Exercise 6: Digitizing and Adding Attribute Data

Table of Contents

1. Intro-fossgis-umass

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1.2. Module Licensing Information

Version 1.0.

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2. Online Digitizing and Adding Attribute Data using QGIS

2.1. Preamble

You work with the Town of Hadley, where some new and intensive residential development is expected. There are some concerns that new development could affect wetlands. Your goal is to examine some natural resource sensitive areas to be sure that proposed development will not harm the environment. Your objective is to outline at risk areas, and specify locations for a detailed on site inspection.

You have the following data:

• two vector wetlands layers from the National Wetland Inventory (NWI) (1:24,000) and one from the Department of Environmental protection (1:12,000). Later you will see that these data are a little bit different (the N.B. DEP dataset is the most precise one, derived from stereo color orthophotos. For this demo we assume that both sets are partially accurate).

• Landuse data for the study area

• An Orthophoto

2.2. Lab Settings:

• Download the data set from this location: http://linuxlab.sbs.umass.edu/introFossgisUmass/datasets/labdigitizing/DSdigitizing.zip**[22mb]**

• Unzip the data into the working directory. You should have the following data sets:

Table 2.1. Table Ref: Ref

n	Files	Description
1	Lus117.*	Landuse (Hadley)
2	Lus214.*	Landuse (Northampton)
3	Nwi38p1.*	Polygon layers from National Wetland Inventory
4	Nwi44p1.*	"--"--"--
5	Wetdep_connp1.*	Wetland layer from the Department of Environmental Protection for Connecticut

		River Watershed
7	2_109898.tif	Orthophoto

2.3. Methodology:

We will create two new layers:

1. a polygon layer with the areas of interest outlined

2. a point layer with the locations of measurement ?oints

For this exercise we will use onscreen digitizing. We assume that the areas of interest will be those where we find discrepencies between wetland layers and are also close to existing residential development. We will overlay the orthophoto, and NWI and DEP wetlands datasets to "eye-ball" such areas and outline them. Then we will add point features for the location of measurements. Let's think about the attributes for our new layers:

Layer Name	Layer type	Attributes/type/Description
StudyAreas.shp	polygon	mID (number) some ID Name (string) name of area Priority (string) priority to check
MeasurePoints.shp	point	pID (number) some ID mDate (string) data of visit mData (string) observations/measurements

Note: you need to design your layers as it's difficult to change attributes properties later.

2.4. Exercise:

1.Please start QGIS and add the following layers (from bottom to top)
   a.Orthophoto (2_109898.tif)

   b.Nwi44p1.shp and Nwi38p1.shp (NWI dataset)
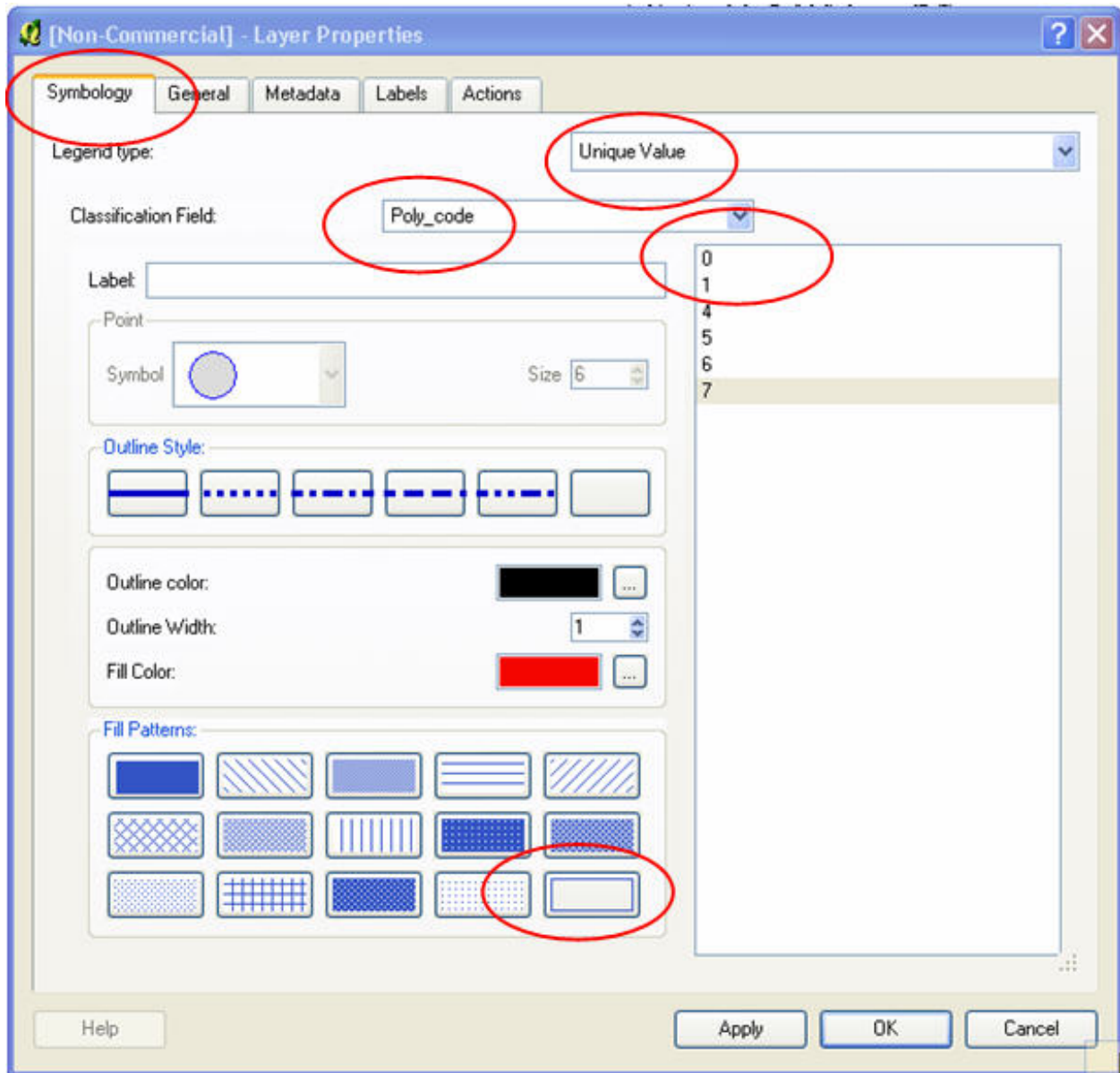
   c.Wetdep_connp1.shp

2.Change Symbology

As you see NWI layers are continuous, so you cannot see through them. Field "poly_code" consists of codes for different features. Features with code 0 and 1 are upland and open water, which are no interest for us. Let's change

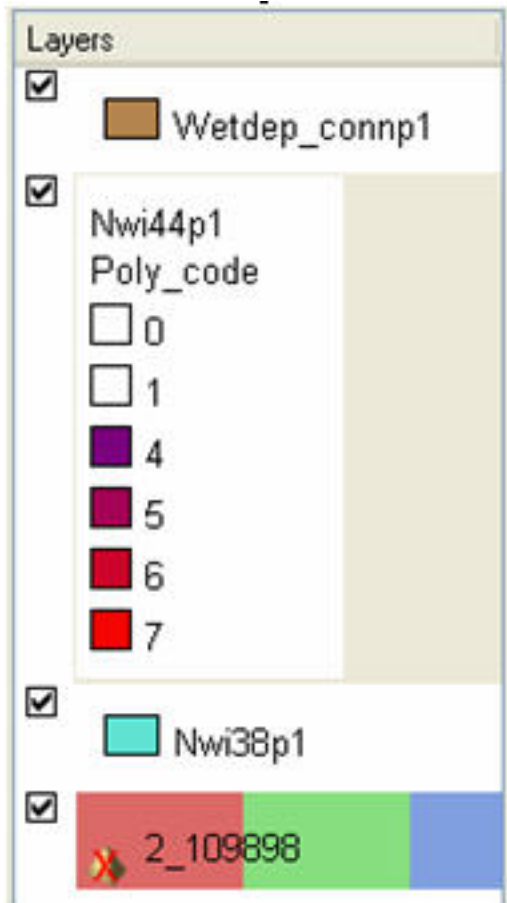symbology of NWI layers, so we depict only features we have interest in.

   a.Select one of NWI layers, right-click and click on " Properties".

   b.Click on "Symbology" tab

   c.Select "Unique value" in Legend Type

   d.Select "Poly_code" in Classification Field

   e.Then click on "0" and change "Fill Pattern" to transparent one. Do the same for code 1. Click 0K. (Figure 1)

Nwi – datalayer (values of poly_code field):

```
0 = Upland (non-wetland areas)
1 = Predominantly Open Water
2 = Estuarine, sub-tidal Marine Systems
3 = Estuarine, intertidal
4 = Non-tidal, aquatic bed
5 = Non-tidal, emergent vegetation
6 = Forested wetlands
7 = Non-tidal, scrub-shrub
8 = Non-tidal, unconsolidated shore
9 = Non-tidal, farmed land, bogs
10 = Tidal, channels
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docbook file!   Exercise 6: Digitizing and Adding
Attribute Data   4

Your TOC should look similar to this one:

Exercise 6: Digitizing and Adding
Attribute Data

- Repeat the same for the second NWI layer.

- Zoom to the Orthophoto extent.

- Make the "Wetdep_connp1" layer transparent, and change the outline color to bright yellow and the outline width to 2. Now you should be able to see the differences in the data sets (NWI and DEP).
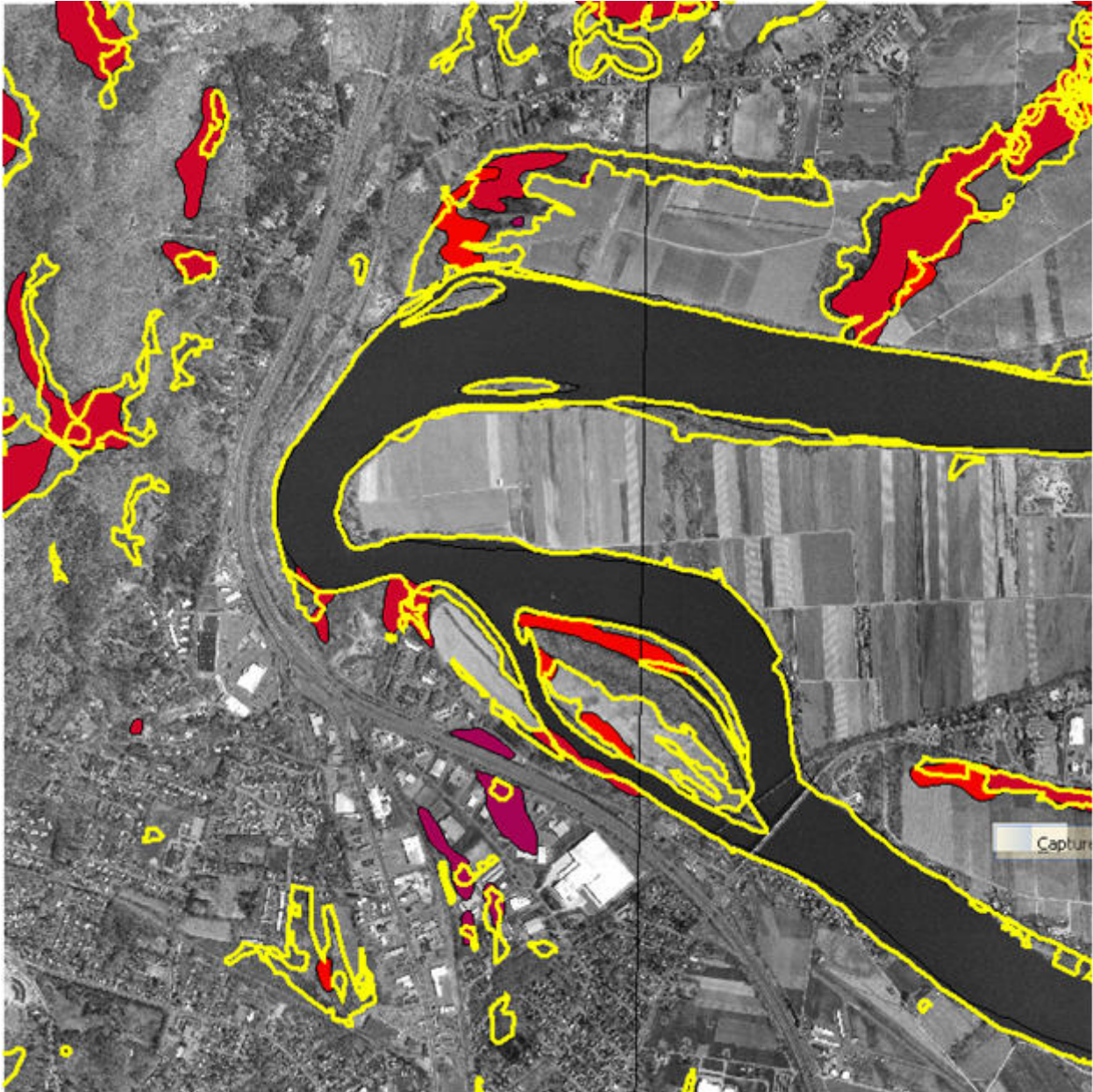
Zoom in/pan and identify some problematic areas. What we would like to do now is to outline areas we need to explore. Let's create a new vector layer "StudyAreas.shp".

3.Click "Layer" > "New Vector Layer" in the main menu.

    a.Select "Polygon" as layer type and add attributes. Click OK.
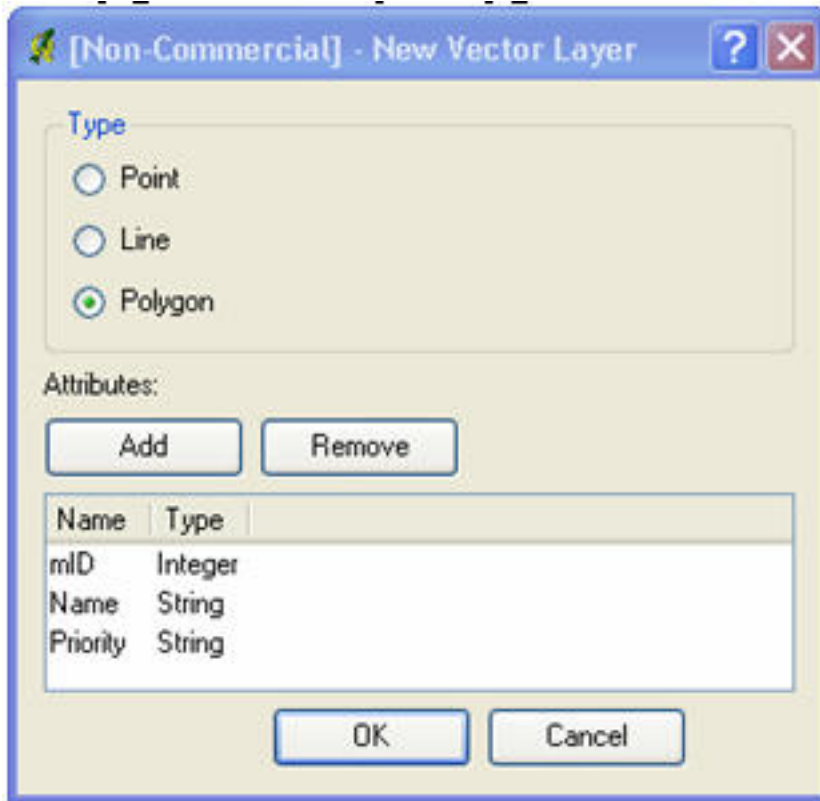
b.Then specify a name for new layer to save as. (" StudyArea.shp). The new layer will be added to the TOC. The layer is empty.
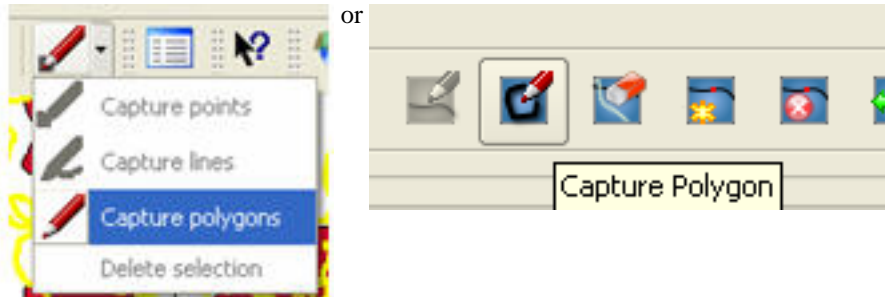
c.Now we can add new features to the layer. First we need to switch this layer into "editing mode". Select layer, right click and select "Start Editing" or "Allow Editing" depending on the version you are working with.
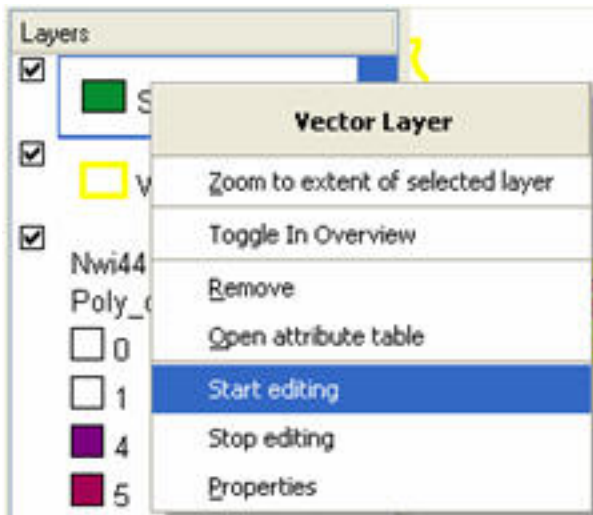
d.Layer is now in editable mode

e.Click on the "capture polygons" tool.

f.Start digitizing features. Left-click to add vertex, right-click to complete the polygon. (Note you cannot delete vertices/polygons).

g.Add attribute information to the feature

h.Continue adding study areas.

i.When done, be sure that you "closed" editing mode. Selecting " stop editing in the context menu" and save your changes.

You now have a vector layer (StudyAreas.shp) with the outlines of areas you need to explore.

Now let's add a point layer and identify some locations to take measurements. Again, you will use the orthophoto as

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                                      Attribute Data   9

the main source of information for your preliminary decisions. Later you can use this layer to delegate some research work to your assistants/colleagues.
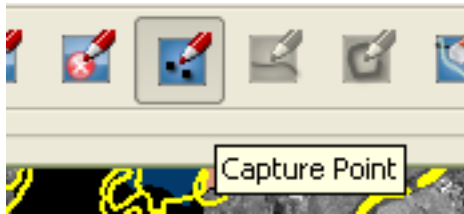
4.Click "layer > New Vector Layer".

a.Specify point as the type of layer and create the attributes **pid** as an integer and **name** as a string.

b.Save the layer as MeasurePoints.shp.

c.Switch to editing mode

d.Start capturing points and filling in the attribute data

e.Stop editing.

f.Save your work.