Obtaining XY Coordinates

for Path Intersections with a Polygon Theme in ArcView 3.2

This instruction set results in giving the X and Y coordinates wherever a polyline theme crosses a polygon theme. In the example given here, wildlife point locations and a vegetation polygon cover are the original data themes provided. The point locations are connected and then intersected with the polygons to answer the following question:

> *Where does an individual animal cross edges between vegetation cover types?*

These instructions may be adapted for any application where you need to find out the XY coordinates where a line and polygon theme intersect, but apply specifically to obtaining the locations where an animal path (e.g. generated from telemetry data) crosses over cover classes. The following is meant to guide you through the five-step process of obtaining the XY coordinates, using ArcView and the appropriate extensions:

- A. Establish an ArcView project with appropriate extensions
- B. Create a theme from the GPS points of animal locations
- C. Create a polyline theme for the animal path
- D. Intersect the animal path with the vegetation cover
- E. Edit the intersection theme table as required

The example file names used here are:

ORIGINAL DATA THEMES

Animal.txt	a text file containing XY information (i.e. Easting, Northing)
Vegetation.shp	a polygon shapefile of the vegetation cover

CREATED DATA THEMES

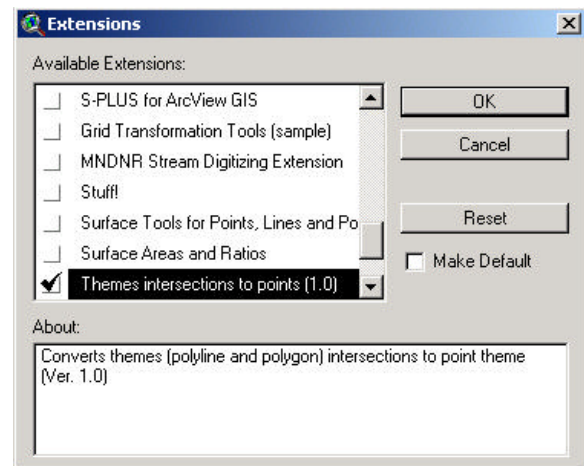|	
Animalpath.shp	a polyline shapefile resulting from connecting the animal points
Intersect.shp	a point shapefile resulting from the intersection of the Animalpath.shp and Vegetation.shp themes

A. Establish an ArcView Project and Activate Required Extensions

> *When launching a new view in an ArcView project, it's always a good idea to set your map and distance units straight away, before adding themes.*

1. Open ArcView and create a new project with a new View
2. Add the **Vegetation.shp** theme to the view
3. Highlight the View window
4. Choose FILE → SET WORKING DIRECTORY
5. Enter the path to where the data will be stored
6. Choose VIEW → PROPERTIES and set Map Units and Distance Units (e.g. meters, if your .txt file of point locations are UTM coordinates)
7. Choose FILE → EXTENSIONS
8. Click on the check box next to the following extensions:
   AlaskaPak
   Themes intersections to points (1.0)
9. Click OK
10. Choose FILE → SAVE PROJECT AS… enter a *name* and save the project into the working directory
11. You may need to navigate to your personal directory since the default directory may not be the directory in which you want to store your data.

B. Create a Theme from the GPS Point Data

Any new point theme based on a table of XY data can be created in this manner. In this case, Animal.txt has Easting as the X-Coord, and Northing as the Y-Coord.
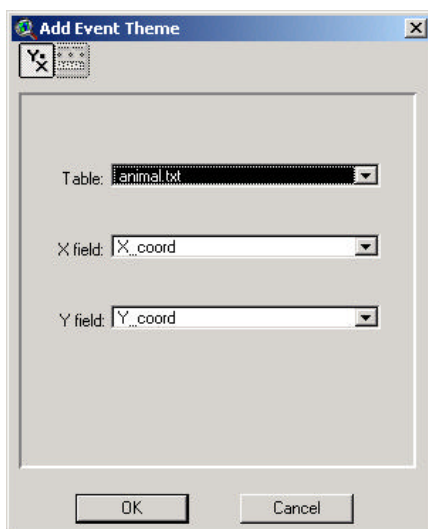
1. Highlight the Project window
2. Choose PROJECT → ADD TABLE from the Project menu
3. From the Add Table window navigate to the directory where your .txt table file is stored
4. Choose the proper file type under List Files of Type: (e.g. *Delimited Text *.txt*)
5. Select your file (e,g, **Animal.txt**) and click OK
6. Highlight the View window
7. Choose VIEW → ADD EVENT THEME
8. Under Table select your point file: **Animal.txt**
9. Select the X (e.g. Easting) and Y (e.g. Northing) fields if the defaults are not correct; Click OK
10. A new point theme is added to the view. Display the points by checking on the box next to the theme name in the View window.

C. Create a Polyline Theme for the Animal Path

1. Make **Animal.txt** the active theme
2. Choose ALASKAPAK → POINT THEME TO POLYGON/POLYLINE
3. Select polyline as the new shape class; Click OK
4. In the next menu *assign a directory and name* for the polyline that will be generated (e.g. **Animalpath.shp**); Click OK
5. Click 'Yes' to add the new shapefile to your view

D. Intersect the Animal Path with the Vegetation Cover

1. Click on the Themes Intersections to Points button
2. Select two polyline themes to intersect by holding the SHIFT key and clicking on the names (e.g. **Vegetation.shp** and **Animalpath,shp**); Click OK
3. In the next menu assign a directory and name for the point theme that will be generated (e.g. **Intersect.shp**); Click OK
4. Click "*Yes*" to add shapefile as theme to a view and select the View to add it to
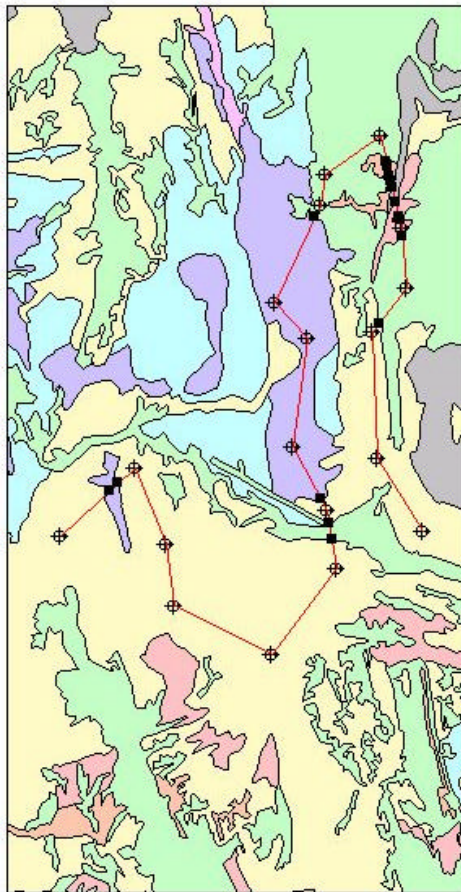
E. Edit the Intersection Theme Table as Required

1. Make **Intersect.shp** the active theme
2. Choose ALASKAPAK → Add XY to Attributes
3. Click on the Open Theme Table button
4. Highlight the *X_coord* field
5. Choose FIELD → SORT ASCENDING
6. Choose FILE → EXPORT…
7. Select your preferred export format (dBASE, INFO table, Delimited Text)
8. In the next menu *assign a directory and name* for the table file that will be generated; Click OK

This adds the XY coordinates to the table and then orders the intersection points by coordinates. Notice that there are pairs of points having the exact same coordinates, one point indicates the vegetation cover class on one side of the edge, and the other point indicates the class on the other side.

You now have a file containing the XY coordinates for where the animal's path crosses vegetation cover class edges, to perform your statistical analysis on.