



United States
Department of
Agriculture

Forest Service

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May 2010



Forest Inventory and Analysis

Fiscal Year 2009 Business Report





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Cover photo: *Late-Successional Black Cherry on the Kane Experimental Forest in northwest Pennsylvania, provided with permission by Will McWilliams.*

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Executive Summary

For more than 75 years, the Forest Inventory and Analysis (FIA) program has played an integral role in managing the Nation's forest resources and conducting the orderly inventory of these resources, which is required for developing effective management scenarios. In recent years, an increased number of major decisions affecting the Nation's forests have been made with reference to and reliance on FIA findings and forest resource evaluations. Contemporary topics include carbon sequestration, climate change, land cover and land use change, pollutant effects, and fire risk.

In 1999, Congress directed the Forest Service, U.S. Department of Agriculture, to reevaluate its statewide inventory mission and to make the transition from a periodic survey approach by State to one in which each State is inventoried annually. FIA developed, in concert with its partners, a strategic plan to carry out the new congressional mandate. FIA's strategic plan, approved by Congress, included a requirement for an Annual Business Report on the status and progress of the annualized inventory program.

This annual report, our 12th, tells the taxpayers, partners, and clients what the program has accomplished with the financial resources they provided and what the program will accomplish in the coming year with budgeted financial resources. This relationship with taxpayers, partners, and clients is integral to FIA's continued success because accountability is our first priority. Some of the key findings of this report are:

Annualized progress—In fiscal year (FY) 2009, FIA added two new States, Oklahoma and New Mexico, bringing activity to 46 States plus coastal Alaska or 94 percent of all States. We measured a total of 38,540 plots on the base grid, representing 12 percent of U.S. land total. Periodic inventories have also been completed in the Commonwealth of Puerto Rico, U.S. Virgin Islands, Federated States of Micronesia, American Samoa, Guam, the Republic of Palau, Republic of the Marshall Islands, and the Commonwealth of the Northern Mariana Islands, which are all exempt from the annualized system. Nevada, Wyoming, Hawaii, and interior Alaska continue to await sufficient funding to enter the annualized inventory program.

Funding—Total funding available for the FIA program in 2009 was \$75.4 million from all sources, a net increase of \$2.6 million from FY 2008. This funding consisted of \$65.5 million appropriated by Congress; \$2.6 million in net adjustments from the previous fiscal year, primarily a return of FY 2008 fire transfer funds; and \$6.5 million in partner funds to accommodate shorter cycles and program enhancements. Although the appropriated funding level in FY 2009 was \$895,000 above FY 2008, allowing us to nearly complete the funding for New Mexico, the funding remains \$10 million short of the target levels required to complete the transition to a full annualized inventory in Nevada, Wyoming, Hawaii, and interior Alaska.

Fire transfer impact—FIA was fortunate to receive full restitution of fire transfer funds of nearly \$2.3 million withheld for the firefighting program in FY 2008. The impact of this return was a significant increase in forest plot production even though the appropriated budget remained relatively constant.

Partner support—Partners contributed \$6.5 million to the program in FY 2009. Through cost-share, 34 States contributed \$3.6 million toward buying down their cycles to 5 years, and States and other partners added \$2.9 million for intensification and other program enhancements. Overall State support of \$6.5 million in FY 2009 is the same as in FY 2008.

Grants and agreements—When cooperators can complete critical FIA work with equal quality for less cost, FIA contracts for these services. A total of \$12.9 million was spent in this way in FY 2009. Of this total, FIA provided \$7.9 million to State forestry organizations and \$3.1 million to universities and research cooperators to improve program efficiency and provide critical issue research and analysis. The remaining \$2.0 million provided information management support. These arrangements are detailed in Appendix 4. Contractors are integral to the efficient delivery of the FIA program and provided 201 employees, or 35 percent of the total workforce of 582 people delivering the FIA program.

Data availability—Forty-four States and interior Alaska now have access to online data that is less than 2 years old. The availability of this data improves partner access to current

information on the Nation's forests and allows analysts to clear up the backlog of analytical reports. Through this data, FIA supplied information for 405 spatial data requests and over 90,000 online data requests.

5-year reports—By FY 2009, 86 percent of targeted FIA 5-year State analytical reports were completed. The goal is to reach 100 percent completion by the end of FY 2010. This will bring FIA into full compliance with our legislative mandate, and a permanent cycle will be established for State analytical reports beginning in FY 2012. In addition to fifteen 5-year reports, FIA published 189 additional publications, 38 of which were in peer-reviewed journals.

Quality Assurance (QA)—In FY 2009, FIA quality checked 8 percent of all field plots to ensure the highest quality data is loaded into FIA databases. The QA staff continues to actively improve documentation, training, and standards.

User Groups—FIA relies heavily on periodic meetings with users and clients to ensure that the program is providing the highest quality service and meeting program objectives. In 2009, FIA held one national and three user group meetings to gauge how well it was meeting the goals stated in the strategic plan and get input for future program enhancements. FIA also held seven regional or national management meetings.

Personnel—Quality staffing is critical to the success of the FIA program. FIA, directly and through cooperators, employs 582 people. Of these, 130—employed in information management, techniques research, and resource analysis—provided 1,399 consultations (8,603 hours) to help users and clients effectively use FIA data.

Performance History—Appendix 9 of this report provides a summary of dozens of key program performance measures for FY 2002 through FY 2009 to allow clients to quickly review program progress without gathering up all of the annual reports.

Other program features—FIA is charged with monitoring and reporting on the status, condition, and trends of all the Nation's forests. While plot-based field surveys provide most of this information, additional questionnaire and field-based surveys are conducted to report on timber products output (TPO), logging utilization, fuelwood production, the characteristics and management objectives of the Nation's private woodland owners, and several indicators of forest health. Over the past 10 years, FIA has collected such data from over 89,000 surveys, samples, and logging sites. This information, in conjunction with FIA plot data, is critical to monitoring the sustainability of the Nation's forest resources.

Clearly, 2009 was a very productive year for FIA. We look forward to further progress in FY 2010. Important goals for FY 2010 include:

- Continue annualized inventory of 46 States and coastal Alaska, which are currently in the program, and initiate activity in Hawaii, Nevada, and Wyoming.
- Continue analysis of the National Woodland Owners Study.
- Further improvements to the Forest Inventory Data Online system.
- Continue development of tools for National Forest System and others through the National Inventory and Monitoring Applications Center.
- Begin layout production of the FIAtlas book.
- Continue work on piloting urban forest inventory.
- Continue work on piloting a national rangeland inventory.

Introduction

The Forest Inventory and Analysis (FIA) program of the Forest Service, U.S. Department of Agriculture (USDA), provides the information needed to assess the status, trends, and sustainability of America's forests. This business report, which summarizes program activities in fiscal year (FY) 2009 (October 1, 2008, through September 30, 2009), gives our customers and partners a snapshot of past activities, current business practices, and future program directions. It is designed to increase our accountability and foster performance-based management of the FIA program. (Note: This business report does not include statistical information about the forests of the United States. Those who wish to obtain such information should contact the appropriate regional or national FIA office listed on the inside back cover of this report or go to <http://www.fia.fs.fed.us>.)

The FIA program has been the Nation's continuous forest census since 1930. We collect, analyze, and report information on the status and trends of America's forests: how much forest ex-

ists, where it exists, who owns it, and how it is changing, as well as how the trees and other forest vegetation are growing, how much has died or been removed, and how the harvested trees are used in recent years. This information can be used in many ways, such as in evaluating wildlife habitat conditions, assessing sustainability of current ecosystem management practices, monitoring forest health, supporting planning and decision-making activities undertaken by public and private enterprises, and predicting the effects of global change. The FIA program combines this information with related data on insects, diseases, and other types of forest damage to assess the current health and potential risks to forests. These data are also used to project how forests are likely to appear in 10 to 50 years under various scenarios in order to evaluate whether current forest management practices are sustainable in the long run and to assess whether current policies will allow our grandchildren and their grandchildren to enjoy America's forests as we do today.

Changes From Previous Year's Business Reports

The FIA program continues to seek performance measures that accurately reflect the program's progress toward meeting the goal of annualized inventory in all 50 States. In addition to Appendix 7, which provides a 7-year summary that compares the number of States and the area of forest under annualized inventory, we continue to include Appendix 9, which provides a multiyear performance summary of key program indicators. This will allow users to see program progress toward full implementation.

In FY 2009, we have added a section on other program features such as Timber Products Output (TPO) studies, National

Woodland Owner Surveys (NWOS), and Forest Health monitoring indicators. These activities further highlight the program's commitment to fully monitor and understand the Nation's forest resources and inform our partners and clients.

The FIA performance measures shown in the "Long-Term Strategic Direction" section conform to measures required by Office of Management and Budget (OMB) Program Assessment Rating Tool (PART). These changes are consistent with OMB guidance to use easily defined measures intended to convey performance with reduced ambiguity.

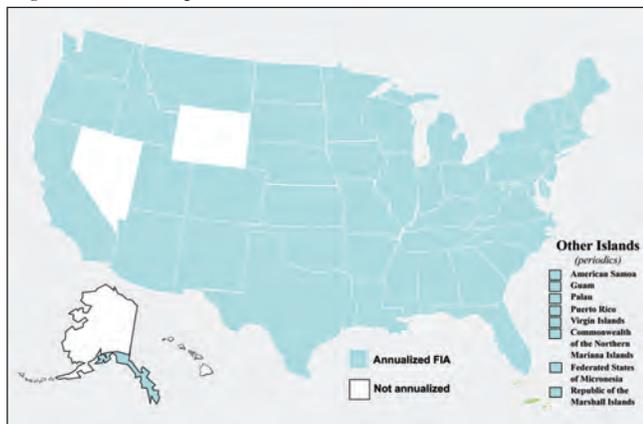
Fiscal Year 2009 Program Overview

This overview for FY 2009 includes outputs and products, program changes, program resources, and partner contributions.

Outputs and Products

Appendix 1 shows some comparisons across FIA regional units in the rates, costs, and performance of implementing the FIA program. In FY 2009, we were active in 46 States plus coastal Alaska (fig. 1), measuring 38,540 Phase 2 and 3 sample locations from the base grid, or 12 percent of the total. At the end of FY 2009, 94 percent of all States were covered by annual FIA program activity. A funding increase of \$895,000 allowed us to nearly complete the funding for New Mexico but remains \$10 million short of the target levels required to complete the transition to a full, annualized inventory in Nevada, Wyoming, and Hawaii and a periodic inventory in interior Alaska. Periodic inventories have also been completed in the Commonwealth of Puerto Rico, U.S. Virgin Islands, Federated States of Micronesia, American Samoa, Guam, the Republic of Palau, Republic of the Marshall Islands, and the Commonwealth of the Northern Mariana Islands, which are all exempt from the annualized system. This is in compliance with a congressional mandate under the Renewable Resources Research Act of 1978, as amended, to treat these islands as States for research purposes.

Figure 1—FIA implementation status, 2009.



The FIA program produced 206 reports and publications in FY 2009, 34 more than in FY 2008. Of these publications, 62 were core publications consisting of reports specific to a complete survey unit, complete State, national forest, or national report. We also published 38 articles in peer-reviewed journals (27 less than in FY 2008), and 87 articles in proceedings from scientific meetings and conferences (compared to 35 in FY 2008). The increase in the combined number of peer-reviewed articles and proceedings from 106 to 125 reflects an increased engagement of our new scientists as they continue to mature in the program. The FIA staff participated in 1,399 significant consultations with FIA customers, requiring 8,603 hours of staff time—equivalent to more than 4 full-time staff positions. The FIA technical staff met on several occasions to further refine the national core FIA program, resulting in continued improvement of the national core field guide and enhancement of Internet tools for accessing and analyzing FIA data, including the National Information Management System (NIMS), which provides a single national platform for processing FIA data and posting it on the Web. Our Internet resources processed over 90,000 completed data retrievals where FIA customers obtained user-defined tables and maps of interest.

Program Changes in FY 2009

In FY 2009, the FIA program completed the 11th year of program transition to an annual inventory system as outlined in the Strategic Plan for Forest Monitoring written in response to the Agricultural Research, Extension, and Education Reform Act of 1998 (Public Law 105-185). The FIA program includes three sample levels, or “phases”: Phase 1, consisting of remote sensing for stratification to enhance precision; Phase 2, based on the original set of FIA forest measurement plots (approximately one plot per 6,000 acres); and Phase 3, consisting of a subsample of Phase 2 plots measured for a broader set of forest ecosystem indicators (approximately one sample location per 94,800 acres). By the end of FY 2003, our goal was to implement an annual FIA program that measures at least 10 percent of all Phase 2 sample locations per year in the Western United States, 15 percent of Phase 2 sample locations per year in the Eastern United States, and 20 percent of base Phase 3 sample

Table 1. Overview of land area; forest area; and estimated P1 pixels, P2 plots, and P3 plots by region in FY 2009.

Region	Land area <i>mil. acres</i>	Forest area <i>mil. acres</i>	Forest <i>percent</i>	All P1* <i>mil. pixels</i>	All P2 <i>plots</i>	All P3 <i>plots</i>	Total P2, P3 <i>plots</i>
North	608	178	29	39.5	94,928	6,414	101,342
South	535	215	40	34.8	83,559	5,646	89,205
Interior West	548	145	26	35.6	85,560	5,781	91,341
Pacific Coast (CA, OR, WA)	203	85	42	13.2	31,753	2,145	33,898
Coastal Alaska	41	15	36	2.7	6,444	435	6,880
Interior Alaska	324	112	35	21.0	not set	3,415	3,415
Islands (including Hawaii)	7	4	53	0.5	1,083	73	1,156
Total	2,267	753	33	147.2	303,327	23,910	327,237

* MODIS 250 m pixels at 15.4 acres each.

locations per year in all States. Table 1 shows the overall distribution of P1, P2, and P3 elements of the FIA sample for the United States. The numbers in this table are illustrative only and do not include possible additional plots that may be required as a result of partially forested sample locations. This can add 15 to 20 percent more actual plots that have to be visited to collect data. Owing to lack of full funding, we are now several years behind the original plan. The base program will include annual compilations of the most recent year's information, with full reporting at 5-year intervals. All States have the option to contribute the resources necessary to bring the program up to the full sample intensity of 20 percent per year, or to make other value-added contributions, such as funding new measurements or additional sample locations. The appropriated funding level in FY 2009 remains \$10 million short of the target levels required to complete this transition, and no further progress was made toward full implementation.

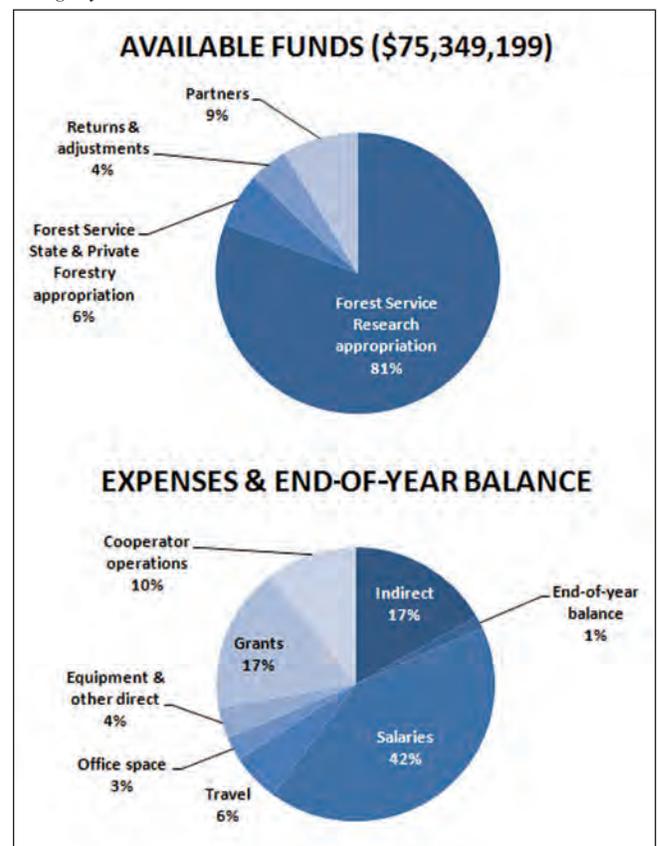
Program Resources

Appendix 2 shows that Federal funding available for the FIA program in 2009 totaled \$68,856,488, a net increase of \$2,656,912 from the previous year's total available Federal funding of \$66,199,576. The funding consisted of \$65,536,000 appropriated by Congress specifically for FIA, plus \$3,350,488 in adjustments from the previous fiscal year, primarily the return of \$2,317,802 in fire transfer funds from FY 2008.

Congress currently appropriates funds annually for the FIA program in two different Forest Service deputy areas: (1) Research and Development and (2) State and Private Forestry (S&PF). Historically, most FIA funding was contained within the research budget of the Forest Service. In FY 2009, the amount of

research money provided by Congress for the FIA program was \$60,770,000, an increase of \$398,000 over the FY 2008 level of \$60,372,000 (app. 2). The S&PF Forest Resource Inventory and Analysis budget line was \$4,766,000 (an increase of \$497,000 over the 2008 level of \$4,269,000) to support the FIA program in those States that provide cost-share contributions. Of the total increase of \$895,000, the Albuquerque Service Center received \$274,000. Cost-share States contributed an

Figure 2—FIA program available funds and expenses by category, 2009.



additional \$3,636,664 toward buying down to 5-year cycles the FIA program in 2009, and States and other partners also added \$2,856,839 for intensification and other program enhancements. Thus, after all contributions and adjustments, a total of \$75,349,991 was available to the FIA program in FY 2009.

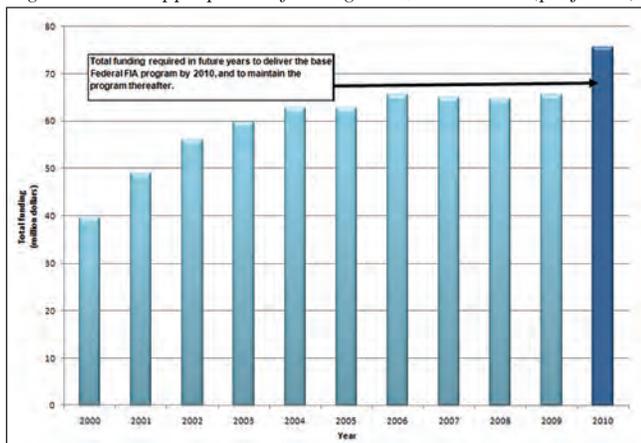
Across FIA regions, cost and productivity figures differ because of the cyclical nature of the current inventory system and because of differences among field units in operational methods and ease of access to property. Rates of effective indirect expenses in FIA field units in 2009 ranged from 7 to 13 percent across the country for field units (app. 2), reflecting differences in both sources of funding as well as research station indirect expense assessment practices. The National Office had a 77-percent rate of indirect cost because its FIA budget includes the USDA overhead and program-wide charges to the Albuquerque Service Center for FIA as these costs shifted to the

national office. Figure 3 shows the total appropriated funding available for FIA from FY 1995 to FY 2009 from all sources, as well as the projected future total funding needed to deliver the base Federal program beyond FY 2009. Appendix 9 also shows trend data in FIA performance measures for 2002 through 2009.

In FY 2009, the FIA Federal program staffing consisted of 381 Federal person-years of effort (app. 3), down from 389 Federal person-years in FY 2008. Of the Federal FIA employees, approximately 55 percent were involved in data collection and field support, 28 percent in analysis and information management, 6 percent in program management and administration, 7 percent in techniques research, and 4 percent in Phase 1 production work (fig. 4).

Cooperators, especially State forestry organizations, through grants and agreements, accomplish much of the work done by FIA. In FY 2009, it is estimated that we employed an additional 201 people through this mechanism, including 149 State field people, 17 information management specialists, 15 analysts, 14 researchers, and 5 administrative specialists. These additional non-Federal employees bring the total number of employees working for FIA to 582 and represent 34 percent of the total FIA workforce.

Figure 3—FIA appropriated funding level, 2000–2010 (projected).



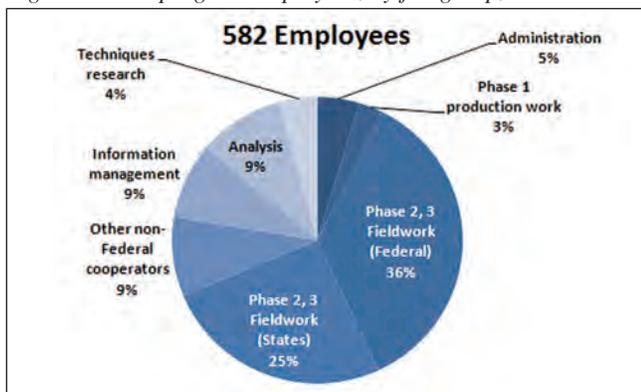
* Dark blue bar is estimated total funding required to deliver the base Federal FIA program by 2010.

Partners' Contributions

The complete FIA program required by Congress is envisioned to be a Federal-State partnership, with both partners contributing resources to accomplish the work. We have agreed that the base Federal share of this program is an inventory program that collects data from 10 percent of sample locations in the Western United States and 15 percent of the sample locations in the Eastern United States on an annual basis, with comprehensive, analytical reports for all States produced at 5-year intervals.

Partners, at their discretion, may choose to contribute the resources needed to bring the FIA program up to the full 20-percent measurements per year described in the law. Additionally, or alternately, partners may choose to contribute resources for other purposes that add value to the FIA program from their perspective, such as intensifying the base FIA sample location grid to support analysis at finer spatial resolution, funding additional types of measurements on FIA sample locations, or providing analyses or reporting beyond that provided by FIA. The

Figure 4—FIA program employees, by job group, 2009.



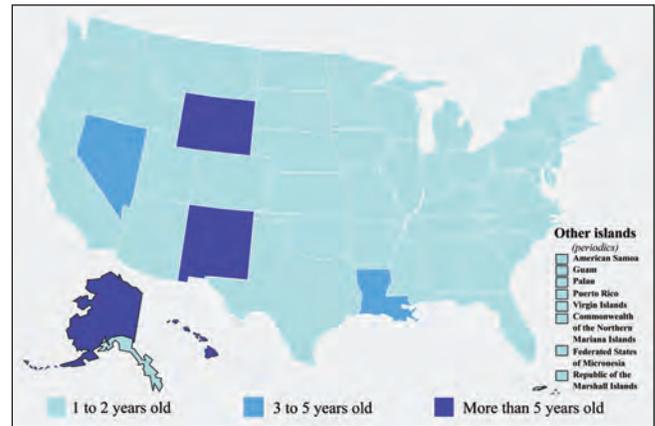
willingness of partners to contribute resources demonstrates the inherent value of the FIA program as a flexible framework upon which to address other issues of interest.

Appendix 4 lists those partners that have contributed resources to the FIA program in FY 2009, either to achieve the 20-percent program envisioned by Congress or to add value to FIA in many ways. These resources include staff time, vehicle use, office space, equipment, travel costs, and other noncash items that support or add value to the FIA program. Contributions are valued for reporting purposes in terms of what it would cost the Federal FIA staff to provide the same service, which may not necessarily be the same as the actual cost to the partner making the contribution. Overall, partners contributed \$3.6 million toward the full 20-percent FIA program envisioned by Congress, and another \$2.9 million in contributions that add value to the FIA program, for a total of \$6.5 million in partners' contributions. This amount is equal to \$6.5 million contributed by partners in FY 2008. The source of the partner contributions depends on the region of the country and the ability of States and partners to contribute. In the West, where forest land ownership is primarily Federal, the major cost-sharing partners tend to be Federal land managers, particularly the National Forest System (NFS) branch of the Forest Service, which contributed approximately \$1.2 million in additional funds to add value to the basic FIA program. In the East, where forest land ownership is predominantly private, States are the major contributors. In FY 2009, States contributed \$2.8 million to help implement the basic 20-percent FIA program, plus an additional \$1.7 million to add value to the basic FIA program. Total State support of \$4.5 million in FY 2009 is sharply up (18 percent) from the \$3.8 million contributed in FY 2008, showing strong commitment in the face of tough economic times.

FIA Data Availability

The FIA program is designed and intended to provide continuously updated, accurate, and reliable information on status and trends in the Nation's forested resources. Current information is one of the chief interests of FIA customers. Our program objectives include (1) providing annual updates for all forested lands sampled as part of the annual inventory system and (2) producing analytical reports for all States on a 5-year cycle.

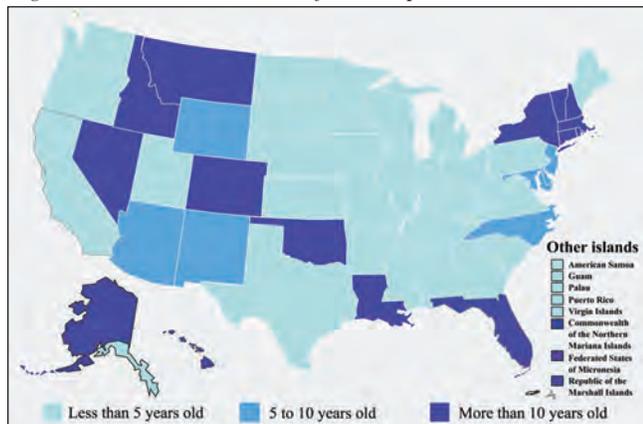
Figure 5—Availability of State FIA data, 2009.



As we move through our transition and toward full program implementation, one key performance measure is how well we are satisfying those objectives. Figure 5 shows, for each State, the age of FIA data accessible in our public database as of the end of September 2009—the end of the 2009 fiscal year. States with 1- to 2-year-old data—the program objective—are shaded light blue; States with 3- to 5-year-old data are shaded medium blue; and States for which data are more than 5 years old are shaded dark blue. This map shows that progress is being made in all regions of the country. The few States with data older than 5 years are in the South and West. The number of “light blue” States was 44 in 2009, plus coastal Alaska, and the number of “dark blue” States with data more than 10 years old was 4, plus interior Alaska. Continued improvements in data process and completion of NIMS are now paying dividends by allowing us to catch up with the previous data backlog and move toward a more routine schedule.

Figure 6 shows, for each State, the age of the most recently published statewide FIA report. States where publications exist based on data less than 5 years old—the program objectives—are shaded light blue. States with publications 5 to 10 years old are shaded yellow, and States where the most recent publication reports on data more than 10 years old are shaded blue. The North has 15 of 24 States with reports less than 5 years old, the South has 9 of 13 States, the Pacific Northwest region has 3 of 5 States, and the Interior West has one State report less than 5 years old out of 8 States.

Figure 6—Publication status of State reports, 2009.



Quality Assurance

The FIA program is committed to producing and delivering complete, accurate, and unbiased information of known quality. The Quality Assurance (QA) program supports this goal through a framework that promotes consistency through all stages of the national core FIA inventory process to assure the collection, compilation, summarization, and delivery of quality data products with known precision, completeness, representativeness, comparability, and accuracy.

The National Quality Assurance Coordinator provides direction and coordination for the FIA QA program. The QA Coordinator works with the Washington Office as well as the regions and the national indicator advisors to assist with QA issues in the program.

The National FIA program promotes process transparency and consistency by extensive documentation of methods and procedures, including:

- Up-to-date National CORE Field Guides ensure consistent collection of CORE program data items.
- The FIA Database Description and Users Guide, version 4.0, provides detailed information to users about published FIA data.
- Ongoing effort to fully document NIMS.
- Cataloged collection of unpublished FIA procedures with FSWEB interface, under development.
- Published *Forest Inventory and Analysis National Assessment of Data Quality for Forest Health Indicators* (GTR-NRS-53), which examines the efficacy of Phase 3 Measurement Quality Objectives (P3 MQOs) and examines the measurement uncertainty of P3 variables.

New and ongoing FIA QA tasks implemented in FY 2009 designed to identify errors and increase consistency in the national inventory include:

- Developing national guidelines and standards defined for checking compiled data for accuracy and completeness prior to release to the public. These guidelines promote analytical QA consistency across regions.
- Releasing QA Tools, a desktop tabling and graphing application used by FIA analysts to examine data for errors prior to public posting.
- Developing FIA database (FIADB) QA, with systematic edit checks of Periodic and Annual FIA data.
- Developing a national cold check field and scoring procedures are rigorously defined to allow equivalent field crew assessment across regions and crew types.
- Documenting and implementing national data collection staff training standards in progress.
- Developing NIMS-CS, a consolidated FIA data processing system.

Fiscal Year 2009 Regional Accomplishments

This section provides information on FIA results, accomplishments, and outcomes throughout the country. Those wanting more detailed information may either go to provided links or contact the respective FIA unit (contact information for each FIA unit can be found on the inside back cover of this report).

West Coast

Key Finding: Potential biomass and logs from fire-hazard-reduction treatments in southwest Oregon and northern California

Accomplishment: The FIA BioSum model was used to simulate three distinctly different fire-hazard-reduction policies, all subject to a stand-scale, fire-hazard-reduction effectiveness constraint: maximize torching index improvement (Max TI), maximize net revenue recovery (Max NR), and minimize merchantable timber removal (Min Merch). Scenarios differed substantially in the area on which treatments would be implemented, ranging from 15 to 96 percent of the area for which effective treatments are technically feasible. By weight, saw logs accounted for 67 to 79 percent of the wood removed, and nearly all were in the Douglas-fir or white woods (spruce/hemlock/fir) species groups. Tops and limbs of commercial/noncommercial species accounted for most of the dirty chip material for which energy generation would yield the greatest value. Stems of low value commercial conifers (7 to 16 in) were also an important source of dirty chips, but trees smaller than 7 in. diameter at breast height (dbh) were a relatively minor component of the dirty chip mix.

Outcome: We examined the area comprising northern California, southwestern Oregon, and the east slopes of the Cascade Mountains in Oregon. This analysis suggests that removal of considerable amounts of commercial size trees is needed to accomplish fire-hazard-reduction goals when objectives are centered on either maximizing net revenue or maximizing treatment effectiveness.

Contact: Jeremy Fried, jsfried@fs.fed.us

Partners: Pacific Northwest Research Station, Focused Science Delivery Program, and Human and Natural Resources Interactions Program

Key Finding: Using airborne lidar to characterize forest stand condition on the Kenai Peninsula of Alaska

Accomplishment: Airborne laser scanning (lidar) data were used to estimate three fundamental forest stand condition classes (forest stand size, land cover type, and forest density) at 32 accurately georeferenced FIA plots distributed over the Kenai Peninsula of Alaska. Individual tree crown segment attributes (height, area, and species type) were derived from the 3-D lidar point cloud, lidar-based canopy height models, and lidar return intensity information. Because the lidar was collected in leaf-off conditions, tree crown segments could be classified into conifer and hardwood species classes, with a classification rate of 83.5 percent. The lidar-based crown segment and canopy cover information was used to estimate condition classes at each 10-meter (m) grid cell on a 300 m × 300 m area surrounding each FIA plot. A quantitative comparison of the lidar- and field-based condition classifications at subplot centers indicates that lidar has potential as a useful sampling tool in an operational forest inventory program.

Outcome: This paper provides a methodology to characterize three of the most important forest attributes: canopy density, canopy stand size, and forest type. It is expected that this information will be applied to more extensive lidar data sets in the future to provide mapped inventory information and improve estimation via post-stratification.

Contact: Hans Andersen, handersen@fs.fed.us

Partners: University of Washington; Pacific Northwest Research Station, Management and Productivity Program

Key Finding: This report highlights key forest resource findings from the most recent (2002-2006) data collected by the FIA program across all ownerships in Washington.

Accomplishment: The report presents detailed resource information on forest area, land use change, ownership, volume, biomass, and carbon sequestration. It discusses structure and function topics, including biodiversity, older forests, dead

wood, and riparian forests. Disturbances in forests are highlighted for insects and diseases, fire, invasive plants, and air pollution. It also provides information about the forest products industry in Washington, including data on tree growth and mortality, removals for timber products, and nontimber forest products. The appendixes describe inventory methods and design and provide summary tables of data with statistical error for the forest characteristics sampled.

Outcome: The data can be used to report on criteria and indicators of sustainability and regional and State-level assessments for a wide variety of topics, including biomass, carbon flux, fuel-loading, fire risk, biodiversity, air quality, timber availability, and the response of forests to climatic changes.

Contacts: Sally Campbell, scampbell01@fs.fed.us; Karen Waddell, kwaddell@fs.fed.us; Andy Gray, agray01@fs.fed.us

Partners: Bureau of Business and Economic Research, University of Montana; Pacific Northwest Region; Washington Department of Natural Resources

Interior West

Finding: FIA data can be used to support use and development of the Forest Vegetation Simulator (FVS)

Accomplishment: The FIA program has made FIA plot data available in FVS-ready format for several years, but improvements in the FIA data delivery system and FVS data management options have provided an opportunity to make the process more convenient for users and to take greater advantage of FIA variables. The Interior West FIA program, in cooperation with Forest Management Service Center (FMSC), is leading an effort to update the FIA-to-FVS data delivery process. When the new data delivery process is completed, it will give FVS users unprecedented access to FIA data for use in a wide variety of applications. Although FVS growth models were developed using the best data available at the time, a large quantity of data have been acquired by the FIA program since many of the regional FVS variants were first created. Under the annual inventory system now used by the FIA program, there is a constant stream of new data that can be used to validate or calibrate many of the submodels that make up the regional variants. This presents an opportunity to develop a process of

continuous quality control, where current FIA data can be used to improve existing models, and future FIA data can be used to validate previously updated models.

Outcome: This research effort will create stronger links between two important Forest Service programs, provide greater user access to data, and increase user confidence in simulation results. End users of FIA data and FVS will be able to use FIA data as source data in FVS simulations that are run at large landscape scales and use FIA data as a geographically unbiased validation source.

Contact: John D. Shaw, jdshaw@fs.fed.us

Partners: Forest Management Service Center; Utah State University

Finding: Satellite imagery and Forest Service Timber Products Output data can be combined to determine historic timber haul distances and associated carbon emissions

Accomplishment: There is growing interest in quantifying the impact of forestry activities on the global carbon budget. While both standing trees and forest products may sequester atmospheric carbon for some period of time, it is recognized that many forest management activities result in the release of carbon from fossil fuels. Timber transport is a major source of such emissions. Current estimates of the carbon “cost” of getting logs to mills are derived from surveys of mill owners or truck drivers. However, even in cases where comprehensive surveys exist, the duration of their validity is uncertain. As harvest patterns change and the processing industry evolves, the distances that logs are transported (together with corresponding fuel emissions) are likely to fluctuate.

Scientists at the Rocky Mountain Research Station have devised a way to use historical inventory and satellite data to comprehensively track changes in likely timber haul emissions. FIA TPO records, collected for decades across the country, give snapshots of timber flows from particular counties to particular mills. Time series of Landsat satellite imagery can be used to give exact locations of harvest sites. Together, these data capture both timber origins and destinations and can be submitted to network analysis in a geographic information system (GIS) to determine likely haul routes, distances, and associated fossil carbon emissions.

Outcome: This system was piloted in Ravalli County, Montana. Transport-related emissions, evaluated as a fraction of transported wood carbon at four points in time, rose from 0.5 percent in 1988 to 1.7 percent in 2004 as local mills closed and spatial patterns of harvest shifted due to decreased logging on Federal lands. The apparent sensitivity of transport emissions to harvest and infrastructure patterns suggests that timber haul is a dynamic component of forest carbon management that bears further study both across regions and over time. The developed monitoring approach, dependent on nationally collected TPO data and globally available satellite imagery, could readily be adapted to provide current and historical estimates of transport emissions in a consistent way across the country.

Contact: Sean Healey, seanhealey@fs.fed.us

Partners: Rocky Mountain Research Station—FIA and Human Dimensions Program; University of Montana Bureau of Business and Economic Research

Finding: Inventory data inform the development of fuel maps that are used to predict fire behavior and fire effects across the United States

Accomplishment: The Interior West FIA program is working with the LANDFIRE program to combine inventory data with satellite imagery and ecosystem simulation models. LANDFIRE produces maps depicting vegetation and fuel across the United States at 30-meter resolution. FIA data provide most of the plot- and tree-level attributes needed to estimate canopy fuel, but some attributes are modeled or adjusted in order to optimize their use in fire simulation. For example, crown ratio measurements can be used to derive estimates of the height to the first live branches on individual trees. The standard FIA crown ratio measurement involves visually compacting the branches within asymmetric crowns, since this variable was originally designed as a surrogate for photosynthetic potential in forest growth simulators. Equations are used to convert compacted crown ratio into uncompact measurements, which removes bias in estimates of the stand-level canopy base height. Removing this bias is important because canopy base height helps determine areas where a ground fire is likely to transition to a crown fire. Tree canopy cover is also used in fire simulation because wind speed near the ground is reduced with increasing canopy cover, and shading by tree canopy affects dead fuel moisture. FIA does not measure tree canopy cover nationally,

but stem-maps of FIA plots along with equations that predict the crown width of individual stems are used to estimate plot canopy cover based on FIA standard measurements.

Outcome: Spatial data describing fuel characteristics are particularly important because these data are needed as input to fire simulation models that provide land managers with estimates of fire behavior and fire effects across a landscape. Plot-level estimates of canopy fuel help inform the development of these spatial products. LANDFIRE data layers based on circa-2001 LANDSAT imagery have been completed for the entire United States and are distributed by the U.S. Geological Survey (USGS) National Map LANDFIRE. These data include a suite of canopy fuel layers based heavily on FIA reference data. LANDFIRE is transitioning into an ongoing operations and maintenance phase that includes updating the circa-2001 maps to the present to account for disturbance and other vegetation changes. An updated map of tree canopy cover is currently in production using model-predicted canopy cover of FIA plots as reference data.

Contacts: Chris Toney, christoney@fs.fed.us, Rocky Mountain Research Station—FIA; Fire Modeling Institute, Missoula Fire Sciences Lab

Partners: LANDFIRE (<http://www.landfire.gov>); United States Geological Service, Center for Earth Resources Observation and Science; National Interagency Fuels, Fire, and Vegetation Technology Transfer; Fire Modeling Institute at the Rocky Mountain Research Station, Missoula Fire Sciences Laboratory; Pacific Northwest Research Station—FIA

Southern

Finding: TPO information from 2007 for the 13 Southern States was published and the database appearance and functionality was updated

Accomplishment: The 2007 Southern Pulpwood report along with the Trends in Southern Pulpwood Production 1953-2006 were published along with nine State timber product output and use assessments for 2007. Each of these reports gives statistics on various aspects of utilization and product output for removals from the Southern Region. Forest industry data for the calendar year 2007 were processed and added to the TPO Data

Retrieval tool on the Southern FIA Web site. The TPO database retrieval system for 2007 southern TPO data was updated for appearance and functionality. The improved version allows users to access the most current southern TPO data and the most current national level (RPA TPO) data.

Outcome: Based on user input, several new tables have been added; most notably county level tables for mill residue information. All tables can be easily downloaded to Excel spreadsheets. Another new feature that will be available only on the southern side of the TPO data retrieval site is the ability to select output tables in million cubic feet, thousand cubic feet, or green tons. Factors used to convert the cubic feet to weight are based on the most current inventory data for each State and are provided in a look-up table beside the green tons radial button. The new link for the TPO data retrieval site is http://srsfia2.fs.fed.us/php/tpo_2009/tpo_rpa_int1.php.

Contact: Tony G. Johnson, tjohnson09@fs.fed.us

Partners: Southern State Forestry Agencies

Finding: State-level 5-year reports published for seven Southern States summarizing the status and condition of forests in those States

Accomplishment: The passage of the 1998 Farm Bill led to the development of a nationally consistent approach to forest inventory across the United States. This included a new national sample design, a national plot design, annual systematic measurement of a proportion of permanent plots in each State, data summaries in 6 to 12 months after the completion of the annual data collection, and State inventory reports every 5 years. In addition to these changes, measures relating to forest ecosystem function, condition, and health were added to FIA. A total of seven 5-year reports were published describing the forest conditions in these States. The seven States were Alabama, Georgia, Mississippi, South Carolina, Tennessee, eastern Texas, and Virginia. This output is a vast improvement compared to previous years. The South Carolina and Virginia reports were the second 5-year reports for these States.

Outcome: These documents (and the data that support these reports) are used by the State forestry agencies to understand the issues that are impacting the condition of the forests in their States. This information is then used to structure their delivery mechanisms for landowner assistance programs. In

addition, the FIA data and information are used to determine the available amount of timber resources and potentially attract new industries that use wood as raw material. This information is extremely critical with the increased interest in the use of woody biomass for bioenergy generation.

Conner, R.C. [and others]. 2009. South Carolina's Forests, 2006. Resource Bull. SRS-158. Asheville, NC: USDA Forest Service, Southern Research Station. 57 p.

Harper, R.A. [and others]. 2009. Georgia's Forests, 2004. Resource Bull. SRS-149. Asheville, NC: USDA Forest Service, Southern Research Station. 78 p.

Hartsell, A.J.; Johnson, T.G. 2009. Alabama's Forests, 2005. Resource Bull. SRS-146. Asheville, NC: USDA Forest Service, Southern Research Station. 50 p.

Oswalt, C.M. [and others]. 2009. Tennessee's Forests, 2004. Resource Bull. SRS-144. Asheville, NC: USDA Forest Service, Southern Research Station. 96 p.

Oswalt, S.N. [and others]. 2009. Mississippi's Forests, 2006. Resource Bull. SRS-147. Asheville, NC: USDA Forest Service, Southern Research Station. 78 p.

Rose, A.K. 2009. Virginia's Forests, 2007. Resource Bull. SRS-159. Asheville, NC: USDA Forest Service, Southern Research Station. 77 p.

Rudis, V.A [and others]. 2008. East Texas Forests, 2003. Resource Bull. SRS-137. Asheville, NC: USDA Forest Service, Southern Research Station. 145 p.

Contact: Thomas Brandeis, tjbrandeis@fs.fed.us

Partners: Southern State Forestry Agencies

Finding: Scientists analyze ozone injury on a regional scale

Accomplishment: In the Eastern United States, hourly concentrations of ozone typically range from 30 to 50 parts per billion (ppb), with events that may exceed 100 ppb. Typical exposure levels can cause visible foliar injury to some plant species and have the potential to reduce tree growth by up to 10 percent per year, depending on species and environment. Every year in the South, from 2002 through 2006, FIA evaluated nearly 30,000 plants on about 350 ozone biosites for visible foliar injury. During this time period, ozone injury occurred on between 8 (2006) and 29 percent (2003) of the sampled biosites. South Carolina had the highest percentage of biosites with injury in 3 out of

5 years. The area at greatest risk from ozone injury occurred in northern Georgia. Both the soil moisture index and the combination of ozone exposure and moisture were significantly different for biosites where injury was observed and biosites where injury was not observed. The injury detected over the study period (2002 through 2006) was less than in previous years for many States. Although declines in ambient ozone concentrations over the past 10 years have been reported, evidence from this study suggests that some forest areas in the South were classified in the low and no risk categories due to the moisture deficit conditions that existed during the 2002 through 2006 time period.

Outcome: The correlation between ozone injury and moisture conditions, as well as the consistent low to moderate levels of injury, occurring year after year in some parts of the South, warrant continued monitoring and evaluation for subsequent forest health impacts. This information is extremely valuable to research on trends in ozone exposure and injury and the impacts to vegetation across the United States.

Rose, A.K.; Coulston, J.W. 2009. Ozone injury across the Southern United States, 2002–06. Gen. Tech. Rep. SRS–118. Asheville, NC: USDA Forest Service, Southern Research Station. 25 p.

Contact: Anita K. Rose, anitarose@fs.fed.us

Partners: Southern State forestry agencies

Northern

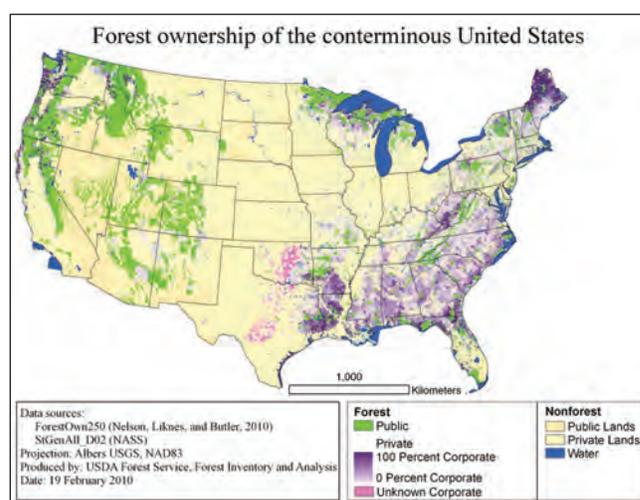
Finding: New map product shows forest ownership patterns across the United States

Accomplishment: A forest ownership dataset known as “Forest ownership of the conterminous United States: ForestOwn250 geospatial dataset” is being published by FIA. ForestOwn250 is designed for conducting geospatial analyses and for producing cartographic products over regional to national geographic extents. This raster geospatial dataset covers the conterminous United States (CONUS) and differentiates forest from nonforest land and water, distinguishes public from private ownership, and quantifies the percent of private forest land in corporate ownership (10-percent classes). Corporate forest land is defined as

being owned by an incorporated business (e.g., forest industry, timber investment management organization, or real estate investment trust). Each 250-m by 250-m pixel in the dataset is attributed with a two-digit code and a text description that identifies its class.

Outcome: Supports geospatial analyses and development of cartographic products.

Contacts: Mark Nelson, mdnelson@fs.fed.us; Greg Liknes, gliknes@fs.fed.us; Brett Butler, bbutler01@fs.fed.us



Finding: Tree species on the move

Accomplishment: Changes in tree species distributions are a potential impact of climate change on forest ecosystems, the examination of which has been limited to simulation activities due to a lack of consistent, annual forest inventories across the Nation. With the advent of a nationally consistent, annual forest inventory conducted by the FIA program of the Forest Service, scientists are now able to actually test climate change hypotheses. Scientists from both the Forest Service and Michigan State University compared the current geographic distributions of tree seedlings to biomass (trees with a dbh \geq 2.54 cm) for species in the Eastern United States using FIA’s inventory. If indeed northern latitude forests are most affected by warming temperatures, then one would expect tree seedlings to be farther north than their counterpart mature trees. The study found that compared to mean latitude of tree biomass, mean latitude of seedlings was found to be significantly farther north (> 20 km) for many northern study species. Density of seedlings relative to tree biomass of northern tree species was nearly 10 times higher in northern latitudes compared to

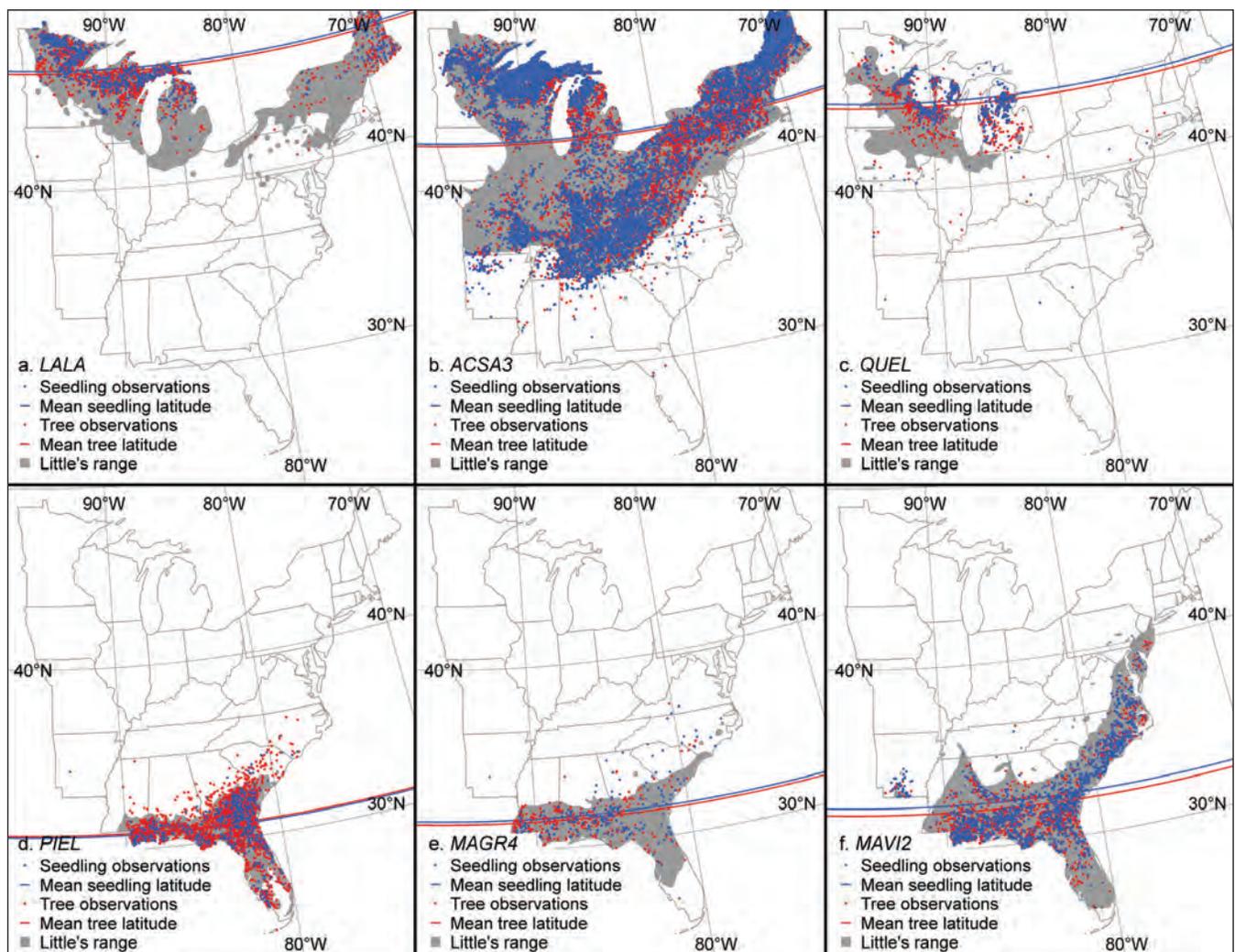
southern. It is hypothesized that as northern and southern species with specific site requirements move northward together, evidenced by greater regeneration success at higher latitudes, species such as red maple with less-specific, more generalized site requirements may fill in the site niches in more southerly locations. The results of this study suggest that the process of northward tree species migration in the Eastern United States is already underway for numerous species, with rates approaching 100 km/century. These monitoring findings are triggering additional ecological and silvicultural research in other units, who are testing this hypothesis and exploring how and why vacant niches are being created and what species are filling them. This is exactly the sort of research program response to new monitoring information that is needed and that indicates

the importance of FIA program data to other parts of the Forest Service's Research and Development and university research programs. The full article, An indicator of tree migration in the eastern United States, is available in Volume 257, Issue 5 of Forest Ecology and Management.

Outcome: Possible indicator of climate change effects on tree species distributions.

Contacts: C.W. Woodall, cwoodall@fs.fed.us; C.M. Oswalt, coswalt@fs.fed.us; J.A. Westfall, jameswestfall@fs.fed.us; C.H. Perry, charleshperry@fs.fed.us; M.D. Nelson, mdnelson@fs.fed.us

Partners: A.O. Finley, Department of Forestry; Michigan State University



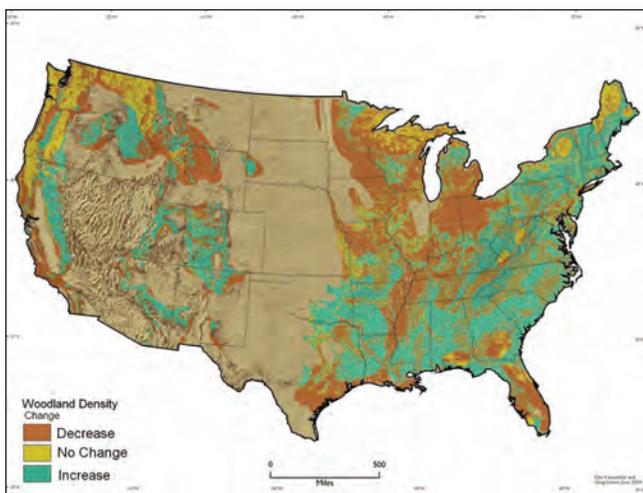
Symbol identification: blue dots=seedling observations, red dots=tree observations, blue line=mean seedling latitude, red line=mean tree latitude, shaded grey=Little's historic tree range. Tree species identification: A) Tamarack, B) silver maple, C) northern pin oak D) slash pine, E) southern magnolia, and F) sweetbay.

Finding: New “old maps” provide look at historical trends in U.S. forests

Accomplishment: Making “New maps from old” has become reality in the FIA program. A team of FIA investigators at the Northern Research Station has utilized historic maps to glean new information about the Nation’s forest resources. The team obtained a cartographic map of woodland density distribution, compiled by William Brewer and published in 1873. This map was digitized and registered to a geographic coordinate system, allowing for geospatial analysis in a GIS. Following the definitions and protocols of the original map, a modern-day counterpart was simulated from a satellite-image-based map of forest cover, allowing for direct comparison of forest distribution “then and now.” The historical dataset allowed Liknes et al. to fill an information gap about forest land distribution in the late 1800s. Using the historic map-derived dataset and its modern day counterpart in a GIS, the team also produced a difference map that shows geographic regions where current forest density is higher, lower, or similar to that of the 1870s.

Outcome: Supports geospatial analyses of trends in U.S. forests.

Contact: Greg Liknes, gliknes@fs.fed.us; Mark Nelson, mdnelson@fs.fed.us; Dan Kaisershot, dkaisershot@fs.fed.us



National Office

The National Office of the FIA program helps to guide and coordinate the FIA field units engaged in implementing the enhanced FIA program. Most of the National Office accomplishments include making presentations, preparing policy white papers and budget justifications, and providing input to reports for national and international organizations.

In FY 2009, the National Office staff:

- Provided budget coordination, briefings, and guidance for FIA field units.
- Facilitated one FIA management team meeting, six conference calls, and dozens of briefings for internal and external partners, customers, collaborators, and supporters.
- Collaborated with the Society of American Foresters and assisted with the eighth national user-group meeting for FIA customers, which was held in Houston in February 2010.
- Published the 2008 FIA Annual Business Report, adding a safety section for the first time.
- Completed work on merging three memorandums of understanding (MOUs) with NFS that expire in 2009 into a single comprehensive MOU covering data privacy, wilderness, and NFS partnership.
- Continued collaboration with the Bureau of Land Management (BLM) and the USDA Natural Resources Conservation Service (NRCS) to design common protocols for strategic rangeland monitoring.
- Continued working with the Conservation Biology Institute (CBI) in Corvallis, OR, to develop and improve the Protected Areas Database. Provided membership on a new Steering Committee made up of CBI, Forest Service, USGS, and The Nature Conservancy to develop an “official” protected areas database for the United States.
- Published *Forest Resources of the United States, 2007*. Posted final tables to the FIA Web site.

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- Published brochure *U.S. Forest Resource Facts and Historical Trends* for the United States from 1953 to 2007. Published in five languages for agency use.
 - Completed final draft of core indicator chapter for the National Report on Sustainable Forests—2010 and the glossary of terms for the report. Brad Smith was lead for Criterion 2, Maintenance of Productive Capacity.
 - Continued providing support for coding and testing the National Vegetation Classification System algorithm for use with FIA data in cooperation with FIA by NatureServe.
 - Completed and submitted U.S. Country Report for the United Nations (UN) Food and Agriculture Organization (FAO) 2010 Global Forest Resources Assessment (FRA). Brad Smith serves as the U.S. National Correspondent and Sonja Oswalt (Southern Research Station) serves as official alternate.
 - Organized UN/FAO North American Forestry Commission Inventory Working Group project on a large-scale summary database for North America. Published a second joint peer-reviewed publication with Canada and Mexico on estimating tree species diversity from national inventory data.
 - Completed plans with UN/FAO for implementation of the Global Remote Sensing Project to estimate and monitor area changes of the world's forests. Greg Reams currently serves as UN/FAO Global Advisory Group for this project and the FRA.

FIA Data Requests and Access

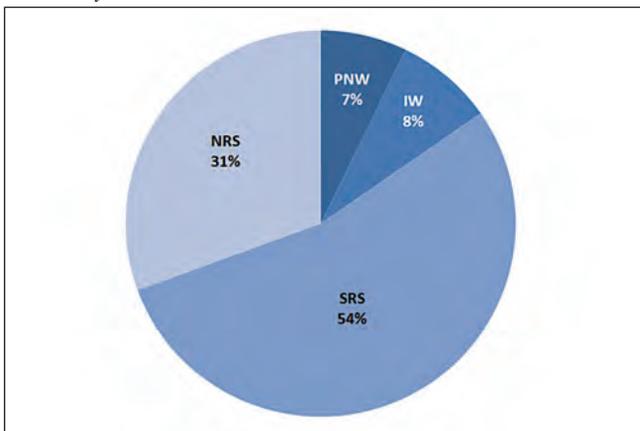
FY 2009 Spatial Data Requests

There were 405 requests active in FY 2009. National or multi-regional data requests accounted for 10 percent of the total number of requests. Of the received requests, 91 percent were completed by the end of the fiscal year and 7 percent remain in progress. The remaining 2 percent were either canceled or put on hold by the client, or the client has not remained in contact with the Spatial Data Service Center (SDSC). The Southern

Research Station's SDSC numbers include all requests that the Southern Research Station receives, regardless of type of request (i.e., the Southern Research Station reports tabular data requests here and other SDSC units do not).

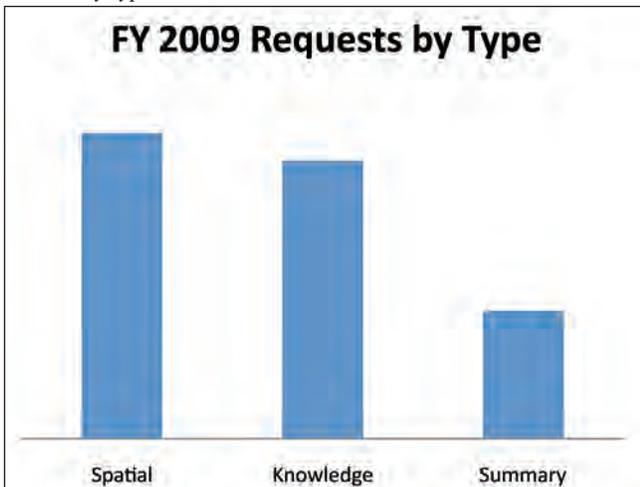
The two largest categories are consultation type requests and those for spatial intersections. The consultation request may be a clarification of FIA data, a search for a GIS data layer, or assistance with a GIS task. The spatial requests generally involve overlaying FIA plots on a client's GIS or imagery layer and returning information to the client.

Figure 7—Requests made to the FIA Spatial Data Service Center, by unit, 2009.



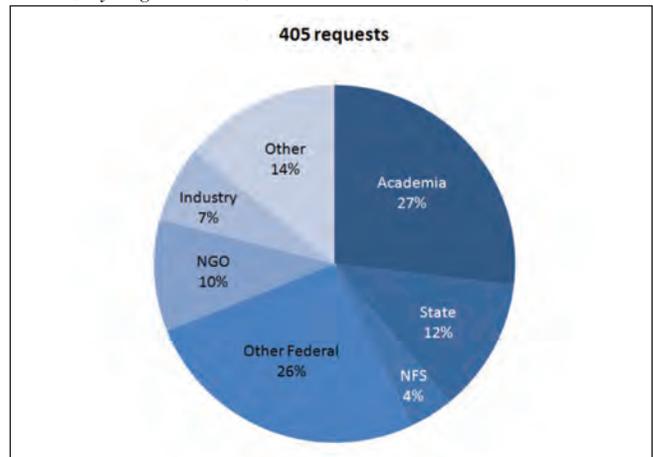
PNW = Pacific Northwest Research Station, IW = Interior West, SRS = Southern Research Station, NRS = Northern Research Station.

Figure 8—Requests made to the FIA Spatial Data Service Center, by type, 2009.



Academia continues to be SDSC's largest client with 27 percent of all new requests. Nongovernmental organizations have increased their use of FIA data, from 7 percent in FY 2008 to 10 percent in FY 2009. Similarly, States also increased their requests for FIA data from 10 to 12 percent. Other Federal requests increased from 16 to 26 percent.

Figure 9—Requests made to the FIA Spatial Data Service Center, by organization, 2009.



Mapmaker, Forest Vegetation Simulator, Fuel Treatment Evaluator, Forest Inventory Data Online, and National Woodland Owner Survey (NWOS) data access

Users continue to access FIA data through various online data tools such as MapMaker, FSveg (Field Sampled Vegetation module of NIMS), FVS, Fuel Treatment Evaluator (FTE), and the NWOS TableMaker. The newest tool is the Forest Inventory Data Online (FIDO). FIDO will replace MapMaker over the

next year or so, and online tutorials and training sessions are provided for users transitioning from MapMaker to FIDO. The following tabulation shows historic use of FIA data tools.

In addition to online tool usage, there were 2,204 downloads of Microsoft-Access databases containing Forest Inventory Assessment Database (FIADB) by State in FY 2009.

Significant changes have continued to be made to our online tools, improving user experience and reporting capabilities.

Table 2. Historic FIA online information retrievals by retrieval tool and fiscal year

Retrieval Tool	2002	2003	2004	2005	2006	2007	2008	2009*
MapMaker	11,579	14,577	26,034	55,062	22,906	24,073	20,834	25,000
FVS		396	514	763	566	497	683	
FTE				650	863			
FIDO							38,092	55,494
NWOS								6,560
EVALIDator								3,920
Total	11,579	14,973	26,548	56,475	24,335	24,570	59,609	90,974

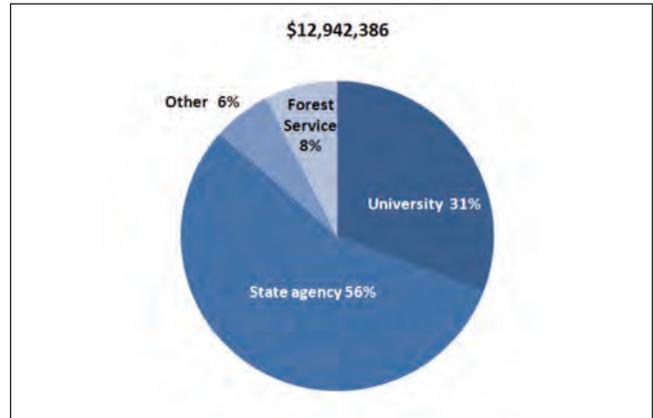
*FY 2009 numbers are estimates due to hard drive and server failures. The numbers are based on 3 to 6 months of data depending on tool.

Grants and Agreements

Each year, FIA units enter into various grants and cooperative agreements with partners to accomplish specialized work in support of the FIA mission. In some cases, partners provide expertise that is not available within the FIA program; in other cases, they share the workload. Appendix 5 lists 98 grants and agreements funded in FY 2009, composing \$12,942,386 or approximately 19 percent of the total available FIA program budget. This amount is an increase of \$3,706,712 above those awarded in FY 2008. This number fluctuates from year to year, but demonstrates the reliance of the FIA program on collaborating with external partners to get work done efficiently. Most of these grants and agreements were with State agency (56 percent of funds) and university partners (31 percent of funds) (fig. 8).

Additional cooperators included other Federal and USDA Forest Service offices (8 percent of grants) and other non-Federal partners (6 percent of grants). The major purpose for all grants was for collaboration in data collection, information management, and research in techniques development. We expect to continue to make significant use of grants and agreements to augment FIA staff capacity in the analysis and reporting of annual FIA data for individual States.

Figure 10—Grants and agreements, by recipient group, 2009.



Consultations by FIA Staff

Consulting with FIA customers is a growing part of our business. Just as we have increased information (both data and analyses) made available on our Web site, our FIA staff are increasingly in demand by customers seeking either to understand more about the FIA program and our results, or seeking to address a specific question not obviously addressed through other means. Questions pertaining to a single administrative unit (for example, to a single State or to a single national forest) often are referred to partners within that administrative unit (for example, State foresters or national forest analytical staff) who can often provide better context and who prefer to maintain their contacts with their customers. When questions span multiple administrative units, FIA staff will try to help the customer find an answer. FIA does not compete with private sector consultants; rather, we answer questions about our methods and help customers (including private consultants) use FIA data to answer their own or their client's questions. Appendix 6 shows the number of significant consultations that FIA staff provided in FY 2009, by unit and by type of customer. A significant consultation is defined as any dialogue with a customer outside

of FIA that requires more than a single hour to address and which is not part of our normal course of business in collecting, analyzing, and reporting on FIA information.

All together, FIA staff addressed 1,399 significant consultations requiring 8,603 staff hours to complete—equivalent to 4 full-time staff-years. Fifty-two percent of the time and 600 of the consultations were conducted with other government agencies, such as State agencies and other Federal agencies, and included internal discussions within the Forest Service. Other major client groups included academic clients (approximately 24 percent of the consultations and 19 percent of the time), industry (10 percent of the consultations and 8 percent of the time), and nongovernmental organizations (NGOs) (7 percent of the consultations and 12 percent of the time). The data also show some regional variations. For example, although government organizations (largely State agencies) are the major clients throughout the country, industry and academic customers are secondary major clients in the East.

Program Safety

Safety is a primary concern for the Forest Service and especially for FIA, which travels hundreds of thousands of miles each year in routine conduct of its business. Standard safety training is mandatory and is conducted at each field unit. We provided safety training and equipment for headquarters offices, field offices, and field crews, including training on driving, first aid kits, emergency communications, etc. In regions with special circumstances, such as the need for aircraft, access to large areas of wilderness, or exposure to potentially dangerous wildlife, we provide additional training and equipment. Information on specific safety training and criteria is available through the FIA main Web site at <http://fia.fs.fed.us>.

Regional Safety Notes

Pacific Northwest Research Station—The Pacific Northwest Station has continued its efforts to improve the safety and the safety awareness of its employees. The Pacific Northwest FIA safety committee has continued its emphasis on safety recognition through a Safe-T-Bucks reward program and Safety Employee of the Month recognition. For safety awareness, we conducted our annual survey of safety perceptions and collected an average of one near-miss report per employee per month. We continue to explore ways to effectively summarize this information and provide feedback to our personnel—working both in the office and the field—on critical safety issues and trends. We established a wellness subcommittee to increase awareness of important issues related to general health and preventative care. Our 2009 safety action plan included items such as (1) documenting safety-related training attended by Pacific Northwest FIA employees, (2) obtaining additional training for members of our safety committee so they can better understand their important role in our organization, and (3) developing modified job hazard analysis and providing additional safety training for field-going personnel working on research projects in interior Alaska.

Interior West—The Interior West FIA program continued to make progress towards an improving safety culture by proactively focusing on risk management. In conjunction with the Rocky Mountain Research Station, Interior West FIA began

participating in a Safety Management Systems (SMS) pilot for the Forest Service. SMS is a systematic risk-based approach to safety that focuses on understanding, evaluating, and managing risk. In addition to SMS training, employees participated in work groups that created risk assessments for high-risk activities. These assessments help employees identify the risks relevant in their current work environment situations. The Program Safety Committee was highly involved in implementing a new check-in process for field employees. The process utilizes a telephone answering service for an evening check-in that interfaces with the program's existing computer-based check-in system. Ten new SPOT satellite messaging devices were purchased and tested throughout the Interior West during the year in differing terrain; the program hopes to implement this new communication tool if the results of the study are favorable, thus providing every field employee a communication device. The program continues to develop and disseminate a bimonthly safety newsletter that recognizes safety award recipients and provides timely safety and health information, messages from the program manager, and quarterly incident summaries. Multiple awards were given throughout the year for proactive safety performance. The annual facilities inspection and safety program evaluation checklist was completed and, again, indicated improvement in all sections. Although the program incurred six chargeable motor vehicle accidents, none resulted in personal injuries or citations.

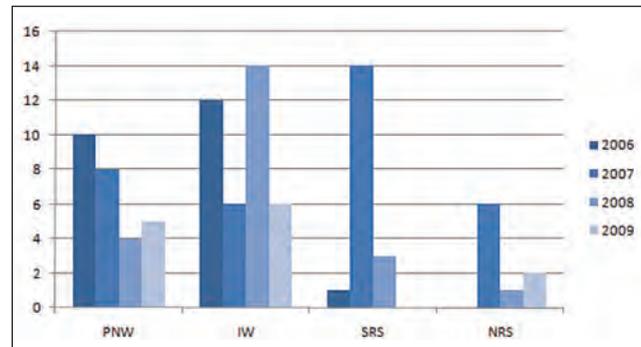
Southern Research Station—The Southern FIA program logged over 70,000 field hours and 104,000 office hours with no lost-time accidents. FIA staff drove nearly 700,000 miles with no reportable motor vehicle accidents. The program conducted defensive driving, boating safety, CPR, first aid, and defibrillator training; held four safety meetings; and updated the field, office, and driving job hazard analyses. The safety manager assisted in fire suppression activities for the Cherokee National Forest, and various staff assisted in fire suppression on an as-needed basis. We also performed the annual vehicle inspection and equipment inventory on our fleet of 36 vehicles; updated our office emergency procedures and continuity of operations plans to account for the possible H1N1 pandemic, and obtained all recommended safety supplies for such; and updated the Hazardous Materials/Hazard Communication (HAZMAT/HAZCOM) guide.

Northern Research Station—The Northern Research Station continued to provide nonmonetary awards for involvement in the safety program. These included intermittent awards for assistance and involvement in safety committee initiatives, as well as an award to the winning author in our third annual safety story contest. This contest requests work-related stories from employees in order to learn from one another and glean helpful safety tips and reminders from real life experiences. Relevant stories are shared with all employees on the Northern Research Station FIA Safety Web page. This Web page serves as a source to all Northern Research Station FIA employees for safety-related resources, policy documents, and safety committee meeting notes. FIA employees also continue to share responsibility in presenting helpful safety information during monthly conference calls. Especially helpful safety presentations are shared with all staff through the Web page.

Employees completed online defensive driving courses, and all field employees received additional 4-wheel-drive training that provided information about the capabilities of the current fleet and proper use of tire chains and recovery straps. The course also covered safety issues when using a come-a-long and emphasized recognizing hazardous conditions and avoiding trouble from the start. We reviewed, authorized, and made all applicable job hazard analyses available to all employees. Five members from various locations across the region—including Newtown Square, Saint Paul, and field offices in Wisconsin and Pennsylvania—comprised the FIA safety committee. Additionally, station FIA staff members served on headquarters and lab safety committees and on the Northern Research Station’s safety coordinators committee. The unit continues to emphasize safe work practices and encourage a culture that values the well-being of its employees. Although the unit incurred two recordable injuries, only one resulted in days away from work or restricted activity.

FIA program safety summary for FY 2009

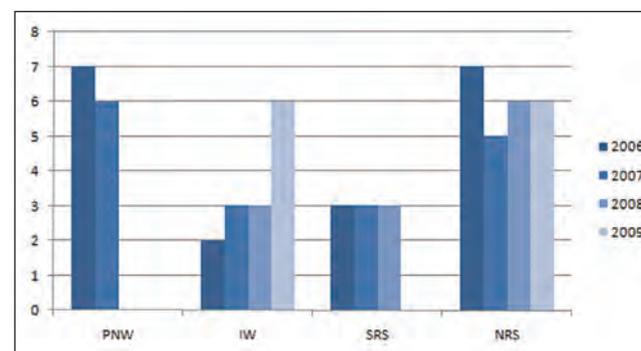
Figure 11—Number of injury or illness incidents by unit, 2006-2009



¹ A work-related injury or illness resulting in any of the following: death, days away from work, restricted work or transfer to another job, medical treatment beyond first aid, or loss of consciousness. No data available for the Northern Research Station for 2006. Value for Southern Research Station for 2009 is zero.

² PNW = Pacific Northwest Research Station, IW = Interior West, SRS = Southern Research Station, NRS = Northern Research Station.

Figure 12—Number of motor vehicle accident incidents by unit, 2006-2009



¹ Any occurrence involving the use of a Government-owned, leased motor vehicles (automobiles, trucks, and buses) that results in a total combined damage exceeding \$500 or more. This definition also applies to privately owned vehicles when used on official government business. Value for the Pacific Northwest Research Station and the Southern Research Station for 2009 was zero.

² PNW = Pacific Northwest Research Station, IW = Interior West, SRS = Southern Research Station, NRS = Northern Research Station.

FIA—National Forest Collaboration

In FY 2002, the Deputy Chief for Research and Development and the Deputy Chief for NFS signed an internal MOU providing for permanent inclusion of all national forest lands within the FIA program. This was a significant step forward for FIA customers, guaranteeing the availability of consistent FIA information across the entire United States. Under the terms of the negotiated agreement, the national forests provide permanent funding to help cover the cost of the FIA program on national forest lands and, in return, the FIA program agrees to implement the program in a consistent manner with inventory on other lands within the same State and to load FIA data into the national forest information base for use in forest planning and other strategic-scale assessments. FIA will also provide advice and assistance in developing forest-level sampling protocols linked to FIA and collaborate with national forests that want to contribute additional resources for additional sampling.

In FY 2009, FIA completed a merger of three major MOUs with NFS related to data collection and access and continued development and operation of applications to load FIA data from national forests into FS Veg, the corporate standard database for national forest use. Recent collaborative efforts between FIA and NFS may be reviewed on the Web at <http://www.fia.fs.fed.us>.

Based on feedback from the nine NFS regions, FIA is meeting the needs of NFS partners with a few caveats. Additional work continues to be needed in the western regions in the areas of coordinating fieldwork and in defining and collecting a consistent set of regional variables on NFS lands to meet NFS needs. More

effort needs to be made in getting FIA data from NFS lands into the hands of NFS staff and in developing data presentations, analyses, and reports tailored to the specific needs of NFS managers. FIA will continue to work on these issues in FY 2010. Increasing demands from NFS customers for additional forest planning data and the move toward an Environmental Monitoring Systems approach to planning will most certainly require changes in current financial arrangements with stronger NFS funding support at the national level, including additional NFS funding for needs beyond the core FIA program. In a meeting with NFS inventory specialists on inputs to the FIA Strategic Plan the following issues were raised as NFS priorities:

- Implement the annual system in all States.
- Collect data on all lands, including reserved and range lands.
- Collect a full suite of vegetation and associated information.
- Follow standard protocols across all NFS lands.
- Allow for “a la carte protocols” with local/regional funding support.
- Allow for increasing the intensity of the core grid as needed.
- Develop a mid-level vegetation map product meeting Federal Geographic Data Committee standards (which may require an NFS funded 2X sample).
- Provide an inventory compilation package that meets NFS business needs.

NFS will participate in a national user’s survey on defining the FIA core program and provide input on their planning needs from the annualized inventory.

Other FIA Program Features

Forest Products, Utilization, and Woodland Owner Studies

FIA is charged with monitoring and reporting on the status, condition, and trends of all the Nation's forests. While plot-based field surveys provide most of this information, additional questionnaire and field-based surveys are conducted to report on TPO, fuelwood production, and characteristics and management objectives of the Nation's private woodland owners.

Primary mill surveys—FIA conducts TPO studies to estimate industrial and nonindustrial uses of roundwood in a State. To estimate industrial uses of roundwood, all primary wood-using mills in a State are canvassed. TPO questionnaires are designed to determine location, size, and types of mills in a State; the volume of roundwood received by product species and geographic origin; and the volume, type, and disposition of wood residues generated during primary processing.

Logging utilization studies—Logging utilization studies provide the information to convert TPO volumes to inventory volume. Utilization factors developed from the data collected translate a standard unit of product (thousand board feet of saw logs, cord of pulpwood, etc.) into a common volume unit and type of tree harvested. Estimates are made of how much product came from sawtimber growing stock, poletimber growing stock, and nongrowing stock sources, such as cull trees, dead trees, saplings, and limbwood. The overall process provides a cross-section of logging operations to characterize the sites logged, trees cut, products taken, and residues left behind.

Fuelwood surveys—Studies of fuelwood production from roundwood are necessary to provide information to forest managers and users about the fuelwood harvest and its impact on the resource. These studies estimate the amount of fuelwood that is harvested from forest land, urban areas, fence rows, windbreaks, or other sources.

National Woodland Owner Survey—The NWOS is the official survey of nearly 10 million forest owners in the United States. It is aimed at increasing our understanding of woodland owners, who are the critical link between forests and society. The Forest Service conducted the first NWOS in 1978. Subsequently, we conducted another national survey in 1994. Beginning in 2000, on an annual basis, the NWOS contacts forest landowners from across the country to ask them questions about the forest land they own, their reasons for owning it, how they use it, if and how they manage it, sources of information about their forests, their concerns and issues related to their forests, their intentions for the future of their forests, and their demographics. Summary information from the NWOS is used to provide, design, and implement services and policies that affect forest owners, including government agencies, NGOs, landowner organizations, private service providers, forest industry companies, and academic researchers. The most recent NWOS findings are available in Butler (2008).

More detailed information on the forest products studies may be found in Smith (1991), Blyth and Smith (1979), and Morgan, et al. (2005). Additional information and online data from all of these surveys is available at <http://fia.fs.fed.us>.

Table 3. Mill, fuelwood, and ownership surveys processed and utilization sites visited from 2000–2008

Survey or site	Year	Number of annual survey questionnaires or sites									Period
	initiated	2000	2001	2002	2003	2004	2005	2006	2007	2008	total
Mills surveyed	1947	1,147	2,291	521	2,875	1,106	2,480	1,232	2,473	931	15,056
Fuelwood	1947	-	-	-	1,400	-	-	-	1,519	-	2,919
Utilization sites	1947	-	-	32	100	142	252	99	147	486	1,258
Ownership surveys	1978	-	-	2,781	4,388	3,662	-	6,450	-	-	17,281

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Smith, W.B. 1991. Assessing removals for North Central forest inventories. Res. Pap. NC-299. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station. 48 p.

Forest Health Indicator Surveys

FIA began implementing a nationwide field-based forest health indicator monitoring effort in the 1990s and currently collects forest health measures in 47 States, with the majority of indicators being documented in terms of sampling protocols, data management structures, and estimation procedures. Field data from most sample years and indicators are available online with numerous analytical examples published both internally and externally. Field protocols associated with each indicator are available in the national field guide (USDA Forest Service 2006). The following are brief descriptions of the indicators and a number of recent samples.

Crown Condition—Tree crowns are an important component of net primary production and trees with deteriorating foliage show visible signs of stress that often precede reduced growth and increased mortality. For this indicator, crews record measurements on all sampled trees greater than 12.7 centimeters (cm) dbh, including uncompact live crown ratio, crown diameter (for some years), crown density, foliage transparency, crown dieback, crown light exposure, and canopy position. The crown indicator is described in Schomaker et al. (2007).

Lichen Communities—Long-term observation of epiphytic (i.e., tree-dwelling) lichen community change indicates changes in air quality, climate, and land use. For this indicator, crews observe the presence of lichen species, estimate the abundance of each species, and collect specimens for identification by a specialist. Lichen community measurements are made within a 37-meter radius of each plot center (~ 0.38-ha area). The lichens indicator is described in Will-Wolf (2010).

Forest Soils—Environmental stressors that interfere with soil function have the potential to influence the productivity, species composition, and hydrology of forest ecosystems. For this indi-

cator, crews complete ocular estimates of the percentage and type of soil compaction or erosion observed on the plot, as well as the presence of restrictive layers within the top 50 cm of soil. The crew then collects five soil samples—three forest floor samples to measure organic matter and carbon content and a mineral soil core collected at two depths: 0 to 10 and 10 to 20 cm. Samples are sent to the laboratory immediately after collection and stored for future analysis of soil physical and chemical properties. The soils indicator is described in O’Neill et al. (2005).

Vegetation Diversity—The vegetation diversity and structure indicator is designed to evaluate the composition, abundance, and spatial arrangement of all vascular plants, for assessing wildlife habitat, site productivity, and the impacts of invasive species. For this indicator, crews with prior botanical experience record both species and overall structural data for vascular plants, including their total canopy cover and cover in different height zones (0 to 2 meters, 2 to 5 meters, and 5+ meters). Specialists collect specimens of species not readily identified. The vegetation indicator is described in Schulz et al. (2009).

Down Woody Material—The Down Woody Materials (DWM) indicator is designed to estimate detrital above-ground biomass in the form of coarse woody debris, fine woody debris, litter, and duff pertaining to important fire, wildlife, and carbon issues. For this indicator, crews sample coarse woody debris (greater than 7.5 cm in diameter) on a series of transects across the plot, totaling 88 meters in length. Fine woody debris between 2.5 and 7.5 cm is sampled on a series of transects totaling 12 meters in length. Fine woody debris less than 2.5 cm is sampled on a series of transects totaling 7 meters in length. Duff and litter depth measurements are taken at 12 points located on the plot. The DWM indicator is described in Woodall and Monleon (2008).

Table 4. Forest health indicator, year of initiation, and number of samples collected, 2000–2008

Indicator	Year	Number of annual samples									Period total
	initiated	2000	2001	2002	2003	2004	2005	2006	2007	2008	
Crowns	2000	264	324	424	696	840	865	767	593	350	5,123
Lichens	1994	401	519	400	584	252	217	157	177	151	2,858
Soils	1999	310	523	435	688	838	851	261	289	234	4,429
Vegetation	2001		536	445	406	179	157	80	679	479	2,961
Ozone	1994	919	1,029	1,018	1,089	1,152	985	961	609	601	8,363
DWM	2001		729	964	1,478	3,852	3,958	3,413	3,887	829	19,110

DWM = down woody material.

Ozone Injury—Ozone is a widely dispersed pollutant that reduces tree growth, changes species composition, and predisposes trees to insect and disease attack. Because ozone causes direct foliar injury to particular forest plant species, these species are used as “bioindicators” to identify the presence and severity of local air pollution. Ozone injury is not observed directly on the FIA plot network because indicator species are not always present and openings in the canopy are necessary to obtain useful results. For this indicator, crews evaluate up to 30 individual bioindicator plants. The ozone indicator is briefly described in Will-Wolf and Jovan (2008).

Other indicators—Other key indicators of forest health, such as tree mortality and growth and the abundance of invasive and nonnative tree species, are found in the basic plot data and subsequent remeasurements.

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Comparing FY 2008 Plans with FY 2009 Accomplishments and FY 2010 Plans

In the FY 2008 business report for FIA, we included a section stating our plans for FY 2009. Below we show how our actions in FY 2009 matched our plans from FY 2008 and our plans for FY 2010.

In the FY 2008 business report, we said that in FY 2009 we would—	In FY 2009, we—	In FY 2010, we will—
Continue annual inventories in 45 States and coastal Alaska and pilot study in Nevada.	Continued annual inventories on all forested lands in 45 current States and coastal Alaska. Completed close-out inventory field work in eastern Oklahoma and initiated annual inventory work in eastern and western Oklahoma. Completed Nevada pilot study—all the data have been collected and analysis is ongoing.	Initiate periodic inventory in Hawaii, Wyoming, and Nevada. Publish results of the Nevada pilot.
Develop an online data distribution tool and begin planning for the next iteration of the survey.	Launched an online data distribution tool (http://fia-tools.fs.fed.us/NWOS/tablemaker.jsp). Began planning for the next iteration of the NWOS.	Continue planning for the next iteration of the NWOS and obtain OMB clearance on new survey form. Work with partners to analyze the results from the NWOS. Develop techniques for creating geospatial NWOS products.
Complete rangeland pilot study and implement initial urban forest monitoring.	Completed data collection for 4th year of the 5-year urban forest inventory pilot in Colorado and Tennessee. Rangeland pilot study results in review.	Continue work with NRCS-Natural Resources Inventory to deliver consistent indicators of rangelands sustainability to the NFS, BLM, State agencies, NGOs, and private landowners. Initiate urban FIA in west coast States, funded by the American Recovery and Reinvestment Act of 2009. Work with clients and partners to complete implementation plans for rangeland monitoring. Publish the results of the urban pilot in Colorado and Tennessee.
Publish 5-year State reports for Illinois, Michigan, Nebraska, North Dakota, Ohio, South Dakota, Arkansas, Florida, Georgia, Tennessee, Alabama (close-out periodic), Arizona, Colorado, Utah, and Washington. Continue movement to convert annual reports to simplified Web-based format.	Published 5-year State reports for Illinois, Michigan, Nebraska, North Dakota, Ohio, South Dakota, Georgia, Tennessee, Alabama (close-out periodic), Utah, and Washington. In addition to those promised, we published eastern Texas, Virginia, South Carolina, and Kansas. Although currently in process, Arkansas, Florida, Arizona, and Colorado were delayed. Overall, with adjustments, 16 reports were promised and 15 reports were published.	Publish 5-year State reports for Vermont, New Hampshire, Massachusetts, Arkansas, Florida, Texas (eastern and western), Oklahoma (close-out periodic, eastern only), North Carolina, Arizona, and Colorado. Publish periodic reports for Commonwealth of the Northern Mariana Islands and Federated States of Micronesia. Continue to convert annual reports to simplified Web-based format.
Continue collaborative stewardship of the FIA program by holding user-group meetings in all regions of the country and at the national level, holding regional management team meetings in all regions of the country, and resuming scientific symposium on a biennial basis.	Held a total of 11 user group and management team meetings in all regions of the country. The FIA science symposium was held in October 2008, with over 200 attendees from dozens of organizations. Proceedings (RMRS-P-56CD) are available at http://www.treeseearch.fs.fed.us/pubs/33326 .	Continue collaborative stewardship of the FIA program by holding user-group meetings in all regions of the country and at the national level and holding regional management team meetings in all regions of the country. Hold the 2010 FIA Science Symposium in Knoxville, TN.

BLM = Bureau of Land Management, FIA = Forest Inventory and Analysis, NFS = National Forest System, NGOs = nongovernmental organizations, NRCS = Natural Resources Conservation Service, NWOS = National Woodland Owner Survey, OMB = Office of Management and Budget.

In the FY 2008 business report, we said that in FY 2009 we would—	In FY 2009, we—	In FY 2010, we will—
Continue ongoing enhancement of FIDO system, including more output formats.	Improved user interface to FIDO, including support for Google Maps. Updated FIDO to support most of FIADB version 4. Approved FIDO migration to consolidated datacenter environment, Enhanced EvaliDator, and the Data Mart dump function.	Improve the user interface to FIDO in order to make the application easier to use for novice users. Add support for new carbon and biomass variables in FIADBv4. Complete the migration of the application to the Forest Service consolidated datacenter environment for ongoing support. Develop FIDO interfaces to other FIA datasets. Enhance the mapping capabilities of FIDO. Initiate onsite, Webinar, and self-guided tutorials for the use of various online data query tools, such as FIDO and EvaliDator.
Review and evaluate client recommendations on possible program efficiencies to assure full-core program implementation in all States.	Developed models to estimate crown cover in west Texas. Published Assessing forestland area based on canopy cover in a semi-arid region: a case study in <i>Forestry: An International Journal of Forest Research</i> (January 2010). Developed component ratio method (CRM) to deliver compatible volume and biomass data at the tree level in FIADB. Published specific gravity and other properties of wood and bark for 156 tree species found in North America. (Gen. Tech. Res. Note-NRS-38) and Tree Biomass and Carbon in the FIADB Using a Biomass Expansion Factor Approach (RMRS-P-56CD). Developed prefield remote sensing strategies to reduce field checks and reduce costs.	Continue to conduct applied research into ways of using technology to increase program efficiency, to develop new products to meet customers' needs, and to collaborate with partners to reduce program costs and increase the scope of products offered.
Complete the beta release of the Portable Data Recorder data collection program (MIDAS) with national and regional variables.	Completed development and began implementation of the MIDAS, capable of collecting both national and regional variables. Initiated MIDAS regionwide in the Northern Research Station.	Continue implementation of MIDAS in all regions. Begin work on the next version of MIDAS to incorporate suggested feature enhancements and new technologies. Develop and use stand-alone MIDAS configuration for the west coast urban inventory.
Provide technical assistance and software tools to States, NFS, and collaborating nations to monitor criteria and indicators of sustainable forestry on their lands using consistent and compatible methods.	Made first 2-year data for Wisconsin State forests available via the Web using FIDO. Provided technical assistance and software tools to Wisconsin and Indiana (State forests) and four Plains States (trees outside forests). Transferred image classification technology to Maryland. Identified the requirements for the design and analysis tools for inventory and monitoring and received funding from NFS for software development. Provided technical assistance to 12 national forests. Developed and plot tested a land-cover change photointerpretation method in Maryland. Completed the monitoring system for pine forests in Honduras. Started developing a monitoring system for mahogany and other rainforest species. Submitted nine U.S. reports to UN/FAO for the global FRA, one for the 50 States, and one each for the Pacific and Caribbean Island groups.	Continue to work with Indiana and Wisconsin on data collection and processing of State lands inventory data. Begin inventory on Missouri State lands. Continue to develop design and analysis tools. Begin development of Web-based analytical tool for NFS. Continue with plot intensification planning on NFS lands. Collect and process data from Honduras rainforest plots.
Continue to improve NIMS-CS to process field guide 4.0, add features to support migration to the data center, and incorporate a new user interface.	Released NIMS-CS 4.0 Production version that supported processing Field Guide 4.0 data. Began migration by installing the system on the test server at the data center.	Release NIMS-CS 5.0 test version with enhanced functionality for prefield and better coordination with MIDAS and support 5.0 field guide. Finish migration of FIADB and NIMS-CS to the data center.

FRA RPA = Forest Resources Assessment Resources Planning Act, UN/FAO = Food and Agriculture Organization of the United Nations.

In the FY 2008 business report, we said that in FY 2009 we would—	In FY 2009, we—	In FY 2010, we will—
<p>Prepare a final 20-map atlas for the 2007 Forest Resources of the United States RPA publication.</p> <p>Complete the first design phase of a national FIAtlas consisting of over 75 Web-based maps illustrating multiple aspects of nationwide forest issues using FIA and related data.</p> <p>Publish Forest Resources of the United States, 2007</p>	<p>Published Forest Resources of the United States, 2007 with 36 authors (336 pages).</p> <p>Published 22 atlas maps in the Forest Resources of the United States, 2007 RPA publication, including map themes, cartographic layout, geographic templates, and corresponding FIADB files.</p> <p>Developed prototype maps for the FIAtlas for review and placed on the national FIA Web site. Drafted a timetable and map list for the atlas.</p> <p>Merged three MOUs with NFS covering Wilderness, plot coordinates, and general NFS cooperation.</p> <p>Updated Forest Facts brochure (58 pages) and published in five languages (Spanish, French, Russian, Portuguese, and Chinese) for distribution at 2009 World Forestry Congress and agency international programs use.</p>	<p>Continue working on FIAtlas project. Select final atlas storylines, maps, charts, and graphics. Develop layout format and storyboards with final selections. Target publication roll-out date is mid-2011 for the “International Year of the Forest.”</p>
		<p>Develop a national, consistent vision for TPO for FIA.</p> <p>Develop a NIMS compatible National data processing tool for TPO.</p> <p>Initiate the development of an online tool to query TPO data.</p>

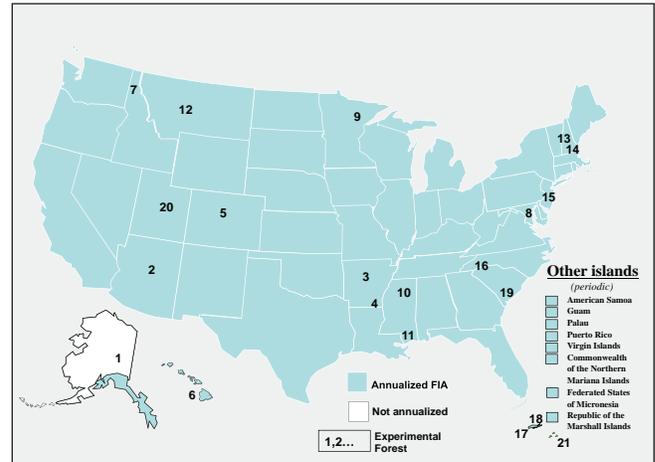
TPO = timber product output.

Fiscal Year 2010 FIA Program

In FY 2010, the FIA program will split a \$5 million general program increase into two parts. The program will use \$3 million to increase the implementation of annualized FIA by fully implementing New Mexico; adding Hawaii, Nevada, and Wyoming to the program; laying plans to enter interior Alaska; and expanding analytical capacity in the Eastern United States. FIA will use \$2 million, marked by Congress, to initiate intensive site monitoring for Forest Service Experimental Forests and Ranges (EFRs). Five selection criteria have been identified to guide site selection, these include sites with (A) long-term data; (B) an intensified plot grid that could provide data for an early warning system; (C) areas expected to be highly sensitive to climate changes; (D) areas that connect widespread gradients of conditions; and (E) areas with practical or administrative considerations in the current fiscal year that make site selection effective. These criteria were used to rapidly screen 81 total EFRs and select 16 sites. More thorough screening of other sites may take place in the future. The sites selected for the initial investments in FY 2010 are:

1. Bonanza Creek EF, Alaska
2. Fort Valley EF, Arizona
3. Alum Creek EF, Arkansas
4. Crossett EF, Arkansas
5. Fraser EF, Colorado
6. Hawaii Experimental Tropical Forest, Hawaii
7. Priest River EF, Idaho
8. Baltimore Ecosystem Study, Maryland
9. Marcell EF, Minnesota

Figure 13—Planned FIA implementation status, FY 2010.



10. Tallahatchie EF, Mississippi
11. Harrison EF, Mississippi
12. Tenderfoot Creek EF, Montana
13. Bartlett EF, New Hampshire
14. Hubbard Brook EF, New Hampshire
15. Silas Little EF, New Jersey
16. Coweeta Hydrological Lab, North Carolina
17. Luquillo EF, Puerto Rico
18. San Juan ULTRA, Puerto Rico
19. Santee EF, South Carolina
20. Great Basin Experimental Range, Utah
21. Estate Thomas EF, U.S. Virgin Islands

Long-Term Strategic Direction

The FIA program initially intended to implement the “Strategic Plan for Forest Inventory and Monitoring” by achieving a base Federal program of 10 percent per year in the West and 15 percent per year in the East by FY 2003. Unfortunately, while funding for the FIA program has increased over the past several years, it has not increased sufficiently to allow full program implementation as scheduled by 2003. We continue to be optimistic that funding will increase in 2011 to allow full implementation of the program. Aggressive partner financial support has allowed FIA to achieve full implementation and 5-year cycles in 34 of 37 States from the Great Plains eastward.

The Government Performance and Results Act (GPRA) of 1993 directs Federal entities to develop long-term goals and performance measures to monitor progress toward those goals. Although intended for application at the agency level, the GPRA framework also provides an excellent tool for guiding progress at the project level. The following tabulation shows our key goals, performance measures, benchmarks, and targets for the FIA program for 2004–2009. In future business reports, we will repeat this table to show how we are progressing toward our goals.

Goal	Performance measure	2004 level	2005 level	2006 level	2007 level	2008 level	2009 level	Target level
Inputs								
Maintain sufficient funding to support the base Federal FIA program ¹	Percentage of total Federal funding necessary for annualized inventory received	75	80	84	84	85	87	100
Outputs								
Include 100 percent of U.S. forest lands in the FIA sample population	Percentage of Nation's forest land included in the target FIA sample population	100	100	100	100	100	100	100
Keep fieldwork current	Percentage of States actively engaged in the Annualized Inventory program	88	88	88	90	94	94	100
Make data accessible to national forest customers	Percentage of national forest land for which FIA data are loaded into NRIS	65	80	84	90	92	92	100
Outcomes								
Keep analysis current	Percentage of States with FIA State report less than 5 years old	52	48	42	42	60	76	100
Keep online data current	Percentage of States with FIA online data less than 2 years old	56	80	84	88	90	90	100
Customer satisfaction	Percentage of customers rating service as “satisfactory” or better	85	85	85	85	85	85	100
Partner participation	Partner financial contributions expressed as percentage of total program funds	15	11	10	10	11	9	20

¹ Revised percents based on new Congressional target of \$75,761,000

Conclusions

We continue to operate in a new era of partnership and collaboration in which Federal and State agencies and other colleagues work together to plan, manage, implement, and continuously improve the FIA program. We are gathering and disseminating information on a wider array of ecological attributes while continuing to serve our traditional customers, who require timely information on forest resources. We are increasing the timeliness of our surveys and of our reporting to provide a continuously updated, publicly accessible information base that includes meaningful reports and analyses, as well as elemental data for others to use. We are exploring and

using the latest technology to expand the scope of our products and to deliver them more efficiently. And, we are openly reporting on our progress, our accomplishments, our successes, and our challenges.

In summary, we are committed to working collaboratively with our partners to deliver the best program possible with the resources that we have at our discretion. We hope this report gives you a transparent view of the business practices of the FIA program, and we encourage you to help us improve the program with your feedback.

Glossary of Terms Used in Appendixes

Base Federal FIA program. A level of FIA program delivery that includes sampling 10 percent of base grid Phase 2 plots per year in the Western United States, 15 percent of base grid plots per year in the Eastern United States, and 20 percent of Phase 3 plots nationwide, with data compiled and made available annually and complete State analyses done every 5 years.

Base grid plots sampled. The base grid consists of one sample location per approximately 6,000 acres (Phase 2) and one location per approximately 94,800 acres (Phase 3). Some partners chose to intensify beyond the base grid.

Buy down. Plots installed at State expense to reach 20-percent implementation level.

Core reports. A class of publications that summarizes forest status and trends for a complete administrative unit, such as a whole State or a national forest. Examples include survey unit reports, State statistical or analytical reports, or national forest reports.

Direct expenses. All expenses directly attributable to the FIA unit incurred as a part of doing FIA business. Excludes indirect business costs (such as rent, telephones, and administrative overhead outside the FIA unit staff), which are included below in “effective indirect expenses.” Includes work done for other units as a normal part of FIA business and the following items:

Salary. Includes direct salary and costs, plus benefits charged to the FIA unit, broken into the following categories:

Administration. Program manager, project leader, and clerical staff.

Phase 1 production. Aerial photointerpreters, satellite image analysts engaged in Phase 1 stratification.

Field support. Field crew supervisors who spend less than 50 percent of their time measuring plots; others involved in supporting and coordinating field crews.

Data collection. All staff spending at least 50 percent of their time measuring regular plots.

QA (quality assurance) crews. All staff spending at least 50 percent of their time doing QA fieldwork.

Information management. Programmers, data compilers, and computer system support staff.

Analysts. Staff who analyze data and write publications.

Techniques research. Mainly research staffs who conduct FIA-related research on methods and techniques.

Travel. Broken into the following categories:

Office travel. Travel costs for all staff except field crews and QA crews.

Field/QA travel. Travel costs for field crews and QA crews.

Equipment. Costs for durable goods used for FIA. Includes the following:

Imagery. Aerial photos, satellite imagery data files.

Vehicles. All vehicle costs, including such items as operating costs, depreciation, and leases.

Field equipment. Measurement tools and equipment, such as data recorders carried by field crews.

Computer/telecommunications. Computer hardware, software, communications costs.

Other. Any cost that does not fit into one of the above equipment categories.

Publications. Costs for laying out, editing, printing, and distributing publications.

Grants and agreements. Cost of cooperative grants and agreements that directly support the FIA mission.

Office space and utilities. Charges for rent, lease, or other real estate costs for FIA staff, plus utilities.

Other direct expenses. Any cost that does not fit into one of the above categories, including training costs, unemployment, office supplies, postage, awards, moving expenses, and other expenses related to delivering the FIA program.

Effective indirect expenses. Indirect expenses include items such as research station management and administrative salaries, operating expenses, research station budget shortfalls, and other items for which the FIA unit is assessed by its research station. Each station has its own means for determining these assessments. Rather than reporting the different

rates, we simply calculate the “Effective Indirect Expenses” item by subtraction:

Effective indirect expenses = (total available funds) – (total direct FIA expenses + end of year balance)

Effective indirect rate. Effective indirect expenses divided by total available funds. This is not necessarily the same as the standard station overhead rate; instead this rate reflects the total indirect cost as a fraction of the total funds available to FIA.

FRIA (Forest Resource Inventory and Assessment). An account created by Congress within the State and Private Forestry (S&PF) portion of the Forest Service budget to provide funds to support FIA collaboration with States.

Intensification. Plots installed at State, National Forest System (NFS), or other partner expense to achieve higher quality estimates for smaller areas.

Management meetings held. Number of national or regional management team meetings held by each FIA unit. A management team for each FIA region consists of partners who are sharing in the funding and implementation of the FIA program. This group typically consists of representatives from the FIA unit, NFS regional offices, S&PF offices, and State forestry agencies.

NGO (nongovernmental organization). A class of customers with whom FIA staff are asked to consult. Includes environmental organizations, professional societies, and other generally not-for-profit organizations.

NIPF (nonindustrial private forest land owners). Private individuals or organizations who own forest land for purposes other than industrial operations.

Percentage of total plots sampled. Total number of base grid plots sampled, divided by the total number of plots in the base grid.

Percentage of full funding. Total available funds divided by the funding needed to fully implement the base Federal program for a given year’s target funding.

Percentage of region covered by annual FIA. Sum of forested acres in States currently implementing annual FIA, divided by the total number of forested acres in each FIA region; a

measure of the degree to which the FIA region has moved from periodic to annual inventory.

Phase 1. Stratification of the land base into forested and non-forested classes by using remotely sensed imagery (aerial photographs or satellite imagery). Done to increase the efficiency of fieldwork and estimation.

Phase 2. A set of sample locations, approximately 1 for every 6,000 acres of land, measured for basic mensurational forest attributes.

Phase 3. A subset of Phase 2 sample locations, approximately one for every 96,000 acres of land, measured for a more extended set of ecosystem attributes, including tree crown condition, lichen community diversity, soil data, and down woody debris.

Publications. Number of publications per unit, by type of publication, as reported in official agency attainment reports. Publications are among the major outputs of the FIA program. Types of publications include the following:

Core reports. A report pertaining to reporting inventory results for a complete geographic entity includes:

National forest reports. A complete analysis for a single national forest.

State resource reports. A complete statistical or analytical summary of the forested resources within a single State.

State timber product output (TPO) reports. A complete analysis of TPO data for a single State.

Regional reports. A report for a group of States or other contiguous unit larger than a single State, such as a regional assessment.

National report. A report for the entire Nation, such as the Resource Planning Act (RPA) report.

Peer-reviewed journal articles. An article appearing in a refereed or peer-reviewed journal.

Proceedings papers. An article appearing in the proceedings from a meeting or symposium.

Other station publications. A manuscript published by the Forest Service, for example, a general technical report.

Other. Publications that do not fit into any of the above categories, such as abstracts, books, or other Government publications.

FY (end-of-the-year) balance. Funds reported in the previous fiscal year business report as unspent at the end of that fiscal year and presumably available for use in the current fiscal year.

Significant consultations. Cases in which an FIA staff person spent at least 1 hour in discussion, analysis, or research to address a specific question or need raised by an external FIA program customer, and which is not part of our normal course of business in collecting, analyzing, and reporting FIA information.

Total available funds. Total funds available for delivering the FIA program, including funds appropriated by Congress for the FIA program, other funds made available by Forest Service partners, and previous year carryover funds. This is a measure of Federal funding for the base Federal program.

User-group meetings held. Number of user group meetings sponsored or attended by each FIA unit. A user group meeting is an open meeting in which a complete regional cross section of FIA partners and customers is invited to attend. User-group meetings differ from the usual smaller meetings with one or two partners that all FIA units call as a normal course of business.

Contacts

For information about the status and trends of America's forests, please contact the appropriate office below:

Northern

Program Manager, FIA
Forest Service
North Central Research Station
1992 Folwell Avenue
St. Paul, MN 55108
651-649-5139

Southern (includes Commonwealth of Puerto Rico and the U.S. Virgin Islands)

Program Manager, FIA
Forest Service
Southern Research Station
4700 Old Kingston Pike
Knoxville, TN 37919
865-862-2073

National Office

National Program Leader, FIA
Forest Service
1601 North Kent Street, Suite 400
Arlington, VA 22209
703-605-4177

Interior West

Program Manager, FIA
Forest Service
Rocky Mountain Research Station
507 25th Street
Ogden, UT 84401
801-625-5388

Pacific Northwest

Program Manager, RMA (FIA)
Forest Service
Pacific Northwest Research Station
620 SW Main St., Suite 400
Portland, OR 97205
503-808-2026

All our regional Internet homepages, as well as a wealth of statistical and other information, are available through the national FIA homepage located at <http://www.fia.fs.fed.us>.



Appendix 1.—Performance Measures for the FY 2009 FIA Program

	Pacific Northwest	Interior West	Southern	Northern	National Office	Total
Total available Federal funds, FY 2009	\$14,577,150	\$12,928,314	\$15,871,551	\$17,523,473	\$7,956,000	\$68,856,488
Total appropriated Federal funds, FY 2009	\$13,595,000	\$12,486,000	\$15,285,000	\$16,214,000	\$7,956,000	\$65,536,000
Estimated % of full program funding	80%	84%	92%	91%	86%	87%
Contributions from partners:						
Supporting the 20% FIA program	\$85,000	\$0	\$2,309,245	\$1,242,419		\$3,636,664
Value-added contributions	\$47,200	\$737,124	\$174,072	\$1,898,443		\$2,856,839
Total contributions	\$132,200	\$737,124	\$2,483,317	\$3,140,862		\$6,493,503
Base grid plots sampled (includes buy down):						
Phase 2, forested	1,705	2,179	7,520	6,225		17,629
Phase 2, nonforested	2,052	3,622	2,751	9,942		18,367
Total Phase 2 plots	3,757	5,801	10,271	16,167		35,996
Phase 3, forested	128	137	660	443		1,368
Phase 3, nonforested	124	242	177	633		1,176
Total Phase 3 Plots	252	379	837	1,076		2,544
Total base grid plots	4,009	6,180	11,108	17,243		38,540
Intensification plots sampled:						
Phase 2/3, forested	938		71	1,539		2,548
Phase 2/3, nonforested	34		-	2,419		2,453
Total intensification plots	972		71	3,958		5,001
Number of quality assurance plots						
Phase 2 (forest + nonforest)	261	453	1,772	929		3,415
Phase 3 (forest + nonforest)	13	33	87	49		182
Total quality assurance plots	274	486	1,859	978		3,597
Total base grid plots and percent sampled ^a :						
Total Phase 2 and 3 Target base grid plots	41,463	91,341	89,205	101,342		323,351
Phase 2 and 3 Target (with buy down)	12%	7%	13%	21%		13%
Phase 2 and 3 Target (without buy down)	10%	7%	12%	17%		12%
Phase 2 and 3 Accomplishment	10%	7%	12%	17%		12%
Percentage of States with annual FIA activity ^b	80%	75%	100%	100%		94%
Number of publications:						
National forest reports	-	1	1	-	-	2
State resource reports	1	-	8	13	-	22
State timber product output reports	-	1	12	-	-	13
Regional reports	-	1	3	-	-	4
National reports	-	2	3	1	3	9
Subtotal--core reports	1	5	27	14	3	50
Peer-reviewed journal articles	7	7	10	13	1	38
Proceedings articles	7	19	21	40	-	87
Other station publications	6	1	2	4	-	13
Other publications	2	3	11	1	1	18
Total, all reports	23	35	71	72	5	206
Number of publications per Federal FTE	0.24	0.37	0.85	0.69	1.43	0.54

Appendix 1.—Performance Measures for the FY 2009 FIA Program (continued).

	Pacific Northwest	Interior West	Southern	Northern	National Office	Total
Consulting activities:						
Number of significant consultations	67	352	699	255	26	1,399
Total hours of significant consultations	603	1,700	3,347	2,811	142	8,603
Meetings:						
User-group meetings held	1	1	0	1	1	4
Management meetings held	1	1	1	1	3	7

FTE = full-time employment.

^a Base grid targets shown are 20 percent of samples per year as stated in the Farm Bill. Congressional conference notes recommended annual Federal targets of 15 percent in the East and 10 percent in the West. Interior Alaska as well as the Caribbean and Pacific Island inventories are periodic and excluded from this mandate in compliance with Congressional recommendations.

^b Revised measure based on number of States where annualized inventory is active (see last section of app. 7 for previous measures).

Appendix 2.— Financial Statement for the FY 2009 FIA Program.

	Pacific Northwest	Interior West	Southern	Northern	National Office	Total
Available funds:						
	Dollars					
Previous year end-of-year balance	0	70,051	184,035	19,345	0	273,431
Post-year adjustments ^a	982,150	347,263	5,997	1,290,128	0	2,625,538
Subtotal pre-year adjustments	982,150	417,314	190,032	1,309,473	0	2,898,969
FY appropriated funds						
Research	12,775,000	11,386,000	14,885,000	15,394,000	6,330,000	60,770,000
State and Private-FRIA (base)	820,000	1,100,000	400,000	820,000	1,626,000	4,766,000
Subtotal appropriated funds	13,595,000	12,486,000	15,285,000	16,214,000	7,956,000	65,536,000
Special project funding	0	25,000	396,519	0	0	421,519
Total available Federal funds	14,577,150	12,928,314	15,871,551	17,523,473	7,956,000	68,856,488
Direct expenses:						
Salary--	7,724,702	7,156,549	6,987,949	9,395,466	322,350	31,587,016
Administration	484,172	708,861	437,690	333,877	322,350	2,286,950
Phase 1 production	0	0	489,872	433,001	0	922,873
Field support	666,640	906,943	681,692	748,105	0	3,003,380
Data collection	3,243,142	2,877,178	685,379	2,675,644	0	9,481,343
Quality assurance	439,252	531,520	1,188,254	467,583	0	2,626,609
Information management	1,132,220	1,037,971	1,069,195	1,854,007	0	5,093,393
Analysis	1,030,827	635,532	1,740,671	1,946,555	0	5,353,585
Techniques research	728,449	458,544	695,196	936,694	0	2,818,883
Travel--	1,629,808	883,106	721,070	973,673	47,514	4,255,171
Office travel	145,393	118,296	150,500	250,700	47,514	712,403
Field/quality assurance crew travel	1,484,415	764,810	570,570	722,973	0	3,542,768
Equipment--	541,040	760,689	354,225	696,534	0	2,352,488
Imagery	74,827	76,021	0	28,522	0	179,370
Vehicles	230,758	448,528	227,152	408,423	0	1,314,861
Field equipment	88,578	54,649	118,367	108,909	0	370,503
Information technology/communications	146,877	181,491	107,842	0	436,210	
Other	0	0	8,706	42,838	0	51,544
Publications	41,125	6,523	0	17,101	55,626	120,375
Grants and agreements ^b	574,182	2,035,676	5,406,392	3,517,136	1,409,000	12,942,386
Field work	0	1,175,155	5,227,501	1,391,707	113,000	7,907,363
Information management	50,000	0	178,891	1,019,014	725,000	1,972,905
Research	524,182	860,521	0	1,106,415	571,000	3,062,118
Office space and utilities ^c	675,614	540,758	375,116	520,725	0	2,112,213
Other direct expenses ^d	811,541	545,570	275,011	113,017	0	1,745,139
Total direct expenses	11,998,012	11,928,871	14,119,763	15,233,652	1,834,490	55,114,788
Effective indirect expenses						
Total effective indirect ^e	1,793,151	930,284	1,598,573	2,209,353	6,121,510	12,652,871
Total effective indirect rate	12%	7%	10%	13%	77%	18%
2009* EOY balance	785,987	69,159	153,215	80,468	0	1,088,829

EOY = End of year, FRIA = Forest Resource Inventory and Analysis.

* Fiscal year 2009 is September 1, 2008 through August 31, 2009.

^a Some bookkeeping is not completed until after the new FY begins, which may affect beginning balances. These adjustments including items such as carryover, return of fire transfer, Station adjustments, etc. are accounted for here.

^b Grants and Agreements include general allocation to basic categories.

^c Note that this row was new in 2003; formerly, these expenses were lumped into "Other Direct and Indirect Expenses."

^d Note: Because office space and other direct expenses are no longer included in this line, these figures are not directly comparable to data prior to 2003.

^e Program charges for Albuquerque Service Center included in National Office column.

Appendix 3a.—Federal Staffing (Full-Time Equivalents) for the FY 2009 FIA Program

	Pacific Northwest	Interior West	Southern	Northern	National Office*	Total
Administration	5.6	10.5	5.0	3.5	2.5	27.1
Phase 1 production work	0.0	1.3	7.6	6.1	0.0	15.0
Field support	8.1	14.9	7.0	8.3	0.0	38.3
Data collection	46.7	45.0	10.7	35.4	0.0	137.8
Quality assurance crew	5.8	1.8	17.9	6.4	0.0	31.9
Information management	11.2	9.8	10.3	18.9	0.0	50.2
Analysis	10.8	7.0	19.2	18.3	0.0	55.3
Techniques research	7.5	3.2	6.3	6.9	1.0	24.9
Total	95.7	93.5	84.0	103.8	3.5	380.5

* Techniques person is in unit funded by National Office at Research Triangle Park, NC.

Appendix 3b. Estimate of Cooperator Staffing Funded by FIA Grants & Agreements (Full-Time Equivalents) for the FY 2009 FIA Program

	Pacific Northwest	Interior West	Southern	Northern	National Office*	Total
Administration	0.0	1.0	3.9	0.3	0.0	5.2
Phase 1 production work	0.0	0.0	0.0	0.3	0.0	0.3
Field support	0.0	1.0	8.8	2.7	0.0	12.5
Data collection	0.0	12.5	97.6	25.3	0.0	135.4
Quality assurance crew	0.0	0.2	0.4	0.0	0.0	0.6
Information management	0.1	0.6	0.0	10.6	6.0	17.3
Analysis	2.0	3.0	0.0	7.4	3.0	15.4
Techniques research	2.0	3.0	0.0	7.4	2.0	14.4
Total	4.1	21.3	110.7	54.0	11.0	201.1

Appendix 3c. Estimate of Total Federally Funded Staffing (Full-Time Equivalents) for the FY 2009 FIA Program

	Pacific Northwest	Interior West	Southern	Northern	National Office*	Total
Administration	5.6	11.5	8.9	3.8	2.5	32.3
Phase 1 production work	0.0	1.3	7.6	6.4	0.0	15.3
Field support	8.1	15.9	15.8	11.0	0.0	50.8
Data collection	46.7	57.5	108.3	60.7	0.0	273.2
Quality assurance crew	5.8	2.0	18.3	6.4	0.0	32.5
Information management	11.3	10.4	10.3	29.5	6.0	67.5
Analysis	12.8	10.0	19.2	25.7	3.0	70.7
Techniques research	9.5	6.2	6.3	14.3	3.0	39.3
Total	99.8	114.8	194.7	157.8	14.5	581.6

Appendix 4.—Partner Contributions Toward Implementing FIA in FY 2009

Unit	Partner	Contributions toward the base program	Contributions that add value
		----- Dollars -----	
Interior West	Colorado State Forest Service		252,116
	Montana State Department of Natural Resources		1,000
	Nevada Division of Forestry		1,200
	New Mexico State Forestry		5,000
	University of Montana, Bureau of Business and Economics Research		69,830
	NASA, Remote Sensing Science Project		142,270
	NASA, Remote Sensing Science Project		171,507
	USDA Forest Service S&PF, Urban Pilot Project		25,000
	USDA Forest Service Region 1		59,000
	USDA Forest Service Region 2		1,200
	USDA Forest Service Region 3		5,000
	USDA Forest Service Region 4		4,000
	IW total		0
National Office			0
NO total		0	0
Northern	Auburn University		3,507
	Connecticut	500	
	Conservation Biology Institute		15,000
	Curators of The University of Missouri		59,500
	Delaware Department of Agriculture	7,770	20,685
	Illinois Division of Forest Resources	23,359	
	Indiana Department of Natural Resources	75,876	148,036
	Iowa Department of Natural Resources	18,680	
	Kansas State Forest Service	61,770	4,750
	Maine Forest Service	209,906	233,905
	Maryland Department of Natural Resources Forest Service	12,300	
	Massachusetts Department of Conservation and Recreation	8,200	
	Michigan Division of Forest Management	40,200	
	Michigan State University		7,782
	Michigan Tech University		3,387
	Minnesota Department of Natural Resources	221,000	327,994
	Mississippi State University		3,428
	Missouri Department of Conservation	67,492	
	National Council for Air and Stream		6,400
	National Forest Service	1,667	348,800
	Nature Serve		5,542
	Nebraska Department of Forestry, Fish, and Wildlife	5,853	4,750
	New Hampshire Department of Resources and Economic Development Division of Forests and Lands	20,400	
	New Jersey	667	
	New York Department of Environmental Conservation	19,890	
	North Dakota Forest Service	8,447	3,750
	Ohio Department of Natural Resources	11,345	
	Oregon State University		4,970
	Pennsylvania Department of Conservation and Natural Resources	43,000	66,389
	Regents of University of Minnesota		3,608
	Rhode Island Department of Environmental Management	12,189	
	South Dakota Department of Forestry and Natural Resource Management	11,092	3,750
University of Massachusetts	21,210		
University of Minnesota		1,910	

S&PF = State and Private Forestry (Forest Service deputy area).

Appendix 4.—Partner Contributions Toward Implementing FIA in FY 2009 (continued).

Unit	Partner	Contributions toward the base program	Contributions that add value
		----- Dollars -----	
	University of Nevada in Las Vegas	165,004	
	University of New Hampshire		4,119
	USDA Forest Service State & Private Forestry Northern Area	67,000	104,500
	Utah State University		3,067
	Vermont Department of Forests, Parks & Recreation	8,600	
	Virginia Polytechnic Institute		5,850
	West Virginia Division of Forestry	49,300	
	West Virginia University		5,000
	Wisconsin Department of Natural Resources	49,702	498,064
NRS total		1,242,419	1,898,443
Pacific Northwest	Alaska Department of Natural Resources	15,000	
	California Department of Forestry	15,000	
	Washington State Department of Natural Resources	20,000	
	Oregon Department of Forestry	35,000	
	Summer Crew Housing		4,200
	USDA Forest Service Region 6		43,000
PNW total		85,000	47,200
Southern	Alabama Forestry Commission	142,979	12,500
	Arkansas Forestry Commission	156,653	
	Florida Department of Agriculture and Consumer Services	130,803	6,500
	Georgia Forestry Commission	160,460	15,600
	IITF, Assistance on Puerto Rico and USVI Inventory	102,045	
	Kentucky Division of Forestry	302,246	25,100
	Mississippi Forestry Commission	99,375	9,100
	National Council for Air and Stream Improvement		24,000
	North Carolina Division of Forest Resources		15,700
	Oklahoma Department of Agriculture and Forestry	119,552	2,772
	South Carolina Forestry Commission	91,262	6,800
	Tennessee Department of Agriculture	109,121	32,400
	Texas Forest Service	373,404	6,600
	University of Tennessee	17,500	
	USDA Forest Service Region 8, Intensification Plots in Tennessee	89,270	
	USDA Forest Service Region 8, Restart of Louisiana	300,000	
	Virginia Department of Forestry	114,575	17,000
SRS total		2,309,245	174,072
Grand total, all FIA units		3,636,664	2,856,839

IITF = International Institute of Tropical Forestry.

Appendix 5.—Grants and Agreements Entered Into by FIA Units, FY 2009.

Unit	Amount	Recipient	Purpose
	<i>Dollars</i>		
Interior West	718,465	Colorado State Forest Service	Implementation of annual FIA
	45,211	Colorado State University	Statistical tools
	5,000	Colorado State University	Stat paper review
	30,000	Forest Management Service Center	Application of FIA data to FVS validation
	101,000	Montana State University	Lichen gradient study
	60,776	Remote Sensing Applications Center	NAFD training
	10,000	Rocky Mountain Research Station	Analyze pathogen genetics
	92,310	Rocky Mountain Research Station	Downscaling climate maps
	109,000	Rocky Mountain Research Station	Soils indicator lead and sample analysis
	295,914	University of Montana	TPO analysis for the interior west States
	50,000	Utah State University	Tree ring archiving
	28,000	Utah State University	Genetics inventory
	50,000	Utah State University	Forest change detection
	30,000	Utah State University	Tree ring analysis
	150,000	Utah State University	Climate change
	160,000	Utah State University	Ecological classification/habitat type analysis
100,000	WCF Work Order	Nevada field work	
IW total	2,035,676		
National Office	80,000	International Institute of Tropical Forestry	Implementation of annual FIA
	33,000	Northeastern Area State and Private Forestry	Damage indicators
	20,000	Northern Station	RPA support
	675,000	University of Nevada in Las Vegas	Information Management support
	30,000	Conservation Biology Institute	Protected areas database
	75,000	Redcastle Resources Inc	RSAC
	150,000	NatureServe/ESA	National Vegetation Classification System
	25,000	FHTET unit at Ft. Collins CO	Forest Health imputation
	41,000	University of Wisconsin	Lichens research
	280,000	Research Triangle Park FHM Unit	National FHM support
NO total	1,409,000		
Northern	148,036	Indiana Department of Natural Resources	Implementation of annual FIA
	2,907	Iowa Department of Natural Resources	Implementation of annual FIA
	256,000	Jameson Professional Services	Implementation of annual FIA
	73,513	Kansas State University	Implementation of annual FIA
	451,261	Maine Forest Service	Implementation of annual FIA
	327,994	Minnesota Department of Natural Resources	Implementation of annual FIA
	4,421	North Dakota State University	Implementation of annual FIA
	15,000	South Dakota Department of Forestry and Natural Resource Mgmt.	Implementation of annual FIA
	10,000	Northern Research Station Grand Rapids	Soil analyses
	297,500	Curators of The University of Missouri	Analysis of Northern Forest Futures
	825,021	University of Nevada in Las Vegas	Information Management support
	26,998	Kera Enterprise	Administrative Support
	43,208	University of Massachusetts	National Ozone Indicator Advisor
	30,000	Conservation Biology Institute	Protected Area Database Enhancement
	20,000	American Forest Foundation	Sustaining Family Forests Initiative
	75,000	National Council for Air and Stream	Improving Carbon Online Estimator
	182,606	University of Massachusetts - Amherst	Family Forest Research Center
	15,675	Mississippi State University	Developing Oak Decline/Mortality and Fuel Model
	50,000	VA Polytechnic Institute	Improving Accuracy of Forest Biomass Estimates

FHTET = Forest Health Technology Enterprise Team, FHM = Forest Health Monitoring program.

Appendix 5.—Grants and Agreements Entered Into by FIA Units, FY 2009 (continued).

Unit	Amount	Recipient	Purpose
	22,500	Auburn University	Quantifying and Mapping Forest Ownership
	17,190	Utah State University	Family Forest Research
	39,250	Michigan State University	Enhanced Est. of Standing Dead Tree Abundance
	29,268	Regents of University of Minnesota	Controls Over Temporal Variables
	25,000	West Virginia University	Modeling Soil Organic Carbon
	50,000	Oregon State University	Decay Reduction Factors For Standing Dead Trees
	10,000	University of Minnesota	Forest Complexity in the Lake States
	15,000	Michigan Tech University	Assessing Vegetation Isle Royale Nat'l Park with FIA Data
	35,000	Yale University	Sustaining Family Forests Initiative
	5,000	West Virginia University	2009 IUFRO Small Scale Forestry International Symposium
	15,167	Access Ability Inc	Document Imaging Services
	28,020	Beaver Tail Enterprises	Nebraska Ozone Inventory
	22,557	Daniel Huberty	North Dakota Plots
	13,000	Edward Jepsen	Illinois Ozone Inventory
	15,675	Regents of University of Minnesota	Biomass Estimate, Data Access and Analysis
	29,543	Mississippi State University	Patterns of Invisibility by Non-Native Invasive
	4,000	Presidents and Fellows Harvard College	Land Owner Decision Making Over Long Term
	30,000	Michigan State University	Forest Complexity in the Lake States
	53,000	Limehouse Software Inc	Software Services for Publications
	60,000	University of New Hampshire	Quantifying Disturbances Effects on Forest Carbon
	8,000	Lumberjack RC&D	Implementation of annual FIA
	12,770	Opportunity Partners	Electronic Scanning of FIA Plots
	4,000	Patrick Temple	Ozone Field Specimen Samples
	78,056	University of Georgia	SRS Burkman Data Link
	20,000	North Carolina State University	Dave Wear
	20,000	Colorado State University	Carbon Inventories
NRS total	3,517,136		
Pacific Northwest	79,963	Oregon State University	Imputation and Modeling Methods to Estimate Productivity
	17,387	Oregon State University	Spatial and Ecological Analysis of Red Fir Decline in California using FIA Data
	17,388	Oregon State University	Spatial and Ecological Analysis of Red Fir Decline in California using FIA Data
	30,000	University of Montana	Pacific States Forest Industry and Timber Harvest Analysis
	40,000	University of Alaska, Fairbanks	Biomass and Carbon in Boreal Forests of Alaska Using L-Band
	3,500	University of Wisconsin	National Lichen Projectwork
	59,994	Texas Agricultural and Mechanical University	Lidar-Assisted Forest Inventory and Analysis Measure
	111,000	Oregon State University	Using Ancillary Information and Forest Inventory Data Improvement
	84,950	Oregon State University	Adjunct Inventory and Monitoring Program/Flora and Fauna
	50,000	Foreign Agricultural Service	For Remotely Sensed Image Data for Pacific Islands
	80,000	Oregon Department of Forestry	Inventories with Forest Assessment
PNW total	574,182		
Southern	428,938	Alabama Forestry Commission	Implementation of annual FIA
	394,959	Arkansas Forestry Commission	Implementation of annual FIA
	392,408	Florida Dept. of Agric. and Consumer Services	Implementation of annual FIA

IUFRO = International Union of Forest Research Organizations, SRS = Southern Research Station.

Appendix 5.—Grants and Agreements Entered Into by FIA Units, FY 2009 (continued).

Unit	Amount	Recipient	Purpose
	481,381	Georgia Forestry Commission	Implementation of annual FIA
	302,246	Kentucky Division of Forestry	Implementation of annual FIA
	397,500	Mississippi Forestry Commission	Implementation of annual FIA
	415,325	North Carolina Department of Environment and Natural Resources	Implementation of annual FIA
	358,657	Oklahoma Dept. of Agriculture and Forestry	Implementation of annual FIA
	273,786	South Carolina Forestry Commission	Implementation of annual FIA
	327,363	Tennessee Department of Agriculture	Implementation of annual FIA
	1,111,212	Texas Forest Service	Implementation of annual FIA
	343,726	Virginia Department of Forestry	Implementation of annual FIA
	26,000	National Council for Air and Stream	Provide detailed land ownership information
	50,000	University of Tennessee	IT support
	102,891	Small Business Innovation Research	Coop agreement assessment
SRS total	5,406,392		
Grand total	12,942,386		

Appendix 6.—Number and Hours of Significant Consultations by FIA Staff, by Customer Group, FY 2009.

Customer group	Pacific Northwest		Interior West		Southern		Northern		National Office		Total	
	No.	Hours	No.	Hours	No.	Hours	No.	Hours	No.	Hours	No.	Hours
Academic	11	41	119	428	147	736	62	449	3	15	342	1,669
Government	34	288	169	942	283	1,537	104	1,654	10	60	600	4,481
Industry	4	29	10	72	102	489	26	112	2	6	144	708
NGO ^a	13	117	27	180	23	142	36	533	5	40	104	1,012
NIPF ^b	-	-	-	-	54	105	3	8	1	3	58	116
Media	-	-	-	-	7	13	8	27	3	12	18	52
Other	5	128	27	78	83	325	16	28	2	6	133	565
Total	67	603	352	1,700	699	3,347	255	2,811	26	142	1,399	8,603

^a NGO = nongovernmental organization.

^b NIPF = nonindustrial private forest landowner.

Appendix 7.—Land and Forest Area and FIA Annualized Implementation Status by State and Region, FY 2004-2010.^a

Region and State	Land area	Forest area	Entry year	2004	2005	2006	2007	2008	2009	2010 (plan)
	-----Thousand acres-----									
Northern										
Connecticut	3,101	1,794	2003	1,794	1,794	1,794	1,794	1,794	1,794	1,794
Delaware	1,251	383	2004	383	383	383	383	383	383	383
Illinois	35,580	4,525	2001	4,525	4,525	4,525	4,525	4,525	4,525	4,525
Indiana	22,957	4,656	1999	4,656	4,656	4,656	4,656	4,656	4,656	4,656
Iowa	35,760	2,879	1999	2,879	2,879	2,879	2,879	2,879	2,879	2,879
Kansas	52,367	2,106	2001	2,106	2,106	2,106	2,106	2,106	2,106	2,106
Maine	19,753	17,673	1999	17,673	17,673	17,673	17,673	17,673	17,673	17,673
Maryland	6,295	2,566	2004	2,566	2,566	2,566	2,566	2,566	2,566	2,566
Massachusetts	5,016	3,171	2003	3,171	3,171	3,171	3,171	3,171	3,171	3,171
Michigan	36,359	19,545	2000	19,545	19,545	19,545	19,545	19,545	19,545	19,545
Minnesota	50,955	16,391	1999	16,391	16,391	16,391	16,391	16,391	16,391	16,391
Missouri	44,095	15,078	1999	15,078	15,078	15,078	15,078	15,078	15,078	15,078
Nebraska	49,201	1,245	2001	1,245	1,245	1,245	1,245	1,245	1,245	1,245
New Hampshire	5,740	4,850	2002	4,850	4,850	4,850	4,850	4,850	4,850	4,850
New Jersey	4,748	2,132	2004	2,132	2,132	2,132	2,132	2,132	2,132	2,132
New York	30,223	18,669	2002	18,669	18,669	18,669	18,669	18,669	18,669	18,669
North Dakota	44,156	724	2001	724	724	724	724	724	724	724
Ohio	26,210	7,894	2001	7,894	7,894	7,894	7,894	7,894	7,894	7,894
Pennsylvania	28,685	16,577	2000	16,577	16,577	16,577	16,577	16,577	16,577	16,577
Rhode Island	668	356	2003	356	356	356	356	356	356	356
South Dakota	48,574	1,682	2001	1,682	1,682	1,682	1,682	1,682	1,682	1,682
Vermont	5,920	4,618	2003	4,618	4,618	4,618	4,618	4,618	4,618	4,618
West Virginia	15,415	12,007	2004	12,007	12,007	12,007	12,007	12,007	12,007	12,007
Wisconsin	34,761	16,275	2000	16,275	16,275	16,275	16,275	16,275	16,275	16,275
Southern										
Alabama	32,481	22,693	2001	22,693	22,693	22,693	22,693	22,693	22,693	22,693
Arkansas	33,328	18,830	2000	18,830	18,830	18,830	18,830	18,830	18,830	18,830
Florida	34,520	16,147	2001	16,147	16,147	16,147	16,147	16,147	16,147	16,147
Georgia	37,068	24,784	1998	24,784	24,784	24,784	24,784	24,784	24,784	24,784
Kentucky	25,428	11,970	1999	11,970	11,970	11,970	11,970	11,970	11,970	11,970
Louisiana	27,883	14,222	2000	14,222	14,222	14,222	14,222	14,222	14,222	14,222
Mississippi	30,025	19,622	2007				19,622	19,622	19,622	19,622
North Carolina	31,180	18,447	2003	18,447	18,447	18,447	18,447	18,447	18,447	18,447
Oklahoma	43,955	7,665	2008					7,665	7,665	7,665
South Carolina	19,272	12,746	1998	12,746	12,746	12,746	12,746	12,746	12,746	12,746
Tennessee	26,381	14,480	1999	14,480	14,480	14,480	14,480	14,480	14,480	14,480
Texas	167,626	17,273	2000	17,273	17,273	17,273	17,273	17,273	17,273	17,273
Virginia	25,343	15,766	1998	15,766	15,766	15,766	15,766	15,766	15,766	15,766
Interior West										
Arizona	72,732	18,671	2001	18,671	18,671	18,671	18,671	18,671	18,671	18,671
Colorado	66,387	22,612	2002	22,612	22,612	22,612	22,612	22,612	22,612	22,612
Idaho	52,960	21,430	2004	21,430	21,430	21,430	21,430	21,430	21,430	21,430
Montana	93,157	25,014	2003	25,014	25,014	25,014	25,014	25,014	25,014	25,014
Nevada	70,276	11,089	2010							11,089
New Mexico	77,674	16,682	2008					16,682	16,682	16,682

Appendix 7.—Land and Forest Area and FIA Annualized Implementation Status by State and Region, FY 2004-2010^a (continued).

Region and State	Land area	Forest area	Entry year	2004	2005	2006	2007	2008	2009	2010 (plan)
	-----Thousand acres-----									
Utah	52,587	17,962	2000	17,962	17,962	17,962	17,962	17,962	17,962	17,962
Wyoming	62,147	11,445	2010							11,445
Pacific Northwest										
Alaska, Coast	39,041	13,718	2003	13,718	13,718	13,718	13,718	13,718	13,718	13,718
Alaska, Int.	326,000	113,151								
California	99,824	32,817	2001	32,817	32,817	32,817	32,817	32,817	32,817	32,817
Hawaii	4,111	1,748	2010							1,748
Oregon	61,442	30,169	2000	30,169	30,169	30,169	30,169	30,169	30,169	30,169
Washington	42,612	22,279	2002	22,279	22,279	22,279	22,279	22,279	22,279	22,279
TOTAL	2,263,230	751,228		569,826	569,826	569,826	589,448	613,794	613,794	638,076
Forest area performance measure, excluding interior AK				89%	89%	89%	92%	96%	96%	100%
Forest area performance measure, including interior AK				76%	76%	76%	78%	82%	82%	85%
State activity performance measure, includes all active States				88%	88%	88%	90%	94%	94%	98%

AK = Alaska

^aBased on area from Forest Resources of the United States, 2007 and entry year into annualized inventory.

Appendix 8.—Status of FIA Special Project Areas Excluded From Annualized Inventory

Region and area	Land area in inventory	Forest area	Percentage forest	Number of major islands	Year of current inventory	Year of published report	Total Phase 2 plots ^a	Total Phase 3 plots	Available online data
Pacific (PNW): ----- Acres -----									
American Samoa	48,434	43,631	90	4	2001	2004	21		Yes
Guam	135,660	63,833	47	1	2002	2004	46		Yes
Palau	110,028	90,685	82	10	2003	2007	54		Yes
Commonwealth of the Northern Mariana Islands	75,546	51,009	68	3	2004	2010	35		Yes
Federated States of Micronesia	161,917	143,466	89	10	2005-2006	2010	73		Yes
Marshall Islands	33,182	23,230	70	10	2008	2010	44		Yes
Hawaii	4,141,469	1,990,000	48	8	2010+	1988			
Atlantic (SRS):									
Commonwealth of Puerto Rico	2,191,815	1,260,625	57	3	2003	2007	373	61	Yes
U.S. Virgin Islands	85,590	52,478	61	3	2004	2007	73	40	Yes
Total	6,983,641	3,718,957	612	52			719	101	

^aPartial suite of Phase 3 data collected on all plots in Pacific region.

Publications for Appendix 8

American Samoa

Donnegan, J.A.; Mann, S.S.; Butler, S.L.; Hiserote, B.A. 2004. American Samoa's Forest Resources, 2001. Resour. Bull. PNW-RB-244. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 32 p.

Guam

Donnegan, J.A.; Butler, S.L.; Grabowiecki, W.; Hiserote, B.A.; Limtiaco, D. 2004. Guam's Forest Resources, 2002. Resour. Bull. PNW-RB-243. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 32 p.

Republic of Palau

Donnegan, J.A.; Butler, S.L.; Kuegler, O.; Stroud, B.J.; W.; Hiserote, B.A.; Rengulbai, K. 2007. Palau's Forest Resources, 2003. Resour. Bull. PNW-RB-252. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 32 p.

Commonwealth of the Northern Mariana Islands

Falanruw, M.C.; Cole, T.G.; Ambacher, A.H. 1989. Vegetation survey of Rota, Tinian, and Saipan, Commonwealth of the Northern Mariana Islands. Resour. Bull. PSW-RB-27. Berkeley, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 11 p.

Federated States of Micronesia

Falanruw, M.C.; Cole, T.G.; Ambacher, A.H. 1987. Vegetation survey of Moen, Dublon, Fefan, and Eten, State of Truk, Federated States of Micronesia. Resour. Bull. PSW-RB-20. Berkeley, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 6 p.

Falanruw, M.C.; Whitesell, C.D.; Cole, T.G.; MacLean, C.D.; Ambacher, A.H. 1987. Vegetation survey of Yap, Federated States of Micronesia. Resour. Bull. PSW-RB-21. Berkeley, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 9 p.

MacLean, C.D.; Cole, T.G.; Whitesell, C.D.; Falanruw, M.V.; Ambacher, A.H. 1986. Vegetation survey of Pohnpei, Federated States of Micronesia. Resour. Bull. PSW-RB-18. Berkeley, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 9 p.

Whitesell, C.D.; MacLean, C.D.; Falanruw, M.C.; Cole, T.G.; Ambacher, A.H. 1986. Vegetation survey of Kosrae, Federated States of Micronesia. Resour. Bull. PSW-RB-17. Berkeley, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 8 p.

Marshall Islands

Figures reported above are from NASF:

http://www.stateforesters.org/statistics/FY98_Statistics/Resource%20Base.htm. Also see: Bolsinger, C.L. 2000. Forest inventory information needs assessment for the Territory of Guam, Republic of the Marshall Islands, and the State of Hawaii with emphasis on the Island of Maui. Professional Services Contract: David Evans and Associates, Inc., Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 102 p.

Hawaii

Buck, M.G.; Branam, J.M.; Stormont, W.T. 1988. The multiresource forest inventory for Kauai, Hawaii. Resour. Bull. PNW-RB-156. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 35 p.

Buck, M.G.; Branam, J.M.; Stormont, W.T.; Costales, P.G. 1988. The multiresource forest inventory for Oahu, Hawaii. Resour. Bull. PNW-RB-155. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 35 p.

Buck, M.G.; Costales, P.G.; McDuffie, K. 1986. The multi-resource forest inventory for Molokai, Hawaii. Resour. Bull. PNW-RB-136. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 18 p.

Brandeis, T.J.; Helmer, E.H.; Oswalt, S.N. 2007. Eleestado de los bosques de Puerto Rico, 2003. Resour. Bull. SRS-RB-119 (Español). Asheville, NC: U.S. Department of Agriculture, Forest Service, Southern Research Station. 72 p.

Puerto Rico

Brandeis, T.J.; Helmer, E.H.; Oswalt, S.N. 2007. The Status of Puerto Rico's Forests, 2003. Resour. Bull. SRS-RB-119. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southern Research Station. 72 p.

U.S. Virgin Islands

Brandeis, T.J.; Oswalt, S.N. 2007. The Status of U.S. Virgin Islands' Forests, 2004. Resour. Bull. SRS-RB-122. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southern Research Station. 61 p.

Appendix 9.—FIA summary statistics and performance measures for 2002-2009.

	2002	2003	2004	2005	2006	2007	2008	2009
Program funds								
Apropriated funds ¹	50,523	56,234	56,652	60,881	63,641	63,605	64,641	65,536
Other federal funds ²	5,397	3,437	6,073	1,776	1,775	1,272	1,559	3,320
Total federal funds	55,920	59,671	62,725	62,657	65,416	64,877	66,200	68,856
Total partner funds	8,656	10,164	7,479	6,379	7,034	7,204	6,505	6,494
Total available funds	64,574	69,834	70,204	69,036	72,450	72,081	72,705	75,350
% Full federal appropriated funding	67%	74%	75%	80%	84%	84%	85%	87%
Program expenses and balances								
Administration	3,306	3,172	3,430	3,065	3,104	3,031	2,785	2,999
Image processing	905	967	940	1,218	919	1,300	1,198	1,102
Field support	2,154	2,252	2,786	2,940	3,287	3,175	3,357	3,003
Data collection ³	20,891	22,514	22,461	23,470	25,106	23,630	22,989	25,243
Information management ³	5,801	6,719	9,448	7,394	6,890	7,431	6,108	7,623
Analysis	3,440	3,484	3,967	4,161	4,499	4,518	5,147	5,354
Research ³	3,413	4,312	3,975	3,477	3,422	4,799	5,033	5,881
Miscellaneous/other	627	3,829	4,351	3,963	5,231	3,454	3,406	3,909
Total direct expense	40,535	47,249	51,357	49,687	52,458	51,338	50,023	55,115
Total Indirect expenses	10,711	10,021	8,919	11,313	12,587	13,194	13,586	12,653
Total federal expense	51,246	57,270	60,277	61,000	65,045	64,532	63,609	67,768
Fire Transfer	2,315	1,102					2,318	
Total EOY balance	2,359	1,298	2,448	1,657	371	345	273	1,089
Total federal funds	55,920	59,671	62,725	62,657	65,416	64,877	66,200	68,856
Category as % of total federal funds								
Administration	5.9%	5.3%	5.5%	4.9%	4.7%	4.7%	4.2%	4.4%
Image Processing	1.6%	1.6%	1.5%	1.9%	1.4%	2.0%	1.8%	1.6%
Field support	3.9%	3.8%	4.4%	4.7%	5.0%	4.9%	5.1%	4.4%
Data collection	37.4%	37.7%	35.8%	37.5%	38.4%	36.4%	34.7%	36.7%
Information management	10.4%	11.3%	15.1%	11.8%	10.5%	11.5%	9.2%	11.1%
Analysis	6.2%	5.8%	6.3%	6.6%	6.9%	7.0%	7.8%	7.8%
Research	6.1%	7.2%	6.3%	5.5%	5.2%	7.4%	7.6%	8.5%

Appendix 9.—*FIA summary statistics and performance measures for 2002-2009 (continued).*

	2002	2003	2004	2005	2006	2007	2008	2009
Miscellaneous/other	1.1%	6.4%	6.9%	6.3%	8.0%	5.3%	5.1%	5.7%
Indirect	19.2%	16.8%	14.2%	18.1%	19.2%	20.3%	20.5%	18.4%
Fire transfer	4.1%	1.8%					3.5%	0.0%
EOY balance	4.2%	2.2%	3.9%	2.6%	0.6%	0.5%	0.4%	1.6%
Total % all categories	100%							
Grants as % of total federal funds								
Fieldwork grants	9.8%	14.4%	10.1%	9.6%	11.8%	11.3%	9.1%	11.5%
Research grants	2.7%	3.4%	2.7%	1.5%	1.8%	3.3%	2.1%	4.4%
Data/information grants	1.2%	2.6%	4.1%	2.0%	1.7%	2.7%	2.7%	2.9%
Total % all federal grants	13.6%	20.4%	16.9%	13.1%	15.4%	17.3%	14.0%	18.8%
Partner funds as % of total program funds								
All partner contributions	13.9%	14.8%	11.0%	9.5%	9.7%	11.1%	9.8%	8.6%
Other measures								
% States with annual activity	64	78	88	88	88	90	94	94
% States with FIADB 1-2 yrs old	10	28	56	80	84	90	90	90
Federal employees	400	403	426	447	410	387	389	381
Other employees	160	180	166	179	171	179	173	201
Total employees	560	583	592	626	581	566	562	582
P2/3 forest plots	16,108	17,182	16,036	15,675	18,245	19,880	18,208	21,545
P2/3 nonforest plots	24,459	29,592	29,532	24,445	24,190	24,757	29,351	21,996
Total plots	40,567	46,774	45,568	40,120	42,435	44,637	47,559	43,541
All QA plots	1,889	2,332	2,874	3,584	3,382	3,664	4,860	3,597
Percent QA plots	5%	5%	6%	9%	8%	8%	10%	8%
All publications	167	138	114	164	182	135	172	206
Journal publications	28	23	25	34	45	37	65	38
Percent journal publications	17%	17%	22%	21%	25%	27%	38%	18%
Consultations, number	819	1,450	1,566	1,510	1,608	1,571	1,659	1,399
Consultations, hours	2,978	4,514	4,899	5,612	5,527	5,767	6,656	8,603
User/mangement meetings	18	16	20	23	16	16	10	11
Spatial data requests filled	29	44	66	145	347	492	483	405
Online tool accesses	11,579	14,973	26,548	56,475	24,335	24,570	59,609	90,974

¹ Net of rescissions.

² Includes return of previous year carryover, return of fire transfers and additional Forest Service Research commitments.

³ Includes federal grants and agreements.

