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# Forest Inventory and Analysis Fiscal Year 2002 Business Report





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## 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) 2002 (October 1, 2001, through September 30, 2002), 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 page 22 of this report.]

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 and how much has died or been removed in recent years. This information can be used in many ways, such as evaluating wildlife habitat conditions, assessing sustainability of current ecosystem management practices, monitoring forest health, supporting planning and decision-making activities undertaken by public and private enterprises, and predicting the effects of global change. The FIA program combines this information with related data on insects, diseases, and other types of forest damage to assess the current health and potential future risks to forests. The program also projects how forests are likely to appear 10 to 50 years from now under various scenarios, which enables us to evaluate whether current forest management practices are sustainable in the long run and to assess whether current policies will allow the next generation to enjoy America's forests as we do today.

## Changes from Previous Year's Business Reports

In response to requests from our partners and customers, we have added maps to show the currency of FIA data presently available to the public. One goal is to publish complete, State-level analytical reports every 5 years. Therefore, a new map pertains to the currency of information available in analyzed and published form. States on this map are colored green if they have reports less than 5 years old, yellow if they have 5- to 10-year-old reports, and blue if they have reports older than 10 years (figure 6, page 8). A second goal is to provide annual updates to our online data resources. To this end, we have included a second new map that pertains to information that is available for analysis online through our Web-based database tool. States on this map are colored green if the data are 1 year old, yellow if the data are 2 to 5 years old, and blue if the data are older than 5 years (figure 5, page 7).

The financial table (appendix 2) includes rows to show funding transferred among FIA units with no net change in the total funding available to the program. The row labeled "National Responsibilities" shows funds transferred from the National FIA Office to various regional FIA programs to cover the costs associated with various National Office functions that are performed by regional staff. FIA is a distributed program with almost all program staff located in field units (as opposed to maintaining a large national staff in Washington, DC). By internal agreements, different units hire staff to perform national coordination and leadership functions. Funds to support such positions come out of the National Office portion of the FIA budget and are transferred directly to regional units for as long as the regional unit chooses the service. The row labeled "Inter-unit exchanges" shows the net total transfer of funds among units to cover other agreed-upon assessments, such as support for Resource Planning Act (RPA) program support and other agreed-upon collective investments.

In 2002, the financial table also includes a row to show the funds lost due to fire borrowing. This situation arose during the summer of 2002 when costs of forest fire suppression during a severe fire season exceeded the amount of funding appropriated for fire suppression. Funds from many USDA Forest Service nonsuppression financial accounts, including FIA accounts, were transferred to ensure that firefighting could continue. This resulted in a loss of funds available to the FIA program in 2002.

## Fiscal Year 2002 Program Highlights

Program highlights for 2002 include outputs and products, program changes, program resources, partners' contributions, and FIA data availability.

### ◆ Outputs and Products

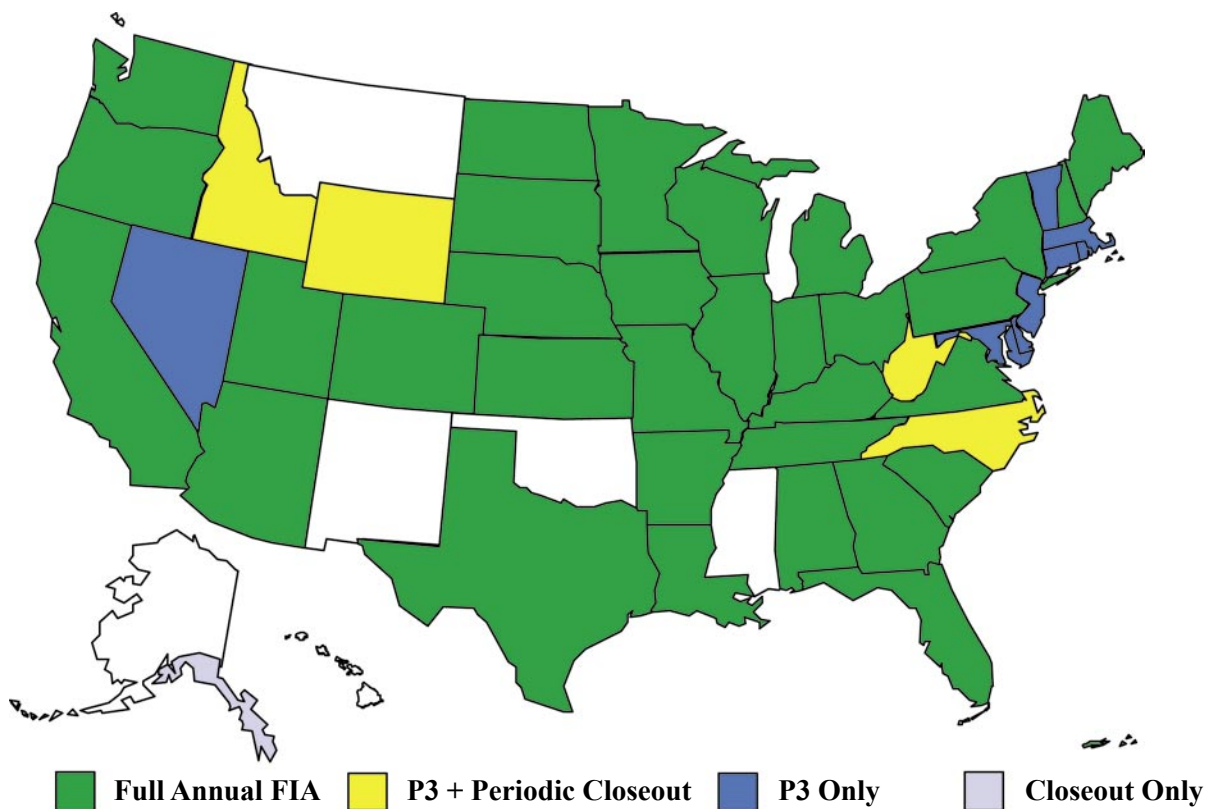
Appendix 1 shows some comparisons across FIA regional units in the rates, cost, and performance of implementing the FIA program. Federal funding available for the FIA program in 2002 totaled \$55,919,830. The funding consisted of \$50,523,000 appropriated by Congress specifically for FIA, \$1,500,000 in one-time funding from the Chief's Emergency Fund to speed up the transition to annual forest inventory, and \$3,896,830 in unspent FIA funds from the previous fiscal year, which were carried over to FY 2002 (appendix 2). In addition, partners contributed an additional \$8,655,953 toward implementing or enhancing the FIA program in 2002.

In FY 2002, we were active in some manner in 46 States (figure 1), covering 37,400 Phase 2 and 3,167 Phase 3 sample locations from the base grid, or 12 percent and 16 percent, respectively, of the total. At the end of FY 2002, 76 percent of the forested lands of the lower 48 States were covered by the new annual FIA program, an increase from 65 percent in FY 2001. The FIA program produced 167 reports and publications in FY 2002, 52 more than in FY 2001. Of these

publications, 55 were *core* publications consisting of reports specific to a complete survey unit, complete State, or national forest. This number represents an increase of 19 core reports over the FY 2001 total of 36 core publications and reflects the increased program emphasis and productivity in analyzing and reporting inventory data for geographic units. We also published 28 articles in peer-reviewed journals (the same number as in FY 2001) and 48 articles in proceedings from scientific meetings and conferences (compared to 19 in FY 2001). FIA staff participated in 1,026 significant consultations with FIA customers, requiring over 3,600 hours of staff time—or the equivalent of nearly two full-time staff positions. This is a slight increase in consultations but fewer total hours than in FY 2001 (921 consultations and 3,751 hours, respectively). FIA technical staff met on several occasions to further refine the national core FIA program, resulting in the development and release of Version 1.6 of the national core field guide; refinement of a set of core tables for reporting purposes that includes Phase 3 (forest health) data; enhancement of Internet tools for accessing and analyzing FIA data; and generation of the National Information Management System (NIMS), which will provide a single national platform for processing and publishing FIA data. Our Web-based Internet resources processed over 12,000 completed data retrievals where FIA customers obtained user-defined tables and maps of interest.

### ◆ Program Changes in FY 2002

In FY 2002, the FIA program completed the fourth of 5 years 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 enhanced FIA program now includes three sample levels (“phases”): **Phase 1** consists of remote sensing for stratification and analysis, **Phase 2** consists of the original set of FIA forest mensuration plots (approximately one plot per 6,000 acres), and **Phase 3** consists of a subsample of FIA plots measured for a



**Figure 1.** *FIA implementation status, FY 2002.*

broader suite 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. The base program will include annual compilations of the most recent panel of 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. Funding levels in 2002 were somewhat less than the funding levels required to complete this transition by 2003. At the present, it seems more likely that full funding and implementation will be achieved no sooner than 2004.

We did not add any new sampling protocols in 2002. We did continue pilot testing of a complete vegetative diversity measurement protocol that we hope to implement nationally in 2004.

### ◆ FIA Program Resources

The FIA program started fiscal year 2002 with \$3,896,830 in unspent funds from the previous fiscal year (appendix 2). Congress appropriates funds annually for the FIA program in three different USDA Forest Service Deputy Areas: (1) Research and Development, (2) National Forest System (NFS), and (3) State and Private Forestry (S&PF). Historically, the bulk of FIA funding was contained within the research budget of the USDA Forest Service. In FY 2002, the amount of research money provided by Congress for the FIA program was \$36,498,000, an increase of \$4,811,000 over the FY 2001 level (appendix 2). Congress also provided \$5,015,000 in the

S&PF Forest Resource Inventory and Analysis (FRIA) budget line (an increase of \$15,000 above FY 2001) to support the FIA program in those States that provide a cost-share contribution. The NFS Deputy Area has made a permanent commitment of \$6,200,000 to help cover the cost of implementing FIA on NFS lands. The S&PF Forest Health Protection Staff has made a permanent commitment of \$2,810,000 to help cover the cost of the FIA program, particularly the Phase 3 sample component.

In FY 2002, an additional \$1,500,000 was made available to the FIA program on a one-time basis to cover some one-time transition costs primarily associated with closing out periodic forest inventories and initiating the new annual approach. These funds came from the USDA Forest Service Chief's Emergency Fund, which in turn was drawn from Research and Development (\$885,000), S&PF/Forest Health (\$350,000), and NFS/Inventory and Monitoring (\$265,000). Total funding available to the FIA program in FY 2002 was \$55,919,830.

In the summer of 2002, a severe fire season forced the USDA Forest Service to suspend many nonfire activities in order to redirect funding to emergency fire suppression activities. This process, referred to as "fire borrowing," resulted in a loss of \$2,314,316 from the FIA program, or nearly 5 percent of available funding. This borrowing occurred late in the fiscal year, resulting in the same effects as those suffered by other USDA Forest Service programs and partners: lower-than-expected fieldwork completed, delays in funding and completing cooperative agreements and grants, and delays in publishing results. The uncertainty associated with fire borrowing and the pressure placed on all nonfire budget accounts to conserve funding in case more was needed also led to a higher-than-normal level of funds remaining unspent at the end of the fiscal year.

Of the funding available, approximately 73 percent was spent in direct support of FIA activities (figure 2), 23 percent was spent on indirect costs charged by research stations (an

increase from the 19 percent expended in the previous year, due primarily to the funds lost to fire borrowing which are treated as an indirect expense), and 4 percent remained unspent at the end of the fiscal year. Without fire borrowing, our indirect expense rate would have been approximately 19 percent, or the same as the previous fiscal year. Across FIA regions, cost and productivity figures vary because of the cyclical nature of the current inventory system and because of differences among field units in operational methods and ease of access. Rates of indirect costs in FIA field units in 2002, including the effect of fire borrowing, ranged from about 18 to 29 percent across the country (appendix 2), reflecting differences in both sources of funding as well as research station overhead assessment practices. The National Office had a 39-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 2002 from all sources, as well as the projected future total funding needed to deliver the base Federal FIA program as planned by FY 2003 and to maintain that program beyond FY 2003.

In FY 2002, FIA program staffing consisted of 401 Federal person-years of effort (appendix 3), up from 375 Federal person-years in FY 2001. The largest changes were in field crew staff (increased from 140 to 156 person-years) and quality assurance staff (increased from 26 to 35 person-years). Otherwise, changes were relatively small and may indicate that our non-field staffing is approaching the strength needed to implement the program over the long run. Of the Federal FIA employees, 56 percent were involved in supervising and collecting field data, 26 percent in analysis and information management, 8 percent in program management and administration, 6 percent in techniques research, and 5 percent in Phase 1 production work (figure 4).

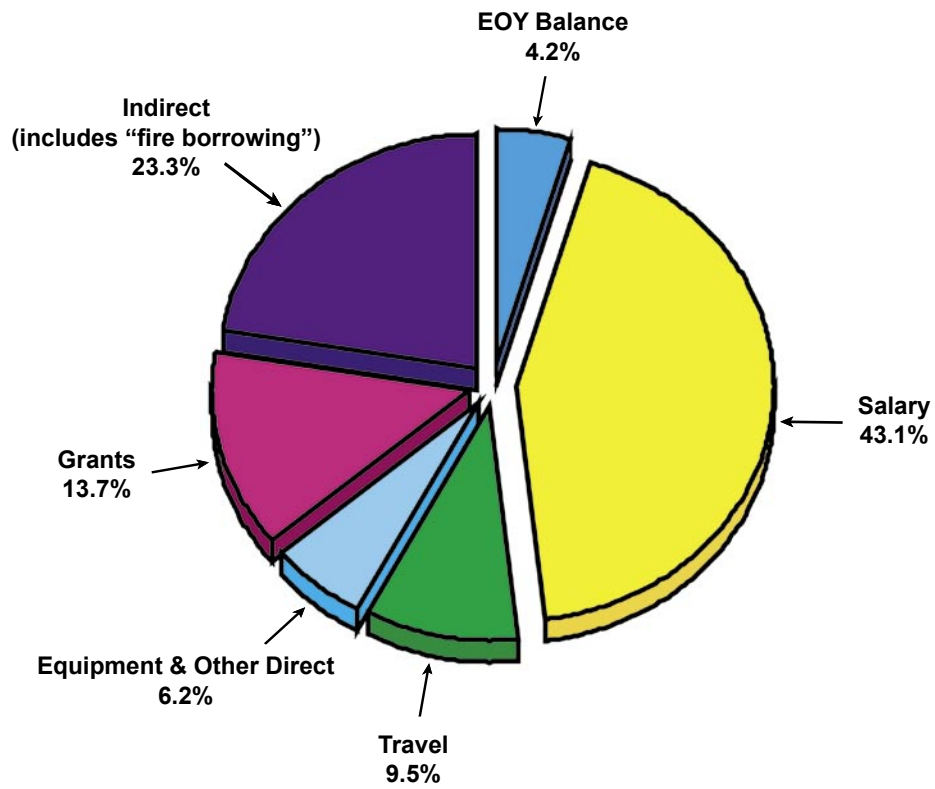


Figure 2. FIA program expenditures, by category, FY 2002.

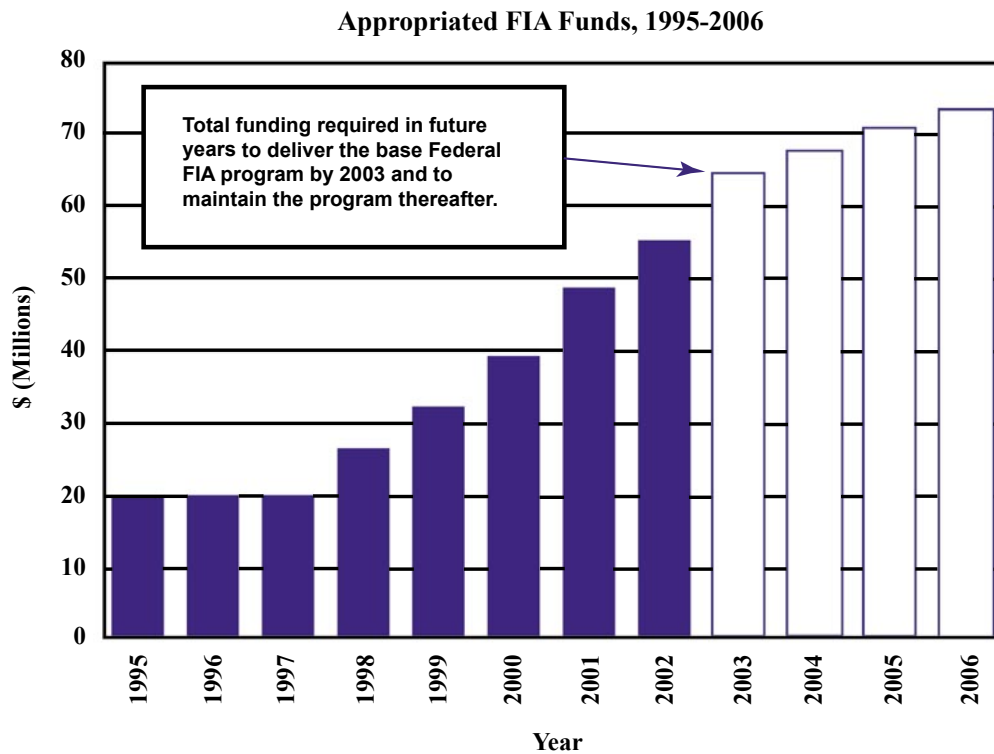


Figure 3. FIA funding level, 1995-2006 (projected).



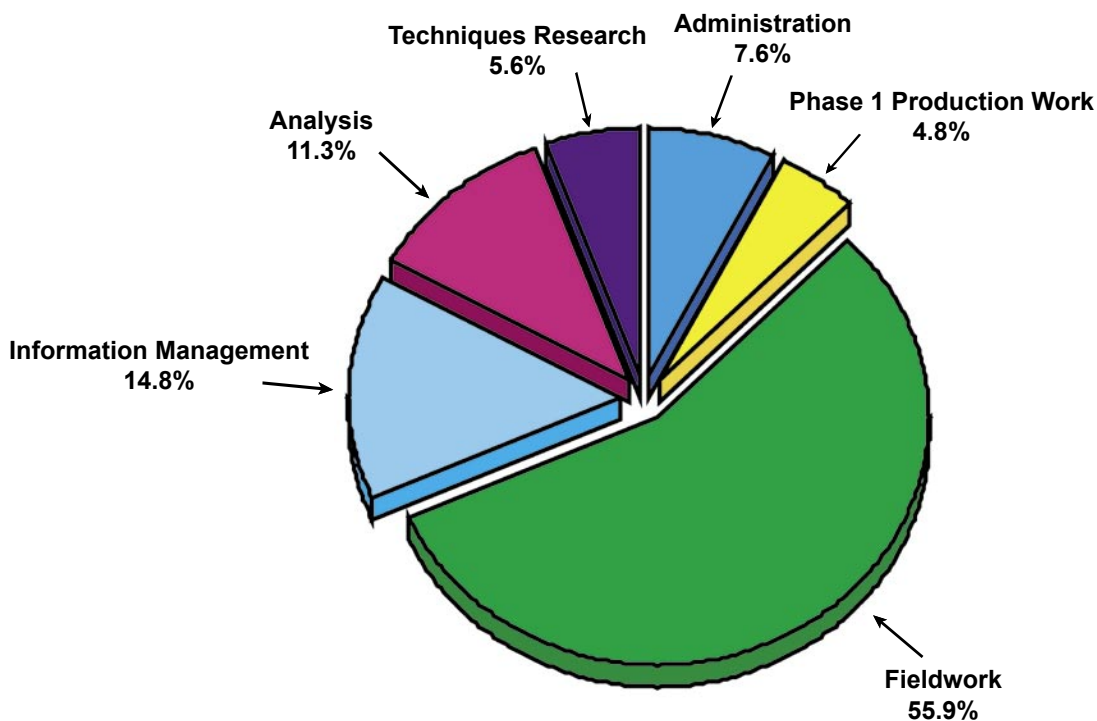
## ◆ Partners' Contributions

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 the sample locations in the Western United States and 15 percent of the sample locations in the Eastern United States on an annual basis, with 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 measurement 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 chosen to contribute resources to the FIA program in FY 2002, 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. For reporting purposes, contributions are valued in terms of what it would cost the Federal FIA staff to provide the same service, which may not necessarily be the same as the actual cost to the partner making the contribution. Overall, partners contributed \$3,637,267 toward the full 20-percent FIA program envisioned by Congress, and another \$5,018,686 in contributions that add value to the FIA program, for a total of \$8,655,953 in partners' contributions. This amount is an increase



**Figure 4.** FIA program employees, by job group, FY 2002.



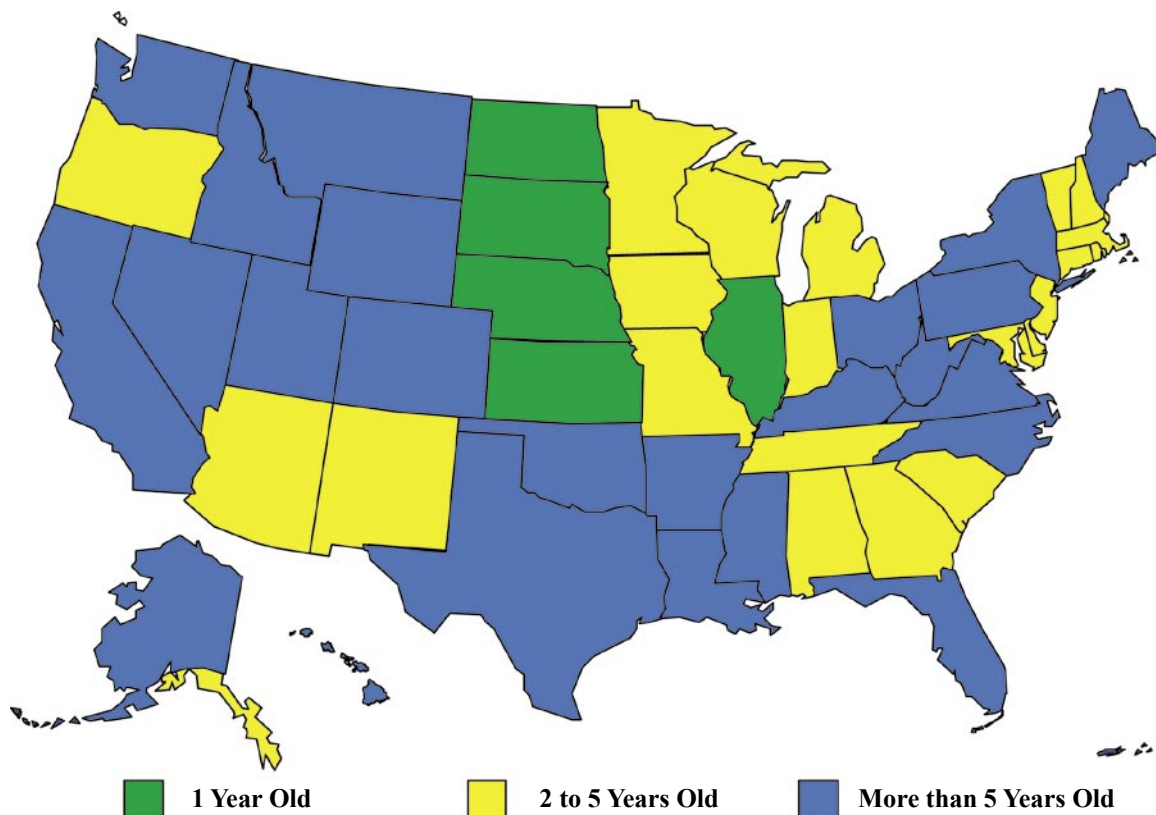
from \$8,020,651 contributed by partners in FY 2001. By far the greatest contributors to the FIA program are State agencies that collectively contributed \$6,911,217 toward the program, accounting for 80 percent of all partners' contributions. Many of our State partners were themselves affected by the fire borrowing situation in 2002, which may account for the slight decrease in funds contributed by States in FY 2002 compared to FY 2001.

### ◆ FIA Data Availability

The FIA program is designed and intended to provide continuously updated, accurate, and reliable information on the status and trends in the Nation's forested resources. Currency of 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 U.S. States on a 5-year cycle.

As we move through our transition and toward full program implementation, it is timely to begin measuring how we are satisfying that objective. Figure 5 shows, for each State, the age of FIA data accessible in our public database as of the end of FY 2002. States with 1-year-old data—the program objective—are colored green, States with 2- to 5-year-old data are colored yellow, and States with data more than 5 years old are shown in blue. This map shows that the greatest progress in making current data available has been achieved in the North Central region, along with several Southern and Northeastern States. Relatively few Western States have current data available, reflecting the historically longer inventory cycle in the West as well as the later implementation of annual inventory. The FIA program has increased investments in fieldwork in



**Figure 5.** Availability of State FIA data, FY 2002 (age of the most recent data available to the public in online FIA databases).



- ❑ Measuring 3,843 Phase 2 plots (4 percent of the total for the region) and 781 Phase 3 plots (14 percent of the total for the region) (appendix 1).
- ❑ Producing 7 publications in FY 2002 (a decrease from 14 in FY 2001), including 5 core reports (2 of them specific to individual national forests), 1 peer-reviewed journal article, and 1 proceedings article.
- ❑ Holding one regional user group meeting and one regional management team meeting, continuing to provide national co-leadership for the soil indicator (west) through an agreement with another research unit within the Rocky Mountain Research Station (RMRS), accepting responsibility to house a national information management coordinator, and continuing to provide national leadership and staff to ensure the timely loading of FIA data into NFS information management systems to make FIA data readily available to national forest staff.
- ❑ Conducting collaborative research with the Fishlake National Forest and the U.S. Geological Survey on developing habitat models that predict the presence of cavity nesting birds.

The RMRS also hosts an FIA techniques research unit with a national mission to conduct research on the mathematical statistics of FIA surveys. In FY 2002, this unit produced 12 publications pertaining to the FIA program (an increase over the 8 produced in FY 2001), including 7 peer-reviewed journal articles, 4 proceedings papers, and 1 other publication. These publications dealt with the theoretical foundation for the statistical techniques used by FIA, including (1) techniques that improve efficiency and incorporate remotely sensed data, (2) scientific methods to infer the cause for changes in forest health, (3) analyses of forest health with FIA data, and (4) methods for the global inventory of tropical forests by the United Nations. The techniques research unit collaborated with the State of Minnesota and USDA's Natural Resources Conservation Service to evaluate integration of FIA data with those

from the National Resources Inventory (NRI). The techniques research unit also continued their work facilitating a multi-institutional partnership to improve forest inventory in the State of Jalisco, Mexico.

## ◆ West Coast

FY 2002 accomplishments for the Pacific Northwest FIA unit include—

- ❑ Completing periodic inventory fieldwork in coastal Alaska and American Samoa, continuing annual inventory in Oregon and California, and initiating annual inventory fieldwork in Washington. The completion of the coastal Alaska inventory led to the description of seven forest and one nonforest vegetation types not shown in previous studies of Alaskan vegetation types.
- ❑ Measuring 4,066 Phase 2 plots (10 percent of the regional total outside of interior Alaska) and 419 Phase 3 plots (17 percent of the regional total outside of interior Alaska) (appendix 1).
- ❑ Producing 28 publications in FY 2002 (an increase over the 19 produced in FY 2001), including 2 core reports for western Oregon and 8 peer-reviewed publications.
- ❑ Holding two user group meetings and three regional management team meetings, continuing to provide national leadership for the understory vegetation indicator, and providing partial year national leadership for the down woody material indicator.
- ❑ Conducting research on remote sensing applications for collecting data from inaccessible areas, fire hazard and fire history in the wildland-urban interface, patterns and importance of down woody material in northwestern forests, and the development of an interactive tool for assessing the economic feasibility of forest treatment opportunities to reduce fire risk.



## ◆ North Central

FY 2002 accomplishments for the North Central FIA unit include—

- ❑ Continuing annual inventory fieldwork in all States—Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, South Dakota, and Wisconsin. The North Central FIA unit is still the only unit to be implemented in 100 percent of its region.
- ❑ Measuring 16,142 Phase 2 plots (21 percent of their regional total) and 1,000 Phase 3 plots (21 percent of their regional total) (appendix 1).
- ❑ Producing 40 publications in FY 2002 (an increase from 26 in FY 2001), including 6 State resource reports based on annual inventory data, 5 State timber product output reports, 7 peer-reviewed journal articles, and 15 proceedings papers.
- ❑ Participating in one regional user group meeting and one regional management meeting.
- ❑ Researching topics, including imputation and model-based updating techniques for annual forest inventories, diameter growth models using Minnesota forest inventory and analysis data, and incorporation of satellite imagery into forest inventory estimation.
- ❑ Continuing national co-leadership, along with the Northeastern FIA unit, for the National Forest Land Ownership Study; continuing to develop and manage the Resource Planning Act (RPA) database and develop and house national FIA Web applications for serving FIA data to users; continuing to provide national co-leadership for the soil indicator; and accepting responsibility for providing national leadership for down woody material. The North Central FIA unit also led a national assessment of forest biomass with focus on potential forest fire fuels in the wildland-urban interface.

## ◆ Northeastern

FY 2002 accomplishments for the Northeastern FIA unit include—

- ❑ Completing periodic fieldwork in West Virginia, the final State inventoried in the Northeast under the periodic system. The Northeastern FIA unit continued annual FIA operations in Maine, Pennsylvania, and Ohio, and initiated annual FIA inventories in New York and New Hampshire. The Northeastern FIA unit also continued Phase 3 data collection in all these States plus Connecticut, Delaware, Maryland, Massachusetts, New Jersey, Rhode Island, and Vermont.
- ❑ Measuring 3,247 Phase 2 plots (13 percent of the regional total) and 321 Phase 3 plots (20 percent of the regional total) (appendix 1).
- ❑ Producing 27 publications in FY 2002 (an increase from 19 in FY 2001), including 14 State resource reports, 4 peer-reviewed journal articles, and 4 proceedings papers.
- ❑ Collaborating with the Maine Forest Service to complete the third annual analysis of annual inventory data collected under the new FIA system, which was released in October of FY 2002.
- ❑ Holding one regional management team meeting and no user group meetings.
- ❑ Continuing its pioneering research into geostatistical methods for producing localized estimates and maps of forest attributes at State and regional scales and continuing to coordinate the agreement to provide national support for the ozone indicator.
- ❑ Continuing to provide national leadership, along with the North Central FIA unit, for the National Forest Land Ownership Study and for internal technical coordination within the FIA program.
- ❑ Continuing to support an assessment of the Delaware River Basin in collaboration with the Northern Global Change Research Program and the National Forest Health Monitoring Program.

- ❑ Accepting responsibility to house a National Geospatial Service Center to assist external FIA customers in working with FIA data in a spatial context.

## ◆ Southern

FY 2002 accomplishments of the Southern FIA unit include—

- ❑ Continuing periodic inventory fieldwork in North Carolina and continuing annual inventory fieldwork in Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, South Carolina, Puerto Rico, Tennessee, Texas, and Virginia.
- ❑ Measuring, in collaboration with its partners, a total of 9,999 Phase 2 plots (11 percent of the regional total) and 646 Phase 3 plots (12 percent of the regional total) (appendix 1).
- ❑ Producing 42 publications in FY 2002 (an increase from 20 in FY 2001), including 7 State resource reports, 10 State timber product output (TPO) reports, and 17 proceedings articles.
- ❑ Attending or hosting one regional user group meeting and hosting two regional management team meetings.
- ❑ Conducting research on methodologies for predicting forest area for large-area research monitoring based on multi-spectral satellite data, as well as statistical methods and estimators for the annual inventory system that are applicable for both measured and modeled data.
- ❑ Entering into or continuing funding of a number of cooperative ventures with university scientists and other stations on topics including tests of vegetative diversity measures, forest loss associated with urbanization, and the use of satellite imagery in forest inventory.
- ❑ Developing Web-based tools for tracking fieldwork and demonstrating the use of digital orthophoto quads (DOQ) and aerial surveys to identify nonforest plots in west Texas, saving significant field costs through more efficient sampling.

## ◆ National Office

The National Office of the FIA program coordinates, oversees, and guides the FIA field units engaged in implementing the enhanced FIA program. In FY 2002, National Office staff—

- ❑ Produced 11 publications (2 more than produced in FY 2001), including portions of 2 national assessments, 1 peer-reviewed article, and 5 brochures related to the 1997 Resource Planning Act Assessment.
- ❑ Organized, facilitated, and documented three FIA management team meetings and dozens of briefings for internal and external partners, customers, collaborators, and supporters.
- ❑ In collaboration with the Society of American Foresters (SAF), participated in the fourth national user group meeting for FIA customers, held in Alexandria, Virginia.
- ❑ Participated in several international workshops focusing on global forest resource assessment and reporting and led the drafting of the forest chapter for the USDA Forest Service's 2003 Sustainability Report.

## Geospatial Service Center

In FY 2002, in response to growing demand by FIA customers for access to spatial data, we created a new Geospatial Service Center housed within the Northeastern FIA unit in Newtown Square, Pennsylvania. The center is intended to provide one-stop shopping for FIA customers needing access to FIA sample location information that, by law, cannot be made generally available to the public. The center will work with customers to help define their precise needs in terms of precision and area of interest; will do data retrievals, extractions, and overlays necessary to accomplish the task; and will provide output products to the customer that address the customer's needs without violating the ownership privacy requirements. For more information about the center, including operating procedures and instructions on placing requests, please go

to the center's Web site at [http://www.fs.fed.us/ne/fia/spatial/index\\_ss.html](http://www.fs.fed.us/ne/fia/spatial/index_ss.html). Priority is given to requests that span multiple FIA unit boundaries.

In FY 2002, the center received 29 and completed 19 requests for data and collaboration. Requests fell into three broad classes: (1) summaries of FIA plot data for user-supplied strata (for example, a watershed basin within a State); (2) imagery analysis (for example, accuracy assessments of user-supplied forest/nonforest maps derived from satellite imagery); and (3) GIS/spatial data extractions where FIA data are overlaid on a user-provided coverage in order to classify FIA plots. The center's largest customer group was other FIA units, accounting for 32 percent of all requests. Requests also came from academic researchers (28 percent), other USDA Forest Service customers (17 percent), other State customers (10 percent), other Federal customers (10 percent), and nongovernmental organizations (3 percent). Only 28 percent of the requests in FY 2002 spanned more than a single FIA unit. As the

center becomes more widely known, the percent of external customers and percent of requests spanning multiple FIA units should increase.

## 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 53 grants and agreements funded in FY 2002, comprising \$7,631,164, or approximately 14 percent, of the total available FIA program budget. This amount is a decrease compared to the total expenditure of \$8,855,673 awarded in grants in FY 2001. This shortfall is due to the effects of fire borrowing in the summer of 2002, which unexpectedly prevented us from finalizing approximately 15 grants and agreements that had been negotiated and drafted

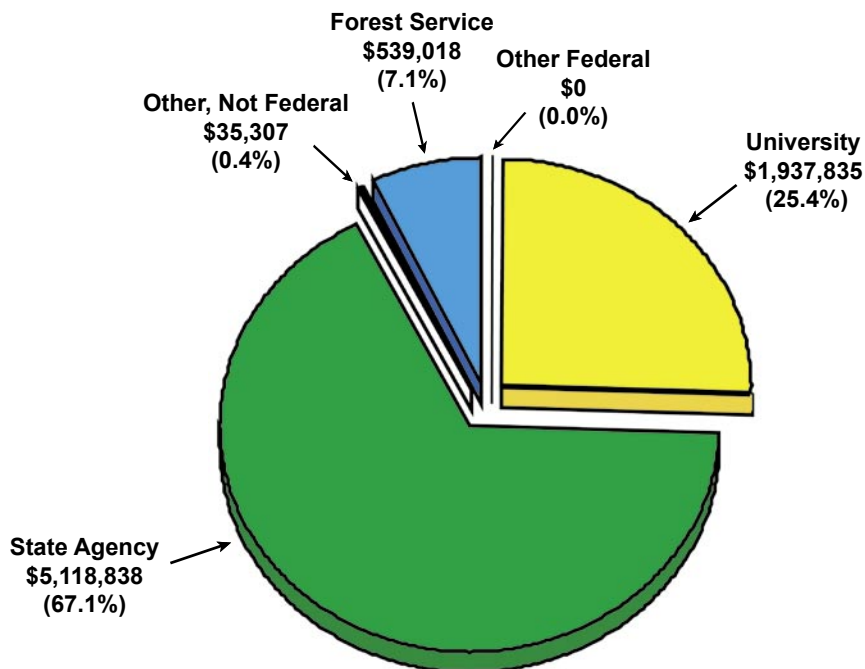


Figure 7. Grants and Agreements, by recipient group, FY 2002.



but not completed. Most of the funded grants and agreements were with State agency (67 percent of funds) and university partners (25 percent of funds) (figure 7). Other cooperators included other USDA Forest Service offices (7 percent of funds) and other Federal agencies (1 percent of funds). The major purpose for the grants was for collaboration in data collection and for research in techniques development. In the future, grants and agreements will increasingly be used to augment FIA staff capacity in the analysis and reporting of annual FIA data for individual States. We will work hard to finalize grants earlier in the fiscal year to avoid the risk of missed opportunities.

## 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, we are increasingly available for customers that contact us seeking either to understand more about the FIA program and our results or seeking to address a specific question not obviously addressed through other means. Questions pertaining to a single administrative unit (for example, to a single State or to a single national forest) often are referred to partners (for example, State foresters, national forest analytical staff) within that administrative unit who can often provide better context and who prefer to maintain their contacts with their customers. When questions span multiple administrative units, we will try to the best of our ability to help the customer find an answer. We do 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 2002, 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. Altogether, FIA staff addressed 1,026 significant consultations requiring 3,675 staff hours to complete—equivalent to almost two full-

time staff-years. More than half of the time and approximately one-third of the consultations were conducted with other Federal, State, and local government agencies, in addition to having internal discussions within the USDA Forest Service. Other major client groups included academic clients (approximately 20 percent of the consultations and 19 percent of the time), industry (22 percent of the consultations and 14 percent of the time), and nongovernmental organizations (8 percent of the consultations and 5 percent of the time). The data also show some regional variations. For example, industrial customers are the major clients of the Southern FIA unit, while government organizations (largely State agencies) are the major client for other FIA regional units.

## FIA-National Forest Collaboration

In FY 2002, the Deputy Chief for Research and Development and the Deputy Chief for National Forest System (NFS) signed an internal memorandum of understanding providing for permanent inclusion of all NFS 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 NFS lands. Under the terms of the negotiated agreement, the NFS provides permanent funding to help cover the cost of the FIA program on national forest lands. In return, the FIA program agrees to implement the program in a consistent manner with inventory on other lands within the same State and to load FIA data into the NFS land information base for use in forest planning and other strategic scale assessments. FIA will also prepare standardized reports specific to individual national forests, 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. Table 1 on page 14 highlights some of the expectations outlined in the agreement and the degree to which the agreement is being satisfied.

**Table 1.** *FIA-National Forest System collaboration.*

| Criterion   | R1  | R2     | R3  | R4     | R5     | R6                | R8                     | R9  | R10 |
|---|-----|--------|-----|--------|--------|-------------------|------------------------|-----|-----|
| Percent of national forest land covered by annual FIA                         | 6   | 76     | 54  | 25     | 100    | 100               | 78                     | 88  | 0   |
| Percent of national forest FIA data loaded into FSveg*                        | 12  | 0      | 0   | 0      | 0      | 0                 | 0                      | 0   | 0   |
| Did region staff participate in FIA management?                               | Yes | Yes    | Yes | Yes    | Yes    | Yes               | Yes                    | Yes | Yes |
| Informed of plans for fieldwork within region?                                | Yes | Partly | Yes | Yes    | Partly | Partly            | Yes                    | Yes | Yes |
| Satisfied with opportunities for enhancing FIA to better meet regional needs? | Yes | Partly | Yes | Partly | Yes    | Yes               | Not currently an issue | Yes | Yes |
| Satisfied with technical support and consultation from FIA?                   | Yes | Yes    | Yes | Yes    | No     | Too early to tell | Yes                    | Yes | Yes |

\*FSveg is the Field Sampled Vegetation module of the Natural Resource Information System. This is the primary vehicle for making inventory data available to NFS staff.

In FY 2002, in response to concerns expressed by several NFS regions about data consistency, the FIA program reached an internal agreement to ensure that NFS lands would receive consistent data across all lands within their administrative region, even when that region is covered by two or more FIA units. FIA identified all such situations where regions were serviced by multiple FIA units, and FIA regional managers will be responsible to do whatever coordination is needed to deliver a consistent set of data across all NFS lands. We also completed an internal Memorandum of Understanding between FIA and NFS describing use of sample plot location data on NFS lands to support land management and planning purposes. We also continued development of software to load FIA data from

national forests into FSveg (Field Sampled Vegetation module of the National Resource Information System), the corporate standard database for national forest staff, and expect to begin populating the NFS database in 2003.

Based on feedback from the nine NFS regions, FIA in general is meeting the needs of NFS partners. Some additional work is required in the western regions in the areas of coordinating fieldwork as well as 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. FIA will work on these issues in FY 2003.

## Comparing FY 2002 FIA Accomplishments with FY 2001 Plans

In the FY 2001 business report for FIA, we included a section stating our plans for FY 2002. Table 2 on page 16 shows how our actions in FY 2002 matched our plans in FY 2001.

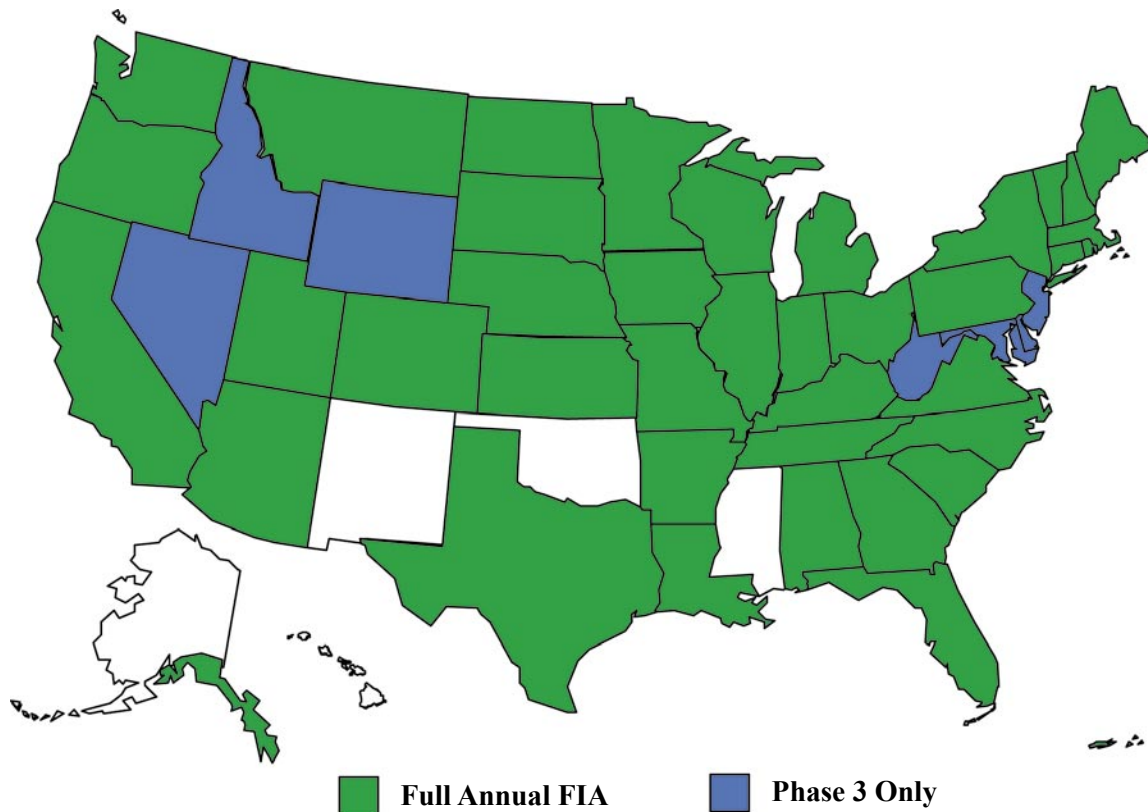
## Fiscal Year 2003 FIA Program Direction

The FIA program initially intended to implement the Strategic Plan for Forest Inventory and Monitoring, with an initial focus on 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. We have made significant changes to our program by forming a partnership with State foresters to

lead and implement the FIA program in a more responsive manner, and we are implementing annual inventory systems in every region of the country. Unfortunately, while funding for the FIA program has increased over the past several years, it has not increased sufficiently to allow full program implementation as scheduled in 2003. We continue to be optimistic that we will achieve the target level of funding by 2004 or 2005 and will, at that time, achieve full program implementation (see figure 3, page 5).

In FY 2003, in order 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 initiating an annual inventory system in coastal Alaska, Connecticut, Massachusetts, Montana, Rhode Island, and Vermont (figure 8). This change will mean that an annual



**Figure 8.** *Planned FIA implementation status, FY 2003.*



**Table 2.** *Comparison of planned versus actual accomplishments, 2002.*

| In the FY 2001 business report, we said that in FY 2002 we would—  | In FY 2002, we—  |
|--|--|
| Continue annual inventories in all current States and initiate an annual inventory system in Colorado, New Hampshire, New York, and Washington.  | Implemented and continued annual FIA in all States listed, expanding coverage from 65 percent to 76 percent of the lower 48 States.  |
| Continue traditional, periodic inventories to establish a baseline in advance of implementing an annual inventory in coastal Alaska, Idaho, North Carolina, West Virginia, and Wyoming.  | Completed traditional, periodic inventories in coastal Alaska, Idaho, West Virginia, and Wyoming, and continued periodic inventory work in North Carolina. North Carolina will be the last State to have a periodic inventory.                               |
| Continue developing and documenting nationally consistent compilation, analysis, and database management procedures, including initiating work on Version 2.0 of the national core field guide.  | Initiated work on the national core field guide (Version 2) as planned; continued development of the National Information Management System, with a target release date of early 2003.   |
| Complete development and testing of vegetative diversity measures to prepare for full implementation in FY 2003.   | Continued development and testing of vegetative diversity measures, but deferred full implementation to FY 2004 due to incomplete data handling procedures.  |
| 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.                          | Four of five regional FIA units plus the National program office held user group meetings; all five units held at least one management team meeting; sponsored one FIA science symposium in conjunction with the Midwest Mensurationists annual meeting.     |
| Continue to make our data more accessible and usable by adding analytical tools and program documentation to online FIA databases and web pages.   | Continued to develop and refine web-based tools for analyzing FIA data. Loaded the first panels of annual inventory data onto the national FIA web site.   |
| Continue to conduct applied research into ways of using technology to increase program efficiency, develop new products to meet customers' needs, and collaborate with the U.S. Geological Survey and other agencies through the Multi Resource Landscape Characteristics (MRLC) consortium. | Invested \$1,919,419 of program staff budget (3.4 percent) and 22.5 full-time employees (FTEs) of our staff (5.6 percent) in techniques research; funded approximately 26 grants for techniques development. Continued participation in the MRLC consortium. |
| Implement FIA on all national forest lands in States where FIA is conducting fieldwork.  | FIA is being implemented on all national forest lands in States where FIA is implemented. NFS coverage nationwide in 2002 is 54 percent, up from 41 percent in 2001.   |

inventory is implemented in every region of the country and will include coverage of more than 71 percent of the Nation (including interior Alaska) under a cooperative program involving full Federal-State partnerships in program management and delivery.

- ❑ Continue developing and documenting nationally consistent compilation, analysis, and database management procedures, including release of Version 2.0 of the national core field guide, release of Version 1 of the National Information Management System (NIMS), and initiation of work on Version 2 of NIMS that will include Phase 3 plot data and regionally collected data.
- ❑ Complete development and testing of vegetative diversity measures to prepare for full implementation in FY 2004.
- ❑ 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.
- ❑ Continue to conduct applied research into ways of using technology to increase program efficiency, develop new products to meet customers' needs, and 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.
- ❑ Complete the initial loading of FIA core data into national forest information management systems in order to make FIA data widely available to NFS customers and initiate the development of loader programs to load FIA regional data.

## 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 to apply at the agency level, the GPRA framework provides an excellent tool for guiding progress at the project level as well. The tabulation on page 18 shows the key goals, performance measures, benchmarks, and targets for the FIA program for 2000-2002. In future business reports, we will repeat this table to show how we are progressing toward our goals. In FY 2002, we are adding a new performance measure: percent of national forest land for which FIA data are loaded into the National Resource Information System (NRIS). NRIS is the national application for making resource data available to national forest managers.

## Conclusions

We continue to operate in a new era of partnership and collaboration in which Federal and State agencies and other colleagues work side by side 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 modern 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

| Goal   | Performance Measure  | 2000 Level | 2001 Level  | 2002 Level  | Target Level |
|--|--|------------|-------------|-------------|--------------|
| <b>INPUTS</b>  |  |            |             |             |              |
| Maintain sufficient funding to support the base Federal FIA program  | Percent of necessary Federal funding received                                    | 67         | 81          | 79          | 100          |
| <b>OUTPUTS</b>   |  |            |             |             |              |
| Include 100 percent of U.S. forestlands in the FIA sample population | Percent forest included in the target FIA sample population                      | 95         | 100         | 100         | 100          |
| Keep fieldwork current   | Percent of base Phase 2 sample locations visited/year:<br>East<br>West           | 9.0<br>3.0 | 14.6<br>6.8 | 15.5<br>6.1 | 15<br>10     |
| Make data accessible to national forest customers                    | Percent of national forest land for which FIA data are loaded into NRIS          | N/A        | 0           | 2           | 100          |
| <b>OUTCOMES</b>  |  |            |             |             |              |
| Keep analysis current  | Average number of years between State analytical reports                         | 8          | 8           | 7           | 5            |
| Keep online database current   | Average age (years) of most recent update of FIA data available online           | 7          | 6           | 7           | 1            |
| Customer satisfaction  | Percent of customers rating service as "satisfactory" or better                  | *          | 84          | 89          | 100          |
|  | Partner financial contributions expressed as percent of total Federal FIA budget | 19         | 16          | 16          | 25           |

have at our discretion. We hope this report gives you a window into 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 96,000 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. Includes the following items:

**Salary.** Includes direct salary 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 photo interpreters, 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 crews.** All staff spending at least 50 percent of their time doing quality assurance fieldwork.

**Direct expenses (cont.)**

**Salary (cont.)**

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

**Analysts.** Staff who analyze data and write publications.

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

**Travel.** Broken into the following categories:

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

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

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

**Imagery.** Aerial photos, satellite imagery data files.

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

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

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

**Other.** Anything that does not fit into one of the above equipment categories.

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

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

**Miscellaneous.** Anything that does not fit into one of the above categories.

**Effective indirect expenses.** Effective indirect expenses include items such as research station management salaries, telephones, utilities, copying, and other items that the FIA unit does not pay for directly but which station leaders deem to be a fair and reasonable assessment for the basic services needed to support FIA along with other station activities. 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:

$$\text{Effective Indirect Expenses} = (\text{Total Available Funds}) - (\text{Total Direct Expenses} + \text{End of Year Balance})$$

**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.

**FHP.** Forest Health Protection is an account created by Congress within the State and Private Forestry portion of the USDA Forest Service budget to protect the health of the Nation's forests. FHP provides some financial support to the FIA program.

**FRIA.** Forest Resource Inventory and Assessment is an account created by Congress within the State and Private Forestry portion of the USDA Forest Service budget to provide funds to support FIA.

**FY 2002 EOY balance.** Funds reported in the FY 2002 business report as unspent at the end of the 2002 fiscal year and presumably available for use in FY 2003.

**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 organizations are 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 are private individuals or organizations that own forest land for purposes other than industrial operations.

**Percent of full funding.** Total available funds divided by the funding needed to fully implement the base Federal program.

**Percent 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.

**Percent of total plots sampled.** Total number of base grid plots sampled divided by the total number of plots in the base grid.

**Phase 1.** Stratification of the land base into forested and nonforested classes 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 suite 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 one of 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.

**Proceeding Papers.** An article appearing in the proceedings from a meeting or symposium.

**Other Station Publications.** A manuscript published by the USDA Forest Service, e.g., a General Technical Report (GTR).

**Publications (cont.)**

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

**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.

**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.

# Points of Contact

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

## **Northeast**

Program Manager, FIA  
USDA Forest Service  
Northeastern Research Station  
11 Campus Boulevard, Suite 200  
Newtown Square, PA 19073  
(610) 557-4075

## **South (includes Puerto Rico and the U.S. Virgin Islands)**

Program Manager, FIA  
USDA Forest Service  
Southern Research Station  
200 Weaver Boulevard  
Asheville, NC 28802  
(828) 257-4309

## **Pacific Northwest (includes Alaska, Hawaii, and the Pacific Islands)**

Program Manager, FIA  
USDA Forest Service  
Pacific Northwest Research Station  
620 SW Main St., Suite 400  
Portland, OR 97205  
(503) 808-2066

## **National Office**

Forest Inventory National Program Leader  
USDA Forest Service 1NW  
1601 North Kent Street, Suite 400  
Arlington, VA 22209  
(703) 605-4177

All of the regional Internet home pages, as well as a wealth of statistical and other information, are available through the national FIA home page located at [fia.fs.fed.us](http://fia.fs.fed.us).

## **North Central**

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

## **Interior West**

Program Manager, FIA  
USDA Forest Service  
Rocky Mountain Research Station  
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## **Statistical Techniques**

Project Leader, FIA  
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# Appendix

## Appendix 1. Performance measures for the Fiscal Year 2002 FIA program.

|   | Pacific Northwest | Interior West | Southern     | North Central | North East  | Fort Collins | National Office | Total        |
|---|-------------------|---------------|--------------|---------------|-------------|--------------|-----------------|--------------|
| <b>Total Available Funds in FY 2002</b>         | \$12,262,914      | \$9,519,414   | \$15,559,774 | \$6,873,357   | \$8,160,855 | \$429,216    | \$3,114,300     | \$55,919,830 |
| <b>Total Appropriated Funds, FY 2002</b>        | \$10,614,000      | \$7,713,000   | \$14,332,000 | \$6,310,000   | \$7,010,000 | \$439,000    | \$4,105,000     | \$50,523,000 |
| <b>Percent of Full Funding</b>                  | 62%               | 73%           | 90%          | 95%           | 78%         | 98%          | 101%            | 79%          |
| <b>Contributions from Partners</b>              |                   |               |              |               |             |              |                 |              |
| <b>Supporting the 20% FIA Program</b>           | \$198,342         | \$292,440     | \$1,603,115  | \$1,079,752   | \$428,368   | \$33,000     | \$2,250         | \$3,637,267  |
| <b>Value-added Contributions</b>                | \$1,377,937       | \$177,911     | \$0          | \$3,201,438   | \$261,400   | \$0          | \$0             | \$5,018,686  |
| <b>Base Grid Plots Sampled:</b>                 |                   |               |              |               |             |              |                 |              |
| <b>Phase 2, Forested</b>                        | 1,807             | 1,651         | 6,070        | 3,224         | 2,075       |              |                 | 14,827       |
| <b>Phase 2, Nonforested</b>                     | 2,259             | 2,192         | 3,929        | 13,021        | 1,172       |              |                 | 22,573       |
| <b>Total Phase 2 Plots</b>                      | 4,066             | 3,843         | 9,999        | 16,245        | 3,247       |              |                 | 37,400       |
| <b>Phase 3, Forested</b>                        | 209               | 247           | 405          | 207           | 213         |              |                 | 1,281        |
| <b>Phase 3, Nonforested</b>                     | 210               | 534           | 241          | 793           | 108         |              |                 | 1,886        |
| <b>Total Phase 3 Plots</b>                      | 419               | 781           | 646          | 1,000         | 321         |              |                 | 3,167        |
| <b>TOTAL BASE PLOTS</b>                         | 4,485             | 4,624         | 10,645       | 17,245        | 3,568       |              |                 | 40,567       |
| <b>Number of Quality Assurance Plots</b>        |                   |               |              |               |             |              |                 |              |
| <b>Phase 2 (Forest + Nonforest)</b>             | 192               | 367           | 581          | 187           | 422         |              |                 | 1,749        |
| <b>Phase 3 (Forest + Nonforest)</b>             | 20                | 60            | 40           | 10            | 10          |              |                 | 140          |
| <b>TOTAL QA PLOTS</b>                           | 212               | 427           | 621          | 197           | 432         |              |                 | 1,889        |
| <b>Percent of Total Plots Sampled(1)</b>        |                   |               |              |               |             |              |                 |              |
| <b>Phase 2 (10% West, 15% East)</b>             | 10                | 4             | 11           | 21            | 13          |              |                 | 12           |
| <b>Phase 3 (20% overall)</b>                    | 17                | 14            | 12           | 21            | 20          |              |                 | 16           |
| <b>Percent Region Covered by Annual FIA(1)</b>  | 85                | 43            | 88           | 100           | 71          |              |                 | 76           |
| <b>Publications</b>                             |                   |               |              |               |             |              |                 |              |
| <b>National Forest Reports</b>                  | 0                 | 2             | 0            | 0             | 0           | 0            | 0               | 2            |
| <b>State Resource Reports</b>                   | 1                 | 1             | 7            | 6             | 14          | 0            | 0               | 29           |
| <b>State TPO Reports</b>                        | 1                 | 2             | 10           | 5             | 0           | 0            | 0               | 18           |
| <b>Regional Reports</b>                         | 0                 | 0             | 1            | 1             | 1           | 0            | 0               | 3            |
| <b>National Reports</b>                         | 0                 | 0             | 0            | 0             | 0           | 0            | 3               | 3            |
| <b>SUBTOTAL - CORE REPORTS</b>                  | 2                 | 5             | 18           | 12            | 15          | 0            | 3               | 55           |
| <b>Peer-Reviewed Journal Articles</b>           | 8                 | 1             | 0            | 7             | 4           | 7            | 1               | 28           |
| <b>Proceedings Articles</b>                     | 7                 | 1             | 17           | 15            | 4           | 4            | 0               | 48           |
| <b>Other Station Publications</b>               | 7                 | 0             | 2            | 3             | 2           | 0            | 0               | 14           |
| <b>Other Publications</b>                       | 4                 | 0             | 5            | 3             | 2           | 1            | 7               | 22           |
| <b>TOTAL - ALL REPORTS</b>                      | 28                | 7             | 42           | 40            | 27          | 12           | 11              | 167          |
| <b># Publications per Federal FTE</b>           | 0.36              | 0.07          | 0.47         | 0.61          | 0.40        | 3.67         | 4.89            | 0.42         |
| <b>Consulting Activities</b>                    |                   |               |              |               |             |              |                 |              |
| <b>Number of Significant Consultations</b>      | 88                | 47            | 527          | 159           | 167         | 24           | 14              | 1,026        |
| <b>Total Hours of Significant Consultations</b> | 453               | 535           | 655          | 636           | 314         | 1,005        | 77              | 3,675        |
| <b>User Group Meetings Held</b>                 | 2                 | 1             | 1            | 1             | 0           | 0            | 1               | 6            |
| <b>Management Meetings Held</b>                 | 3                 | 1             | 2            | 1             | 1           | 0            | 3               | 11           |

(1) Excludes interior Alaska, Hawaii, and Pacific Island territories which will be handled through special projects

Appendix 2. Financial statement for the Fiscal Year 2002 FIA program.

|  | Pacific Northwest    | Interior West      | Southern            | North Central      | North East         | Fort Collins      | National Office    | Total                |
|--|----------------------|--------------------|---------------------|--------------------|--------------------|-------------------|--------------------|----------------------|
| <b>I. AVAILABLE FUNDS</b>  |                      |                    |                     |                    |                    |                   |                    |                      |
| Reported 2001 EOY Balance  | \$229,600            | \$250,000          | \$941,774           | \$0                | \$73,200           | (\$9,784)         | \$0                | \$1,484,790          |
| Adjustments  | 1,274,314            | 477,414            |                     | 23,657             | 636,655            |                   |                    | 2,412,040            |
| Available 2001 EOY Balance   | \$1,503,914          | \$727,414          | \$941,774           | \$23,657           | \$709,855          | (\$9,784)         | \$0                | \$3,896,830          |
| <b>2002 Appropriated Funds</b>   |                      |                    |                     |                    |                    |                   |                    |                      |
| Research   | \$6,830,000          | \$4,150,000        | \$12,004,000        | \$5,389,000        | \$5,761,000        | \$439,000         | \$1,925,000        | \$36,498,000         |
| National Forest System   | 2,787,000            | 2,595,000          | 385,000             | 366,000            | 67,000             | 0                 | 0                  | \$6,200,000          |
| State and Private-FRIA   | 997,000              | 968,000            | 1,743,000           | 390,000            | 917,000            | 0                 | 0                  | \$5,015,000          |
| State and Private-FHP  | 0                    | 0                  | 200,000             | 165,000            | 265,000            | 0                 | 2,180,000          | \$2,810,000          |
| Chief's Emergency Funds  | \$0                  | \$950,000          | \$400,000           | \$0                | \$150,000          | \$0               | \$0                | \$1,500,000          |
| National Responsibilities  | \$174,000            | \$0                | \$0                 | \$93,000           | \$376,000          | \$0               | (\$643,000)        | \$0                  |
| Inter-Unit Exchanges   | (\$29,000)           | \$129,000          | (\$114,000)         | \$446,700          | (\$85,000)         |                   | (\$347,700)        | \$0                  |
| <b>TOTAL AVAILABLE FUNDS</b>   | <b>\$12,262,914</b>  | <b>\$9,519,414</b> | <b>\$15,559,774</b> | <b>\$6,873,357</b> | <b>\$8,160,855</b> | <b>\$429,216</b>  | <b>\$3,114,300</b> | <b>\$55,919,830</b>  |
| <b>II. DIRECT EXPENSES</b>   |                      |                    |                     |                    |                    |                   |                    |                      |
| <b>Salary</b>  |                      |                    |                     |                    |                    |                   |                    |                      |
| Administration   | \$253,624            | \$429,907          | \$467,855           | \$231,409          | \$320,609          | \$50,268          | \$251,432          | \$2,005,104          |
| Phase 1 Production   | 44,000               | 140,097            | 223,966             | 198,228            | 53,878             | 0                 | 0                  | \$660,169            |
| Field Support  | 458,231              | 491,209            | 474,879             | 144,516            | 585,237            | 0                 | 0                  | \$2,154,072          |
| Field Crews  | 2,758,877            | 1,646,007          | 872,870             | 1,236,834          | 947,926            | 0                 | 22,602             | \$7,485,116          |
| QA Crews   | 487,791              | 549,231            | 622,700             | 161,574            | 416,722            | 0                 | 0                  | \$2,238,018          |
| Information Management   | 738,613              | 923,558            | 1,386,360           | 642,068            | 533,097            | 0                 | 0                  | \$4,223,696          |
| Analysis   | 833,722              | 300,663            | 1,219,826           | 619,705            | 465,588            | 0                 | 0                  | \$3,439,504          |
| Techniques Research  | 525,065              | 142,692            | 316,514             | 277,681            | 431,158            | 226,309           | 0                  | \$1,919,419          |
| <b>Travel</b>  |                      |                    |                     |                    |                    |                   |                    |                      |
| Office Travel  | 350,974              | 144,700            | 471,723             | 103,978            | 174,361            | 21,132            | 33,772             | \$1,300,640          |
| Field/QA Crew Travel   | 1,144,432            | 1,302,143          | 971,026             | 241,523            | 325,844            | 0                 | 48,621             | \$4,033,589          |
| <b>Equipment</b>   |                      |                    |                     |                    |                    |                   |                    |                      |
| Imagery  | 33,131               | 30,721             | 10,000              | 530                | 170,000            | 0                 | 0                  | \$244,382            |
| Vehicles   | 432,449              | 280,345            | 141,542             | 130,540            | 270,838            | 0                 | 0                  | \$1,255,714          |
| Field Equipment  | 218,496              | 48,356             | 103,116             | 39,469             | 15,187             | 0                 | 0                  | \$424,624            |
| Computer/Telecommunications  | 222,619              | 160,908            | 216,691             | 45,767             | 188,190            | 1,631             | 0                  | \$835,806            |
| Other  | 66,589               | 185,710            | 70,000              | 78,447             | 55,000             | 0                 | 5,199              | \$460,945            |
| Grants and Agreements  | 404,490              | 893,673            | 3,214,463           | 710,433            | 960,179            | 0                 | 1,447,926          | \$7,631,164          |
| Publications   | 30,000               | 9,821              | 0                   | 4,744              | 0                  | 1,894             | 11,100             | \$57,559             |
| Miscellaneous  | 17,639               | 72,111             | 0                   | 60,865             | 0                  | 1,704             | 13,309             | \$165,628            |
| <b>TOTAL DIRECT EXPENSES</b>   | <b>\$9,020,742</b>   | <b>\$7,751,852</b> | <b>\$10,783,531</b> | <b>\$4,928,311</b> | <b>\$5,913,813</b> | <b>\$302,937</b>  | <b>\$1,833,961</b> | <b>\$40,535,147</b>  |
| <b>III. FIRE BORROWING</b>   | <b>(\$1,252,525)</b> | <b>(\$97,000)</b>  | <b>(\$646,281)</b>  | <b>(\$155,000)</b> | <b>(\$100,000)</b> | <b>(\$18,000)</b> | <b>(\$45,510)</b>  | <b>(\$2,314,316)</b> |
| <b>IV. EFFECTIVE INDIRECT EXPENSES (INCLUDES FUNDS LOST TO FIRE BORROWING)</b> |                      |                    |                     |                    |                    |                   |                    |                      |
| Effective Indirect Expenses  | \$2,657,506          | \$1,747,562        | \$3,420,703         | \$1,945,046        | \$1,918,042        | \$126,279         | \$1,210,202        | \$13,025,340         |
| Effective Indirect Rate  | 22%                  | 18%                | 22%                 | 28%                | 24%                | 29%               | 39%                | 23%                  |
| <b>V. 2002 EOY Balance</b>   | <b>\$584,666</b>     | <b>\$20,000</b>    | <b>\$1,355,540</b>  | <b>\$0</b>         | <b>\$329,000</b>   | <b>\$0</b>        | <b>\$70,137</b>    | <b>\$2,359,343</b>   |

**Appendix 3. Federal staffing (full-time equivalents) for the Fiscal Year 2002 FIA program.**

|                                | Pacific Northwest | Interior West | Southern | North Central | North East | Fort Collins | National Office | Total |
|--------------------------------|-------------------|---------------|----------|---------------|------------|--------------|-----------------|-------|
| <b>Administration</b>          | 4.9               | 8.3           | 7.4      | 3.6           | 3.6        | 0.6          | 2.3             | 30.6  |
| <b>Phase 1 Production Work</b> | 3.0               | 2.3           | 4.9      | 5.7           | 3.5        | 0.0          | 0.0             | 19.3  |
| <b>Field Coordination</b>      | 6.3               | 9.1           | 7.0      | 2.3           | 8.0        | 0.0          | 0.0             | 32.7  |
| <b>Field Crew</b>              | 33.1              | 43.9          | 19.6     | 30.2          | 29.4       | 0.0          | 0.0             | 156.1 |
| <b>QA Crew</b>                 | 5.1               | 11.7          | 11.2     | 3.2           | 4.0        | 0.0          | 0.0             | 35.0  |
| <b>Information Management</b>  | 11.6              | 13.4          | 18.4     | 8.0           | 8.1        | 0.0          | 0.0             | 59.3  |
| <b>Analysis</b>                | 8.3               | 4.4           | 16.7     | 9.5           | 6.4        | 0.0          | 0.0             | 45.3  |
| <b>Techniques Research</b>     | 5.9               | 1.9           | 3.8      | 3.2           | 5.0        | 2.7          | 0.0             | 22.5  |
| <b>TOTAL</b>                   | 78.0              | 94.9          | 88.8     | 65.8          | 67.9       | 3.3          | 2.3             | 400.8 |

**Appendix 4. Partner contributions toward implementing FIA in Fiscal Year 2002.**

| <b>Unit</b>                  | <b>Partner</b>   | <b>Contributions Toward<br/>the Base Program</b> | <b>Contributions<br/>which Add Value</b> |
|------------------------------|--|--|--|
| <b>Interior West FIA</b>     |  |  |  |
|                              | Forest Service/Region 1                                  |  | \$65,000                                 |
|                              | USDI Bureau of Land Management                           |  | 4,000                                    |
|                              | Arizona State Land Department                            |  | 2,000                                    |
|                              | Utah Department of Natural Resources                     |  | 8,000                                    |
|                              | Colorado Forest Service                                  | \$236,000  | 63,771                                   |
|                              | Montana Department of Natural Resources and Conservation | 56,440   | 35,140                                   |
|                              | <b>Subtotal, Interior West FIA</b>                       | <b>\$292,440</b>                                 | <b>\$177,911</b>                         |
| <b>North Central FIA</b>     |  |  |  |
|                              | Mark Twain National Forest                               |  | \$101,157                                |
|                              | Superior National Forest                                 |  | 126,050                                  |
|                              | Illinois Division of Forest Resources                    | \$30,319   |  |
|                              | Indiana Department of Natural Resources                  | 45,723   |  |
|                              | Iowa Department of Natural Resources                     | 24,849   |  |
|                              | Kansas State Forest Service                              | 52,019   |  |
|                              | Michigan Division of Forest Management                   | 456,435  | 1,270,000                                |
|                              | Minnesota Division of Forestry                           | 150,338  | 431,946                                  |
|                              | Missouri Department of Conservation                      | 131,515  | 280,035                                  |
|                              | Nebraska Department of Forestry, Fish, and Wildlife      | 27,441   |  |
|                              | North Dakota Forest Service                              | 8,600  |  |
|                              | South Dakota Department of Forestry & Natural Res. Mgmt. | 31,286   |  |
|                              | Wisconsin Department of Natural Resources                | 91,227   | 992,250                                  |
|                              | Resource Planning Act                                    | 30,000   |  |
|                              | <b>Subtotal, North Central FIA</b>                       | <b>\$1,079,752</b>                               | <b>\$3,201,438</b>                       |
| <b>Northeast FIA</b>         |  |  |  |
|                              | Maine Forest Service                                     | \$428,368  | \$261,400                                |
|                              | <b>Subtotal, Northeast FIA</b>                           | <b>\$428,368</b>                                 | <b>\$261,400</b>                         |
| <b>Pacific Northwest FIA</b> |  |  |  |
|                              | Forest Service/Region 6                                  |  | \$50,000                                 |
|                              | Forest Service/Region 5                                  |  | 557,000                                  |
|                              | Forest Service/PNW Research Station                      | \$10,342   | 105,000                                  |
|                              | Forest Service/State and Private Forestry                |  | 285,000                                  |
|                              | Forest Service/Research and Development                  |  | 80,000                                   |
|                              | Forest Service/PSW Research Station                      |  | 39,654                                   |
|                              | Forest Service/State and Private Forestry/R-6            | 20,000   |  |
|                              | USDI/Bureau of Land Management                           |  | 261,283                                  |



| Unit                                   | Partner                                     | Contributions Toward<br>the Base Program | Contributions<br>which Add Value |
|--|---|--|----------------------------------|
| <b>Pacific Northwest FIA (cont.)</b>   |   |  |                                  |
|  | AK  | 20,000                                   |                                  |
|  | CA  | 20,000                                   |                                  |
|  | OR  | 20,000                                   |                                  |
|  | WA  | 20,000                                   |                                  |
|  | OR  | 35,000                                   |                                  |
|  | American Samoa                              | 20,000                                   |                                  |
|  | Guam  | 33,000                                   |                                  |
| <b>Subtotal, Pacific Northwest FIA</b> |   | <b>\$198,342</b>                         | <b>\$1,377,937</b>               |
| <b>Southern FIA</b>                    |   |  |                                  |
|  | Georgia Forestry Commission                 | \$199,874                                |                                  |
|  | Alabama Forestry Commission                 | 180,923                                  |                                  |
|  | Arkansas Forestry Commission                | 161,971                                  |                                  |
|  | Florida Division of Forestry                | 152,745                                  |                                  |
|  | Kentucky Division of Forestry               | 121,478                                  |                                  |
|  | Louisiana Office of Forestry                | 129,658                                  |                                  |
|  | North Carolina Division of Forest Resources | 162,971                                  |                                  |
|  | South Carolina Forestry Commission          | 112,252                                  |                                  |
|  | Tennessee Department of Agriculture         | 130,158                                  |                                  |
|  | Texas Forest Service                        | 112,252                                  |                                  |
|  | Virginia Department of Forestry             | 138,833                                  |                                  |
| <b>Subtotal, Southern FIA</b>          |   | <b>\$1,603,115</b>                       | <b>\$0</b>                       |
| <b>Fort Collins FIA</b>                |   |  |                                  |
|  | Minnesota Department of Natural Resources   | \$25,000                                 |                                  |
|  | Colorado State University                   | 8,000                                    |                                  |
| <b>Subtotal, Fort Collins</b>          |   | <b>\$33,000</b>                          | <b>\$0</b>                       |
| <b>National Office FIA</b>             |   |  |                                  |
|  | Society of American Foresters               | \$2,250                                  |                                  |
| <b>Subtotal, National Office</b>       |   | <b>\$2,250</b>                           | <b>\$0</b>                       |
| <b>Total, All FIA Units</b>            |   | <b>\$3,637,267</b>                       | <b>\$5,018,686</b>               |

**Appendix 5. Grants and Agreements entered into by FIA units, Fiscal Year 2002.**

| <b>Unit</b>              | <b>Amount</b>    | <b>Recipient</b>                                | <b>Purpose</b>   |
|--------------------------|------------------|---|--|
| <b>Interior West FIA</b> |                  |   |  |
|                          | \$616,955        | Colorado State Forest Service                   | Implementation of annual FIA                           |
|                          | 100,000          | Colorado State University                       | Nonparametric Model-assisted survey estimation methods |
|                          | 100,000          | Utah State University                           | Spatial products for FIA                               |
|                          | 76,718           | University of Montana                           | Timber Product Output data collection and analysis     |
|                          | <b>\$893,673</b> | <b>Subtotal, Interior West FIA</b>              |  |
| <b>North Central FIA</b> |                  |   |  |
|                          | \$7,200          | Hiawatha National Forest                        | Field office rental                                    |
|                          | 6,000            | Mark Twain National Forest                      | Field office rental                                    |
|                          | 3,000            | Michigan Tech University                        | Field office rental                                    |
|                          | 32,484           | NC Research Station                             | Soils analysis   |
|                          | 4,500            | Shawnee National Forest                         | Field office rental                                    |
|                          | 2,007            | Great Lakes Indian Fish and Wildlife Comm.      | Development of a birch bark evaluation guide           |
|                          | 13,300           | Lumber Jack RC&D                                | Implementation of annual FIA                           |
|                          | 7,200            | Iowa Dept. of Natural Resources                 | Implementation of annual FIA                           |
|                          | 17,030           | Indiana Dept. of Natural Resources              | Implementation of annual FIA                           |
|                          | 343,676          | Minnesota Division of Forestry                  | Implementation of annual FIA                           |
|                          | 6,500            | North Dakota Forest Service                     | Implementation of annual FIA                           |
|                          | 84,000           | South Dakota Dept. of Forestry & Nat. Res. Mgt. | Implementation of annual FIA                           |
|                          | 17,500           | Wisconsin Dept. of Natural Resources            | Implementation of annual FIA                           |
|                          | 68,883           | Kansas State University                         | Implementation of annual FIA                           |
|                          | 7,053            | University of Illinois                          | Implementation of annual FIA                           |
|                          | 46,000           | University of Michigan                          | Implementation of annual FIA                           |
|                          | 44,100           | University of Nebraska                          | Implementation of annual FIA                           |
|                          | <b>\$710,433</b> | <b>Subtotal, North Central FIA</b>              |  |
| <b>Northeast FIA</b>     |                  |   |  |
|                          | \$5,000          | Delaware Dept. of Agriculture                   | Implementation of annual FIA                           |
|                          | 713,472          | Maine Forest Service                            | Implementation of annual FIA                           |
|                          | 11,920           | MA Dept. of Environmental Mgt.                  | Implementation of annual FIA                           |
|                          | 25,500           | NH Dept. of Resources & Economic Development    | Implementation of annual FIA                           |
|                          | 10,640           | VT Dept. of Forests, Parks, and Recreation      | Implementation of annual FIA                           |
|                          | 79,328           | The Pennsylvania State University               | Implementation of annual FIA                           |
|                          | 37,819           | University of Vermont                           | Carbon and net primary productivity research           |
|                          | 76,500           | University of Massachusetts                     | National Ozone Indicator Advisor                       |
|                          | <b>\$960,179</b> | <b>Subtotal, Northeast FIA</b>                  |  |

| Unit                         | Amount             | Recipient   | Purpose  |
|------------------------------|--------------------|---|--|
| <b>Pacific Northwest FIA</b> |                    |   |  |
|                              | \$3,160            | National Park Service                             | Ozone monitoring, Mt. Ranier National Park                                 |
|                              | 152,169            | Oregon Dept. of Forestry                          | Implementation of annual FIA   |
|                              | 66,914             | University of Wisconsin                           | Using climate-related information to improve short-term growth projections |
|                              | 182,247            | University of Leeds                               | Biodiversity analysis of Southeast Alaska                                  |
|                              | <b>\$404,490</b>   | <b>Subtotal, Pacific Northwest FIA</b>            |  |
| <b>Southern FIA</b>          |                    |   |  |
|                              | \$542,768          | Alabama Forestry Commission                       | Implementation of annual FIA   |
|                              | 331,200            | Florida Division of Forestry                      | Implementation of annual FIA   |
|                              | 362,569            | Georgia Forestry Commission                       | Implementation of annual FIA   |
|                              | 364,432            | Kentucky Division of Forestry                     | Implementation of annual FIA   |
|                              | 488,913            | North Carolina Division of Forest Resources       | Implementation of annual FIA   |
|                              | 336,755            | South Carolina Forestry Commission                | Implementation of annual FIA   |
|                              | 167,000            | Texas Forest Service                              | Implementation of annual FIA   |
|                              | 416,650            | Virginia Department of Forestry                   | Implementation of annual FIA   |
|                              | 34,000             | University of Georgia                             | Analysis of stream management zones  |
|                              | 170,176            | University of Tennessee                           | Understory vegetation sampling   |
|                              | <b>\$3,214,463</b> | <b>Subtotal, Southern FIA</b>                     |  |
| <b>Fort Collins FIA</b>      |                    |   |  |
|                              | <b>\$0</b>         | <b>Subtotal, Fort Collins FIA</b>                 |  |
| <b>National Office FIA</b>   |                    |   |  |
|                              | \$33,000           | Northeastern Area                                 | Damage indicator advisor   |
|                              | 320,000            | Southern Research Station (RWU 4803)              | National Program Support   |
|                              | 93,000             | Rocky Mountain Research Station (RWU 4301)        | Soil indicator advisor and lab work (west)                                 |
|                              | 40,000             | International Institute of Tropical Forestry      | Implementation of annual forest inventory                                  |
|                              | 20,000             | IUFRO   | Global Forest Inventory System   |
|                              | 93,829             | Colorado Forest Service                           | Crown indicator advisor  |
|                              | 25,000             | Iowa State University                             | Digital government proposal  |
|                              | 531,480            | University of Nevada at Las Vegas                 | Information management support   |
|                              | 107,347            | University of Nevada at Las Vegas                 | Quality Assurance support  |
|                              | 184,270            | University of Wisconsin                           | Lichen indicator advisor support (east)                                    |
|                              | <b>\$1,447,926</b> | <b>Subtotal, National Office FIA</b>              |  |
|                              | <b>\$7,631,164</b> | <b>Total Grants and Agreements, All FIA Units</b> |  |

**Appendix 6.** *Number and hours of significant consultations by FIA staff, by customer group, Fiscal Year 2002.*

| Customer Group    | Pacific Northwest |            | Interior West |            | Southern   |            | North Central |            | North East |            | Fort Collins |              | National Office |           | Total        |              |
|-------------------|-------------------|------------|---------------|------------|------------|------------|---------------|------------|------------|------------|--------------|--------------|-----------------|-----------|--------------|--------------|
|                   | no.               | hrs.       | no.           | hrs.       | no.        | hrs.       | no.           | hrs.       | no.        | hrs.       | no.          | hrs.         | no.             | hrs.      | no.          | hrs.         |
| <b>Academic</b>   | 16                | 72         | 7             | 85         | 120        | 171        | 18            | 72         | 44         | 116        | 2            | 200          | 0               | 0         | 207          | 716          |
| <b>Government</b> | 37                | 228        | 34            | 395        | 137        | 151        | 94            | 376        | 61         | 90         | 5            | 660          | 9               | 61        | 377          | 1,961        |
| <b>Industry</b>   | 12                | 74         | 2             | 34         | 170        | 250        | 18            | 72         | 22         | 40         | 1            | 30           | 0               | 0         | 225          | 500          |
| <b>NGO*</b>       | 1                 | 2          | 0             | 0          | 43         | 41         | 26            | 104        | 12         | 15         | 0            | 0            | 5               | 16        | 87           | 178          |
| <b>NIPF**</b>     | 4                 | 30         | 1             | 8          | 45         | 29         | 0             | 0          | 6          | 5          | 1            | 15           | 0               | 0         | 57           | 87           |
| <b>Media</b>      | 9                 | 14         | 0             | 0          | 12         | 13         | 1             | 4          | 11         | 19         | 0            | 0            | 0               | 0         | 33           | 50           |
| <b>Other</b>      | 9                 | 33         | 3             | 13         | 0          | 0          | 2             | 8          | 11         | 29         | 15           | 100          | 0               | 0         | 40           | 183          |
| <b>TOTAL</b>      | <b>88</b>         | <b>453</b> | <b>47</b>     | <b>535</b> | <b>527</b> | <b>655</b> | <b>159</b>    | <b>636</b> | <b>167</b> | <b>314</b> | <b>24</b>    | <b>1,005</b> | <b>14</b>       | <b>77</b> | <b>1,026</b> | <b>3,675</b> |

\* NGO = Nongovernmental Organizations

\*\* NIPF = Nonindustrial Private Forest Landowners





