

Visualizing Animal Movement from Locations and Paths

These instructions enable you to visualize where animal locations occur in space and time using ArcGIS 9.x software – through connecting the dots with a third party extension, simple symbolization, and using the out-of-the box functionality to simulate a GPS connection.

Hawth's Tools – for converting locations to paths – is freely available from here: <http://www.spataleecology.com/htools>

ORIGINAL DATA

points.shp a shapefile of locations in a projected coordinate system (e.g. UTM)

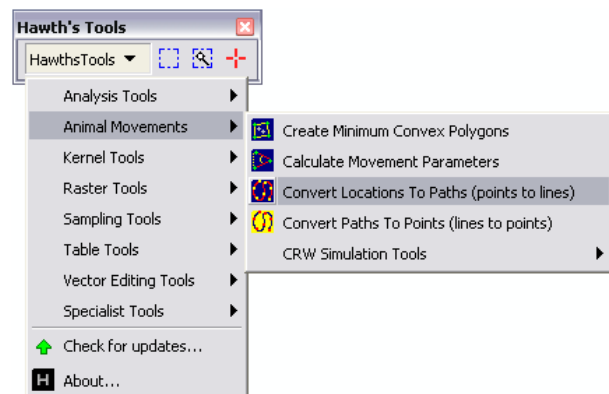
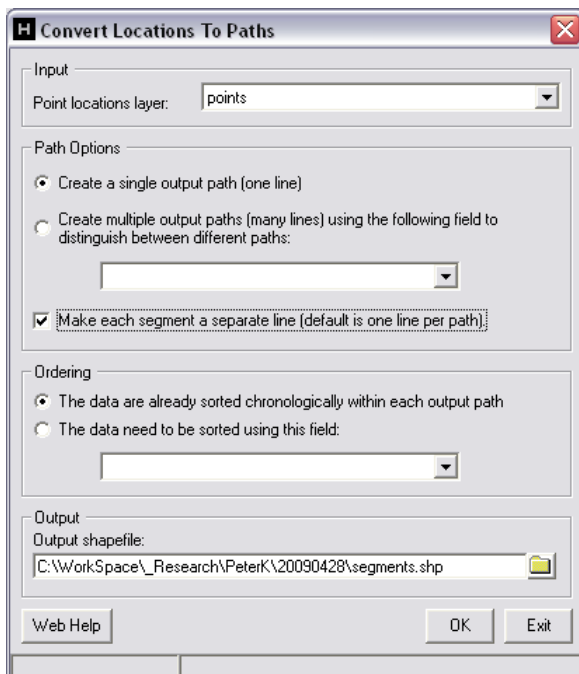
CREATED DATA

segments.shp a line shapefile resulting from converting locations to paths

Convert locations to paths and symbolize direction:

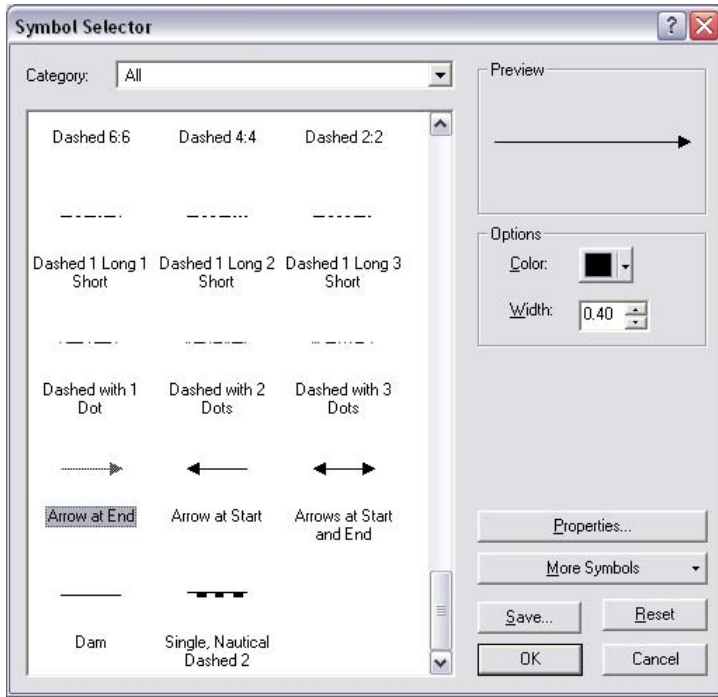


1. Start ARCMAP and ADD DATA: navigate to working directory and add points.shp
2. Choose TOOLS >>> EXTENSIONS and make sure there is a check beside Hawth's Analysis Tools
3. Choose TOOLS >>> CUSTOMIZE and make sure there is a check beside Hawth's Tools
4. Click HAWTH'S TOOLS >>> ANIMAL MOVEMENTS >>> CONVERT LOCATIONS TO PATHS (points to lines)

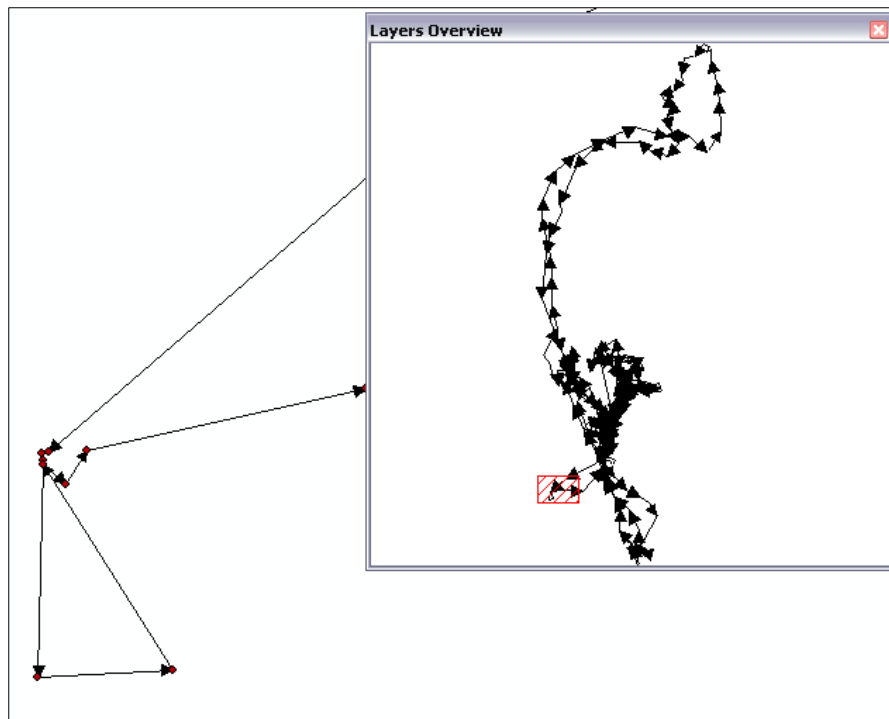
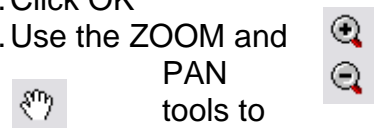


5. Specify the following parameters:
 - Input: points
 - Check beside 'Make each segment a separate line...'
 - Output: **segments.shp**

6. Click OK to run and OK again to dismiss processing complete message
7. Optionally, click HAWTH'S TOOLS >>> TABLE TOOLS >>> ADD LENGTH FIELD TO TABLE (arcs)



8. Specify the input segments and click OK
9. In the table of contents, click on the segments line symbol to view the Symbol Selector
10. Scroll down to the end and select ARROW AT THE START style
11. Click OK
12. Use the ZOOM and PAN tools to get a closer look at the direction of each segment between locations
13. Optionally, click WINDOWS >>> OVERVIEW to view the entire layer simultaneously with your zoomed-in data view



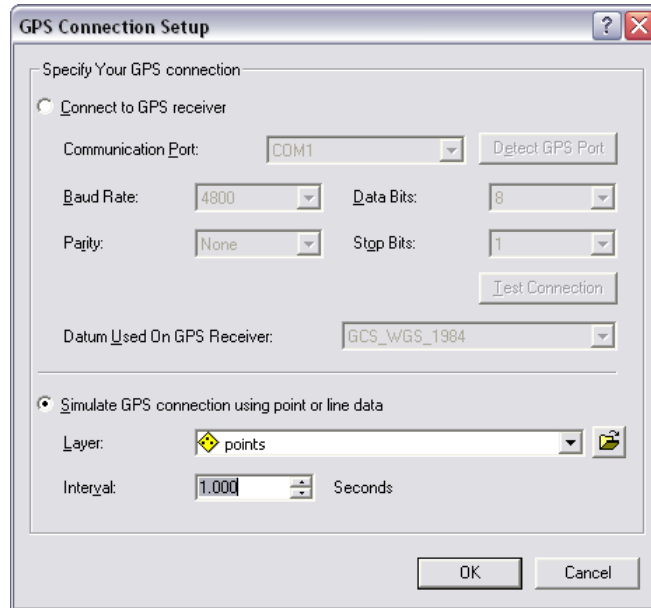
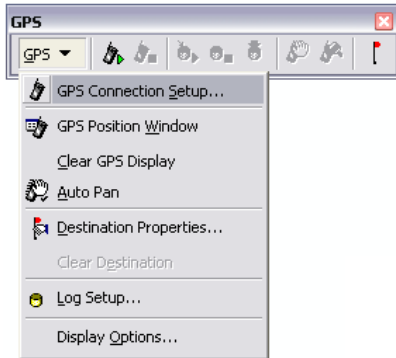
14. Optionally, ZOOM TO FULL EXTENT and click WINDOWS >>> MAGNIFIER to drag and view a magnification window across the layer

Simulate a GPS connection:

15. ZOOM TO FULL EXTENT

16. Choose TOOLS >>> CUSTOMIZE and make sure there is a check beside GPS

17. Click GPS >>> GPS CONNECTION SETUP...



18. Click the second option button to 'Simulate GPS connection using point or line data'

- Layer : select the points
- Specify the interval in seconds; e.g. 1

19. Click OK

20. Click OPEN CONNECTION

and watch as points are drawn in sequence

21. To make viewing easier, click any of the following tools:

TOOL	FUNCTION
PAN TO GPS POSITION	Moves the display to view the current location
ZOOM TO GPS POSITION	Zooms to current location
Click GPS >>> AUTO PAN Auto Pan	Display continually moves to follow the current location

SOME ADDITIONAL NOTES/FUNCTIONS:

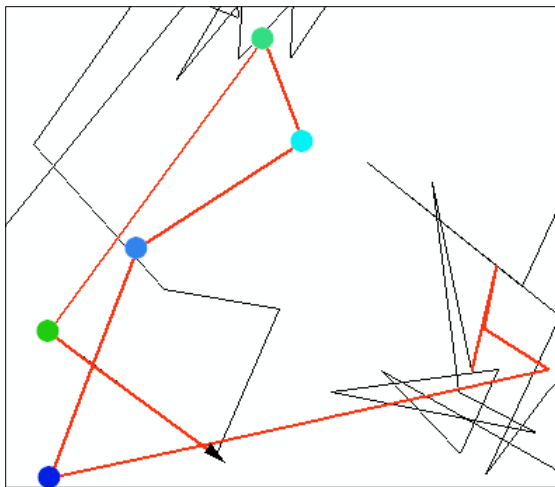
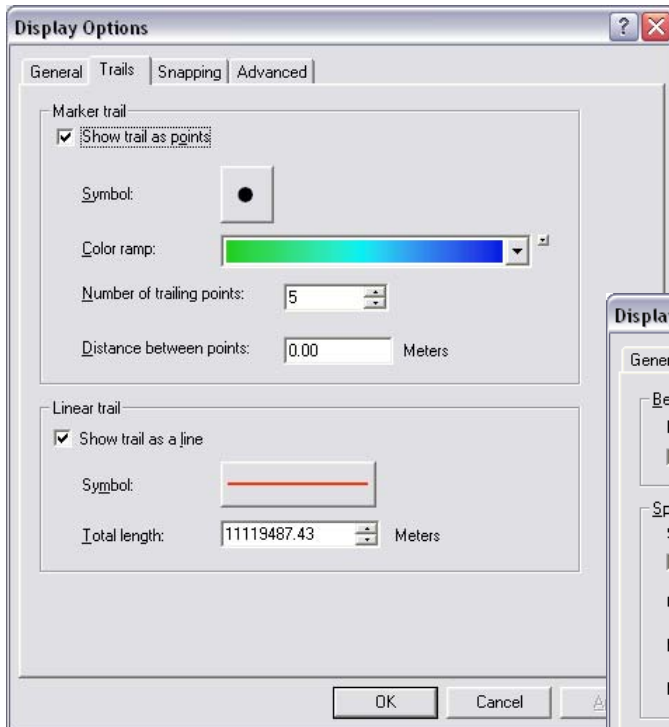
22. ADD DATA: view imagery below the locations/paths

23. Click GPS >>> DISPLAY OPTIONS and modify many useful symbols (points and trails) – experiment with everything until you find what you like

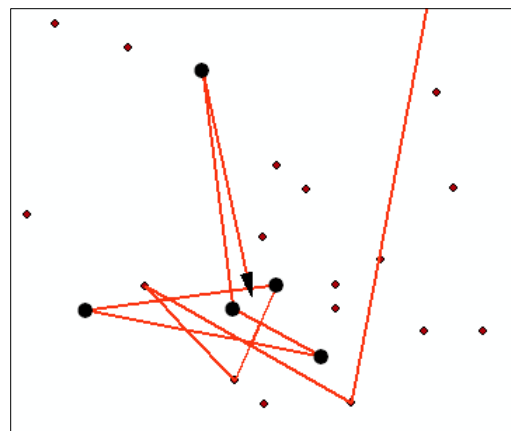
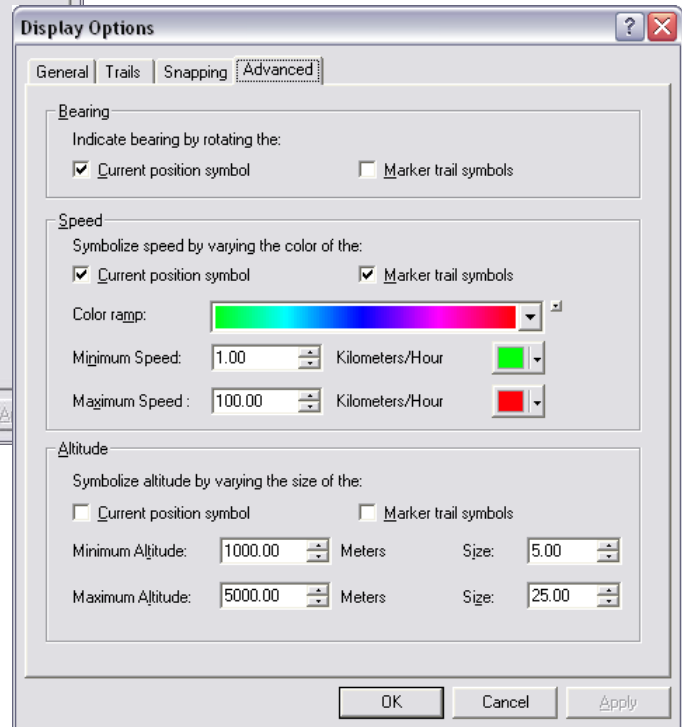
24. The screen captures below are only a few simple suggestions...

25. Also, try simulating a connection using the segments (see step 18 above)

26. Refer to the ARCGIS DESKTOP HELP topic “Getting started with ArcMap GPS Support”



Simulated GPS connection using LINES with the above indicated TRAILS tab display options



Simulated GPS connection using POINTS with the above indicated ADVANCED tab display options