A selected row can be deleted using the X button.

Moving the cursor from row to row in the **Filter Expression** table will cause the categories, elements, or other filters in the row to be automatically displayed in the lower left portion of the window for editing purposes, but the setting in the Add Filter Setting box will not change from the last one used to select values.

8. Once you have completed the entries and defined relationships in the **Filter Expressions** table, validate the expression by clicking the  validate button. If the expression cannot be validated, a window will be displayed indicating that the expression is not valid. Click **OK** and point to any column indicators in order to display a brief statement describing the issue with the expression that prevents its validation. Correct the expression and recheck the validation.

   If the filter expression is valid, a window will be displayed indicating that the expression is valid. Click **OK**.
9. To review the elements and/or area that will be included in analyses when the filter is applied, click the **Preview Results...** button. The resulting report will display the entire expression including brackets and operands, as well as any spatial filter used. See the Reports section for more details on Filter reports.
10. To close the window and save the expression developed for the filter click **OK**; otherwise, click **Cancel**.

Edit a filter:

1. Select the filter from the list on the **Filter List** window (e.g., Element Type) and click the **Properties...** button. The resulting properties window displays the criteria defined for the filter.
2. Edit the filter using the processes described above for creating a new filter as guidelines.
3. To close the window and save any changes made to the filter click **OK**; otherwise, click **Cancel**.

GENERATE CONSERVATION SOLUTION WINDOW

The **Generate Conservation Solution** wizard is displayed by selecting **Generate a Conservation Solution...** from the NatureServe Vista menu. This window is used to prepare the necessary input data for analysis by external conservation solution software, specifically MARXAN and SPOT (the Spatial Portfolio Optimization Tool). These applications evaluate different units of land

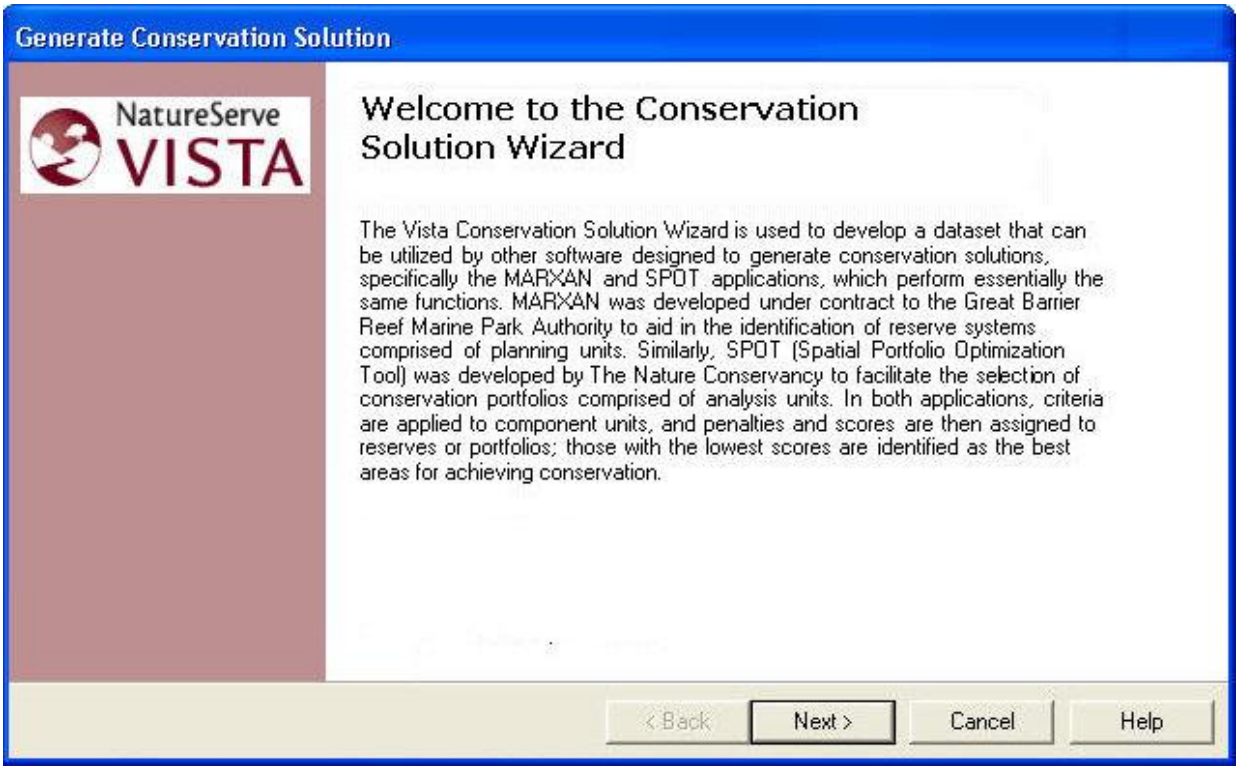
according to criteria to determine which sets, when combined into larger units (e.g., portfolios or reserve systems) result in optimal conservation solutions in terms of several factors, including cost and representation of conservation targets. Once the input data are generated by Vista, the user is walked through the process of initiating solution runs using the external application.

For more detailed information on the MARXAN and SPOT applications, see http://www.ecology.uq.edu.au/marxan.htm and http://www.conserveonline.org/workspaces/spot, respectively.

Prepare for generating a conservation solution:

Before beginning the solution generation process, two or more attribute columns must be added to the analysis unit layer (identified in step 2 below) that will be used in the process.

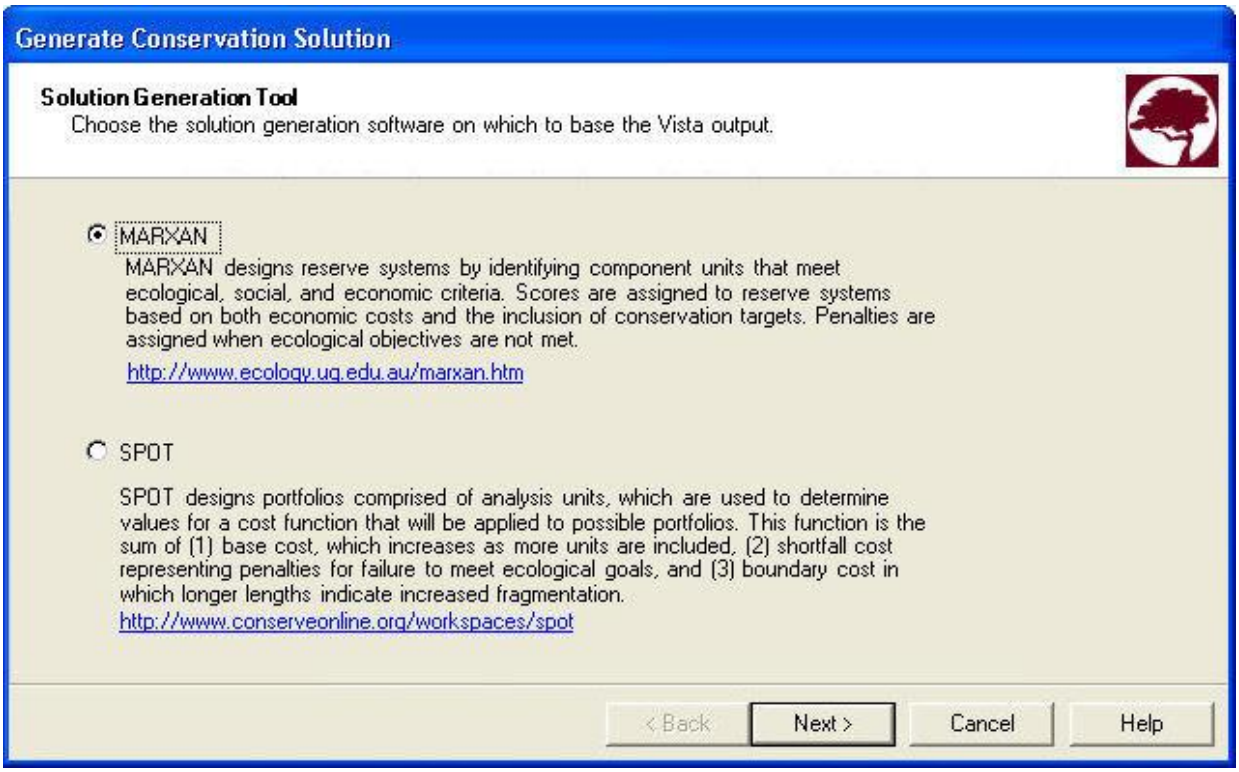
- One or more columns must be added to represent different types of costs (e.g., effort [in days], mitigation costs), with values associated with units to be considered in the solution (indicated in step 4, below).
- One column must be added to represent the attribute selection status (indicated in step 5, below); values for this attribute are limited to **Locked In**, **Locked Out**, or may be null. The selection status attribute serves to identify units to be included (Locked In) or excluded (Locked Out) when a solution is generated; null values will permit the solution generator to choose whether or not to include the unit in the solution.



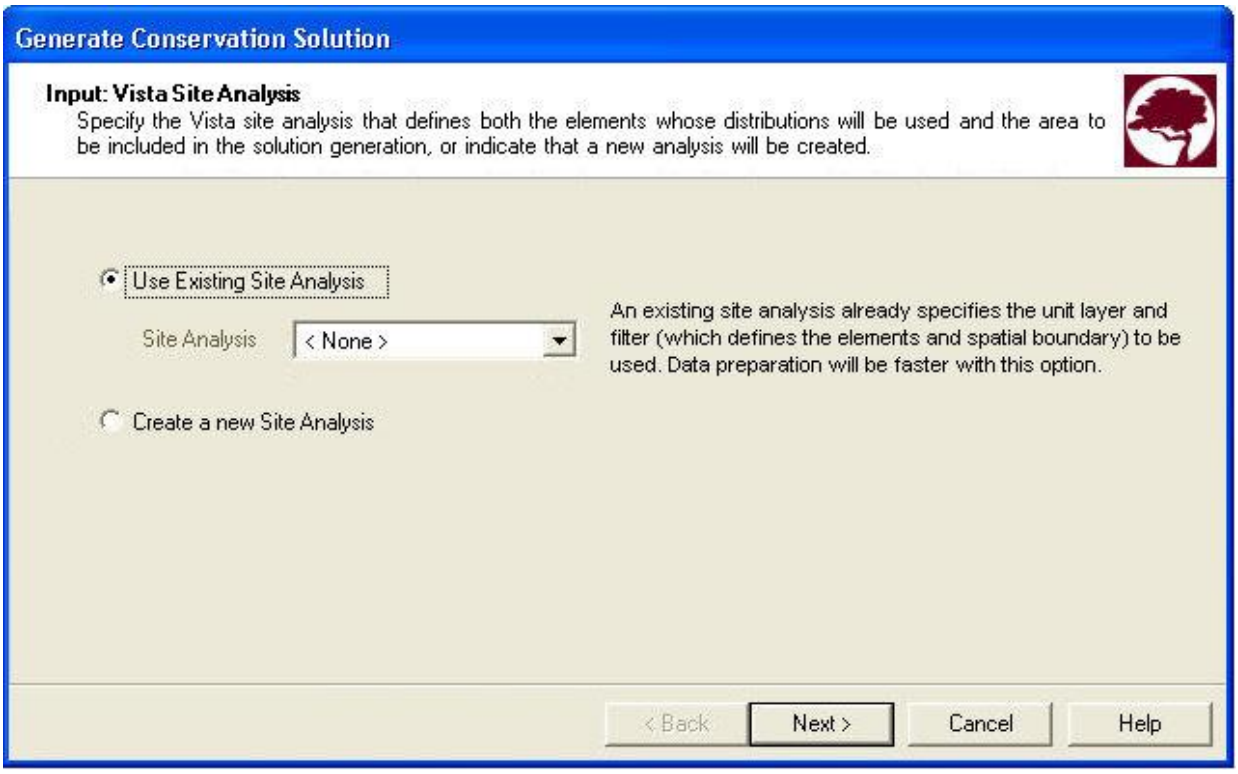
Note that at any time during the process of generating a solution, the previous step in the process can be revisited (and data changed, if desired) by clicking the **<Back** button, or the action can be canceled altogether by clicking the **Cancel** button.

Generate a conservation solution:

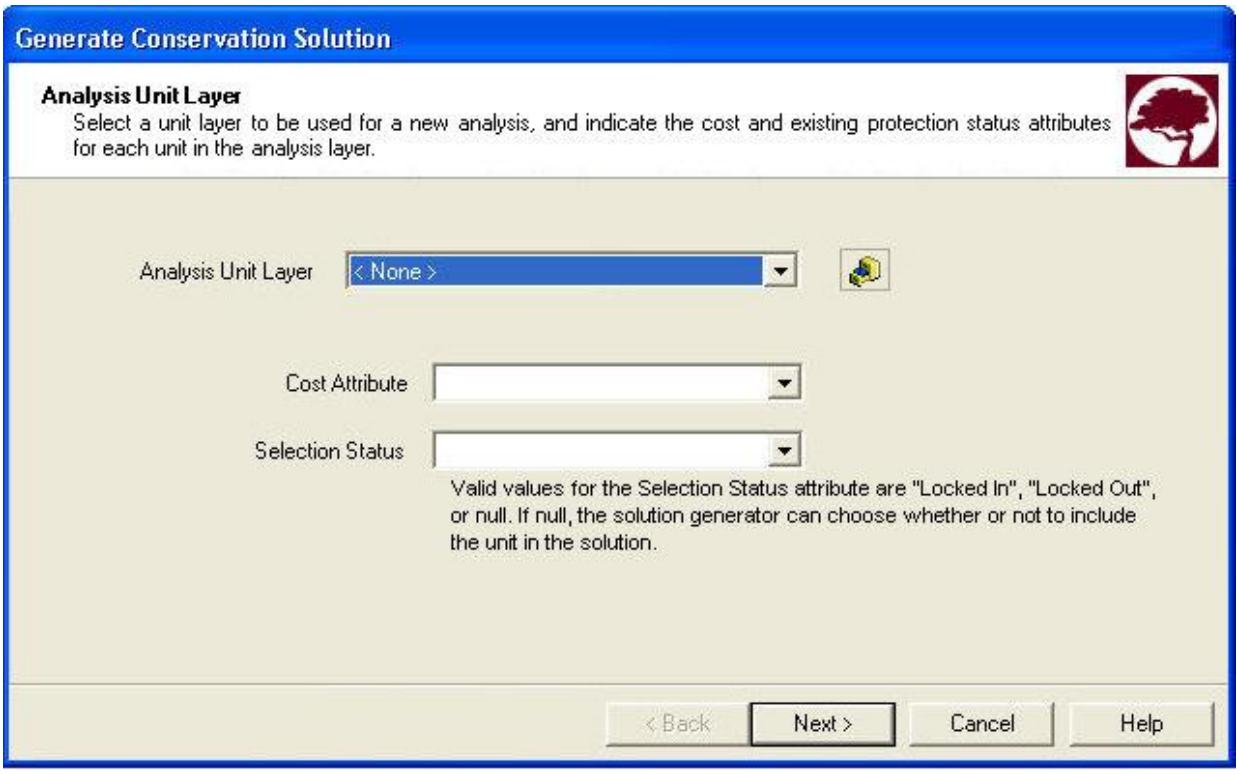
1. Indicate which application should be used as the basis for the solution to be generated by Vista using the appropriate **MARXAN** or **SPOT** radio button. Click **Next>**.



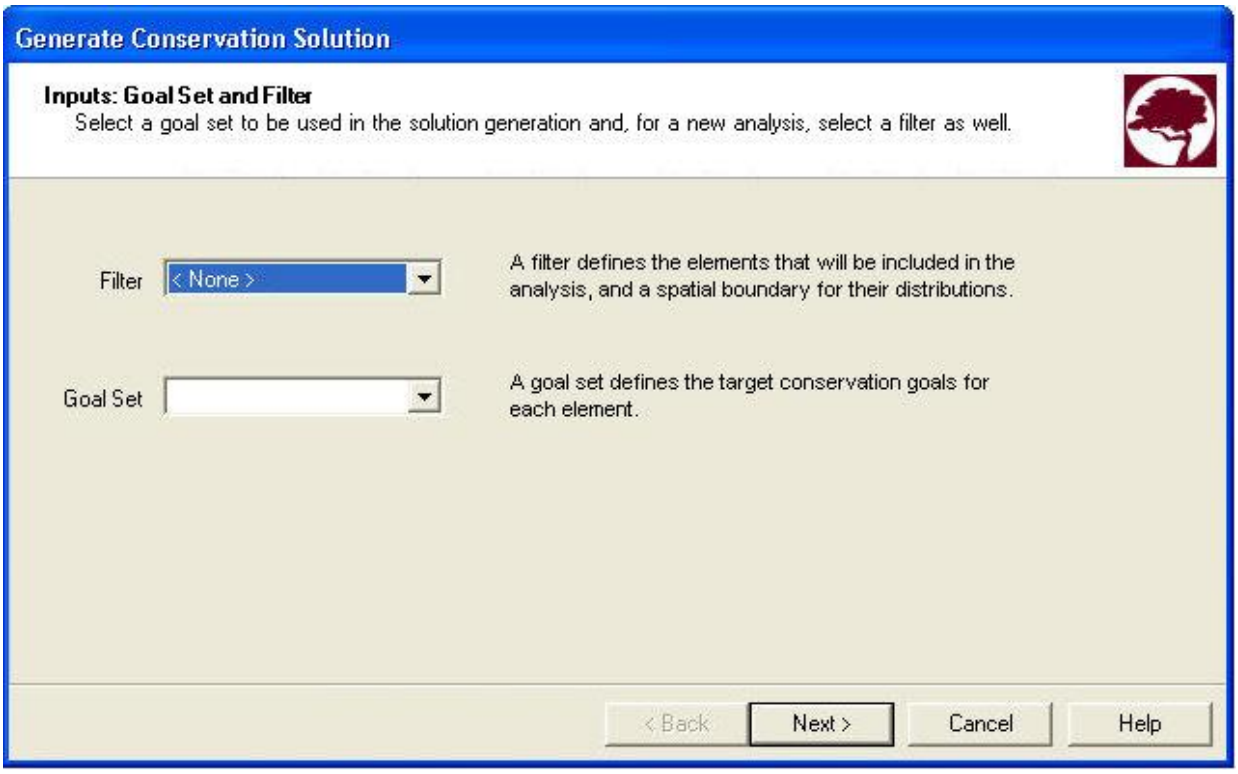
2. Indicate whether a new or existing site analysis will be used to generate the solution using the appropriate **Use Existing Site Analysis** or **Create a new Site Analysis** radio button. If an existing analysis will be used, select the analysis from the **Site Analysis** drop-down list. Click **Next>**.



3. If an existing analysis is being used for the solution, select the layer to be used from the drop-down list in the **Analysis Unit Layer** field, or by using the  ArcCatalog button.
4. Select the attribute (column) to be used to represent the costs associated with different units in the solution from the drop-down list in the **Cost Attribute** field.
5. Select the attribute (column) to be used to indicate whether units are to be included or excluded in the solution from the drop-down list in the **Selection Status** field. Click **Next>**.

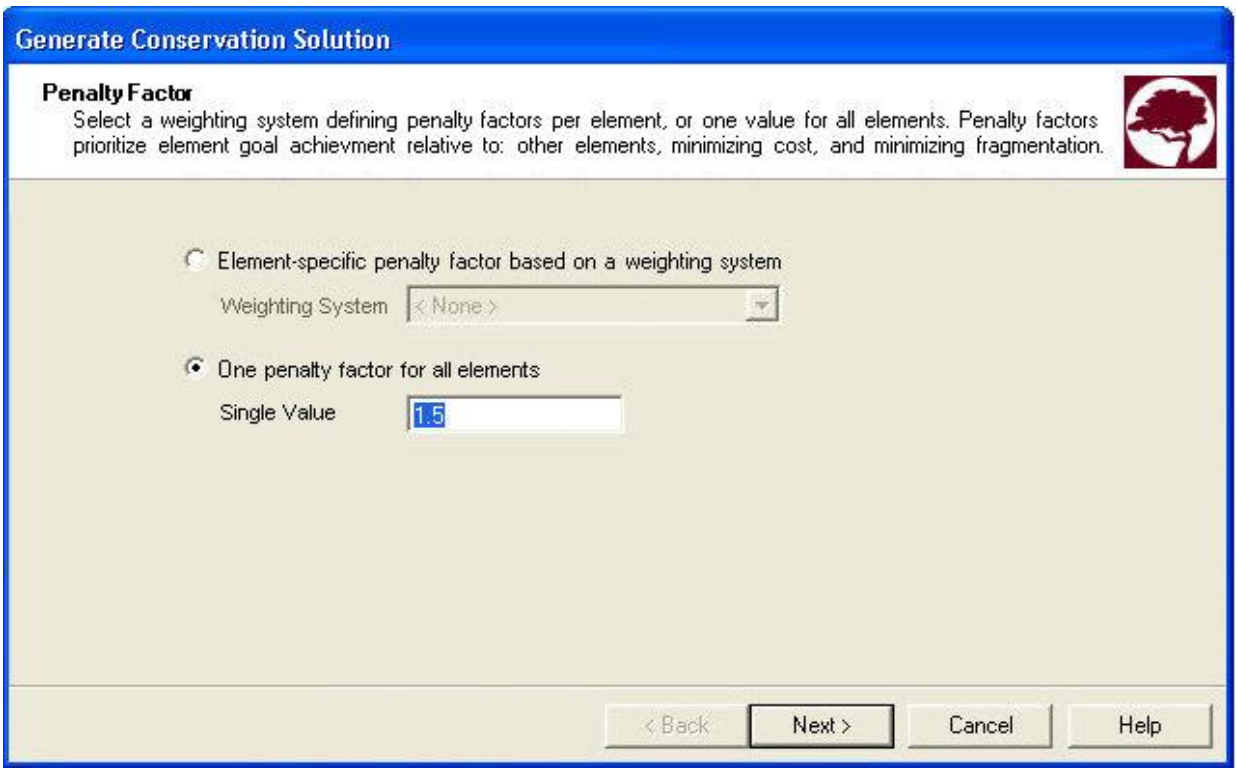


6. If a new analysis is being created for the solution, select the filter to be used in generating the solution from the drop-down list in the **Filter** field.
7. Select the element conservation goals to be used in the solution from the drop-down list in the **Goal Set** field. Click **Next>**.

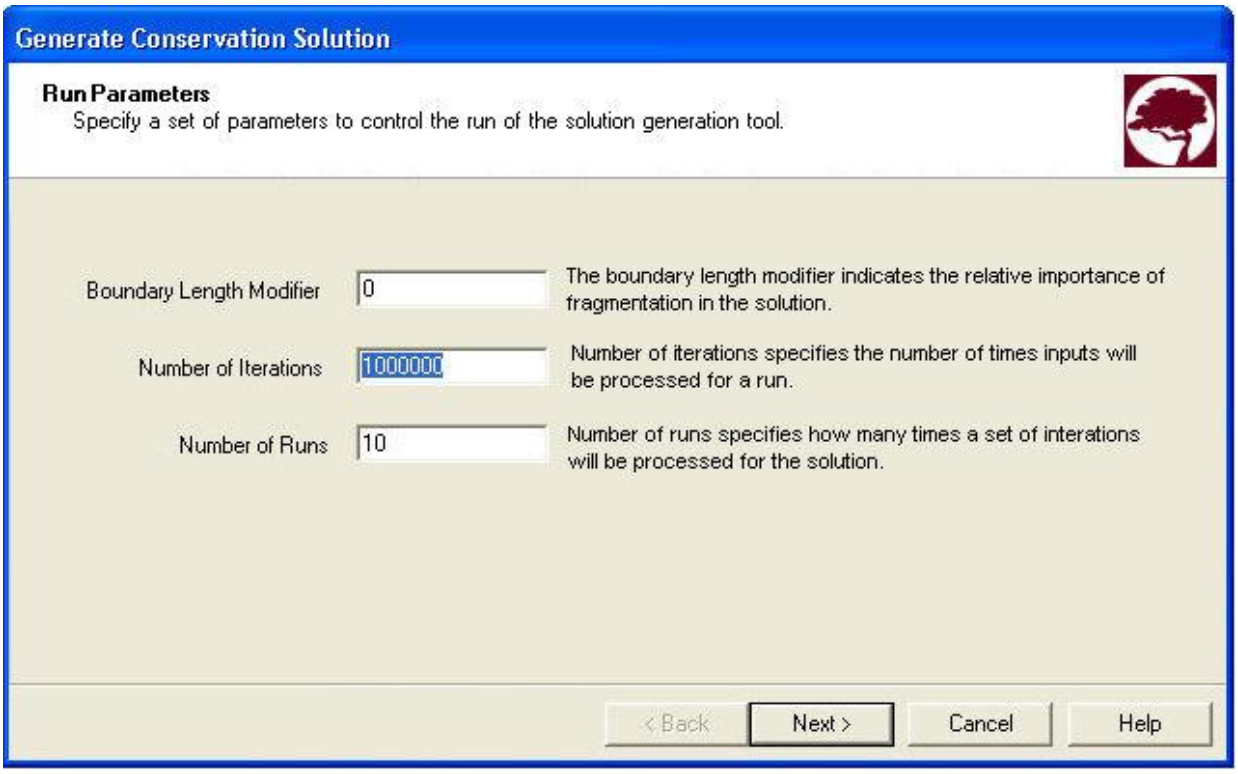


8. Indicate whether a weighting system that assigns a penalty for each element is to be used in generating the solution, or a single penalty factor should be utilized for all elements using the appropriate radio button.
    - If an element-specific penalty is to be used, select the appropriate system from the **Weighting System** drop-down list.
    - If a penalty is to be assigned to all elements in the solution, specify the value to be used in the **Single Value field**.

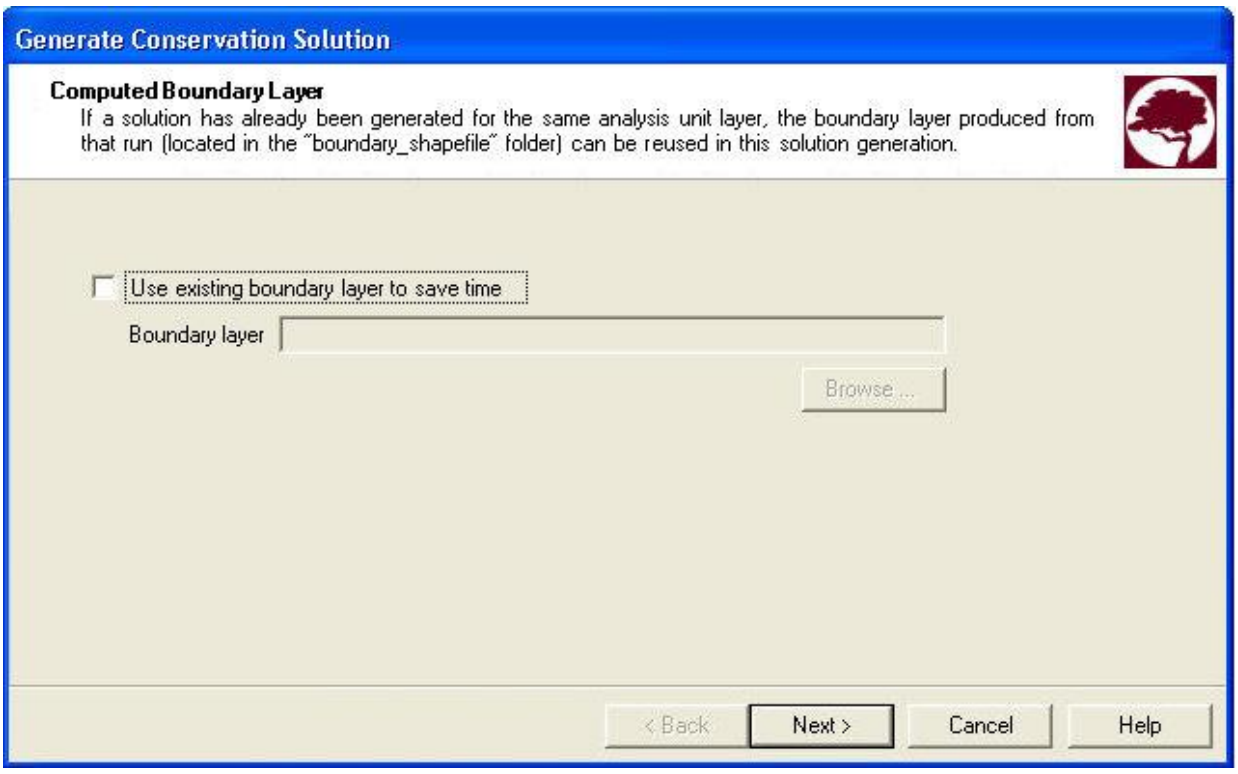
   Click **Next>**.



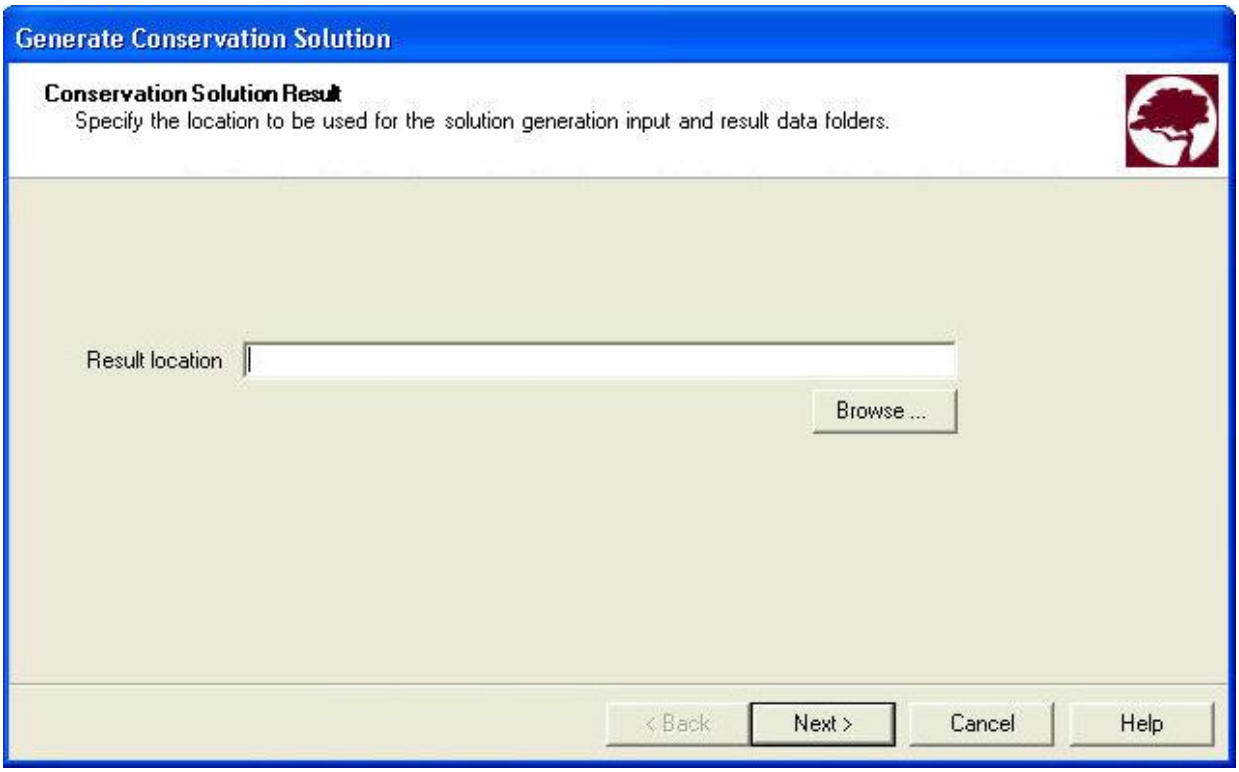
9. Specify the value to be used as the boundary length modifier in generating the solution.
10. Specify the number of iterations to be performed per run in the generation process.
11. Specify the number of runs to be performed in generating the solution. Click **Next>**.



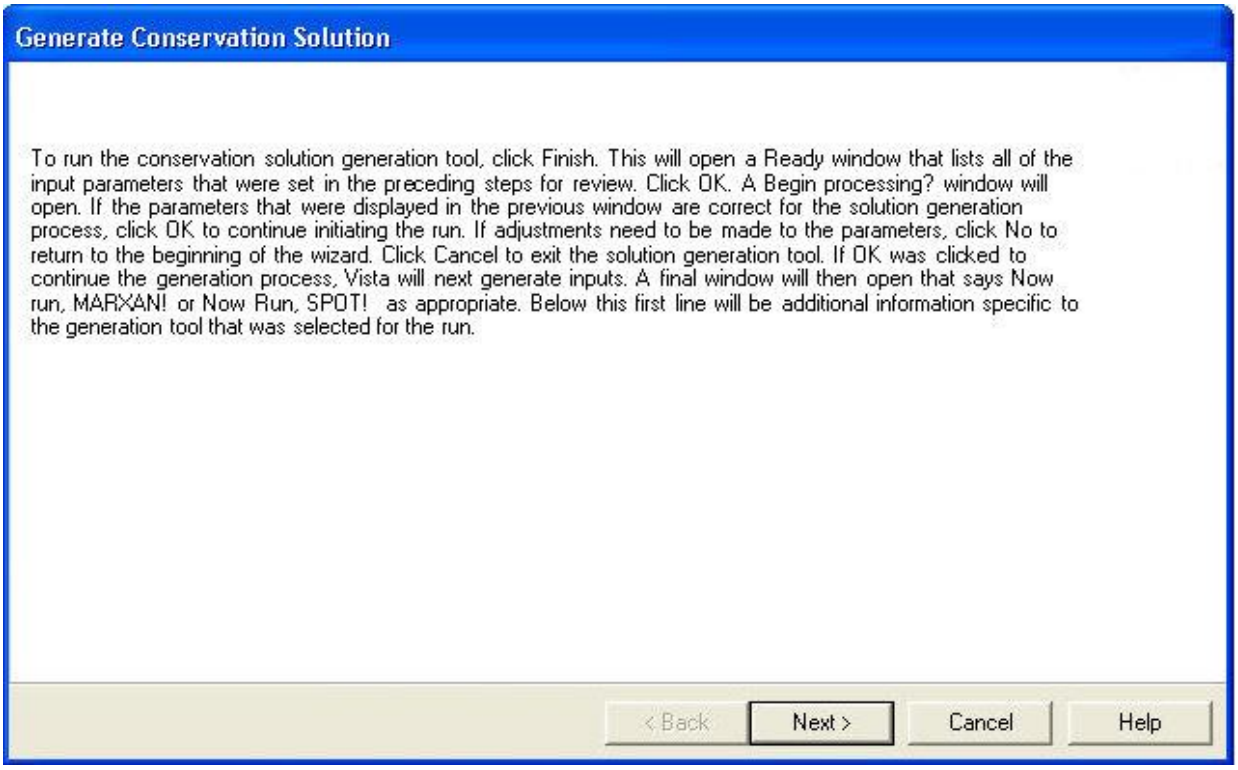
12. If a solution has already been generated using the same analysis layer as that specified for this solution, the generation time can be reduced by utilizing the boundary layer that was produced from the previous run. In such an instance, check the box to indicate that an existing layer will be used, and enter its path in the **Boundary layer** field, or click the **Browse** button to navigate to the layer (found in the ”r;boundary_shapefile” folder) and select it. Click **Next>**.



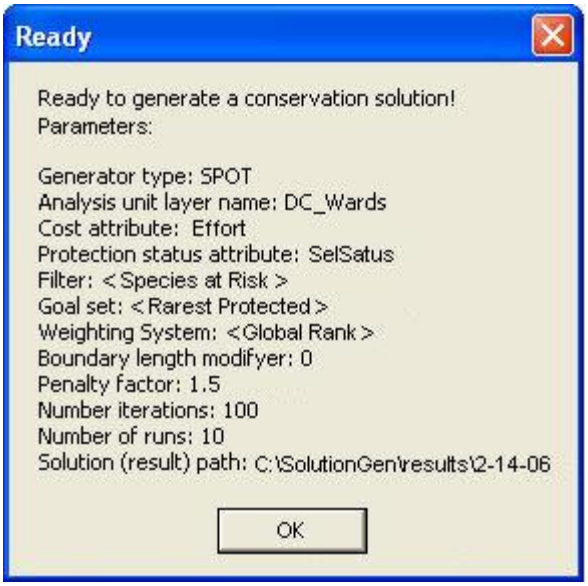
13. Specify the location to be used for folders created for the solution generation in the **Result location** field, or click the **Browse** button to navigate to the location. Click **Next>**.



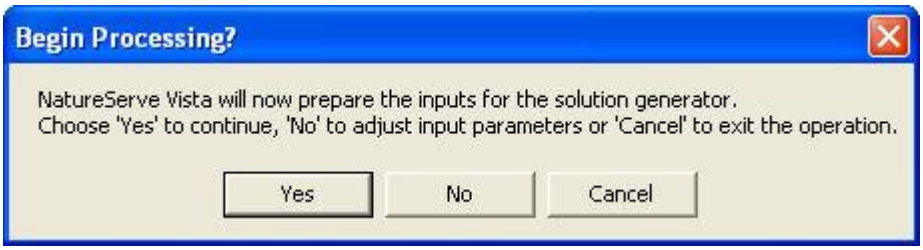
14. To begin the generation process for the solution, click **Next>**.



15. A **Ready** window will open that displays the parameters set for solution generation using the specified external solution generating application. Review the list of parameters for accuracy and click **OK**.



16. A **Begin Processing?** window will open. If the parameters that were displayed in the previous window are correct for the solution generation process, click **Yes** to continue initiating the run. If adjustments need to be made to the parameters, click **No** to return to the beginning of the wizard. Click **Cancel** to exit the solution generation tool.

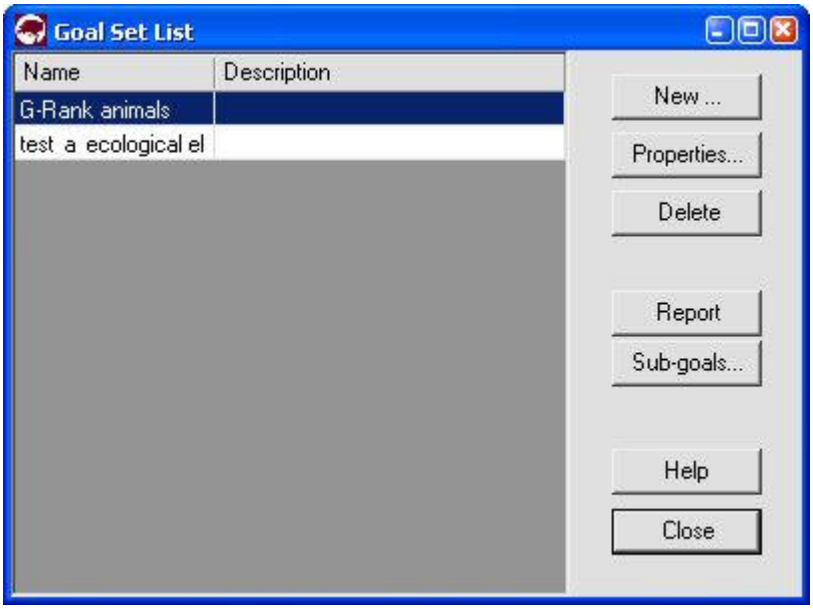


If **Yes** was clicked to continue the generation process, Vista will next generate inputs.

17. A final window will then open that says **Now run, MARXAN!** or **Now Run, SPOT!** as appropriate. Click **OK** to begin generating a solution using the designated external software application.

GOAL SET LIST WINDOW

The **Goal Set List** window is displayed by selecting **Lists ▸Goal Set List...** from the NatureServe Vista menu. This window lists all the goal sets that have been created for the project. See the Goal Sets section for more detailed information on the development and use of goal sets in analyses.



Button functions:

New... displays a new Goal Set Properties window that can be used to develop a new goal set to be used in the project.

Properties... displays the Goal Set Properties window showing details and allowing edits to the goal set selected in the list.

Delete deletes the goal set selected in the list.

A **Confirm Delete** window is displayed before the deletion is implemented.

A **Cannot Delete** window is displayed in cases when the goal set is referenced by another item used in project analyses, as shown in the following example.

Report displays a report that describes the selected goal set and its settings, as well as any elements with explicit goals to be included in analysis when the goal set is utilized. See the Reports section for more details on Goal Set reports.

Sub-goals... displays the Edit Sub-Regional Goal Set window that can be used to develop a new goal set to be used for a specific sub-region defined in the project.

Help opens the on-line documentation.

Close closes the window.

Columns displayed:

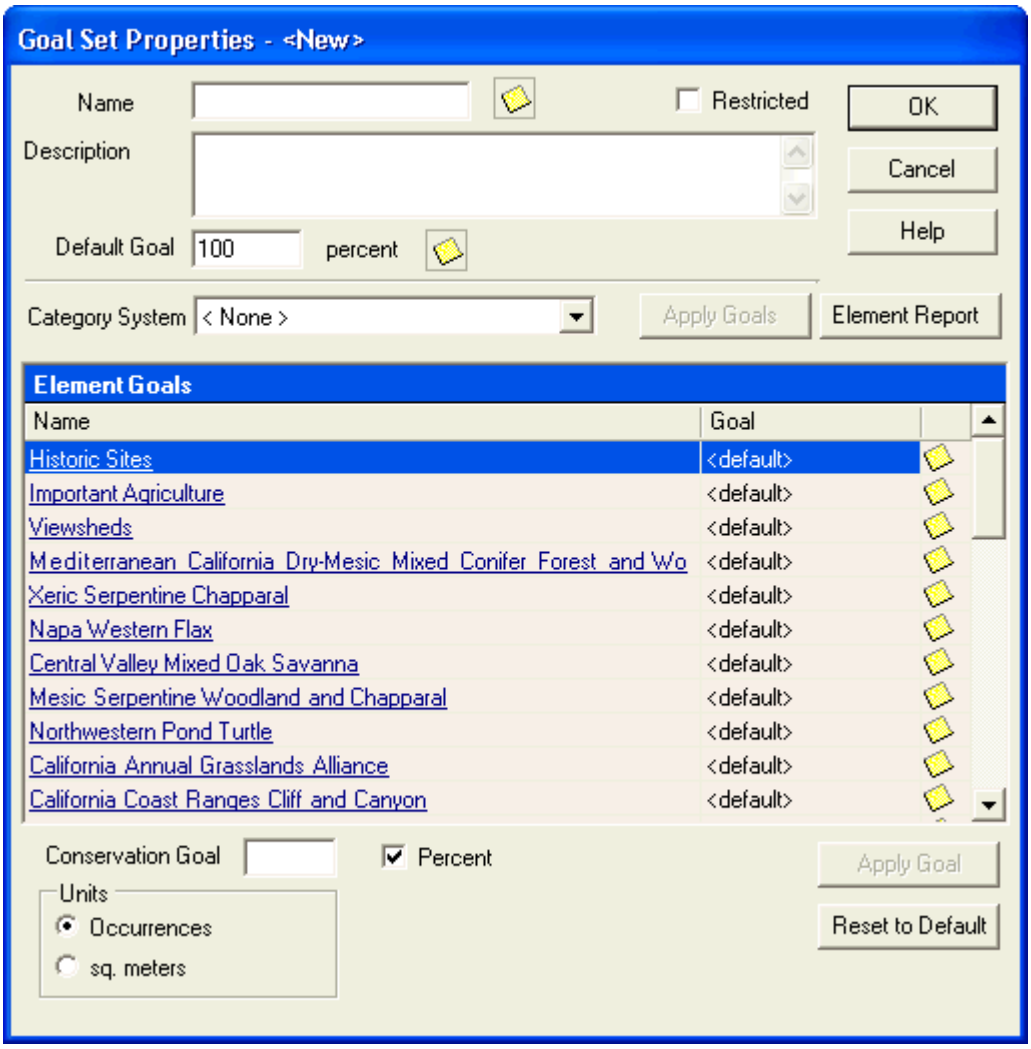
Name - name of the goal set.

Description - description of the goal set, if any.

GOAL SET PROPERTIES WINDOW

The **Goal Set Properties - <New>** window is displayed by clicking the **New...** button on the Goal Set List window. The new properties window is used to create a new set of conservation goals for elements of interest in the planning region. The goal set can be utilized in Land Use and Conservation Scenario evaluations for establishing a baseline against which both the existing land use status and scenarios for future land use can be compared, and conservation progress tracked over time. See the Goal Sets section for more detailed information on the development and use of goals in analyses.

Note that the  button located next to an item can be used to record additional information related to that item (see the Documentation Window topic for more details).



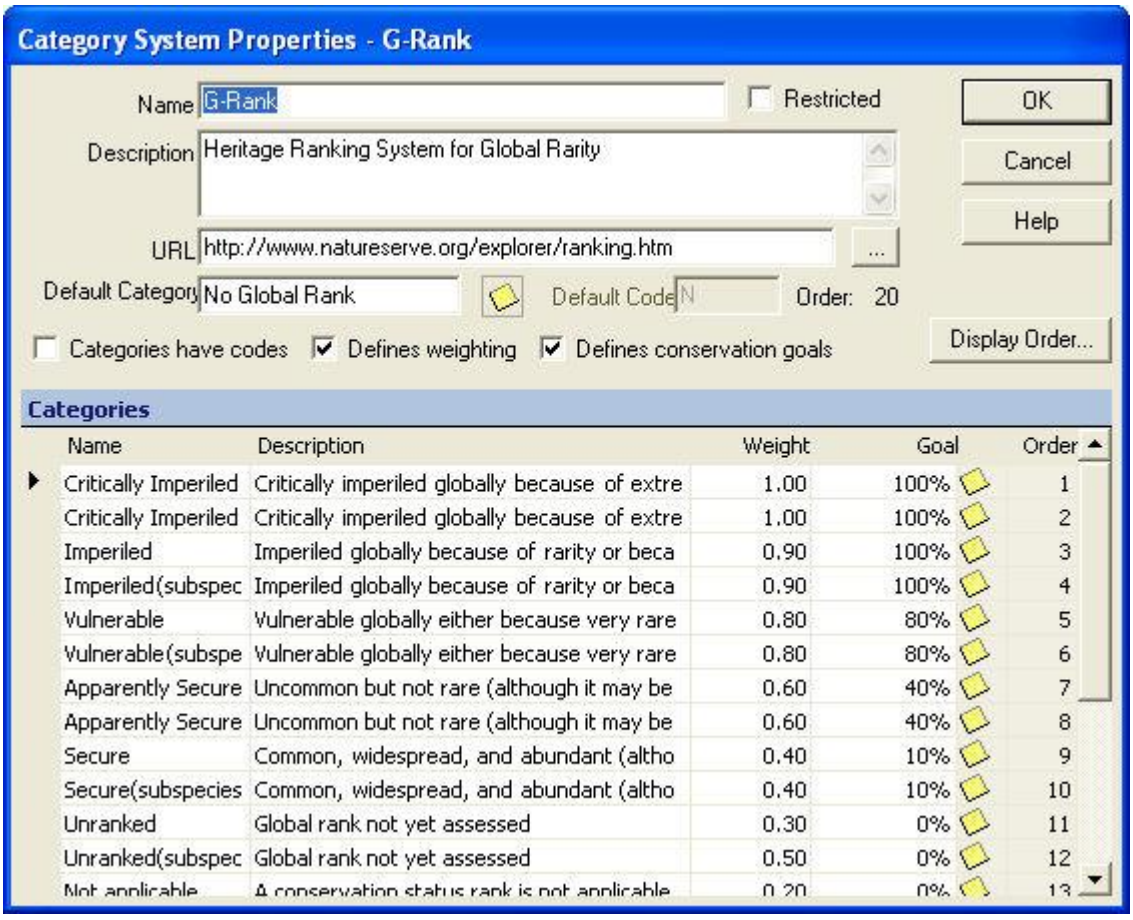
Create a goal set:

1. Specify a name for the goal set in the **Name** field. The **<New>** on the window title will change to the name of the new goal set as the entry is typed in.
2. If the ability to edit the goal set should be limited to members of the data development team, place a check in the **Restricted** checkbox.
3. Enter a brief description of the goal set in the **Description** field, if desired.
4. Enter a value in the **Default Goal** field to be used in cases when a specific goal is not assigned to an element. The default value in this field is 100 percent.

If a category system is to be used to create the goal set, continue with step 5; if not, skip to step 7.

5. From the **Category System** drop-down menu select a category system to be used to define conservation objectives for the goal set. Only category

systems that define goals are shown in the drop-down list, such as the default "G-Rank" system displayed in the Category System Properties window below, although the option to create a new category system (**<Add New...>**) or to display all existing systems (**<Show List...>** in order to select and modify an existing system by adding goals) are included in the drop-down list.

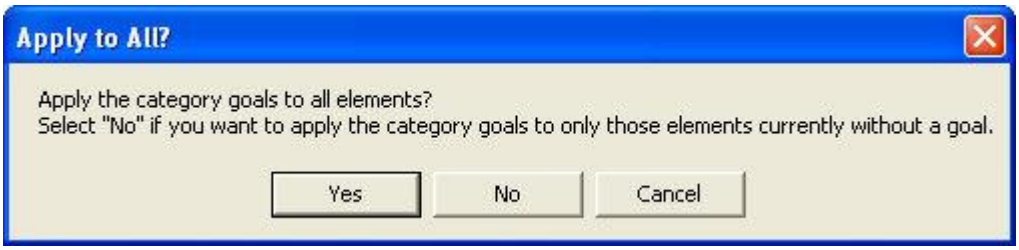


The advantage of using a category system is that goals can be assigned for groups of elements (e.g., all elements that are Critically Imperiled will have a conservation goal of 100%) instead of element by element individually (e.g., goal assigned for Burrowing Owl is 80% of viable occurrences, goal assigned for California Black Rail is 90%, etc.).

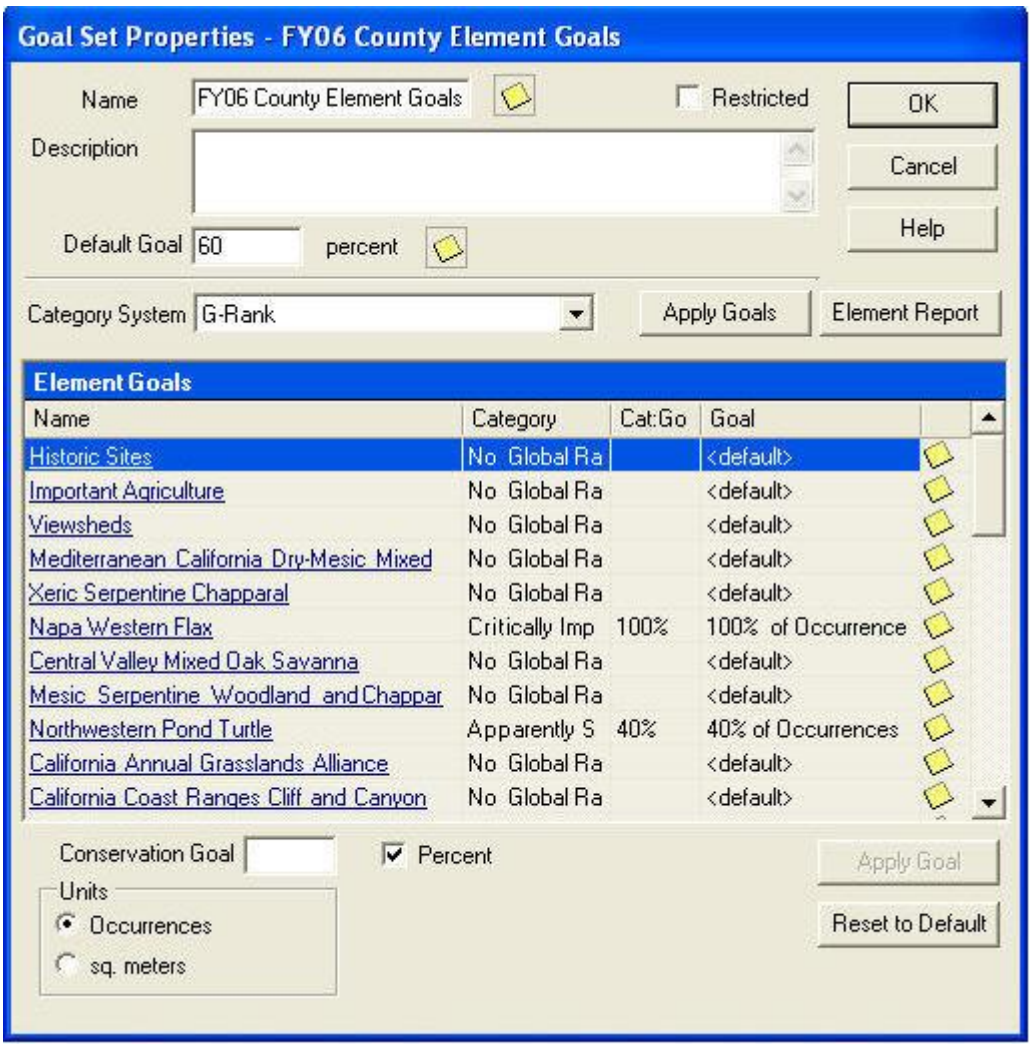
Once a category system has been selected, Category and Cat:Goal columns are displayed for elements listed in the Goal Set Properties window, and the name and conservation goal associated with the category to which each element belongs are displayed in these columns, respectively.

6. If it is preferable to begin using goals set for elements in the category system instead of just <default> values, use the **Apply Goals** button to the right of the **Category System** field to replace values in the Goal column with those displayed in the Cat.Goal column. Note that this action will result in an "Apply to All?" window that prompts the use to decide

whether to replace any new values entered in the Goal column with the pre-existing goals assigned to the category (Yes), or retain any newly-defined values for the goal set being defined (No).



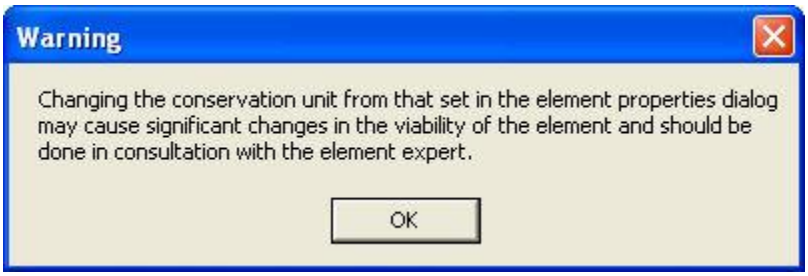
If the **Apply Goals** button is used before any specific element goals have been defined, it makes no difference whether the user chooses **Yes** or **No** since there are no new goals to be overwritten. (If specific goals have been defined, however, see step 7.) Category goal values will be displayed in the Goal column.



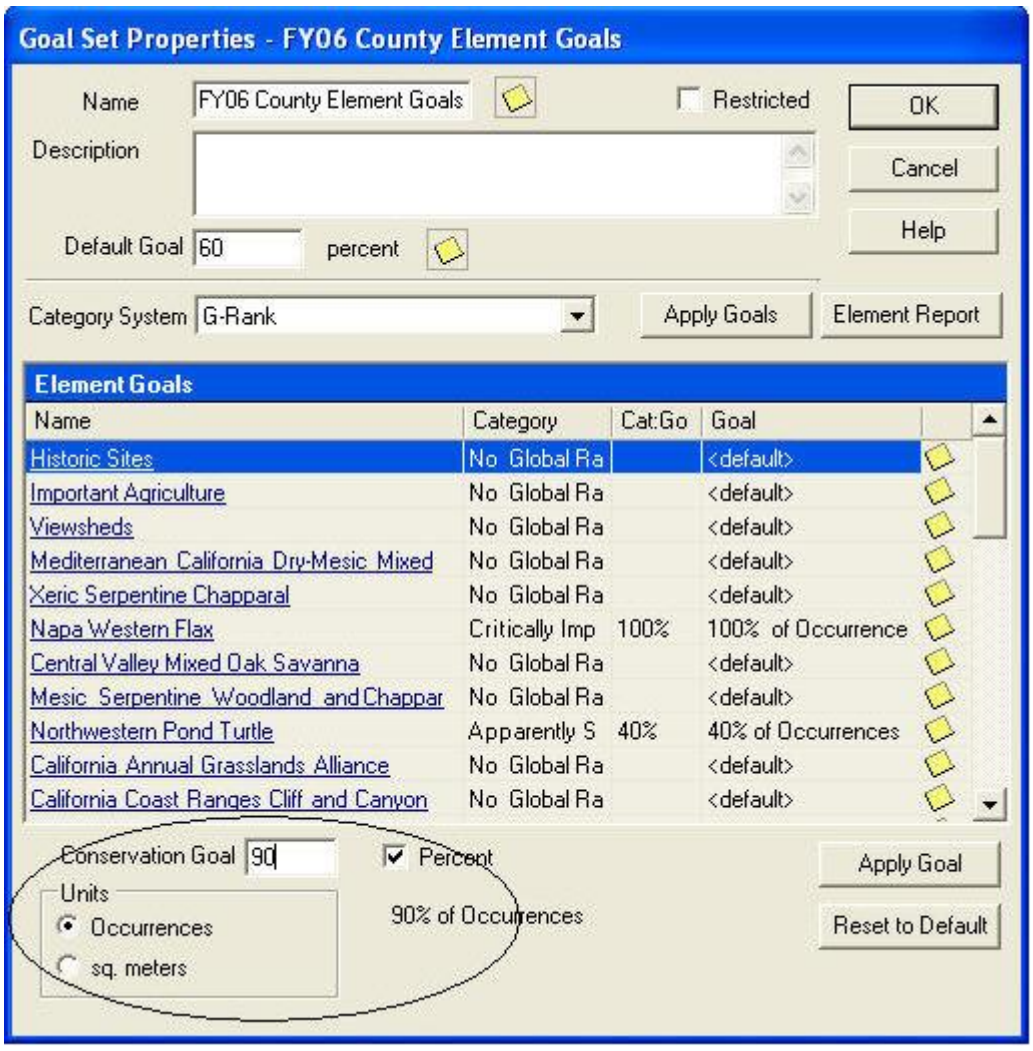
7. To assign a specific conservation goal to an element for this goal set:

- Highlight the element
- Enter (or change) the value in the **Conservation Goal** field in the lower left corner of the window. The value will be changed in cases when the Goal has been previously populated with the category value using the **Apply Goals** button, or when a value has been previously specified for the element.
- Indicate whether the goal represents viable occurrences or viable area to be conserved for the element by selecting either the **occurrences** or **area** radio button, respectively, in the Units group box in the lower left corner of the window.

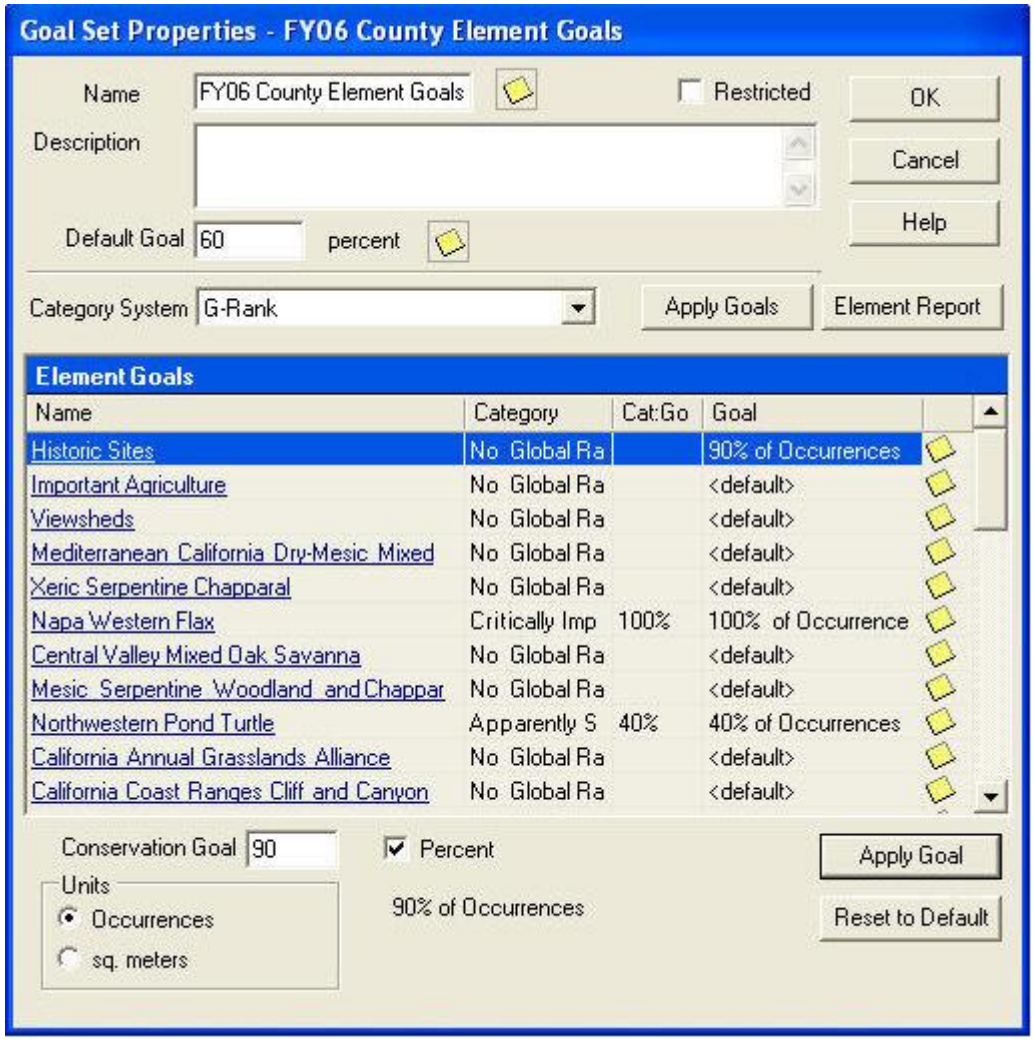
  If a category system is being used to create goals, the appropriate **occurrences** or **area** radio button in the *Units* group box will be automatically selected based on the goal in the category system. Changing this default setting may significantly impact the actual viability (or integrity, for ecological communities and systems) of an element to be conserved in the region of interest if the goal is not appropriate for the type of data associated with that element. The first time such a change is made during the process of defining the conservation goal for a specific element, the following warning message is displayed:



- If the goal is to be applied as a *percentage* of viable occurrences or viable area to be conserved rather than the *number* of viable occurrences or viable area, place a check in the **Percent** checkbox. Note that if the element has an assigned category goal, the **Percent** checkbox will be checked by default since category goals always represent a percentage, rather than a number, of occurrences or area.

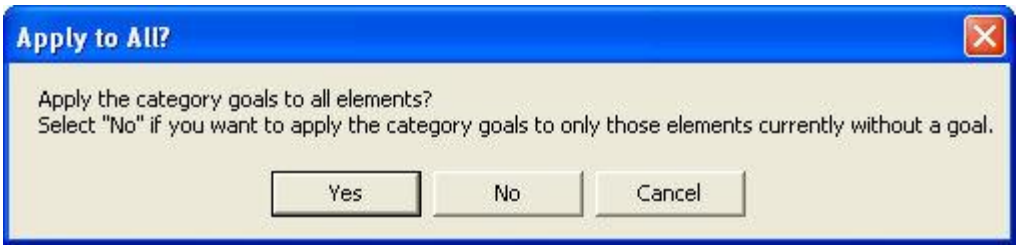


- Once these items have been completed, click the **Apply Goal** button in the lower right corner of the window to assign the conservation goal to the element. Note that a specified conservation goal for a particular element can be changed back to the original <default> value by highlighting the element and clicking the **Reset to Default** button in the lower right corner of the window.



If a category system is <u>not</u> being used to create goals, skip to <u>step 9</u>.

8. If, after specific element goals have been defined, there are <default> values remaining in the Goal column that need to be replaced with the goal values defined for the category system instead of simply using the value in the **Default Goal** field, use the **Apply Goals** button to the right of the **Category System** field. This will replace the <default> values in the Goal column with those displayed in the Cat.Goal column. Note that this action will result in an "Apply to All?" window that prompts the user to decide whether to replace any new values entered in the Goal column with the pre-existing goals assigned to the category (**Yes**), or retain any newly-defined values for the goal set being defined (**No**).



Unless specifically defined goals should be overwritten, the user should choose **No** to replace only <default> values in the Goal column.

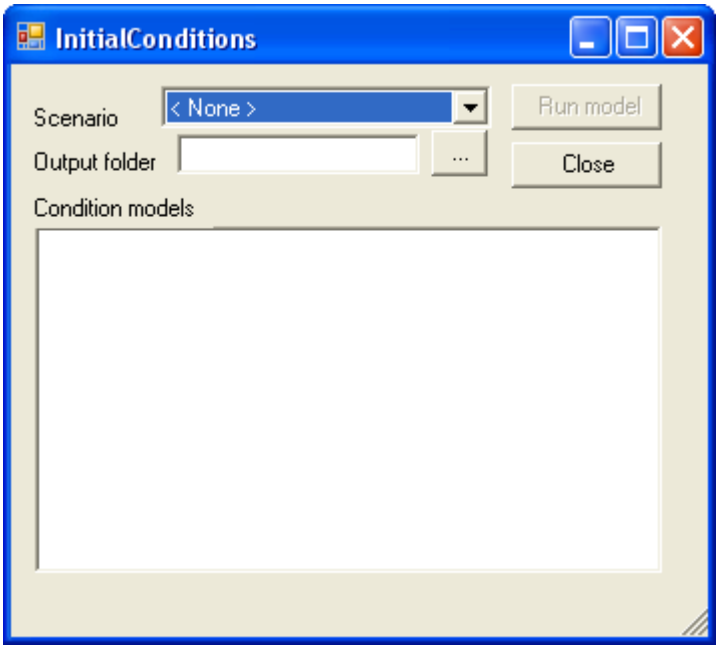
9. To view a report on a specific element, highlight the element and the **Element Report** button. See the Element Details Report for more detailed information.
10. To close the window and save the goal set click **OK**; otherwise, click **Cancel**.
11. To review details on the new (saved) goal set, open the Goal Set List window, select the set, and click the **Report** button. Settings for the goal set, as well as goals assigned to specific elements will be displayed. See the Reports section for more details on Goal Set reports.

Edit a goal set:

1. Select the goal set from the list on the Goal Set List window and click the **Properties...** button. The resulting properties window displays the goals defined for elements in the goal set.
2. Edit the goal set using the processes described above for creating a new goal set as guidelines.
3. To close the window and save any changes made to the goal set click **OK**; otherwise, click **Cancel**.

INITIAL CONDITIONS WINDOW

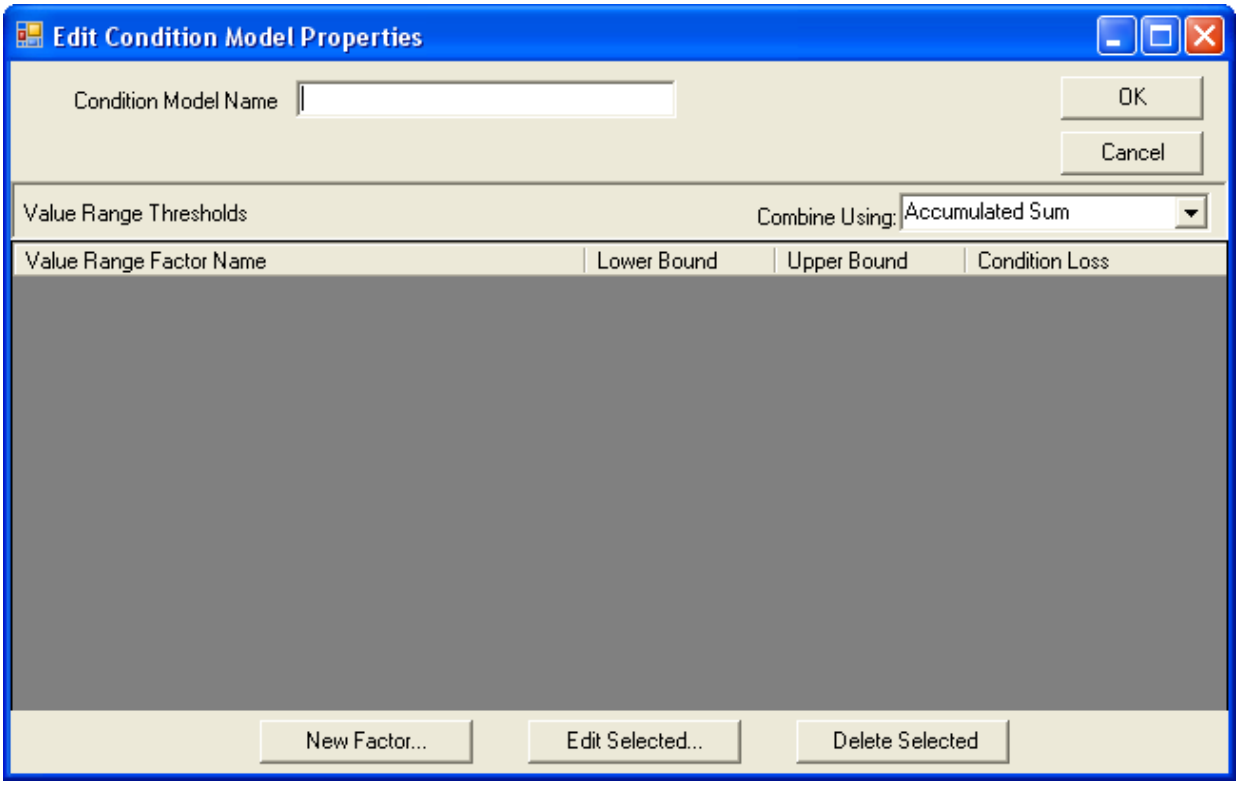
The Initial Condition Model list is accessed through the Vista main menu -> Lists -> Initial Condition Model List.



See Using the initial condition modeler for instructions on data entry for this window.

LANDSCAPE CONDITION MODEL PROPERTIES WINDOW

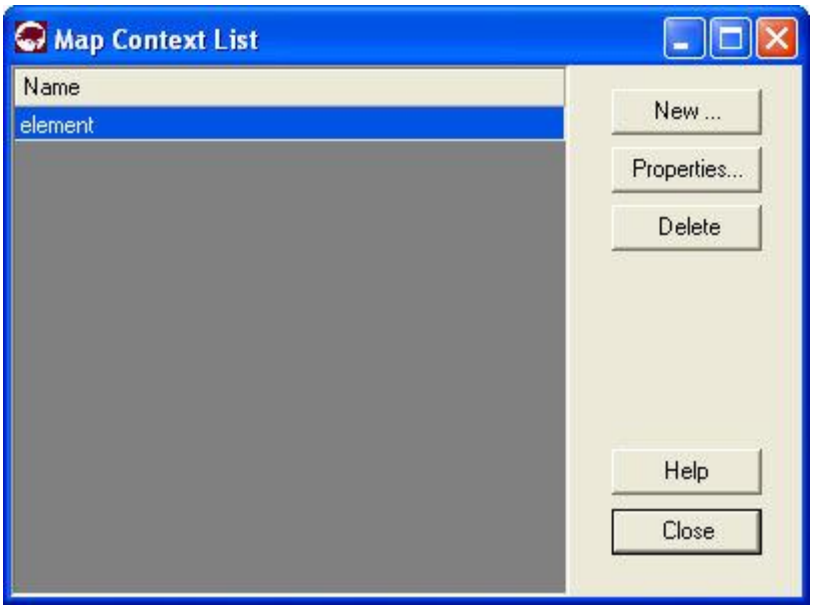
The Landscape Condition Model Properties window is accessed by clicking the blank area in the condition model next to an element and selecting new model.



See Creating distance intensity models for instructions on data entry for this window.

MAP CONTEXT LIST WINDOW

The **Map Context List** window is displayed by selecting either **Lists ▸Map Context List...** or **Reports▸ Map Context List...** from the NatureServe Vista menu. This window lists all the map contexts that have been created for the project to be used in creating reports, if any. A map context is a stored legend that can be used to help ensure that certain features are consistently included in specific reports. Note that Vista can apply map context individually for elements in the database. Thus, a specific map context can be defined and named for every element, if desired. For example, a map context could be created for a particular element, such as bald eagle, which would include layers that should always be displayed in a report on bald eagles (e.g., hillshade, rivers, county boundaries, watersheds).



Button functions:

New... displays a new Map Context Properties window that can be used to develop a new map context to be used in the project.

Properties... displays the Map Context Properties window showing details and allowing edits to the context selected in the list.

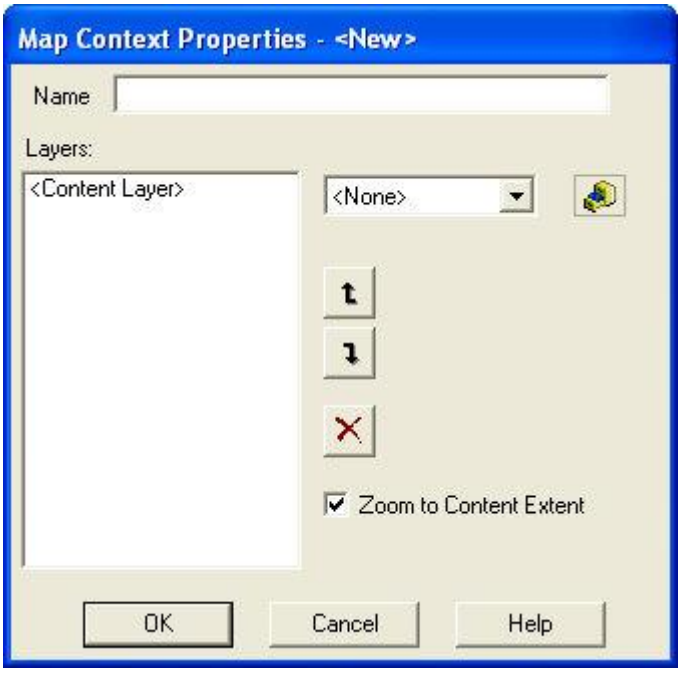
Delete deletes the map context selected in the list. A **Confirm Delete** window is displayed before the deletion is implemented.

Help opens the on-line documentation.

Close closes the window.

MAP CONTEXT PROPERTIES WINDOW

The **Map Context Properties - <New>** window is displayed by clicking the **New...** button on the Map Context List window. The new properties window is used to create a new map context that can be used to help ensure that certain features are consistently included in specific reports.



Create a map context:

1. Specify a name for the new map context in the **Name** field. The **<New>** on the window title will change to the name of the new map context as the entry is typed in.
2. Select the content layers to be displayed when the map context is applied by either selecting the layers from the drop-down menu, or by using the ArcCatalog button to browse to the layer. (Layers will be displayed in the drop-down menu only if the layer is the correct feature type and is included on the Display Type tab of the left pane of the Vista application, referred to as the Table of Contents [TOC].)
3. Using the up and down arrow buttons, set the order in which features will draw by changing the order of the layers as needed. Click the delete button (red X) to remove any layers.
4. If the application should automatically display the full extent of the content layers selected when the map context is applied, check the **Zoom to Content Extent** checkbox.
5. To close the window and save the data entered for the map context click **OK**; otherwise, click **Cancel**.

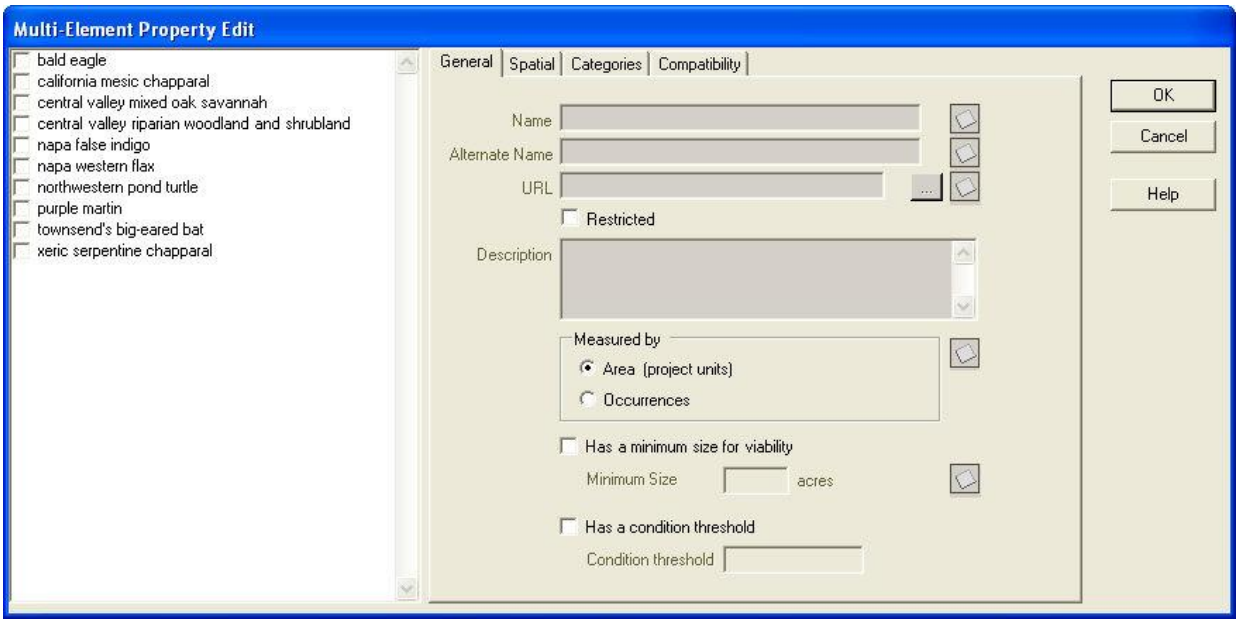
Edit a map context:

1. Select the map context from the list on the Map Context List window and click the **Properties...** button. The resulting properties window displays the map context.
2. Edit the map context using the processes described above for creating a new map context as guidelines.

3. To close the window and save any changes made to the map context click **OK**; otherwise, click **Cancel**.

MULTI-ELEMENT PROPERTY EDIT WINDOW

The **Multi-Element Property Edit** window, displayed by clicking the **Edit Multiple...** button on the Element List window, is used to set values for a selected group of elements simultaneously.



Edit properties for multiple elements:

1. Select the set of elements that is to be assigned the same values for specific properties by clicking either on each element to be included or on the checkbox for each of these elements.
2. Choose the appropriate tab(s) that contain properties to be changed for the designated group of elements. You will notice that the attributes that can be edited are limited, with many "grayed out" and unavailable. In addition, there are no values displayed in any of the fields that can be edited, even if the existing values for the selected elements are the same to begin with. Properties that can be edited for the designated set of elements simultaneously are as follows:

   On the **GENERAL** tab, can edit:

   Measured by Area or Occurrences

   Has a minimum size for viability

   Minimum Size

   Has a condition threshold

   Condition threshold

On the **SPATIAL** tab, can edit:

Viability/Integrity - Attribute of Distribution or Raster Layer

Map Context

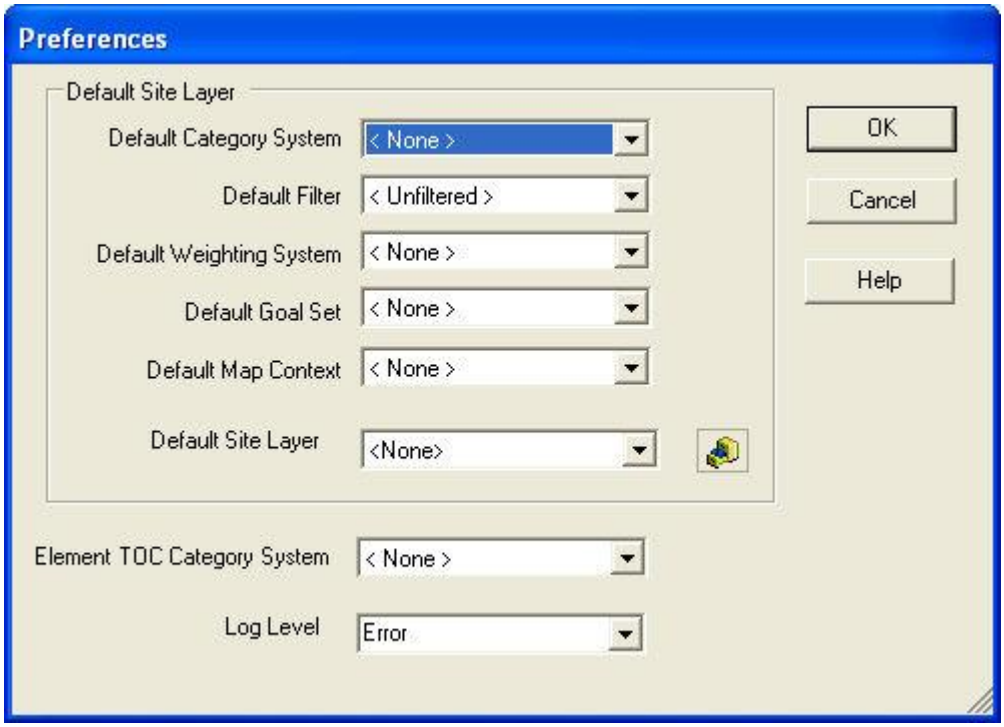
On the **CATEGORIES** tab all Category Systems can be edited

On the **COMPATIBILITY** tab element compatibility can be edited

3. Edit properties in the records of the selected elements simultaneously by clicking the appropriate radio buttons or checkboxes, entering values, and/or choosing values from drop-down menus for any properties that are to be set to a single value for these elements. Guidance for editing elements is provided in the processes described for adding new elements using the Element Properties window.
4. To close the window and save the edits made in the records of each of the selected elements simultaneously, click **OK**; otherwise, click **Cancel**.

PREFERENCES WINDOW

The **Preferences** window is displayed by selecting **Project▸ Preferences...** from the NatureServe Vista menu. This window lists the default behavior of commonly used fields in the project. Setting these preferences can save time during data entry.



Set project preferences:

1. Select the category system to be used as the project default from the **Default Category System** drop-down list. The selected category system will be the default displayed on the Categories tab of the Element Properties window when creating a new element, on the Filter Properties window when creating a new filter, and as the value in the Summarize Report By field on the Evaluate Scenario window when creating a new evaluation report.
2. Select the filter to be used as the project default from the **Default Filter** drop-down list. The selected filter will be the default displayed on the Summarize Conservation Value window and the Evaluate Scenario window.
3. Select the weighting system to be used as the project default from the **Default Weighting System** drop-down list. The selected system will be the default displayed on the Summarize Conservation Value window.
4. Select the goal set to be used as the project default from the **Default Goal Set** drop-down list. The selected goal set will be the default displayed on the Evaluate Scenario window.
5. Select the map context to be used as the project default from the **Default Map Context** drop-down list. The selected context will be the default displayed on the Spatial tab of the Element Properties window when creating a new element, on the Summarize Conservation Value window, and on the Evaluate Scenario window.
6. Select the layer to be used as the project default from the **Default Site Layer** drop-down list, or use the  ArcCatalog button to browse to the a layer to be used as the default site layer for Site Analyses, displayed on the Summarize Conservation Value window and on the Evaluate Scenario window.
7. Select the category system to be used as the default for the project Table of Contents (TOC) from the **Element TOC Category System** drop-down list. The selected category system will be the grouping used for the elements listed in the TOC. This setting can be altered by selecting the **Elements** header in the TOC, right-clicking, selecting **Element Properties...** from the context menu, choosing the Group tab from the resulting Group Layer Properties window, and then manually altering the list of elements displayed.
8. Select the level of detail to be used for information logged for errors, stored in the <project location>\Logs\Vista.log file from the **Log Level** drop-down list, specifically Error, Warning, Info, and Verbose. The values indicate an increasing level of detail to be logged, with the Error level logging only error messages and the Verbose level logging everything. The log file is created to help identify the cause of any errors.

Edit project preferences:

1. Select **Project▸ Preferences...** from the NatureServe Vista menu. The resulting window displays the current preferences for the Vista project.

2. Edit the project preferences using the parameters described above for setting preferences.
3. To close the window and save any changes made to the values click **OK**; otherwise, click **Cancel**.

PROJECT PROPERTIES WINDOW

The **Project Properties-Untitled** window is displayed by selecting **Project▸ New...** from the NatureServe Vista menu. The properties window contains information that is used to help insure that the project database and associated files are set up properly.

Before creating a NatureServe Vista project, one or more spatial data layers must be added to the Display tab of the Table of Contents.

Note that all the fields in the Project Properties window must be completed before the Vista project can be created.

Set properties for a new project:

1. Specify a name for the project in the **Project Name** field.
2. Select the unit of area that is to be used for the project from the **Project Area Unit** drop-down list. The value selected determines how all areas are calculated in the database and is fixed once the project has been created. After this value is saved, all windows in the project will reflect the unit type selected.

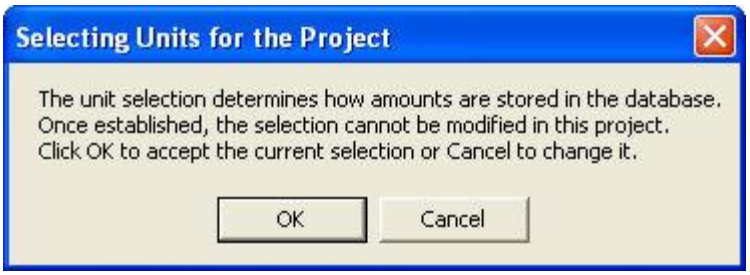
Note that once a unit has been selected for a project and saved, IT CANNOT BE CHANGED.

3. Enter a value in the **Default Cell Size** field. This is a time-saving device used when layers are created in Vista. The value entered in this field will be displayed as the default cell size in all Vista windows used to produce layers; the default value can then be changed in any of those windows to

a size more appropriate for a particular analysis. See the Determining Grid Cell Size topic for more information on selecting cell sizes.

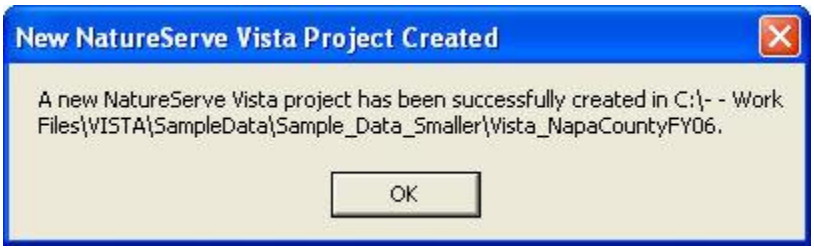
4. Select a value from the **Snap Raster** drop-down list that displays the layers already in the Table of Contents (TOC), or use the ArcCatalog button to browse to the a layer to be used as the project snap raster. See the Snap Raster topic for more information on selecting the appropriate snap raster for the project.
5. All of the derived layers in Vista must be loaded into the same ArcMap data frame. Select the appropriate value from the **Data Frame** drop-down list. The default value for an ArcMap data frame in a new project is **Layers**.
6. Select a value from the **Project Boundary** drop-down list that displays the layers already in the Table of Contents (TOC), or use the ArcCatalog button to browse to the layer to be used to define the boundary of the project area. The layer to be used as the project boundary can only contain one feature. Note that this selection cannot be later replaced by a smaller boundary layer or one that is offset from the original boundary layer selected. In cases when the boundary for a project is uncertain, it is recommended that this selection be conservative initially since a larger encompassing layer can be utilized later if needed.
7. To close the window and save the properties data entered for the project click **OK**; otherwise, click **Cancel**.

Clicking **OK** will result in the following units confirmation window:



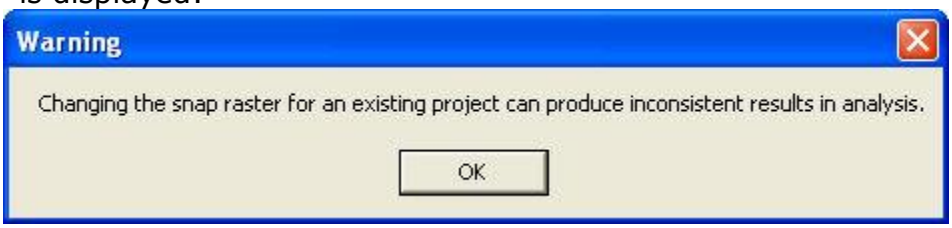
Accepting the unit selection (clicking **OK**) will be followed by:

Clicking **OK** will result in creation of a new NatureServe Vista project, indicated by a confirmation window:



Edit existing project properties:

1. Select **Project▸ Properties...** from the NatureServe Vista menu. The resulting window displays the current properties settings for the Vista project.
2. Edit the project properties using the information on appropriate alternate values for the fields described above.
   - **The Project Area Units field in an existing project cannot be altered.**
   - If the value in the **Snap Raster** field is edited, the following warning is displayed:



To continue, click **OK**.

   - If the value in the **Project Boundary** field is edited, the following warning is displayed:

To continue, click **OK**.

If the new project boundary layer selected is smaller or offset from the original boundary layer, a warning indicator ❗ will be displayed with the message: "Once established in the project, the project boundary can only be increased. It cannot be decreased or shifted" and the

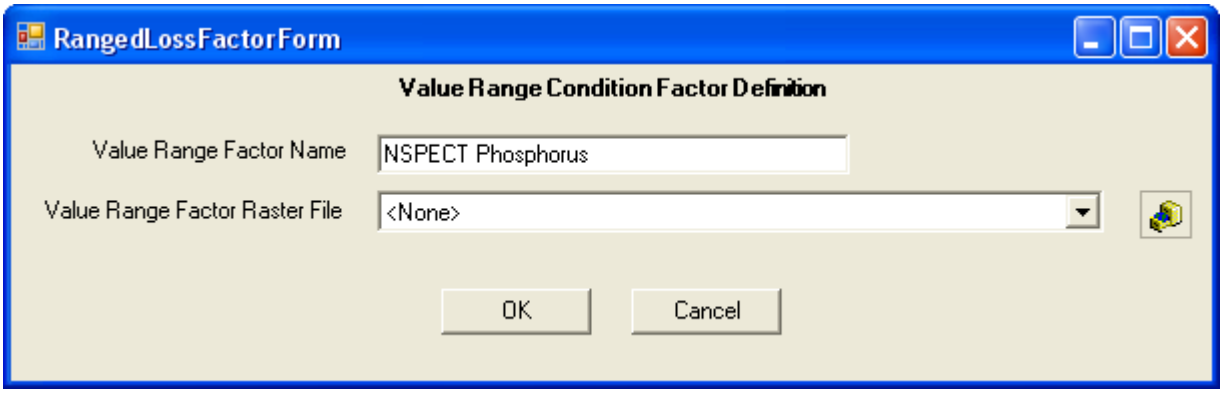
disallowed layer must be replaced by another valid selection in order to continue.

If the new project boundary layer selected contains more than one feature, a warning indicator will be displayed with the message: "Spatial filter layer must contain exactly one feature (this layer may not be selection-based). Parameter name: "and the disallowed layer must be replaced by another valid selection in order to continue.

3. To close the window saving any changes made to the properties click **OK**; otherwise, click **Cancel**.

RangedLoss Factor Form

This window is accessed by Selecting New Value Range Factor from the Value Range Factor form.



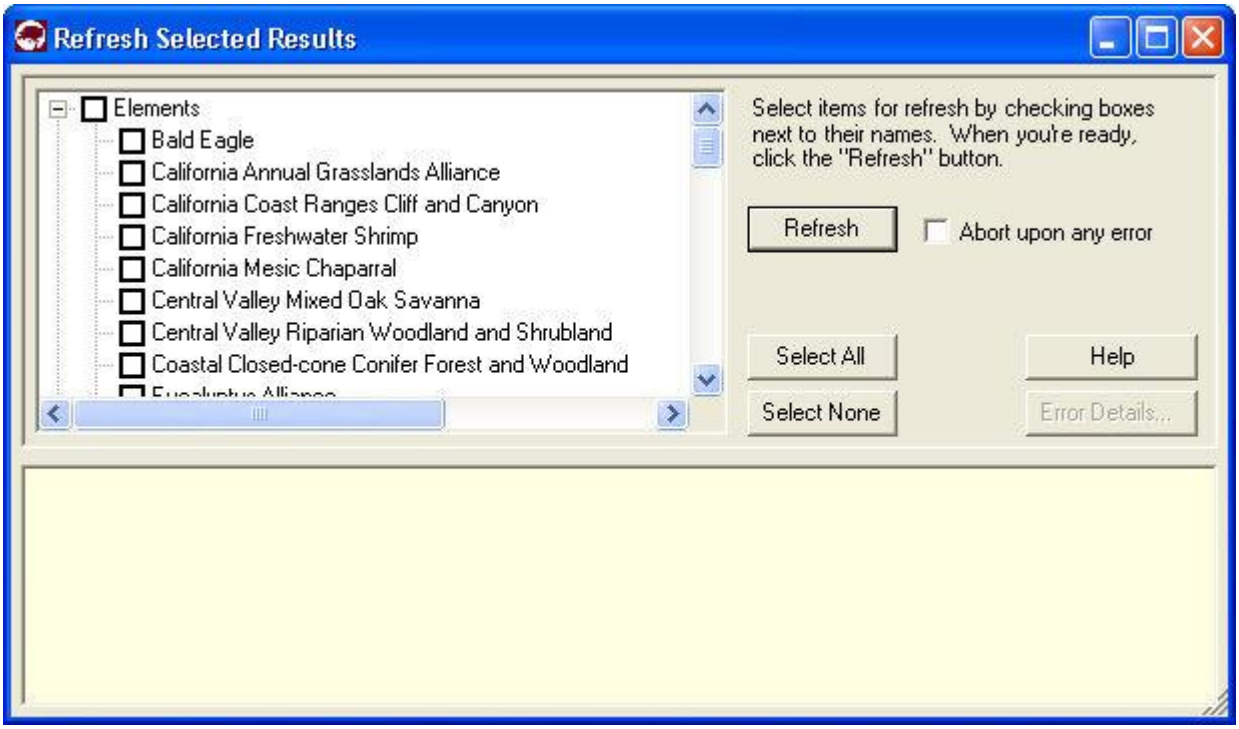
See Creating value range factors for instructions on data entry for this window.

Refresh Selected Results Window

The **Refresh Selected Results** window can be opened several ways, depending on the item(s) to be refreshed.

- To display the Refresh Selected Results window listing all items that can be refreshed in the project (that is, elements, Conservation Value Summaries (CVS), and Scenario Evaluations, seen by scrolling down the list), click **Refresh Results...** from the NatureServe Vista menu.
- To display the Refresh Selected Results window listing only elements in the project to be refreshed, click the **Refresh...** button on the Element List window, or right-click on the major heading "Elements" on the NatureServe Vista tab in the Table of Contents (TOC) and choose **Refresh Results...** from the context window.

- To display the Refresh Selected Results window listing only CVS in the project to be refreshed, click the **Refresh...** button on the Conservation Value Summary List window.
- To display the Refresh Selected Results window listing only scenarios and Scenario Evaluations in the project to be refreshed, click the **Refresh...** button on the Scenario List window or the Scenario Evaluation List window, or right-click on the major heading "Evaluations" on the NatureServe Vista tab in the TOC and choose **Refresh Results...** from the context window.

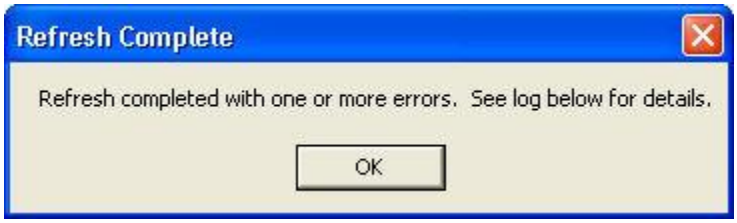


Refresh data:

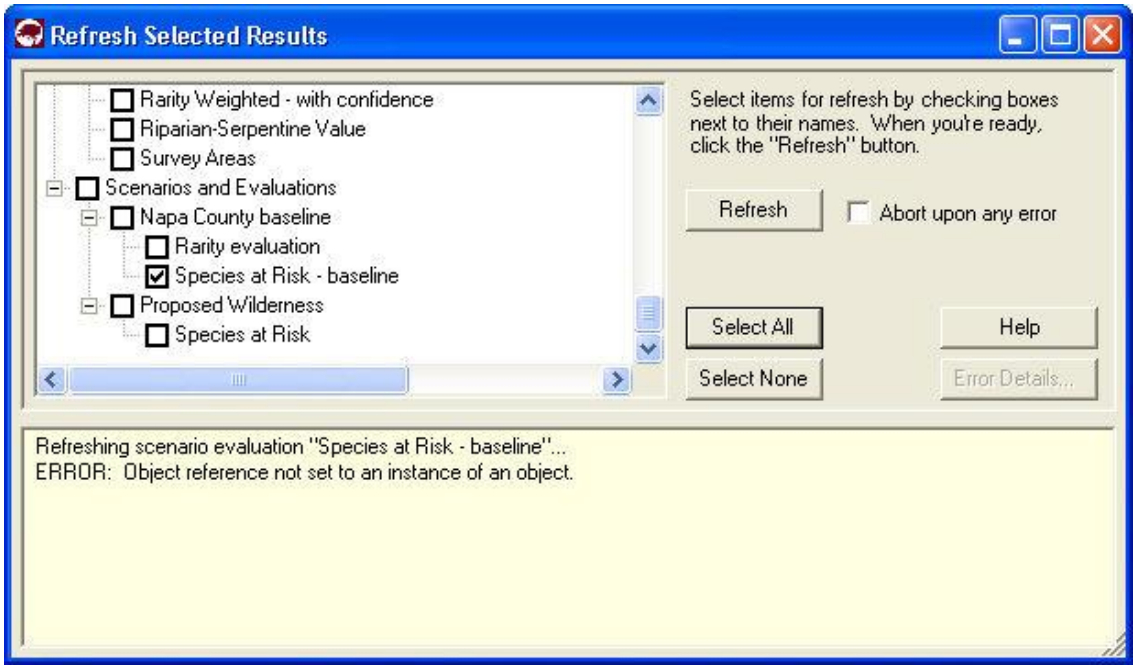
1. Indicate which data are to be refreshed by using the check-box(es) associated with the element(s) and/or project analyses. The **Select All** button can be used to select the entire list of items; using the **Select None** button will de-select any items that have been selected.
2. Indicate whether the refresh process should be cancelled if an error should occur using the **Abort upon any error** checkbox.
3. Click the **Refresh** button to begin the data refresh process.

If the refresh process completes without errors, the following message is displayed:

If an error occurs during the refresh, the following message will be displayed

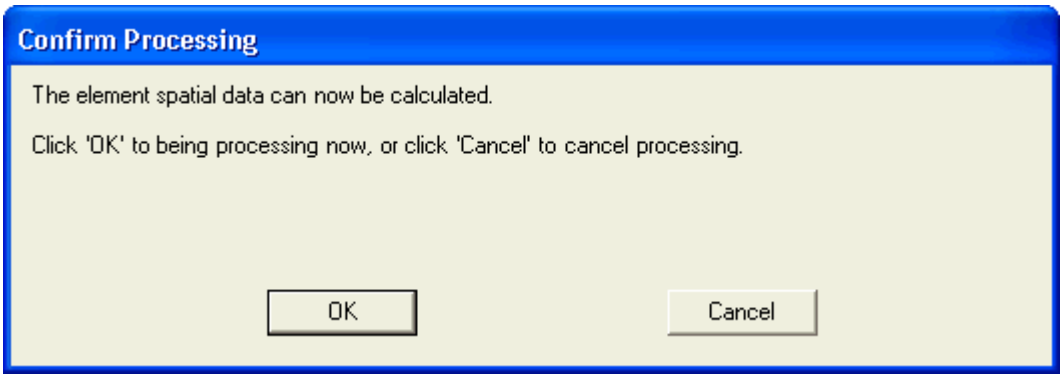


and an error log will be displayed in the lower half of the Refresh Selected Results window.



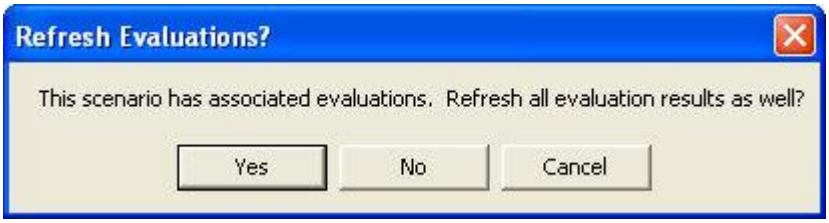
If more detailed information on the error(s) encountered is desired, click on the error log and then click the **Error Details...** button to display an Error Detail window.

Note that elements, CVS, and Scenario Evaluations in the project can be refreshed *without* opening the Refresh Selected Results window. To accomplish this, right-click on a single element or analysis on the NatureServe Vista tab of the Table of Contents and select **Refresh Result** from the context menu. A Confirm Processing window will be displayed.



Click **OK** to continue with the refresh process; otherwise, click **Cancel**.

Scenarios in the project can also be refreshed *without* opening the Refresh Selected Results window. To accomplish this, right-click on a single scenario on the NatureServe Vista tab of the Table of Contents and select **Refresh Result** from the context menu. A Refresh Evaluations? window will be displayed.

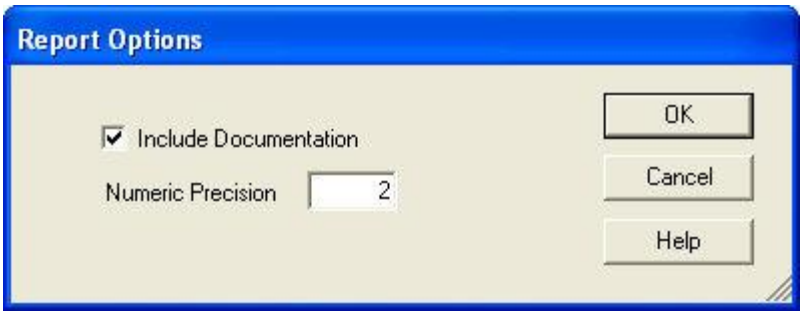


Click **Yes** to refresh both the scenario as well as any Scenario Evaluations that utilize the scenario; click **No** to refresh only the scenario; otherwise, click **Cancel**.

REPORT OPTIONS WINDOW

The **Report Options** window is displayed by clicking the 

button on the toolbar displayed in a report. This window provides the ability to set options for data to be included in a report.

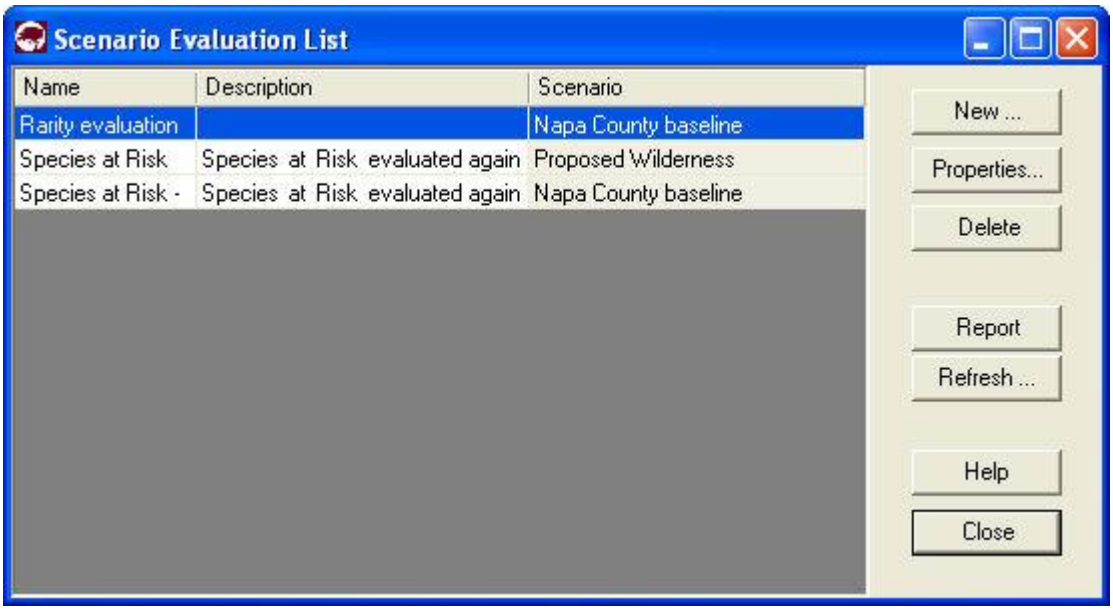


Set report options:

1. Indicate that documentation is to be included in the report by checking the **Include Documentation** checkbox. The term "documentation" refers specifically to any information entered in a Documentation window associated with data included in the report.
2. Enter a number in the **Numeric Precision** field that indicates the digits to be displayed to the right of the decimal point for numeric values in the report.
3. To close the window, saving any changes made to the options click **OK**; otherwise, click **Cancel**.

SCENARIO EVALUATION LIST WINDOW

The **Scenario Evaluation List** window is displayed by selecting **Lists ▸Scenaria Evaluation List...** from the NatureServe Vista menu. This window lists all the Scenario Evaluations that have been created for the project. See the Conservation and Land Use Scenarios section for more detailed information on this analysis.



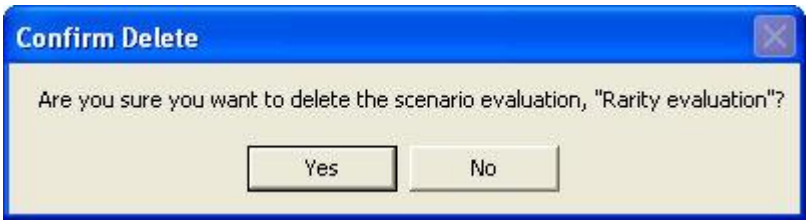
Button functions:

New... displays a new Evaluate Scenario window that can be used to develop a new evaluation for the project.

Properties... displays the Evaluate Scenario window showing details and allowing edits to the analysis selected in the list.

Delete deletes the Scenario Evaluation selected in the list.

A **Confirm Delete** window is displayed before the deletion is implemented.



Report displays a report for the selected Scenario Evaluation that displays the land use or policy scenario that was evaluated in terms of element goals. See the Reports section for more details on Scenario Evaluation reports.

Refresh... displays the Refresh Selected Results window that can be used to refresh the data for selected Scenario Evaluation.

Help opens the on-line documentation.

Close closes the window.

Columns displayed:

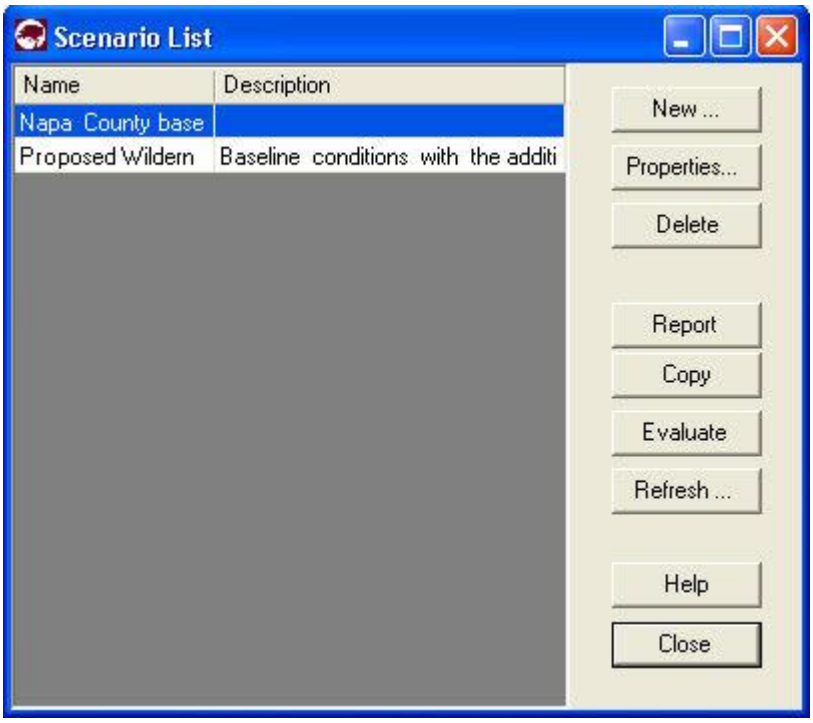
Name - name of the Scenario Evaluation.

Description - description of the evaluation, if any.

Scenario - name of the scenario used in the evaluation.

SCENARIO LIST WINDOW

The **Scenario List** window is displayed by selecting **Lists ▸Scenario List** from the NatureServe Vista menu. This window lists all the scenarios that have been imported into the project. See the Land Use and Conservation Scenario Evaluations section for more detailed information on defining and using scenarios.



Button functions:

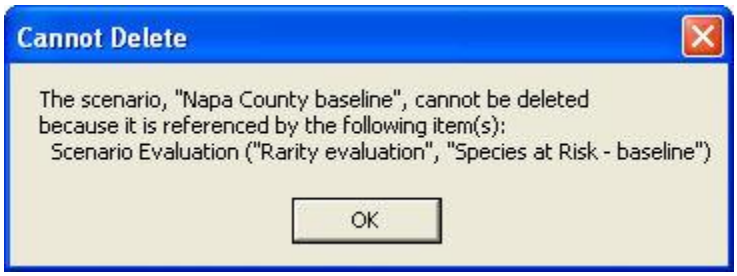
New... displays a new Scenario Properties window that can be used to define a new scenario to be imported into the project.

Properties... displays the Scenario Properties window showing details and allowing edits to the scenario selected in the list.

Delete deletes the scenario selected in the list.

A **Confirm Delete** window is displayed before the deletion is implemented.

A **Cannot Delete** window is displayed in cases when the scenario is referenced by one or more Scenario Evaluations, as shown in the following example.



Report displays a report for the selected Scenario that displays the settings used to create the scenario. See Reports section for more details on Scenario reports.

Copy creates a copy of the scenario selected in the list, which can then be edited to create a new scenario for import.

Evaluate opens a new Evaluate Scenario window that uses the scenario selected in the list.

Refresh... displays the Refresh Selected Results window that can be used to refresh the data for the selected scenario.

Help opens the on-line documentation.

Close closes the window.

Columns displayed:

Name - name of the scenario.

Description - description of the scenario, if any.

SCENARIO PROPERTIES WINDOW

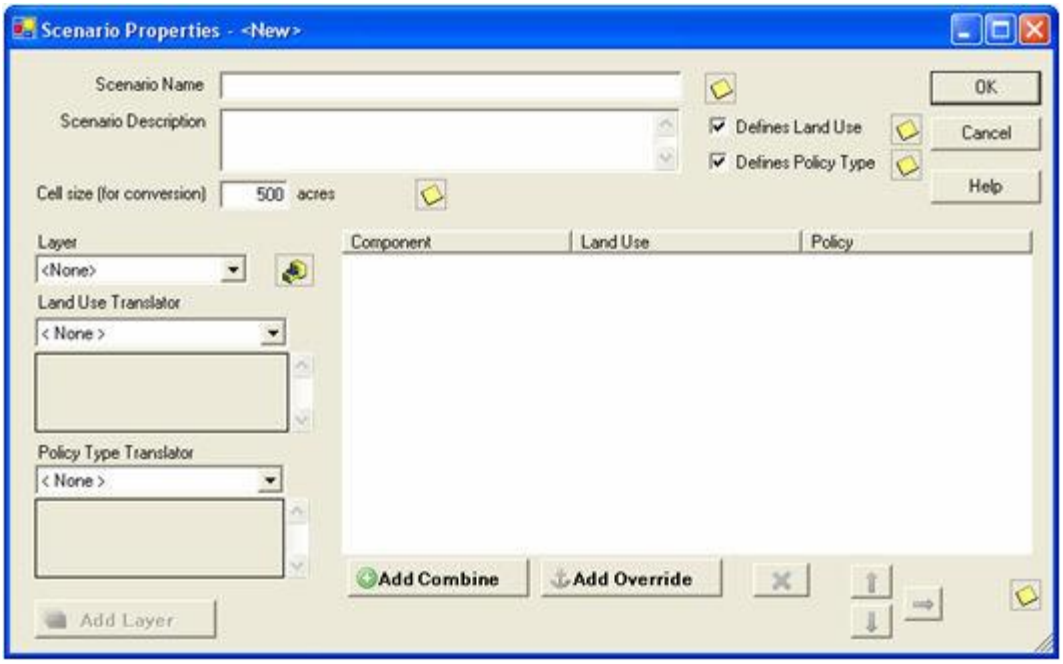
The **Scenario Properties - <New>** window is displayed by either clicking the **New...** button on the Scenario List window or choosing **Define Scenario...** from the NatureServe Vista menu. The new properties window is used to define new scenarios that can be utilized in Land Use and Conservation Scenario Evaluations. Note that typically a baseline scenario (representing current conditions in the planning region) will be defined first. See the section on Scenarios for more detailed information on defining and using scenarios in analyses.

New scenarios can be defined using scenarios that have already been developed in Vista. The process for defining a new scenario based on an existing one involves first copying the existing scenario using the **Copy** button on the Scenario List window, and then renaming and modifying the copy in the Scenario Properties window before defining it as a new scenario (see the section below on editing a scenario for more details).

Override nodes function in order of precedence. If layers are stacked in an Override node and there are instances of overlap between the layers, whichever layer is higher in the scenario list, will override, or trump the one below it.

Combine nodes function as additive features. Any number of land uses can exist in one place if they are stacked in a Combine node. Element compatibility and response to multiple land uses is discussed in the Scenario Evaluations section of this manual.

Note that the  button located next to an item can be used to record additional information related to that item (see the Documentation Window topic for more details).

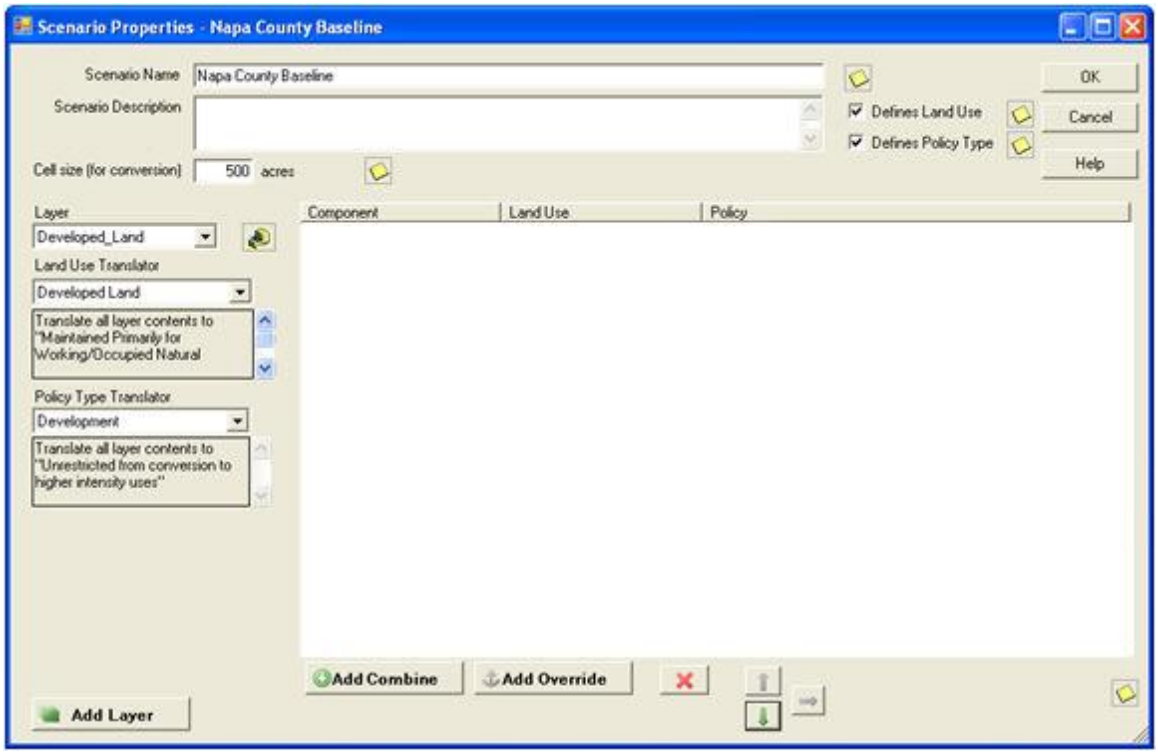


Define a scenario:

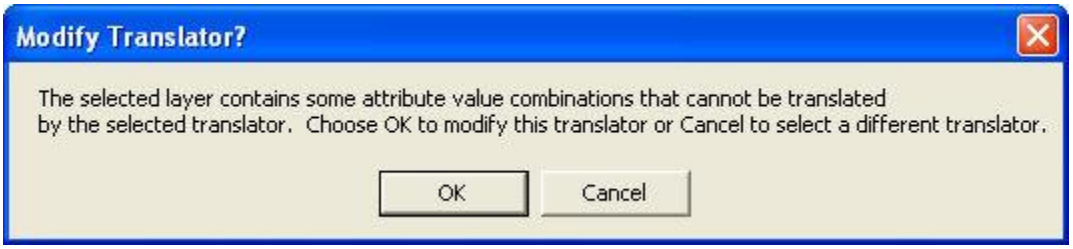
1. Specify a name for the new scenario in the **Name** field. The **<New>** on the window title will change to the name of the new scenario as the entry is typed in.
2. Enter a brief description of the scenario in the **Description** field, if desired.
3. Indicate whether both land use and policy type evaluations will be performed using the scenario (the default), or only a single type of evaluation will be performed, by using the **Defines Land Use** and/or **Defines Policy Type** checkboxes.
4. If desired, edit the value in the **Cell size (for conversion)** field, which displays the default grid cell size specified for the project in the Project Properties window. Note that if this cell size differs greatly from the cell size used to create the visualization layers generated by a Scenario Evaluation (which are set in the Spatial tab of the Element Properties window), the visualization layers may not overlay the scenario correctly. For a discussion of optimal cell size to be used for a planning project, see the Determining Grid Cell Size topic.
5. Select a layer to be added to the scenario from the drop-down list in the **Layer** field, or by using the ArcCatalog button. Values in the drop-down list are determined by what is in the Table of Contents (TOC), or a subset thereof (by layer type). If the ArcCatalog button is used, a Select Polygon or Raster Input window is displayed; browse to the appropriate layer, select, and click the **Add** button.

6. Select the translator(s) to be applied to the selected layer for this scenario.
   - If land use evaluations will be performed using the scenario, select the land use translator to be applied to the layer from the **Land Use Translator** drop-down list, or select the **<Add New...>** value to create a new translator, or the **<Show List...>** value to display all existing translators (in order to select and modify an existing translator).
   - If policy type evaluations will be performed using the scenario, select the policy translator to be applied to the layer from the **Policy Type Translator** drop-down list, or choose the **<Add New...>** or **<Show List...>** values as described above.

The box below the drop-down list will display information on the selected translator.

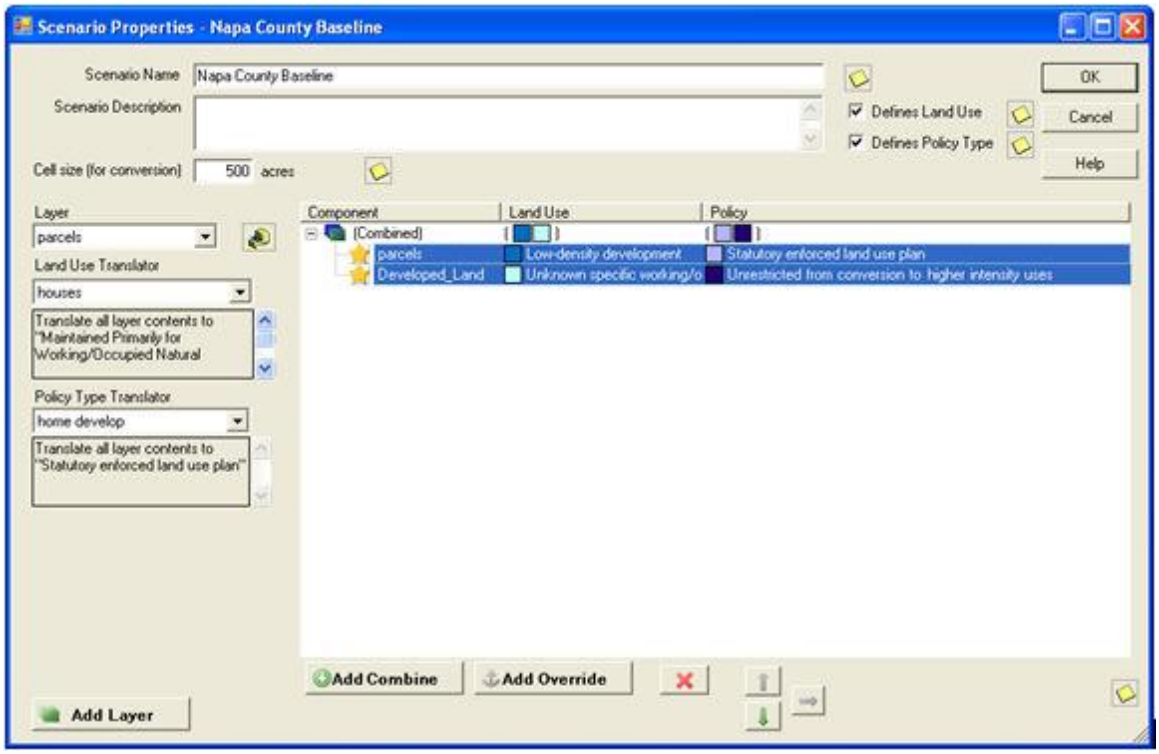


If a selected translator was defined on the basis of attributes that are not contained in the layer, the following message may be displayed:



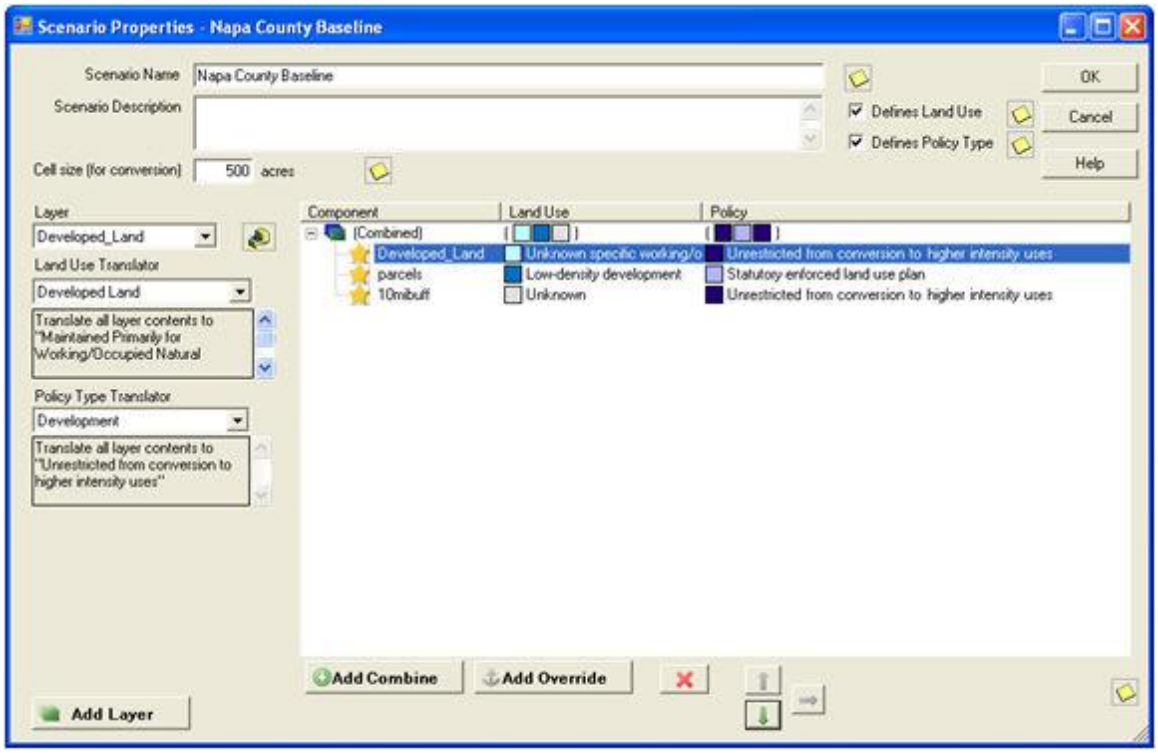
Click **OK** to edit the translator to add translations for the attributes that are lacking; otherwise, click **Cancel** to choose another translator.

7. When the selection of either or both translators for the layer has been completed, decide whether the land use layer overrides other land uses or whether it is a co-occuring land use using the Add Override or Add Combine buttons respectively (See Define scenarios using Vista combine and override functionality for more information). Click the Add Layer button to add the layer, along with the selected translator(s), to the Scenario Layers grid.



8. Continue the process of selecting layers, specifying translator(s) for them, and then adding them to the grid as desired for the scenario. Note that the same layer can be reused in the scenario, as long as the associated translator(s) are different each time. Similarly, the same translator can be reused in the scenario, as long as the layer(s) to which it is applied are different each time.

Note: It is important to include the boundary layer specified for the project in every scenario, with all features of both the Land Use and Policy Type attributes translated to the single value "Unknown." If such translators have not yet been created, use the **<Add New...>** value in both the Land Use and Policy Type Translator drop-down lists to create new translators to accomplish this (as described in step 6 above). Including the project boundary layer with these translations in all scenarios will insure that no area within the project boundary will fall out as "unspecified" in a Scenario Evaluation.



9. Use the up and down arrow buttons to change the order of layers in the grid as needed to ensure that LUI and/or PT attributes for overlapping areas are obtained from the layer representing the dominant policy. Because data is processed beginning with the first layer in the list, then the second, third, and so forth, each layer takes precedence over (i.e., modifies) the layer directly below it. Thus, layers should be sequenced so that those representing dominant policies (or those that are not subject to such policies) are placed higher than subordinate layers. In almost all cases, the dominant layer in a planning region should be a converted lands layer, since changes in policy will rarely result in making such lands immediately compatible with biodiversity.

   Note: The project boundary layer in which all features are translated to LUI and PT values of "Unknown" should always be positioned at the bottom of the list, that is, as the "base" layer.

10. To delete a selected layer, use the **X** button.
11. To close the window and save the developed scenario click **OK**; otherwise, click **Cancel**.

The Scenario Properties window can be used to edit existing scenarios, for example, in cases when data sources have been changed in the project after scenarios were first defined. This window can also be used to define a new scenario using an existing one (e.g., the baseline scenario). However, the existing scenario must first be copied using the **Copy** button on the Scenario List window before being renamed and modified in the Scenario Properties window. Making changes to the name and other information for an existing scenario rather

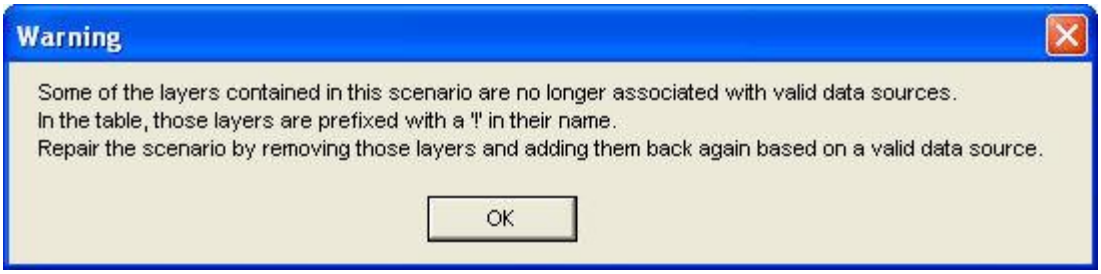
than to a copy will result in actual modifications to the original scenario instead of a separate, new scenario.

Typically the baseline scenario is first defined, next copied, and then the copy modified (as described below) to define other scenarios, although any scenario can be used as the basis for a new one.

Edit an existing scenario:

1. Select the scenario to be edited, or the copy of a scenario to be used for defining a new one, from the list on the Scenario List window and click the **Properties...** button, or select the scenario from the NatureServe Vista Table of Contents (TOC), right-click, and choose **Scenario Properties...** from the context window. The resulting properties window displays the scenario.

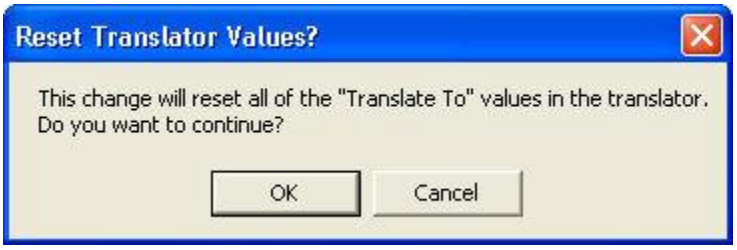
   In cases when data sources have been changed in the project after the scenario was originally defined, the following message may be displayed:



   In such cases, click **OK**; edit the scenario by removing the layers lacking data sources and then redefining the scenario so that the layers utilized have valid sources.

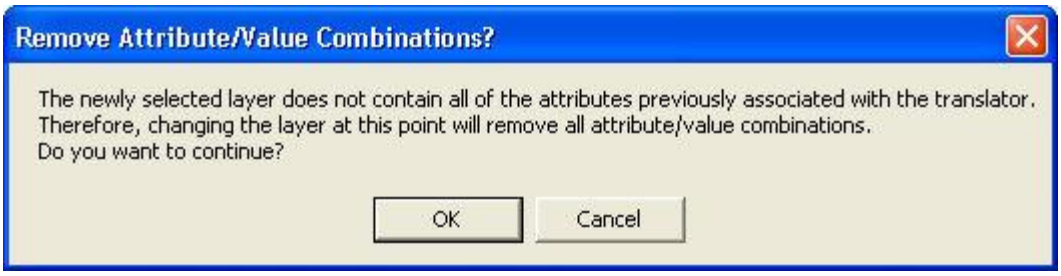
2. Edit the scenario using the processes described above for defining a new scenario as guidelines.

   If the type of translator (i.e., land use or policy type) is changed, the following message may be displayed:



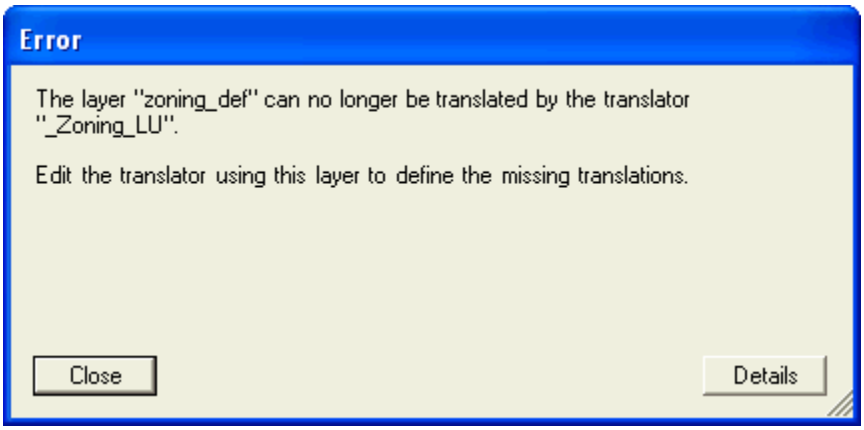
   Click **OK** to continue with the revision and the previously assigned values for attributes will be deleted; otherwise, click **Cancel**.

   In cases when the newly specified layer is lacking attributes previously defined for the translator, the following message may be displayed:



Click **OK** to continue with the revision and the previously assigned values for attributes will be deleted; otherwise, click **Cancel**.

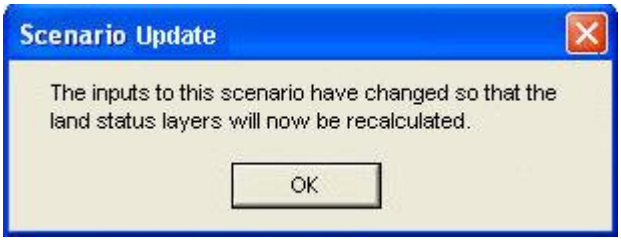
In cases when a translator cannot translate all of the attributes in the newly specified layer, the following message may be displayed:



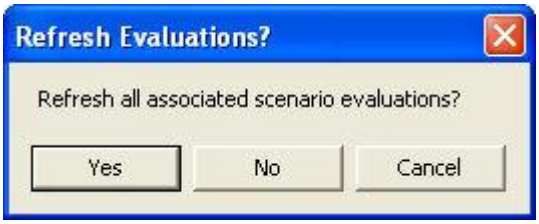
In such cases, click **Close** to cancel the process, or **Details** to view information on the error.

3. To close the window and save the edited scenario click **OK**; otherwise, click **Cancel**.

If **OK** was clicked to save the revised scenario, one of the following messages may be displayed:



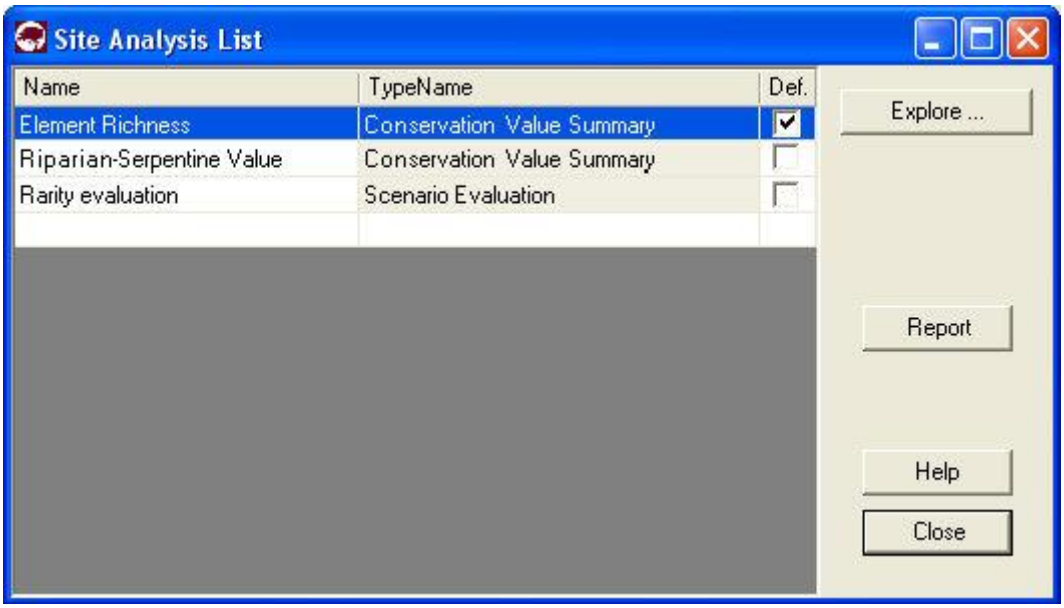
Click **OK** to continue with the revision, and layers in the scenario will be recalculated; otherwise, click **Cancel**.



Click **OK** to refresh the Scenario Evaluations that utilize the scenario; **No** if evaluations should not be refreshed; otherwise, click **Cancel**.

SITE ANALYSIS LIST WINDOW

The **Site Analysis List** window is displayed by selecting **Lists ▸Site Analysis List** from the NatureServe Vista menu. This window lists all of the analyses in the project, specifically Conservation Value Summaries and/or Scenario Evaluations, that can be examined in detail using the Site Explorer tool. In order to be included in this list, a site layer must be specified for the analyses. See the Site Analyses section for more detailed information on the use of Site Explorer.



Button functions:

Explore... displays the Site Explorer window with data from the analysis that is selected.

Report displays the report for the selected analysis. See the Reports section for more details on Conservation Value Summary and Scenario Evaluation reports.

Help opens the on-line documentation.

Close closes the window.

Columns displayed:

Name - name of an analysis that can be evaluated using Site Explorer tool.

TypeName - type of analysis, specifically Conservation Value Summary or Scenario Evaluation.

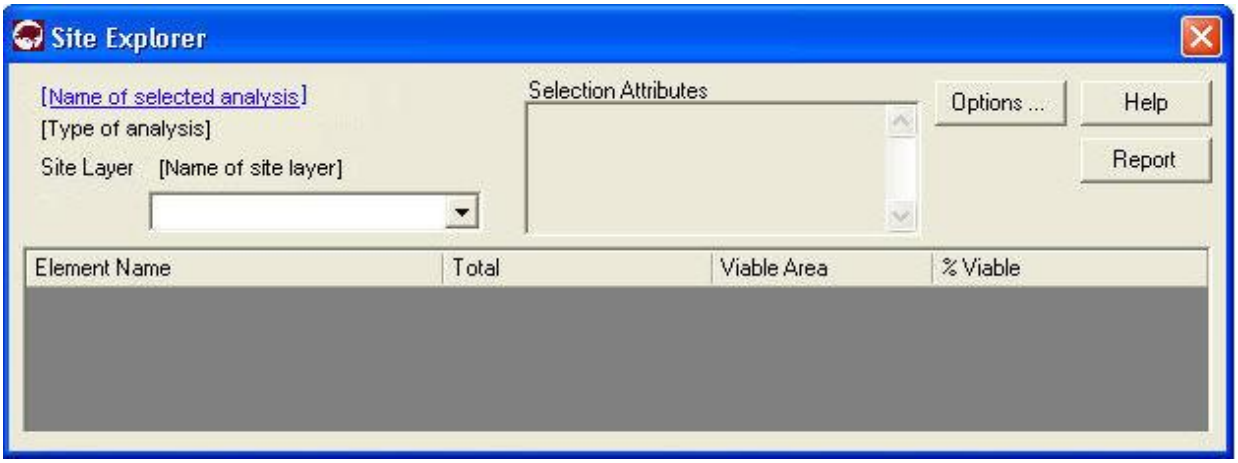
Def. (Default) - checkbox used to designate an analysis as the default displayed in the Site Explorer window.

SITE EXPLORER WINDOW

The **Site Explorer** window is used to evaluate the conservation properties of a specified site or set of sites that are of interest, with functionality and results that differ depending on the type of Vista analysis that is examined, specifically a Conservation Value Summary (CVS) or Scenario Evaluation). When used for a CVS, the Site Explorer window displays details on the conservation value for the site selection, along with information on the contributing biodiversity elements present on the selection. For a Scenario Evaluation, the Site Explorer tool provides data on the land use and/or policy types for the site selection along with detailed information on elements occurring on the selection in terms of conservation goals achieved, and enables the user to examine the effects on goal achievement if alternative land statuses are used.

The Site Explorer window can be opened several ways:

- Clicking the **Explore...** button on the Site Analysis List window will display the Site Explorer window with data from the analysis (CVS or Scenario Evaluation) that is selected.
- Right-clicking on a CVS or Scenario Evaluation displayed on the NatureServe Vista tab of the Table of Contents and selecting **Site Explorer...** from the resulting menu will display the Site Explorer window with data for that analysis.
- Selecting **Explore Sites...** from the NatureServe Vista menu will display the Site Explorer window with data for the analysis marked as the default in the Site Analysis List window.
- Clicking the  button on the NatureServe Vista toolbar will open the Site Explorer window with data for the analysis marked as the default in the Site Analysis List window.



Button functions:

Options... displays the Site Explorer Options window to set the attributes (columns of data) to be displayed for elements and the site selection.

Help opens the on-line documentation.

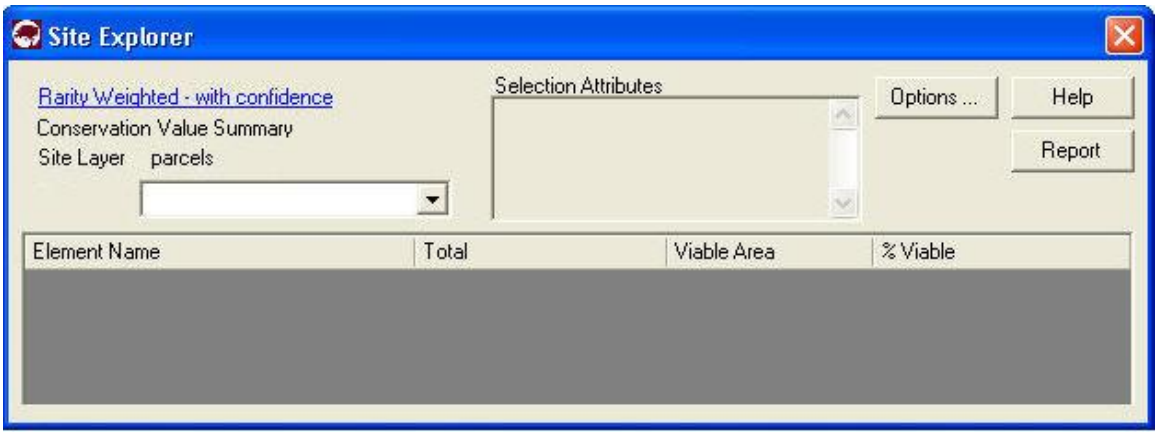
Report displays the report for the attribute data resulting from the exploration. See the Reports section for more details on Site Selection reports.

Explore sites related to a Vista analysis:

The basic process for exploring sites related to a CVS and a Scenario Evaluation is the same. Additional functionality is provided when evaluations are explored, permitting the user to examine the effects on element goals caused by altering land uses and/or policy types for the site selection, and then save the results as new scenarios for use in Scenario Evaluations.

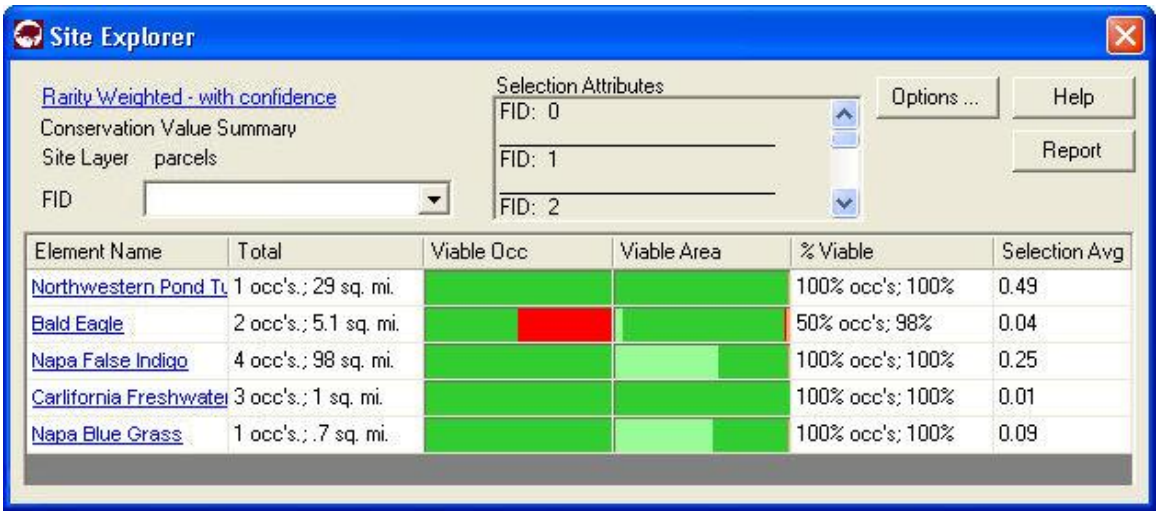
The process for exploring either a CVS or a Scenario Evaluation is described below. Following the process steps that are common to both types of analyses is a description of how to evaluate alternative land statuses for a Scenario Evaluation.

1. Open the Site Explorer window for the desired analysis using one of the methods described above.



2. Click the **Options...** button to set the attributes to be displayed for elements and the site selection in the Site Explorer window for the analysis. See the Site Explorer Options window for details on the process for selecting element attributes.
3. Using the Site Explorer pointer, select one or more land units in the site layer (parcels in this example) to be examined, or choose the desired site from the Site Layer drop-down menu (populated only if a site attribute has been specified on the Site Explorer Options window). Holding the button while selecting sites with the pointer will permit multiple sites to be considered together. The pointer can also be dragged to define a rectangle to indicate multiple sites to be examined as a set. To deselect units, click outside of the area included in the analysis, or select one or more different sites to be explored.

Data for the identified site selection will be displayed in the Site Explorer window.



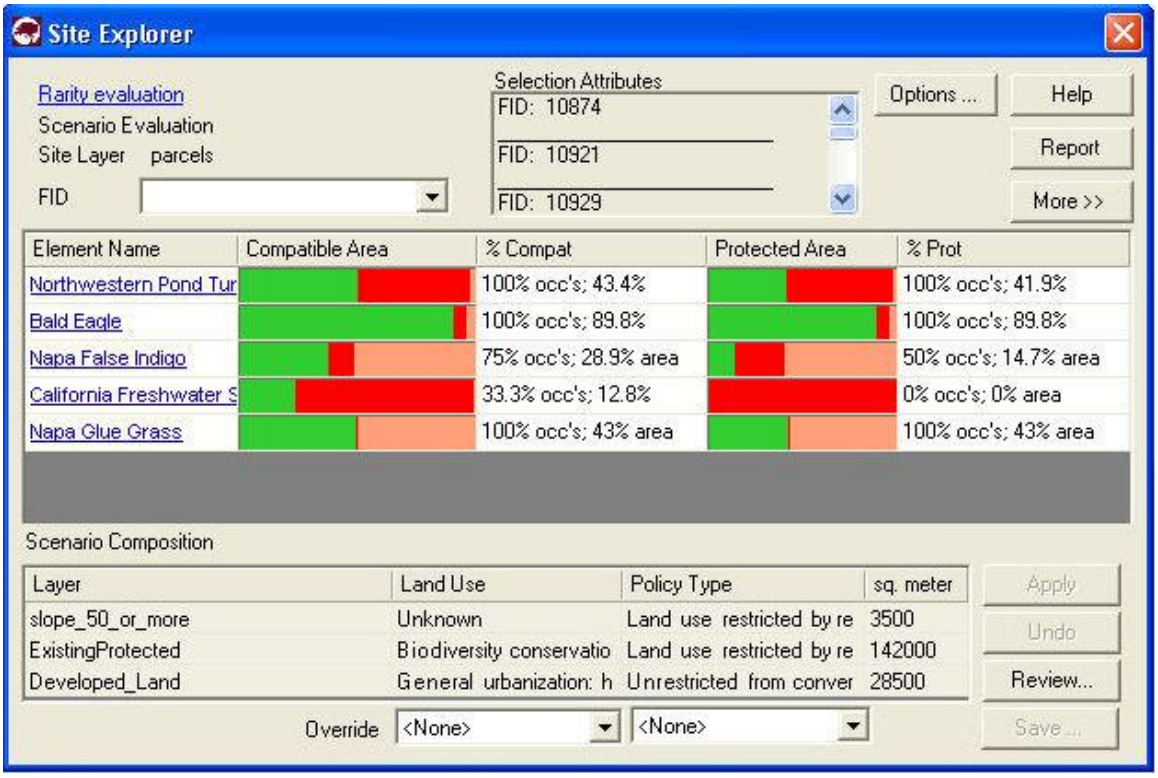
Attribute definitions that will describe briefly what the column data represent can be found in the topics Element Inventory Data for a CVS Exploration and Element Inventory Data for a Scenario Evaluation.

Back to process steps above

Evaluate alternative land statuses and their effects on element goals:

Once the Site Explorer window has been opened and sites selected for a Scenario Evaluation, the functionality related to evaluation of alternative land uses and policy types can be utilized, as described below.

Click the **More>>** button to expand the window to display composition details for the scenario used for the evaluation, including the land status(es) assigned to the layer(s) that comprise that scenario.



Button functions for the Scenario Composition portion of the Site Explorer window:

Apply changes land use statuses to those selected in the **Override** fields.

Undo returns any land statuses changed by "Override" values back to their original statuses.

Review... opens a Site Change List window used to modify statuses for individual layers.

Save opens a Save Changes to Shape File window to capture the modified layers and land statuses as a shape file.

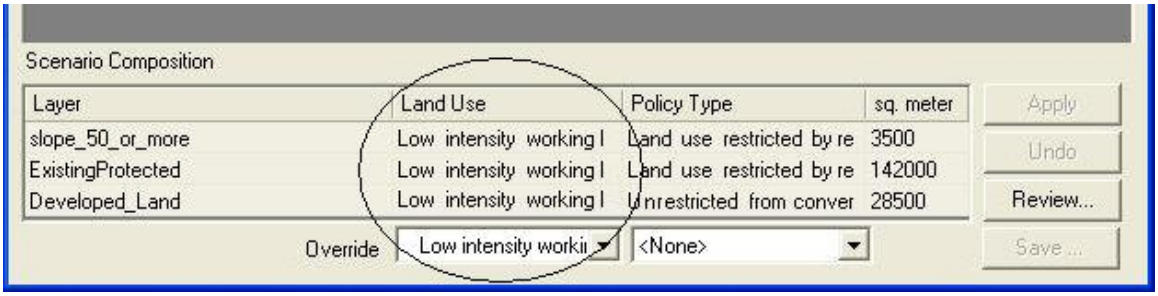
Response attribute functionality:

Provided the **Response** attribute is included in the site exploration and displayed as a column, selecting a single row in the Scenario Composition portion of the Site Explorer window will display each element's specific response to the land use in that row.

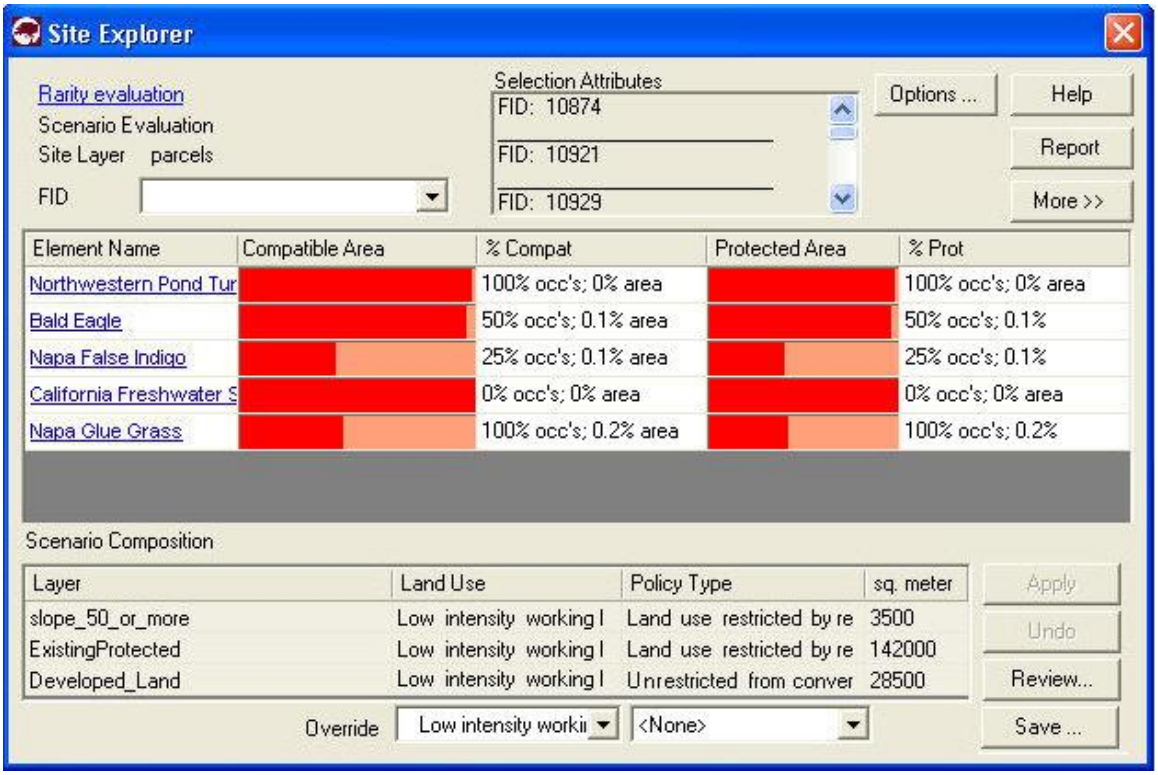
1. Change land use status(es)

Using the Scenario Composition portion of the Site Explorer window, select a different land use and/or policy type to be applied to scenario layers by

selecting value(s) from the appropriate **Override** drop-down list(s) and clicking **Apply**.



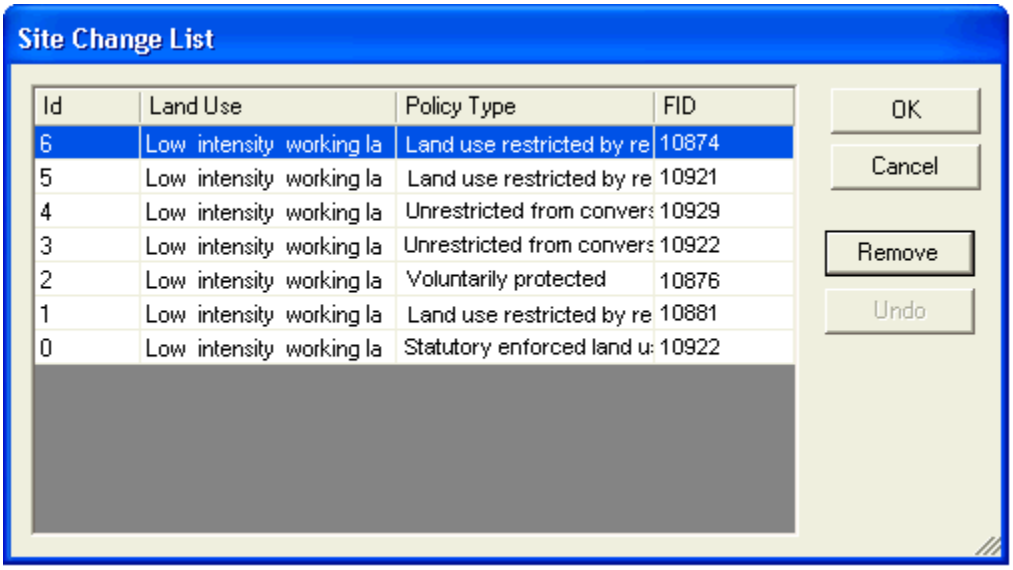
The land status value(s) selected in the **Override** field(s) will be applied to the layers that comprise the scenario used for the Scenario Evaluation. Any resulting changes to the element attribute data for the site exploration will change accordingly, as shown in the example below (compared with the initial results, above).



2. Review land status changes

Click **Report** to display the Site Selection report showing the effects of the alternative land status(es) on element attributes and goal achievement. See the Reports section for more details on Site Selection reports.

If desired, click **Review...** on the Site Explorer window to display the Site Change List window, which lists all layers that have modified land status(s) resulting from any override values selected in the Site Explorer window. Modify the change list if desired using the buttons provided on the window, described below.



Button functions for the Site Change List window:

OK saves any revisions to the list of land use status changes.

Cancel closes the window without retaining any revisions made to the land status change list.

Remove removes a selected layer (row) with modified land status values from the list. As a result, this layer will now be displayed in the Scenario Composition part of the Site Explorer window with its original land status(es); that is, the land status(es) in effect before any override values were specified.

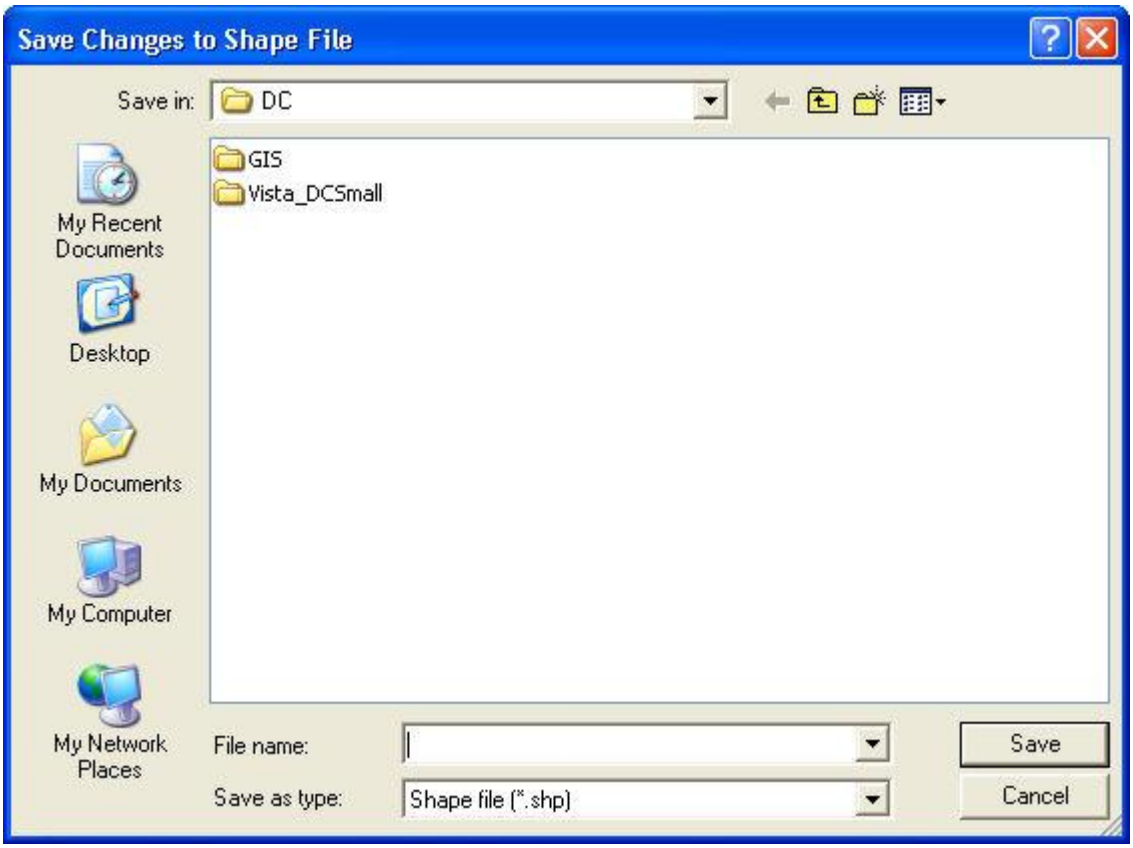
Undo restores a layer removed from the Site Change List window back to the list, again with the land status modified by override values.

3. Determine optimal land statuses

Repeat the process of selecting new land status(s) for the layers in the site exploration by changing override value(s), and reviewing and accepting any values (steps 1 and 2, above) that result in desirable changes to element goal achievement.

4. Save alternative scenario layers

Once a combination of land statuses in the site exploration is deemed to be acceptable/useful, use the **Save...** button in the Scenario Composition portion of the window to display the **Save Changes to Shape File** window. Designate a folder and file name for the location of the saved data, and click **Save**.



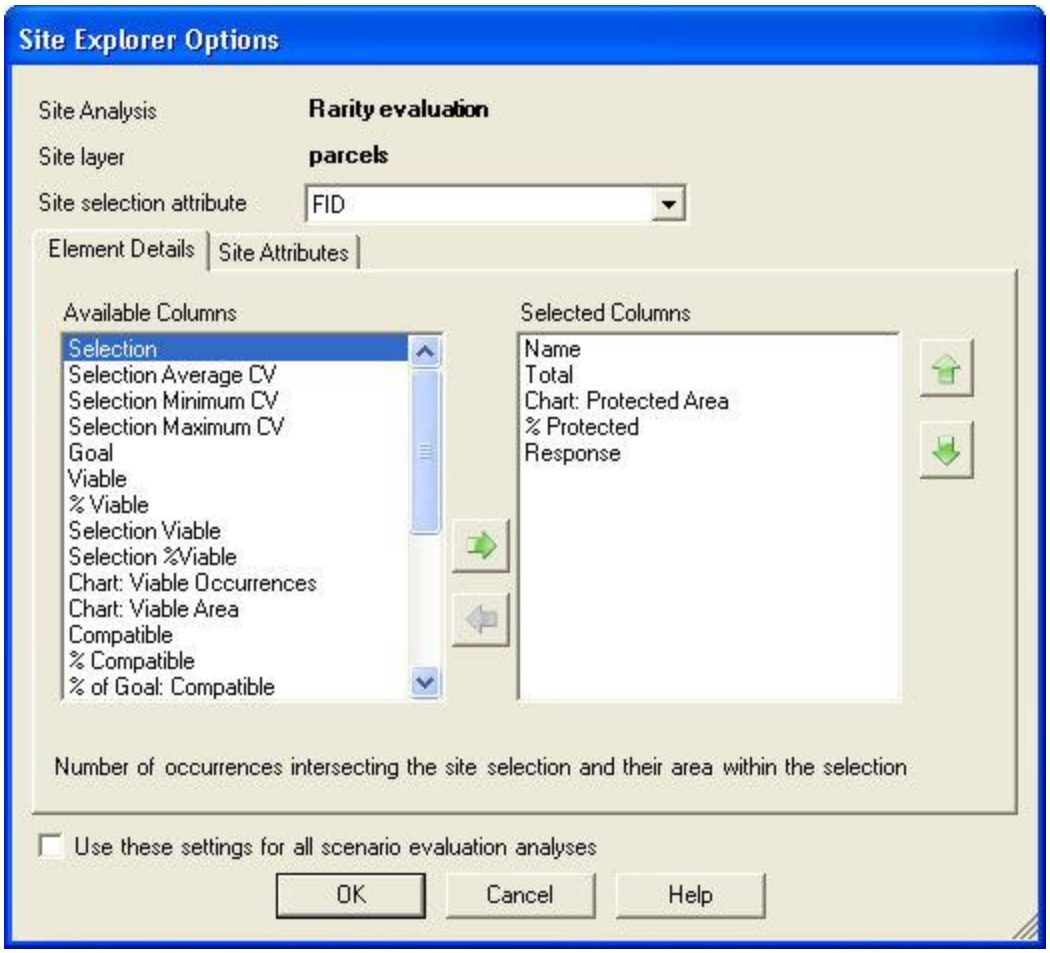
The saved shape file and associated land status data can then be used to define new scenarios for use in Scenario Evaluations.

SITE EXPLORER OPTIONS WINDOW

The **Site Explorer Options** window is displayed by clicking the **Options** button on the Site Explorer window, and is used to set attributes related to the element and site information displayed for a particular analysis (i.e., a Conservation Value Summary (CVS) or Scenario Evaluation).

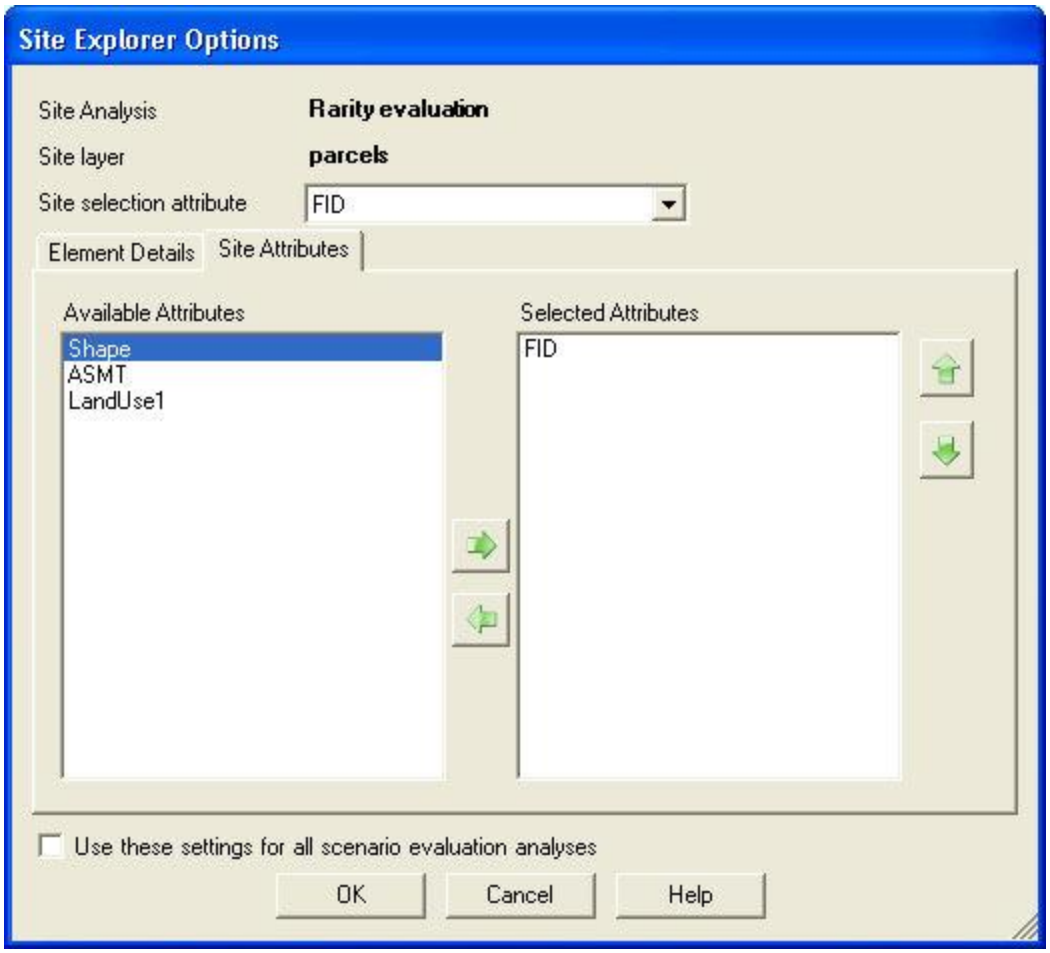
Set options:

ELEMENT DETAILS TAB INPUT



1. Indicate the attributes (i.e., columns) of data to be displayed for elements that occur in the site selection, using the right arrow button to move one or more highlighted attributes from the **Available Columns** list to the **Selected Columns** list, and the left arrow to remove attribute(s) from the set to be displayed. The up and down arrow buttons can be used to set the order for the attributes to be displayed in the Site Explorer window. While an attribute is selected, a brief description for the attribute is displayed near the bottom of the tab. A complete list of attributes and their definitions can be found in the topics Element Inventory Data for a CVS Exploration and Element Inventory Data for a Scenario Evaluation Exploration.

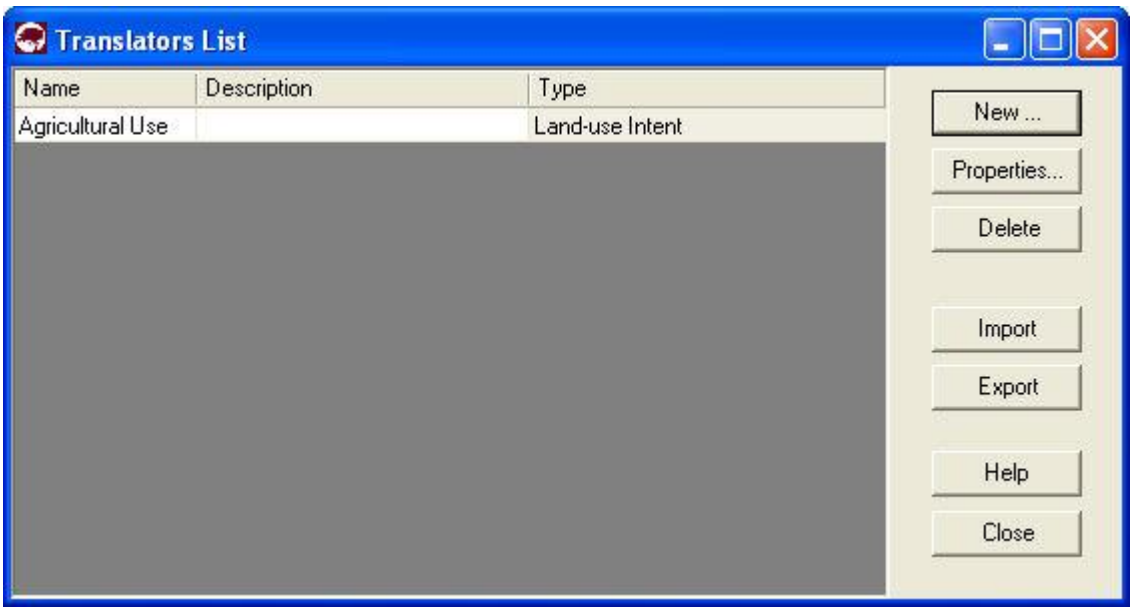
SITE ATTRIBUTES TAB INPUT



2. Select an attribute from the **Site selection attribute** drop-down list near the top of the window to be used to select land units for Site Explorer. The values for this attribute will then be displayed in the Site Layer drop-down list on the Site Explorer window.
3. Indicate the attribute(s) to be displayed for the site(s) selected in the **Selection Attributes** box, using the right arrow button to move one or more highlighted attributes from the **Available Attributes** list to the **Selected Attributes** list, and the left arrow to remove attribute(s) from the set to be displayed. The up and down arrow buttons can be used to set the order for the attributes to be displayed in the Site Explorer window.
4. To use the set of attributes specified on both the Element Details and Site Attributes tabs as the default for all site explorations of Conservation Value Summaries or Scenario Evaluations, indicate so using the checkbox near the bottom of the window.
5. To close the window and save any changes made to the attribute lists click **OK**; otherwise, click **Cancel**.

TRANSLATOR LIST WINDOW

The **Translator List** window is displayed by selecting **Lists ▸Translator List** from the NatureServe Vista menu. This window lists all the translators that have been created for land use and protection layers in the project, which are used for Scenario Evaluations.



Button functions:

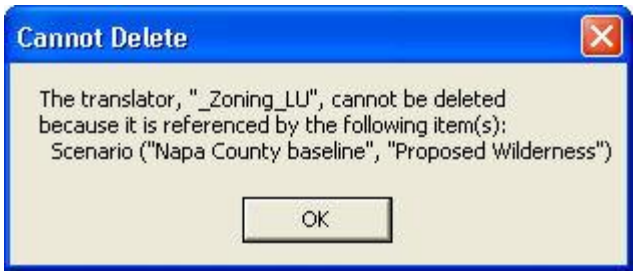
New... displays a new Translator Properties window that can be used to develop a new translator for a land use or protection layer to be imported into the project.

Properties... displays the Translator Properties window showing details and allowing edits to the translator selected in the list.

Delete deletes the translator selected in the list.

A **Confirm Delete** window is displayed before the deletion is implemented.

A **Cannot Delete** window is displayed in cases when the translator is referenced by another item used in scenario evaluations, as shown in the following example.



Import... opens a browse window to locate a translator (developed in another project) to be imported into this project.

Export... opens a browse window to find the desired location to place a copy of the selected translator so that it can be imported into another project.

Help opens the on-line documentation.

Close closes the window.

Columns displayed:

Name - name of the translator.

Description - description of the translator, if any.

Type - type of translator, Land-use Intent or Policy Type.

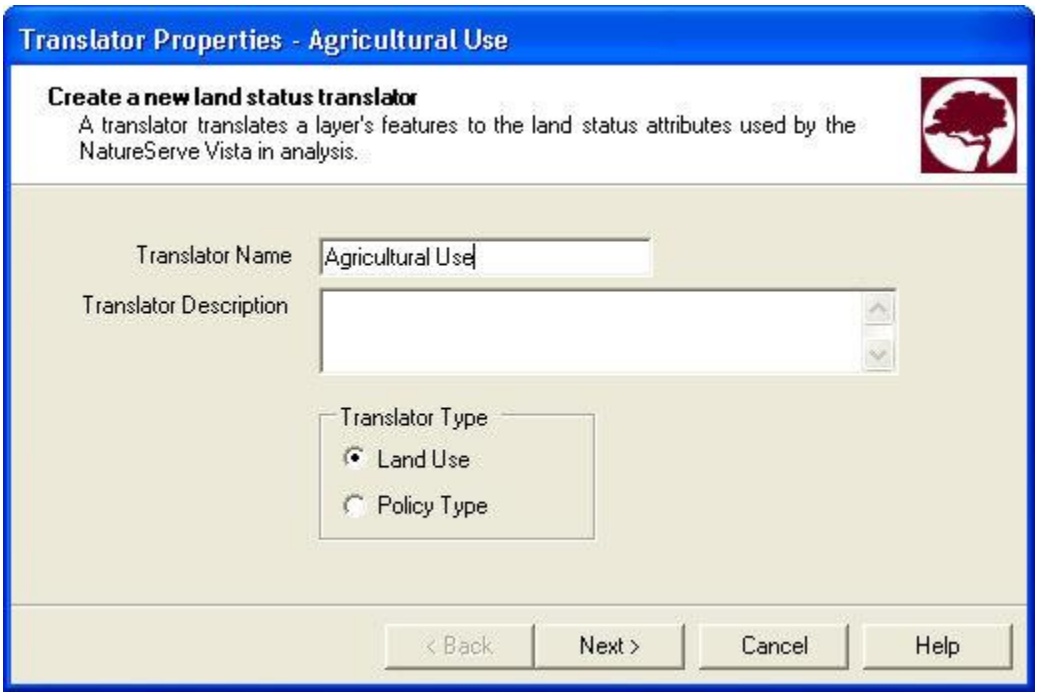
TRANSLATOR PROPERTIES WINDOW

The **Translator Properties - <New>** wizard is displayed by clicking the **New...** button on the Translator List window. The new properties wizard is used to create a translator used to translate land use/management or policy practices layer into land status types, specifically land use intent (LUI) categories or policy types (PTs) utilized by Vista in Land Use and Conservation Scenario Evaluations. See the Creating Translators section for more detailed information on the development and use of translators for importing scenarios. For detailed descriptions of Vista land use statuses, see Appendix F for LUI categories, and Appendix G for PT. The Translator Properties wizard consists of a series of screens for recording specific information that defines the new translator.

Note that at any time during the process of creating a new translator, the previous step in the process can be revisited (and data changed, if desired) by clicking the **<Back** button, or the action can be canceled altogether by clicking the **Cancel** button.

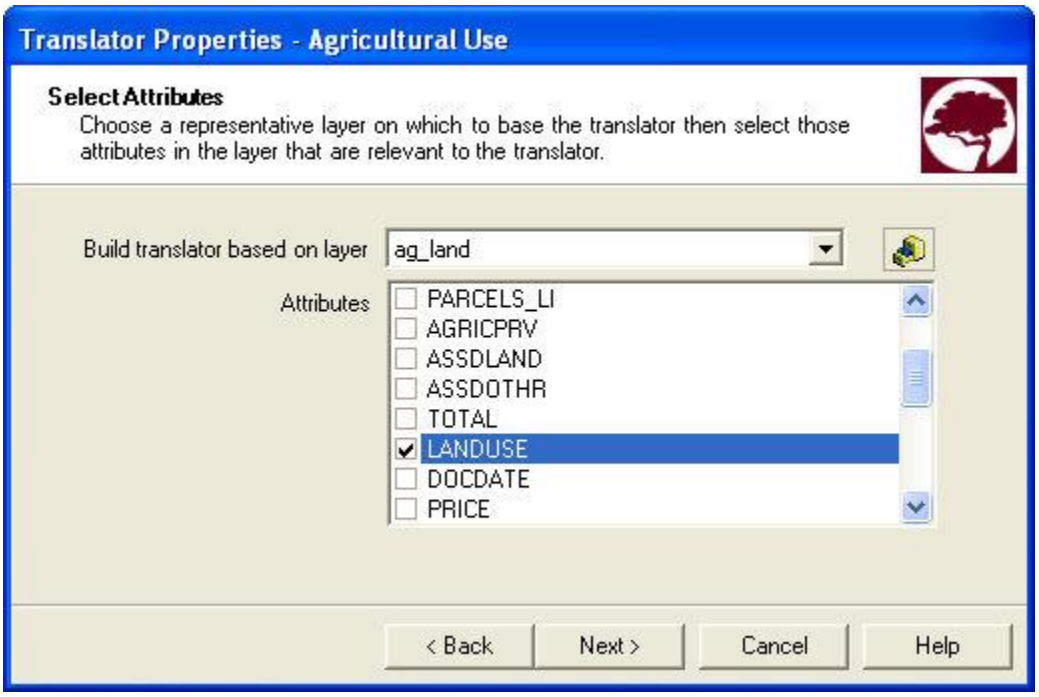
Create a translator:

1. Specify a name for the new translator in the **Translator Name** field. The **<New>** on the window title will change to the name of the new translator as the entry is typed in.
2. Enter a brief description of the translator in the **Translator Description** field, if desired.
3. Indicate whether the translator will assign land use or policy types using the appropriate **Land Use** (the default) or **Policy Type** radio button. Click **Next>**.



4. Indicate, using the appropriate radio button, whether the translator will 1) assign a **single Vista land status** (i.e., LUI or PT) for the entire group of land use categories or policy types in that layer (the default), or 2) assign an individual Vista type for each of the different land use categories or policy types (i.e., **translate all features based on attribute values**). Generally, option 1 is most useful for single purpose layers (such as a stream setback regulation), while option 2 is useful for general land use and zoning layers that have different land uses and perhaps policies for specific areas/zones within the layer.
5. If the **Translate all features to a single land status** radio button was chosen, select the appropriate land status type to be used for all features. The most sensitive elements should be used to determine the single value to be assigned for this option. However, this has the effect of reducing the precision of the compatibility assessment for less-sensitive elements. Element-specific response requires greater information but increases the precision of the analysis and flexibility for the client to meet element conservation goals in a variety of land use types. Click **Next>**, and then **Finish** to complete the new translator. Disregard the remaining steps in the process.
6. If the **Translate features based on attribute values** radio button was chosen, click **Next>**.
7. Select the layer to be used for developing the translator from the drop-down list in the **Build translator based on layer** field, or by using the  ArcCatalog button. Values in the drop-down list are determined by what is in the Table of Contents (TOC), or a subset thereof (by layer type). If the ArcCatalog button is used, a Select Polygon Input window is

displayed; browse to the appropriate layer, select, and click the **Add** button.



8. A list of attributes for features in the selected layer is displayed in the **Attributes** box. Indicate the feature attribute(s) to be used to create the translator, i.e., those that are most relevant to land use/management or policy practices, by placing a check in checkbox next to the attribute(s). Click **Next>**.

9. For each type or combination of types listed in the attribute column (in the above example, **LANDUSE**), select a single translated status from the drop-down menu provided in the **Translate To** column. Status types displayed in the drop-down menu are determined on the basis of the kind of translator indicated in step 3 above (i.e., LUI or PT), and consist of a single entry for each different type of the attribute/attribute combination selected in the previous step. Every attribute/combination must have a land status selected in order to complete the translator; land status types that are unchanged from the default <None> entry will be flagged as needing an assigned LUI or PT. Any specific interpretations employed for assigning a particular LUI or PT should be documented.

   LUI translators: Select the Vista type that best describes the unique land use for each attribute or attribute combination. Note, however, that the selected LUI type must be from the lowest (i.e., minor category) level; selection of a major category type will be flagged as an invalid entry. Assigning the major category "Unknown" will result in the assumption of "incompatible" in analyses that utilize LUI compatibility information.

   PT translators: Select the Vista type that identifies the appropriate policy practice for each attribute or attribute combination. The assigned PT indicates the mechanism that guides the implementation of an LUI designation, including processes that prevent or allow land uses of greater intensity. Because some of the policy types are fairly dynamic (e.g., zoning), a conservative approach should be used in assessing whether a PT category is likely to permit LUI changes. Assigning the category "Unknown" will result in the assumption of "unprotected" in analyses that utilize PT information.

   Keystrokes that can be used to navigate through the list of land status types for data entry include the following:

   - Clicking on an entry in the Translate To column will display a drop-down menu
   - Clicking <Tab> twice will move the cursor to the next item and highlight it
   - Clicking <Shift><Tab> will move the cursor to the previous item
   - The down and up arrow keys can be used to move down or up, respectively, the list of types in the drop-down menu

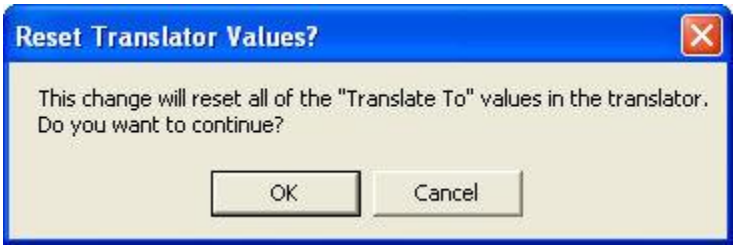
10. Once every attribute has an assigned Vista type, click **Next>**, and then **Finish** to complete the new translator.

Note: It is important to create both a LUI translator and a PT translator that translate all features to the single value "Unknown." These will be used to translate the boundary layer for the project, which should be included in all scenarios to insure that no area within the project boundary will fall out as "unspecified" in a Scenario Evaluation.

Edit a translator:

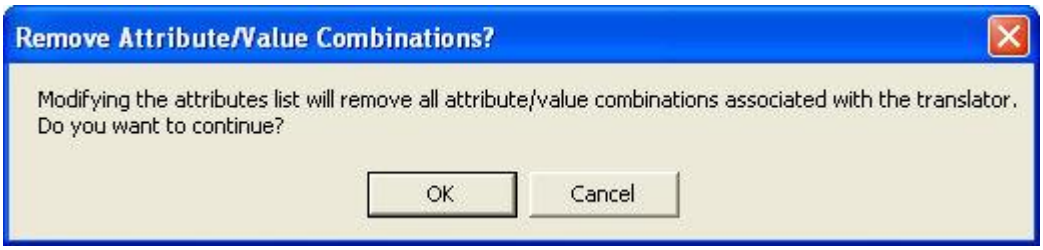
1. Select the translator from the list on the Translator List window and click the **Properties...** button. The resulting properties wizard displays the translator.
2. Edit the translator using the processes described above for creating a new translator as guidelines.
3. To close the window and save any changes made to the translator click **OK**; otherwise, click **Cancel**.

Note that if the translator type, that is **Land Use** or **Policy Type** (originally selected in step 3 of the creation process) is changed, the following message will be displayed:



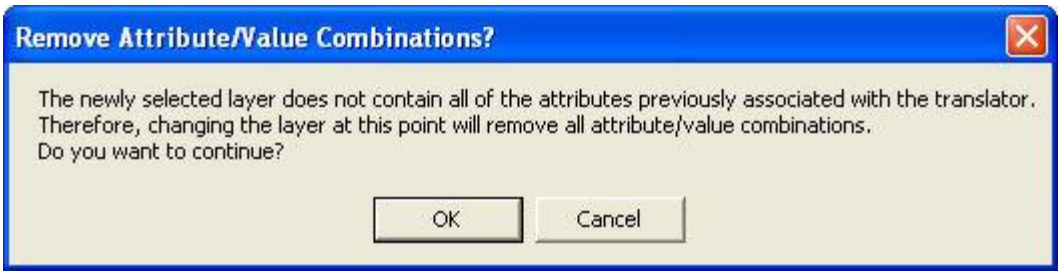
Clicking **OK** will continue with the change, and an entirely new set of land status types will need to be selected for the attributes (as described in step 9 above); clicking **Cancel** will leave the translator type unchanged.

Note also that if the set of attributes associated with the translator is changed, the following message will be displayed:



Clicking **OK** will continue with the change, and an entirely new set of land status types will need to be selected for the attributes (as described in step 9 above); clicking **Cancel** will leave the attributes used for the translator unchanged.

Note also that if the layer to be used for the translator, selected in the **Build translator based on layer** field (step 7, above) is edited, the following message to confirm the change may be displayed:



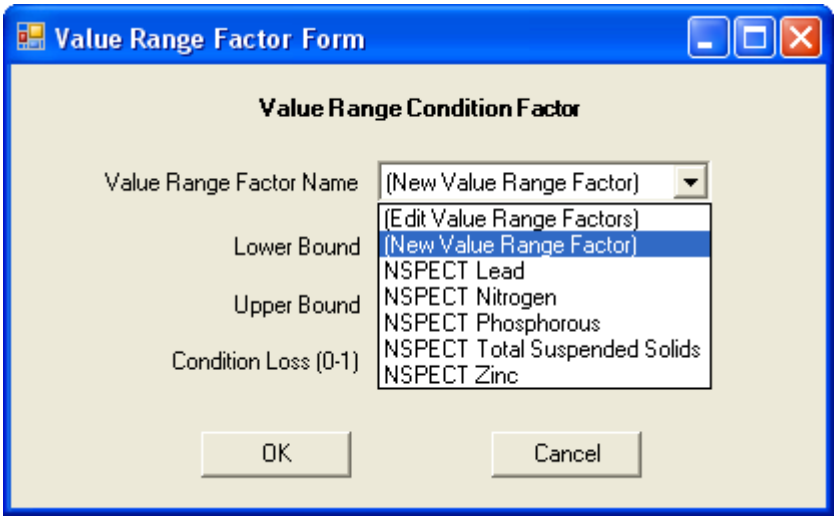
Clicking **OK** will continue with the edit, and an entirely new set of land status types will need to be selected for the new attributes (as described in step 9 above); clicking **Cancel** will leave the original layer, along with the status types assigned to its attributes, unchanged.

Note also that if the translator is edited such that the full set of attributes previously addressed by the translator will no longer be handled, the following message will be displayed:

Clicking **OK** will continue with the edit, and scenarios that were defined using the translator will need to be modified; clicking **Cancel** will leave the set of attributes associated with the translation unchanged.

VALUE RANGE FACTOR FORM

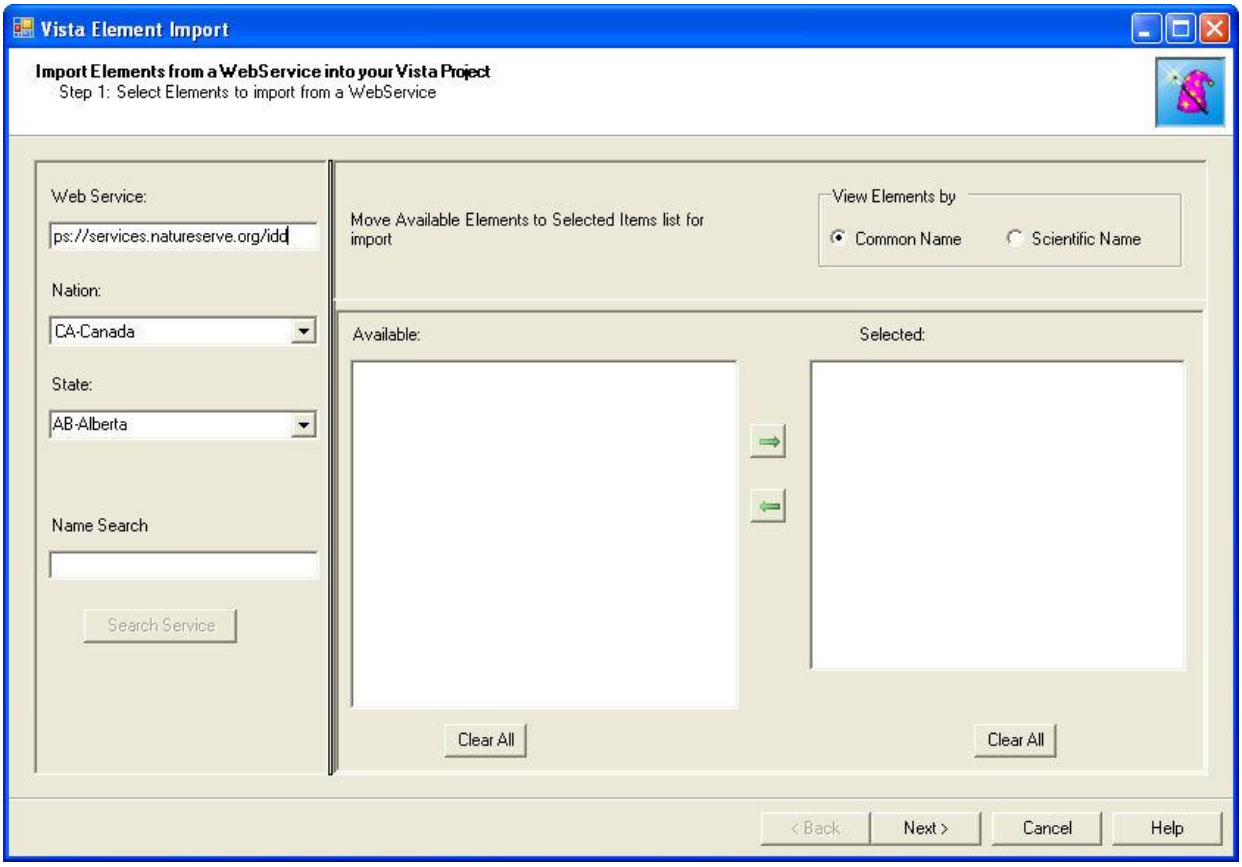
This window is accessed by clicking New Factor... from the Edit Condition Model Properties window.



See Creating value range factors for instructions on data entry for this window.

VISTA ELEMENT IMPORT WINDOW

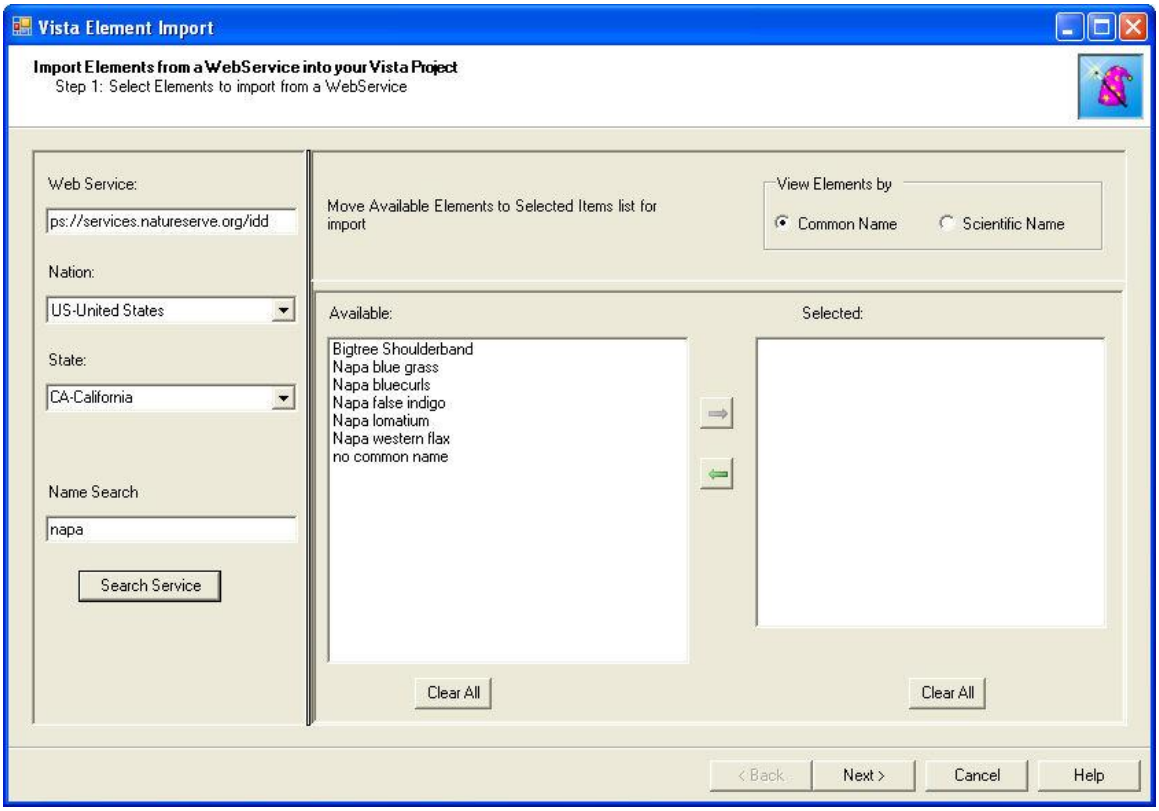
The **Vista Element Import** window is displayed by clicking **Project ▸ Import Element Properties from Web Service...** from the Vista menu, and is used to import properties from multiple elements using NatureServe Web Services.



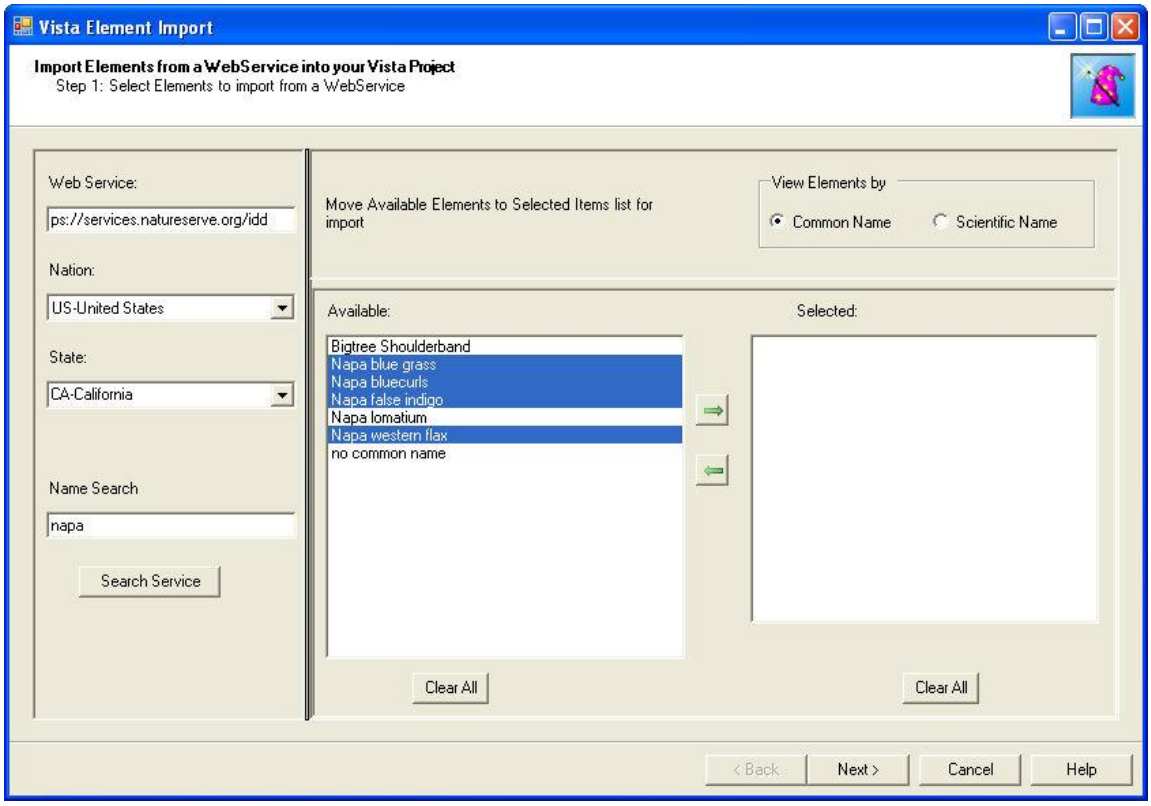
Import element properties using a web service:

1. If the web service location is not populated automatically, enter: https://services.natureserve.org/idd
2. Select the desired values from the Nation and State drop-down menus.
3. Using the Name Search field, enter the name or part of the name of an element whose properties are to be imported, and click **Search Service**. Note that either common or scientific names can be used in the search. Note also that the wildcard ”r;*” is permitted for searches, but caution is recommended as its use may result in a longer search time before results are returned.

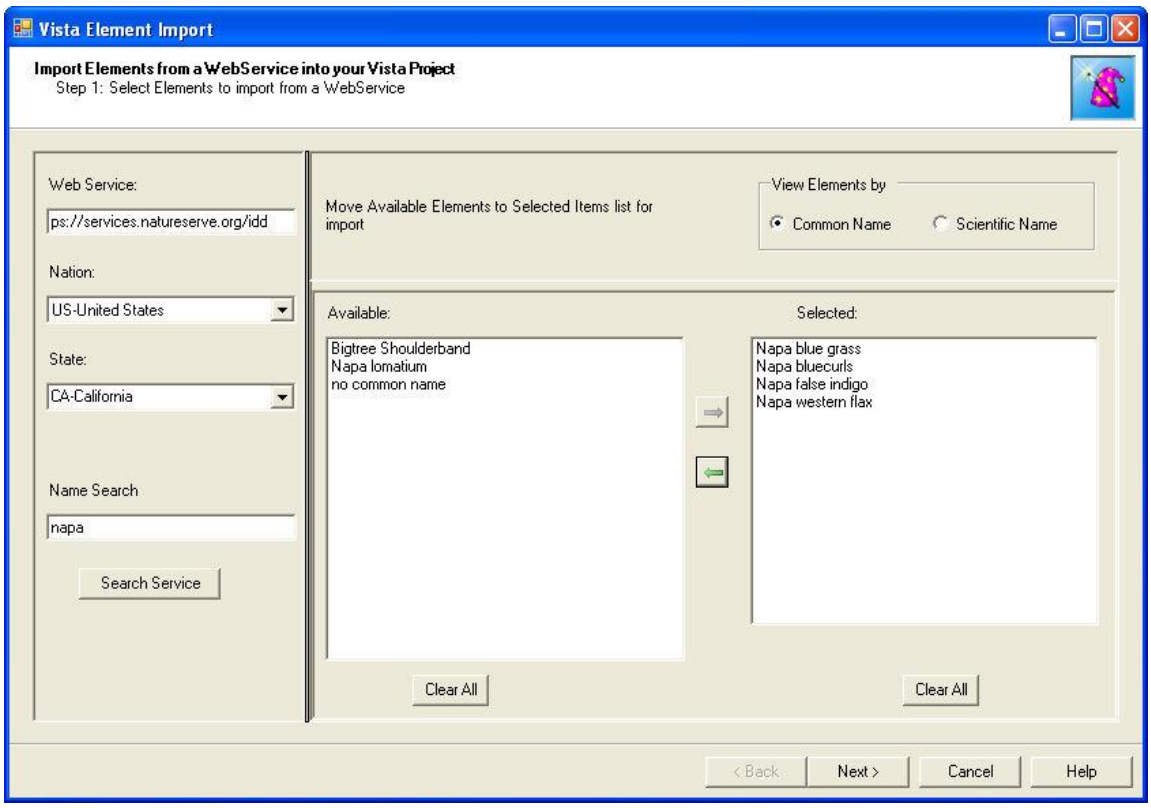
When the search has completed, the results will be displayed as a list of species in the **Available:** field. The listed species can be displayed by using **Common Name** or by **Scientific Name** by selecting the appropriate radio button in the **View Elements By** area.



4. Select one or more elements to be imported, and click the  button. Multiple elements can be selected together using <Control>-Click, and a range by using <Shift>-Click.



Elements selected for import will be displayed in the **Selected:** list.

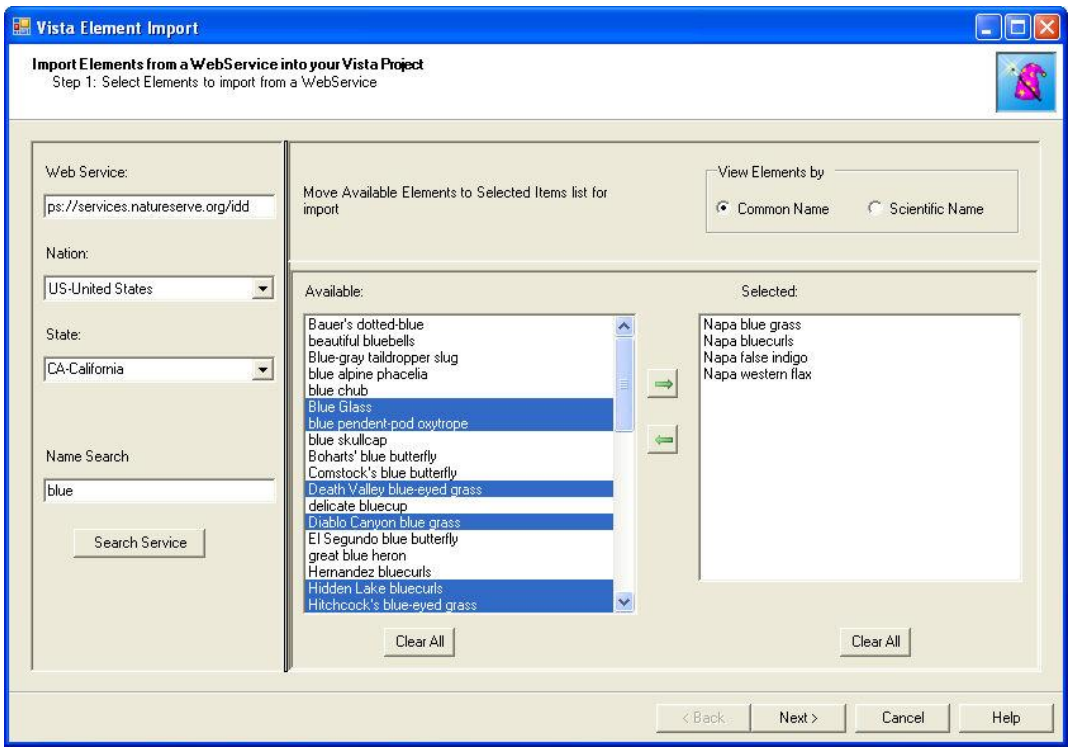


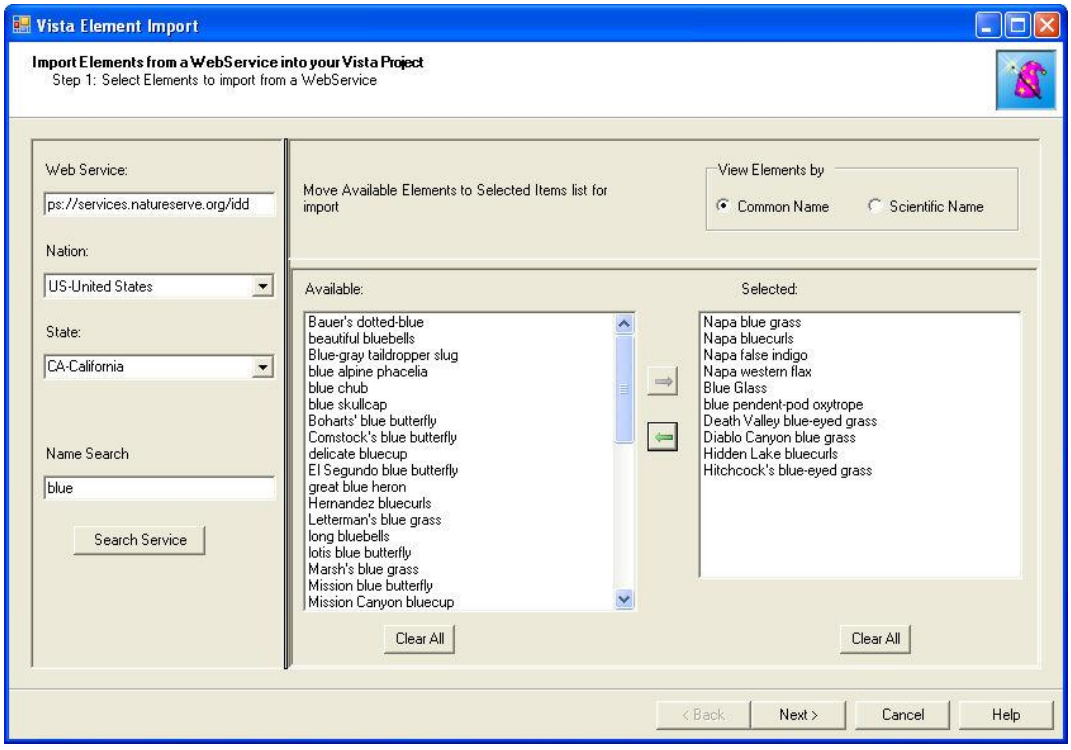
5. Repeat the process from step 4 until all the elements in the **Available:** list that are to be imported have been moved to the **Selected:** list.

   To de-select an element from the list to be imported, click on the element in the **Selected:** list and use the  button to move the element back to the **Available:** list.

   To re-start the selection process over at any point, click the **Clear All** button under the **Selected:** list.

6. To begin a new search for available elements, click the **Clear All** button under the **Available:** list. Repeat the search process from step 3 and then the selection process in step 4.

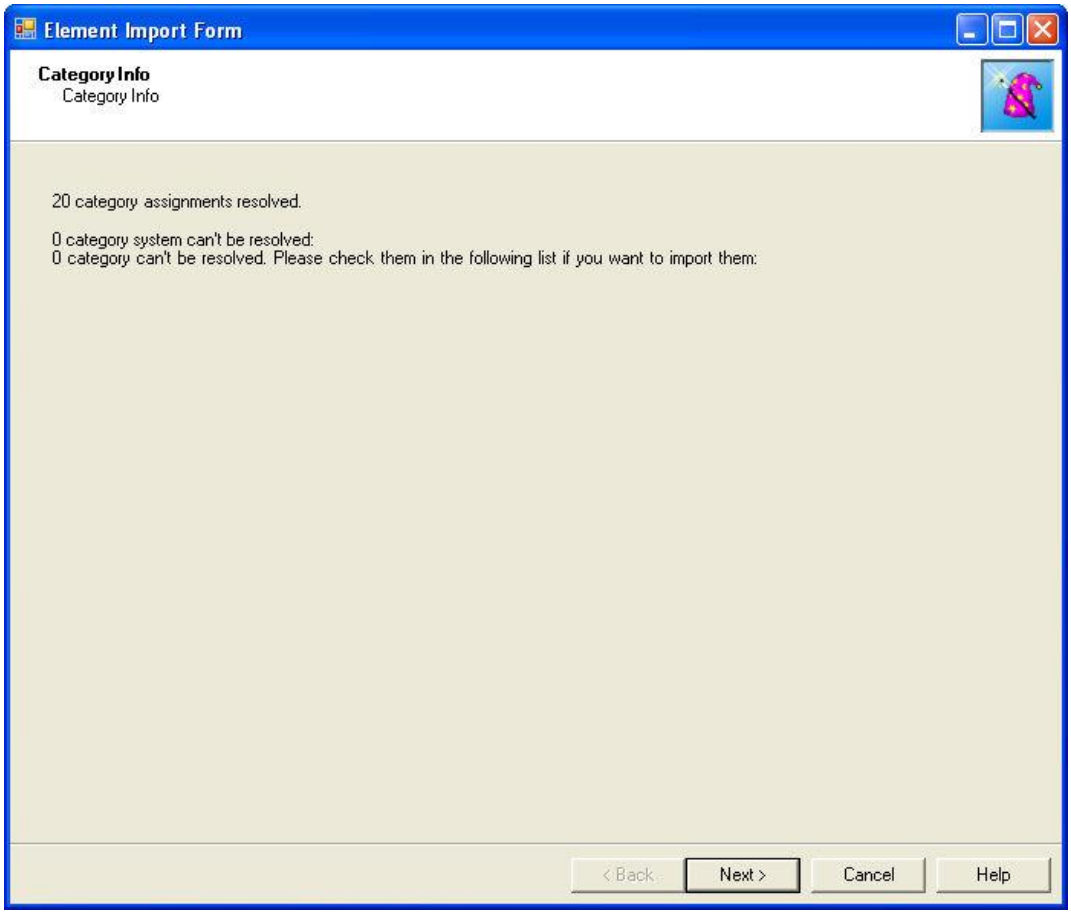




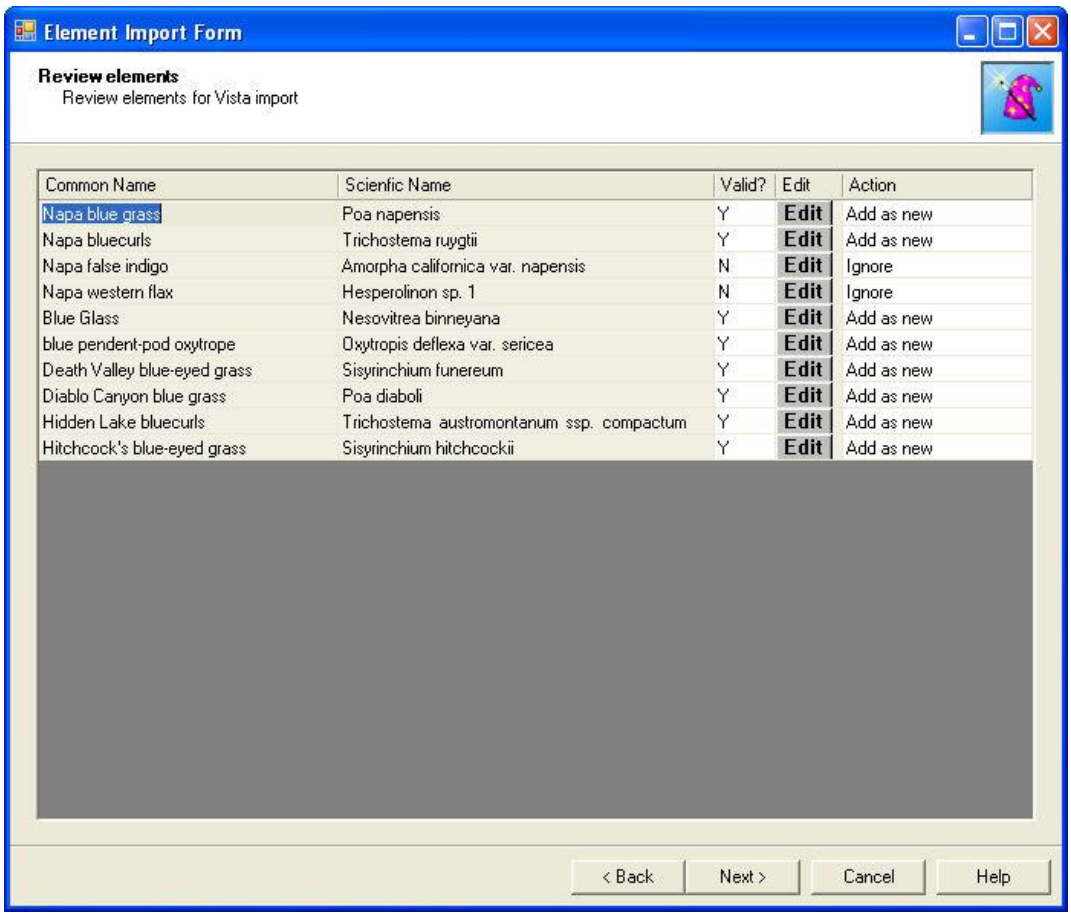
7. When the **Selected:** list contains all of the elements to be included for the properties import, click **Next>**. The data for these elements will be transferred from the web service, and a Category Info report

displayed in an Element Import Form, which provides the status of assignments to Category Systems, specifically whether both the Element Type category and G-Rank category systems have been resolved and assigned for each of the elements.

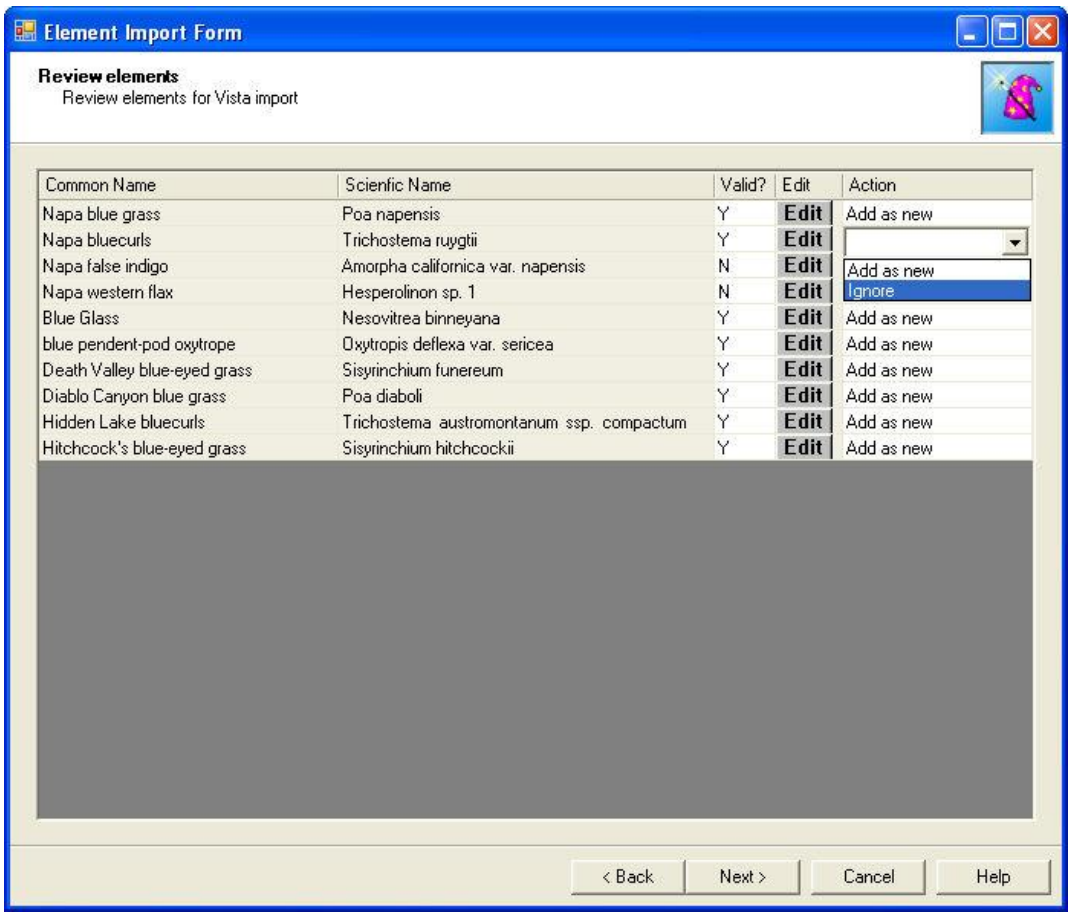
Note: This Vista Element Import window has changed at this point in the process to one labeled with the same name as the Element Import Form utilized in Vista to import element properties using a shapefile rather than a web service.



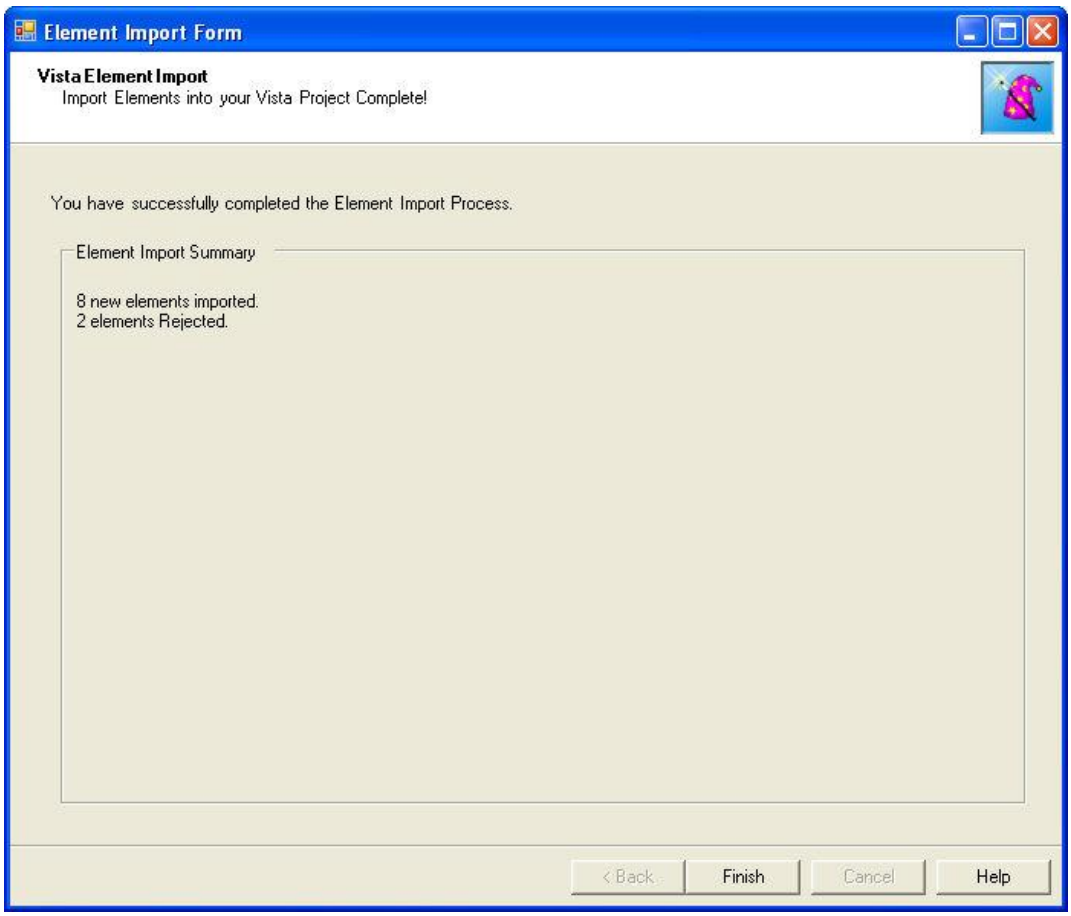
8. Click **Next >**. The system will display a list of the elements transferred.



9. Review the elements and attributes that were transferred, and, if desired, perform either or both of the following:
    - For any element transferred that lacks an associated valid category, specify or modify a category system by clicking **Edit** and making changes on the Categories tab of the Element Properties window that opens;
    - Change the displayed value in the **Action** column using the drop-down menu property in the element list, if appropriate, as follows:
        - **Add as new** will import the element (not previously existing) and associated properties as a new element in the project;
        - **Ignore** will cause the element and associated properties to not be imported into the project;
        - Only in cases when the Action initially displayed is **Ignore**, selecting the additional option to **Overwrite existing element** will result in replacement of that element and associated attributes already existing in the project with the imported element and properties data.



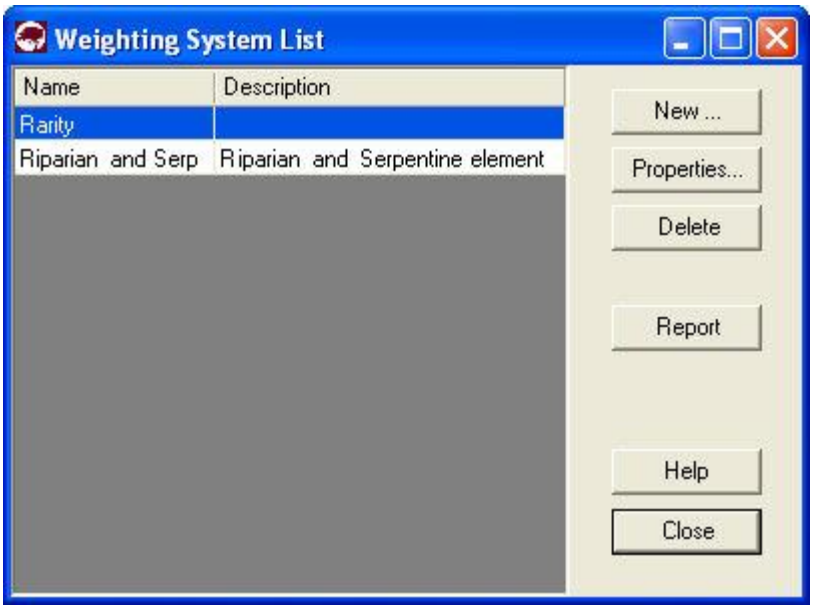
10. Once all desired changes to the elements have been made, click **Next>** to complete the element properties import process. The designated elements and associated properties will be imported into the Element Properties window and a final status report of the import will be shown. (In the example below, 2 of the 10 elements selected for properties import had an Action value of **Ignore**, and the remaining 8 were labeled with the **Add as new a**ction.)



11. Click **Finish** to close the import window.

WEIGHTING SYSTEM LIST WINDOW

The **Weighting System List** window is displayed by selecting **Lists ▸Weighting System List...** from the NatureServe Vista menu. This window lists all the weighting systems that have been created for the project. See the Weighting Systems section for more detailed information on the development and use of weighting systems in analyses.



Button functions:

New... displays a new Weighting System Properties window that can be used to develop a new weighting system to be used in the project.

Properties... displays the Weighting System Properties window showing details and allowing edits to the weighting selected in the list.

Delete deletes the weighting system selected in the list.

A **Confirm Delete** window is displayed before the deletion is implemented.

A **Cannot Delete** window is displayed in cases when the weighting system is referenced by another item used in project analyses, as shown in the following example.

Report displays a report that describes the selected weighting system and its settings. See the Reports section for more details on Weighting System reports.

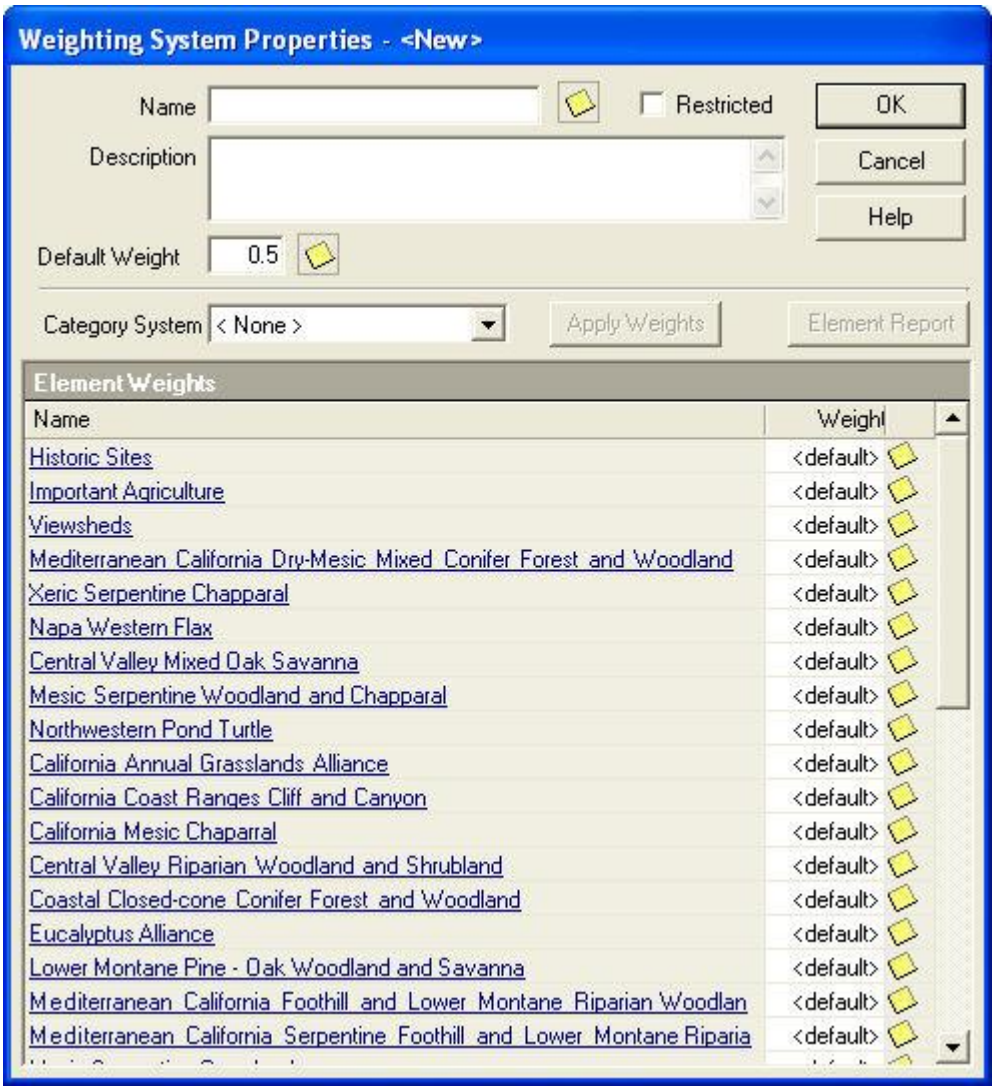
Help opens the on-line documentation.

Close closes the window.

WEIGHTING SYSTEM PROPERTIES WINDOW

The **Weighting System Properties - <New>** window is displayed by clicking the **New...** button on the Weighting System List window. The new properties window is used to create a new weighting system that can be utilized for prioritizing elements in Conservation Value analyses. See the Weighting Systems section for more detailed information on the development and use of weightings in analyses.

Note that the  button located next to an item can be used to record additional information related to that item (see the Documentation Window topic for more details).

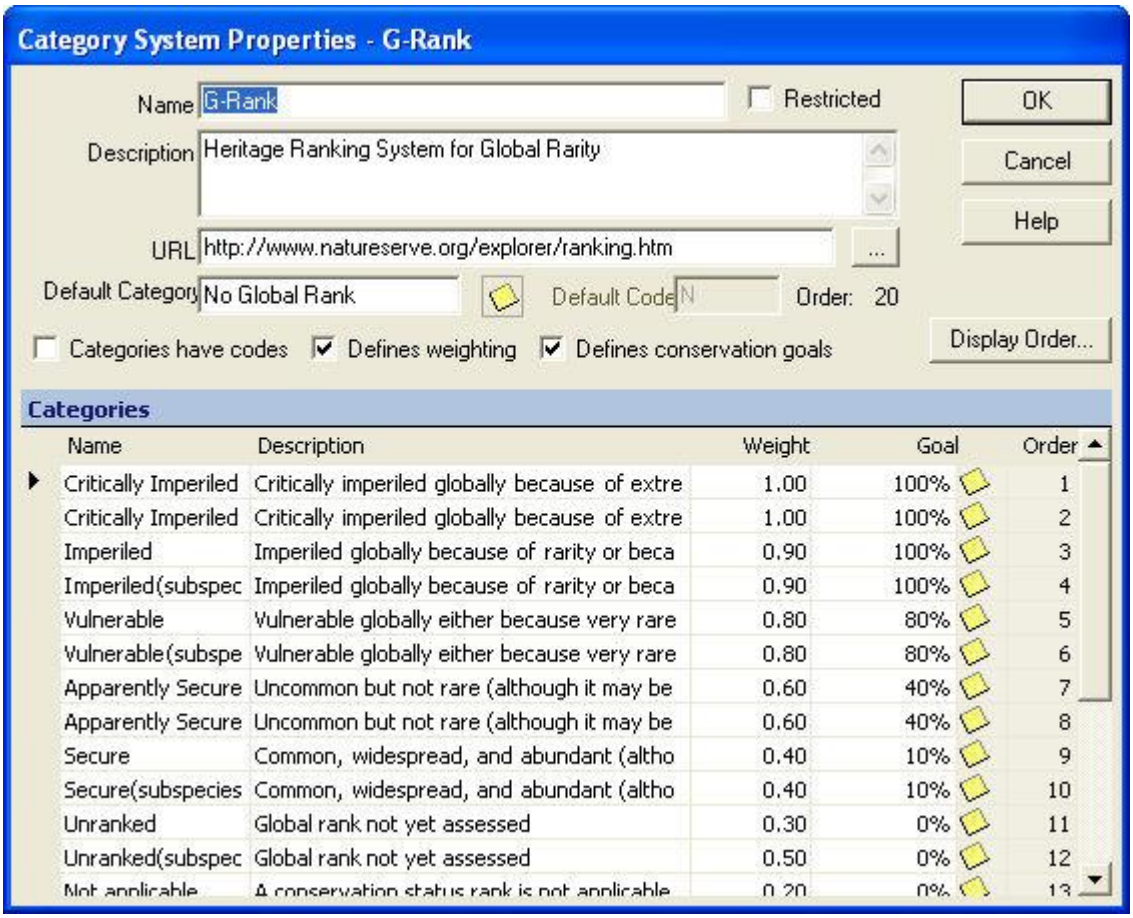


Create a weighting system:

1. Specify a name for the weighting system in the **Name** field. The **<New>** on the window title will change to the name of the new weighting system as the entry is typed in.
2. If the ability to edit the weighting system should be limited to members of the data development team, place a check in the **Restricted** checkbox.
3. Enter a brief description of the weighting system in the **Description** field, if desired.
4. Enter a value in the **Default Weight** field to be used in cases when a specific weight is not assigned to an element. The default value in this field is 0.5.

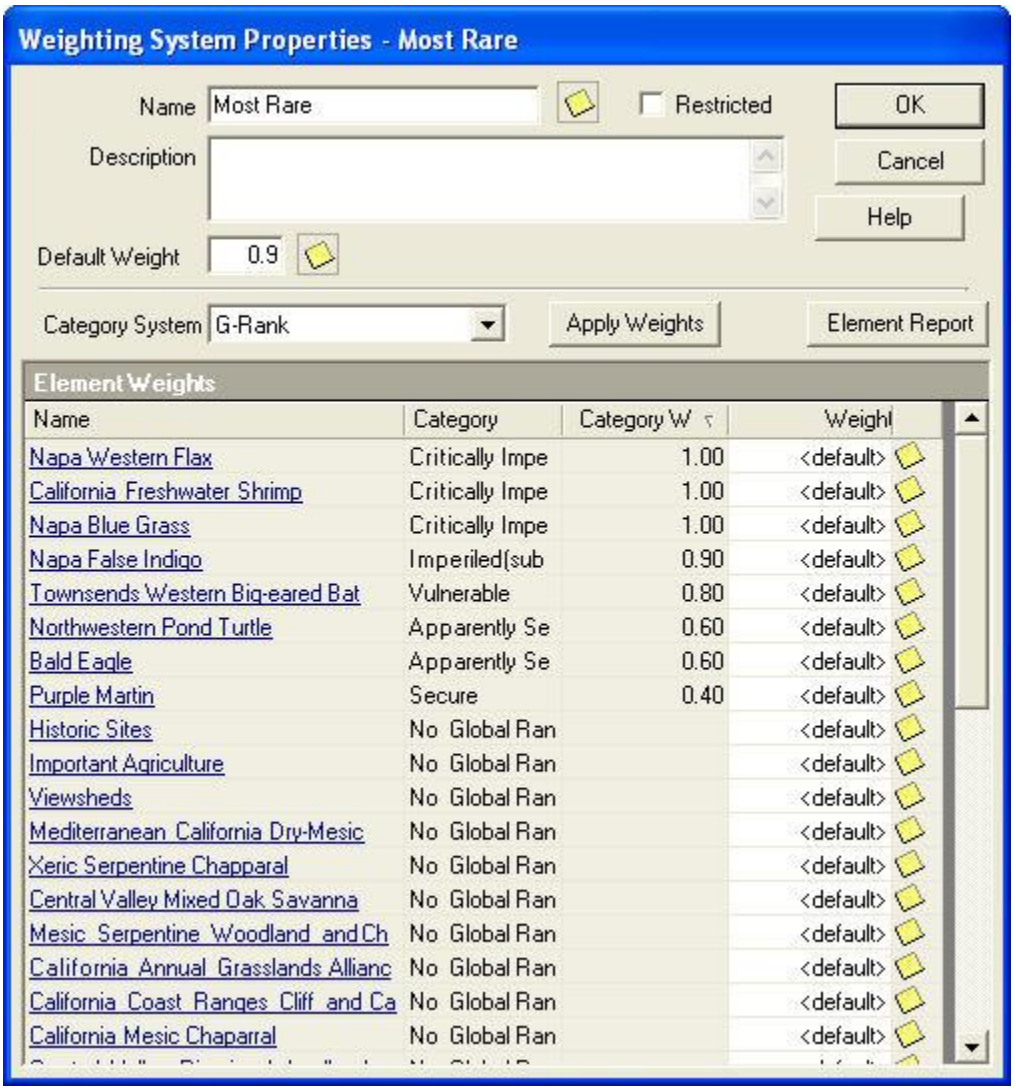
If a category system is to be used to create the weighting system, continue with step 5; if not, skip to step 8.

5. From the **Category System** drop-down menu of existing systems, select a category system to be used in developing the weighting system. Only category systems that define weights are shown in the drop-down list, such as the default "G-Rank" system displayed in the Category System Properties window below, although the option to create a new category system (**<Add New...>**) or to display all existing systems (**<Show List...>** in order to select and modify an existing system by adding weights) are included in the drop-down list.



The advantage of using a category system is that weights can be assigned for groups of elements (e.g., all elements that are Critically Imperiled will have an assigned weight of 1.0) instead of element by element individually (e.g., weight assigned for Burrowing Owl is 0.5, weight assigned for California Black Rail is 1.0, etc.). Note, however, that regardless of whether weights are assigned to categories of elements or to individual elements, Vista applies the weightings to each element individually during analyses.

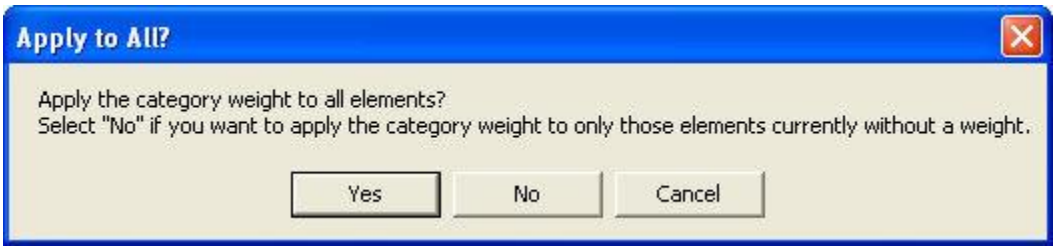
Once a category system has been selected, Category and Category Wt. columns are displayed for elements listed in the Weighting System Properties window, and the name and weight associated with the category to which each element belongs are displayed in these columns, respectively.



6. Determine if the weight assigned for the category system is appropriate for each element. If an alternate weight is preferred for an element, assign a specific value from 0.0 to 1.0 in the Weight column, replacing the

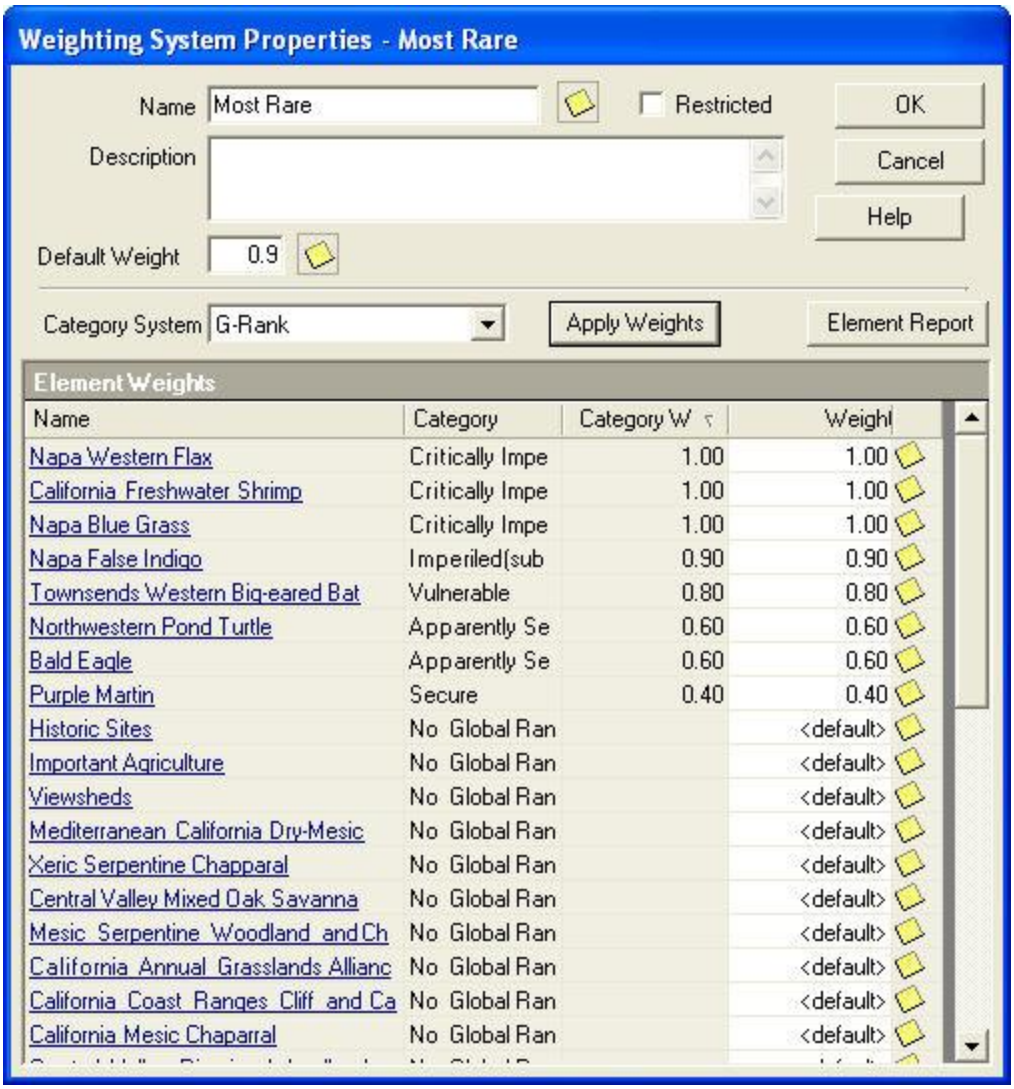
< default>. Clicking on an element name opens its element report, which can aid in setting weights. It may be useful to record the reason(s) for specifying a certain weight by using the associated button to access the Documentation window.

7. After any specific weights have been entered for elements, click the **Apply Weights** button.



The resulting "Apply to All?" window prompts the user to decide whether to replace newly entered values in the Weights column with the pre-existing weight values previously assigned to the category (**Yes**), or retain the new weight values and use existing category weights only for <default> values in the Weight column (**No**).

Skip to step 9.



To create the weighting system without using a category system:

8. Replace the <default> value in the Weight column with a value from 0.0 to 1.0 for any element that should be weighted differently than the value specified in the **Default Weight** field (in step 4 above). Clicking on an element name and clicking the **Element Report** button opens its Element Details Report, which can aid in setting weights. It may be useful to record the reason(s) for specifying a certain weight by using the associated button to access the Documentation window.
9. If needed, reset to <default> any weight values for elements that should be weighted using the entry in the **Default Value** field (see step 4 above) instead by selecting the value to be changed in the Weight column and clicking either the **Delete** or **Backspace** button to remove the value. Moving to another row (using either **Enter** or the arrow buttons) will cause the now missing value to be replaced with <default>.

10. To save the data entered for the weighting system click **OK**; otherwise, click **Cancel**. Any elements with a <default> weight value will be automatically weighted according to the value entered in the **Default Weight** field (in step 4 above) in any analyses.
11. To review details on the new weighting system, select the system on the Weighting System List window and click the **Report** button. Settings for the weighting system, as well as weights assigned to specific elements will be displayed. See the Reports section for more details on Weighting System reports.

Edit a weighting system:

1. Select the weighting system from the list on the Weighting System List window and click the **Properties...** button. The resulting properties window displays the weights defined for elements in the weighting system.
2. Edit the weighting system using the processes described above for creating a new weighting system as guidelines.
3. To close the window and save any changes made to the weighting system click **OK**; otherwise, click **Cancel**.

LIMITATIONS

LIMITATIONS OF THE VISTA APPLICATION

Limitations Related to the Selection of Elements:

The initial selection of elements for consideration is a complex task that requires scientific knowledge, but must also incorporate the social values of the planning region. It should not be done hastily without education about the role the planning region plays in conserving some elements, especially the "non-glamorous" species that might otherwise be ignored. Scientific knowledge is also very incomplete, especially when it comes to less-conspicuous elements and the classification of some types of communities and ecosystems. New elements or new range extensions of elements will likely be discovered in the planning region periodically. Therefore, the act of element selection should be considered a dynamic activity that should be revisited frequently. The methods described in this section for selecting the subset of elements should be considered guidelines to be modified by local experts.

Limitations Related to Element Distributions:

Note that element distribution data will rarely satisfy all criteria for completeness, accuracy, currentness, and/or precision. Therefore, the user must evaluate which criteria need to be met in order for distribution data to be categorized as acceptable for use in Vista. (See the Confidence section for further details on the types and levels of confidence associated with distributions).

Note also that in rapidly changing environments it is difficult to keep distribution data current. It is strongly advised that a system be instituted to better capture onsite observations of elements to increase the precision of the distribution database.

Limitations Related to Viability/Integrity:

The methods described here for attributing viability or ecological integrity are meant to provide a measure that indicates whether occurrences have relatively high or low viability/integrity to be used in Conservation Value analyses. This process is not a substitute for population viability analysis (PVA) or field surveys to determine probabilities of population persistence or actual ecological quality of occurrences. The user should establish criteria that define 0.0-1.0 viability/integrity values; they may be used as relative values (as suggested in this section), or defined as probabilities of persistence calculated from a PVA.

Limitations Related to Confidence:

Vista currently uses only a single net attribute of confidence per occurrence polygon or raster grid cell. Retaining all of the attributes used to calculate a net confidence value may be valuable; the confidence attributes can be accessed directly through the Environmental Systems Research Institute (ESRI) ArcView application when decisions need to be made on issues that may be sensitive to confidence type (e.g., locational precision versus assumed extirpated versus age of observation, etc.).

When the confidence attributes of elements are included in Conservation Value analyses, they have the effect of lowering the conservation values of grid cells in proportion to the confidence scores of all elements selected and occurring at any particular location. However, low confidence does not necessarily mean that the elements observed or predicted for that location are not present, but rather that characteristics of the data (e.g., age of the observation, scale of the input maps) and/or changes that have occurred at the location reduce certainty that the element is present. It is recommended that different types of Conservation Value Summaries be developed - both with and without confidence in order to evaluate its effect of lowering the value of areas that are otherwise indicated by the data to be of conservation importance. It is important to prioritize areas for near-term conservation action based on confidence in the data, however, the optimal solution for low certainty is to increase the confidence of element observations/predictions (e.g., by obtaining more current data, by using finer resolution maps).

There is inherent uncertainty based on the size of the grid cell used for mapping element occurrences (observed or modeled) in a raster format. This uncertainty is also present in the processing of raster maps for Conservation Value analyses. The larger the cell size used for mapping and processing, the less confidence there is in making decisions for management units at a finer resolution (e.g., parcels from a legal town map). Vista uses the original confidence attributes of the elements and does not recalculate confidence when analytical cell sizes are changed. See the topic Determining Grid Cell Size for further information on the effects of cell size on analyses.

Confidence values are based on locations where elements have been observed or predicted; there are no confidence values assigned to locations where elements are not known or predicted to occur. In other words, Vista currently does not utilize a value for confidence that a location does *not* contain an occurrence of a particular element. While such knowledge would be very useful, the guiding assumption is that predictive distributions should be employed where existing occurrence information is known to be incomplete (most cases); using only existing data would lead to large errors of omission in element distribution. Errors of commission, that is, mapping elements as present where they are not, is a common result of predictive distribution modeling, which is designed to utilize precautionary principles in predicting element presence. Therefore, when employing predictive distribution maps, there may be higher confidence that areas depicted as lacking elements are truly lacking conservation value, than the opposite and

more dangerous case (i.e., low confidence that areas that show the presence of elements have conservation value).

Limitations Related to Category Systems:

To make category systems useful, it is important that they be updated routinely to reflect systems that are the most useful for grouping elements. The system update process should include review and any needed revisions to both the description of each category within a system (in case any categories have changed), and the assignment of elements to those categories. While most category systems tend to be very stable, element assignments may be dynamic. For example, the legal status of an element may change over time; failure to review and adjust the category assigned to such an element could have serious ramifications to results of analyses if the legal status assignment is obsolete.

Limitations Related to Filters:

A current limitation of this version of Vista is that a spatial filter can only be developed based on the default project boundaries or on a sub-region derived from a layer that contains a single feature (e.g., the county shape). In addition, spatial filters cannot be nested or included in sub-expressions. Another limitation is that the expressions used to create a filter are limited to the operands AND and OR; however, ANDs and ORs cannot be mixed in the same sub-expression. More complex queries that would utilize other operands such as IF, BUT NOT, etc. are not supported by this version.

Limitations Related to Weighting Systems:

To ensure the most accurate results in Conservation Value analyses, it is important that weighting systems be updated routinely to reflect any changes in the importance of particular elements relative to others. Policies and priorities for conservation in the planning region may change for various stakeholders over time, and so assigned element weights may be dynamic. The process for updating a weighting system should include review and any needed revisions to the weightings assigned for groups of elements and/or individual elements.

Limitations Related to Goal Sets:

To ensure the most accurate results in analyses (e.g., Scenario Evaluations), it is important that goal sets be updated routinely to reflect any changes in conservation goals for the planning region. Since specific objectives for target elements are frequently defined on the basis of incomplete knowledge and/or data, and ecosystems that support targeted elements change over time, careful documentation and long-term monitoring are necessary to ensure that goals remain current.

Limitations Related to Element Conservation Value:

ECV layers are created by rasterizing vector element distribution layers. This process results in a loss of precision.

Limitations Related to Conservation Value Summaries:

The CVS is an index and should be used as such - a general indicator of areas with relatively high and low conservation value based on user inputs and options. A large amount of data about individual elements and their occurrences is aggregated to a single value in this process, which necessarily results in a loss of precision and information to achieve the summary or averaged value. In addition, precision is lost as the data is re-sampled during the process of creating a CVS. Re-sampling occurs when the Element Conservation Value (ECV) layers used to create the CVS are overlaid on top of one another; their cell boundaries may not line up so their values are ”r;re-sampled” into the grid cells in the CVS which closely correspond with (but are not always identical to) the cell locations they came from. Note that the results of a CVS display all occurrences of elements included in the analysis coded according to conservation value; the analysis does not exclude any occurrences from the results on the basis of minimum viable size.

It is also important to realize that the CVS does not automatically incorporate other important considerations of conservation planning, such as the degree to which elements are already protected at a location, how irreplaceable any one occurrence is in terms of meeting conservation goals, or the degree to which any particular occurrence is threatened. Such information can, however, be obtained using Scenario Evaluation analyses.

Limitations Related to Landscape Condition Modeling:

The concept of landscape condition modeling is highly simplified in Vista resulting in relative indices of condition that take into account a fairly narrow set of considerations especially relative to animal species. Although experts building and documenting the model may consider a number of factors in assigning site and distance intensity weights, the Vista model does not explicitly address issues such as impacts on species mobility, demographics, habitat connectivity among multiple resources, etc. Much more detailed modeling tools exist to consider these issues when knowledge, time, and funding exist to address them. Over time we anticipate adding the ability of Vista to incorporate outputs of such models to allow greater precision while integrating results into the broad Vista planning framework.

Limitations Related to Translators:

Vista translators serve to convert the many land use/management and policy types used in different jurisdictions to a circumscribed set of "standard" LUI categories and PT that can be utilized effectively in analyses. While the default LUI and PT descriptions attempt to capture the range of conditions on a land unit that may affect ecological compatibility, they are very limited in their ability to address more complex conditions that typically occur (e.g., the multiple effects of land use, management practices, disturbances, and invasions of exotic species). Thus, the default

LUI and PT are offered as a useful generic categorization, but they may not be entirely suited to any particular planning region or project. Vista provides the flexibility to permit users (working with NatureServe Vista support staff) to substitute custom LUI and PT lists comprised of types that better capture the important conservation impacts of specific land uses, management practices, and/or supporting policies in the planning region.

Limitations Related to Scenarios:

The scenario definition process in Vista is used to create layers that represent LUI and PT conditions for the planning region, which can then be used in Scenario Evaluations. However, because Vista will convert all data to raster format before conducting the analysis, there is a danger of losing information if the cell size is too great. This risk is of greater concern for thin linear features such as streams, rivers, or roads. See discussion in the Determining Grid Cell Size topic for additional details related to the rasterization of features.

Limitations Related to Scenario Evaluations:

Scenario Evaluation in Vista is intended to provide an indication of the degree to which conditions represented by a scenario support conservation goals for elements. It should not be used as a substitute for ground surveys, specific site design review, or expert opinion when element viability/ecological integrity must be ensured because:

- It makes use of simplified and generalized assumptions about compatibility between land uses and element viability/ecological integrity, and
- It may not incorporate specific and current information on species demographics or the viability/ecological integrity of elements.

Vista currently lacks the ability to calculate two important measures in conservation, specifically:

- Irreplaceability of land units to meet goals, which relates to how many options exist for achieving goals. A land unit containing an occurrence of an element with a conservation goal of 100% is essential for meeting that goal, and would be ranked 100% irreplaceable. As the options for achieving goals increase, irreplaceability values decrease.
- Complementarity of land units to contribute to goals, which refers to the degree to which a unit can represent elements not already conserved elsewhere in the planning region. A land unit that can be used to conserve occurrences of five elements for which goals are not already met, when compared with another unit that contains three such occurrences, will have a higher complementarity value.

Irreplaceability and complementarity are currently very difficult to infer with no direct processes for calculating them. However, some expert tools exist

that can be used to derive values for these conservation measures. NatureServe Vista support staff can provide services that utilize such tools to obtain values, and then integrate the results with Vista output.

The freedom to determine what combinations of land use compatibility and policy types define protection for elements in a Vista project is an important advantage over other regional, state, and national conservation projects, which typically do not allow any consideration of local policies. However, it is also an enormous responsibility on the part of the user to create a realistic definition of protection and to be conservative about the true nature of land use/management practices and policies in the planning region. A conservative approach will, at worst, demonstrate less protection than currently exists, and can be easily corrected. However, a less moderate approach that validates policies which are, in practice, unreliable for protecting elements may indicate that conservation goals have been achieved while elements are actually at serious and permanent risk.

Limitations of Site Analysis:

Limitations described for data inputs and dependent Vista analyses, specifically for Conservation Value Summaries and Scenario Evaluations, are carried forward as limitations of Site Explorer. Additional limitations that are specific to Site Explorer include:

- When evaluating alternative land uses and/or policy types for the site selection, the alternative land status(es) must be applied to the entire selection. This suggests that care be taken to use a planning unit of sufficiently small size to reflect the scale of most land use patterns.