

WORKSHOP TUTORIAL FOR THE ONLINE GAP DATA EXPLORER TOOL

Online GAP Data Explorer Tool

Funding and support provided by:



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LOGGING ONTO THE ONLINE TOOL

FOR THE PURPOSES OF THIS WORKSHOP A LOGIN/PASSWORD HAS ALREADY BEEN ESTABLISHED:

gapusers/123456

Point your web browser to : www5.basinc.ncsu.edu

You will be directed to login or register. If you have not entered the site before, click “register”:

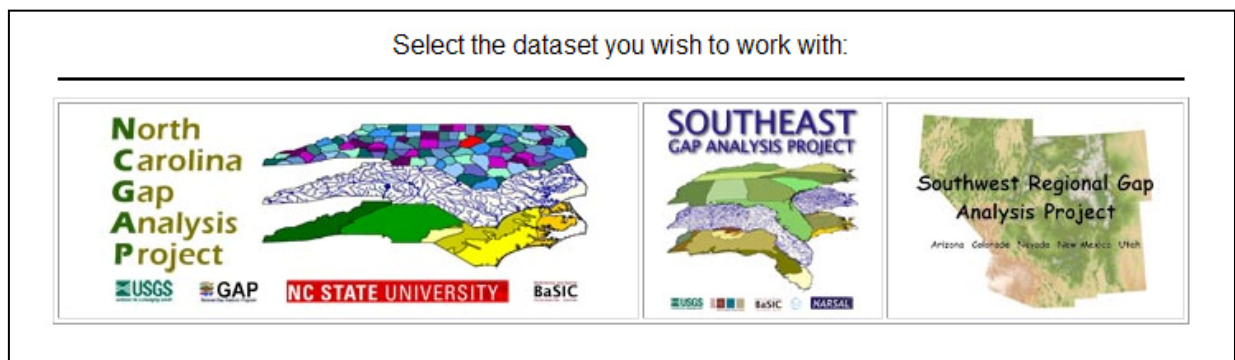


In order to register for the site please select a login name which is all lowercase letters and 6-12 characters long. Also enter your email address and a copy of your long and passcode will be mailed to you.

Note: if you have previously registered with an email address, then it will ignore the entry in the login name field and send a copy of the initial login and passcode.

Once the email is sent, go back to the page and enter your information. You are now free to explore any of the three datasets we have available: NC State GAP, Southeast Regional GAP, or Southwest Regional GAP.

Select the dataset you wish to work with:



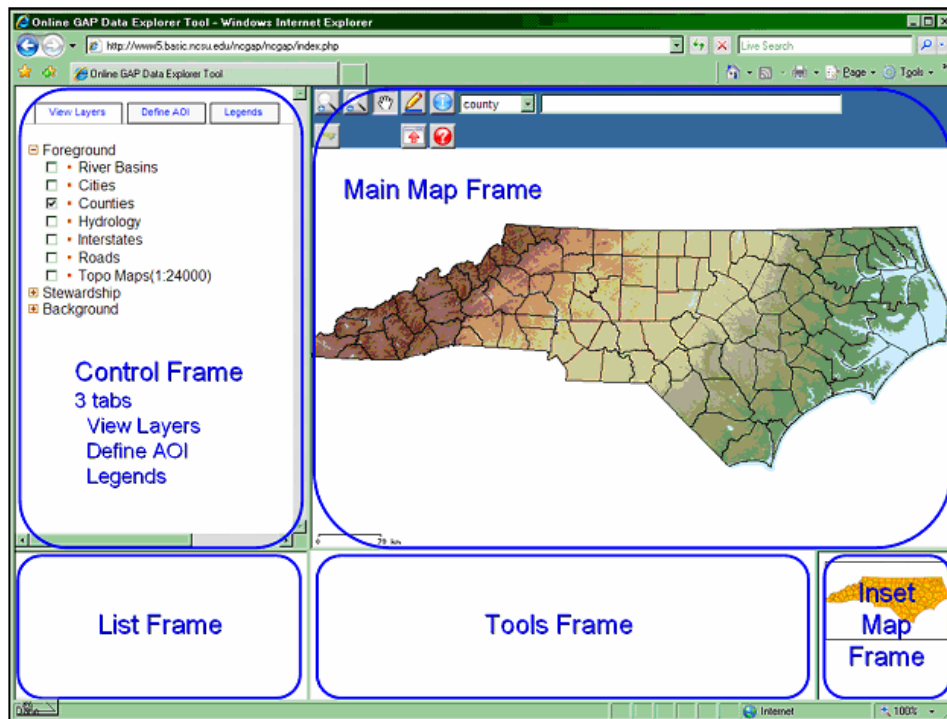
Note: This application is still being developed. Not all data has been entered nor has all programming been completed. You may find links/buttons that do not work. Please advise us of these issues so that we can address them.

EXERCISE 1: GETTING FAMILIAR WITH THE INTERFACE

Tasks:

- Change the main map frame layers.
- Introduce toolbar buttons including, identify, zoom, pan, zoom to extent, etc.

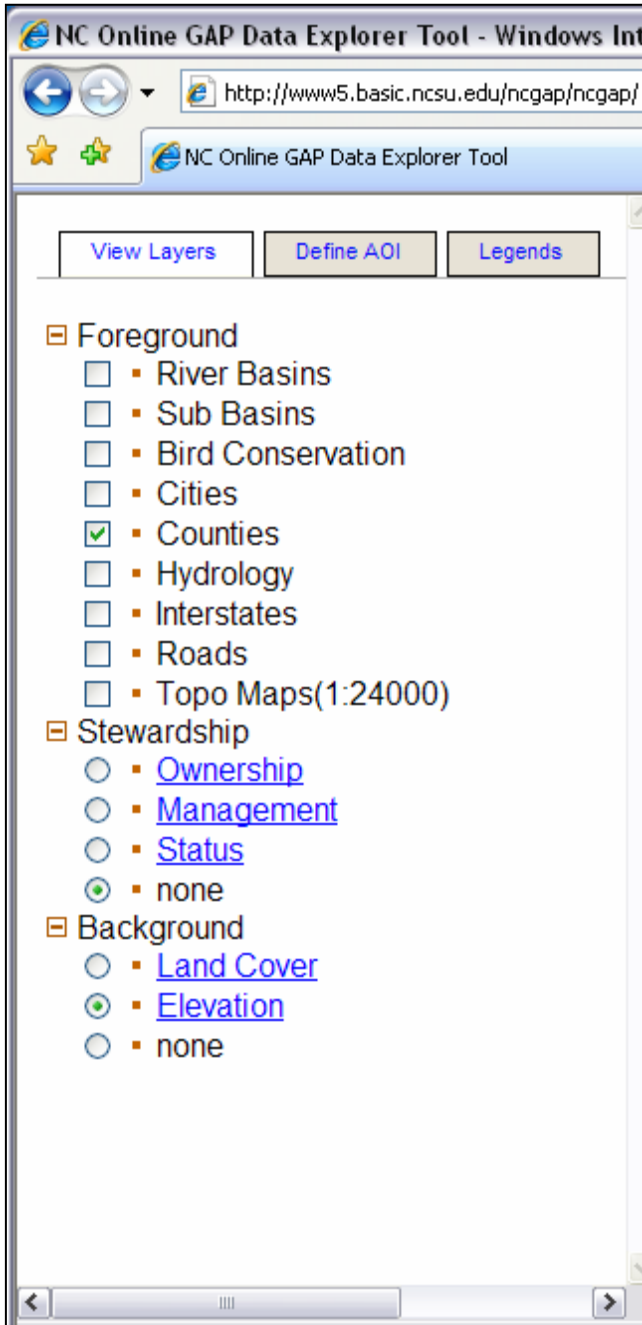
The initial interface has a few basic elements. We will refer to these throughout the exercises:



- 1) **Control Frame** - three tabs are presented in the main dialog frame; View Layers, Define AOI (Area Of Interest), and Legends. It provides the user control over what the map contains through a series of dialogs once an AOI is selected.
- 2) **Main Map Frame** – contains the main map as well as several map tools (pan, zoom, query, etc.).
- 3) **List Frame** – contains the list of species that occur within the AOI.
- 4) **Tools Frame** – contains the tools for individual species once one is selected from the List Frame.
- 5) **Inset Map Frame** – contains full extent view with a polygon depicting where the Main Map located.

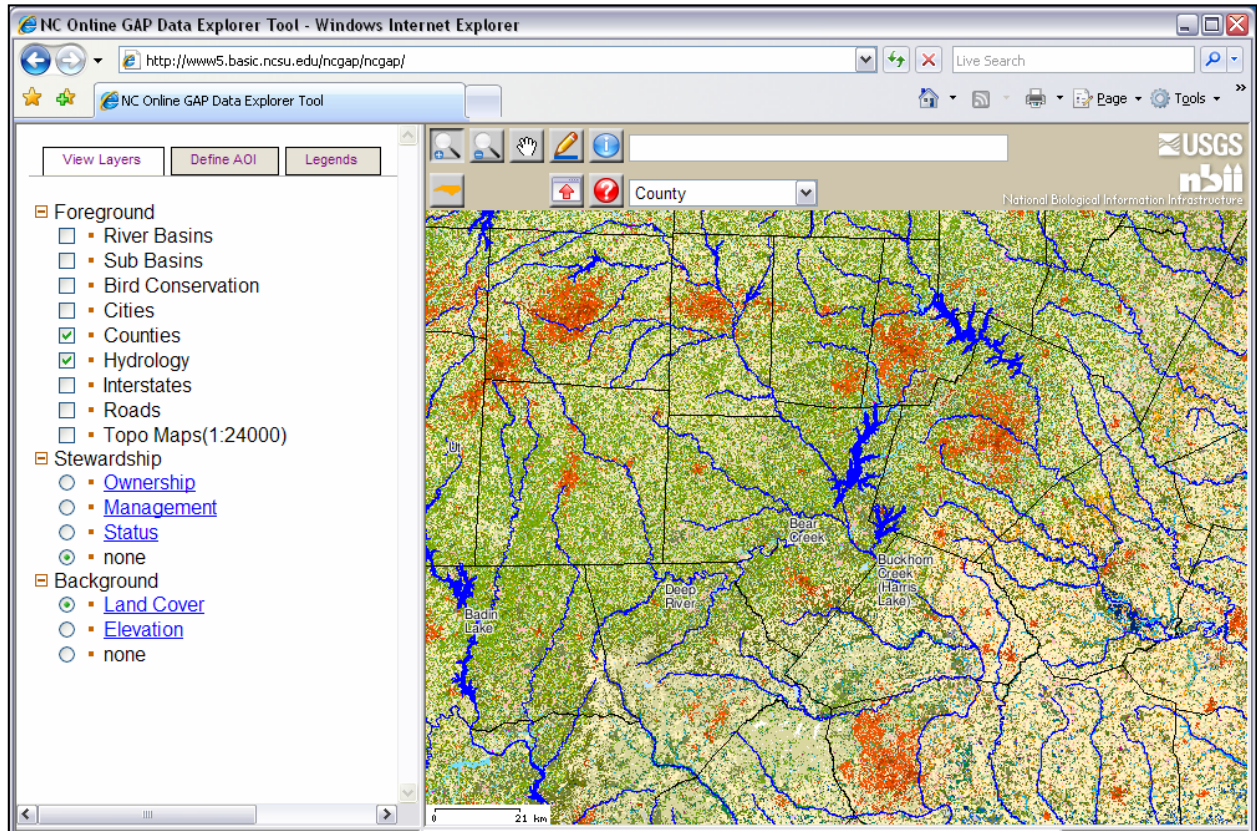
Steps:

1. Click the “View Layers” tab and expand the “Stewardship” and “Background” categories to navigate different foreground, stewardship or background layers.





2. Select the “Hydrology” checkbox under the “Foreground” category. Waterbodies are drawn on the map along with any previously checked layers. Note that you can select and unselect multiple layers in the main map frame as foreground.
3. Select the “Ownership” radio button in the “Stewardship” category. Conservation lands of varying ownership are drawn on top of the other foreground layers selected. You can only select one stewardship category at a time.
4. Click the “Legends” tab. This shows a legend for each of the five layers available in the main map frame including: **Ownership, Management, GAP-Status, Land Cover, and Elevation.** You can click on this tab at any time to bring up the legend as a reference. You can also click on the blue links for each of the five layers in the View Layers tab to bring up the legend for that layer.

- Now make sure you are on the “View Layers” tab and select Land Cover as your background, Counties, and Hydrology as your foreground, and none for your stewardship. Zoom in to the central part of the state using the zoom button in the upper left corner of the main map frame. You should have a main map frame similar to the one below.



- Query a layer (in this case County) by using the drop-down menu.


County  Select the Query button  and then click on the main map frame. The county name will appear in the text bar at the top of the main map frame.

- The other navigation buttons are familiar to other online mapping applications including,

 - Zoom In

 - Zoom Out

 - Pan

 - Zoom to Full Extent

Note: Mousing over any of the buttons lets you know what each button is used for.

EXERCISE 2: GETTING ACQUAINTED WITH THE GAP ONLINE DATA EXPLORER TOOL

Tasks

- Generating reports for various data layers
- Creating an Area of Interest using pre-defined layers

Question: How many hectares are there of “urban low-intensity developed” land cover in Buncombe County and what percentage of total county area does that represent?

Steps:

1. Zoom to the full extent of the state and click the “Define AOI” tab. This will allow you to define your Area(s) of Interest (AOI) for analyses you may want to perform. There are six predefined layers available to create an AOI including;

Ownership

Management

County

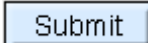
River Basin

River Sub-basin

Bird Conservation Region

Expanding any one of these layer selections provides a list and checkbox to select your AOI. In this example, expand the county layer and select Buncombe County. The main map frame highlights your selected AOI.

Note that it is possible to select multiple counties, river basins etc... as your AOI.

2. Click the “Submit”  button. This sets up subsequent calculations and zooms to your selected AOI.


- Click the “Calculate” button next to Land Cover. A new window opens up with your AOI Land Cover Report. Note that there are 1432.97 hectares of “Urban Low-Intensity Developed” land cover representing 0.84% of the total area of Buncombe County. Note that you can click either of the three other calculate buttons **Management**, **Ownership** or **GAP Status** to create another report for that selected layer.

AOI Land Cover Report

```


-----
RASTER MAP CATEGORY REPORT
LOCATION: n_carolina                               Fri Sep  7 12:48:32 2007
-----
north: 322289.921875      east: 322286.625
REGION south: 190575.765625  west: 257718.921875
      res: 30.00950084    res: 30.00358118
-----
|MASK:none
-----
|MAP: Reclass of ac1519793calc_lc in webserv (ac1519793recl_lc in webserv)
-----
|
| Category Information
|-----|-----|-----|-----|
| #|description | acres| hectares| cover|
|-----|-----|-----|-----|
| 8|Open Water . . . . .| 3057.42| 1237.32| 0.72|
| 36|Successional Deciduous Forest. . . . .| 1589.00| 643.06| 0.38|
|180|Agricultural Fields. . . . .| 5285.18| 2138.88| 1.25|
|202|Residential Urban. . . . .| 32,263.51| 13,056.86| 7.64|
|203|Urban Low-Intensity Developed. . . . .| 3540.88| 1432.97| 0.84|
|204|Urban High-Intensity Developed and . . . . .| 12,190.73| 4933.52| 2.88|
| |Transportation Corridor
|205|Agricultural Pasture/Hay and Natural . . . . .| 86,286.46| 34,919.65| 20.42|
| |Herbaceous
|213|Barren (quarries, strip mines, and gravel. . . . .| 700.17| 283.35| 0.17|
| | (pits)
| | | | | |
|214|Barren (bare rock and sand). . . . .| 3590.72| 1453.14| 0.85|
|228|Piedmont Dry-Mesic Oak and Hardwood Forests. | 374.22| 151.45| 0.09|
|239|Piedmont Emergent Vegetation. . . . .| 43.38| 17.56| 0.01|
|267|Riverbank Shrublands . . . . .| 111.47| 45.11| 0.03|
|384|Piedmont Mixed Bottomland Forests. . . . .| 1117.33| 452.18| 0.26|
|517|Hemlock Floodplain Forest. . . . .| 6330.64| 2561.98| 1.50|
|518|Dry Mesic Oak Forest . . . . .| 133,615.23| 54,073.36| 31.62|
|519|Dry Mesic Mixed Forest . . . . .| 32,695.13| 13,231.54| 7.74|
|520|Mesic Hardwood Forest. . . . .| 5096.73| 2062.62| 1.21|
|521|Spruce/Fir Forest. . . . .| 1660.87| 672.14| 0.39|
|522|Northern Hardwood Forest . . . . .| 2190.83| 886.62| 0.52|
|523|Grassy Bald. . . . .| 17.35| 7.02| 0.00|
|524|Shrub Bald . . . . .| 4998.79| 1780.17| 1.04|
|525|Appalachian Oak Forest . . . . .| 32,659.30| 13,214.61| 7.73|
|526|Appalachian Cove Forest. . . . .| 32,387.65| 13,107.10| 7.66|
|527|Appalachian Hemlock. . . . .| 8108.54| 3281.48| 1.92|
|528|Appalachian Xeric Pine Forest. . . . .| 7059.73| 2857.04| 1.67|
|529|Appalachian Xeric Mixed Forest . . . . .| 768.03| 310.82| 0.18|
|530|Appalachian Xeric Deciduous Forest . . . . .| 5430.68| 2197.77| 1.29|
|534|Appalachian Wet Shrubland/ Herbaceous. . . . .| 2.00| 0.81| 0.00|
|535|Talus/Outcrop/Cliffs. . . . .| 0.67| 0.27| 0.00|
|-----|-----|-----|-----|
|TOTAL |422,566.64|171,010.38|100.00|
-----

```







- Click the red X button  to cancel your AOI and reset the Online Tool.

EXERCISE3: CREATING A CUSTOM AREA OF INTEREST

Tasks:

- Create a custom Area Of Interest using the “Draw Custom”  tool.
- Upload a polygon shape file as your Area Of Interest.

Steps:

1. Cancel any previously selected AOIs by clicking the red X button. 
2. Click the “Define AOI” tab and Zoom in to any area within the state.
3. Click on the “Custom” button. 
4. Click the “Draw Custom”  button.
5. Place the cursor in the main map frame and left click each ‘node’ of your custom AOI to create a polygon defining your area of interest. Note if you don’t like the polygon you create, you can always click the “Reset” button  in the data view frame.
6. Once your polygon is defined, click on the “Submit”  button to begin AOI calculation setup. The main map frame zooms to your custom AOI polygon. You can now calculate **Land cover, Management, Ownership or GAP Status** for your custom AOI.
7. Click the red X button  to cancel your AOI.
8. Click the upload link to open a new window to enter three required shapefile components that define your custom AOI.

Select *.shp, *.shx, and *.prj files to upload shapfile for your AOI. Program will reproject into proper co-ordinates.

select SHP file:

select SHX file:

select PRJ file:

Desktop/SouthMtns.*

EXERCISE 4: VIEWING AND QUERYING THE VERTEBRATE SPECIES DATA


Questions:

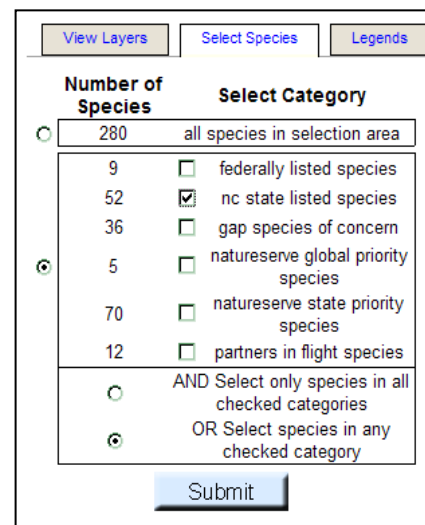
1. What do GAP predicted species distribution maps look like?
2. How many vertebrate species are predicted to occur in the Upper Neuse River sub-basin?
3. What levels of protection exist for the Black Vulture in the Upper Neuse?
4. Can I create a map of state listed amphibian species richness?

Tasks:

- Creating an Area of Interest using river sub-basins.
- Getting a list of species predicted to occur in an AOI.
- Generating a species report and an AOI habitat protection report.
- Using the Multiple Species Mode to generate richness maps.

Steps:

1. Cancel any previous AOIs and zoom to the full state extent.
2. From the Define AOI tab, expand “sub-basin.” Select the Upper Neuse sub-basin and click the submit button. The map frame zooms to the Upper Neuse River sub-basin.
3. Click the “Select Species” button.  The “AOI Info” tab turns into the “Select Species” tab. There are 280 species whose predicted distributions occur in the Upper Neuse sub-basin.
4. The species listed are categorized by federally listed, state listed, GAP species of concern, NatureServe Global Priority, NatureServe State Priority, and Partners in Flight Species. Any combination of subcategories can be selected through the use of AND/OR logical operands.
5. Select ‘NC State Listed Species’ and click “Submit”. A list of all the species shows up in the list frame at the lower left corner.



Number of Species	Select Category
280	<input type="radio"/> all species in selection area
9	<input type="checkbox"/> federally listed species
52	<input checked="" type="checkbox"/> nc state listed species
36	<input type="checkbox"/> gap species of concern
5	<input type="checkbox"/> natureserve global priority species
70	<input type="checkbox"/> natureserve state priority species
12	<input type="checkbox"/> partners in flight species
<input type="radio"/> AND Select only species in all checked categories	
<input checked="" type="radio"/> OR Select species in any checked category	

6. Unselect all but the bird species in the checkbox list. The “Single Species Mode” radio button is selected by default. Keep it selected and click the “Submit” button. The list in the list frame is reduced to only the birds.

7. Select Black Vulture from the list and click the “Select” button. The predicted distribution for Black Vulture is drawn in the main map frame with red representing predicted presence and white representing predicted absence.

Species Group	Total Count	Display
Avian Species	22	<input checked="" type="checkbox"/>
Mammalian Species	9	<input type="checkbox"/>
Reptilian Species	12	<input type="checkbox"/>
Amphibian Species	9	<input type="checkbox"/>

Single species Mode
 Multiple Species Mode

Double-crested cormorant

Anhinga

Least bittern

Great blue heron

Yellow-crowned night-heron

American black duck

USGS
nbi
National Biological Information Infrastructure

Species Group	Total Count	Display
Avian Species	22	<input checked="" type="checkbox"/>
Mammalian Species	9	<input type="checkbox"/>
Reptilian Species	12	<input type="checkbox"/>
Amphibian Species	9	<input type="checkbox"/>

Single species Mode
 Multiple Species Mode

American black duck

Black vulture

Mississippi kite

Bald eagle

Sharp-shinned hawk

Cooper's hawk

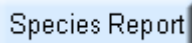
Current Species:

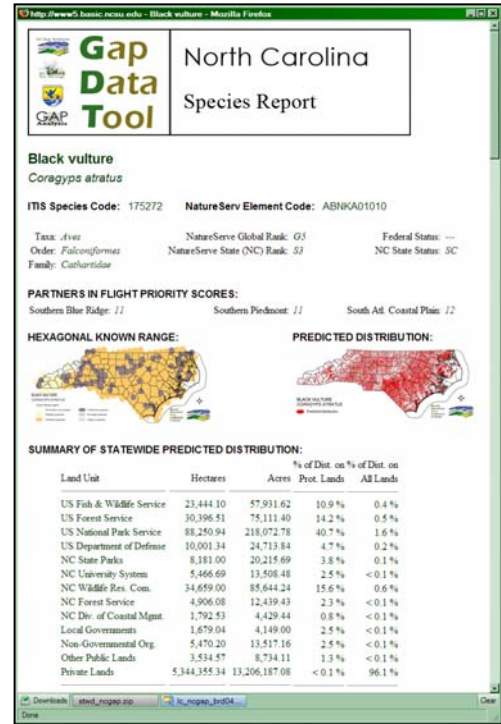
Predicted Dist.
 Ownership of Habitat

Habitat Types
 Protection of Habitat

Hexagonal Range Maps Management of Habitat

Several other species specific tools are presented in the Tool Frame including Habitat Type, Known Range, Stewardship, Species Reports and Listing Status. In addition, the user can quantify several of those data layers for the AOI.

8. Generate a species report for the Black Vulture by clicking “Species Report”  in the tools frame. A new window opens with a report summarizing statewide predicted distribution by management, a description of habitat, a description of map units utilized in model development, and a list of literature citations, among other things.

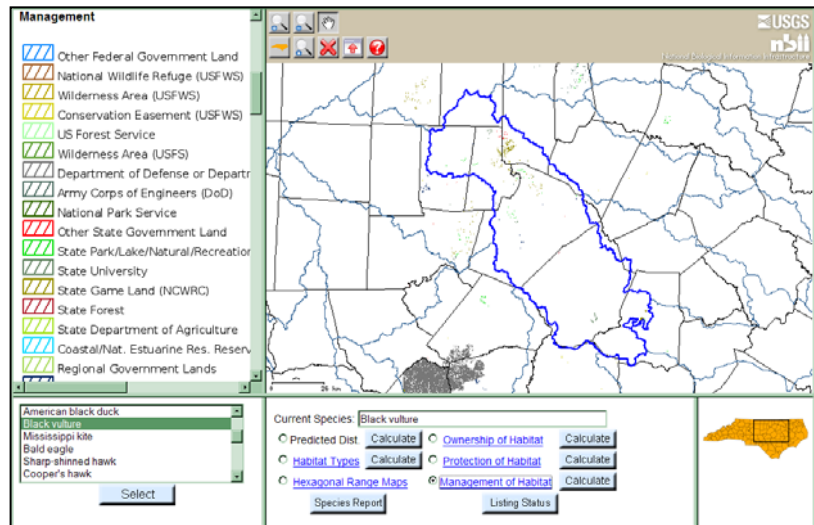


9. In the tools frame, select the radio button for ‘Management of Habitat’. The main map frame the management categories of the predicted distribution of Black Vulture for lands throughout the Upper Neuse sub-basin.

10. Click the the blue Management of Habitat link and the legend for that layer will show up in the control frame.

11. Click the “Calculate” button next to “Management of Habitat” and an AOI report is generated summarizing management status for the Black Vulture in the Upper Neuse River sub-basin.

12. In the control frame, scroll to the top and click the “Select Species” tab to return to the species count by taxon.



Note that you can go back to the full species list selection by clicking the

 button.

13. To generate a species richness map for state listed amphibians in the Upper Neuse, select Multiple Species Mode, check only the Amphibian taxa, and click submit. A list of amphibians species predicted to occur in your AOI is displayed in the list frame.
14. Select all the species by clicking and dragging down the list. Click the select button. The list of amphibians shows up in the tools frame.
15. Click the Richness Map button to produce a map of amphibian species richness for the Upper Neuse. White indicates predicted absence of these 9 species, while shades of pink to red indicate increasing richness.

The screenshot shows a web-based GIS interface with the following components:

- Top Panel:** Includes navigation icons (home, back, forward, search, refresh) and logos for USGS and nSII (National Biological Information Infrastructure).
- Left Panel (Species Selection):**

Species Group	Total Count	Display
Avian Species	22	<input type="checkbox"/>
Mammalian Species	9	<input type="checkbox"/>
Reptilian Species	12	<input type="checkbox"/>
Amphibian Species	9	<input checked="" type="checkbox"/>

Buttons: Back, Submit

Mode Selection:

 - Single species Mode
 - Multiple Species Mode
- Map View:** A map of the Upper Neuse region with a blue boundary. The map is color-coded by species richness, with white indicating absence and shades of pink to red indicating increasing richness.
- Bottom Panel (Species Lists):**
 - Left List (Selected):** Four-toed salamander, Neuse river waterdog, Oak toad, Pine barrens treefrog, Gray treefrog, Ornate chorus frog. Button: Select
 - Right List (Available):** Mabee's salamander, Mole salamander, Tiger salamander, Four-toed salamander, Neuse river waterdog, Oak toad, Pine barrens treefrog.
- Bottom Right Panel:** Buttons for Richness Map, Reset, and Calculate. Includes a small map of North Carolina with a yellow box highlighting the study area.