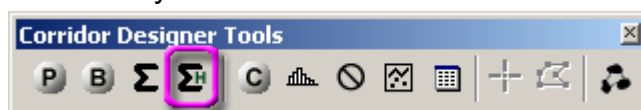


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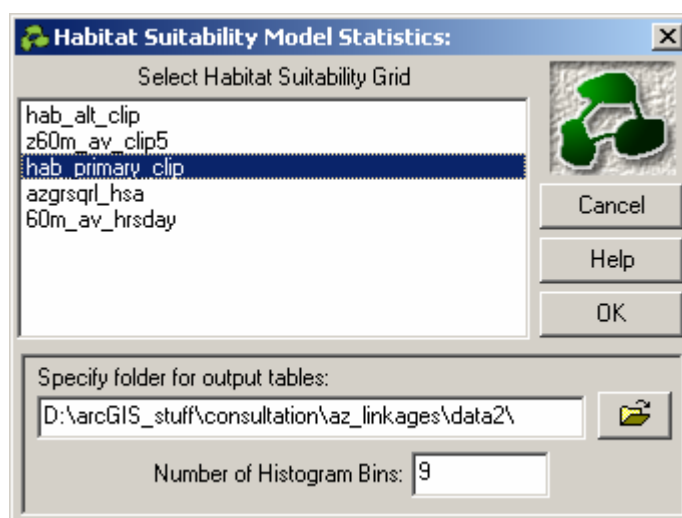
Calculating Habitat Suitability Statistics



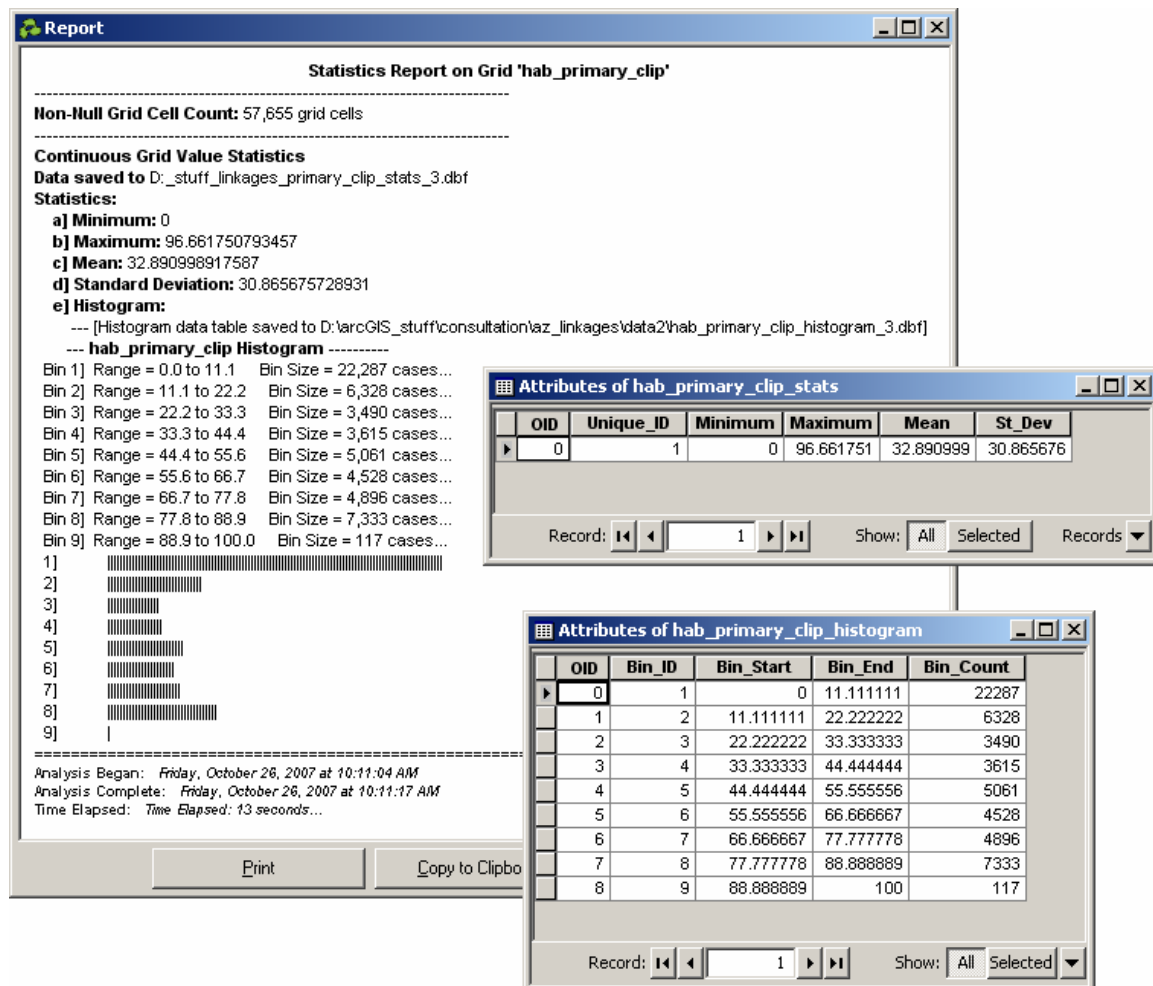
The Corridor Designer Evaluation tools include a variation of the general statistics tool designed specifically to analyze habitat suitability grids produced by the Corridor Designer tools. This habitat suitability statistics tool generates statistics on floating point grids and generates a histogram showing the distribution of habitat suitability values ranging between 0 and 100. General statistics include the mean, minimum, maximum, standard deviation and histogram of data.

As with the general summary statistics tool, this tool will not automatically clip your habitat suitability grid to a particular polygon or area of interest. It analyzes the entire grid, and therefore you must clip your habitat suitability grid to your corridor polygon prior to running this tool. Please refer to “Using the Clip Tool” (see p. 6) for more information on how to clip your habitat suitability grid.

Open the tool by clicking the  button:

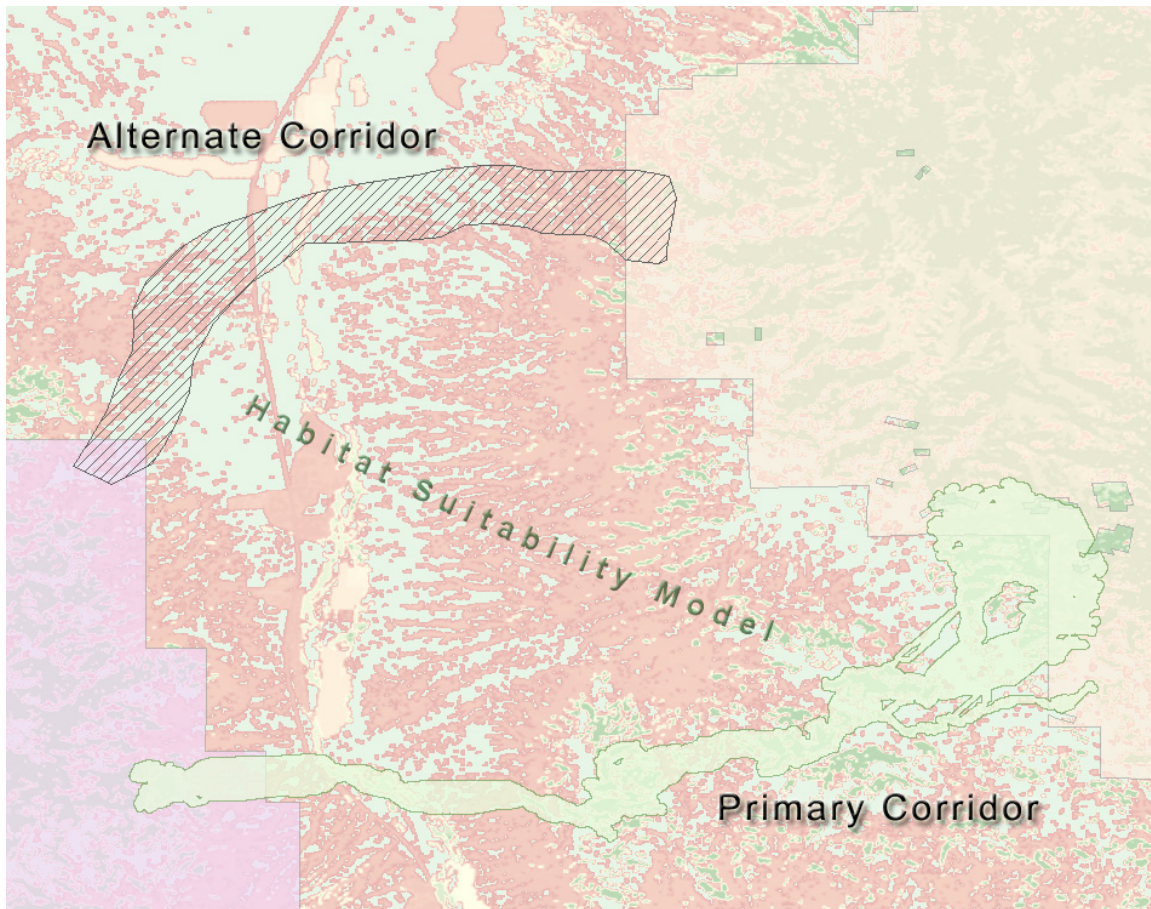


The list of grids includes all the floating point grids currently available in the active data frame of your map. Simply select the grid, confirm the folder to save your output data, confirm the number of histogram bins, and click “OK”. The tool will generate two tables and a textual report:

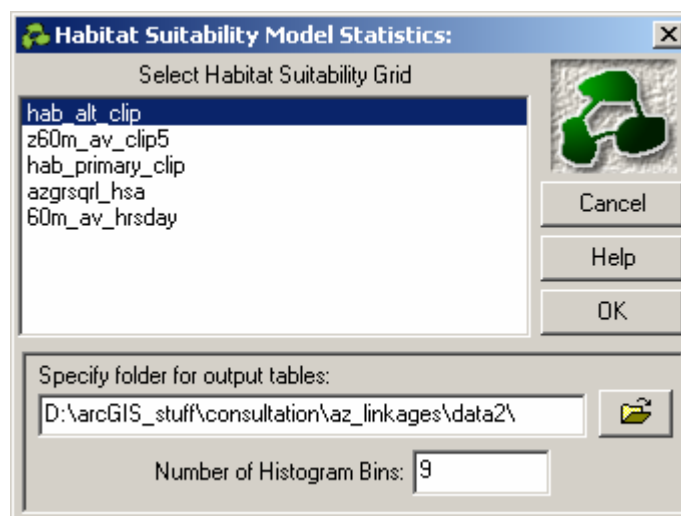


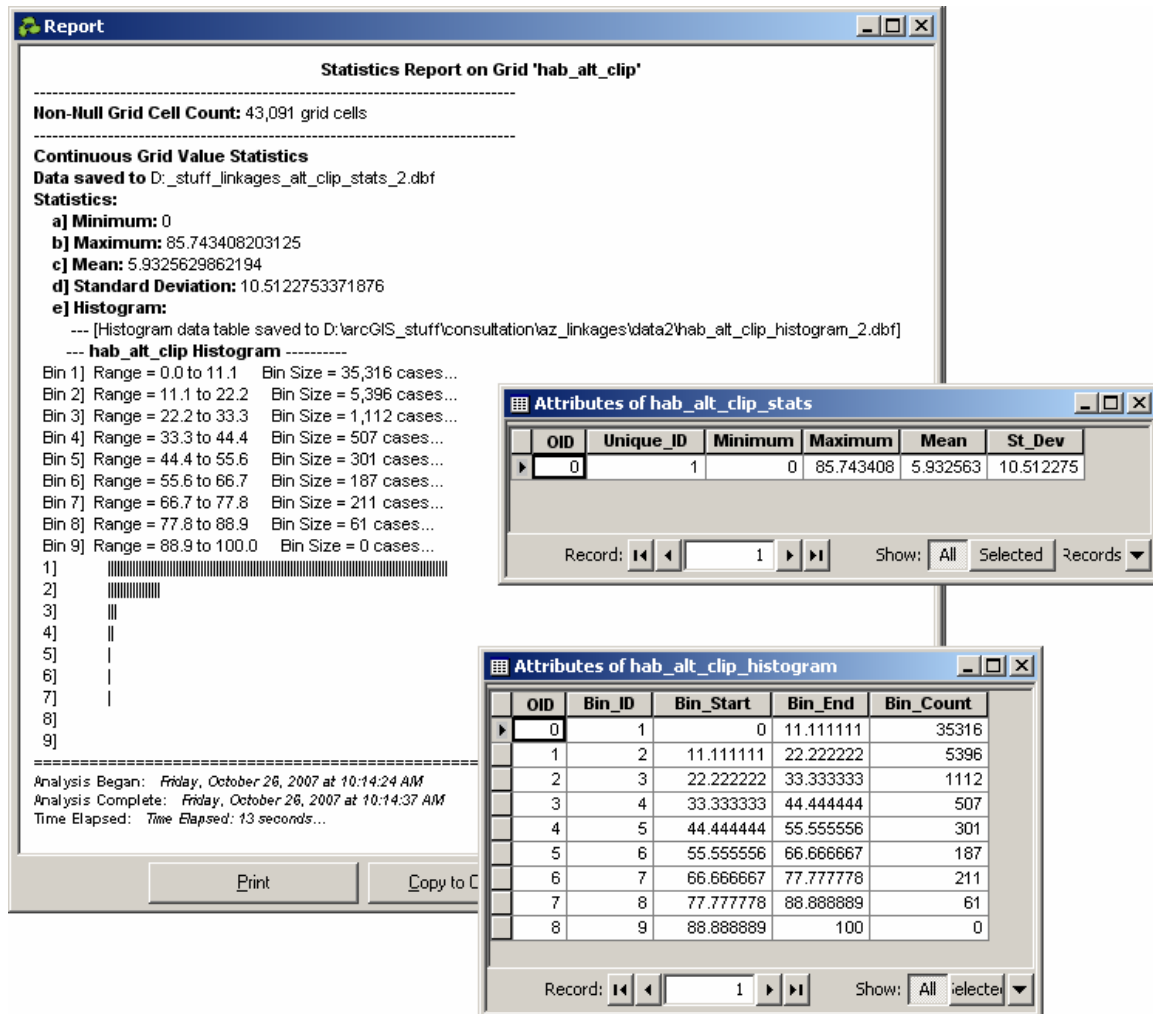
This function will be most useful when comparing the habitat suitability between different alternative corridor polygons. In general, the corridor polygon developed by the Corridor Designer tools will always have the best habitat values. It has to; the polygon is drawn around the habitat with the highest values.

The question for managers is then how much worse would an alternative corridor be? This tool provides a simple method to compare the distributions of habitat values between the primary and alternative corridor. For example, consider a situation where we wish to consider the alternative corridor illustrated below:

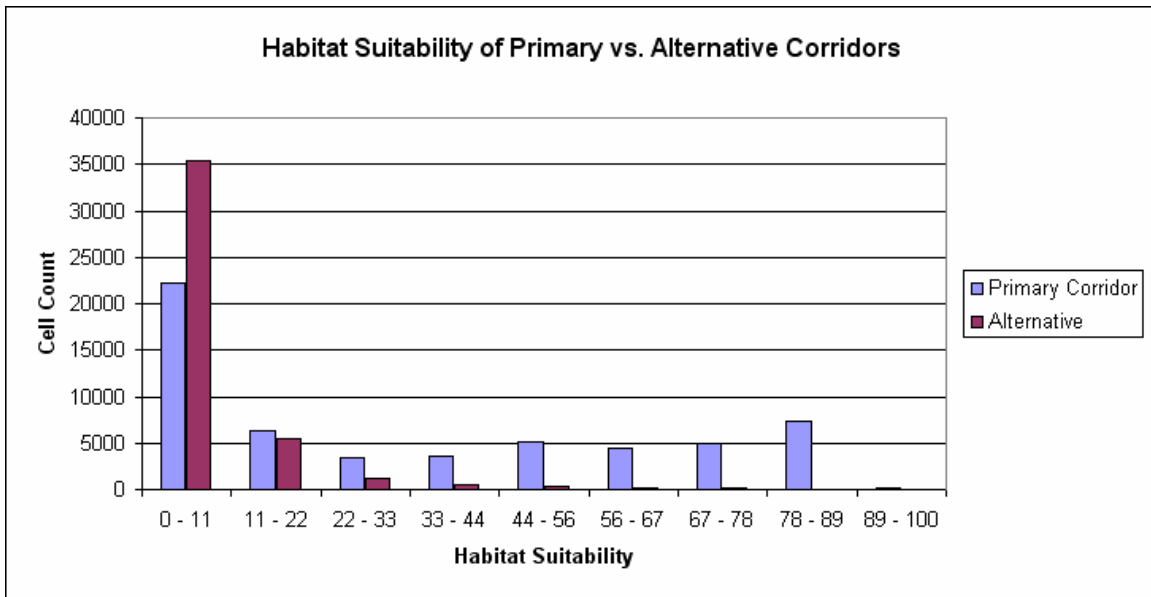


We first use the Clip Tool (see p. 6) to clip the habitat suitability model to the alternate corridor polygon illustrated above. We then use the habitat suitability statistics tool to generate statistics on this clipped grid. **NOTE:** It is a good idea to use the same number of histogram bins as we did when analyzing the primary corridor polygon, because we can then compare the histograms directly in Excel:

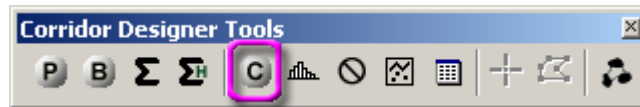





Note that the histogram always ranges between 0 and 100, regardless of the actual range of the data. Because of this fact, and because the histogram statistics are provided in a dBASE table, we can easily open both histogram tables in Excel, combine the data, and generate a paired bar chart that clearly illustrates the differences between the two corridors:

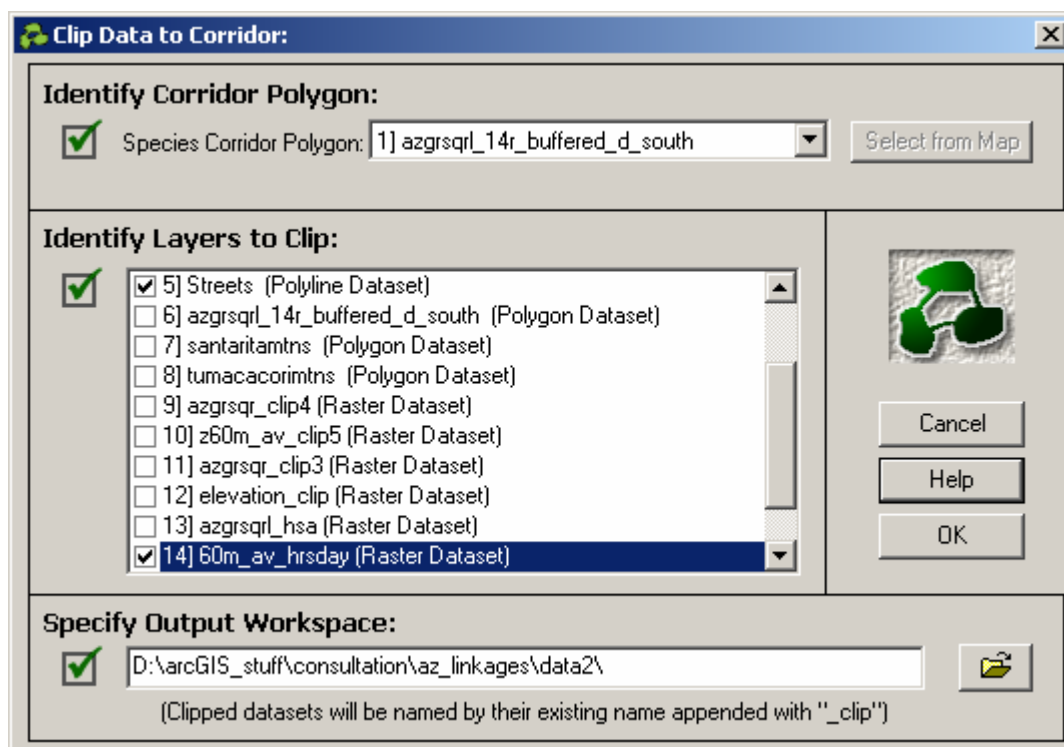


Using the Clip Tool



The Corridor Designer Evaluation tools include functions to calculate a large variety of statistics on vector and raster data, including a specialized tool intended specifically for habitat suitability grids. However, these tools require that the vector or raster datasets be clipped to the polygon or area of interest before using them. The statistical tools themselves analyze the entire dataset and do not automatically clip the datasets as part of the analysis. Therefore we have provided a tool specifically designed to clip both raster and vector datasets to polygons.

Click the  button to open the “Clip Data to Corridor” dialog:



You must identify 3 parameters before the “OK” button will become enabled:

- 1) The polygon to clip to,
- 2) The layers to clip, and
- 3) The folder to save the new clipped datasets to.

As you identify each parameter, you will see green checkmarks appear in the respective boxes.

SELECTING THE CLIPPING POLYGON:

You have several options for selecting a corridor to clip to. You may:

- 1) Select a polygon layer from the map, IF that layer contains only a single polygon feature.
- 2) Select a single polygon from an existing polygon layer.

- 3) Select an existing polygon graphic.
- 4) Draw a new polygon graphic.

The drop-down list box at the top of the dialog lists all polygon layers currently in the active frame of your map document. If any of these contains only a single polygon, then you may simply select that layer and be done. However, the clipping tool is designed to work with a single polygon so you will receive an error message if you have multiple polygons in that polygon layer.

If you need to select a single polygon from a polygon layer, or if you need to select or draw a polygon graphic, then choose the option “Select by clicking on map”. This will enable the button “Select from Map”, from which you can access an interactive tool to directly select or draw your polygon. For more information on using the interactive polygon selection tool, please refer to “Selecting or Drawing Polygons” (see p. 8).

NOTE: This tool will not let you use several separate polygons for your clipping boundary. If you wish to use several polygons for this purpose, you will need to combine them into a single entity first. We have a separate stand-alone tool available which will do this function, available for free download at http://www.jennessent.com/arcgis/shapes_graphics.htm (see especially the discussion of the “Combine Features” tool).


IDENTIFYING THE LAYERS TO CLIP:

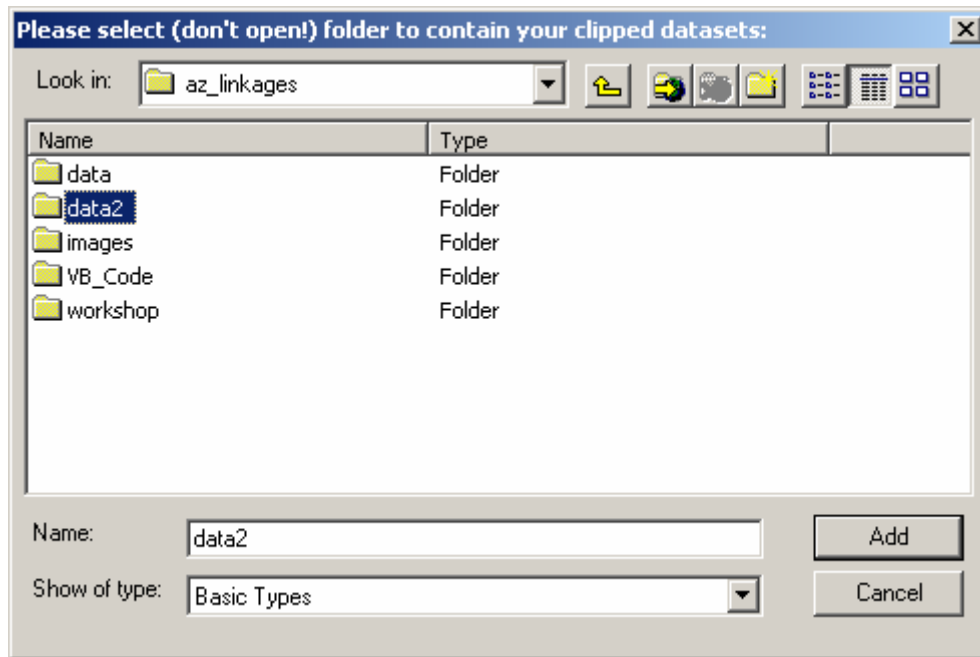
Select one or more layers to clip. Layers should be selected by clicking the check boxes to the left of each layer name.

This function will check to make sure the layers actually intersect the polygon before clipping them, and will also make sure the polygon is projected to the same coordinate system as the clip layer before the clip is executed. Therefore all clipped datasets will be in the same projection as the original dataset.

SPECIFY OUTPUT WORKSPACE:

Finally, make sure the clipped datasets are saved to the correct workspace. All clipped datasets will be named according to the layer name, appended with “_clip”. In the case of clipping grids, new grid dataset names will also conform to grid naming rules (i.e. ≤ 13 characters, no spaces and does not start with a number).

If you need to select a different folder to save clipped datasets to, then click the  button to open the standard ArcGIS file browser folder:



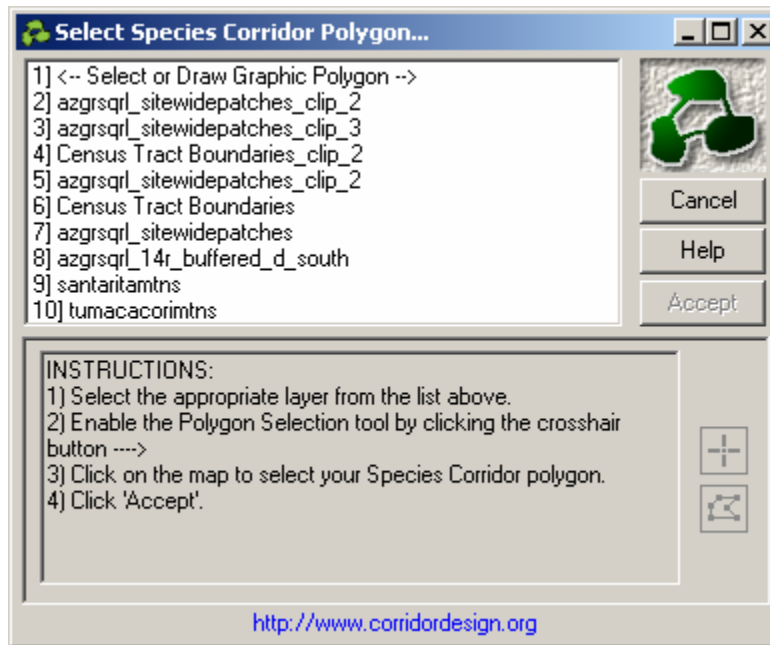
IMPORTANT: Do not open the folder you wish to select. Simply click on it once to select it, then click the “Add” button.

NOTE: This tool is an improvement over the standard ArcGIS clipping tools, in that it works equally well on raster and vector data and handles multipart polygons and polygons with holes or islands, or even multiply nested holes and islands. When clipping grids, it also maintains the full raster attribute table provided that there was one to start with. Finally, it will clip to non-standard shapes such as circles, ellipses and polygons containing curved segments.

NOTE: If you used a graphic polygon to clip with, and if you wish to save your graphic into a new polygon shapefile, you can use the “Create Shapefile” tool to do so (see p. 13).

Selecting or Drawing Polygons:

Three functions allow the user to do something based on a selected polygon graphic or polygon feature, and therefore all three tools needed a way to select or draw that polygon. The Patch Analysis, Bottleneck Analysis and Clip tools all provide access to the following dialog:




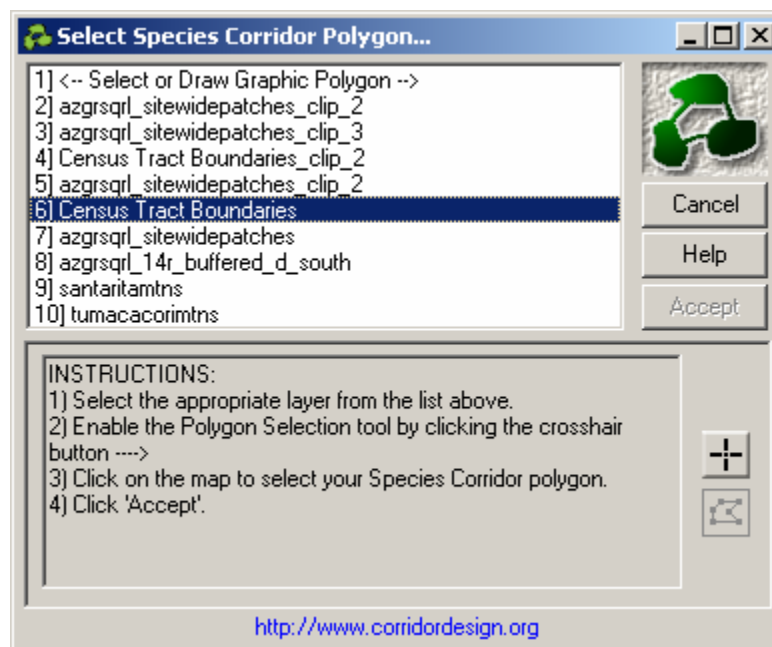
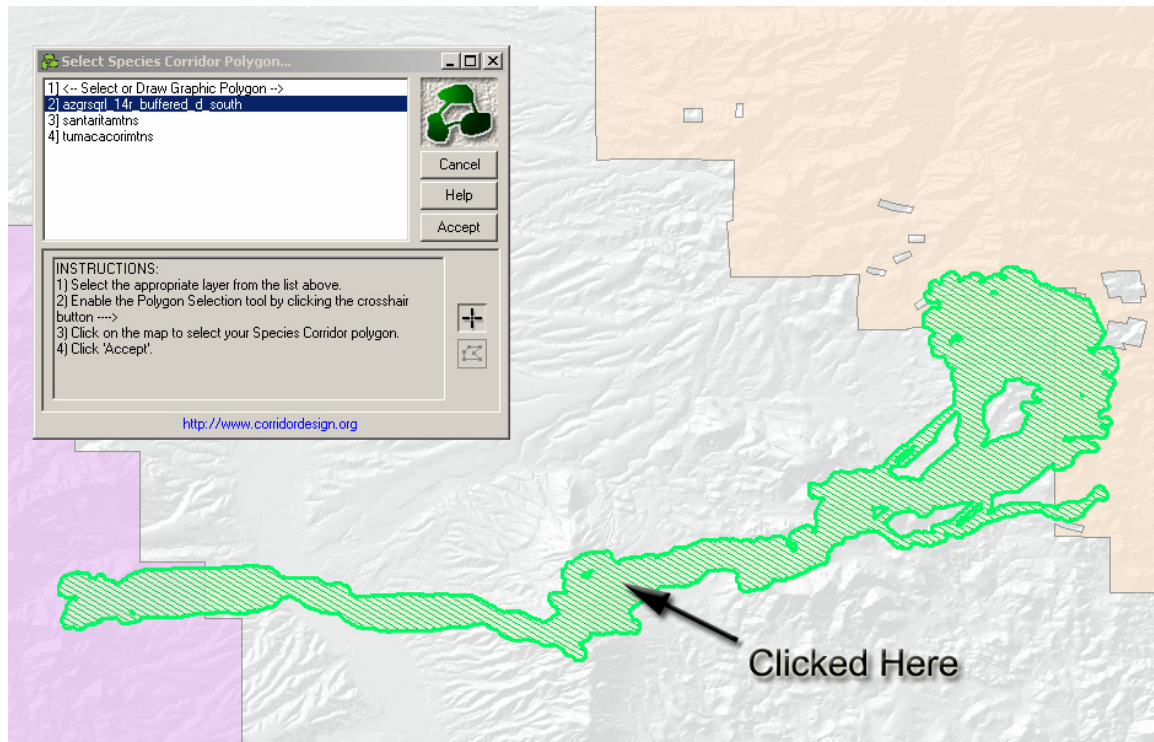
NOTE: The title of this dialog will change depending on whether the user is searching for a corridor polygon or a wildland block.



This dialog allows you to:

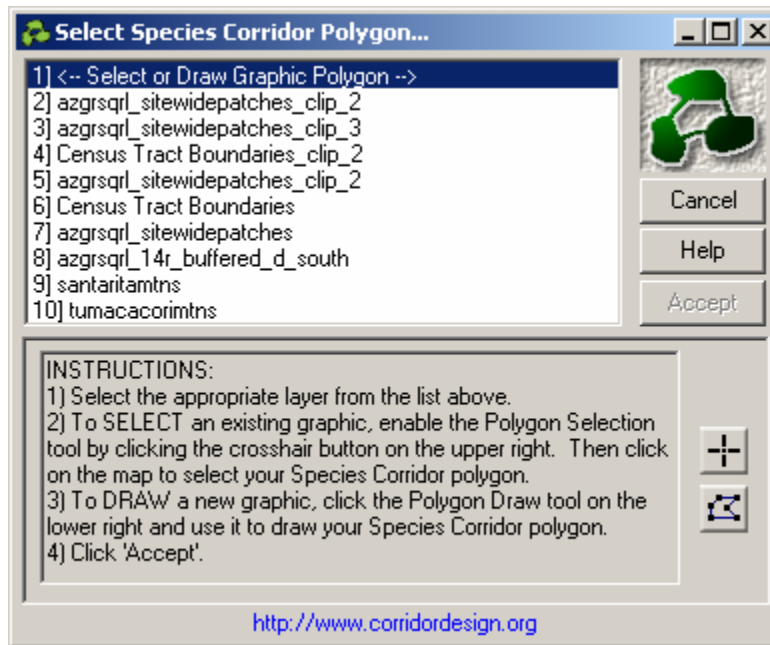
1. Select a single polygon from a polygon feature layer, or
2. Select a single graphic polygon, or
3. Manually draw a graphic polygon on the screen.

If you select a polygon theme from the list at the top of the dialog, then the “Select Polygon”

button  will become enabled and the corresponding tool will become enabled on the Corridor Designer toolbar. Click this button and then select a polygon from the theme. After you click on a polygon, it will turn a green color with a crosshatch fill:

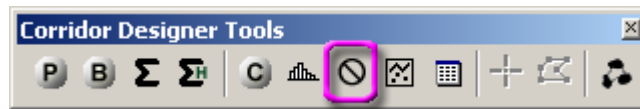


You may also select or draw graphic polygons, rather than selecting polygons from a polygon layer. If you select the first item in the list, “Draw or select graphic polygon”, then both the “Select Polygon”  and “Draw Polygon”  buttons will become enabled. Use the appropriate button to either select or draw a graphic polygon. Note that the instructions change if you select this option:



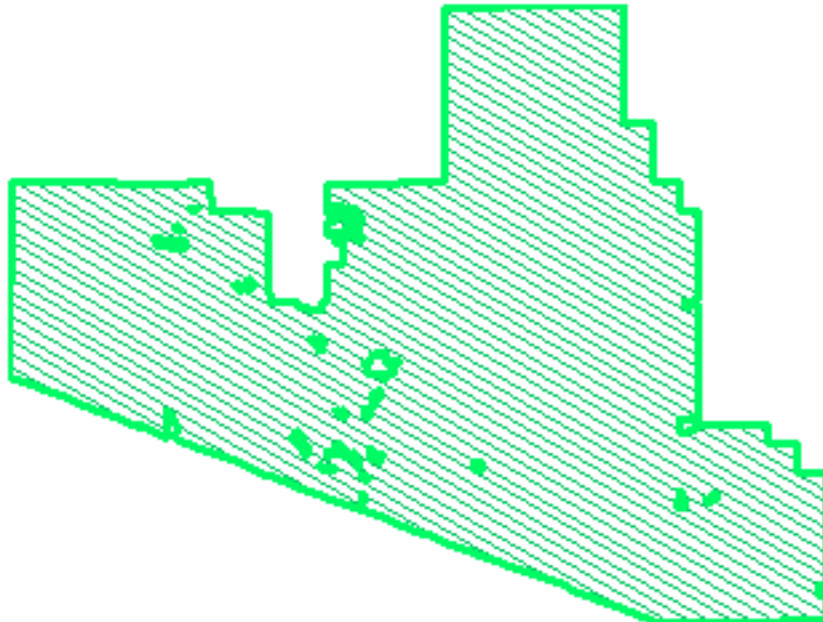
In all cases, selected polygons will be shaded green with a crosshatch pattern. If any of these graphics remain in your view after you no longer need them, you can quickly clear them out using the “Delete Corridor Designer Graphics” tool (p. 12). You may also convert any graphics to a shapefile using the “Create Shapefile” tool (p. 13).

Delete Corridor Designer Graphics:



Several of the Corridor Designer Evaluation functions create graphics on the screen. For example, the Clip tool and the Polygon Selection tool both produce polygons with a particular fill pattern:

Selected Polygon will turn green with diagonal crosshatch:



The bottleneck and patch distance tools will also produce distinctive graphics.

This button simply clears out any CorridorDesigner-produced graphics, leaving any other user-created graphics untouched.

Create New Shapefile:



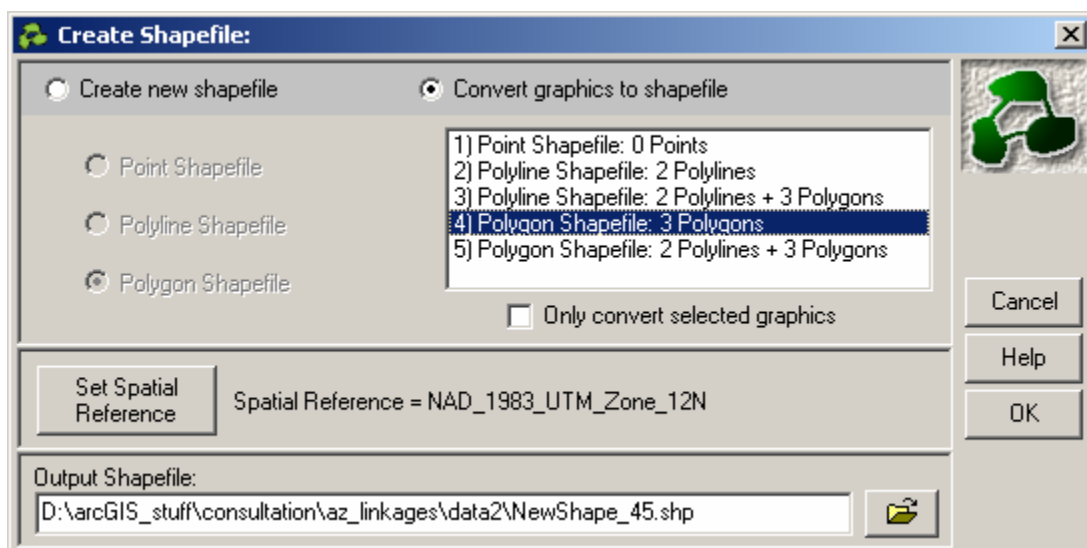
This function allows you to either create a new empty shapefile or convert graphic shapes to a shapefile. You may create either point, polyline or polygon shapefiles with this tool.

- Polygon shapefiles will include attribute fields for [Unique_ID] and [Area].
- Polyline shapefiles will include attribute fields for [Unique_ID] and [Length]
- Point shapefiles will include attribute fields for [Unique_ID], [X_Coord] and [Y_Coord].

NOTE: If you are converting graphics to a shapefile, and if those graphics have names (right-click the graphic and check the properties to see if it has a name), then these names will also be added to the attribute table in a [Name] field.

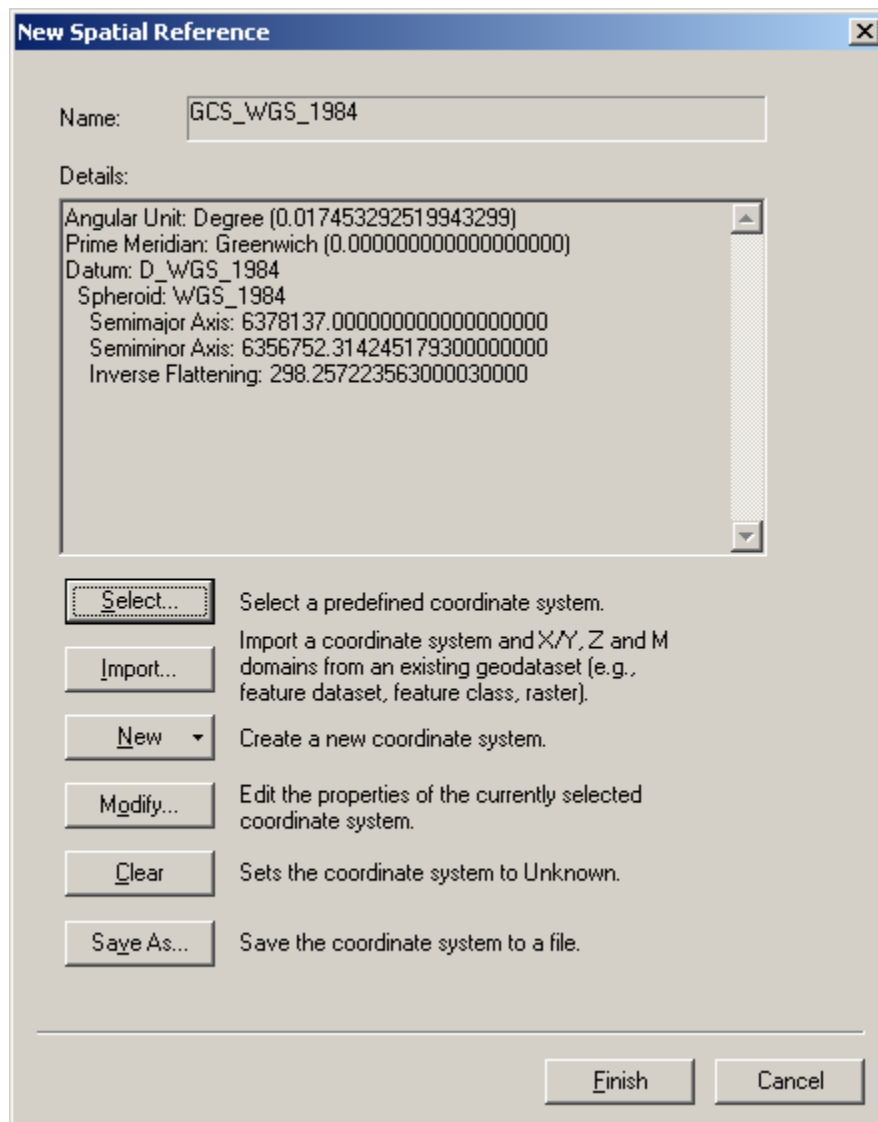
This function also allows you to convert polyline graphics to polygons, or polygon graphics to polylines, if you wish. When opened, the tool will examine your map to see how many point, polyline or polygon graphics are available, and whether any of them are selected. The tool will show you how many of each type are available to convert. If you attempt to create a shapefile from existing graphics when there are no graphics to convert, you will be notified of this and asked if you would like to try a different shape type.

NOTE: Certain linear or areal graphic shapes are not technically polylines or polygons. Polygons that are defined by a circle or elliptic arc are not really “polygons” in the sense that they are not composed of a series of straight-line segments. This is also true for linear features that are constructed of Bezier curves. It is not possible to add true curves such as circles, ellipses or Bezier curves to a polyline or polygon shapefile, so this function will convert these shapes to standard polygons or polylines before adding them to the shapefile. It does this by generating 200 evenly-spaced points along the length or perimeter of the curve, and connecting these points with straight segments. Therefore, if the original graphic feature is composed of true curves, then the actual shape in the shapefile will be slightly different than the original feature.



You must set a spatial reference for the new shapefile. If your map has a spatial reference set, then the map spatial reference will be the default value. You may easily change the spatial

reference by clicking the “Set Spatial Reference” button and identifying the spatial reference you want:



NOTE: This function adds the new shapefile to map, but does not delete existing graphics so you may not see the new shapefile when the shapes lie behind the graphics.