



# The FORsight Resource

Volume 4, Issue 1

Q1 2007

## Upcoming Events...

Western Forest Economists  
42nd Annual Meeting  
May 7-9, 2007  
Resort at the Mountain,  
Welches, OR  
<http://www.masonbruce.com/wfe>



Decisions for Sustainability:  
Forest Estate Models for the  
Future  
June 12-14, 2007  
Victoria, BC  
<http://www.femc2007.net>



SAF National Convention  
Oct 23-27  
Portland, OR  
<http://www.safnet.org/natcon-07/>  
Save\_the\_date.pdf



## Inside this issue:

<b>Guest Author J. Brian Fiacco discusses timberland ownership change</b>	1
<b>ArcGIS 9.2.. Is it time to make the switch from 9.1?</b>	1
<b>Growth Model Review—FASTLOB</b>	2
<b>How times change! Top 10 forest land-owners in the US</b>	4

## The implications of land ownership change

*The timberland picture in the U. S. has changed dramatically during the past decade and clearly will continue to do so. The objective of this site is to monitor those changes and to think through their implications. Are the changes good or bad and who gets to determine what good is? As timberland shifts from industrial ownership to TIMOs, what are the implications? As TIMOs dispose of land, what are the implications? That's what I want to think about and to provide something of a forum for other's thoughts. What do these changes mean to investors, hunters, the forest industry, environmentalists, tree farmers, foresters and ordinary citizens who could care less but are none the less impacted?*

Feb 3, 2007 — The most important change in timberland today is clearly the shift in ownership from forest industry to TIMO's, government and NGOs. I have heard many comments suggesting that the shift to TI-

This month, guest author Brian Fiacco discusses some of the issues surrounding forest land tenure change from industrial to investor ownership.

MOs is a bad thing but, if we believe in capitalism and free markets, then we have to think otherwise. Good or bad, though, is like beauty - its in the eye of the beholder. One person would think that all of the IP lands that went to the Nature Conservancy was a great change. A mill owner needing hardwood sawlogs might not think it was so good!

But one thing is for sure,

things will be different and that is not just in the eye of the beholder. Let's throw out for thought what some of those changes might be. First, what about productivity of the land from the perspective of forest products. There is a lot that goes into this ranging from silvicultural investments to the length of ownership. The forest industry's ownership horizon used to be to own timberland "forever". Not so for TIMOs which normally have a relatively short time horizon and factor in the value of "flipping" HBU (Higher and Better Use) lands at the time of acquisition. I once bought a tract of land in Mississippi at a very favorable price because the owner felt that if he sold to a paper company he would never have to worry about having neighbors close by because the land was sold for building lots. Those days are gone. TIMOs are

*(Continued on page 3)*

## ArcGIS 9.2... Is it time to make the switch from 9.1?

ESRI rolled out its latest version of ArcGIS, version 9.2, a few months ago. In January, Service Pack 1 was released. There are many changes in the new version including new geodatabase formats, cartography and productivity tools, data management improvements, and application development enhancements. You

may be wondering, is it time to make the switch from 9.1 to 9.2?

Below are some of the usability enhancements for version 9.2 that may interest general ArcGIS users in the forestry community.

The handy **X-Y tool** allows the user to enter a coordi-

nate in any coordinate system (Longitude-Latitude, UTM, State Plane, etc.) and create a graphic point in the map. This tool also allows you to zoom to and pan to the newly created point, as well as, create a label for the point.

In the previous versions of *(Continued on page 2)*

# Growth Model Review—FASTLOB

	PARTICULARS
Author	Loblolly Growth & Yield Research Cooperative
Species	Loblolly Pine Plantations
Region	Coastal Plain & Piedmont of the U.S. South
Silviculture	Commercial Thinning & Fertilization
Model Type	Dynamic Link Library
Add'l Info	<a href="http://www.fw.vt.edu/g&amp;y_coop/loblolly.htm">http://www.fw.vt.edu/g&amp;y_coop/loblolly.htm</a>

FASTLOB was developed to project growth and yields for thinned and fertilized loblolly pine plantations. The model was developed using data from cutover, site-prepared areas throughout the Piedmont & Coastal Plain regions in the Southeastern U.S.

Required inputs to the model include age, site index (or dominant height), trees per acre and log rule. Optional inputs to the model include information about thinning and fertilization, stand basal area, drainage type (standard, poor) and percent basal area in hardwoods. Outputs include total stand basal area, number of trees and volume, total and merchantable volume by diameter class.

Simulations can include one or two thinnings at any time after age four.

The initial thinning may be a low (to target BA or TPA), row, or row-low thinning. The second thinning must be a low thinning. As many as four mid-rotation fertilization treatments of Nitrogen and/or phosphorus can be scheduled during the rotation after age four.

Single stand simulations can be made or multiple stand projections can be accomplished through batch processing. Merchantability limits are fixed to a 4 inch top diameter for the 5-8 inch class and to a 6 inch to for the 8+ inch classes. A size class distribution can be obtained for any age in a simulation. The stand is broken down into 1 inch diameter classes, displaying for each class the number of trees, basal area, cubic foot volume (outside bark), cords, green tons, merchantable cords and board feet.

## Some important considerations

The data used to develop FASTLOB did not include genetically improved stock so the user must determine how best to handle predictions as to the effects of genetics on future yields. In addition, care must be taken when simulating multiple silvicultural treatments in a stand because treatment effects are assumed to be additive. During model development interactions between treatments were not taken into account due to data limitations.

Sensitivity testing by the model developers suggested that FASTLOB provides reasonable estimates for one and possibly two fertilizations, but that using FASTLOB to simulate more than two fertilizations may not be appropriate, particularly at older ages. Finally, the data used to develop FASTLOB reflected site preparation techniques commonly used in southern plantation forestry in the late 1950's to early 1970's, and projections may be overly conservative relative to modern practice.

FASTLOB was implemented as a DLL for the GYST model interface and is compatible with Windows versions through XP. A free demonstration version can be downloaded from the Virginia Tech Loblolly Pine Growth & Yield Research Cooperative website.

## ArcGIS 9.2...

*(Continued from page 1)*

ArcGIS, calculating acres required applying the correct VBScript formula in the **Field Calculator**. Now it is as easy as opening the attribute table, right-clicking the column's name, clicking calculate geometry and choosing acres.

In version 9.2, users can add an Excel spreadsheet as a table. There is no need to convert that .XLS file to a .DBF file anymore.

The **Measure tool** has been completely redesigned. The old tool only allowed length measurements in the units of the

data frame. Now, length and area can be measured and displayed in several units, although chains are not one of the available options. The **Distance tool** can snap onto any feature (point, line edge, or polygon edge) in the map for precise measurements. Users can also click a feature (such as a polygon) and view its acres - even accumulate the acres across multiple features.

Version 9.2 allows the user to create and store **User-defined map scales** in the map scale drop-down. Instead of entering 1:15,840 (1 inch = 20 chains) in the map scale window every time the user zooms in/out, the user can add it to the default list of "quick scales" in the

map scale drop-down. It will then be available every time you are using ArcGIS.

These are just a few of the enhancements found in ArcGIS 9.2 (ArcView, ArcEditor, and ArcInfo). Most users will gain increased functionality and improved performance by switching to version 9.2.

One word of caution: Personal geodatabases created in 9.2 cannot be opened in previous versions of ArcGIS. A quick workaround to this issue is to export the data to a shapefile for those users with previous ArcGIS versions.

## Implications...

*(Continued from page 1)*

clearly more likely to capitalize on the HBU lands than industry did historically. This pulls forest land out of productivity (not a bad thing, just a fact).



Mt. Hood National Forest

Recently while attending a Tree Farm meeting I was listening to comments about how the TIMO sales of HBU lands to homeowners and hunters was creating a serious forest fragmentation issue which I suppose is somewhat true. What wasn't said is that these sales are also creating a wonderful opportunity to bring many more people into the Tree Farm System and to add to the political strength of those owning Family Forests. So there are pros and cons surrounding fragmentation.

Productivity is greatly impacted by silvicultural investments, particularly in young stands. I'm not sure how TIMOs compare to forest industry on that issue. I know some TIMOs that practice very intensive forestry and some that do minimal work and just hope the value increases. There is a big difference between TIMOs. But guess what - there was/is a big difference between companies in the way industrial land was/is managed. I'm not sure what or if there is a net difference.

In the area of basic research and developing and implementing technology, the TIMOs clearly fall down. The historically long term view of industrial firms is absent with the shorter time horizons of TIMOs and basic research is gone. TIMOs seem

to be very good at implementing proven technology if, and only if, the gain will show up in the next annual appraisal. Forest research must come from academia and government in the future, right? Maybe not. Capital markets will come to the rescue and provide the technology needed (you do have faith in capitalism!). As industry disposes of its nurseries and research wings, a new industry will emerge to provide those products and services (we are already seeing it develop) and my guess is that the new industry will deploy its capital more efficiently than has been done in the past.

Now let's think about fire control. As industry has sold land it has also disposed of, or significantly scaled back on the fire fighting assistance that it has provided to state fire control organizations. When the largest timberland owner in the U.S. sold its lands to TIMOs and NGOs, the seller no longer needed fire control equipment and it's pretty safe to say that the new owners had little interest in maintaining fire control personnel or equipment (somebody tell me if I'm wrong!). Now, what about our faith in capitalism and the thought that capital will flow to meet this need. Perhaps the faith is misplaced here and these new buyers (TIMOs, NGOs, Tree Farmers, homeowners, hunters, etc.) need to step up to the plate and provide very strong support for funding of state forest fire control organizations. That means through both lobbying and increased taxes on forestland focused 100% on improved fire control. This will not happen until after a major calamity. In the meantime, state fire control budgets will shrink (in real dollars) as government finds "better" places to allocate its expenditures.

So..., what's the net change in productivity as a result of all these changes? My guess, and that is all that it is, is that productivity goes down mainly as the result of a decline in productive acreage. That's bad. Or is it? Pulpwood demand has dropped significantly in the U.S. so maybe the productivity decline will be a good thing. Or maybe we will come to understand that people would rather eat than have gasoline made from corn ethanol. Or see timberland and wildlife habitat cleared for corn fields. Perhaps soon

a President will wake up to the fact that he/she has a nation with forests capable of providing ethanol (and other forms of fuel) and a very capable research team already in place that is capable of making it happen. Then forest productivity will once again be a major issue and timberland investors will be smiling. And capital will flow to forest research! and to silvicultural expenditures! and to fire control! But that's a thought for another day.

### About the author

J Brian Fiacco is a forester (A.A.S in Forest Tech. from Paul Smiths, B.S. in Forest Management from NC State and an MBA from Murray State Univ). His career began as a Land Acquisition Forester in WV & OH with the West Virginia Pulp and Paper Co. (Westvaco's predecessor) Temporary assignments included appraisals for land sales in SC, GA and PA.



Industrial forest land near Mt. St. Helens.

The next five years found him buying land in MS, TN, MO, IL, AR and KY, and then subsequently selling most of what we had purchased over those years. Between buying and selling, Brian was involved with land management and technical activities ranging from silviculture to IT management. Brian "finished" his career at the Forest Technology Group where his focus was on bringing GIS technology to the forestry community via the web. Brian regularly posts news updates and shares his thoughts on events in the timber industry at <http://thetimberlandblog.blogspot.com>.

## How times change! Top ten forestland owners in the US

As a follow-up to Brian Fiacco's discussion of timberland ownership change, consider how much things have changed since the turn of the millennium. Many of us remember the big industry names from the 1980's before the mergers (St. Regis, MacMillan-Blodel, Union Camp). Consider in 2000, the top ten forest land owners in the U.S. were:

1. International Paper
2. Plum Creek
3. Weyerhaeuser
4. Hancock Timber
5. Temple-Inland
6. Boise Cascade
7. Mead
8. Rayonier
9. Bowater
10. Willamette

Only 2 years later, the landscape had changed significantly with mergers of Mead and Westvaco, and Weyerhaeuser and Willamette.

1. International Paper
2. Plum Creek
3. Weyerhaeuser
4. MeadWestvaco
5. Hancock Timber
6. Temple-Inland
7. Rayonier
8. Boise Cascade
9. Potlatch
10. Sierra Pacific

At the end of 2006, the top-ten list shows the dramatic effect of the sell-off of industrial forest land, and the disappearance of stalwart industry names like Boise Cascade. New entrants have arisen by the sell-off of International Paper lands, and the TIMOs continue to jockey for position:

1. Plum Creek
2. Weyerhaeuser
3. Resource Management Service
4. Hancock Timber
5. Forest Capital Partners
6. Forest Investment Associates
7. Temple-Inland
8. Forestland Group
9. Rayonier
10. Timberstar

Any wagers on who'll make the list by year's end?

**FORSight Resources** provides world-class expertise to companies and agencies facing critical natural resource decisions. The company's offerings include forest planning, acquisition due diligence, forest inventory & biometrics, GIS & data services, custom system/application development and hardware/software sales.

### FORSight Resources Contacts:

#### Office Locations:

**Southern Office  
(Corporate Headquarters)**  
8761 Dorchester Rd., Suite 101  
North Charleston, SC 29420  
Phone 843.552.0717

**Western Office**  
3813 H Street  
Vancouver, WA 98663  
Phone 360.882.9030

**Northern Office**  
272 West Broadway  
Bangor, ME 04401  
Phone 207.945.3302

<http://FORSightResources.com>  
[info@FORSightResources.com](mailto:info@FORSightResources.com)



**Bruce Carroll - President & CEO**  
843.552.0717

**Greg Day - VP-GIS Services**  
843.552.0715

**Karl Walters - VP-Planning Services**  
360.882.9030

**William Boswell - Product Sales**  
843.552.0715



*World-class expertise for natural resources decision-making...*

## The FORSight Library...

### Forest Structure & Spatial Restrictions: Interactions & How They Affect Harvest Goal Achievement

Karl R. Walters. 2003

**Summary**– This presentation was given at the 2003 Symposium on Systems Analysis in Forest Resources in Stevenson, WA.

While most researchers concentrate on the development of algorithms or formulations that can solve spatial explicit harvest schedules, there has been very little discussion of the underlying causes for some instances to suffer little impact on PNV due to spatial constraints, while others have shown huge impacts.

In this study, I looked at different spatial arrangements of stands and the distribution of age classes across a forest. In each case, the forest strata and age-class distribution were identical, and so the spatial relaxation LP is an ordinary stratum-based harvest schedule common to all. However, the ability to find spatially

feasible blocked solutions depended heavily on size and distribution of stands eligible for harvest in a given period. Forests with heavy fragmentation (small scattered stands) suffered significant fall-downs in harvest achievement relative to the LP relaxation when the minimum block size became larger, but are relatively insensitive to greenup. Conversely, forests with large contiguous stands grew more sensitive to the size of green-up buffers as the green-up interval increased in size. Non-economic silvicultural practices that reduce green-up periods and thinnings may help mitigate difficulties that arise when spatial restrictions are significant.

For a copy of this slide presentation, visit our website:  
<http://FORSightResources.com/library/Walters.pdf>