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Forest Service

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Forest Inventory and Analysis

Fiscal Year 2005 Business Reort

Contents

Introduction

The Forest Inventory and Analysis (FIA) program of the U.S. Department of Agriculture (USDA) Forest Service 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) 2005 (October 1, 2004, through September 30, 2005), 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 is the Nation's continuous forest census. We collect, analyze, and report information on the status and trends of America's forests: how much forest exists, 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 decisionmaking 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 financial table (app. 2) appears the same as last year's, with a continued focus on consistency between FIA units in how data are reported for administrative and indirect costs. This has been a particular concern of regional and national user groups.

In FY 2005, the FIA program lost no funds to "fire transfers" and received one-time carryover funds from FY 2004 that were applied to the FIA program at the direction of the Deputy Chief for Research and Development—clear commitment to the full implementation and success of the FIA annualized inventory.

Continued rescissions and loss of fixed-cost increases, however, are having a negative impact on the program. Initial State and Private Forestry (S&PF) funding of $5 million in 2000 should have grown to $6.5 million adjusted for inflation by 2005. Unfortunately, owing to no fixed-cost increases in this account and to rescissions, S&PF funding in FY 2005 was $5 million. Continued losses in this funding are placing cooperative support for States at risk. Modest increases on the Research and Development side of the budget have offset some of these losses but made it difficult to add new States to the annualized program.

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. Appendix 7 provides a 5-year summary to compare the number of States and the area of forest under annualized inventory. At the bottom of this table are three measures of performance based on various criteria. The first measure is based on area covered by FIA excluding Alaska and Hawaii, as Congress excluded them from requiring annualized inventories. The second measure includes these States based on total forest area. To simplify the accounting, in 2005, we adopted a simple percentage of States where annualized inventory is active. The performance measure in the body of Appendix 1 uses this new approach. A comparison of the new and previous measures is provided at the

bottom of Appendix 7. The FIA performance measures shown in the "Long-Term Strategic Direction" section have been revised to conform to new measures required by Office of Management and Budget (OMB) Program Assessment Rating Tool. These changes are consistent with OMB guidance to use easily defined measures that clearly convey performance with reduced ambiguity.

Fiscal Year 2005 Program Highlights

Program highlights for FY 2005 include 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. Federal funding available for the FIA program in 2005 totaled $62,656,528, a decrease of $68,114 from the previous year's total available funding of $62,724,642. The funding consisted of $60,881,000 appropriated by Congress specifically for FIA plus $1,775,528 in unspent FIA funds from the previous fiscal year, which should have been available for FIA in FY 2005 adjusted for any post-year actions (app. 2). In addition, partners contributed $6,379,012 toward enhancing the FIA program in 2005.

In FY 2005, we were active in 45 States (fig. 1), covering 36,831 Phase 2 and 3,289 Phase 3 sample locations from the base grid, or 12 percent and 16 percent, respectively, of the total. At the end of FY 2005, 77 percent of all forested lands of the United States were covered by the annual FIA program, an increase from 76 percent of all forest lands in FY 2004. The new performance measure implemented in 2005 based on proportion of States with annualized activity (45) is 90 percent of all States. Periodic inventories, exempt from the annualized system, have also been completed in the Commonwealth of Puerto Rico, U.S. Virgin Islands,

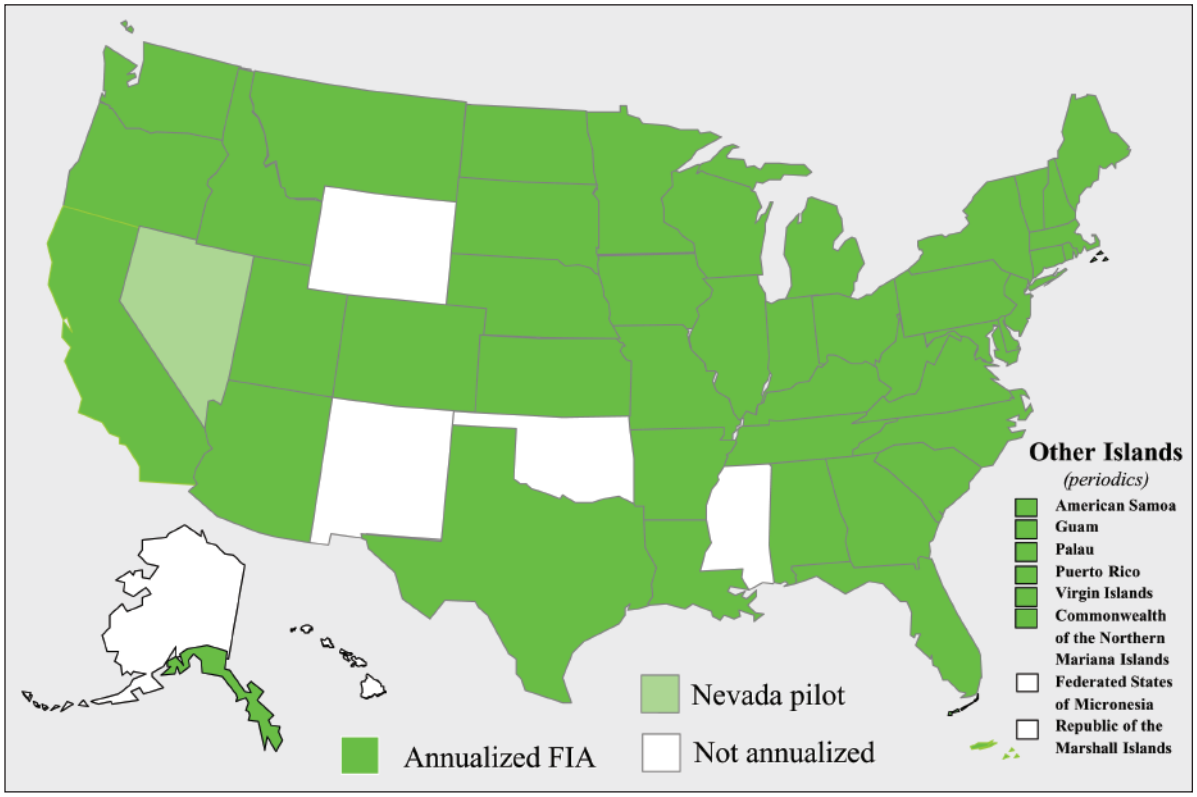

Figure 1—FIA implementation status, 2005.

American Samoa, Guam, the Republic of Palau, and the Commonwealth of the Northern Mariana Islands in compliance with a congressional mandate under the Renewable Resources Research Act of 1978, as amended.

The FIA program produced 164 reports and publications in FY 2005, 50 more than in FY 2004. Of these publications, 44 were core publications consisting of reports specific to a complete survey unit, complete State, national forest, or national report. This number represents an increase of 9 core reports from the FY 2004 total of 35 core publications and reflects the continued improvement in FIA reporting as analysts begin to catch up with the flood of new data generated by annualized inventories. We also published 34 articles in peer-reviewed journals (9 more than in FY 2004), and 50 articles in proceedings from scientific meetings and conferences (compared to 28 in FY 2004). The increase in peer-reviewed articles and proceedings reflects an increased engagement of our new scientists as they continue to mature in the program. The FIA staff participated in 1,510 significant consultations with FIA customers, requiring 5,612 hours of staff time—more than 2.5 full-time staff positions. This signifies fewer consultations but more total hours than in FY 2004 (1,566 consultations and 4,899 hours, respectively). The FIA technical staff met on several occasions to further refine the national core FIA program, resulting in the development of Version 3.0 of the national core field guide; enhancement of Internet tools for accessing and analyzing FIA data, including Fuel Treatment Evaluator Version 3.0; and release of Version 2.2 of 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 nearly 56,000 completed data retrievals (up from approximately 26,000 in 2004) where FIA customers obtained user-defined tables and maps of interest, along with nearly 800 retrievals by users of the FSVeg (Field Sampled Vegetation) forest vegetation simulator, which uses FIA data as one source of input data for modeling forest growth and yield.

Program Changes in FY 2005

In FY 2005, the FIA program completed the 7th 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 Phase 3 sample locations per year in all States. Owing to lack of full funding, we are still more than 2 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 permanent funding level in FY 2005 was still $13 million short of the target levels required to complete this transition. Full funding and full implementation of the annualized inventory in all States is doubtful for FY 2006.

The FIA program did not add any new sampling protocols in FY 2005 other than continuing the Nevada pilot study on new techniques. We completed the development of a vegetative diversity measurement protocol, which should be ready for implementation in 2006, subject to availability of requisite funding.

Program Resources

At the end of FY 2004, we reported $2,448,004 in unspent funds, which we expected to be available for use in FY 2005 less $672,476 in one-time carryover funds from the National Office (app. 2). Congress currently appropriates funds annually for the FIA program in two different Forest Service deputy areas: (1) Research and Development and (2) S&PF. Historically, most FIA funding was contained within the research budget of the USDA Forest Service.

In FY 2005, the amount of research money provided by Congress for the FIA program was $55,923,000, an increase of $4,209,000 over the FY 2004 level of $51,714,000 (app. 2). This increase includes $4,958,000 in the S&PF Forest Resource Inventory and Analysis budget line (an increase of $20,000 above the 2004 level of $4,938,000) to support the FIA program in those States that provide cost-share contributions. Thus, a total of $62,656,528 in new, carry-over, or base funding was available to the FIA program in FY 2005.

Starting with the 2003 business report, the "direct expense" calculation includes charges such as office rent, utilities, FIA employee relocation costs, and other charges that, in the past, were generally assessed by research stations as part of the overhead rate, and were, therefore, not broken out separately. Because these charges are a legitimate cost of doing FIA business, and because we are now able to account for them separately, this and future editions of the annual business report will include such costs as part of "direct expenses." The remaining amount counted as "effective indirect expenses" now includes only assessments for research station administration plus costs assessed to FIA units in support of non-FIA activities. By using this approach, of the funding available in FY 2005, approximately 80 percent was spent in direct support of FIA activities (fig. 2), 18 percent was spent on effective indirect costs charged by research stations, and 2 percent remained unspent at the end of the fiscal year.

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 2005 ranged from about 11 to 22 percent across the country for field units (app. 2), reflecting differences in both sources of funding as well as research station overhead assessment practices. The National Office had a 59 percent rate of indirect cost because its FIA budget includes the USDA overhead assessed to the entire FIA program. Figure 3 shows the total appropriated funding available for FIA from FY 1995 to FY 2005 from all sources, as well as the projected

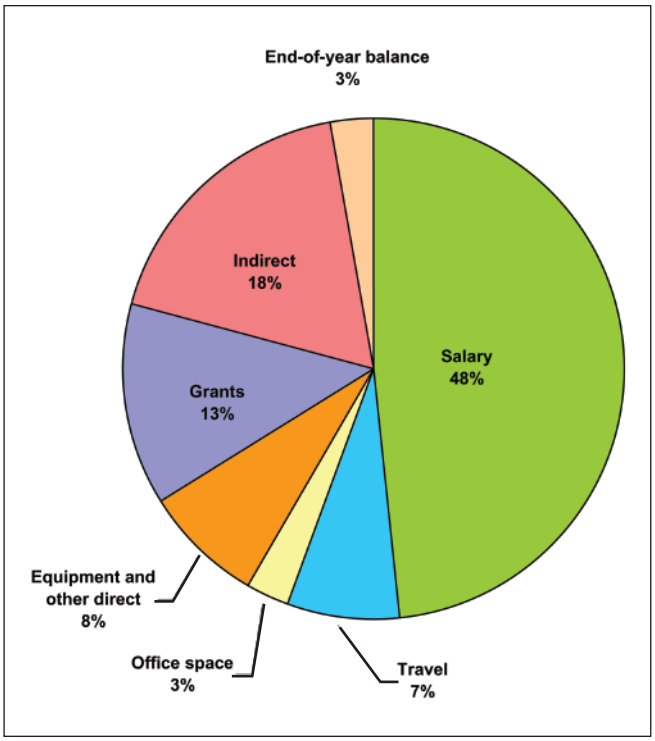

Figure 2—FIA program expenditures by category, 2005.

future total funding needed to deliver the base Federal program beyond FY 2005.

In FY 2005, FIA program staffing consisted of 447 Federal person-years of effort (app. 3), up from 426 Federal person-years in FY 2004. The largest change was in field crew staff (increased from 160 to 177 person-years); otherwise, the changes were relatively small and may indicate that our nonfield staffing is approaching the strength needed to implement the program over the long run. Of the Federal FIA employees, approximately 58 percent were involved in supervising and data collection, 25 percent in analysis and information management, 7 percent in program management and administration, 6 percent in techniques research, and 4 percent in Phase 1 production work (fig. 4). Each of these percentages is within 1 or 2 percent of the 2004 staffing values.

Cooperators, especially State forestry organizations, through grants and agreements, accomplish much of the work done by FIA. In FY 2005, it is estimated that we employed an additional 179 people through this mechanism. These additional employees bring the total number of

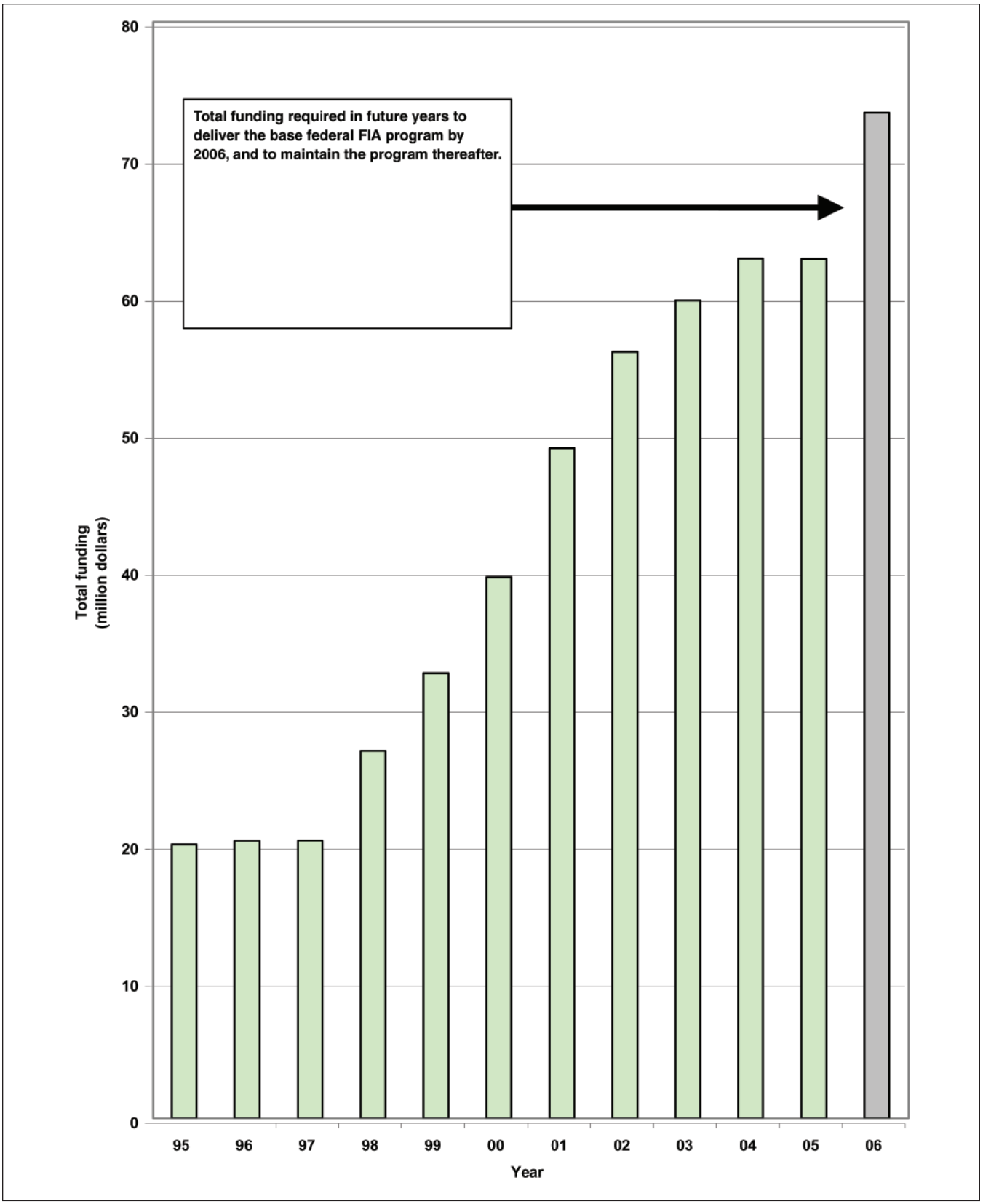

Figure 3—FIA funding level, 1995–2006 (projected).

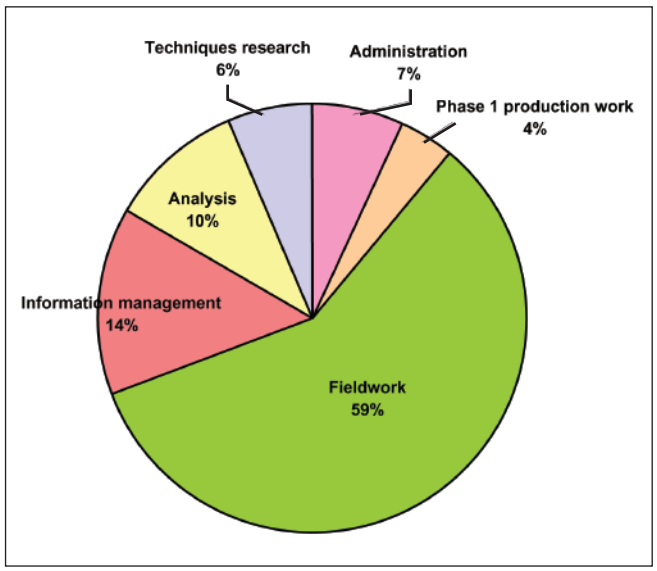

Figure 4—FIA program employees, by job group, 2005.

employees working for FIA to 626 and represent 28 percent of the total FIA workforce.

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 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 2005, either to achieve the 20-percent program envisioned by Congress or to add value to FIA data in other 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 $2,429,226 toward the full 20 percent FIA program envisioned by Congress, and another $3,949,786 in contributions that add value to the FIA program, for a total of $6,379,012 in partners' contributions. This amount is a decrease from $7,479,102 contributed by partners in FY 2004. 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 USDA Forest Service, which contributed approximately $400,297 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 2005, States contributed over $2.4 million to help implement the basic 20 percent FIA program, plus an additional $2.8 million to add value to the basic FIA program.

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 complete analytical reports for all States on a 5-year cycle.

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 October 2005—the start of the 2006 fiscal

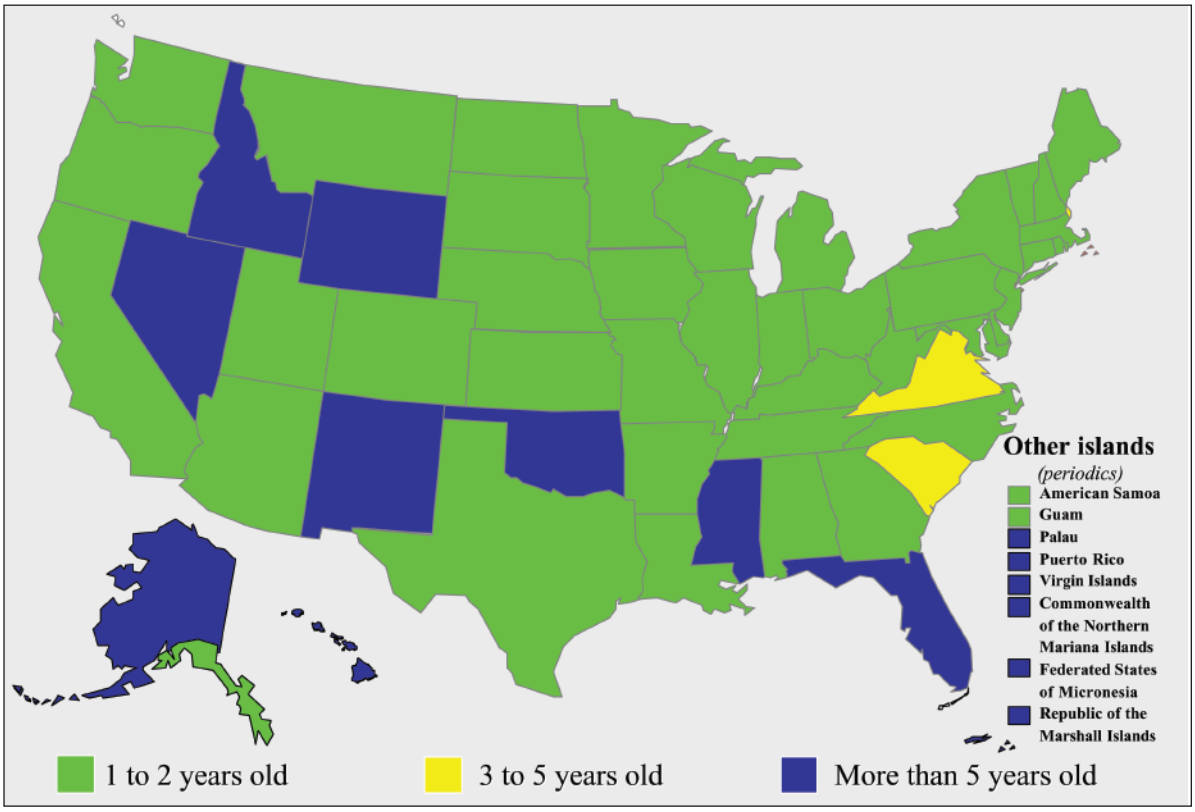

Figure 5—Availability of State FIA data, 2005.

year. States with 1- to 2-year-old data—the program objective—are shaded green; States with 3- to 5-year-old data are shaded yellow; and States for which data are more than 5 years old are shaded 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 "green" States increased to 40 in 2005, and the number of "blue" States dropped to 8. We believe that the implementation of the FIA NIMS is now paying dividends by allowing us to catch up with the previous data backlog. Some minor slippage in loading current data may occur, however, as annual budgets continue to fall below target levels for full program implementation.

Figure 6 shows, for each State, the data collection year for the most recently published statewide FIA report. States where publications exist based on data less than 5 years old—the program objectives—are shaded green. 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 central region again leads the Nation, with all of these States having reports based on data that are less than 5 years old. The northeastern region is second with 8 of 11 States less than 5 years old, and progress is more mixed in the rest of the country.

Fiscal Year 2005 Regional Highlights

In FY 2005, the FIA program modified this section to provide information on 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). Some examples of FIA program accomplishments and outcomes for FY 2005 follow:

West Coast

Finding: FIA research provides critical baseline information on species threatened by sudden oak death in California.

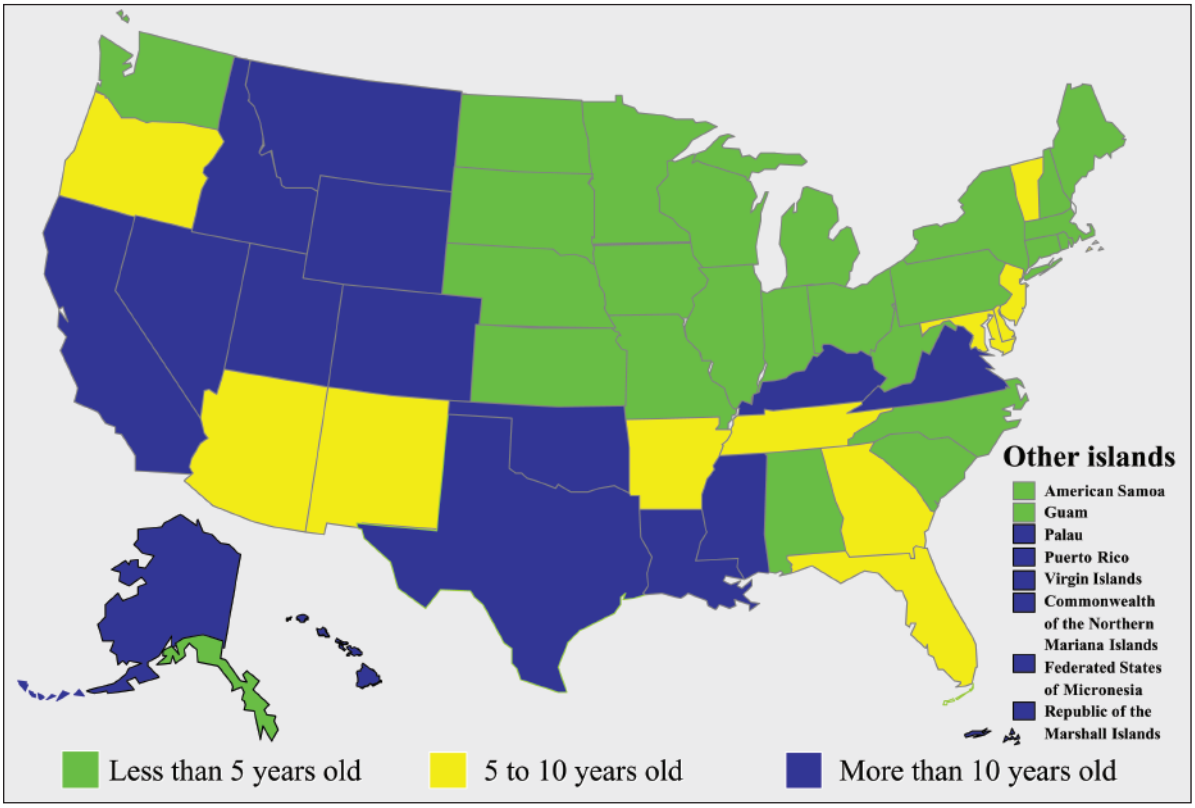

Figure 6—Publication status of State reports, 2005.

Accomplishment: Sudden oak death was first observed in California in 1995, and recent California legislation requires counties to specify mitigation strategies for projects that involve cutting of oaks. The basis for these strategies requires analysis of pre-epidemic mortality rates for host species to provide managers and researchers with a comparative baseline against which to evaluate observed mortality rates where the disease is present. FIA researchers provided an evaluation of the pre-epidemic status of host tree species of *Phytophthora ramorum* (the pathogen for sudden oak death) to establish "natural" change rates, which could be used for comparison in areas where the disease is now present and in areas of potential spread.

Outcome: An oak woodlands resource bulletin was developed to provide a statewide assessment of hardwood forests in California, which will serve as a primary reference for policy and management debates about California oak woodlands in the foreseeable future. On the basis of these findings, FIA provided the California Department of Forestry with information on growth, mortality, and harvest of hardwoods for a presentation supporting recent legislation for the California Licensed Foresters Association. FIA information was also used in a conference on forest loss in California and conversion rates of forest land to developed land to help "launch a public discussion of what it will take to secure the future of our forests and their many public benefits."

Waddell, K.L.; Barrett, T.M. 2005. Oak woodlands and other hardwood forests of California, 1990s. Resour. Bull. PNW-RB-245. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 94 p.

Contact: Karen Waddell, kwaddell@fs.fed.us, and Tara Barrett, tbarrett@fs.fed.us, Pacific Northwest Research Station, FIA

Partners: Richard Standiford, former program manager, Integrated Hardwood Range Management Program, University of California; Bill Stewart, assistant deputy director, California Department of Forestry

Finding: FIA research provides multinational strategy for Pacific Island forest resource inventories.

Accomplishment: Pacific Island resource managers require knowledge of the status and trends in forest vegetation to help plan sustainable supplies of wood, control invasive species, control erosion, detect and plan for land use change, and manage disturbances such as animal- and human-caused damage. Recent inventories were completed in American Samoa and Guam where forests cover 90 and 48 percent of land area, respectively. Forest area was established and measures of forest volume and health were recorded. Data indicate that 17 to 21 percent of the trees sampled had some form of damage with weather being the primary factor.

Outcome: Baseline inventory methods for the Pacific Islands were adapted from the national FIA program. Owing to their relatively small size and widely dispersed nature, the Pacific Islands will be measured on a periodic rather than annualized basis. The recent inventories of American Samoa and Guam not only provided basic inventory information, but also provided field training and inventory skills for local foresters. A multinational crew will conduct remaining island inventories on a different island group each year. Detailed summaries and publications provide tables and graphical highlights to help inform resource managers and policymakers, as well as educate the public regarding the status and trends in their natural resources. The reports also allow for consistent integration of information with the remainder of the United States.

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.

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.

Contact: Joseph A. Donnegan, jdonnegan@fs.fed.us, Pacific Northwest Research Station, FIA

Partners: Sarah L. Butler, Bruce A. Hiserote, and Walter Grabowiecki: Pacific Northwest FIA; Sheri S. Mann, American Samoa Forestry; David Limtiaco, Government of Guam

Finding: FIA research provides information to aid management of nonnative plants in western Oregon forests.

Accomplishment: Nonnative plants have tremendous ecological and economic impacts on plant communities globally, but comprehensive data on the distribution and ecological relationships of individual species are often scarce or nonexistent. FIA researchers conducted a study to assess the influence of vegetation type, climate, topography, and management history on the distribution and abundance of eight selected nonnative plant taxa in forests in western Oregon. The eight taxa were determined to be reliably detected by a multiresource inventory at the FIA program scale (roughly one plot per 6,000 acres). Data on overstory density, nonnative plant frequency, climate, and proximity to source populations were analyzed.

Outcome: A publication was developed describing eight nonnative plants in western Oregon forests and their associations to their environment and management. It provides a baseline of species' abundance and suggests factors affecting their distribution. Most of the nonnative plant species are abundant and widely distributed in the forests of western Oregon and are generally associated with disturbance caused by management, primarily clearcutting, but also with commercial thinning in established stands. The study suggests that future impacts may be limited to early-successional stands with open conditions, regardless of climatic and topographic associations, and thus prediction of the future spread and expansion of these species is possible. In addition, in established mature forests, some of the nonnative species are very shade-tolerant and may continue to spread in undisturbed forests according to the analysis.

Gray, A. 2005. Eight nonnative plants in western Oregon forests: associations with environment and management. Environmental Monitoring and Assessment. 100: 109-127.

Contact: Andrew Gray, agray01@fs.fed.us, Pacific Northwest Research Station, FIA

Interior West

Finding: FIA research detects critical trends in tree mortality from annual plot Network.

Accomplishment: Early in 2003, scientists and managers from universities and government agencies approached the Interior West FIA (IW-FIA) program with questions about a widespread episode of drought-related mortality they were observing in pinyon-juniper woodlands. In response, IW-FIA analysts began to follow the progression of mortality in States where annual inventory had recently been initiated and conducted a critical analysis.

Outcome: FIA annual inventory data revealed an ecosystem-wide mortality episode that varied regionally in its intensity and indicated that population-wide mortality, which ranged between 3 and 14 percent of pinyon basal area at the State scale, was considerably lower than suggested by anecdotal reports and ad-hoc surveys. Managers and scientists can use the annual plot system for identification of, and trends in, tree mortality. The IW-FIA experience with this "natural experiment" revealed that the annual inventory system can provide important information about forest change not obtainable from traditional, periodic inventories.

Shaw, J.D.; Steed, B.E.; DeBlander, L.T. 2005. FIA annual inventory answers the question: What is happening in pinyon-juniper woodlands? Journal of Forestry. 103(6): 280-285.

Shaw, J.D. 2005. Drought-related mortality in pinyon-juniper woodlands: a test case for the FIA annual inventory system. In: McRoberts, R.E.; Reams, G.A.; Van Deusen, P.C.; McWilliams, W.H., eds. Proceedings of the sixth annual Forest Inventory and Analysis symposium. Gen. Tech. Rep. WO-70. Washington, DC: U.S. Department of Agriculture, Forest Service.

Contact: John Shaw, jshaw@fs.fed.us, Rocky Mountain Research Station, FIA

Partners: USDA Forest Service Forest Health Technology Enterprise Team, Fort Collins, CO; USDA Forest Service Forest Health Protection, Ogden, UT.

Finding: FIA research links Moderate Resolution Imaging Spectroradiometer (MODIS) imagery and plot data to evaluate forests affected by wildfire.

Accomplishment: Recent emphasis has been placed on estimating amount and characteristics of forest affected by wildfire in the interior West. Inventory data collected by FIA is intended for estimation over large areas and is too sparse to construct sufficiently precise estimates within burn perimeters. MODIS-based maps coupled with field-collected plot data have been used to produce estimates of forest biomass within small geographic areas. FIA-collected forest attributes were modeled as functions of 250-m-resolution digital ancillary variables by using nonparametric tree-based methods, and then maps were built over diverse ecological mapping zones.

Outcome: These methods are being integrated in a rapid response toolkit that enables managers and scientists to construct "as-it-burns" resource estimates by accessing limited plot data and prebuilt FIA variable maps linked to the Forest Service Remote Sensing Applications Center's rapid response fire page. Work is also underway to produce improved estimates of resources actually burned within the fire detection zones.

Moisen, G.G.; Blackard, J.A.; Finco, M. 2004. Small area estimation in forests affected by wildfire in the interior West. Proceedings of the USFS remote sensing conference, 2004 [CD-ROM].

Contact: Gretchen Moisen, gmoisen@fs.fed.us, Rocky Mountain Research Station, FIA

Partners: USDA Forest Service Remote Sensing Applications Center

Finding: FIA research develops maps and models of forest attributes by using plot data, MODIS imagery, and other geospatial layers.

Accomplishment: Models and maps of forest attributes, including age, basal area, biomass, crown cover, forest/nonforest, growth, quadratic mean diameter, stand density index, trees per acre, volume, and height weighted by basal area, have been developed for all eight interior Western States. Maps were produced by modeling forest attributes collected on FIA plots as functions of 250-m-resolution satellite image products and other digital geographic layers. These map products are valuable for analyzing and visualizing the spatial distribution of forest characteristics.

Outcome: Regional maps of forest characteristics make FIA data more accessible and useful to a larger and more diverse audience. Important applications include broad-scale mapping and assessment of wildlife habitat; documenting forest resources affected by fire, fragmentation, and urbanization; identifying land suitable for timber production; and locating areas at high risk for plant invasions, or insect or disease outbreaks.

Blackard, J.A.; Moisen, G.G.; Tymcio, R.P. 2004. Modeling investigations into mapping of forest attributes with FIA data for the state of Wyoming. Proceedings of the USFS remote sensing conference, 2004 [CD-ROM].

Frecino, T.S.; Moisen, G.G., 2005. Predictive mapping of forest attributes on the Fishlake National Forest. In: McRoberts, R.E.; Reams, G.A., Van Deusen, P.C.; McWilliams, W.H.; Cieszewski, C.J., eds. Proceedings of the fourth annual Forest Inventory and Analysis symposium. NC-GTR-252. U.S. Department of Agriculture, Forest Service, North Central Research Station, St. Paul, MN: 215-221.

Ruefenacht, B.; Moisen, G.G.; Blackard, J.A., 2004. Forest type mapping of the intermountain West. Proceedings of the USFS remote sensing conference, 2004 [CD-ROM].

Contact: Gretchen Moisen, gmoisen@fs.fed.us, or Jock Blackard, jablackard@fs.fed.us, Rocky Mountain Research Station, FIA

Partners: USDA Forest Service Remote Sensing Applications Center North Central

North Central

Finding: FIA research develops electronic tools to improve program management and delivery.

Accomplishment: Customer service standards have been established for major internal and external programs for Web-based products to assist researchers and FIA field operations. Environmental issues, such as impacts of wildfire, drive many of these developments, whereas others are driven by a need for more efficient ways to conduct inventories. New Web-based products include fuel treatment estimation, Web distribution tools, an image server to support field operations, and development of a population estimation engine.

Outcome: New Web-based products developed include a new version of Fuel Treatment Evaluator; Beta version of new Web services and Web client data distribution tools; new digital orthophoto quarter quad image server to support field preparation, crew navigation, and sample stratification; prototype version of Virtual Analyst, an automated data analysis and data reporting tool; and a population estimation engine by the University of Minnesota for the Web services tool.

Fuel Treatment Evaluator:

http://www.ncrs.fs.fed.us/4801/hot-topics/bio-fuel-reduction/FTEbrief.pdf.

Contact: Pat Miles, pmiles@fs.fed.us, North Central Research Station, FIA

Web Services:

Wilson, B.T.; Ibes, W.S. 2005. Forest Inventory and Analysis information delivery architecture. In: Proceedings, 16th annual workshop on database and expert systems applications (DEXA), 5th FEIDSS workshop; Copenhagen, Denmark. Los Alamitos, CA: Institute of Electrical and Electronic Engineers Computer Society Press: 706-710.

Contact: B. Tyler Wilson, barrywilson@fs.fed.us, North Central Research Station, FIA

Virtual Analyst:

Moser, W.K.; Hansen M.H.; Miles P.D.; Johnson B.; McRoberts, R.E. 2005. The Virtual Analyst Program: a small scale data-mining, error-analysis and reporting function. In: Proceedings, 16th annual workshop on database and expert systems applications (DEXA), 5th Forest and Environmental Information and Decision Support Systems workshop; Copenhagen, Denmark. Los Alamitos, CA: Institute of Electrical and Electronic Engineers Computer Society Press: 691-695.

Contact: W. Keith Moser, wkmoser@fs.fed.us, North Central Research Station, FIA

Partners: University of Nevada, Las Vegas; University of Minnesota

Finding: FIA research supports fire risk management strategies at the wildland urban interface.

Accomplishment: Wildland fire management is rapidly becoming one of the most important aspects of resource management planning. FIA researchers have integrated biological, physical, socioeconomic, and ecological sciences to improve the public's ability to live in a fire environment

and developed the forest fuels monitoring system to anticipate future opportunities and threats from fire. The newest version of Fuel Treatment Evaluator allows users to identify and prioritize hazardous fuel reduction opportunities in forests based on departure from historical natural fire regimes, need for thinning, and proximity to people and structures (the wildland-urban interface). Fuel Treatment Evaluator also evaluates the effects of alternative silvicultural thinning prescriptions on the high-priority treatment opportunities in terms of acres, biomass yields, fire effects, and harvest profitability.

Outcome: Resource managers and planners are benefiting from the Fuel Treatment Evaluator and the Downed Woody Material technical guide, which provide the basis for understanding and using FIA fuel estimates to their full potential. Standard FIA reporting products have been strengthened by the inclusion of forest fuel information, and users are benefiting from the more holistic nature of FIA forest resource data. Consistent and proven methods for training, collecting, editing, processing, storing, retrieving, and displaying forest fuels information are now being incorporated throughout the Nation. The Fuel Treatment Evaluator tool has supported hundreds of retrievals, has been used in a second assessment of forest biomass and fuel reduction treatments in the West, and is being used by the Woody Biomass Utilization Team (Edmund Gee, leader) and the Opportunity Area Utilization Team (Ken Skog and Jamie Barbour, leaders).

Fuel Treatment Evaluator:

U.S. Department of Agriculture, Forest Service. 2005. A strategic assessment of forest biomass and fuel reduction treatments in Western States. Gen. Tech. Rep. RMRS-GTR-149. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 17 p.

FTE Ver 3: http://www.ncrs2.fs.fed.us/4801/fiadb/FTE_Version3/Webclass1.asp

Contact: Pat Miles, pmiles@fs.fed.us, North Central Research Station, FIA

Down Woody Material:

Web site: http://ncrs2.fs.fed.us/4801/dwm/methods/
Field guide: http://ncrs2.fs.fed.us/4801/dwm/local-resources/documents/dwm-field-manual.pdf

Contact: Chris Woodall, cwoodall@fs.fed.us, North Central Research Station, FIA

Finding: FIA research supports mitigation and management of invasive species.

Accomplishment: Invasive species have become a critical-management issue with regard to native forests and restoration of healthy forest ecosystems. FIA researchers have developed methods to detect and report on 25 key invasive plants across the 11-State north central region.

Outcome: The first year's data collection across 7,000 forested plots provides critical baseline data on the occurrence and distribution of 25 key invasive plants. Analysis of invasive association with other FIA plot characteristics provides additional critical information to researchers working on efforts to predict and prevent invasive spread. FIA research aimed at quantifying the amount, distribution, and value of potential host species and impacts of invasive insects, like the emerald ash borer in Michigan and Indiana, has provided critical information to resource managers and planners.

Invasive field guide:

http://www.ncrs.fs.fed.us/4801/regional-programs/Inventory/fieldcrews/manuals/

Contact: W. Keith Moser, wkmoser@fs.fed.us, North Central Research Station, FIA

Northeastern

Finding: FIA research assists management strategies for low-grade hardwoods in Pennsylvania.

Accomplishment: Pennsylvania leads the Nation in volume for many hardwood species, and the hardwood products industry is one of the major economic drivers in the State. Low-grade wood material often goes unharvested or unused in many regions of the State owing to various market factors; consequently, much wood is wasted and economic development opportunities are missed. Through analysis of recently compiled inventory data, FIA is providing estimates of the statewide availability of low-grade wood.

Outcome: The Pennsylvania Department of Agriculture announced the creation of a Hardwoods Blue Ribbon Task Force to develop recommendations regarding public policy

for the promotion of profitable use of low-grade forest timber resources. The task force comprises representatives from wood products processors and manufacturers, academic institutions, private forestry companies, State and Federal government agencies, and other industry stakeholders. FIA estimates are being used to match available resources with potential wood-using industries. According to Pennsylvania Agriculture Secretary Dennis Wolff, "I believe that with the task force, we have a great opportunity to positively influence the future of the forest products industry in Pennsylvania."

McWilliams, W.H.; Alerich, C.A.; Devlin, D.A.; Lister, A.J.; Lister, T.W.; Sterner, S.L.; Westfall, J.A. 2004. Annual inventory report for Pennsylvania's forests: results from the first three years. Resour. Bull. NE-159. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northeastern Research Station. 95 p.

McWilliams, W.H.; King, S.L.; Scott, C.T. 2001. In: Reams, G.A.; McRoberts, R.E.; Van Deusen, P.C., eds. 2001. Proceedings of the second annual Forest Inventory and Analysis symposium. Gen. Tech. Rep. SRS-47. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southern Research Station: 119-122

Contact: Will McWilliams, wmcwilliams@fs.fed.us, Northeastern Research Station, FIA

Finding: FIA research assists in ice storm assessment in West Virginia.

Accomplishment: In February 2003, an ice storm impacted an area of some 307,000 acres in west-central West Virginia. In early 2005, FIA completed data collection and analysis for plots in the impact zone as part of a special study conducted at the request of the West Virginia Department of Commerce, Bureau of Forestry. To provide an assessment of the changes that have occurred owing to the storm, FIA remeasured 51 permanent plots in the region that was previously measured during the 2000 statewide inventory.

Outcome: FIA provided estimates of storm-related damage with volume per acre decreasing an average of 3.4 percent in the storm impact area, with the impact being much greater on softwood trees than on hardwoods. An estimated 13 million cubic feet of softwood growing stock was lost. Research indicates an average of 20 trees per acre had broken tops, a fourfold increase from previous measurements. This represents damage that will likely affect growth, mortality, and tree quality well into the future.

Griffith, D.M.; Widmann, R.H. 2003. Forest statistics for West Virginia: 1989 and 2000. Resour. Bull. NE-157. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northeastern Research Station. 119 p.

Contact: Doug Griffith, dgriffith@fs.fed.us, Northeastern Research Station, FIA

Finding: FIA research supports national forest management needs on the Allegheny National Forest.

Accomplishment: The Allegheny National Forest (NF) is located in northwestern Pennsylvania and is within a day's drive of one-third of the U.S. population. To support the Allegheny's forest planning process, FIA provides critical data to describe changes in the health and vigor of stand conditions. In addition, FIA researchers routinely provide Allegheny NF managers with analysis and information to support national forest management decisions and are critical for public relations, responses to litigation, and marketing.

Outcome: FIA inventory data describe current forestwide habitat conditions for certain threatened and endangered species, support calibration of yield estimates for forest plan revision analysis, support environmental impact statement (EIS) discussions about vegetation at the landscape scales, and provide vital information to describe various forest health indicators. FIA's descriptive vegetation and forest health information has proven beneficial during appeals and litigation. In September 2005, the Court of Appeals for the 3rd Circuit Court ruled in favor of the Allegheny National Forest, based in part on the strength of the FIA data and analysis supporting the management decisions made by the forest in what is known as the Eastside Project.

Morin, R.S.; Liebhold, A.M.; Gottschalk, K.W.; Woodall, C.W.; Twardus, D.B.; White, R.L.; Horsley, S.B.; Ristau, T.E. 2006. Analysis of forest health monitoring surveys on the Allegheny National Forest (1998-2001). Gen. Tech. Rep. NE-339. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northeastern Research Station. 102 p.

Contact: Will McWilliams, wmcwilliams@fs.fed.us, Northeastern Research Station, FIA

Southern

Finding: FIA research provides comprehensive analysis for South Carolina forests.

Accomplishment: Current information on forest inventory is critical to the South Carolina Forestry Commission and forest industry in resource management planning. FIA recently completed a new inventory of South Carolina forests in cooperation with the State, resulting in the first comprehensive 5-year annual report from FIA. This report included results from a set of new forest health indicators developed by FIA researchers. Findings indicate that the volume of all live trees was the highest since FIA began inventories in the State in 1936. Loblolly pine, a mainstay of forest industry, increased 30 percent since 1993. All softwoods combined are generating more commercial wood than at any other time since surveys began, and net annual growth of all live softwoods has doubled since 1993.

Outcome: Partially as a result from this updated inventory, Grant Forest Products announced their intent to build two oriented strand board plants in Allendale and Clarendon Counties. This development will bring $400 million in capital expenditures to the State and income for 240 families. This result has shown that updated annual inventory data are needed to assist States with economic development. The 5-year report has received favorable response for individuals within South Carolina and has increased the visibility of the FIA program in South Carolina. The report addresses forest resource status and extent, as well as forest health issues. By incorporating FIA's forest health and traditional data with other data sources (population density, weather, etc.), this report has set a new standard for comprehensive updates on forest land within a State or other area classification.

Conner, R.C.; Adams, T.; Butler, B.J.; Bechtold, W.A.; Johnson, T.G.; Oswalt, S.N.; Smith, G.; Will-Wolf, S.; Woodall, C.W. 2004. The state of South Carolina's forests, 2001. Resour. Bull. SRS-96. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southern Research Station. 67 p.

Contact: Roger Conner, rconner@fs.fed.us Southern Research Station, FIA

Partners: Tim Adams, South Carolina Forestry Commission; Brett Butler, USDA Forest Service–Northeast FIA; William Bechtold, USDA Forest Service–Southern FIA; Tony Johnson and Sonja Oswalt, USDA Forest Service–Southern FIA; Gretchen Smith, University of Massachusetts; Susan Will-Wolf, University of Wisconsin; Chris Woodall, USDA Forest Service–North Central FIA.

Finding: FIA research provides consistent classification and change models for annualized inventories.

Accomplishment: As FIA State inventories move from the old periodic design (measuring a State every 10 years or so) to the new annualized designs (10 to15 percent of all plots in each State measured every year), the need for a clearly defined logic for processing components of change (growth, removals, and mortality) in the new design was needed. FIA has developed a National Field Guide for data collection procedures, NIMS for consistent data storage and process, and nationally consistent tables for reporting. During 2005, cooperative efforts within the national FIA program have resulted in completion of these critical program elements.

Outcome: Programs to process annual plot remeasurement for NIMS allow for processing, posting, and publishing of FIA data in a timely and nationally consistent manner. The initial effort developed the logic for all trees, plots, and condition classes for two measurement periods.

Bechtold, W.A.; Patterson, P.L., eds. The enhanced forest inventory and analysis program--national sampling design and estimation procedures. Gen. Tech. Rep. SRS-80. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southern Research Station. 85 p.

http://srsfia2.fs.fed.us/publicweb/statistics_band/stat_documents.htm

http://www.fia.fs.fed.us/library/field-guides-methods-proc/

Contact: Gary Brand, gbrand@fs.fed.us North Central Research Station, FIA, and Ray Sheffield, rsheffield@fs.fed.us, Southern Research Station, FIA

Partners: All FIA units within the USDA Forest Service and users of FIA data.

Finding: FIA research develops new urban forest monitoring strategies.

Accomplishment: During the September 2004 National Association of State Foresters' (NASF) annual meeting in Jackson, MS, the State foresters passed a resolution addressing the **lack of systematic inventory and assessment of our Nation's urban forest resource**. This resolution called for a task force (NASF Urban Forest Health Monitoring (UFHM) Task Force) consisting of representatives from the USDA Forest Service FIA, Forest Health Monitoring (FHM), and Urban and Community Forestry (UCF) programs; NASF; and State UCF Coordinators. In response to this resolution, the national FIA program chartered an FIA Urban Implementation Team to develop the necessary infrastructure support system, resulting in an efficient production effort to implement urban FIA across the United States. A pilot study was instituted in 2005 in Tennessee and Colorado to evaluate activities unique to urban FIA implementation and identify critical issues. Data collection on approximately 50 plots each in Tennessee and Colorado resulted in a refinement of field procedures and a data recorder program integrated with traditional FIA data collection procedures.

Outcome: Urban pilot studies have provided invaluable information on protocols and field application and showed that a national continuous urban forest inventory and assessment can be implemented within 1 year of receiving appropriated funds. The protocol would use a standard definition of **urban** (consistent with U.S. census definition of urban areas), use the standard FIA grid (one plot per 6,000 acres with option to intensify), add an additional set of urban variables (including micro plots for small trees), and have all plots measured during "leaf on" season. The FIA Urban Implementation Team has approved the work completed to date and the operational manual (Urban FIA Manual) is available as a **turnkey system** for field application. Urban forest data would be a valuable addition to State FIA reports, especially data analysis generated through the Urban Forest Effects Model (UFORE). The task force further noted that FIA, with assistance from the UCF and FHM programs, could establish an Urban Reporting Task Team within the FIA Urban Implementation Team.

http://www.urbanforestrysouth.org/Resources/Collections/Collection.2004-10-06.2101/view

http://www.fs.fed.us/ne/syracuse/Tools/UFHMonitoring.htm

http://fhm.fs.fed.us/pubs/ufhm/ufhm_09_02.pdf

Contact: Angie Rowe, krowe@fs.fed.us, Southern Research Station FIA, FIA Urban Implementation Team Chair; Bill Dunning, bdunning@fs.fed.us, Rocky Mountain Station, FIA; Anne Cumming, acumming@fs.fed.us, NASF UFHM Task Force staff

Partners: Mark Buscaino, USDA Forest Service–UCF Director; Borys Tkacz, USDA Forest Service–FHM Director; Bruce Webster, Tennessee Division of Forestry–Urban Forestry Director; Ralph Campbell, Colorado Forest Service–Urban Forestry Director; NASF UFHM Task Force

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. Much of the National Office experience is in making presentations, preparing policy white papers and budget justifications, and providing input to national and international organizations. In FY 2005, the National Office staff:

- Facilitated final followup review of the Southern FIA unit for the Chief.
- Produced five publications. Most of the reporting effort in 2005 was focused on updating of the U.S. Forest Resource Facts and Historic Trends brochure with language translations per the request of the Chief's Office, and providing final United States submission to the Food and Agriculture Organization (FAO) global Forest Resources Assessment 2005.

- Facilitated one FIA management team meeting and dozens of briefings for internal and external partners, customers, collaborators, and supporters.
- Collaborated with the Society of American Foresters, and assisted the sixth national user-group meeting for FIA customers, which was held in Fort Worth, TX.
- Prepared followup information for Government Accountability Office auditors on FIA and its role in providing criteria and indicators to the Heinz Center and other clients.
- Finalized a new memorandum of understanding with the National Park Service (NPS) to improve access to NPS lands and encourage opportunities for collaborative work.
- Initiated a process to finalize the interim directive on FIA data privacy to extend its provisions permanently.
- Continued working with the Conservation Biology Institute in Corvallis, OR, to develop and improve the Protected Areas Database.
- Participated in FAO/North American Forestry Commission (NAFC) Inventory Working Group project on a large-scale summary database for North America.

Spatial Data Service Center

There were 145 requests, 76 percent of the total, completed by the Spatial Data Service team in FY 2005. The team received a total of 191. Ten percent were still in progress at the end of the fiscal year. Only three projects were rejected outright. National or multiregional data requests were completed within 2 weeks of starting them. This is an improvement over past years when requestors waited about 4 weeks for most requests. Our largest customer group was academia (fig. 7), accounting for 25 percent of all new requests. The State forestry agencies made the largest number of requests in the southern region. In the north central and northeastern regions, the majority of the requests were from academia. However, the group "other Forest Service" had the majority in interior West, Pacific Northwest, and in multiregional projects. The "other Forest Service" group is made up of all non-FIA USDA Forest Service groups.

MapMaker/TableMaker

Mapmaker/Tablemaker programs are tools designed by FIA to assist clients in generating tables and maps of forest statistics for the 48 contiguous States. This Web application uses FIA data stored in a database containing information from 160,000 plots, over 5.8 million trees, and dozens of other forest variables across all forest land ownerships nationwide. Mapmaker is accessible at http://www.fia.fs.fed.us.

During FY 2005, over 55,000 retrievals were completed. A summary of Mapmaker usage from 2002 through 2005 follows.

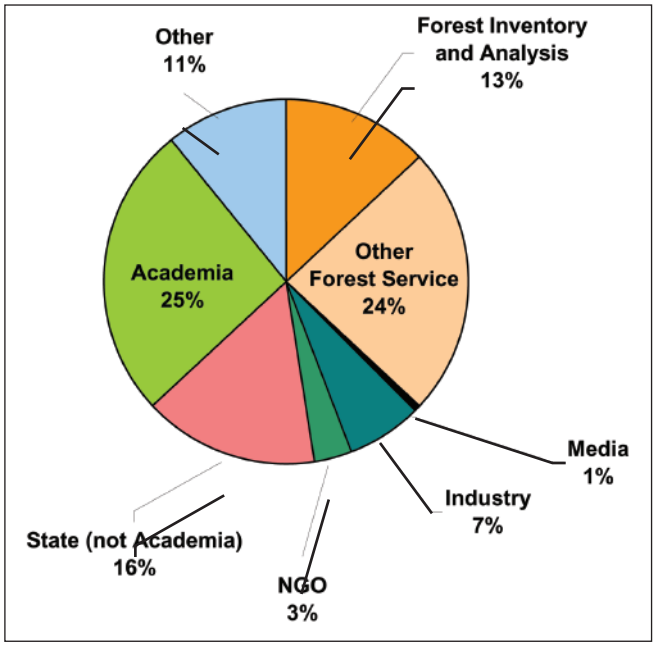

Figure 7—Requests made to the FIA Spatial Data Service Center, by organization, 2005.

Mapmaker Tool	FY2003	FY2003	FY2004	FY2005
Forest Inventory Mapmaker and RPA Tablemaker population estimates	11,579	14,577	26,034	55,062
Forest Veg Simulator		396	514	763
Fuel Treatment Evaluator				650
Total	11,579	14,973	26,548	56,475

Note: Over 32,000 retrievals were run by a client in FY 2005 via an automated process.
A limit of 100 retrievals per day was instituted to restrict this type of retrieval.

Number of Mapmaker retrievals by State									
State	Number	State	Number	State	Number	State	Number	State	Number
AK	631	HI	25	ME	1,559	NJ	966	SD	931
AL	2,411	IA	1,300	MI	2,276	NM	904	TN	2,317
AR	1,803	ID	964	MN	2,604	NV	807	TX	1,649
AZ	978	IL	1,367	MO	1,995	NY	1,529	UT	952
CA	1,014	IN	1,655	MS	1,641	OH	1,436	VA	2,015
CO	1,154	KS	1,000	MT	1,203	OK	1,041	VT	985
CT	972	KY	1,694	NC	1,993	OR	1,190	WA	1,026
DE	1,019	LA	2,387	ND	953	PA	1,594	WI	2,086
FL	1,900	MA	1,065	NE	890	RI	929	WV	2,196
GA	6,492	MD	1,278	NH	1,355	SC	2,234	WY	1,011
								Total	75,419

Note: The total number of data retrievals by state exceeds the total number of retrievals owing to multistate retrievals.

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 42 grants and agreements funded in FY 2005, composing $8,180,837 or approximately 13 percent of the total available FIA program budget. This amount is a decrease in number (down from 67 grants in 2004) and a decrease in total funding, down from $10,625,840 (17 percent of the FIA budget) awarded in grants in FY 2004. 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 (53 percent of funds) and university partners (19 percent of funds) (fig. 8).

Other cooperators included other USDA Forest Service offices (21 percent of funds) and other non-Federal partners (2 percent of funds). The major purpose for grants was for collaboration in data collection and for 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.

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,

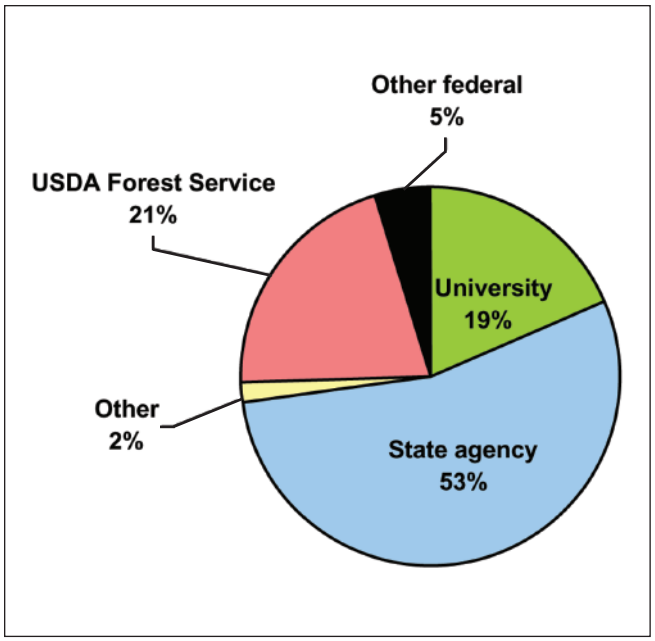

Figure 8–Grants and agreements, by recipient group, 2005.

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, 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 questions. Appendix 6 shows the number of significant consultations that FIA staff provided in FY 2005, 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 1,510 significant consultations requiring 5,612 staff hours to complete—equivalent to over 2.5 full-time staff-years. Half of the time and approximately a third of the consultations were conducted with other government agencies, such as State agencies and other Federal agencies, as well as having internal discussions within the USDA Forest Service. Other major client groups included academic clients (approximately 18 percent of the consultations and 22 percent of the time), industry (19 percent of the consultations and 12 percent of the time), and nongovernmental organizations (NGOs) (8 percent of the consultations and 8 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.

FIA-National Forest Collaboration

In FY 2002, the Deputy Chief for Research and Development and the Deputy Chief for NFS signed an internal memorandum of understanding 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, including all national forest lands. 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 manner consistent 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 2005, FIA continued development and operation of applications to load FIA data from national forests into FSVeg (Field Sampled Vegetation module of NIMS), the corporate standard database for national forest staff. Recent collaborative efforts between FIA and NFS may be reviewed on the Web at http://www.fia.fs.fed.us/slides/NFS/FIA_NFS%20partnership.pdf.

Based on feedback from the nine NFS regions, FIA is meeting the needs of NFS partners. Some additional work is required 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 2006. Increasing demands from NFS customers for additional forest planning data will most certainly require changes in current financial arrangements with stronger NFS funding support at the national level.

Comparing FY 2005 FIA Accomplishments with Plans from FY 2004

In the FY 2004 business report for FIA, we included a section stating our plans for FY 2005. Below we show how our actions in FY 2005 matched our plans.

In the FY 2004 business report, we said that in FY 2005 we would—	In FY 2005, we—
Continue transition to an annual inventory system by continuing annual inventories on all forested lands in all current States and initiating an annual inventory system in Nevada and periodic inventory of the Federated States of Micronesia.	Continued annual inventories on all forested lands in all current States and completed implementation of Delaware, Idaho, Maryland, New Jersey, and West Virginia. Pilot study in new techniques continues in Nevada.
Continue engaging partners, users, and clients to develop and document a new strategic plan to guide the program for FY 2006 through FY 2010, setting priorities as well as staffing and funding goals.	Completed the new FIA Strategic Plan for 2007-2011 and revised core variables. The plan may be viewed at http://www.fs.fed.us/ne/fia/news/planning/index.html
Publish the first comprehensive State reports that integrate information on forest health.	Published comprehensive State report for South Carolina (http://www.srs.fs.usda.gov/pubs/viewpub.jsp?index=7507), and Maine. Indiana is in the publication process.
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 holding one scientific symposium on FIA.	Held user group meetings and management team meetings in all regions of the country, and the national user group met in September. Held one national FIA science symposium. Shared the strategic plan with our partners and users and encouraged them to provide feedback to the National Office or regional offices.
Continue to make our data more accessible and usable by adding analytical tools and program documentation to online FIA databases and Web pages. Release approximate coordinates for recent periodic plots and for annual plots where a sufficient number of plots have been taken to ensure owner confidentiality. Develop a prototype set of core map products based on FIA data.	Updated Fuel Treatment Evaluator to version 3.0 for Western States to allow analysis of impacts of alternative fuel treatment prescriptions that reduces stocking for even- or uneven-age management scenarios to reduce wildfire risk. Models incorporate forest type, topography, productivity, and presence of a wildland-urban interface. Approximate plot coordinates now available on the Web as outlined in the Federal Register (Vol. 70, No. 45 / Wednesday, March 9, 2005 / Notices) via MapMaker.
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. Develop a prototype set of core map products based on FIA data.	Updated the Fuel Treatment Evaluator for identifying and prioritizing hazardous fuel reduction opportunities. Continued to study tree taper data and began developing taper models for selected species. These will help reduce the time required to measure merchantable heights in the field.
Publish the sampling and estimations methods documentation for Phase 2 and a quality assurance assessment of Phase 2 measurements. Finalize current Phase 3 estimation methods.	Published FIA estimation procedures in Bechtold, W.A.; Patterson, P.L., eds. The enhanced FIA program—national sampling design and estimation procedures. Gen. Tech. Rep. SRS-80. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southern Research Station. 85 p.
Complete beta testing of national Portable Data Recorder data collection program (e-plot) and complete analysis of field data measurement quality objectives.	In autumn 2005, released Beta test version of the data recorder program that collects national core data.

Fiscal Year 2006 FIA Program 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 Western United States and 15 percent per year in the Eastern United States by FY 2003. Unfortunately, although funding for the FIA program has increased over the past several years, it has not increased sufficiently to allow full program implementation as scheduled in 2003. We continue to be optimistic that we will achieve the target level of funding by 2007 and will, at that time, achieve full program implementation (see fig. 3).

In FY 2006, to continue progress toward full program implementation, we intend to accomplish the following:

- Continue transition to an annual inventory system by continuing annual inventories on all forested lands in all current States and evaluating damage from Hurricane Katrina in Mississippi. For 2006, only Oklahoma, New Mexico, Wyoming, Hawaii, and interior Alaska will still await annualized inventory (fig. 9). This change will mean that an annual inventory is implemented in every region of the country and will be active in 92 percent of all States.
- Continue engaging partners, users, and clients to develop and finalize the new Strategic Plan to guide the program for FY 2007 through FY 2011, setting priorities as well as staffing, funding, and implementation goals.
- Continue to publish the comprehensive 5-year State reports that integrate information on forest health in Indiana, Iowa, Minnesota, Missouri, Pennsylvania, Arkansas, Kentucky, East Texas, Kentucky, Virginia, and Oregon. North Carolina and Alabama final periodic reports should also be completed.
- Complete a periodic report for Puerto Rico, including a Spanish translation.

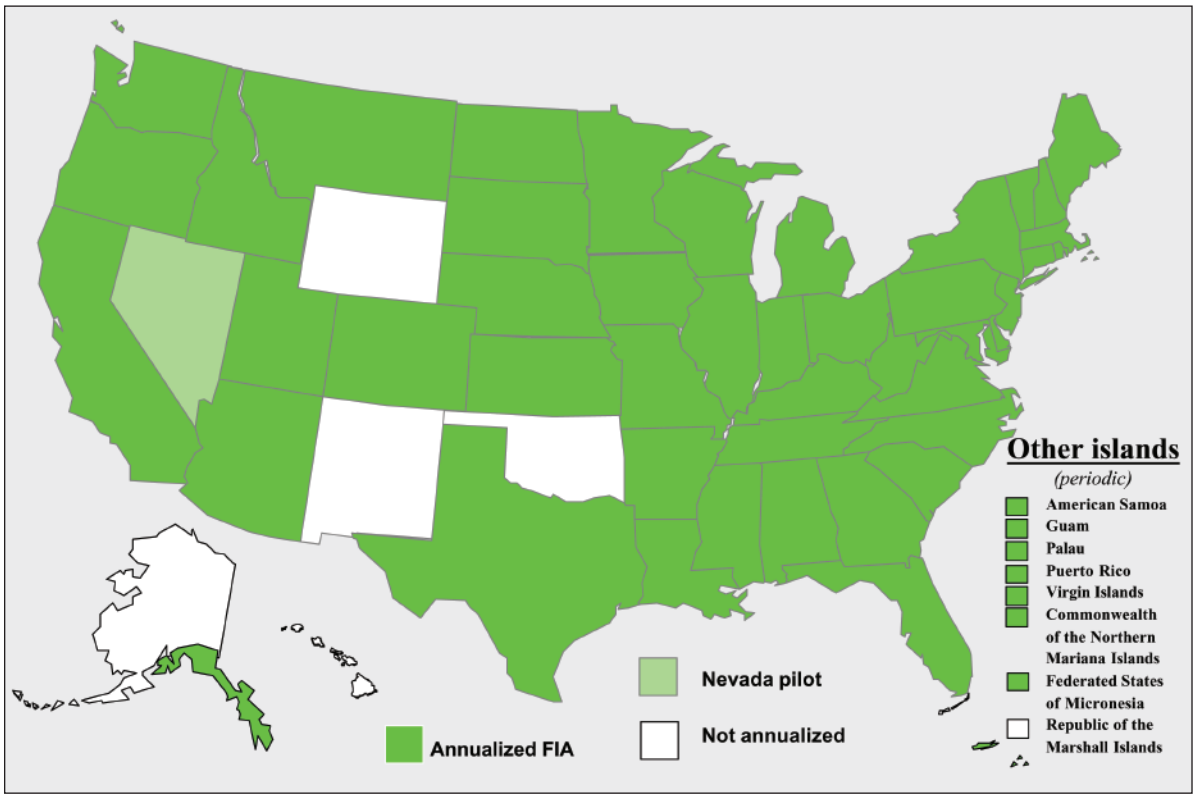

Figure 9—Planned FIA implementation status, 2006.

- Publish national forest/nonforest mask, cover type map, and biomass map based on FIA data. Finalize a prototype set of core map products based on FIA data.
- 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 holding one scientific symposium on FIA.
- Continue to make our data more accessible and usable by adding analytical tools and program documentation to online FIA databases and Web pages. Release a Web Services data distribution tool.
- 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 estimation engine for Phase 2 data.
- Complete the beta release of the Portable Data Recorder data collection program (e-Plot) with national and regional variables.
- Complete production release of NIMS V3.0.

Long-Term Strategic Direction

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

Goal	Performance measure	2003 level	2004 level	2005 level	Target level
Inputs					
Maintain sufficient funding to support the base Federal FIA program	Percentage of total Federal funding necessary for annualized inventory received	84	82	83	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
Keep fieldwork current	Percentage of States actively engaged in the annualized inventory program	78	88	90	100
Make data accessible to national forest customers	Percentage of national forest land for which FIA data are loaded into NRIS	18	65	80	100
Outcomes					
Keep analysis current	Percentage of States with FIA State report less than 5 years old	48	52	48	100
Keep online data current	Percentage of States with FIA online data less than 2 years old	38	56	80	100
Customer satisfaction	Percentage of customers rating service as "satisfactory" or better	89	85	85	100
Partner participation	Partner financial contributions expressed as percentage of total Federal FIA budget	18	10	10	20

level, the GPRA framework also provides an excellent tool for guiding progress at the project level. The tabulation on page 21 shows our key goals, performance measures, benchmarks, and targets for the FIA program for 2003-2006. In future business reports, we will repeat this table to show how we are progressing toward our goals.

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.

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.

Field crews. 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, computer system support staff.

Analysts. Staff who analyze data and write publications.

Techniques research. Mainly research staff who conducts 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.

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

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 their 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.

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 nonforested 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 one 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 USDA 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 USDA 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 are 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.

Appendix 1. Performance Measures for the FY 2005 FIA Program

	Pacific Northwest	Interior West	Southern	North Central	Northeast	National Office	Total
Total available funds in FY 2005	$14,343,000	$12,500,663	$14,951,515	$7,811,306	$8,834,227	$4,215,817	$62,656,528
Total appropriated funds, FY 2005	$13,805,000	$11,733,000	$14,931,000	$7,378,000	$8,805,000	$4,229,000	$60,881,000
Estimated % of FY 2005 full funding	83%	81%	83%	77%	91%	83%	83%
Contributions from partners:							
Supporting the 20% FIA program	$85,000	$0		$ 608,985	$509,548	$0	$2,429,226
Value-added contributions	$157,000	$429,711	$ 74,950	$2,485,579	$440,755	$361,791	$3,949,786
Base grid plots sampled:							
Phase 2, forested	1,918	2,013	5,382	3,052	1,987		14,352
Phase 2, nonforested	2,461	4,435	3,618	10,530	1,435		22,479
Total Phase 2 plots	4,379	6,448	9,000	13,582	3,422		36,831
Phase 3, forested	207	270	414	228	204		1,323
Phase 3, nonforested	251	597	277	709	132		1,966
Total Phase 3 Plots	458	867	691	937	336		3,289
Total base plots	4,837	7,315	9,691	14,519	3,758		40,120
Number of quality assurance plots							
Phase 2 (forest + nonforest)	179	738	1,531	566	287		3,301
Phase 3 (forest + nonforest)	11	77	126	49	20		283
Total quality assurance plots	190	815	1,657	615	307		3,584
Percentage of total plots sampled[a] :							
Phase 2 (10% West, 15% East)	10%	8%	13%	15%	11%		12%
Phase 3 (20% overall)	17%	15%	13%	20%	20%		16%
Percentage of States with annual FIA activity[b]	80%	75%	85%	100%	100%		90%
Number of publications:							
National forest reports	-	2	1	13	1	-	17
State resource reports	7	-	1	3	2	-	13
State timber product output reports	-	3	5	-	-	-	8
Regional reports	1	-	1	-	-	-	2
National reports	1	-	1	1	-	1	4
Subtotal--core reports	9	5	9	17	3	1	44
Peer-reviewed journal articles	13	7	2	7	5	-	34
Proceedings articles	2	11	11	12	11	3	50
Other station publications	8	5	1	1	4	-	19
Other publications	1	2	6	5	2	1	17
Total, all reports	33	30	29	42	25	5	164

Appendix 1. Performance Measures for the FY 2005 FIA Program (continued)

	Pacific Northwest	Interior West	Southern	North Central	Northeast	National Office	Total
Number of publications per federal full-time equivalent	0.35	0.26	0.33	0.59	0.32	2.50	0.37
Consulting activities:							
Number of significant consultations	234	33	748	176	299	20	1,510
Total hours of significant consultations	1,121	195	1,904	704	1,591	97	5,612
Meetings:							
User-group meetings held	2	3	3	1	2	1	12
Management meetings held	2	1	3	1	1	3	11

[a] Plot counts do not include interior Alaska, Hawaii, Puerto Rico, Virgin Islands, and Pacific Island territories, which are treated as special project

[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 2005 FIA Program

	Pacific Northwest	Interior West	Southern	North Central	Northeast	National Office	Total
Available funds:				*Dollars*			
Previous year end-of-year balance	1,101,243	607,818	153,970	20,306	547,850	16,817	2,448,004
Post-year adjustments[a]	(300,243)	101,845	(67,455)		(406,623)	0	(672,476)
FY appropriated funds							
Research	12,727,000	10,662,000	14,461,000	6,770,000	8,693,000	2,610,000	55,923,000
State and Private-FRIA	1,078,000	1,071,000	470,000	608,000	112,000	1,619,000	4,958,000
National responsibilities/interunit exchanges	(263,000)	58,000	(66,000)	413,000	(112,000)	(30,000)	0
Total available funds	14,343,000	12,500,663	14,951,515	7,811,306	8,834,227	4,215,817	62,656,528
Direct expenses:							
Salary--							
Administration	328,343	473,871	565,466	252,415	383,866	216,291	2,220,252
Phase 1 production	0	220,755	431,900	204,894	64,031	0	921,580
Field coordination	716,820	738,896	461,994	258,715	763,350	0	2,939,775
Data collection	3,011,426	2,324,373	567,077	1,761,979	1,620,204	0	9,285,059
Quality assurance	333,612	827,289	909,795	176,212	383,454	0	2,630,362
Information management	1,439,701	1,134,426	1,762,520	646,234	606,179	0	5,589,060
Analysis	1,077,321	359,502	1,399,197	786,423	538,225	0	4,160,668
Techniques research	813,323	434,023	290,884	456,188	537,732	0	2,532,150
Travel--							
Office travel	169,362	159,340	244,651	143,364	90,797	37,200	844,714
Field/quality assurance crew travel	1,238,714	1,229,216	606,483	299,616	364,590	0	3,738,619
Equipment--							
Imagery	216,401	71,708	0	2,829	5,050	0	295,988
Vehicles	230,698	416,558	226,805	185,061	325,103	0	1,384,225
Field equipment	72,056	107,434	18,782	32,330	28,513	0	259,115
Information technology/communications	114,632	150,623	6,617	188,554	49,762	0	510,188
Other	0	128,791	0	35,300	5,610	0	169,701
Publications	27,174	0	0	15,476	353	19,000	62,003
Grants and agreements	837,100	628,550	4,205,066	627,423	479,526	1,403,172	8,180,837
Office space and utilities[b]	459,029	419,969	447,542	159,233	267,323	0	1,753,096
Other direct expenses[c]	1,011,620	304,197	381,077	103,947	363,565	45,000	2,209,406
Total direct expenses	12,097,332	10,129,521	12,525,856	6,336,193	6,877,233	1,720,663	49,686,798
Effective indirect expenses (includes funds lost to fire transfer)							
Total effective indirect	1,940,000	1,946,142	1,649,659	1,391,416	1,902,928	2,482,632	11,312,777
Total effective indirect rate	14%	16%	11%	18%	22%	59%	18%
2005 EOY balance	305,668	425,000	776,000	83,697	54,066	12,522	1,656,953

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

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

[c] Because office space and other direct expenses are no longer included in this line, these figures are not directly comparable to previous years' data

Appendix 3a. Federal Staffing (Full-Time Equivalents) for the FY 2005 FIA Program

	Pacific Northwest	Interior West	Southern	North Central	Northeast	National Office	Total
Administration	5.0	9.1	7.2	3.3	5.0	2.0	31.6
Phase 1 production work	0.0	4.7	8.4	3.3	1.0	0.0	17.4
Field coordination	11.9	10.8	5.6	3.6	11.0	0.0	42.9
Field crew	38.8	56.0	11.8	36.4	34.0	0.0	177.0
Quality assurance crew	3.9	13.1	14.3	2.8	6.5	0.0	40.6
Information management	14.7	11.2	22.1	7.3	7.6	0.0	62.9
Analysis	10.7	5.1	15.4	9.2	5.9	0.0	46.3
Techniques research	9.1	4.5	3.4	5.0	6.1	0.0	28.1
Total	**94.1**	**114.5**	**88.2**	**70.9**	**77.1**	**2.0**	**446.8**

Appendix 3b. Estimate of Cooperator Staffing Funding by FIA Grants & Agreements (Full-Time Equivalents) for the FY 2005 FIA Program

	Pacific Northwest	Interior West	Southern	North Central	Northeast	National Office	Total
Administration	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Phase 1 production work	0.0	0.0	0.0	0.2	0.0	0.0	0.2
Field coordination	0.6	1.0	10.4	0.6	2.0	0.0	14.6
Field crew	10.0	8.6	113.7	9.0	9.4	0.0	150.7
Quality assurance crew	0.7	0.0	0.0	0.0	0.0	0.0	0.7
Information management	0.0	0.0	0.0	0.5	0.0	5.0	5.5
Analysis	0.0	0.0	0.8	0.7	0.0	5.0	6.5
Techniques research	0.0	0.0	0.0	0.0	0.0	1.0	1.0
Total	**11.3**	**9.6**	**124.9**	**11.0**	**11.4**	**11.0**	**179.2**

Appendix 3c. Estimate of Total Federally Funded Staffing by (Full-Time Equivalents) for the FY 2005 FIA Program

	Pacific Northwest	Interior West	Southern	North Central	Northeast	National Office	Total
Administration	5.0	9.1	7.2	3.3	5.0	2.0	31.6
Phase 1 production work	0.0	4.7	8.4	3.5	1.0	0.0	17.6
Field coordination	12.5	11.8	16.0	4.2	13.0	0.0	57.5
Field crew	48.8	64.6	125.5	45.4	43.4	0.0	327.7
Quality assurance crew	4.6	13.1	14.3	2.8	6.5	0.0	41.3
Information management	14.7	11.2	22.1	7.8	7.6	5.0	68.4
Analysis	10.7	5.1	16.2	9.9	5.9	5.0	52.8
Techniques research	9.1	4.5	3.4	5.0	6.1	1.0	29.1
Total	**105.4**	**124.1**	**213.1**	**81.9**	**88.5**	**13.0**	**626.0**

Appendix 4. Partner Contributions Toward Implementing FIA in FY 2005

Unit	Partner	Contributions toward the base program	Contributions that add value
		---------Dollars---------	
Interior West	Arizona State Department of Lands		3,000
	Colorado State Forest Service		160,408
	Montana State Department of Natural Resources		2,600
	Navajo Nation Tribal Forestry		3,000
	Uinta National Forest		13,750
	University of Montana, Bureau of Business and Economics Research		67,953
	USDA Forest Service Region 1		175,000
	USDI Bureau of Land Management		2,000
	Utah State Division of Forestry, Fire, and State Lands		2,000
IW total		**0**	**429,711**
National Office	University of Nevada in Las Vegas		291,630
	University of Wisconsin		70,161
NO total		**0**	**361,791**
North Central	Black Hills National Forest		27,200
	Hoosier National Forest		7,700
	Illinois Division of Forest Resources	32,165	
	Indiana Department of Natural Resources	48,507	
	Iowa Department of Natural Resources	26,363	
	Kansas State Forest Service	55,187	
	Mark Twain National Forest		54,600
	Michigan Division of Forest Management	48,423	730,000
	Minnesota Department of Natural Resources	176,343	518,720
	Missouri Department of Conservation	139,525	
	Nebraska Department of Forestry, Fish, and Wildlife	29,112	
	North Dakota Forest Service	9,123	
	Resources Planning Act		30,000
	Shawnee National Forest		33,100
	South Dakota Department of Forestry and Natural Resource Management	33,191	
	Wisconsin Department of Natural Resources	11,046	1,084,259
NC total		**608,985**	**2,485,579**
Northeast	Delaware Department of Agriculture	23,758	
	Maine Forest Service	179,578	419,793
	Ohio Department of Natural Resources		17,213
	Pennsylvania Department of Conservation and Natural Resources	306,212	
	Rhode Island Department of Environmental Management		3,749
NE total		**509,548**	**440,755**

Appendix 4. Partner Contributions Toward Implementing FIA in FY 2005 (continued)

Unit	Partner	Contributions toward the base program	Contributions that add value
		Dollars	
Pacific Northwest	Alaska Department of Natural Resources	15,000	
	California Department of Forestry	15,000	
	USDA Forest Service Region 6		5,000
	USDA Forest Service Region 10		92,000
	USDA Forest Service PNW Research Station		10,000
	USDA Forest Service PNW Research Station		5,000
	USDA Forest Service PNW Research Station		5,000
	Oregon Department of Forestry	35,000	
	USDA Forest Service PNW Research Station		17,000
	USDA Forest Service PNW Research Station		3,000
	USDA Forest Service PNW Research Station		20,000
	Washington State Department of Natural Resources	20,000	
PNW total		**85,000**	**157,000**
Southern	Alabama Forestry Commission	151,244	
	Arkansas Forestry Commission	78,143	
	Florida Department of Agriculture and Consumer Services	124,328	
	Georgia Forestry Commission	150,207	
	Kentucky Division of Forestry	107,171	
	South Carolina Forestry Commission	73,013	
	Tennessee Department of Agriculture		30,000
	Tennessee Department of Agriculture	130,158	
	Texas Forest Service	272,546	
	University of Florida		44,950
	Virginia Department of Forestry	138,883	
SRS total		**1,225,693**	**74,950**
Grand total, all FIA units		**2,429,226**	**3,949,786**

Appendix 5. Grants and Agreements Entered Into by FIA Units, FY 2005

Unit	Amount	Recipient	Purpose
	Dollars		
Interior West	593,550	Colorado State Forest Service	Implementation of annual FIA
	35,000	Colorado State Forest Service	Urban FHM pilot, field plots
IW total	**628,550**		
National Office	732,986	University of Nevada at Las Vegas	Information management support
	267,000	Research Triangle Park FHM Unit	National FHM support
	154,200	University of Wisconsin	Lichen communities for FIA
	80,000	International Institute of Tropical Foresty	Implementation of annual FIA
	57,986	University of Nevada at Las Vegas	Crown indicator advisor
	48,000	University of Missouri	Soils lab work
	33,000	Northeastern Area S&PF	Damage indicators
	15,000	National Council for Air and Stream Improvement	Wildlife
	12,000	Conservation Biology Institute	Protected area database
	3,000	Purdue University	Analyst study
NO total	**1,403,172**		
North Central	346,982	Minnesota Department of Natural Resources	Implementation of annual FIA
	83,139	South Dakota Department of Forestry and Natural Resource Management	Implementation of annual FIA
	64,640	Kansas State University	Implementation of annual FIA
	45,466	Grand Rapids	Soil analyses
	43,747	Lumberjack Resource Conservation and Development Council	Implementation of annual FIA
	20,163	University of Michigan	Implementation of annual FIA
	11,750	Indiana Department of Natural	Implementation of annual FIA
	5,740	University of Nebraska	Implementation of annual FIA
	3,900	North Dakota Forest Service	Implementation of annual FIA
	1,896	Iowa Department of Natural Resources	Implementation of annual FIA
NC total	**627,423**		
Northeast	403,572	Maine Forest Service	Phase 2 and 3 data collection and expertise
	75,954	University of Massachusetts	National Ozone Indicator Advisor
NE total	**479,526**		
Pacific Northwest	500,000	USDA Forest Service Southern Research Station	University of Las Vegas co-op (National portable data recorder development)
	134,500	Oregon State University	Regional patterns of forest wildlife habitat: scaling plots to landscapes
	85,000	Oregon State University	Alpine plant communities by using permanent plot systems and predictive mapping
	83,500	Oregon State University	Ecological drivers and potential responses to climate change of tree species distribution in Pacific Costal States

Appendix 5. Grants and Agreements Entered Into by FIA Units, FY 2005 (continued)

Unit	Amount	Recipient	Purpose
	30,000	University of Washington	Invasive plants in Pacific Coast forest lands: creation of a priority list and identification and management
	4,100	USDI National Park Service, Mount	Ozone injury monitoring at Mount Rainier National
PNW total	**837,100**		
Southern	817,636	Texas Forest Service	Implementation of annual FIA
	488,913	North Carolina Divison of Forest	Implementation of annual FIA
	453,732	Alabama Forestry Commission	Implementation of annual FIA
	450,623	Georgia Forestry Commission	Implementation of annual FIA
	416,650	Virginia Department of Forestry	Implementation of annual FIA
	390,473	Tennessee Department of Agriculture	Implementation of annual FIA
	372,984	Florida Department of Agriculture and Consumer Services	Implementation of annual FIA
	321,513	Kentucky Division of Forestry	Implementation of annual FIA
	234,430	Arkansas Forestry Commission	Implementation of annual FIA
	219,038	South Carolina Forestry Commission	Implementation of annual FIA
	24,074	University of Florida and International Institute of Tropical Forestry	Avian diversity
	15,000	National Council for Air and Stream Improvement	Wildlife
SRS total	**4,205,066**		
Grand total, all FIA units	**8,180,837**		

Appendix 6. Number and Hours of Significant Consultations by FIA Staff, by Customer Group, FY 2005

Customer group	Pacific Northwest		Interior West		Southern		North Central		Northeast		National Office		Total	
	No.	*Hours*	*No.*	*Hours*	*No.*	*Hours*	*No.*	*Hours*	*No.*	*Hours*	*No.*	*Hours*	*No.*	*Hours*
Academic	51	76	2	6	119	934	34	136	58	265	5	30	269	1,447
Government	103	517	23	174	190		101	404	128	1,032	6	35	551	2,162
Industry	18	38	2	6	222	663	10	40	35	61	2	5	289	813
NGO[a]	21	121	-	-	45	102	26	104	26	190	2	10	120	527
NIPF[b]	-	-	-	-	104	84	5	20	33	16	1	3	143	123
Media	5	4	-	-	20	21	-	-	3	9	3	12	31	46
Other	36	364	6	9	48	100	-	-	16	18	1	2	107	493
Total	**234**	**1,121**	**33**	**195**	**748**	**1,904**	**176**	**704**	**299**	**1,591**	**20**	**97**	**1,510**	**5,612**

[a] NGO = nongovernmental organization.

[b] NIPF = nonindustrial private forest landowner.

Appendix 7. Land and Forest Area and FIA Annualized Implementation Statue by State and Region, FY 2001-2005[a]

Region and State	Land area	Forest area	Entry year	Annual FIA implemented (forest area)				
				2002	2003	2004	2005	2006 (plan)
	Acres			*Forest acres*				
Northeast								
Connecticut	3,101,000	1,859,000	**2003**		1,859,000	1,859,000	1,859,000	1,859,000
Delaware	1,251,000	383,000	**2004**			383,000	383,000	383,000
Maine	19,753,000	17,699,000	**1999**	17,699,000	17,699,000	17,699,000	17,699,000	17,699,000
Maryland	6,295,000	2,566,000	**2004**			2,566,000	2,566,000	2,566,000
Massachusetts	5,016,000	3,126,000	**2003**		3,126,000	3,126,000	3,126,000	3,126,000
New Hampshire	5,740,000	4,818,000	**2002**	4,818,000	4,818,000	4,818,000	4,818,000	4,818,000
New Jersey	4,748,000	2,132,000	**2004**			2,132,000	2,132,000	2,132,000
New York	30,223,000	18,432,000	**2002**	18,432,000	18,432,000	18,432,000	18,432,000	18,432,000
Ohio	26,210,000	7,855,000	**2001**	7,855,000	7,855,000	7,855,000	7,855,000	7,855,000
Pennsylvania	28,685,000	16,905,000	**2000**	16,905,000	16,905,000	16,905,000	16,905,000	16,905,000
Rhode Island	668,000	385,000	**2003**		385,000	385,000	385,000	385,000
Vermont	5,920,000	4,618,000	**2003**		4,618,000	4,618,000	4,618,000	4,618,000
West Virginia	15,415,000	12,108,000	**2004**			12,108,000	12,108,000	12,108,000
North Central								
Illinois	35,580,000	4,331,000	**2001**	4,331,000	4,331,000	4,331,000	4,331,000	4,331,000
Indiana	22,957,000	4,501,000	**1999**	4,501,000	4,501,000	4,501,000	4,501,000	4,501,000
Iowa	35,760,000	2,050,000	**1999**	2,050,000	2,050,000	2,050,000	2,050,000	2,050,000
Kansas	52,367,000	1,545,000	**2001**	1,545,000	1,545,000	1,545,000	1,545,000	1,545,000
Michigan	36,359,000	19,281,000	**2000**	19,281,000	19,281,000	19,281,000	19,281,000	19,281,000
Minnesota	50,955,000	16,680,000	**1999**	16,680,000	16,680,000	16,680,000	16,680,000	16,680,000
Missouri	44,095,000	13,992,000	**1999**	13,992,000	13,992,000	13,992,000	13,992,000	13,992,000
Nebraska	49,201,000	947,000	**2001**	947,000	947,000	947,000	947,000	947,000
North Dakota	44,156,000	672,000	**2001**	672,000	672,000	672,000	672,000	672,000
South Dakota	48,574,000	1,619,000	**2001**	1,619,000	1,619,000	1,619,000	1,619,000	1,619,000
Wisconsin	34,761,000	15,963,000	**2000**	15,963,000	15,963,000	15,963,000	15,963,000	15,963,000
Southern								
Alabama	32,481,000	22,987,000	**2001**	22,987,000	22,987,000	22,987,000	22,987,000	22,987,000
Arkansas	33,328,000	18,771,000	**2000**	18,771,000	18,771,000	18,771,000	18,771,000	18,771,000
Florida	34,520,000	16,285,000	**2001**	16,285,000	16,285,000	16,285,000	16,285,000	16,285,000
Georgia	37,068,000	24,405,000	**1998**	24,405,000	24,405,000	24,405,000	24,405,000	24,405,000
Kentucky	25,428,000	12,684,000	**1999**	12,684,000	12,684,000	12,684,000	12,684,000	12,684,000
Louisiana	27,883,000	13,812,000	**2000**	13,812,000	13,812,000	13,812,000	13,812,000	13,812,000
Mississippi	30,025,000	18,580,000						18,580,000
North Carolina	31,180,000	19,302,000	**2003**		19,302,000	19,302,000	19,302,000	19,302,000
Oklahoma	43,955,000	7,665,000						
South Carolina	19,272,000	12,495,000	**1998**	12,495,000	12,495,000	12,495,000	12,495,000	12,495,000
Tennessee	26,381,000	14,396,000	**1999**	14,396,000	14,396,000	14,396,000	14,396,000	14,396,000
Texas	167,626,000	17,149,000	**2000**	17,149,000	17,149,000	17,149,000	17,149,000	17,149,000
Virginia	25,343,000	16,074,000	**1998**	16,074,000	16,074,000	16,074,000	16,074,000	16,074,000

Appendix 7. Land and Forest Area and FIA Annualized Implementation Statue by State and Region, FY 2001-2005[a] (continued)

Region and State	Land area	Forest area	Entry year	Annual FIA implemented (forest area)				
				2002	2003	2004	2005	2006 (plan)
	Acres			*Forest acres*				
Rocky Mountain								
Arizona	72,732,000	19,427,000	**2001**	19,427,000	19,427,000	19,427,000	19,427,000	19,427,000
Colorado	66,387,000	21,637,000	**2002**	21,637,000	21,637,000	21,637,000	21,637,000	21,637,000
Idaho	52,960,000	21,646,000	**2004**			21,646,000	21,646,000	21,646,000
Montana	93,157,000	23,293,000	**2003**		23,293,000	23,293,000	23,293,000	23,293,000
Nevada	70,276,000	10,204,000					10,204,000	10,204,000
New Mexico	77,674,000	16,682,000						
Utah	52,587,000	15,676,000	**2000**	15,676,000	15,676,000	15,676,000	15,676,000	15,676,000
Wyoming	62,147,000	10,995,000						
Pacific Northwest								
Alaska, Coast	39,041,000	13,718,000	**2003**		13,718,000	13,718,000	13,718,000	13,718,000
Alaska, Int.	326,000,000	113,151,000						
California	99,824,000	40,233,000	**2001**	40,233,000	40,233,000	40,233,000	40,233,000	40,233,000
Hawaii	4,111,000	1,748,000						
Oregon	61,442,000	29,651,000	**2000**	29,651,000	29,651,000	29,651,000	29,651,000	29,651,000
Washington	42,612,000	21,790,000	**2002**	21,790,000	21,790,000	21,790,000	21,790,000	21,790,000
TOTAL	2,263,230,000	748,923,000		464,762,000	531,063,000	569,898,000	580,102,000	598,682,000
Forest area performance measure, excludes HI, interior AK				**73%**	**84%**	**90%**	**91%**	**94%**
Forest area performance measure, includes HI, interior AK				**62%**	**71%**	**76%**	**77%**	**80%**
State activity performance measure, includes all active States				**64%**	**78%**	**88%**	**90%**	**92%**

AK = Alaska
HI - Hawaii

[a] Based on area from Forest Resources of the United States, 2002 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		No
Guam	135,660	63,833	47	1	2002	2004	46		No
Palau	111,544	96,688	87	10	2003	1988	55		No
Commonwealth of the Northern Mariana Islands	73,536	53,665	73	3	2004	1989	50		No
Federated States of Micronesia	149,660	135,668	91	10	2005-2006	1986-87	75		No
Marshall Islands	44,800	44,460	99	5	2007				No
Hawaii	4,141,469	1,990,000	48	8	2008	1988			
Atlantic (SRS):									
Commonwealth of Puerto Rico	2,200,000	710,000	32	3	2003	1997	367	55	No
U.S. Virgin Islands	86,000	35,000	41	3	2004		70	45	No
Total	6,991,103	3,172,945	45	47			684	100	

[a] Partial suite of Phase 3 data collected on all plots in Pacific region.

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All our regional Internet home pages, 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

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.

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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

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Puerto Rico

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U.S. Virgin Islands

Report for current inventory in preparation. Figures reported here are from Food and Agriculture Organization Forest Resources Assessment 2005 Country Report and are not based on current inventory data.

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