Editing with ArcGIS: Tips and Tricks

Todd Stuber and Darrin Christy
Overview

• Topics
  – Productive editing techniques
  – Finding and fixing data errors
  – Editing coincident features and topology

• Format
  – Tips & tricks
  – Software demonstrations
  – Q & A session at end
Help and helpful things

• Context-Sensitive Help
  – On command on pull-down menu or button on toolbar, click *What's This?* tool
  – On command on context menu, highlight command, press *Shift + F1*
  – On control in dialog box, click *What's This?* button

• Desktop Help and ESRI Resource Centers
  – Help: Editing and data compilation section
  – Common editing tasks
  – Tutorial videos
  – [http://resources.esri.com](http://resources.esri.com) - One stop for ArcGIS information

• Training Course
  – Data Production and Editing Techniques - DPET
Switching among tools while sketching

How can you quickly switch from a sketch tool to another tool and back to a sketch tool again?

Use shortcut keys: E, C, X, Z, and B

- E key to toggle between the Sketch tool and the Edit tool (and Edit Annotation tool, when working with annotation)
- C key to pan
- X key to zoom out
- Z key to zoom in
- B key to zoom and pan continuously

These shortcuts are available with any tool in ArcMap (starting with ArcGIS 9.2).

To see a list of all the editing shortcut keys, in ArcGIS Desktop help, on the Index tab enter “shortcuts, for editing in ArcMap.”
Creating an edit sketch using other features

- **Constraints - Sketch tool context menu**
  - Parallel
  - Perpendicular
- **At**
  - Absolute XY
  - Delta XY
- **With specific**
  - Length
  - Direction
  - Direction and length
  - Distance
  - Deflection angle
  - Tangent curve

Sketch tool shows length, direction, perimeter, and area in status bar.

Length: 592.654 km, Direction: 204.4440, Perimeter: 3048.862 km, Area: 200729.272 sq km
Using the Trace tool for new features

- Adds sketch segments by tracing along selected features

![Trace Options](image)

- Mitered
- Beveled
- Rounded
Overriding map units

- Use unit abbreviation after distance value
- Distance units interpreted from entered value

<table>
<thead>
<tr>
<th>Unit</th>
<th>Abbrev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meter</td>
<td>m</td>
</tr>
<tr>
<td>Kilometer</td>
<td>km</td>
</tr>
<tr>
<td>Millimeter</td>
<td>mm</td>
</tr>
<tr>
<td>Foot</td>
<td>ft '</td>
</tr>
<tr>
<td>Mile</td>
<td>mi</td>
</tr>
<tr>
<td>Nautical mile</td>
<td>nm</td>
</tr>
<tr>
<td>Chain</td>
<td>ch</td>
</tr>
<tr>
<td>Yard</td>
<td>yd</td>
</tr>
<tr>
<td>Inch</td>
<td>in</td>
</tr>
<tr>
<td>Survey Foot</td>
<td>ftUS</td>
</tr>
<tr>
<td>Survey Chain</td>
<td>chUS</td>
</tr>
<tr>
<td>Survey Mile</td>
<td>miUS</td>
</tr>
<tr>
<td>Survey Yard</td>
<td>ydUS</td>
</tr>
</tbody>
</table>
Overriding map units

- Enter coordinates in DD, DMS, or DDM when map has a projected coordinate system.
- Absolute XY and Delta XY
- New in ArcGIS 9.3

<table>
<thead>
<tr>
<th>Unit</th>
<th>Abbrev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decimal degrees</td>
<td>dd</td>
</tr>
<tr>
<td>Degrees minutes seconds</td>
<td>dms</td>
</tr>
<tr>
<td>Degrees decimal minutes</td>
<td>ddm</td>
</tr>
</tbody>
</table>

XY coordinates - DMS

Map Units - Meters
Modifying the feature selection

- **Selection tab**: Right-click on layer to
  - Zoom/Pan to selected features
  - Clear selected features
  - Switch selection
  - Select all
  - Make only that layer selectable
  - Also has keyboard shortcuts

- **Attributes dialog box**: Right-click on feature
  - Unselect features in a layer one at a time
  - Can work with multiple selectable layers
Selecting from overlapping selectable features

- Use the select “next” function.
- Click with Edit tool to select feature, then press the N key.
- Must point to first feature within the selection tolerance

Use this technique with overlapping features.
Preventing accidental movement of features

- Set the sticky move tolerance.
- Helps avoid accidental movement
- Prevents feature movement within tolerance

**Editing Options**

- **Display measurements using**: 3 decimal places
- **Snapping tolerance**: 30 pixels
- **Sticky move tolerance**: 100 pixels

100 pixels
Visualizing snapping environment while editing

- **Snapping indicator in status bar**
  - Snapping indicator
  - Snapping indicator in status bar
  - Snap agent type
  - Snapping distance (tolerance)
  - SnapTips

- **SnapTips**

- **Snapping distance (tolerance)**
  - View by pressing T shortcut key
Controlling how features snap to one another

• Set snapping tolerance in the Editing Options dialog box
  – Snap Tolerance tool (from Customize dialog box) to set interactively

• You can also
  – Prioritize layers in the Snapping dialog box.
  – Enable snapping to edit sketch elements (helps when creating rings or cutting polygons).
  – Press the **Spacebar** to suspend snapping temporarily.
  – Use the **V** shortcut key to view vertex locations.
Overriding the snapping environment

- **Snap To Feature command** – Right-click when sketching (9.2: Sketch tool only; 9.3: all sketch tools)
- **Snapping on the fly**
- **Overrides snap environment settings**
- **Snap to feature geometry without setting individual snap agents**
- **Snap to midpoint of a line or polygon boundary**
Changing the coordinates of a feature

- Edit Sketch Properties dialog box
- Highlight a vertex
- Works with “parts” of multipart features
- Context menu options
  - Insert vertices
  - Zoom to vertex
  - Delete
- Can edit x-, y-, m-, and z-values
Demonstration
Creating donut holes in polygons

• **By sketching the hole**
  – Double-click feature to modify its shape.
  – Click the Sketch tool.
  – Right-click to finish part.
  – Sketch the hole feature.
  – Finish the sketch.

• **From another feature’s shape**
  – Create a feature where you want the hole.
  – Select that “holed” feature.
  – Choose Editor menu > Clip.
  – Choose Discard the area that intersects option.
Removing donut holes in polygons

- Double-click on the feature to modify its shape.
- Open the Edit Sketch Properties dialog box.
- Right-click on “donut hole” part and choose Delete.
Flipping the direction of a line

- **Flip command on the Edit Sketch context menu**
  - Double-click feature to modify its shape.
  - Right-click shape to open the Sketch context menu.
  - Click Flip Command.

- **Flip developer sample**
  - VB6 SDK or Resource Center
  - Bulk flip selected lines
Updating the attributes of multiple features

- Select target features.
- Open Attributes window.
- Choose layer.
- Choose target field.
- Type new attribute value.
Demonstration
Using visual inspection to find errors

- Automated methods cannot find all errors.
  - Like legal codes incorrectly assigned
- Use cartography to support.
  - Symbols and labels
- Look for unusual patterns.
  - Compare map to itself.
  - Compare to other sources (aerial photos, other maps, etc.).
- Helps if you know your data!
Validating features

- Editor > Validate Features command in ArcMap
- Applies geodatabase rules to selected features
  - Tests subtypes, domains, geometric networks, and relationship rules

Helps find illegal codes

Also tests custom rules (must program)
Summarizing fields

- With the field Summarize command
- Find errors, generate statistics, find duplicates, extract fields
- You select fields and statistics
- Creates an output table

One record for each unique value (extract fields)

Statistics for summary field(s)

Frequency

Error?
Working with tables

• Improved usability and navigation in tables (9.2/9.3)
  – Mouse and keyboard shortcuts
  – Interact with the map from the table: flash, zoom to, pan to features
  – Select rows, work with fields, and edit attributes

• Calculate Geometry (new for 9.2) (9.3?)
  – Length, perimeter, area, endpoints, and x,y coordinates
  – Right-click field and click Calculate Geometry
Editing coincident features

- **Topology editing tools – Topology toolbar**
  - Constructing features
  - Validation
  - Topology to edit
  - Editing coincident geometry
  - Fixing errors

- ArcEditor or ArcInfo license required to create and edit geodatabase topology

- **Map topology**
  - Temporary for the edit session
  - For shapefiles and feature classes without a topology
  - Works with ArcView
  - Enables some topology editing tools
Moving coincident/shared geometry

- Topology Edit Tool
  - Selects and modifies edges and nodes
  - Press E to select only edges, and N to select only nodes.

- Show Shared Features
  - To pull apart coincident geometries

Uncheck layers so they are not modified with the coincident geometry.
**Splitting topology edges**

- **Temporarily splitting edges**

<table>
<thead>
<tr>
<th>Step Description</th>
<th>Diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select an edge.</td>
<td><img src="image" alt="Select an edge." /></td>
</tr>
<tr>
<td>Temporarily split the edge.</td>
<td><img src="image" alt="Temporarily split the edge." /></td>
</tr>
<tr>
<td>Select and modify one of the edges.</td>
<td><img src="image" alt="Select and modify one of the edges." /></td>
</tr>
<tr>
<td>All polygons are modified.</td>
<td><img src="image" alt="All polygons are modified." /></td>
</tr>
<tr>
<td>Rebuild cache to remove temporary nodes.</td>
<td><img src="image" alt="Rebuild cache to remove temporary nodes." /></td>
</tr>
</tbody>
</table>
Reshaping and modifying topology edges

• Reshape edge
  – Reshape an edge with a sketch

• Modify edge
  – Edit the vertices of an edge in the sketch
Splitting and moving topology nodes

- Temporarily disconnects one node and one edge from topology
  - Move a polygon boundary without creating slivers.
  - S key while dragging node with Topology Edit Tool

Select one node and one edge with N and E keys.

Press S key and snap node to some other part of the polygon.

These edges don’t rubber band.

Polygons will be deleted if you don’t snap the node to the edge of the polygon.
Demonstration
Converting graphics to features

Added at ArcGIS 9.3

• Draw a graphic or text with drawing tools.
• Assign name property to graphic element.
  – Name becomes feature attribute.
• Convert to shapefile or geodatabase feature class.
Questions