The Forestry Source

News for forest resource professionals published by the Society of American Foresters May 2014 • Vol. 19, No. 5

IN THIS ISSUE

DEPARTMENTS

Jerry Franklin: Forest Is His Middle Name

By Steve Wilent

At 77 years of age, Jerry Forest Franklin is as passionate as ever when it comes to forest research. He exhibits the drive and energy many men and women half his age wish they had. I witnessed this myself earlier this year, when Franklin spoke enthusiastically to my forestry and wildlife management students at Mt. Hood Community College about his vision of an "ecological forestry" for federal lands in Oregon, which he developed with K. Norman Johnson, a professor at Oregon State University's College of Forest Resources (see "Does Federal Forestry Have a Future in Spotted Owl Country? Professors Jerry Franklin and K. Norman Johnson Say 'Yes,' *The Forestry Source*, November 2011). Franklin, who lives near Seattle, Washington, spent most of a day in traveling to and from the college, just east of Portland, Oregon—just to give a one-hour talk.

The trip was nothing out of the ordinary. Franklin and Johnson have made numerous visits over the past few years to southwestern Oregon, where a handful of pilot timber sales on Bureau of Land Management (BLM) land, designed based on their principles, are in progress. In meetings with the general public, city and county governments, civic organizations, and other groups, the pair have sought to explain and win support for their assertion that timber harvesting on federal lands in the Pacific Northwest is needed as a means of countering a demonstrable shortage of early-successional habitat. A recent meeting with environmental activists who were occupying a timber-sale area on one of the pilot projects, Franklin told me, didn't win any converts.

Jerry F. Franklin recognized this tree at Mt. Hood Community College in Gresham, Oregon, as a Spanish fir (*Abies pinsapo*), having seen the species during his travels in Europe.

Before his presentation at the college, Franklin and I sat down to talk about his career, his role in developing the Northwest Forest Plan, and his efforts to promote a new brand of forest management on federal forestlands—a response, in part, to the unintended consequences of the plan. Franklin, an Oregon native,

(See "Franklin" page 3)

Study Documents Economic and Other Benefits of Community Forests

By Joseph M. Smith

Prompted by changing ownership pressures, in 2005 the town of Errol, New Hampshire (population ~ 300), located in the northern part of the state not far from the Canadian border, purchased 5,269 acres of forestland to create the 13-Mile Woods Community Forest. In 2009, the town added another 1,839 acres, growing the forest's acreage to 7,108 and increasing its investment in natural resources and tourism. All totaled, the town paid more than $4 million for the parcels and, according to the Collaborative Forest Partnership, it was a wise move.

Earlier this year, the collaborative—a partnership among the Northern Forest Center, Trust for Public Land, and the Quebec Labrador Foundation—released a study, *Economic Impacts of the 13-Mile Woods Community Forest in Errol, New Hampshire*—which concluded that the

(See "Community" page 4)

Courtesy of Northern Forest Center

Community leaders show off a portion of the new snowmobile trail created within 13-Mile Woods Community Forest.

Genome Sequencing Gives Researchers a Map to Resilient Forests Improved Varieties

By Joseph M. Smith

In January 2011, the University of California–Davis (UC Davis) announced that it had received $40 million in federal grants from the of US Department of Agriculture's National Institute of Food Agriculture (NIFA) to develop climate-change-tolerant plants and new bioenergy sources. About $25 million of that money went to a team working to develop new varieties of wheat and barley, and $14.6 million went to UC Davis forest geneticist David Neale to head a team working to sequence the genomes of loblolly pine and two other conifers.

Three years and two months later, the university announced on March 20 that the "massive" genome sequence of the loblolly pine had been completed.

It was big news, and not just because of the genome's size, which UC Davis researchers and others say is approximately seven times bigger than that of the human genome and the largest genome sequenced to date.

The sequencing of the genome is a significant achievement because loblolly pine is a significant species. According to the US

(See "Loblolly" page 6)

MANAGEMENT TOOLS

Grounding a Vision: Timberlands, William E. Schlosser, and FRASS

FRASS creates a virtual cutting-edge tool for today's real forestry world.

By William L. Wagner

Sales in the world market are not sales; they are returns on long-term investment. What matters is the total return over the lifetime of the investment.

—Peter Drucker, 1989

No matter how inefficient or ineffective their biophysical layout, over a period of time, growing forests create things—they are living multiproduction facilities. To a person interested in the "dismal" science—economics—the tree and the land on which it grows represent both capital and output. Like a factory, they produce a variety of products at various times in their lifecycles. Needless to say, the multiproduction biofacility has economic value. Speculators are often interested in the market value of the land and standing timber. Investors, on the other hand, are interested in the forest's propensity to create wealth over the long-term.[1]

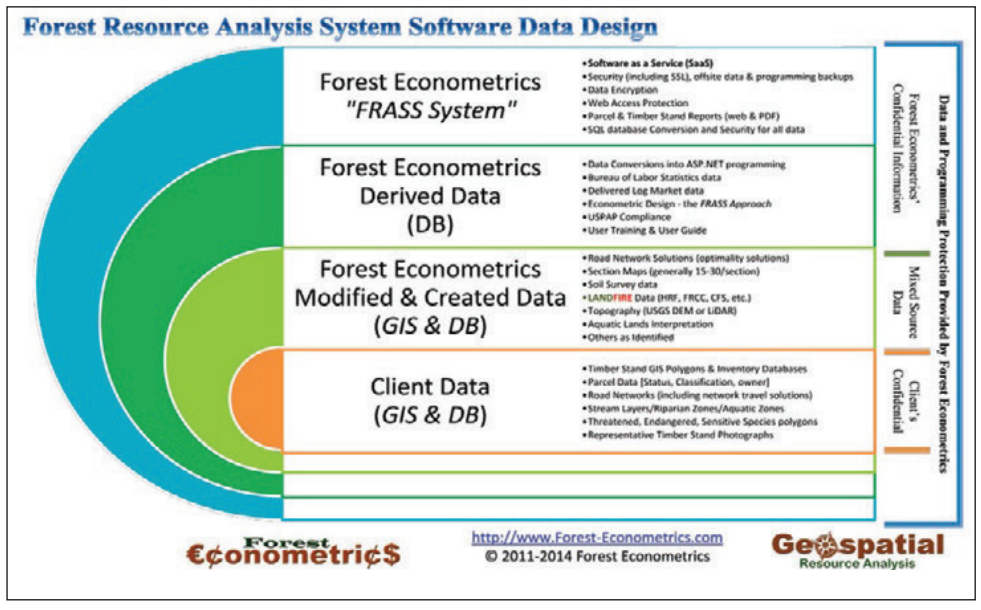


Figure 1. Forest Resource Analysis System Software (FRASS) integrates financially optimal timber rotation timing with land appraisal techniques using the income capitalization approach to asset value—one timber stand at a time.

Foresters need to understand all the values associated with their management strategy for forested estates as a measure of the quality of their professional woodsmanship. One key measure they ought to examine is whether their strategy maximizes the economic value of the forest estate, if for no other reason than as a report card on the progress of management to the forestland owner. With those thoughts in mind and an eye to the possibilities of expanding my consulting business, I attended a seminar titled, "Financial Analysis for Resource Managers" in Olympia, Washington, in March 2013. The course was taught by a professional forester and forest econometrician, William E. Schlosser, PhD, who focused on the data, types of analysis, and strategies needed to make accurate economic decisions about renewable resources.

On the second evening of the course Schlosser introduced a Software-as-a-Service (SaaS) program that he had designed and implemented to analyze economic characteristics of forestlands from the timber management perspective: The Forest Resource Analysis System Software (FRASS) combines forest inventory data, a large and integrated financial database that uses real rather than nominal price trends in delivered log markets, physical site characteristics, road networks, and zoning for riparian areas and for threatened, endangered, and sensitive species. The program produces financially optimal timber rotation determinations for parcels into perpetuity, as well as bareland values, where timber production is the "Highest and Best Use." It looked like a one-stop shop for the forest land decision-maker, so I decided to learn more about this approach.[2]

The Timberlands Investment

The economic characteristics and opportunities of timberland investments are much like the more classical cases of stocks, bonds, and real estate. However, timberland offers some unique benefits that elude more traditional investments. For example:

1. Returns from timberland appear to be negatively correlated with returns from equity and fixed-income assets (Conway, 1989). Thus, an investor has the ability to diversify risk in an investment portfolio by embracing long-term timberland investments.

2. Further, while the value of forests have tended to increase faster than the rate of their biological growth, timber round-log delivered prices within the western Washington markets have been in a devaluation cycle, in real terms, for the last 25 years.

3. The devaluation trend of delivered log prices in the western Washington market may have bottomed out. Since June 2009, in real price terms, these log prices seem to be in a real price appreciation phase.

4. If there is a short-term decline in the forest's economic value, it can be held on the stump and it will continue to accumulate biological growth.

Timberland investment is weighted by at least four factors: biological growth in terms of products being "biofactured," the price of products grown, the change in land value, and the investor's need to diversify risk in the investment portfolio. A special study in November 1989 for the Stratford Advisory Group suggested that investment returns on timberland are aptly stated by the following portions:

1. Timber price: 30 percent
2. Biological growth: 60 percent
3. Land value: 10 percent

These ratios are presented for a period before 1989 and require constant reassessment to be up-to-date. In the typical timberland "factory," economic returns are generated both by revenues from the sale of forest products and from the surplus value of the land. Revenues from the forest products are the market price obtained minus the costs of harvest, delivery, payments to capital, taxes, and profit. Estimating revenues encompasses a number of variables, including:

1. Market price that varies by species, product, grade, and demand
2. Harvesting costs that vary by product size, volume per unit area, location, and logging system
3. Transportation costs that vary by distance and road class
4. Profit that varies with risk due to type of harvest operation, cost of capital, the location, and the size of the operator
5. The land expectation value that is related to the productivity of the land and potential future forest products

The presence of such a large number of apparently unrelated variables confuses financial assessments and decision-making processes. These variables often increase the probability of error in estimating the benefits and costs in the financial management of forests. Many errors can be minimized in second-growth and plantation forest stewardship. During the lifecycle of a forest, the variety of products generated are predictable as to amount and quality, but determining accurate economic value and setting strategic event timing remains elusive. Timber harvesting and delivery costs can be estimated for most forested properties, but often are misinterpreted in real cost terms.

The need to identify and determine high-quality estimates of these variables is the force driving the FRASS timberland management tool.

The Grounding of William E. Schlosser

Bill Schlosser was born in Washington's Puget Sound area and spent his pre-university days working an array of jobs, including collecting non-timber forest products, Christmas tree culture, bough cutting, and logging. He worked as a choker setter, landing sawyer, slasher, and tree planter on Washington's Olympic Peninsula. If you ever worked the woods over on the "wet side" of the state, then you understand why Washington State University (WSU) on the dry, eastern side of the state looked so attractive to Bill.

While at WSU he worked with the biometricians at the US Forest Service's Rocky Mountain Research Station in Moscow, Idaho, and was exposed to an early forest-growth–and-yield program by Al Stage: "Prognosis Model for Stand Development."

"What an amazing program!" Bill recalls thinking. "I would analyze stands on my 8088 PC to get 10-year interval PROGNOSIS runs made for 200 years into the future. It would take about 15 hours to calculate and print one timber stand report! This was something new and amazing (that was only 30 years ago!)."

Compare that to what can be computed today in seconds.

While attending university, Bill worked as a consulting forester for Washington Timberland Management (WTM) and became a timber cruiser and land-use planner and an administrator of contract loggers. He cruised timber in Washington, Oregon, British Columbia, and Alaska. He was "young enough" that he became the leading company dweeb — the guy who knew how to turn on and use a computer. Not long after Microsoft launched its Windows operating system, Schlosser was using Toby Atterbury's Timber Ace software.

FRASS can increase long-term profitability at the parcel level by an average 18 percent as compared to traditional asset valuation techniques.

Bill went back to WSU for another year to earn a master's degree in natural resource economics. He then took a job with an Idaho consulting firm, Inland Forest Management (IFM), and stayed there for a few years, working with landowners to develop management plans in which he applied his forest-growth–and-yield interests, administered timber sales, and participated in fire management activities, including wildfire fighting and prescribed burning.

In 1992 Bill joined the faculty at the University of Idaho as an extension forester in Orofino, where he won national recognition by the National Woodland Owners Association in 1994 for the Best Forestry Video: "Forestland Taxes." He published several documents about forestland business management, including "Managing Your Timber Sale," "Federal Taxes on Your Forestland Activities," "Estate Planning," "Financial Analysis for Forest Resource Mangers," and "Selling Woodland Timber: Contract Decisions."

Bill started consulting in the Russian Federation in 1994, and in 1995 he accepted a demanding challenge and joined a project for the US Agency for International Development (USAID) in the Russian Far East city of Khabarovsk working with the Russian Ministry of Forestry, the US Forest Service, several international NGOs, and Russians eager to learn what perestroika could mean for the Russian Taiga. As the project's chief forester, he administered such projects as the building of a seed-breeding center, implementation of wildfire control techniques, and marketing non-timber forest products.

Bill later became the general director for an American/Russian Joint Venture (JV), involving harvesting timber from a large concession in the Far East and selling logs to Japan and Korea. It was a 24-hour-a-day logging operation with about 40 expatriots and 250 Russian laborers.

They built their own seaport and hundreds of kilometers of roads through the Russian Taiga. They were sending out about one river-ocean vessel every four days. The village they built was very remote; their Russian logging crews were refreshed every two weeks (half brought in and half trucked out).

At the JV, he developed administrative guidelines for production logging, trucking, scaling, and ship-loading crews that tied their pay to their production. Interestingly, his Russian experience is where he developed a model for cost tracking and production enhancements that he still uses. It also plays heavily in the road network solutions for road construction timing, distances, placement, and their impacts on logging profitability in the FRASS model.

In 1999, a company started by Bill and his wife, Birgit, was awarded another USAID contract to administer a new project focused on sustainable land use, management, and business development in an effort to reduce the negative effects of global climate change. The objectives of the project were achieved through work in non-timber forest products, forest management to enhance carbon sequestration, and assisting Russian lumber mills to improve lumber quality and find new markets for their milled wood. Although a success, in 15 months the project expired as goals were reached and budgets concluded.

After six years living and working in Russia, Bill returned to the United States to make his home in Washington State.

Home Again

Bill was recognized by his local Inland Empire Society of American Foresters as the Communicator of the Year in 2000 and earned a PhD from WSU in 2002. He then booked on with another consulting firm in Idaho, Northwest Management Inc. (NMI). While with the firm, he completed a few significant projects in the forest economics world. First, in 2004, he was retained by the Idaho State Tax Commission to rewrite the forest property tax code for the state. He brought forest industry representatives together with county administrators to negotiate long-term solutions for forestland property taxes. Schlosser's tax code bill was unanimously endorsed by the Idaho legislature and signed into law by then Governor Dirk Kempthorne. He was awarded the Inland Empire SAF's Forester of the Year in 2004 for "Outstanding Service to the Profession of Forestry."

Potlatch Corp. retained Bill in 2005 to prepare the company for its conversion into two companies: a mill owner and a real estate investment trust (REIT). During this project, he developed the real price appreciation forecasting criteria and the tools to make it work in a number of forestry applications.[3] He used the road network strategies he had earlier developed in the Russian Federation to apply to the Potlatch delivered log market pricing situation. The application of long-term price forecasting, cost accounting, inflation, and landowner discount rate setting were "comparatively" still in their infancy in forestry.

Bill left NMI after five years and with his wife restarted his own company, Forest Econometrics (forest-econometrics.com). While solving problems for their clients, Bill launched the initial designs for FRASS by teaming up with another resource economist, a database administrator, a web programmer, and a computer systems specialist to build a team with exceptional skills. Bill may not have realized it at the time, but in all the tasks he had performed up to this point, he was acquiring the experience that would culminate in the creation of the Forest Resource Analysis System Software as a resource-management tool.

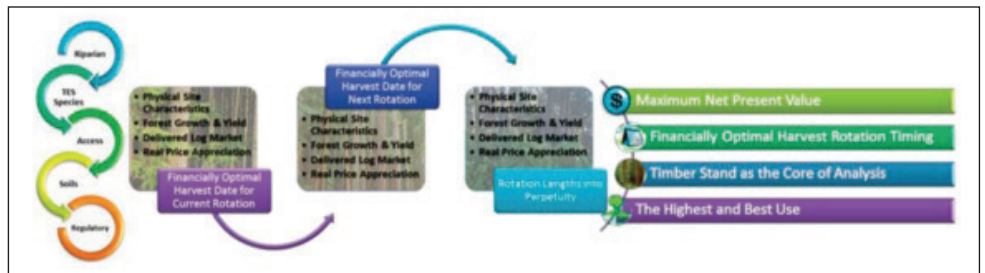


Figure 2. Multiple rotation stacking: FRASS's approach to harvest timing optimization.

FRASS

The FRASS program integrates financially optimal timber rotation timing with land appraisal techniques using the income capitalization approach to asset value—one timber stand at a time (see Figure 1). When carried out this way, the two approaches simultaneously realize the asset's financially optimal value. FRASS generates these solutions described in specific parcel reports using photographic, mapping, tabular, and other required data in property reports to generate an income capitalization approach for each parcel. Financially optimal harvest timing is found by combining real price appreciation trends of costs and revenues with forest growth and yield projections, resulting in intuitively organized information—one timber stand at a time on each parcel.

FRASS combines physical site characteristics, regulatory constraints, macro- and micro-economic trends of the log marketing areas of interest, and financial recovery options. Deriving the value of forestland in perpetuity has been possible since the Soil Expectation Value (SEV) was first generated by the German forester Martin Faustmann in 1849 to explain multiple-rotation forestland discounted value. Bare-land SEV and yield are products of analyses available to FRASS users—they are generated for each parcel as part of the valuation report.

As I looked into the FRASS approach to harvest timing optimization (see Figure 2), I watched how the software presented an analysis of the current rotation (Rotation 1), the next rotation (Rotation 2), and then all rotations in perpetuity as three separate stages of valuation, each with unique harvest timing opportunities. Bill discussed with me how this approach applies the economic realities of changing markets and price trends in "real" terms.

"Prices are never climbing indefinitely, nor are they dropping forever," he told me.

Bill described the price-prediction horizon for delivered roundlog markets as being associated with a "partially observable Markov-chain continuous-time with memory model, and its particular application for performing a 'random walk' in price forecasting." This is a price-projection technique developed by Bill and one of his team members, economist Phil Wandschneider of WSU. FRASS applies this "random walk" model to delivered log prices, logging costs, log trucking costs, and overhead and administration costs associated with timber harvesting activities on the parcels evaluated. Real-price appreciation forecasts apply equally to prices and costs, but the data sources are scattered into different segments of the economy, and all are guided by the economy's rate of inflation.

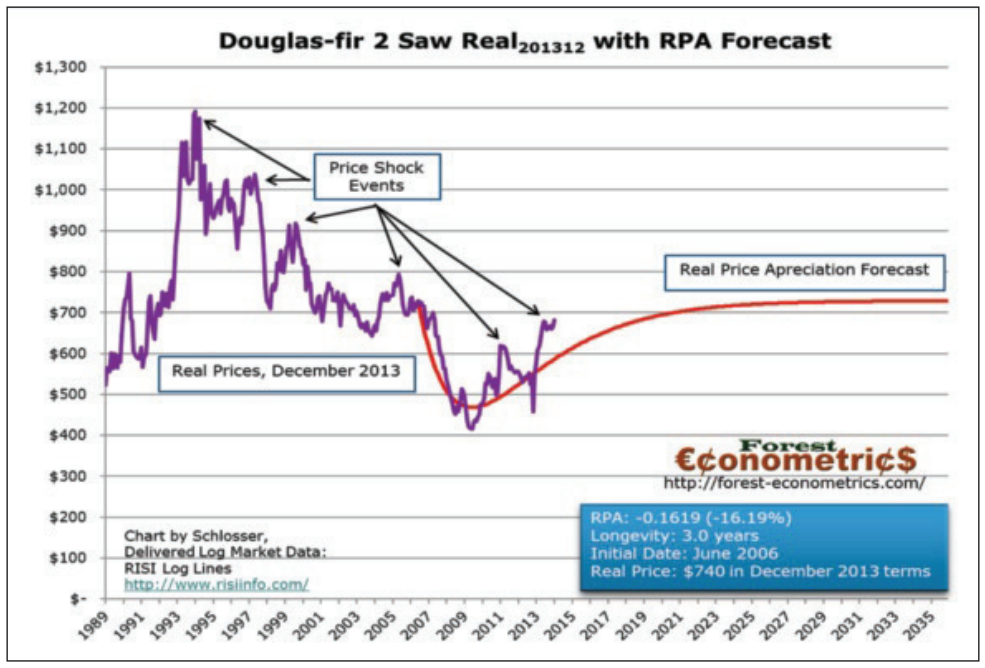


Figure 3. FRASS helps users recognize market behavior: long-term trends as different from short-term market shocks.

FRASS is built around economic variables pulled from a variety of sources, resulting in data interpretation through understanding real-time price formation events, which is extremely sensitive to factors of time and location. Grasping the phenomenon of real-price behavior and how it performs in time lets managers view a resulting curve formation and, through it, feel the financial "pulse" of their log markets. Over time, this gives users the ability to respond to time-specific changes in a trend to take advantage of "price peaks" by harvesting early, or "price troughs" by holding timber as the price shock passes, to retain financially optimal benefits in the managed asset. Recognition of these events is made possible by the formation of the real price appreciation forecasts made in FRASS for each log sort: This provides something extremely valuable that has not been accessible before now.

The Forest Econometrics website describes much of the FRASS program's design components and arrangements available to users through the SaaS Subscription format. Through this access point, you can gain free access into the FRASS demonstration site to explore how properties are arranged, described, blended with economic realities, and delivered to clients. This demonstration site uses actual forestlands at the University of Washington's Pack Forest, segregated into 40-acre parcels to demonstrate how solutions are made on each parcel. Each property collection in the demonstration is unique, and each landowner is motivated by different stimuli.

The FRASS program creates a unique portal to combine physical site characteristics, property details, economic realities, and landowner preferences onto a secure online access point. User property information is held confidentially, but users within the same account can share and edit each other's market portfolio projections before they are applied to properties. Full parcel reports can be generated to PDF files on demand (even on the demonstration site) to view how market portfolio assumptions impact harvest timing decisions and asset values. You can access the program from a desktop computer, thin client, or even a mobile device, as long as there is an Internet connection. The results all happen with real-time responses for property analyses. I recommend this approach and suggest that a FRASS subscription would be valuable for all forestland managers charged with managing the long-term profitability of the resource. Personally, I am hoping that a British Columbia version will be developed and launched soon around the Vancouver Log Market.

A Meticulous Approach

As you can see, I am highly impressed not only by Bill Schlosser's educational background and his professional experience, but also with his meticulous approach to accurate financial analyses. He has spent much of his time with his head in the clouds, but his feet are firmly on the ground. A recent test of the FRASS approach performed by Accountability Plus Inc. of Port Orchard, Washington, suggests that FRASS can increase long-term profitability at the parcel level by an average of 18 percent as compared to traditional asset valuation techniques. On some test parcels, the long-term profitability increase was as much as 30 percent.

FRASS delivers a single encompassing package of financially optimal forestland analyses. Supported with sound econometric projections, it helps users recognize market behavior—long-term trends as distinct from short-term market shocks (see Figure 3). It introduces real-price appreciation interpretation as an expression of economic life events to form actual price curves, as opposed to the illusory and deceptive trends of nominal prices. FRASS merges forest physical- site characteristics and forest-growth–and-yield data into a financial optimization package unparalleled in the forest industry.

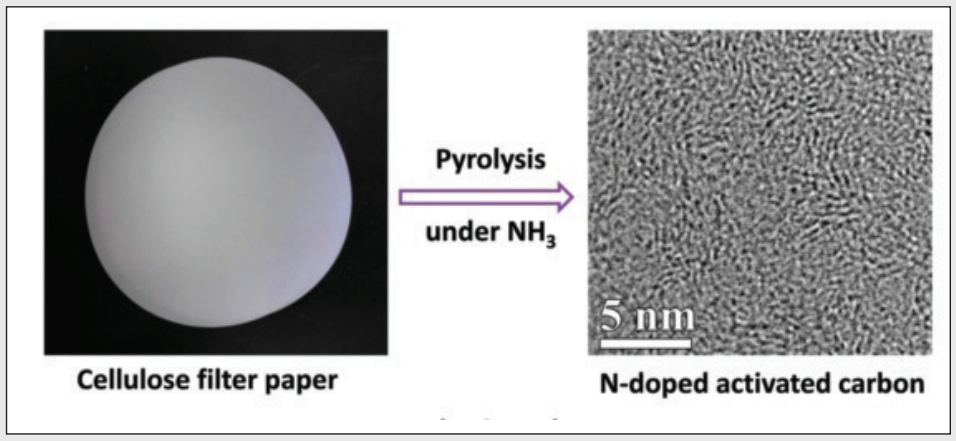
FRASS is a response to today's need to bring to a new level the way forestland managers acquire the information so necessary for more-profitable timberland management. Recent advances in technology have diminished the value of traditional analytical tools in today's forestland management; FRASS's approach in-

"FRASS" continued on page 15

Inexpensive Supercapacitors Made from Wood

Batteries made of wood? Yes, as was reported in *The Forestry Source* in "Science & Tech: Recent Forestry Research Highlights," October 2013, which described a means of using wood nanofibers and sodium as an alternative to the much more expensive lithium in large-scale batteries. Now researchers at Oregon State University (OSU) have discovered a new method for turning cellulose into a key component of supercapacitors, a type of energy storage device that can provide a great deal more power and be recharged much faster than batteries.

"We're going to take cheap wood and turn it into a valuable high-tech product," said Xiulei (David) Ji, an assistant professor of chemistry in OSU's College of Science and lead author of the study, which was described in a recent edition of *Nano Letters*, a journal of the American Chemical Society. "There are many applications of supercapacitors around the world, but right now the field is constrained by cost. If we use this very fast, simple process to make these devices much less expensive, there could be huge benefits."



Oregon State University

Researchers at Oregon State University have discovered that heating wood cellulose in the presence of ammonia turns the cellulose fibers into nanoporous carbon membranes.

According to the researchers, supercapacitors are typically used in devices that require rapid power storage and short but powerful energy release, such as the flash in a digital camera, a defibrillator, a hybrid electric automobile, or a crane or forklift. Supercapacitors also can capture energy that might otherwise be wasted, such as through automobile braking, and can store energy that may help "smooth out" the power flow from alternative energy systems, such as wind turbines.

The researchers found that heating wood cellulose—the most abundant organic polymer on Earth—in a furnace in the presence of ammonia turns the cellulose fibers into nanoporous carbon membranes, the electrodes used in supercapacitors. Nano-scale carbon membranes are extraordinarily thin—a single gram can have a surface area of nearly 2,000 square meters—a property that makes them useful in supercapacitors.

According to Ji, the supercapacitor industry is "roaring" and the annual market for them could reach as much as $11 billion dollars in the next 10 years. FS

PEOPLE IN THE NEWS:

Cheryl Adams, UPM Blandin forest ecologist, was recently promoted to forest resources manager. In her new position, Adams will oversee the overall management of Blandin's forestry operations, including the management of 188,000 acres of Blandin forestland and procurement of wood supply for mill operations. Adams, who assumed her new responsibilities on April 1, was also appointed to the mill management team. She joined UPM Blandin in 1999 as a forest ecologist, responsible for all land management activities on Blandin land, including habitat type mapping, developing silvicultural prescriptions for habitat types, planning, forest inventory, GIS maintenance, and forestry education for foresters in other organizations and nonforestry people. Prior to her arrival at Blandin, Adams worked as an instructor in forestry and natural resources at Itasca Community College; a natural resources specialist consultant; a land management officer with the Alaska Department of Natural Resources, and a soil scientist with the US Forest Service. She has a bachelor's degree in forestry and a master's degree in forest soils from Michigan Technological University. She joined SAF in 2014.

The Forest Resources Association's (FRA) Southcentral Region honored **Chris Erwin,** of the American Forest Foundation with its Second Place Technical Writing Award for 2014. This annual Award recognizes the best serial publications from FRA's quarterly magazine, the *Forest Operations Review*. Erwin, an SAF member since 2000, authored FRA technical release 13-R-21, "AFF Architect Tour Promotes Sustainability of Wood" while he was employed with the Alabama Forestry Association. The technical release shows how the Alabama Forestry Association and collaborators build architecture students' awareness of the structural, aesthetic, and sustainability advantages of building with wood. Single copies of 13-R-21 are available at no charge from FRA (www.forestresources.org).

If you have a personnel announcement for People in the News or an obituary for In Memoriam, please send it, along with a press-quality digital image, to Joseph Smith at source@safnet.org.

IN MEMORIAM:

Alan Lucier, National Council for Air and Stream Improvement (NCASI) senior vice-president, died March 27. Lucier led NCASI for more than 30 years, having joined NCASI in 1983 as research program manager, with responsibility for oversight of NCASI's nascent forestry program. He was promoted to director of NCASI's Forest, Environment, and Sustainability Program in 1990, and named senior vice-president in 1994. Lucier achieved an international reputation as a thoughtful and effective leader and spokesperson on numerous forest management and sustainability topics, most notably the role of forest carbon in greenhouse gas accounting. Among other leadership roles, he was cofounder and first board chair of the Institute of Forest Biotechnology, and he continued to serve on the board of that organization. He was also a member of the strategic planning committee for the 2014 World Congress of the International Union of Forestry Research Organizations, and member of the Steering Committee for the Northern Institute of Applied Carbon Science at Michigan Technological University. He also served as cochair of the Sustainable Forestry Task Group of the Agenda 2020 Technology Alliance, was a member of the National Commission on Science for Sustainable Forestry, and served as chair of the Forest Working Group of the Heinz Center's State of the Nation's Ecosystem Program. As senior vice-president at NCASI, he served as a spokesperson for the organization and implemented significant improvements to its research program planning process. He led and administered NCASI's forest environment and sustainability program throughout his long career with NCASI and designed and skillfully executed research programs on sustainable forestry, climate change, biomass energy, and forest wetlands, and the results of this research shaped policy and regulatory decisionmaking for three decades. Lucier received a PhD in forestry by North Carolina State University in 1982. He also held a master's degree in tree physiology and ecology from the University of Missouri–Columbia and a bachelor's degree in biology from Tufts University. He joined SAF in 1981.

Herbert C. Johnston, 89, died December 11, 2013. Johnston graduated from Washington State University (WSU) in 1950 with a bachelor's degree in forestry. Prior to college, he served in the US Army as a military policeman, then as an aerial gunner on a B-24 airplane. Johnston worked at the WSU tree nursery, on a US Forest Service trail crew, and planted trees on state lands while in college. After graduation, he went to work for the Washington State Forestry Service in Forks. He helped fight the Forks Fire, which stopped just short of burning down the town. The Milwaukee Land Company hired Johnston in 1951 as its Olympic Peninsula land manager, and, in 1975, he was promoted to the Seattle office as general manager of the company's timber holdings in Washington and Idaho. Johnston served as president of the Quillayute Valley School Board and was an active member of the Washington SAF's North Olympic Chapter. He was proud of the Olympic Chapter's forward thinking in organizing the forestry-learning day for Forks area fourth graders. He joined SAF in 1952.

Kern Ridlington died March 23, 2013. He served in the US Navy in World War II. After his honorable discharge, he joined the Reserve Officers' Training Corps and continued his education, graduating from the University of Minnesota with a degree in forest management. He entered the US Army as a second lieutenant during the Korean Conflict. Ridlington worked for the Iron Range Resource and Rehabilitation Company and was on loan to the Aitkin County Land Department, where he served as a forester for 23 years. During this time, he supervised the planting of 3,000 acres of trees and the creation of 352 miles of a snowmobile trail system. He was instrumental in the development of three campgrounds on the Mississippi River at Aitkin, Jacobson, and Palisade, and another on the Snake River. He was the first to build accesses and river trails on the Mississippi. His greatest accomplishment for the county and the most gratifying was his involvement in the organizing and building of the Long Lake Conservation Center in Palisade. In 1973, he was appointed to the Region III Arrowhead Environment Education Council by Gov. Wendell Anderson. That same year, he receivd the Munsingwear WCCO Conservation in Action Award. In 1980, he took a position in Park Rapids as district forester with the Department of Natural Resources and remained there until his retirement in 1987. Ridlington never lost his love of forestry, and until shortly before his death he wrote a weekly news article on forestry called "News and Views" for 16 newspapers, including the *Aitkin Age*. He joined SAF in 1957.

"FRASS" continued from page 13

corporates econometric tools of real-price appreciation predictions, operations research optimization (nonlinear optimization and sequential quadratic programming), and geospatial analysis techniques, along with the current economic realities of delivered log markets to create a virtual cutting-edge tool for today's real forestry world.

SAF member William L. Wagner is a registered professional forester and research economist based in Campbell River, British Columbia.

Endnotes

1. The theory of economic valuation is based on individual preferences and choices. People express their preferences through the choices and trade-offs they make, given certain constraints, such as those on income or available time. Market price is *not* the same as economic value. Market price is the maximum price consumers are willing to pay for the good or service.

2. Information used in this paper was gathered during discussions with William E. Schlosser over a two-month period in January and February 2014. It also included a three-hour online demonstration of the FRASS program and visits to the FRASS website at http://forest-econometrics.com.

3. Real prices are nominal prices with inflation removed. They are presented in a base-time reference. In FRASS, the base period is updated monthly. FS