Use of GIS & GPS in Trail and Land Management

Explore CT ECO

CT ECO is a partnership between the CT Department of Energy and Environmental Protection (CT DEEP) and the University of Connecticut Center for Land Use Education and Research (UConn CLEAR). It is a website with the goal of sharing Connecticut's environmental and natural resource information with the general public. CT ECO's mission is to encourage, support, and promote informed land use and development decisions in Connecticut.

Map Catalog

The Map Catalog is a collection of pdf maps produced by CT DEEP. Most maps are created for towns, but a few are available by quad or for the whole state. All of the maps include explanation, a legend, scale bars, data sources and more.

- Go to http://cteco.uconn.edu

- From the **Maps** heading, click on **Map Catalog**.

- Choose your **Town** in the drop-down menu.

- Click on and explore several of the pdf maps available for your town.
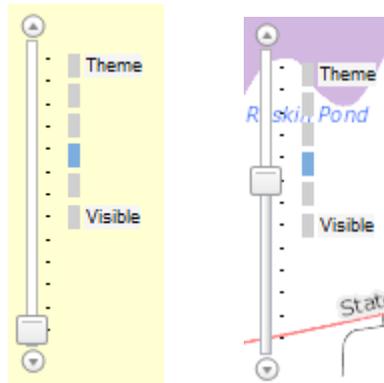
Thematic Map Viewers

These are the easiest viewers to use on CT ECO. At this time, there are two thematic viewers – the **Simple Map Viewer** and the **Aerial Photo Viewer**. More thematic viewers are in the works.

- From the **Maps** heading, click on **Thematic Map Viewers**.

- Click on the Simple Map Viewer **GO** button. This will open the **Simple Map Viewer** in a new tab.

- Notice some simple map tools along the top include **pan** (the hand), **zoom in**, **zoom out**, **zoom to full extent of CT**, etc. Along the left side, there are categories and "**themes**."

- Under **Choose a Map Theme** on the left side of the screen, locate the **Protected Open Space Mapping Project** layer and click on the **round button** next to the layer. Then click the **Refresh Map** button at the bottom of the layer list.

- Nothing happened! That's because you aren't zoomed in enough. The **Theme Visible Bar** (shown below) is critical. You can only see that map when the square ☐ is aligned with the gray or blue rectangles of the **Theme Visible Bar**. **Zoom in** (click that top upward pointing arrow) until this is the case.

- Explore the **Simple Map Viewer**. Some things to try:
    - Move around the map to different places.
    - Zoom in and zoom out.
    - Change the base map to an aerial image.
    - Explore the different map themes.

The **Aerial Imagery Viewer** is similar to the **Simple Map Viewer** except that it is loaded with, you guessed it, aerial imagery!

- Go back to the home page of http://cteco.uconn.edu and find the **Aerial Imagery Viewer**.
- Notice the same tools as the **Simple Map Viewer** along the top.
- The left side is a long list of imagery datasets available for Connecticut. Click on the button next to one and then hit **Refresh Map**.
- Explore the **Aerial Imagery Viewer**. Some things to try:
    - Move around the map to different places.
    - Zoom in and Zoom out.
    - Hide the Base Map.
    - Explore different imagery datasets including:
        - true color, infrared and black and white,
        - different years and
        - different seasons (leaf off vs leaf on).

Data and Resource Guides

CT ECO contains a wealth of information about the maps in the form of Resource Guides and Data Guides. A **Resource Guide** is a comprehensive explanation of the natural resource itself. The **Data Guides** are slightly more data-focused, but both are written to be understandable (brilliant idea!).

- Go back to the CT ECO home page http://cteco.uconn.edu.

- From the Guides dropdown menu, click on the **Resource Guides** link. Explore a couple of **Resource Guides** to see what they contain.

- Try visiting the **Data Guides** link. Explore a couple of **Data Guides** to see what they contain.

Advanced Map Viewers

The Advanced Map Viewers contain more options and tools than the Thematic Map Viewers. Currently there are two Advanced Viewers – the original **Advanced Map Viewer** and the **Connecticut Coastal Hazards Viewer**. These will be upgraded to a different format in the future.

- Go back to the CT ECO home page http://cteco.uconn.edu.

- From the Maps dropdown menu click on **Advanced Map Viewers** and then click the **GO** button.

The **Advanced Map Viewer** contains GIS tools along the top right, location tools along the top left and a very long list of Map Contents along the left. Layers are turned on and off with check boxes. There are two important (and kind of tricky) concepts in the Advanced Map Viewer when it comes to turning on and off layers.

1. Many layers are **Scale Dependent**. This means they won't draw unless you are zoomed in far enough. A layer is grayed out ☑ Protected Open Space Mapping Project if you are not zoomed in enough for it to draw. After zooming in to its scale, the same layer name will change so that it is black and you are able to check it on.
☐ 1997 Municipal and Private Open Space

2. Layers are in Groups. Both the Group **AND** Layer must be checked on for the layer to draw.

   ☑ Watershed
   ⊞ ☑ Major Drainage Basins

- Zoom in to your town of interest.

- In the **Map Contents Window**, check **ON**
  - the **Habitat** Group
    - the **Natural Diversity Database Areas** Layer
    - the **Critical Habitats** Layer

- Click on the **Critical Habitat Communities Heading** to expand it and show three data layers – **Critical Habitat Labels**, **Critical Habitat Units** and **Critical Habitat Communities**. Notice that each of these can be check on and off.

- o Click on the **Critical Habitat Communities** to expand the legend.
  - o Click on it **again** to close the legend
- In the **Map Contents Window**, check **ON**
  - o the **Soils** Group
    - the **Inland Wetland Soils** Layer
  - o the **Water Resource Management** Group
    - the **Aquifer Protection Area** Layer
  - o the **Open Space** Group
    - the **DEP Property** layer
    - the **Protected Open Space Mapping Project** Layer
  - o the **Imagery and Topo** Group
    - turn on **Hillshade 2000**

You have now created a map containing a number of layers that are useful and relative to land management. In the Advanced Viewer, you have the opportunity to combine layers that are appropriate to your application.

Map Services

Map Services are a means of accessing GIS data over the Internet in the form of a dynamic map. This is an advanced section of the CT ECO website meant for GIS software users interested in using map services from CT ECO with their own GIS software and data. However, the introduction of ArcGIS online to the GIS scene has created new utility for map services. As you have heard, ArcGIS Online is a way to make maps using an interface provided by Esri. ArcGIS Online is designed to connect to map services as a way to add data to your maps.
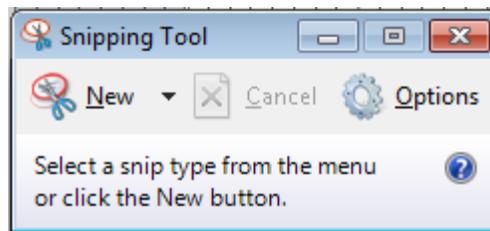
- Visit the **Map Services** page on CT ECO to see a long list of available map series and the data layers they contain. You may want to use these in the ArcGIS Online exercise next.

Appendix: How to Create a Screen Shot

Windows 7 and Vista

Windows 7 and Windows Vista both have a nifty new Snipping Tool. To access it go to

- **Start Menu** > **All Programs** > **Accessories** > **Snipping Tool**.
- Click **New** and **draw a box** around what you want to "take a picture of" on your screen.
- When you release your mouse, your capture will show.
- Use the icons to **Save** or **Copy** your image. If you save, you can choose the file format.

Other Windows (XP, etc.)

To capture a picture of the <u>entire screen</u>, hit the **Print Screen** button. This copies the image to the clipboard so you then **paste** it into a document, such as Powerpoint or Word.

To capture only the <u>active window</u> (the one on top), hold down the **Alt** key while pressing **Print Screen**. Again, this copies the image to the clipboard so you then **paste** it into a document, such as Powerpoint or Word.

On a Mac

The following screen capture shortcuts print and output images on desktop in the format of .PNG (Portable Network Graphics).

- Command + Shift + 3 – Prints the entire screen, everything inside your monitor screen.
- Command + Shift + 4 – Prints the screen according to user selection. By using the following shortcut, your cursor will turned into a cross-hair and allows you to select the area you want to capture.
- Command + Shift + 4 *then* Space – By holding down Command + Shift + 4, your cursor will turn to a **cross-hair**. Then hit the space bar once it will turn to a **camera icon**. This allows you to capture any opened windows, regardless of active or hiding behind.

If you want your screen capture to be kept in clipboard so you can paste them in image editing tools (eg. Photoshop) instead of output as .PNG, just include **Control** while using the shortcut.

- Control + Command + Shift + 3 – Captures entire screen, hold image in clipboard.
- Control + Command + Shift + 4 – Captures screen according to user selection, hold image in clipboard.

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