

Forest Inventory and Analysis (FIA) National Quarterly E-Newsletter



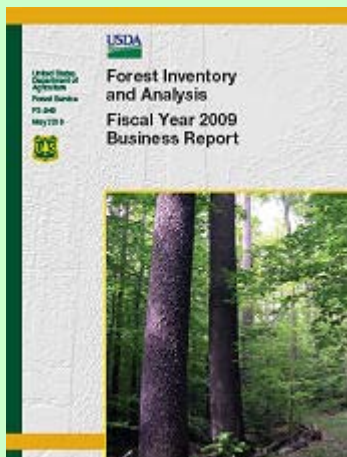
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Volume 2, Number 1

In This Issue

A message to our clients.....	1
What's going on in the world of research?.....	2
Studies in Progress.....	2
Outcomes from recently held meetings.....	9
Employee Profile Gretchen Moisen, IW.....	10
Upcoming events.....	11
Safety at Work.....	14

Fiscal Year 2009 FIA Business Report



This report is available at:
<http://www.fia.fs.fed.us/>

A message to our clients...

In the September, 2009 newsletter I discussed the results of an external peer review the Forest Service's Inventory & Monitoring (I&M) Research Strategic Program Area. The FIA program constitutes approximately 90% of all I&M research. The seven reviewers filed their report on September 21, 2009.

The review panel was tasked with scoring FIA on Office of Management and Budget (OMB) guidelines designed to assess performance in the areas of relevance, quality and performance. The review team scored FIA relevance at 98 percent and made several substantial recommendations for continued enhancements for land use and cover measurement and carbon monitoring to maintain and continue the maximum relevance of the FIA program.

In late September 2009, the National Association of State Foresters (NASF) through NASF Resolution No. 2009-8 encouraged the U.S. Forest Service to support and vigorously seek funding for fully implementing the base FIA program nationwide; the resolution further stated;

- A. encourages the U.S. Forest Service to support and vigorously seek funding for fully implementing the base FIA program nationwide;
- B. encourages the U.S. Forest Service to support and vigorously seek funding to enhance FIA to address the rapidly emerging issues of climate change, carbon, land use changes, water resources, biomass, and bio-energy;
- C. suggests that the enhanced FIA include the following priorities:
 1. use of remote imagery to track harvest intensity, land-use change, and land cover change. This could be done in conjunction with the U.S. Forest Service Remote Sensing Application Center and aligned state and federal institutions;
 2. increase the analytical ability within FIA and within cooperating State Forestry Agencies;
 3. increased measurement of forest floor woody and non-woody forest components, including soils;
 4. expand the capacity of timely forecasts for forest products markets, land use change, and future forest conditions;
 5. intensify plot distribution on experimental forests as a set of baseline plots for climate change monitoring and modeling to address forest management and adaptation needs; and

What's going on in the world of research?

Northern Research Station

Crocker, S.J., Meneguzzo, D.M., Liknes, G.C. (2010).

Patterns among the ashes: exploring the relationship between landscape pattern and the Emerald Ash borer. In: Proceedings of the Symposium on Ash in North America, march 9-11, 2010. West Lafayette, IN. 1 CD.

Woodall, C.W., Nowak, D.J., Liknes, G.C., Westfall, J.A. (2010). Assessing the potential for urban trees to facilitate forest tree migration in the eastern United States. *Forest Ecology and Management*, 259, 1447-1454.

Liknes, G.C., Perry, C.H., Meneguzzo, D.M. (2010). Assessing tree cover in agricultural landscapes using high-resolution aerial imagery. *Journal of Terrestrial Observation*, 2, 1, Article 5.

In April 2009, it was reported in this newsletter that FIA staff at the Northern Research Station contributed two chapters to a forthcoming book entitled "Mapping Forestry" from ESRI Press. We are happy to announce the book was released earlier in 2010 and has been positively reviewed in the Society of American Foresters "The Forestry Source" newsletter (www.eforester.org).

The chapter by Charles (Hobie) Perry, Mark Nelson, and Ron Piva "Imports and exports of roundwood in the upper midwestern United States" was cited in the SAF review.

Greg Liknes, Mark Nelson, and Brett Butler contributed a chapter entitled "Public and private forest ownership in the conterminous United States".

6. evaluate the impact of timely forest resource information and communication.

In FY 2010 FIA has made significant progress towards fulfilling several of the I&M SPA review and NASF recommendations. The PNW-FIA program has added Hawaii to the inventory and RMRS-FIA has added Nevada and begun substantial work towards full implementation of Wyoming. This leaves interior Alaska as the last challenge towards full implementation of FIA nationwide. FIA in cooperation with Experimental Forest leaders have begun implementation of NASF resolution #5. We are initiating intensive site monitoring (ISM) on and in the immediate vicinity of FS Experimental Forests and Ranges (EFRs). For the ISM investment, a small team of FS researchers are providing leadership to EFRs. They are tasked with identifying the key questions related to climate change monitoring and the critical data gaps that could be filled by ISM activities. From those questions and gaps, five selection criteria have been identified to guide site selection: (A) locations which have long-term data on forest stand dynamics, hydrology, nutrient dynamics, and/or carbon fluxes; (B) the absence of any existing quantitative vegetation data across forested landscapes, and where an intensified plot grid could provide data for an early warning system; (C) sites in areas expected to be highly sensitive to climate changes; (D) sites that help assure broad-scale coverage across widespread gradients of conditions; and (E) practical or administrative considerations in the current fiscal year that influence where the initial implementation effort could be conducted.

These are exciting times as FIA resolves to maintain its national leadership in providing current and accurate forest inventory and monitoring information. This information is a requirement if we are to conserve and restore all of America's forests. The inventory must address the rapidly emerging issues of climate change, carbon, biomass, and land use and land cover change. Please send your feedback on any of these issues and others to your regional FIA Program Manager and the National Office.



- Greg Reams, National Program Leader

Studies in progress...

Northern Research Station

Study Title: NIMAC International Technology Transfer

Participants: Charles T. Scott, National Inventory and Monitoring Applications Center (NIMAC) Program Manager, Northern Research Station (NRS) FIA, Andrew Lister (NRS FIA, NIMAC), Vicente Monleon (PNW FIA), Tom Brandeis (SRS FIA)

Status: In Progress

Results: The Forest Service receives requests for technical assistance from foreign countries through the International Programs (IP) branch. Due to a legacy of successful interactions between FIA and IP, NIMAC has taken an active role in providing technical assistance related to establishing national forest inventories or other resource monitoring studies. Examples of

What's going on in the world of research?

Southern Research Station

Conner, R.C.; Adams, T.O.; Johnson, T.G.; Oswalt, S.N. 2009. South Carolina's forests, 2006. Resour. Bull. SRS-158. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station. 57 p.

Coulston, J.W.; Oswalt, S.N.; Carraway, A.B.; Smith, W.B. 2010. Assessing forestland area based on canopy cover in a semi-arid region: a case study. Forestry Advance Access. 12 p.

Harper, R.A. 2009. The Forest Inventory and Analysis program: what's in it for landowners? Forest Landowner Magazine. 68(4):5-8.

Rose, A. K.; Nicholas, N.S. 2008. Coarse woody debris in a Southern Appalachian spruce-fir forest of the Great Smoky Mountains National Park. Natural Areas Journal. Vol. 28(4): 342-355.

Rosson, J.F.; Rose, A.K. 2010. Arkansas' forests, 2005. Resour. Bull. SRS-166. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station. 126 p.

Interior West Research Station

Bailey, R. G. 2010. Fire regimes and ecoregions. In: Elliot, W. J.; Miller, I. S.; Audin, L. [Eds.] Cumulative watershed effects of fuel management in the western United States. Gen. Tech. Rep. RMRS-GTR-231. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. pp. 7-18.

current technical assistance projects include:

Peru: Peruvian foresters want to design a monitoring protocol for timber leases in the Amazon basin. Due to the remoteness of many of these areas, problems with illegal logging and accountability occur. The Peruvian Forest Service is seeking technical assistance to devise a method that combines field inventory and remote sensing technology to improve estimates of standing volume and thus improve accountability and management of these areas. In addition, Peru is considering implementing a national forest inventory. NIMAC is offering FIA's technical expertise and experience in the design and implementation of inventories to support this effort.

Honduras: Honduran forestry officials are interested in characterizing the mahogany resource so they can better manage this valuable and internationally regulated species. NIMAC helped design an inventory aimed at assessing the distribution and amount of mahogany in a portion of Honduras, and is currently engaged in analyzing results and building a reporting tool.

Dominican Republic: Dominican forestry officials want to determine budget parameters for a national forest assessment. Goals of the assessment are similar to those of FIA, so NIMAC and SRS FIA were approached to offer technical advice on determining design requirements and methodology. A workshop was held in the Dominican Republic in which inventory goals were determined and inventory design steps were outlined.

Congo: The Democratic Republic of the Congo has been interested in participating in a global REDD (Reduce Emissions from Deforestation and forest Degradation) initiative. A key component of this initiative is effective monitoring of forest carbon stocks. NIMAC has been asked to help develop a monitoring strategy that meets REDD objectives.

Contact: Chip Scott, ctscott@fs.fed.us, (610) 557-4020

Study Title: Refining the Nation's Estimates of Dead Wood Resources

Participants: Christopher Woodall, Dr. Mark Harmon and staff, Oregon State University

Status: In Progress

Results: This project consists of two closely related studies; the first will examine the density of standing dead trees by decay class in major forest biomes across the U.S. Dr. Harmon and his staff have been felling standing dead trees at study sites in Oregon, Colorado, Minnesota and North Carolina to examine trends in standing dead tree bulk density by decay class and major species groups. The second study will be conducting lab analysis of the actual carbon content of coarse woody debris by decay class and tree species for hundreds of samples from his archive of coarse woody debris samples. Information from this study may greatly refine carbon estimation of dead wood.

Contact: Chris Woodall, cwoodall@fs.fed.us, (651) 649-5141

Southern Research Station

Study Title: Tennessee Pilot Urban Inventory

Participants: Christopher Oswalt, Thomas Brandeis, Angie Rowe, Southern Research Station FIA; Tennessee Division of Forestry; Northern Research Station's Urban Forests, Human Health, and Environmental Quality Unit.

Status: In Progress

What's going on in the world of research?

Healey SP, Blackard JA, Morgan TA, Loeffler D, Jones G, Songster J, Brandt JP, Moisen GG, DeBlender LT.

2009. Changes in timber haul emissions in the context of shifting forest management and infrastructure. Carbon Balance and Management 4:9
doi: 10.1186/1750-0680-4-9.

Long, J.N. and Shaw, J.D.

2010. The influence of compositional and structural diversity on forest productivity. Forestry 83: 121-128.
doi: 10.1093/forestry/cpp033

Powell, S.L., S.P. Healey, W.B. Cohen, R.E. Kennedy, G.G. Moisen, K.B. Pierce, and J.L. Ohmann. **2010.**

Quantification of live aboveground forest biomass dynamics with Landsat time-series and field inventory data: A comparison of empirical modeling approaches. Remote Sensing of Environment 114(5) 1053 – 1068.

Schroeder, T.A., Hember, R., Coops, N.C., and Liang, S.

(2009). Validation of solar radiation surfaces from MODIS and reanalysis data over topographically complex terrain. Journal of Applied Meteorology and Climatology. pending

Pacific Northwest Research Station

Campbell, S.; Waddell, K.; Gray, A. **2010.** Washington's Forest Resources, 2002 to 2006. Gen. Tech. Rep. PNW-GTR-800. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 189 p.

Results: While white oak and red maple are among the most prevalent tree species on Tennessee forest land, a recent inventory of urban forests in the state paints an entirely different story. Beginning in 2004, the Southern Research Station FIA program in collaboration with the Tennessee Division of Forestry began a pilot program intended to evaluate the potential of FIA inventories of urban forests and to describe the urban forest resource of Tennessee. Now, with 5 annual panels collected we can begin to understand the changes along the gradient from forests to non-maintained and maintained urban forests. Approximately 55 different tree species were sampled on maintained urban forests with hackberry representing the most prevalent. More than 70 tree species were observed on non-maintained urban forests and Virginia pine was encountered more often. Approximately 120 different species were sampled on forest land in the state. Additionally, the Northern Research Station's Urban Forests, Human Health, and Environmental Quality Unit, led by David Nowak, is utilizing the iTree Eco (formerly UFORE) model to analyze the contributions of urban forests to the amelioration of air pollution and the contribution to energy cost-savings within the state.

Contact: Christopher Oswalt, coswalt@fs.fed.us, 865-862-2068

Study Title: Anomaly Detection for FIA Analysts: (or: Is there something weird going on here?)

Participants: Frank Roesch, Southern Research Station FIA; Paul Van Deusen, NCASI

Status: Soon to be published in the Southern Journal of Applied Forestry

Results: Ever since annual forest inventories were first being discussed as a viable option for FIA, researchers at the Southern Research Station and elsewhere have been exploring ways to combine the data from successive years into useable and meaningful estimates. A key component of all of these efforts is the conceptual model of the relationship of the data between successive years that is being assumed by the researcher. Any estimation approach that combines data from successive years will yield poor results if the underlying model assumptions are unknowingly violated. Soon to appear in the Southern Journal of Applied Forestry is a paper by Frank Roesch and Paul Van Deusen entitled "Anomaly detection for analysis of annual inventory data: A quality control approach". The paper shows a simple method for assessing new data for compatibility with the data from previous years under the appropriate model for a particular estimator. That is, the research addresses one extremely important question currently being asked by FIA analysts: When combining this year's data for a particular variable with data from previous years, how does one know if the new data is so different from the older data that it would be inappropriate to combine the data with the same methods used in the past? The paper focuses on a simple control chart approach that will allow analysts to determine when a departure from a past trend is likely to have occurred. The approach has several advantages that are not common among competing approaches. The first is that it is graphic and therefore easily interpreted. The second is that its simplicity would allow it to be programmed to run in the background until an "out-of control" warning is issued. Once the warning is issued, analysts could examine the data for anomalies and take the appropriate corrective measures.

What's going on in the world of research?

Brady, T.J.; Monleon, V.J.; Gray, A.N. 2010. Calibrating Vascular Plant Abundance Data for Monitoring Future Local Climate Changes in Washington, USA. *Ecological Indicators* 10: 567-667.

Gatziolis, D.; Fried, J.S.; Monleon, V.J. 2010. Challenges to Estimating Tree Height via LiDAR in Closed-Canopy Forests: A Parable from Western Oregon. *Forest Science*: 56: 139-155.

Pierce, K.B.; Ohmann, J.L.; Wimberly, M.C.; Gregory, M.J.; Fried, J.S. 2009. Mapping wildland fuels and forest structure for land management: a comparison of nearest-neighbor imputation and other methods. *Canadian Journal of Forest Research* 39:1901-1916.

Contact: Frank Roesch, froesch@fs.fed.us, 828-257-4871

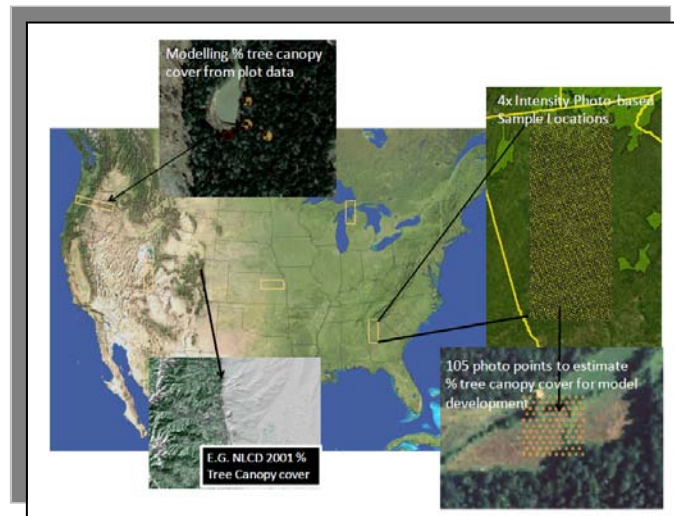
Study Title: Developing the 2011 National Land Cover Database (NLCD) % Tree canopy cover product

Participants: John Coulston, Ken Brewer, Warren Cohen, Gretchen Moisen, Ty Wilson, and other scientists from each FIA region; Mark Finco, Brian Schwind, Remote Sensing Applications Center; Everett Hinkley, WO; Frank Sapio, Forest Health Technology Enterprise Team

Status: The primary objective of this project is to develop the 2011 % Tree canopy cover geospatial product for the United States using FIA data and Landsat TM imagery. To accomplish this, five proof of concept areas were selected to test data collection and modelling approaches. For each study area plot-level estimates of percent tree canopy we made based on modelling FIA inventory data and interpreting high-resolution aerial photos. Currently we are in the model development and testing phase where the plot-level data serve as the response variable for the model and Landsat TM imagery and derivatives serve as the explanatory variable. We are completing a repeatability study of the photo-interpreted percent tree canopy cover estimates. We have secured funding to move into a prototyping phase once the proof of concept work is completed.

Results: Results will be presented at the 2010 FIA Symposium in Knoxville Tennessee.

Contact: John Coulston, jcoulston@fs.fed.us, 865-862-2008



Interior West Research Station

Study Title: Changes in Timber Haul Emissions in the Context of Shifting Forest Management and Infrastructure

Participants: Sean Healey, Jock Blackard¹, Gretchen Moisen, Larry DeBlander (IW-FIA), Todd Morgan, Jason Brandt, Jon Songster (University of Montana School of Business), Dan Loeffler, Greg Jones (RMRS Human Dimensions Program)

Status: Complete

Results: Although significant amounts of carbon may be stored in harvested wood products, the extraction of that carbon from the forest generally entails combustion of fossil fuels. The transport of timber from the forest to primary milling facilities may in particular create emissions that reduce the net sequestration value of product carbon storage. However, attempts to quantify the effects of transport on the net effects of forest management typically use

Category of Links

National Program

<http://fia.fs.fed.us>

Pacific Northwest

<http://www.fs.fed.us/pnw/fia/>

Interior West

<http://www.fs.fed.us/rm/ogden/>

Northern

<http://www.nrs.fs.fed.us/fia/>

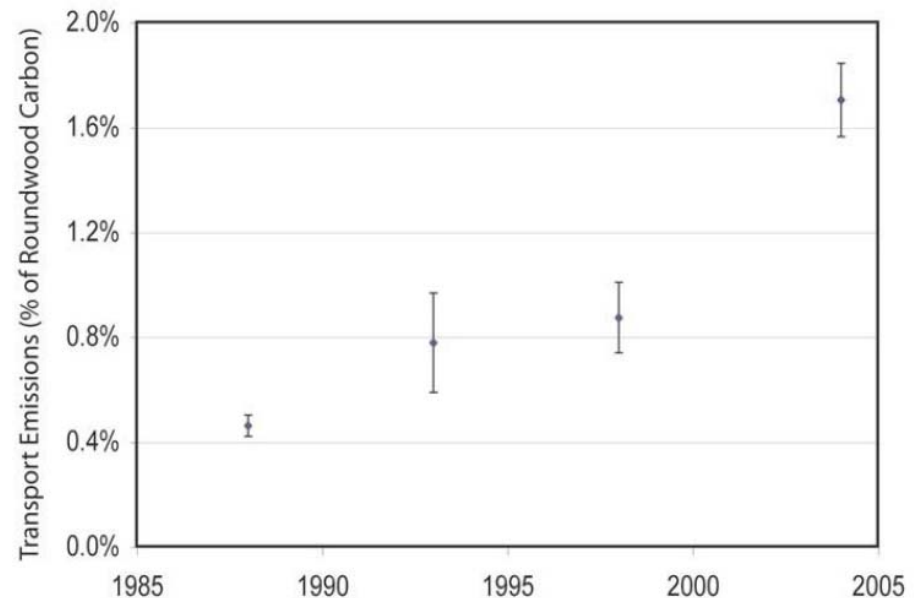
Southern

<http://srsfia1.fia.srs.fs.fed.us/>

relatively sparse survey data to determine transportation emission factors. An approach was developed for the systematic determination of transport emissions using: 1) remotely sensed maps to estimate the spatial distribution of harvests, and 2) FIA



Timber Products Output data to determine landscape-level harvest volumes as well as the location and processing totals of individual mills. These data support spatial network analysis that can produce estimates of fossil carbon released in timber transport. Transport-related emissions, evaluated as a fraction of transported wood carbon at 4 points in time on a landscape in western Montana (USA), rose from 0.5% in 1988 to 1.7% in 2004 as local mills closed and spatial patterns of harvest shifted due to decreased logging on federal lands. The apparent sensitivity of transport emissions to harvest and infrastructure patterns suggests that timber haul is a dynamic component of forest carbon management that bears further study both across regions and over time. The monitoring approach used here, which draws only from widely available monitoring data, could readily be adapted to provide current and historical estimates of transport emissions in a consistent way across large areas.



Change in Ravalli County log transport emissions as a function of the carbon in the roundwood being transported. Bars represent the standard deviation of 500 simulation results.

Study Title: Increasing statistical efficiency with FIA's Nationwide Forest Imputation System

Participants: IW-FIA, PNW Resource Monitoring and Assessment Program

Status: In progress

Results: FIA uses post-stratification for two disparate objectives: (1) impose areal constraints and (2) improve statistical efficiency with remotely sensed data. Objective (1) assures that FIA area

statistics agree with geopolitical statistics, such as the total proclaimed area of each National Forest or the Census statistics for total area of counties. Objective (2) improves estimates of forest area, which indirectly improves statistical efficiency for all FIA forest statistics. However, post-stratification requires cross-classification by both geopolitical and remotely sensed categories. This creates numerous strata with small sample sizes. This constrains the degree to which available remotely sensed data can improve FIA statistics. For example, FIA's Nationwide Forest Imputation System (NaFIS) pilot study produces wall-to-wall thematic maps for forest types and size classes. Because geopolitical categories are numerous and stratum sample sizes are small, the multitude of remotely sensed NaFIS categories must be collapsed into two strata: forest and nonforest. Furthermore, NaFIS uses remote sensing to estimate the volume and basal area by tree size and major species group for each pixel, but post-stratification precludes use of these continuous auxiliary data. The Recursive Restriction Estimator (RRE) can utilize much more of the available remotely sensed data because RRE does not require cross-classification.

This project is testing the success of RRE with the full suite of NaFIS remotely sensed products. Implementation requires solutions to difficult numeric problems, such as large rank-deficient covariance matrices, that are common with detailed remotely sensed products. If successful, this project will advance objectives in FIA's Strategic Plan for increased efficiencies with modern remote sensing technologies.

Contact: Ray Czaplewski, rczaplewski@fs.fed.us, (970) 295-5973

Study Title: Population-Wide Mortality in Multiple Forest Types in Western North America

Participants: IW-FIA, Utah State University

Status: In progress.

Results: A complex of drought, insects, and disease is causing widespread mortality in multiple forest types across western North



America. These forest types range from dry pinyon-juniper woodlands to moist, montane spruce-fir forests. Although large-scale mortality events are known from the past and considered part of natural cycles, the recent events have largely been attributed to climate

change. We use periodic and annual inventory data to assess the onset, extent, and severity of impacts of mortality events that have occurred since the mid-1990s. The availability of annual inventory data permits FIA to track progression of epidemics in ways that were not previously possible. For example, IW-FIA analysis and cooperators are studying the "anatomy" of the Interior West mountain pine beetle epidemic that is currently affecting lodgepole pine. We are examining the progression of mortality from susceptible stand structures to less susceptible conditions, large-scale patterns within forest types as related to elevation and latitude, and the sequence of mortality onset among different forest types located along topo-edaphic gradients. The results of this

research may allow us to test and refine models of stand susceptibility. We have found that there have been synchronous insect outbreaks over millions of hectares, suggesting that broad-scale climatic factors are involved. However, at this point it does not appear that there have been significant range contractions such as might be expected from shifting climatic conditions, and local extirpations have been rare. Our current research includes improvement of the methods we use to analyze mortality trends, so that population shifts can be detected when they occur.

Thompson, M.T. 2009. Analysis of conifer mortality in Colorado using Forest Inventory and Analysis's annual forest inventory. *Western Journal of Applied Forestry*. 24(4):193-197.

Contact: John Shaw, jdshaw@fs.fed.us, (801) 598-5902; Mike Thompson, mtthompson@fs.fed.us, (801) 625-5374

Pacific Northwest Research Station

Study Title: Forests Adapting to and mitigating Climate Change—FIA Inventory of Urban Areas.

Participants: Collaborators from FIA, Oregon Department of Forestry, California Polytechnic State University

Status: Startup stages, planning and training with crews hitting the field in the second half of summer.

Results: Forests, whether in wild land or urban areas, will change as the climate changes – shifts in species composition, slowed or accelerated growth rates, higher rates of mortality, and increased susceptibility to pests are some possible effects. The national Forest Inventory and Analysis (FIA) Program has developed and piloted an inventory protocol for measuring urban forests that will be used to establish a baseline of measurements against which future changes in growth, mortality, species, damage, and fire susceptibility can be tracked for 5 western states (Alaska, California, Hawaii, Oregon, and Washington). Over time this data will allow us to determine if and how urban forests in the west are adapting to changing climate conditions and it might shed some light on urban mitigation of effects (e.g., tree care, species replacement, shifts in invasives). The urban data collection is being funded through the American Reinvestment and Recovery Act of 2009 (Recovery Act). So in addition to establishing the FIA sampling frame in urban areas, the objective includes the creation or saving of jobs. The bulk of the data will be collected by contractors with some student involvement via Cal Poly. Results from this project will also help contribute to our understanding of the many roles of trees in the urban environment, including the potential reduction of energy use due to cooling effect of trees, the contribution of urban trees to carbon sequestration, water management within urban areas, and quality of life for urban residents. Data collection for all 5 states is expected to be complete in 3 field seasons.

Contact: John Mills, jmills@fs.fed.us, (503) 808-2076

Study Title: Impact of wildfire on forests: role of pre-fire structure and weather.

Participants: PNW-RMA Vegetation Monitoring Science Applications team, Information Management team, Rocky Mountain Research Station, Region 5 National Forest System.

Status: On-going

Results: Fire will continue to be a major disturbance in forested landscapes of the West, possibly taking on even greater importance under climate change. What kind of ecosystem structures (habitats, fuels, vegetation, soils, etc.) can we expect fire to leave behind? How good are the existing models that predict fire behavior and effects on vegetation based on fuel structure and weather? Can we improve them? Can this inform choices about where and how to conduct fuel treatments? For this study, crews remeasure existing FIA plots within one year of a fire with standard protocols and



additional fire severity protocols (e.g., to characterize soil impacts, tree damage, and tree mortality). Analyses are relating fire severity measures to pre-fire measurements, fire weather data, and remote sensing predictions of burn severity. Data have been collected in Alaska, California, Oregon, and Washington and analyses are in progress.

Contact: Jeremy Fried, jfried@fs.fed.us, (503) 808-2058; or David Azuma, dazuma@fs.fed.us, (503) 808-2047

Study Title: Predicting tree distribution and mortality in relation to recent climate.

Participants: PNW-RMA Vegetation Monitoring Science Applications team, Oregon State University.

Status: On-going

Results: Changes in climate are expected to affect the distribution of tree species in the Pacific states through differential effects on mortality and regeneration. A variety of climate indices are related to tree data on FIA plots to create predictive models and maps of current tree distribution. Estimates of future climate are then applied to the species models to identify geographic areas of possible change in distribution. Additional models will evaluate recent tree mortality to climate variables, in particular drought stress, to see if peaks in mortality occur on sites corresponding to climatic thresholds in species occurrence. Mortality datasets will be built from FIA and National Forest periodic datasets and filtered to separate different causes of mortality.

Contact: Andrew Gray, agray01@fs.fed.us, (541) 750-7252

Outcomes from recently held meetings...

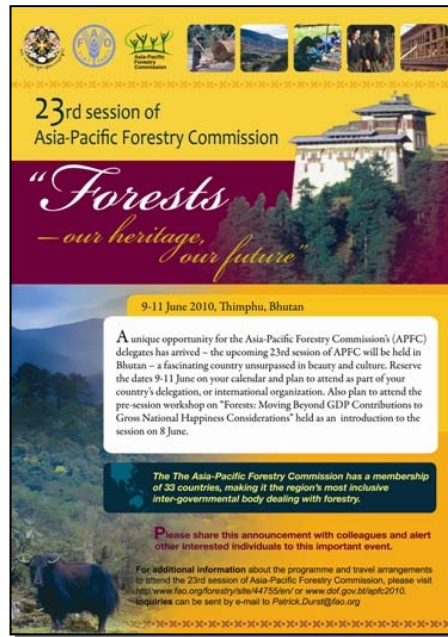
Interior West Research Station

The Interior West (IW-FIA) Program used a different approach for their April 13, 2010 User Group meeting. In this time of tight budgets and increasingly convenient technology, they decided to use a webcast format to interact with users regarding the status of IW efforts and research. The daylong webcast focused on general Program updates, research developments, and access to data. Throughout the webcast, the group had open discussions about the topics and answered questions. Some users participated in the entire session, and others joined only for specific presentations. Feedback from users was very positive. IW-FIA benefits greatly from the input and interaction they receive every year from client meetings, and

this proved to be a useful format for that purpose. The Webcast was hosted by Utah State University Extension. The presentations and links to the streaming versions of the webcast can be found at: http://www.fs.fed.us/rm/ogden/about/user_group11.shtml

Pacific Northwest Research Station

The U.S. Forest Inventory and Analysis program recently participated in meetings of the 23rd session of the Asia-Pacific Forestry Commission held in Bhutan that was Organized by the United Nations Food and Agriculture Organization. A special session on forest inventory was held where the U.S. introduced the inventory system used by FIA and discussed special considerations for forest inventory in montane environments. A panel discussion included inventory personnel from Bhutan, India, Nepal, the U.S., and FAO. Participants shared forest inventory methodologies



employed in montane ecosystems, and identified concerns, gaps, and capacity building issues associated with national inventories both from a policy and technical side. The outcomes and partnerships identified will be detailed in a short issues paper that will also summarize the presentations and discussions. Partners from Bhutan indicated interest in hands-on work with U.S. partners to better understand the logistics and methodologies FIA uses to collect, compile, and report on forest inventory in montane environments. Contact: Joseph Donnegan, jdonnegan@fs.fed.us, (503)-808-2053.

Employee Profile

Gretchen G. Moisen
Techniques Research Team Leader
Interior West FIA Program



Born and raised in New England, Gretchen Moisen received her Bachelor's degree in Forestry from the University of New Hampshire in 1982. After graduating, she thought she would spend one short summer on a temporary forest inventory job in the majestic Rocky Mountains before returning to graduate school. Little did she know that her FIA experience would really begin by measuring (what she thought were) shrubs in the southern tip of Nevada.....and that what was supposed to be one short summer,

Contact Us

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would turn into twenty-eight years! After three seasons of field data collection, Gretchen found herself doing a variety of jobs, like photo-interpretation, reconciling ownership figures, contributing to state reports, working on compilation problems and assisting researchers with various studies. Many years later, she returned to graduate school, obtaining a Masters and PhD in statistics from Utah State University. Today, she leads the Techniques Research Team in the Interior West, and specializes in nonparametric modeling of forest vegetation with satellite imagery and biophysical information, as well as improving efficiency in forest surveys using advances in remote sensing technologies. She is heavily involved in a number of large collaborative efforts including the Monitoring Trends in Landcover Change (MTLC) project, related work using historic Landsat data to study forest dynamics under the North American Carbon Program, studies supporting the NLCD 2011 Tree Canopy Cover product, investigations into potential changes in western conifer distributions under different climate change scenarios, amongst others. Gretchen has served Associate Editor for the Journal of Agricultural, Biological, and Environmental Statistics, and as Guest Editor for Ecological Modelling. She is an active participant on FIA's Techniques Research Band, and an Adjunct Professor in the Department of Wildland Resources at Utah State University. She just completed her term as Chair for the American Statistical Association's Section on Statistics and the Environment, and recently began service on the Science Steering Group for the North American Carbon Program. Gretchen is always looking for creative ways to support her windsurfing and skiing addictions, and enjoys spending time with her husband of 23 years, 16-yr-old son, and two big, sloppy Newfoundlands.

Upcoming events...

Event	Location/Objectives	Date
National FIA Management Team Meeting	Kerrville, Texas Objectives of the meeting are to review the FY10 Band Workplans and discuss FY11 Band focus areas, provide updates on land cover, use, and change, soil, lichen and the National TPO proposal, biomass algorithm issues, and status of National FIA efforts concerning the Legacy Database.	June 22-24, 2010
PNW-FIA Client Meeting	Sacramento, California Objectives: Share information about changes in the PNW-FIA program, present information on research and project updates from internal and	September 22, 2010

Event	Location/Objectives	Date
	<p>external partnerships, and assess how we can better meet needs for inventory data, research, analysis, and reporting.</p> <p>To register and receive additional updates, location, and agenda information, please send an email of interest to: PNW_IRAM@fs.fed.us</p>	
<p>FIA.edu: A workshop to facilitate the use of FIA data</p>	<p>Sacramento, California</p> <p>Objectives: Present an overview of FIA and the objectives of the inventory, introduce database concepts, demonstrate national FIA tools for summarizing and downloading the data, demonstrate locally developed tools (PNW-FIADB: a user friendly Access database), and hands-on analysis working with the FIA data (bring laptop with MS Access 2007)</p> <p>To register and receive additional updates, location, and agenda information, please send an email of interest to: PNW_IRAM@fs.fed.us</p>	<p>September 23, 2010</p>
<p>Broadcast of the "Lichens" episode of Oregon Field Guide</p>	<p>Oregon Public Broadcasting</p> <p>Objectives: Lichenologist Sarah Jovan (PNW-FIA) and Linda Geiser (Region 6 Air Program) will be featured by Oregon Public Broadcasting in an episode of Oregon Field Guide. The segment includes beautiful lichen footage from the Wind River Canopy Crane,</p>	<p>September 2010</p>

Event	Location/Objectives	Date
	<p>discussion of pollution effects on lichen communities, and overview of lichen-monitoring efforts by the FIA Program. Viewers outside the Northwest can access the show on OPB's website in September (http://www.opb.org/programs/ofg/)</p>	
<p>FIA Symposium 2010: Monitoring Across Borders</p>	<p>The Symposium will be held in Knoxville, TN.</p> <p>The FIA Symposium 2010 Organizing Committee is excited to announce: "Monitoring Across Borders." The Symposium's goal is to exchange science across borders in the broadest sense. Specific objectives include highlighting cutting-edge mensuration, modeling, issue-focused analyses, policy and management examples, collaborative efforts, and communicate to the broader domestic and international inventory and monitoring community.</p> <p>The Symposium (http://www.fia.fs.fed.us/symposium) is a joint venture with the Southern Mensurationists (http://www.mensurationists.com/soma/mainframe.htm).</p> <p>Contact: Will McWilliams, wmcwilliams@fs.fed.us, 610-557-4050.</p>	<p>Deadline for submissions is July 23, 2010.</p> <p>The Symposium will be held from October 5 to 7, 2010.</p>



Safety at work...

Interior West Research Station

By Devon Donahue, IW-FIA Safety and Occupational Health Specialist

IW-FIA is synonymous with remote backcountry and long-distance hiking. With less road access than most areas, IW employees hike many miles in steep and rugged terrain each field season. In fact, the three most "remote" locations in the lower 48 states are in southeast portion of Yellowstone in Wyoming, the Bob Marshall Wilderness in Montana, and the River of No Return Wilderness in Idaho. Not surprisingly, over 45% of our reported field incidents resulted in injuries involving knees, ankles, and or feet. To help decrease the stress on employees' joints, increase balance, and ultimately decrease slip, trip and fall type incidents, IW started issuing trekking poles to employees in 2007. Since then, there has been a steady decrease in the number of and severity of injuries involving knees, ankles, and or feet and a reduction in missed work days and restricted workdays. Also to help prevent more of these types of injuries, IW sought assistance from a sports physical therapist. Clay Sniteman, an athletic trainer for the World Tennis Professionals (WTP) and Weber State University Athletics, presented an excellent active training session on knee and ankle injury prevention tailored to our hiking activities. Below is a brief summary of his tips that you may find quite useful for preventing hiking injuries.

- Begin your day with dynamic stretching (active or moving stretching). End your workday with static stretching (stretch muscles while the body is at rest).
- Develop balance and IT (iliotibial) band strength.
 - Stand on one foot (without shoes) for a few minutes. Each week gradually increase time without losing balance.
 - Stand on one foot and turn head from side to side. Gradually increase time without losing balance.
 - Stand on one foot and close eyes. Gradually increase time without losing balance.
 - Stand with legs shoulder width apart. Lift one leg behind and balance on other leg. Extend arms, bend at waist and touch ground. Return to upright position without touching foot to ground.
- Dynamic Stretches
 - Stand with legs shoulder width apart. Step sideways with right foot as if doing a lateral lunge. Bring left foot to right foot. Continue. Repeat stepping with left.
 - Stand with feet shoulder width apart. Step forward into a deep lunge until knee touches ground. Pull ankle towards buttocks. Press hips forward.
 - High knee walk. With each step, lift knee and pull to chest; rise up onto toes of standing leg.
 - Stand with legs shoulder width apart. Rise up onto toes. Lift one leg. Lower heel to ground.

Forest Service Safety Website

Please click on the following link for the Forest Service safety website. It contains lots of safety information, as well as the links to other good safety websites.

<http://www.fs.fed.us/safety/>

Pacific Northwest Research Station

By Jodee Hogg, PNW-FIA, Fleet, Equipment, and Safety Manager

The Pacific Northwest Research Station Forest Inventory and Analysis Data Collection crews are currently using SPOT Personal Tracker units. This is the world's first Satellite GPS Messenger device. It provides location-based communication, in times where both Cellular and Satellite phones do not work, between field personnel and office staff. These systems can initiate search and rescue systems or simply check in with an "I am okay" message. The messages are delivered to supervisory staff using either a cell phone text message or an email. These units are used as a tertiary way to ensure the safety of Data Collection crews when on the job in remote areas. For more information about the SPOT Personal Tracker visit www.findmespot.com.

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