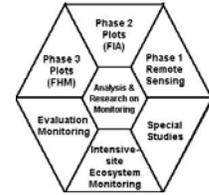




Forest Inventory and Analysis Program Components



FIA

Fact Sheet Series

FHM

Coverage. The legislative mandate calls for a single inventory program to include all forested lands in the US, regardless of ownership or availability for forest harvesting. The new program includes all forest land in the lower 48 States plus Alaska, Hawaii, and all of the territories and possessions of the US. It covers all public and private forest land including reserved areas, wilderness, National Parks, defense installations, and National Forests.

Sampling Intensity. The legislative mandate requires measurement of 20% of the plots in each State, each year, to be achieved through a federal-state partnership. We have agreed that the base federal program to be implemented in all states will include sampling levels of 15% per year in the eastern US and 10% per year in the western US (where the program is significantly more expensive to implement due to difficulty of access).

The plot intensity assumes that enough plots are measured to achieve standard errors of area and volume estimates, which are consistent with historical levels. Individual States may choose to increase the sample intensity by installing additional plots, at their own expense, in order to increase the precision. Those costs and outcomes are not included in the budget projections for FIA. However, one of the advantages of the proposed annual inventory system is that it will provide maximum flexibility to States to engage in such intensifications.

A nationally uniform cell grid has been superimposed over our existing set of sample locations, in order to provide a uniform basis for determining the annual set of measurement plots. This will

eliminate existing discrepancies in the sample intensity between States and regions, and will provide a standard frame for integrating FIA and FHM and for linking the program's other data sources such as satellite imagery, spatial models, and other existing surveys.

Core Variables. The new inventory program includes a nationally consistent set of core measurements, collected on a standard field plot, with data managed, processed, analyzed, and reported uniformly. The set includes ecological variables not previously collected consistently in all regions. Because a nationally consistent set of core variables is needed to respond to the legislative mandate and address customer information needs across scales, field units use the national definitions and measurement protocols established for the core variables on all forest land. Field units may also add additional measures, conduct special analyses, and prepare reports that respond to specific customer needs. The budget estimates for this new program includes funds for each field location to support some enhanced data collection for local customer needs. Forest health data will continue to be collected on a shorter cycle and subset of plots to maintain the present level of effort in the FHM program.

Data Collection. Data are collected in a variety of ways, including by permanent or temporary Federal employees; State employees through cooperative agreements; or non-government sources (universities, private contractors, etc.) via contract. The FIA units have experience with all of these options. Use of contractors and increased use of State or other partner employees will be considered, but for budgeting purposes current cost estimates

associated with Federal employee salaries are used. Actual staffing plans are developed by each field unit, providing flexibility to take advantage of local conditions. All field data collectors receive standardized training and must pass a certification test before collecting data.

Quality Assurance. The new program will extend our present Quality Assurance (QA) program, which includes documentation of methods, training for data collectors, checks of data quality, peer review of analysis products, and continuous feedback to ensure that the system improves over time. Field crews enter measurements into portable data recorders (PDRs) in the field. The PDR software includes a high level of real-time error checking as data are entered. QA data and analyses will be included in publications and made available.

Information Management. The new program will develop a national information management (IM) system that serves both internal data needs as well as external data access needs. The IM database will consist of a core set of tables, data validation procedures, algorithms, analytical and compilation procedures, and data access tools to ensure that core data are treated identically. The Eastwide/Westwide data bases are precursors to the next generation IM system currently being developed. The new IM system will include all the data currently in existing systems and will allow comparisons of current and past data. Appropriate parts of this system will be accessible via multiple channels including the World Wide Web and CD-ROMs.

In response to customer requests, we are also exploring the feasibility of including our PDR software on the FIA web site so that customers with the same equipment can download the software and use it. FIA information

managers are evaluating the possibility of offering data analysis and summarization services on a cost-reimbursable basis for firms and individuals who choose to use the FIA PDR software.

Analysis. The FIA program will include several levels of analysis.

Annual Report. Each year, core data will be compiled into a standard set of core tables for each State, which will be released in hard copy and electronic formats. The data for each fiscal year will be added to the database and released to customers by March 31 of the next fiscal year, which is consistent with the FHM annual reporting schedule. The job of analyzing and compiling annual data from each State is a larger task, so additional staff and computing capacity are needed to produce individual State-level reports.

Periodic Reports by State. Every five years, a complete State analytical report will be produced. To make most efficient use of analysts, about ten State reports will be produced annually. Each State report will include the following:

- The current status of the forest based on the last five years of data;
- Trends in forest status and condition over the preceding 20 years, with emphasis on comparing the most recent data with data from the previous period;
- Timber product output data;
- Analysis and discussion of the probable forces causing the observed conditions; and
- Projection of the likely trends in key resource attributes over the next 20 years, under various scenarios.

The State reports will be prepared by the FIA program in collaboration with State, other Federal, academic, and other individuals. The analytical reports will include tabular analyses as well as spatial representation of key variables of interest.

Periodic National Report. Starting five years after the program begins, FIA will prepare a National Summary report, which includes the same elements, described above but at regional and national scales. The FIA program has historically prepared such summaries for the Resource Planning Act (RPA) Assessment. The National Summary will be prepared either as a part of the collection of RPA Assessment reports or as a separate FIA program report if the legislative mandate changes.

Special Studies. Over the past 20 years, a number of special studies have been conducted that relied on FIA and FHM data to provide regional context. Two examples are *The Southern Appalachian Assessment*, (1996), and *Private Forest-Land Owners of the United States, 1994*. Many of the past special studies have been sought by customers interested in regional analysis of resource trends and have relied heavily on the expertise of partners. The current program includes only limited capacity to conduct special studies beyond the periodic reports mandated. Any funds needed to conduct future special studies will need to be provided in addition to the base funding levels.

Research and Development.

Investments in research and development will focus on building practical, efficient methods to obtain and report information of interest to customers. Priority research areas include the following:

- Trend analysis - Which estimation procedures are most appropriate for analyzing trends in FIA and FHM data over the past 20 years?
- Projections - Using the present data as a starting point, how can likely future trends in resource status under different management and policy scenarios best be projected? What forms of collaboration with other researchers can be created to assure

that FIA projections are consistent with other USDA Forest Service (e.g. RPA) projections?

- Remote Sensing - What techniques are most appropriate for detecting and measuring changes in resource extent, status, and condition from satellite and other low-altitude imagery? How can the expanded FIA program make most efficient use of currently classified imagery and can declassified products that can be shared with partners be produced from classified imagery?

- Geospatial Analysis and Display Tools - What new geostatistical techniques are most appropriate for analyzing data that are accurately referenced with Global Positioning Systems? What new techniques can be developed to merge FIA geospatial data with similar data on other natural resources to gain additional information about resource interrelationships?

- Modeling - What new techniques can be developed to model changes expected over time in forests undisturbed by human, pathogenic, or atmospheric phenomena? Can the long-term effects of disturbances be modeled using FIA data and do those models suggest that changes in current natural resource management strategies are needed to avoid or mitigate detrimental effects and improve sustainability?

These research and development needs will be addressed in several ways. The number of research and development staff in existing FIA units will increase. Other USDA Forest Service Research and Development units having missions allied with inventory and monitoring goals (e.g., silviculture research units) will be used. This will create a cadre of researchers and developers who are familiar with the capabilities of existing FIA systems. Collaborative relationships with universities, industry research organizations, interest groups, and other Federal agencies will be strengthened. This will allow the

USDA Forest Service to gain increased experience in specialized areas, as well as gain access to creative scientists outside of the USDA Forest Service. The full array of funding arrangements available to the USDA Forest Service Research and Development program will be used to foster the collaborative relationships and focus on specific FIA research and development needs.

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