

Northern Forest Inventory and Analysis Program

Explore the Possibilities



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Department of
Agriculture**

**PREPARED BY
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Maybe you're a wildlife biologist trying to assess the carrying capacity for white-tail deer in Pennsylvania. Or, maybe you're studying global warming



and would like to estimate carbon storage in forests. Or, possibly you own a small sawmill specializing in products from a specific tree species and would like to know how much volume is available for your operation. A good place to go for answers to these and other questions about the forest resources of the Northern States is the Forest Inventory and Analysis (FIA) unit at the Northern Research Station (NRS). Stocked with a large amount of data and many information retrieval systems, FIA is a one-stop shop of facts and figures on the current status, past changes, and future potential of northern forests. Our dedicated staff of data collectors, resource analysts, and inventory specialists would like you to know more about who we are, what kinds of data we collect, and how YOU can access these data and explore the possibilities for using them.

FIA Program

FIA is a national program of the Forest Service, U.S. Department of Agriculture, that conducts and maintains comprehensive inventories of the forest resources in the United States. In cooperation with State forestry agencies, the NRS-FIA unit is responsible for inventorying more than 174 million acres of forest land spread across 24 states. These forests encompass the diverse ecosystems of the Great



Plains, Lake, Central, Mid-Atlantic, and New England States.

NRS-FIA began periodic inventories in the 1930s, and most of our states have been inventoried at least five times since then. In 1998, Congress mandated that we switch

from periodic inventories to annual inventories. In an annual inventory, about 10 to 20 percent of the plots in a state are visited every year and each plot is revisited every 5 to 10 years. This annual inventory system allows for complete regional coverage every year and a 5-year reporting cycle.

Three-Phase Sample

We inventory the northern forests using a three-phase sample. In Phase 1, we use satellite imagery to determine forest area in each state and determine which plots are measured in the field. In Phase 2 (field plots), we visit a selection of the forested acres identified in Phase 1 to further describe the forests. In Phase 3, we visit a subsample of the Phase 2 plots during the summer to collect additional information when foliage is present.



On all our Phase 2 plots, we gather quantitative and qualitative measurements that describe

- General land use
- Changes in land use and stand characteristics
- Tree species, diameter, height, damage, amount of rotten or missing wood, and tree quality
- Counts of tree regeneration
- Stand characteristics, such as forest type, stand age, and disturbance
- Estimates of growth, mortality, and removals



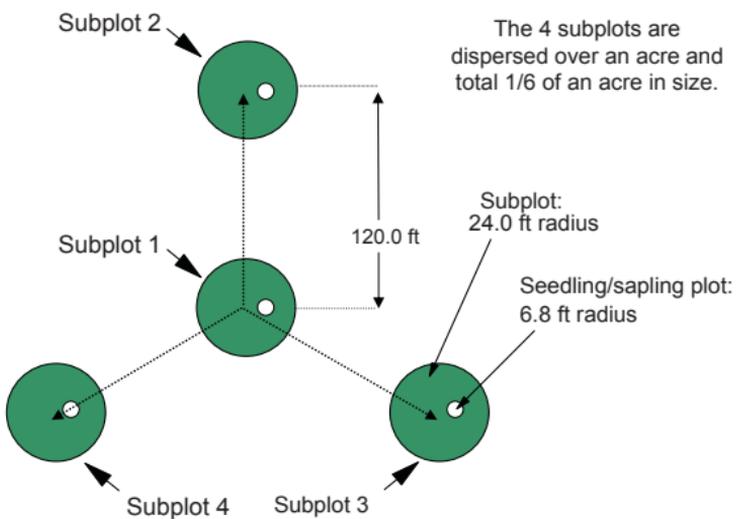
On our Phase 3 plots, we collect a more extensive set of forest health data from May through September. The measurements collected during the summer can be grouped into the following categories:

- Crown conditions—generally, good crown conditions are signs of vigorous trees and poor crown conditions are symptoms of trees under stress.
- Soil chemical analyses—collecting then analyzing soil samples is useful in estimating site fertility.
- Invasive plants inventory—monitors the abundance, distribution, and changes in abundance and distribution of invasive species over time.
- Advanced tree seedling regeneration data—analyzes the regeneration adequacy and provides an indication of the expected future forest composition.
- Vegetation diversity and structure—provides the composition of vegetation structure by growth habit (trees, shrubs, vines, forbs, ferns, and graminoids) and height classes for vascular plants.
- Down woody material—estimating the amount and size of dead wood on the forest floor is useful in determining fire fuel potential, forest floor biomass, and carbon stores. When combined with the vegetation structure data, down woody material can be used in wildlife habitat models too.



The FIA unit has a quality assurance program that covers all aspects of data collection and calculation. Data collected in the field must fall within acceptable tolerances for measurement error, and sampling errors are available for population estimates.

Phase 2 & Phase 3 Plot Design



Forest/Landscape Assessments

FIA is a forest inventory system that yields meaningful information at the multicounty, State, and larger landscape scales. Data are collected consistently using standardized measurement techniques and definitions. Through geographic information systems, users can combine their data with FIA data to conduct integrated analyses. Many of the possibilities go beyond the more traditional timber inventories to include potential items as:

- Wildlife habitat suitability indices
- Carbon sequestration modeling
- Old-growth forest assessments
- Forest fragmentation/urbanization issues
- Timber availability assessments
- Fire hazard rating/fuel loading models
- Forest insect and disease impact assessments



Beyond Forest Inventory

Because the forest inventory alone may not sufficiently explain the changes in the region's forests over time, FIA also conducts special studies to quantify and characterize several of the major influences shaping the forests and economies of the region:

- Timber products output studies to monitor the composition, size, and locations of the primary wood-using industry; its use of roundwood (logs) by species, product, and geographic location; and its generation and disposition of mill residues

- Logging utilization studies to characterize the sites logged, the trees cut, the products taken, and the residues left behind.
- The Family Forest Research Center studies characteristics of forest landowners to determine their ownership objectives, management practices, and future intentions for their forest property.
- The Northern Inventory and Monitoring Applications Center develops leading-edge forest ecosystem monitoring methods and tools to help the FIA program and other organizations monitor forests and ensure that results are compatible across the landscape.
- National carbon and greenhouse gas inventories study the role of the Nation's forests in the sequestration of atmospheric carbon dioxide and storage of carbon. Estimating the amounts of carbon stored in ecosystem pools and projecting these estimates into the future will meet critical needs in studying long-term climate change.



Sorting Through All the Information

FIA units from across the country work together to establish and maintain common databases and make tools available to access data through the Internet. These tools allow users to get data as well as produce customized tables and maps. In the new Forest Inventory Data Online (FIDO) tool, users select from a list of standard retrieval templates for forest area, volume, tree counts, and other measures, and then customize these templates to meet their needs.



Other tools work with national timber product output data for each state and county in the U.S. This data set consists of variables that describe the roundwood products harvested for each

county, the logging residues left behind, the timber otherwise removed, and the wood and bark residues generated by its primary wood-using mills.

FIA has a Spatial Data Services team that assists in data access and interpretation. This team provides customers with plot information in a way that does not compromise the security of plot locations or the privacy of landowners.

We also continue to develop, publish, and distribute reports that are available on request and in PDF format on the Internet.

For More Information on FIA

To learn more about FIA or the utility of these tools for your application, please contact us at: USDA Forest Service Forest Inventory and Analysis Program

Northern Research Station
1992 Folwell Ave.
St. Paul, MN 55108

Telephone: (651) 649-5139

Email (via our home page):
<http://www.nrs.fs.fed.us/fia/>



You may also visit our national FIA Web page at:
<http://www.fia.fs.fed.us>

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