CHASE Jeri

From: BIRCH Kevin R
Sent: Friday, January 04, 2008 9:07 AM
To: CHASE Jeri
Subject: FW: OG Paper
Attachments: Old Growth Paper 4.doc

Please put this in the FFAC folder.

From: Tom Partin [mailto:tpartin@amforest.org]
Sent: Thursday, January 03, 2008 11:33 AM
To: Kevin Birch
Subject: FW: OG Paper

Ross Mickey of my staff prepared the enclosed paper on Old Growth. I think it is very well done and I would like for you to share it with the Committee because I think it is timely for Monday's meeting. I will refer to it as part of my presentation on Monday.

Thank you in advance.

Tom

Failures of the Past
Hope for the Future

Ross Mickey
American Forest Resource Council

It was six men of Indostan
To learning much inclined,
Who went to see the Elephant
(Though all of them were blind),
That each by observation
Might satisfy his mind.
John Godfrey Saxe,
"The Blind Men and the Elephant"

Thus starts the famous poem that so aptly applies to the "old growth" debate. Just to remind you, the poem is about six blind men's encounter with an elephant. The first blind man feels the elephant's side and proclaims that an elephant is like a wall. The second touches the tusk and cries that it is like a spear. The third takes hold of the trunk and says it is like a snake. The fourth feels the knee and says it is like a tree while the fifth touches the ears and declares it is like a fan. The sixth disagreed as he grabbed the tail and said it was like a rope. The poem ends with the following phrase.

And so these men of Indostan
Disputed loud and long,
Each in his own opinion
Exceeding stiff and strong,
Though each was partly in the right,
And all were in the wrong!

The old growth debate is littered with analogous situations. The foremost are that there is no agreement as to what old growth is, how much exists or how much existed in the past, though many proclaim "loud and long" that they know. There is also no basis for determining if we have too little, just enough or too much of it, whatever "it" is. Lastly there is no clear understanding of the importance of this thing we call old growth in the ecological, economic and social sense. Even though the entire subject of old growth is vague and ill defined, there is no lack of people adamantly proclaiming facts and positions as if they really know what an elephant is.

Old Growth…A Thousand Definitions

My literature search turns up scores of definitions of old growth – *scores.* (Franklin 1981, Franklin 1986, Marcot 1991, USDA 1993, USDA 1992, Potter 1992, White 1994, Jones 1988) These are usually based on sets of ecological characteristics such as tree species, plant association, geographical region, soil productivity, elevation, site class, and tree age and origin.

One would expect different definitions for different tree species but even when you narrow down the discussion to one plant association like Douglas-fir forests in the Pacific Northwest, there is still no agreement on how to define it.

In the most recent assessment of the status of old growth within the range of the northern spotted owl, the authors use three different definitions to estimate how much old growth might exist under each one. (Moeur 2005) Depending on which definition they chose, they found a difference in abundance, patch size and distribution of "old growth" Douglas fir in the Pacific Northwest.

The three definitions and estimates of how much old growth might exist under each were:

- Older Forest With Medium and Large Trees and Single- or Multistoried Canopies
  - 34 percent of forest-capable area (7.87 million ac ± 1.96 million ac)

- Older Forest With Medium and Large Trees Defined by Potential Natural Vegetation Zone
  - 30 percent of forest-capable area (7.04 million ac ± 1.93 million ac)

- Older Forest With Large Trees and Multistoried Canopies
  - 12 percent of forest-capable area (2.72 million ac ± 0.35 million ac).

Who gets to decide what the proper definition is? It appears that everybody does. This is why we have different definitions and abundance estimates from the U.S. Forest Service, the Bureau of Land Management, several universities, the Wilderness Society, the Society of American Foresters and many remote sensing contractors. Which one is right? Maybe the "blind man" knows.

The fact that there are so many definitions and that each definition is specific to a certain tree species, plant association, geographical region, etc., while being interesting to scientists and researchers, tends to overwhelm the general public and further muddies the water of the public debate. Newspapers and television reporting aren't conducive to clarifying complex issues. That is left to the PBS special series aired late at night. What sells on the evening news are 10-second sound bites that grab peoples' emotions. What you may hear are things such as, "We must stop the Forest Service from logging the last of the ancient cathedral forests. Call your congressman and tell them to defeat HR-XXX." It matters little to the local news reporter that no one has ever put a definition to "ancient cathedral forests," or that no one knows how much or where such forest may or may not exist or that no one can say if the Forest Service is logging any or all of it. Despite this, the news report is aired, the general public is outraged and donations pour into the group supporting the effort to "stop it."

But We Only Have 10% Of the Original Old Growth Left!

Some may say that this lack of a common definition for old growth is well and good but no one can argue with the fact that we only have a small fraction of "it" left. This notion is held to be intuitively obvious because we have been harvesting (and growing) trees since settlers moved

here. For some, this moment in history when settlers arrived is held as the standard for what we should have today or is used as the yardstick to determine how much we have lost. This, however, ignores many fundamental facts of ecological systems one of which is that ecosystems are always in a state of change. The condition of the landscape when settlers arrived could have been at a low, mid or high point in the natural fluctuation of the system. If we don't know where in the cycle the landscape was when settlers arrived, how can this be used as a reference?

A few studies have tried to determine how the amount and distribution of older forests have changed over time. These have been done in well-defined geographical regions, using clearly stated definitions and specific points of historical reference. The majority of these are based on post-settlement records. The problem with using this approach is that they only show us how things have changed over the last 150 years or so. This is a very short time frame when looking at long-lived species such as Douglas fir that can grow for 250+ years barring any catastrophic event such as windstorms and wildfires.

These studies give us no sense of how these landscapes naturally changed over the last 1,000 years or more. This longer time frame could represent about four natural cycles of a Douglas-fir forest. One study did look at a longer time frame using data from dendroecological and paleoecological studies to simulate temporal and spatial patterns of wildfires to model the historical variability of older forests in the Oregon Coast Range over the last 3,000 years. (Wimberly 2000) What they found there, I believe, is applicable to most forest types and regions.

> *"Our results indicate that the historical age class distribution was highly variable and that variability increased with decreasing landscape size. Simulated old growth percentages were generally between 25% and 75% at the province scale (2,250,000 ha) and never fell below 5%. In comparison, old growth percentages varied from 0-100% at the late-successional reserve scale (40,000 ha)."*

What does this tell us? First and foremost is that over the 3,000 years modeled, all of the older forests were replaced at least once. Over the course of 3,000 years every landscape smaller than 100,000 acres had either 0% or 100% older forests, *naturally*. It is only when you look at a very large area, >5.5 million acres, do you find that the low point goes from 0% to 5%. So, it was only within these very large areas that older forests may have persisted but only on a maximum of 5% of the area.

What I think this data also shows is that it is not possible to use the past as a template for suggesting what we "need" today. If we tried to do this, what point in the fluctuation between 0-100% would we choose as the baseline and why? This, incidentally, was the conclusion of Wimberly for forest areas less than about 500,000 acres in size.

> *"Our results suggest that in areas where historical disturbance regimes were characterized by large, infrequent fires, management of forest age classes based on a range of historical variability may be feasible only at relatively large spatial scales. Comprehensive landscape management strategies will need to consider other factors besides the percentage of old forests on the landscape..."*

So, how much "old growth" remains? 10%..50%..75%? The answer depends on what point in time and what scale you compare the past to the present. Is it reasonable to assume that there was a point in time that there was about the same amount of "old growth" as we have today? I believe the answer is a resounding "Yes."

Be wary of the "blind man" proclaiming that we only have 1%..5%..10% old growth left. You really don't know what point of the ecological timeframe they are touching or what definition they are using.

There are Definitions and Estimates… Then There is Reality

One thing that all estimates of the abundance and distribution of old growth have in common is that none of them actually use the definition they espouse to be using when they estimate how much exists today. This is confusing so let me give you an example.

One of the most recognized definitions of Douglas-fir old growth in the Pacific Northwest is found in PNW-447, a Research Note published by the USDA Pacific Northwest Research Station (Franklin 1986). This defines old growth Douglas-fir on western hemlock sites as "stands" (undefined by the authors) having the following characteristics.

- 2 or more species with wide range of ages and tree sizes
- Douglas-fir >= 8 trees per acre of trees >32 inches in diameter or >200 years old
- Tolerant associates >= 12 per acre of trees > 16 inches in diameter
- Deep, multilayered canopy
- Conifer snags >= 4 per acre which are >20 inches in diameter and >15 feet tall
- Downed logs >= 15 tons per acre including 4 pieces per acre >+24 inches in diameter and >= 50 feet long

All of these indicators are easily measured if you actually go out into the forest. A group of people in the woods would have a pretty good chance of being able to agree if the spot they were standing in met this definition (disregarding the lack of a definition of a "stand.")

But what happens when we try to determine how much of this type of forest exist over a very large landscapes? It doesn't take very long to realize that there is not enough money nor is it physically feasible to have all of the "stands" in that area visited by real people. So how are estimates made of how much of the PNW-447 Douglas-fir old growth there is? The simple answer is computer simulations, models, and statistical estimations. Most commonly, spectral images taken from space are analyzed and computer algorithms are written to estimate forest characteristic that are surrogates for the real definition. Clear as mud, right?

Satellite imagery and computer simulations don't provide much detail. Technology beamed from space does not, for example, tell us anything about the size or age of the trees we are observing, key factors used in most definitions. Eyes in the sky can tell us what species they see, how big the crowns are and a few other things but you have to actually *walk* the ground to determine whether or not all six characteristics of PNW-447 old growth exist there.

So how much PNW-447 Douglas-fir old growth do we have in the Pacific Northwest today – and how much did we have before white man began his western migration? Well, we really don't know but there are people out there who *think* they know the answer, and proclaim it "loud and long."

Just Save It

Now that 21 million acres of federal land in the range of the northern spotted owl has been set-a-side, how are we doing in protecting the "old growth" we have today? What was the number one cause for the loss of older forests in the last decade in the Pacific Northwest? Logging? No. Urbanization? No. The number one cause of habitat loss for the spotted owl and older forests was catastrophic wildfire. The Biscuit Fire in southern Oregon alone consumed 500,000 acres of forestland, mostly in Wilderness Areas and "late-successional reserves" created to "protect" these areas. Large areas within this burn were classified as "old growth." The Forest Service estimated that 68,000 acres of spotted owl nesting and roosting habitat and 51,000 acres of spotted owl dispersal habitat were lost in the fire as well as 20,341 acres of critical marbled murrelet habitat and 131,604 acres of critical spotted owl habitat. (USDA 2004)

Why did this fire consume so much acreage? The major factor was the unnatural buildup of flammable material, i.e. too many trees and too much brush. Some of the reasons that this situation was allowed to develop are that active management is prohibited in Wilderness Areas and there was a lack of funding to pay for the needed fuels reduction work. In recent years, this problem was compounded by the fact that little or no management occurred in the Late-Successional Reserves created to protect the forest that ended up in ashes. The result of these policy decisions to "save" the area was that it burned down.

I Just Want To Make Sure That We Will Always Have It

What is the best way to ensure that there will be older forests in the future? The answer one hears the most is to set-a-side all of the existing "old growth" in reserves. Within the range of the northern spotted owl, the U.S. Forest Service and Bureau of Land Management developed a management plan, called the Northwest Forest Plan, that set-a-side huge blocks called "late successional reserves." These large blocks are not 100% "old growth" but the idea was that they would grow into such over time. Based on this management scenario, the agencies estimate that the amount of "old growth" would increase from 8 million acres to 10.7 million acres in 50 years. While this is good news for those people who believe that we are on the deficit side of our old growth needs, it is a shortsighted approach. As one researcher put it, "(F)orest preserves are not like strawberry preserves."

What this means is that dynamic forest ecosystems cannot be held static like strawberry preserves. With strawberry preserves, you can be fairly certain that the contents will remain unchanged as long as the jar is not opened. Forest ecosystems are in a constant state of change. The forest you walk into today will be vastly different from what will be there in 50-200 years. What will be the likely outcome of the millions of acres of federal land now in reserves? It is an

absolute certainty that given enough time these older forests will die either by catastrophic wildfire, wind throw, insects and diseases or other ailments related to old age.

People tend to forget that all old forests were formerly young forests and all young forests were started by seed taking root in soil. The only way we can be assured that we will have old forests tomorrow is to continually start new ones today. The only way to have new forests is to have them start out as seeds in bare soil. The reserve system of management relies on unpredictable events to create new forests. Thus, there is no way to predict how much older forests we will have in the future. If we really want the best chance of having older forests forever, we must manage our lands to achieve that goal and continually create new ones.

What would this look like? A healthy forest, one with trees that have high crown to height ratios and adequate space to grow, has a much greater likelihood of achieving old age than an unhealthy one. Since we have removed natural fire from the ecosystem, hundreds of thousands of acres of our federal lands are in an unnatural state, far too dense to maintain their vigor, waiting to explode in an uncharacteristically large catastrophic wildfire. Many scientists believe that these dense forests may never develop the characteristics described in PNW-447 (USDI 2003). These lands must be managed if they are to develop the characteristics found in the "old growth" forests today. They need to be mechanically thinned and the residue treated so that there are enough nutrients and water to support the remaining trees. Then, we need to continually create new forests.

This type of an approach, however, will meet great resistance by those who want to perpetuate the myth that somehow a tree that sprouted from a seed that fell naturally from a tree is superior to a tree that was grown from the same seed in a nursery and is then planted in the woods. There are those who want us to believe that nature should be left to take its course without human intervention. This course of action would be taken by very few people if it pertained to letting a natural disease take its course without a doctor's intervention. I, for one, will go to the doctor if I am sick and I will do as I am instructed.

It is time to let the forest doctors, called silviculturalists, do their work. Tell them what forest condition you want on what proportion of the landscape and they will tell you how best to achieve it. The current mode of locking forests up and walking away is doomed to failure.

Now is the time for action. We cannot wait for the scientists to agree on a definition or for the federal government to allocate billions of dollars so we can finally do a REAL survey to see how much we really have. Even if we did, we have no yardstick to use to judge where we are on the continuum of "the historic range of variability." Neither can we look to "old growth" species to give us the answers. The spotted owl has shown us that. We have to stop going to the "blind men" for answers. I think the authors of *A Conservation Strategy for the Northern Spotted Owl 1990* (Thomas et.al. 1990) say this very well.

> *We were asked to do a scientifically credible job of producing a conservation strategy for the northern spotted owl. We have done our best and are satisfied with our efforts. We have proposed. It is for others - agency administrators and elected officials and the*

people whom they serve - to dispose. That is the system prescribed in law. It seems to us a good one. We can live with that.

Frankly and bluntly we must chose between (1) managing the forests for the values *we* place on them, and (2) walking away and allowing them to develop "naturally." Remember, Mother Nature is not always kind. Ask the wildlife that was either killed or driven out by the 500,000-acre Biscuit Fire. Ask the folks in New Orleans.

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