LAB #8

An introduction to USDA Forest Inventory and Analysis (FIA) Data

How much forest is there in parts of NY State and how fast is it growing?

Purpose:

To provide experience in accessing and using USDA FIA data to quantify and describe the forest resources of New York State.

To provide experience in estimating the components of stand growth.

Background:

Continuous forest inventory plots are permanent plots, usually systematically spaced over the entire forest, used to measure the status and change in forest resources over a designated area. The USDA Forest Inventory and Analysis (FIA) program collects, analyzes, and reports information on the status and trends of America's forests. This information can be used in many ways, such as in evaluating wildlife habitat conditions, assessing the sustainability of ecosystem management practices, and supporting planning and decisionmaking activities undertaken by public and private enterprises.

Equipment Required:

- Computer with internet access and browser software

Task:

1) Select one of the following three Forest Survey Units within New York State: **Nothern Adirondacks**, **Catskills**, or **Southwest Highlands**.

Northern Adirondacks	Catskills	Southwest Highlands
Clinton	Delaware	Allegany
Franklin	Schoharie	Cattaraugus
Jefferson	Sullivan	Chautauqua
St. Lawrence	Ulster	Steuben

2) Use the online Forest Inventory Mapmaker program to access the FIA data set and derive the following characteristics of the forest resource for your selected region (fill in Tables 1-6 on pages 6-7 on this assignment document):

Table 1: Total private forest land (acres) and private timberland (acres) by county in 1993 and 2005

Table 2: Species distribution on private timberland in total volume of growing stock (ft^3) by county in 1993

Table 3: Species distribution on private timberland in total volume of growing stock (ft^3) by county in 2005

Table 4: Species distribution on private timberland in mortality of growing stock (ft^3) by county in 2005

Table 5: Species distribution on private timberland in removals of growing stock (ft^3) by county in 2005

Table 6: Species distribution on private timberland in net growth of growing stock (ft^3) by county in 2005

3) Using the information derived in Step (2) above, derive the following forest growth for each county and the whole of your selected region and enter your results in Table 7:
   - Gross Growth (ft^3/acre/yr) on private timberland from 1993 to 2005
   - Net Growth (ft^3/acre/yr) on private timberland from 1993 to 2005
   - Production (ft^3/acre/yr) on private timberland from 1993 to 2005
   - Ratio of Net Growth to Removals
   - Produce a graph (pie chard or bar chart) of the species distribution by volume in 2005.

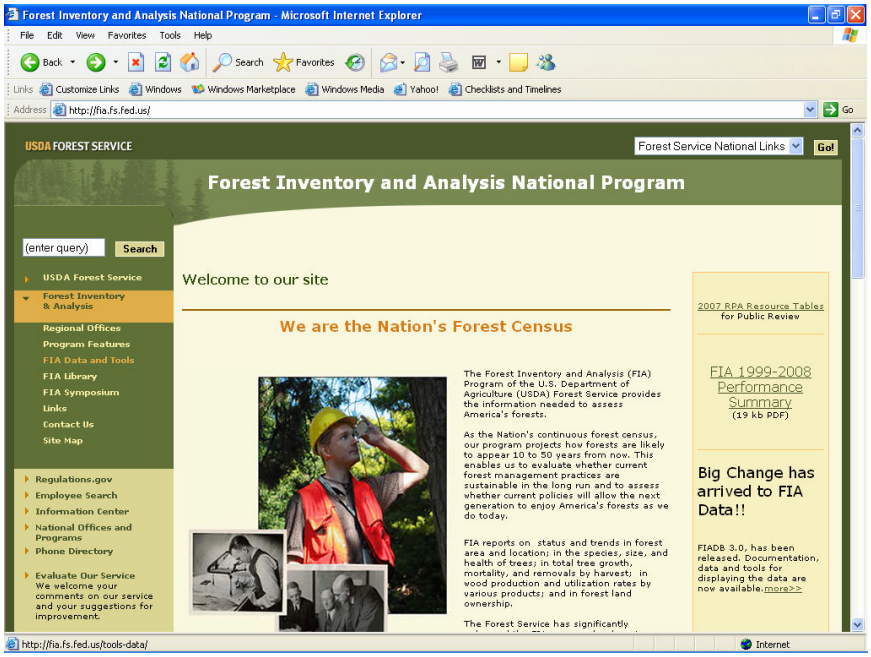
Critical Thinking Questions:

1) How is the amount of forest land and timberland changing in that part of NY State which you selected? What factors do you feel are contributing to this change?
2) Which species is growing the fastest (ft^3/ac/yr) for the region you selected? Comment on whether these results agree with statements you may have heard in some of your other forestry courses.
3) How is the species distribution by volume changing over time? What factors do you feel are contributing to this change?
4) Based on the ratio of net growth to removals, comment on the rate of forest harvesting relative to the availability of growth stock. Are there any species which are being harvested at relatively higher rate (overharvested?) compared to their growth? Which ones?
5) Ingrowth and accretion are not attributes which are explicitely available from the MapMaker program. How could you derive estimates of ingrowth and accretion from FIA data (hint, look through the list of Attributes of Interest and the FIA definitions provided on the last page)?
6) What portions of the FIA Inventory MapMaker interface did you find (a) easy and (b) difficult to use?
7) What recommendations would you make for improving the interface?

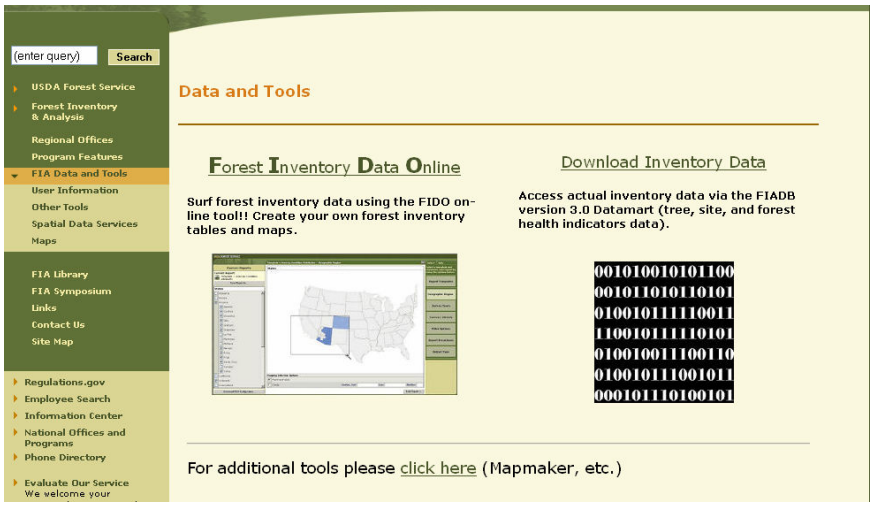
Procedures:

Start up Internet Explorer and goto

http://fia.fs.fed.us



Scroll down and Click on the



For additional tools please click here (Mapmaker, etc.)

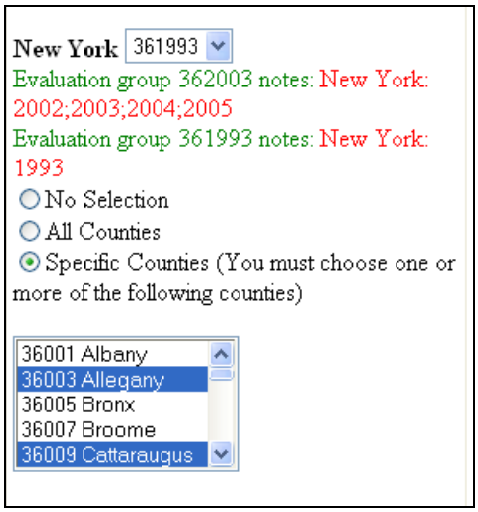
Select the **Custon Tables** option

The user needs to input the following four steps to retrieve the desired information:

1. geographic area of interest (state/county retrieval or radius retrieval)
2. attribute of interest (timberland area, number of trees, growing-stock volume, etc.)
3. optional filters (for restricting the query to a specific ownership, species, etc.
4. classification variables to be used for columns and rows and the web application generates the resulting table.

Step 1:

Scroll down the list of states, locate **New York**, Select the 1993 data, click on **Specific Counties**, and locate the four counties for your selected region



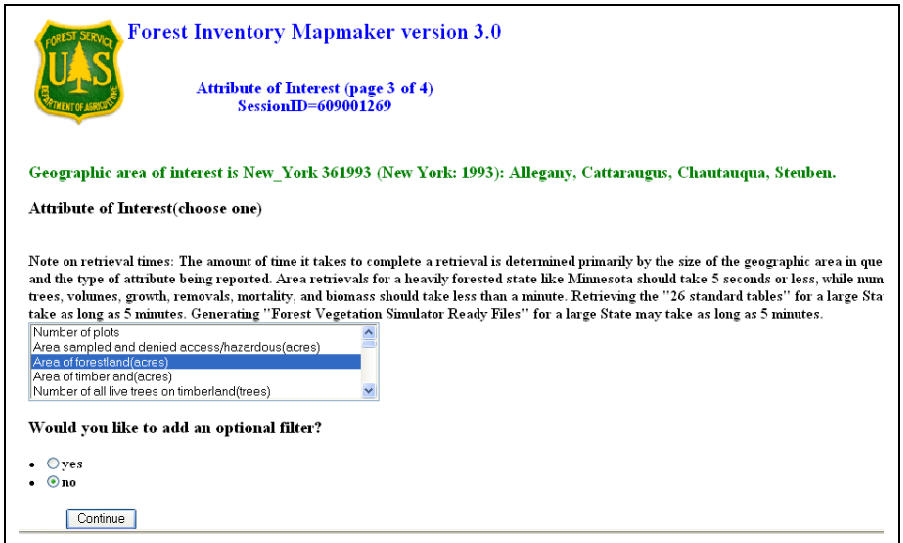
Step 2:

Select attribute of interest

e.g., **Area of Forest Land**

Step 3:

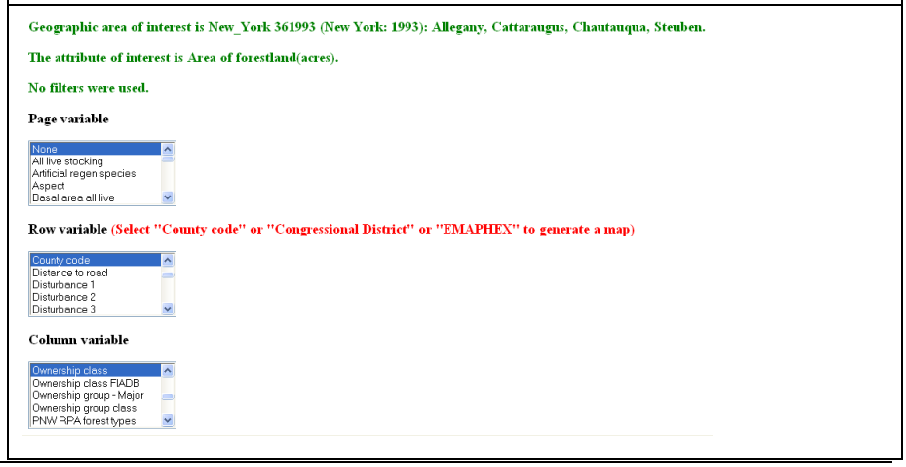
For now, don't apply any filter to the data



Step 4:

Control display of resulting summary table

Select **County Code** as the row variable and **Ownership class** as the column variable



Click Continue and then View the resulting table as a html file.

DO NOT SIMPLY PRINT OUT THE TABLES FROM THE WEB BROWSER, COPY AND PASTE THE INFORMATION INTO THE BLANK TABLES OF THIS DOCUMENT

Go back in the web browser and change the variable of interest in Step 2 to Timberland and repeat steps 3 and 4.

You will need to run the MapMaker program a number of times to obtain the information needed to complete this lab. Use the table below as a guide to defining the parameters of each analysis.

Run #	Output table	Data year	Variable of interest	Filter	Row variable	Column variable
1	Table 1	1993	Area of Forest land (acres)	None	County code	Ownership class
2	Table 1	1993	Area of Timberland (acres)	None	County code	Ownership class
3	Table 1	2005	Area of Forest land (acres)	None	County code	Ownership class
4	Table 1	2005	Area of Timberland (acres)	None	County code	Ownership class
5	Table 2	1993	Volume of growing stock on timberland (ft^3)	Ownership class = Private	Species group	County code
6	Table 3	2005	Volume of growing stock on timberland (ft^3)	Ownership class = Private	Species group	County code
7	Table 4	2005	Mortality of growing stock on timberland (ft^3)	Ownership class = Private	Species group	County code
8	Table 5	2005	Removals of growing stock on timberland (ft^3)	Ownership class = Private	Species group	County code
9	Table 6	2005	Net growth of growing stock on timberland (ft^3)	Ownership class = Private	Species group	County code

Output tables

Table 1: Total private forest land (acres) and private timberland (acres) by county in 1993 and 2005

	Private forest land		Private timberland	
County	1993	2005	1993	2005
Total				

Table 2: Species distribution on private timberland in total volume of growing stock (ft^3) by county in 1993

	County				
Species group					TOTAL
White and red pine					
Hemlock					
Other softwoods					
Hard maple					
Soft maple					
Select red oak					
Other oaks					
Beech					
Ash					
Other hardwoods					
TOTAL					

Table 3: Species distribution on private timberland in total volume of growing stock (ft^3) by county in 2005

	County				
Species group					TOTAL
White and red pine					
Hemlock					
Other softwoods					
Hard maple					
Soft maple					
Select red oak					
Other oaks					
Beech					
Ash					
Other hardwoods					
TOTAL					

Table 4: Species distribution on private timberland in mortality of growing stock (ft^3) by county in 2005

	County				
Species group					TOTAL
White and red pine					
Hemlock					
Other softwoods					
Hard maple					
Soft maple					
Select red oak					
Other oaks					
Beech					
Ash					
Other hardwoods					
TOTAL					

Table 5: Species distribution on private timberland in removals of growing stock (ft^3) by county in 2005

	County				
Species group					TOTAL
White and red pine					
Hemlock					
Other softwoods					
Hard maple					
Soft maple					
Select red oak					
Other oaks					
Beech					
Ash					
Other hardwoods					
TOTAL					

Table 6: Species distribution on private timberland in net growth of growing stock (ft^3) by county in 2005

	County				
Species group					TOTAL
White and red pine					
Hemlock					
Other softwoods					
Hard maple					
Soft maple					
Select red oak					
Other oaks					
Beech					
Ash					
Other hardwoods					
TOTAL					

Table 7: Forest growth (ft^3/acre/yr) on private timberland for selected counties within NY State from 1993 to 2005

County	Gross Growth	Net Growth	Production	Ratio of Net Growth to Removals
TOTAL				

Report:

Each student will turn in a print out of their data and results sheet by the end of the lab.

FIA Definitions

Accretion: The estimated net growth on growing-stock trees that were measured during the previous inventory (divided by the number of growing seasons between surveys to produce average annual accretion). It does not include the growth on trees that were cut during the period, nor those trees that died.

Forest land: Land that is at least 10 percent stocked with trees of any size, or that formerly had such tree cover and is not currently developed for a nonforest use. The minimum area for classification of forest land is one acre. The components that make up forest land are timberland and all noncommercial forest land (see definitions).

Gross growth: The sum of accretion and ingrowth.

Growing-stock volume: Net volume, in cubic feet, of growing-stock trees 5.0 inches d.b.h. and larger from a 1-foot stump to a minimum 4.0-inch top diameter outside bark of the central stem, or to the point where the central stem breaks into limbs. Net volume equals gross volume less deduction for cull.

Ingrowth: The estimated net volume of growing-stock trees that became 5.0 inches d.b.h. or larger during the period between inventories . Also, the estimated net volume of growing-stock trees 5.0 inches d.b.h. and larger that are growing on land that was reclassified from noncommercial forest land or nonforest land to timberland.

Net growth: The change, resulting from natural causes, in growing-stock volume during the period between surveys (divided by the number of growing seasons to produce average annual net growth). Components of net growth are ingrowth plus accretion, minus mortality, minus cull increment, plus cull decrement.

Removals: The net growing-stock volume harvested or killed in logging, cultural operations (such as timber stand improvement) or land clearing, and the net growing-stock volume neither harvested nor killed but growing on land that was reclassified from timberland to noncommercial forest land or nonforest land during the period between surveys. This volume is divided by the number of growing seasons to produce average annual removals.

Timberland: Forest land producing or capable of producing crops of industrial wood (more than 20 cubic feet per acre per year) and not withdrawn from timber utilization (formerly known as commercial forest land).