

Self Guided Aspen Conifer Tour Map



Beaver

Hwy 153

Detour

1

2

3

4

5

6

Eagle Point Resort

Hwy 153

Junction

Image State of Utah

Google earth

Aspen/Mixed Conifer as Biomass?

This discussion and self-guided tour of the Aspen/Mixed Conifer Forest is meant to bring about awareness concerning the ecological state of these forests, possible treatments to sustain the aspen communities in the long run, and the amount of biomass that could be available. If you just want to take a beautiful drive and enjoy the scenery of the forest as you travel to Eagle Point, stop reading here and enjoy the drive. If you want to challenge your intellect and learn about an option to solve a large problem across the West then please, read on, and enjoy the discussion as you enjoy the scenery.

From my perspective this is a great opportunity. I have the attention of some of the best minds in relation to biomass utilization, and I get to have a one sided conversation.

This “Tour” starts at the beginning of the **Kent’s Lake Road (FR 137)** which is where the detour to Eagle Point and the Biomass Summit turns off of Highway 153, mile post 10. **Set your odometer to 0.0 at this point.**

For the first four miles you will be traveling through a mix of private and public property. Notice the thinning and limbing of vegetation, adjacent to the road, to improve fire management opportunities. Public and Private landowners have made a tremendous effort, with my compliment, to sustain a healthy forest and protect the developments.

Stop 1, mile 4.0 - View Tushar Lake and the forest landscape.

Taking this forest, across the lake, as an example of the aspen forests in the West; I see a huge need for treatment and a great opportunity to put people to work in the woods. This is not meant to be political or critical of the current activities and management actions of the US Forest Service. I know from personal experience (retired Forest Service) that there are continual management actions taken to restore these aspen communities. I compliment the efforts made to remove hazard trees and the significant fuel loads from this very popular campground. Most efforts at this point are focused around the highest values at risk (ie; this campground and the housing developments we have just seen). However, we all understand there has not been enough public funds (whether City, County, State, or Federal) appropriated to pay for the critical need to protect these communities, let alone forest health treatments (mechanical or fire) these forests need to be sustainable. Your knowledge and understanding of the economic value of this material (Biomass) is integral in finding a way to pay for forest health treatments and restoration of these aspen communities.

Please see the following excerpts, from peer reviewed publications of scientists that know these forests well, regarding Aspen/Mixed Conifer forest, its human and ecological values and its successional processes.

(For those of you who already have a good understanding of Aspen/Mixed Conifer forests along with many of the issues surrounding them, please feel free to skip and move on to stop 2)

As you read, it becomes apparent that this issue exists across the western United States, not just in this watershed.

A Forest Service publication, *Sustaining Our Aspen Heritage into The Twenty-first Century*; (Charles W. Cartwright, Jr., Regional Forester & Denver P. Burns, Director, Rocky Mountain Research Station) describes the ecology and intrinsic values of aspen. They start with an individual's personal experience that may be similar to yours.

"As a child, I looked forward to our family's fall trips into the mountains of Arizona and New Mexico to camp, picnic, and sometimes just drive for hours on end. The highlight of these trips was the riot of color the aspens made. We left the southwest 25 years ago --- in June 1985. When I returned late last summer, I looked forward to taking my son and daughter on the same type of fall excursions I remembered so well. I wanted them to hear the aspen leaves rustle in the wind and watch as gusts created small storms of gold to cover the picnic blanket with the last bits of summer's produce.

We took two trips in October, the first to southern New Mexico south of Cloudcroft, and then to the San Francisco Peaks by Flagstaff, Arizona. I know that memories are sometimes more vivid than life, but the forests seemed to have changed. There was still color in the forests, but the gold, yellow, and reddish tints of the changing aspen leaves were muted, hidden, and sometimes almost choked by the deep forest green of the intermixed conifers. Often, groves I remembered as populated with stately aspen trees were now mostly douglas-fir or white fir. Here and there, the aspen appeared to have just grown old and died. In a few places where there were no young aspen, the fallen skeletons of the previous forest littered what were now grassy meadows. What happened to my aspen heritage? "

"Does this really portray the future of our aspen forests in the Southwest? Is it likely, improbable, or even a possibility? We hope it is improbable. But it's possible because almost everywhere in the Southwest aspen typifies a young forest that gradually yields to conifer trees as the aspen stands age. Without fire or some other method to remove the conifers and return the forest to aspen, the forest's aspen component will gradually diminish and likely disappear. Improbable, because we are beginning to realize just how fleeting our aspen is and how fast we must act to retain it; either as a component of the conifer forest or as a forest of its own. Aspen is the most widely distributed native tree in North America. It forms extensive forests in western Wyoming, Colorado, Utah, and Northern New Mexico.....

Given today's climate, conditions favorable to aspen reproduction by seed are extremely rare. Aspen can produce viable seed but usually regenerate vegetatively through root suckers, stems that sprout from the roots of the parent tree. The result is a clump of trees, all identical in genetic composition. These clumps, or clones, can be as large as several acres. The largest have been estimated to cover as much as 300 acres. Most aspen stands represent a mosaic of a

number of individual clones. No one really knows how long an aspen clone can persist by vegetatively reproducing generation after generation.....

As clumps, stands, or entire forests, aspen has depended on fire for perpetuation through time.....Where aspen covers large acreages and no conifers exist close enough to provide a seed source, the aspen may exist as uneven-aged stands where the death of individual trees or groups of trees are replaced by suckers without the need of fire. The normal situation is for aspen to serve as a nursery or early successional stage for conifer forests. The natural ecosystem dynamics are for fire to periodically remove the conifers before the aspen has been completely replaced. This process can also be mimicked with a variety of tree harvest techniques designed to ensure aspen regeneration.....

Aspen forests and aspen stands within conifer forests provide important foraging, nesting, breeding, and resting sites for a wide variety of wildlife.....Aspen seed and buds are edible for a wide range of birds. Aspen communities also provide important nesting habitat for many bird species, both those nesting on the ground, as well as those nesting in tree cavities.....

Livestock, both cattle and sheep, and wildlife such as deer and elk, use small aspen trees and the lush understory of grasses and forbs typical of an aspen community. Aspen sprouts and suckers are so preferred that use by elk, sheep, cattle, and sometimes deer is often sufficient to impair or completely prevent aspen regeneration.....

Effective fire control for much of this century permitted development of denser forests with an ever increasing tendency toward catastrophic fires. If we were to continue the course of the recent past, we could expect more and larger catastrophic wildfires. These fires might burn up existing aspen but would promote aspen regeneration. This positive benefit cannot counter the negative impacts of a catastrophic fire. The large-scale and high intensity fires that once created our aspen are rarely desirable or practical....”

Fire has historically played a major role in sustaining healthy Aspen stands. Are we sure that relates to this location? In the publication, *Decline of Quaking Aspen in the Interior West, Examples from Utah*; Dale L. Bartos and Robert B. Campbell (Rangelands 20(1), Feb 1998) outline the fire history on Monroe Mountain, which is the next mountain range to the east. They state:

“Sixteen sites were evaluated to determine fire history of Monroe Mountain (Data on file with Linda Chappell, Fishlake National Forest. *A fire history study conducted on the Monroe Mountain Demonstration Area*, 25 p., 1997). In the Lower Box creek site near the Burnt Flat Analysis Area, two ponderosa trees were sampled in a stand of mostly Douglas Fir. Although only two trees were sampled, both were excellent fire recorders with 9 and 10 fires respectively. **Prior to 1838, the area burned on average about every 19 years. No fires have been recorded on the sample trees since 1838. Over 156 years of fire exclusion has created an unnaturally high fuel load. A fire in the area now would be much more intense than the more frequent fires of the past.....”**. They also point out “When aspen dominated landscapes convert to mixed-conifer, losses occur.”

For every 1,000 acres that convert:

(1) Some 250 to 500 acre-feet of water is transpired into the atmosphere and not available for streamflow or undergrowth production. (modified from Gifford, Humphries, and Jaynes 1984. A preliminary quantification of the impacts of aspen to conifer succession on water yield –II. Modeling results. Water Resources Bulletin 20(2):181-186).

(2) An estimated 500 to 1,000 tons of undergrowth biomass is not produced. Usable forage ranges between 40 and 70% of the undergrowth biomass.

(3) Numbers and kinds of plants and animals in the area decline appreciably. “

They have also identified five factors used to determine the risk of loss of the aspen landscapes. The factors are: “

- (1) Conifer understory and over-cover >25%
- (2) Aspen Canopy cover <40%
- (3) Dominate Aspen trees > 100 years of age
- (4) Aspen regeneration , 500 stems/acre (5-15 feet tall)
- (5) Sage brush cover , 10%”

Any of these factors may indicate that the landscape is not in properly functioning condition.”

Now, with that common knowledge in place let’s look at the forest across the lake. If we want to sustain Aspen, is it in Properly Functioning Condition? Without having done a specific stand survey, it seems that four of the above referenced risk factors are present:

- Conifer understory and over-cover >25%, and most of it is Subalpine fir. However there are some Ponderosa Pine, Spruce and Douglas Fir;
- Aspen Canopy cover < 40 %;
- Dominate Aspen trees > 100 years of age. From my personal experience and knowledge those very tall aspen with the large white trunks are at least 100 years old;
- Aspen regeneration, 500 stems/acre (5-15 feet tall). The only place that I see aspen 5-15 feet tall is where the vegetation has been thinned for purposes of the campground.

Stop 2- mile 5.6 – Take a look at the Aspen/Mixed Conifer Forest as you drive over the next couple of miles. This is a close view. Are the risk factors present? Do you see large amounts of forage production? I see minimal forage. How many young aspen 5 to 15 feet tall do you see? Also please recognize that most of the conifers are subalpine fir which has minimal to no value as dimensional lumber.

Stop 3-mile 6.4 - This is location provides a perspective of the extent of these Aspen/Mixed Conifer Forests and there condition ... Quite old and decadent! It is reasonable to think that much of this is too steep to treat mechanically. I agree in several cases. And that is where we

will need fire to sustain these Aspen types. However, much of this *could* be treated mechanically and has been logged in the past. So you may now say; “why not log it again”. Unfortunately, the timber that has enough value to justify a logging operation (ie; Ponderosa Pine, Douglas Fir, and Spruce) are minimally present and the conifer that dominates these Aspen stands is Subalpine Fir. Sub-Alpine Fir has minimal value and, from my experience, the only reason loggers take it is because they are required within the contract. I believe any logger you talk with will tell you the same. Again, your knowledge and expertise in the economic value of Biomass and how we can get value from this material while also sustaining these forest ecosystems for the other values they provide is critical.

I do not know the average tons per acre of biomass in these Aspen vegetation types but I am aware of a calculated estimate that determined that the average dry weight tons per acre would be approximately 26 tons. This is a lot of volume per acre!

Stop 4-mile 8.5 - Anderson Meadow. At this stop look up the small stream to the east (generally following the road). See the light green (maybe yellow) tops of the Aspen stand about ¼ to ½ mile east? In the early 1960s a range site analysis plot was established in that aspen stand. Remember from the earlier conversation that the understory of aspen can be large amounts of forage for livestock and wildlife, thus a range site. As that plot was established the recorder of information made note that several small conifers have become established in the area. 40 years after the plot was established, a range technician for the Fishlake National Forest was rereading specific analysis plots to determine long term trends of the herbaceous vegetation. This site had been randomly selected from numerous sites. However, as the technician tried to again conduct a range site analysis he noted this is no longer an Aspen stand. It is dominated by Spruce and Fir.

How fast things change.

Notice also, as you continue on that you have gained enough elevation that you are now traveling through a Spruce vegetation type. Yes, there are scatterings of other conifers and aspen but it is pretty much dominated by Spruce. This is a different type and is much more stable and self-sustaining than the Aspen/Mixed Conifer we have just traveled through. A spruce log still has minimal value and some forest health treatments can be accomplished through utilizing that economic value.

You will notice at about mile 12 signs on trees that indicate Timber Harvest Area. Near Lebaron Lake you may notice recent timber harvest activity.

Stop 5- mile 15 or so Betenson Flat - Stop in the middle of this parkland. Notice the small aspen stand to the west where the trees may be 20 feet tall. Is it different from most of the Aspen we have observed? The difference is that in 1958 a sawmill located just in the edge of the trees burned down starting a wildfire that traveled to the north. Look to the east. See the patches of young aspen surrounded by conifer forest. The patchiness and young aspen is the result of a wildfire in 1996 that burned approximately 8,000 acres to the east and north. The hill in the

middle of this parkland was dominated by Conifers prior to that fire in 1996. What do you see now?

Look beyond the hill to the north and east up on the ridge. You will see the effects of logging and mechanical treatments. Do these recently disturbed aspen stands surrounding this parkland have any of the risk factors discussed earlier?

From here drive another $\frac{1}{4}$ to $\frac{1}{2}$ mile to major junction in the road and be sure to turn west (left) toward Eagle Point and the Summit. Enjoy the wonderful Scenery as you drive.

Stop 6-West of the Lodge at Eagle Point - Directly across the highway from the entrance to the Lodge is Pinnacle Drive. Follow this to the ridge top, find a view point. Observe the Aspen/Mixed Conifer Stands to the west. Do they Have Risk Factors? *Again we appreciate your thoughts!!!* This is where the Forest Service is focusing their efforts for Aspen/Mixed Conifer restoration through prescribed burning. Treatments will minimize the threat of wildfire to these commercial and residential developments through fuel reduction, improve important wildlife habitats and help manage sustainable aspen forests. However, it is rare that all of the weather conditions, fire-fighting resources, and funding come together in a way that they can implement prescribed fire in this location. Again we need your ideas for Biomass utilization so we can all sustain our forests.

Thanks for listening.

Dayle Flanigan, Southern Utah Biomass, Board Member.