

The Inventory

An Update Concerning the SRS FIA Program

Issue 23
September 2011

Inside this issue:

FY2011 Research Publications Published Since June 2011	2
FY2011 Research Publications Published Since June 2011 (continued)	3
Status of Current Field Inventories	3
FIADB 5.1 Coming Fall 2011	3
FIADB 5.1 Coming Fall 2011 (continued)	4
Current Status of FIA Data Posted	4
Issues with Analyzing Net Growth by Diameter Class	4
Issues with Analyzing Net Growth by Diameter Class (continued)	5
National and Southern FIA Web sites of Interest	6

SRS FIA Information Update (September 2011)

In this part of the SRS FIA Information Update, I usually highlight some success, accomplishment, or milestone of the SRS FIA unit. This usually identifies some piece of information that may be of interest to you—the user of FIA data. For this edition, I want to change it up a bit.

The SRS FIA unit receives many inquiries from FIA data users who want additional information on some aspect of the FIA program, such as—do we tally dead saplings; or, how do we determine forest type? These items relate to the “transparency” of our operations and/or procedures. Some of this information on the transparency of our program is through the publication of guides such as *The Forest Inventory and Analysis Database: Database Description and Users Manual version 4.0 for Phase 2* or the inclusion within the appendix of the 5 year State reports a glossary, a section on inventory methods, and a section on data reliability.

So my question to you—the FIA data users—what information do we need to provide to be more transparent? What information would assist you in a better understanding of how FIA operates? Please forward those questions to me at the email address listed below. If the information is already published or exists on our Web site, we will point you to the right location. If it doesn't exist, we will answer your questions and if enough data users have similar questions, we will formalize the response in a publication and/or on our Web site.

As always, if you have any technical questions regarding FIA, please submit those questions to Charlene Walker (cwalker@fs.fed.us) and we will address them in a future issue of *The Inventory*. Thank you for your interest in FIA and please let us know how we may serve you in the future.

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***FY2011 Research
Publications Published
Since June 2011***

- Alexander, S.J.; Oswald, S.N.; Emery, M.R.** 2011. Nontimber forest products in the United States: Montreal process indicators as measures of current conditions and sustainability. Gen. Tech. Rep. PNW–GTR–851. Portland, OR: U.S. Department of Agriculture Forest Service, Pacific Northwest Research Station. 36 p.
- Bentley, J.W.; Johnson, T.G.** 2011. Mississippi's timber industry—an assessment of timber product output and use, 2009. Resour. Bull. SRS–181. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station. 31 p.
- Bentley, J.W.; Johnson, T.G.; Hendricks, B.** 2011. Alabama's timber industry—an assessment of timber product output and use, 2009. Resour. Bull. SRS–176. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station. 31 p.
- Cooper, J.A.; Johnson, T.G.; Becker, C.W.** 2011. Virginia's timber industry—an assessment of timber product output and use, 2009. Resour. Bull. SRS–179. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station. 31 p.
- Cooper, J.A.; Johnson, T.G.; Nevins, C.G.** 2011. Kentucky's timber industry—an assessment of timber product output and use, 2009. Resour. Bull. SRS–177. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station. 32 p.
- Cooper, J.A.; Johnson, T.G.; New, B.D.; Altizer, C.B.** 2011. North Carolina's timber industry—an assessment of timber product output and use, 2009. Resour. Bull. SRS–178. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station. 31 p.
- Johnson, T.G.; McClure, N.; Willard, R.A.** 2011. Georgia's timber industry—an assessment of timber product output and use, 2009. Resour. Bull. SRS–175. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station. 35 p.
- Johnson, T.G.; Nowak, J.** 2011. Florida's timber industry—an assessment of timber product output and use, 2009. Resour. Bull. SRS–180. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station. 31 p.
- Morin, R.S.; Oswald, S.N.; Trotter, R.T., III; Liebhold, A.W.** 2011. Status of hemlock in the Eastern United States forest inventory and analysis factsheet. e-Science Update SRS–038. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station. 4 p.
- Oswald, C.M.; Clatterbuck, W.K.** 2011. Growing high quality hardwoods: plantation trials of mixed hardwood species in Tennessee [Abstract]. In: Fei, S.; Lhotka, J.M.; Stringer, J.W.; Gottschalk, K.W.; Miller, G.W. eds. Proceedings, 17th central hardwood forest conference. Gen. Tech. Rep. NRS–P–78. Newtown Square, PA: U.S. Department of Agriculture Forest Service, Northern Research Station: 664.
- Oswald, C.M.; Clatterbuck, W.K.; Larsen, D.R.** 2011. A technique for predicting clearwood production in hardwood stems: A model for evaluating hardwood plantation development and management. In: Fei, S.; Lhotka, J.M.; Stringer, J.W.; Gottschalk, K.W.; Miller, G.W., eds. Proceedings, 17th central hardwood forest conference. Gen. Tech. Rep. NRS–P–78. Newtown Square, PA: U.S. Department of Agriculture Forest Service, Northern Research Station: 33-40.
- Oswald, C.M.; Conner, R.C.** 2011. Southern forest inventory and analysis volume equation user's guide. Gen. Tech. Rep. SRS–138. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station. 22 p.
- Oswald, S.N.; Bentley, J.** 2011. Mississippi, 2010 forest inventory and analysis factsheet. e-Science Update SRS–037. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station. 4 p.
- Oswald, S.N.; Oswald, C.M.** 2011. Invasive plants found in east Texas forests, 2009 forest inventory and analysis factsheet. e-Science Update SRS–039. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station. 5 p.
- Oswald, S.N.; Oswald, C.M.** 2011. The extent of selected nonnative invasive plants on southern forest lands. In: Fei, S.; Lhotka, J.M.; Stringer, J.W.; Gottschalk, K.W.; Miller, G.W., eds. Proceedings, 17th central hardwood forest conference. Gen. Tech.

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**FY2011 Research
Publications Published
Since June 2011
(continued)**

To access an electronic copy of each research publication, click on the publication number.

Rep. NRS-P-78. Newtown Square, PA: U.S. Department of Agriculture Forest Service, Northern Research Station: 447-459.

Rose, A.K. 2011. Virginia, 2009 forest inventory and analysis factsheet. e-Science Update SRS-035. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station. 4 p.

Rosson, J.F., Jr. 2011. Arkansas, 2009 forest inventory and analysis factsheet. e-Science Update SRS-034. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station. 4 p.

Rosson, J.F., Jr. 2011. Arkansas, 2010 forest inventory and analysis factsheet. e-Science Update SRS-036. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station. 4 p.

Status of Current Field Inventories

State	Cycle start date	Subcycle start date	Cycle and subcycle of current inventory	Percent of current subcycle collection completed
Alabama	2005	Aug-11	9-7	11
Arkansas	2010	Nov-10	10-1	66
Florida	2008	Sept-10	9-3	99
Georgia	2009	Aug-10	10-2	97
Kentucky	2010	Apr-10	7-2	41
Louisiana	2009	June-10	8-2	94
Mississippi	2009	Sept-10	9-3	99
North Carolina	2008	Aug-10	9-3	100
Oklahoma (east)	2010	Apr-11	9-2	61
Oklahoma (west)	2009	June-11	2-3	32
Puerto Rico	2011	Jan-11	5-1	56
South Carolina	2006	Nov-10	10-5	78
Tennessee	2009	Feb-11	9-2	60
Texas (east)	2008	July-11	9-4	13
Texas (west)	2004	July-11	1-8	11
U.S. Virgin Islands	2009	Aug-09	2-1	100
Virginia	2007	Dec-10	9-4	74

Information compiled August 31, 2011.

For more information, contact Dale Trenda at 865-862-2039 or dtrenda@fs.fed.us.

**FIADB 5.1 Coming
Fall 2011**

The National Reporting and Data Distribution Team and the National System Development Team are working on the final details of version 5.1 of the FIA Database (FIADB), including documentation. The release is scheduled for October but the exact date has not been established.

There are a few changes in FIADB 5.1 that mirror updates outlined in the National FIA Field Guide 5.0. That version was implemented

in data collection panels that started on or after October 1, 2010. However, SRS only implemented the addition of the crown cover attributes. As a result, the SRS Field Guide was updated to version 4.01 instead of 5.0. After each State completes their 2011 panel of plot data, the additional crown cover attributes will be populated in FIADB for just that one panel of data. Those plots collected prior to 2011 will not have crown cover estimates, with the exception of west Texas which started collection in 2004.

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FIADB 5.1 Coming Fall 2011 (continued)

For more information contact Jeff Turner at 865-862-2053 or jturner02@fs.fed.us.

There are also a few updates to the National Information Management System that will be pushed into FIADB 5.1. These include tweaks to the net growth, removal, and mortality (GRM) estimates for live trees that change growing-stock classifications between time 1 and time 2 observations, as well as for the rare tree that was observed as standing dead at time 1, but is coded live at time 2. These updates were presented at the FIA Symposium in Knoxville, TN in October 2010 by the GRM/Change Task Team.

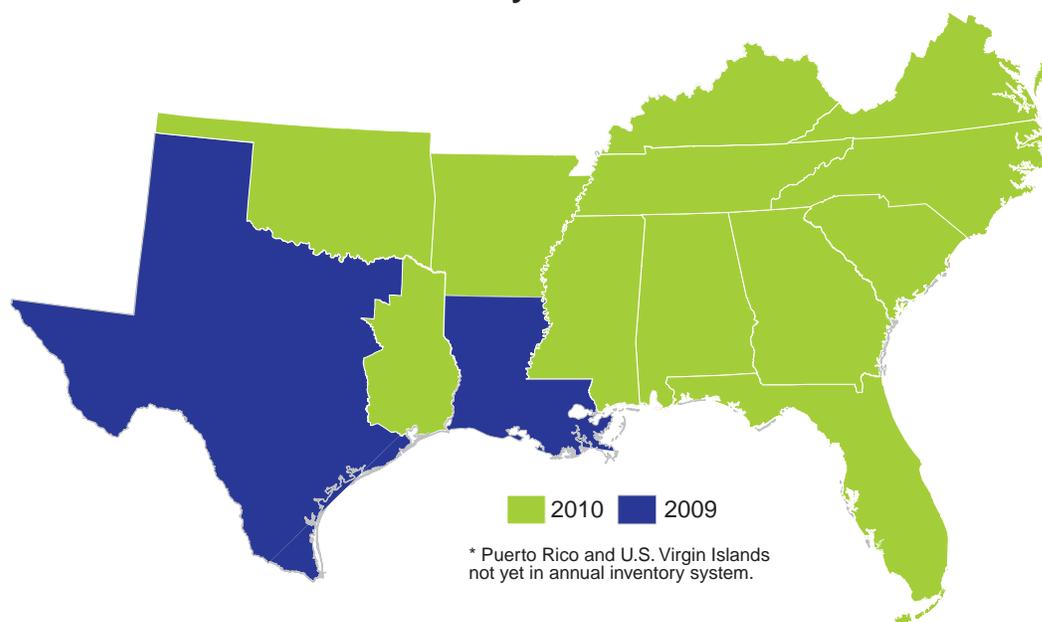
The change in overall State-level GRM estimates from this update is minimal. In addition, there are a myriad of other updates to fix known data errors.

The National FIA Online Tools (EVALIDator and FIDO) are being updated to query from FIADB 5.1. Users should check the FIA Data and Tools link on the National FIA Web site (fia.fs.fed.us) for more information.

Current Status of FIA Data Posted

For more information, contact Ali Conner at 865-862-2228 or aconner@fs.fed.us.

Most Recent FIA Data by State and Collection Year



Issues with Analyzing Net Growth by Diameter Class

Under FIA's current method, any distribution of net growth by diameter-based classes results in smaller diameters receiving disproportionately high net growth volumes. While this "anomaly" has been known for some time, it only recently became an issue due to the growing interest in biomass for energy. Increased demand for small-diameter trees as biomass feedstock is eliciting concerns about sustainable harvesting, resulting in the need for closer scrutiny of growth to removals relationships among diameter classes.

FIA's estimate of net annual growth is calculated as the increased volume of trees ≥ 5.0 inches in diameter, minus deductions for tree mortality. This routine and widely accepted calculation results in reasonably accurate estimates of

total net growth. Net annual growth distributed among typical FIA forest resource categories (e.g., ownership, forest type, species, etc.) and compared with estimates of annual removals, provide valuable information in the analysis of net change in resource status and conditions. However, current FIA growth variables are not adequate to explain inventory changes for sub-categories of net growth based on tree size.

FIA's estimates of inventory change derived by subtracting removals from growth do not closely match actual change by diameter class. The fault lies in the FIA 'growth accounting system.' The current system does not provide estimates of transfers into and out of a given tree-size subcategory. There are reasonable solutions

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Issues with Analyzing Net Growth by Diameter Class (continued)

that give users a great deal of flexibility in the assessment of growth for a wide range of tree size classes. Most of the basic growth computations and variables that are required already exist in FIA's current processing system, but these data and variables are not stored in FIADB or made available in online tools such as FIDO or EVALIDator.

Proposed Solution

The proposed solution to the problem, as developed by retired SRS FIA forester Ray Sheffield, would be to create two additional variables that would provide estimates of transfers into and out of a given tree-size subcategory. To accomplish this, two net growth variables are needed for **each** tree, one allocated to the initial diameter class (IDC) and one to the final diameter class (FDC). An **Outgrowth** component would be calculated and assigned to the IDC. This component is treated as a negative value in the computation of overall net growth for the tree. An **Ingrowth** component would also be calculated and assigned to the FDC, which would be known at the time each tree is remeasured. The Ingrowth component is treated as a positive value in the computation of overall net growth for the tree. When summed, these two values would equal the current net growth value for each tree. For the proposed adjustment to work, the volume calculations would necessarily assume that the trajectory of change is linear.

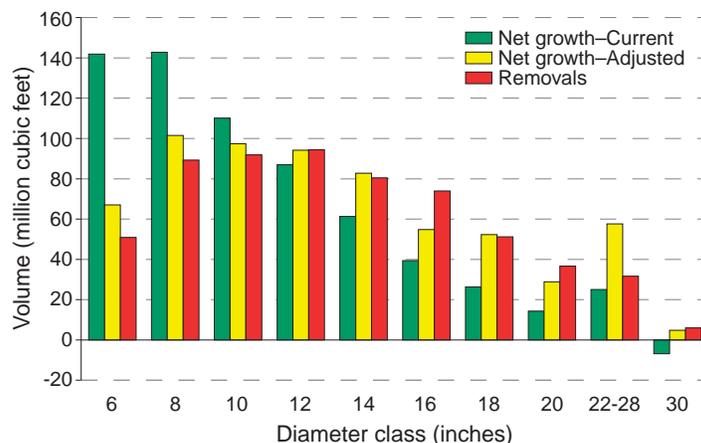
The above calculations would be accomplished and stored for each tree by 1-inch diameter class. The two net growth variables and each tree's initial and final diameters would allow accurate assignment of growth to tree size classes, particularly for cases where the tree

grew into a larger size class. Similarly, in cases where a tree stays in the same 1-inch class, or when trees grow from submerchantable to merchantable size (<5 inches in diameter to ≥5 inches in diameter), the growth components would be assigned to the FDC.

The graph below illustrates how the proposed change would adjust the distribution of net growth by diameter class. The **Current** net growth values reflect how FIA's system calculates and assigns net growth by diameter with the existing calculations. Note that the current estimates of growth are skewed toward the smaller diameter classes. When compared to annual plot-level removals, the results show a large surplus in the small diameters and overcutting in several of the larger diameter classes. With the proposed adjustment, the distorted distribution is corrected and a more accurate assessment of growth to removals relationships at the diameter level is possible. More importantly, the **Adjusted** diameter distribution is more consistent with actual inventory change.

Current users of FIA data through external tools such as EVALIDator and FIDO that query the data for net growth and removals by diameter class will get an output with the distorted distribution of net growth by diameter class. To implement that change as proposed here will take some time. In the interim, users should **not** conduct these types of analyses. A warning will be posted to users of the possibility of inaccurate results. Until the correction is implemented, users with a need to analyze net growth and removals by diameter class should contact the spatial data services group of SRS FIA (see lower left column for contact information). They can provide this information.

Distribution of current net growth, adjusted net growth, and removals by diameter class (Example)



To contact spatial data services, please contact Sam Lambert at 865-862-2097 or slambert@fs.fed.us.

For more information regarding this issue, please contact Roger Conner at 865-862-2031 or rconner01@fs.fed.us.

Southern Research Station
Forest Inventory and Analysis

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FIA is a USDA Forest Service research work unit which collects, analyzes, and reports on data pertaining to our forest land in the Southern region. This region includes Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, Puerto Rico, South Carolina, Tennessee, Texas, the U.S. Virgin Islands, and Virginia.

FIA conducts this program of research to improve the understanding of the Southern forest ecosystem.

Government and private agencies utilize this data to monitor forest resources, forest use, and forest health. The collection of data is done on private and public land.

Our system development success is a direct result of our partners, our talented scientists, analysts, computer specialists, and other staff members who have continually contributed to the mission of this complex project.

National and Southern FIA Web sites of Interest

National FIA Web site: <http://www.fia.fs.fed.us>

National FIA database available at: <http://fia.fs.fed.us/tools-data/other/default.asp>

National Timber Product Output (TPO) database available at: <http://srsfia2.fs.fed.us/>

National Woodland Owner Survey Web site: <http://www.fia.fs.fed.us/nwos/>

Information specific to Southern States: <http://srsfia2.fs.fed.us/>

Electronic copies of SRS FIA publications at: <http://www.srs.fs.usda.gov/pubs/>