

Webinar Question Report: Answering Questions about the Appropriateness of Woody Vegetation Treatments	
Lunch and Learn Webinar, 10/30/2019 8:13:00 AM. Access webinar at: https://youtu.be/P40vLX_8YdQ	
Question	Answer(s)
Is it possible to remove with hand pullers before trees become too big and not have to use equipment. Has then been discussed about being pro-active vs. Re-active.	(Live answered as well.) Yes. Typically that is called a lop and scatter treatment, where small trees are cut with chain saws. It is more of a proactive approach, fire could also be used at this juncture but other factors such as loss of sagebrush be a concern. Your point about being proactive rather than reactive is important. This is why some land managers focus on Phase I juniper woodlands where most of the trees are still small.
Why do you think PJ is encroaching?	Changes to disturbance regimes. Fires (wild or initiated by Native Americans) often limited conifer expansion before we entered the suppression era of the 1900s. Also, changes in annual and longterm climatic conditions may favor establishment of juniper in areas, it has been shown that around the turn of the 19th century there was a wave of expansion that was likely driven by wetter cooler precipitation.
Has consideration been to soil compaction? I did not see any efforts in the pics?	live answered
Having worked as a Range Mgmt specialist, Forester, and Forest Health Specialist for State and Feds, I believe that folks really value their PJ forests, not just sagebrush steppe. If there is a lot of forest be it what you call encroached or not, it is highly valued. They want to manage it for forest health, but don't want to knock it down and lose it. Having surveyed a lot of this type of vegetation type, I believe with the different climate we live in, this type will increase as it probably has over time and recede as the climate goes the other way. Many of the Native American tribes hold these forests in very high regard. So maybe it is not just a misunderstanding but a very different value	We have acknowledged that different values can lead to different perspectives on land management decisions. The agencies via their NEPA process will have to address those differences. It is important to remember that while pinyon and juniper acreage is still expanding even in the face of these treatments. The biggest driver for removal right now is trying to avoid Greater Sage-grouse listing but maintaining or expanding sagebrush steppe.
what conditions enable or facilitate conifer encroachment into sagebrush systems?	previously answered.

With our invasive Scotchbroom of the hills in Washington, we use a tool called Uprooter or Weed Wrench	A weed wrench could work for saplings, and I've used them for small-scale woody vegetation removal as part of a restoration project on a 500-acre land trust parcel. However it's hard to see how it would be a practical tool at the scale of pinyon-juniper expansion in the Intermountain West, where we're talking hundreds of thousands of acres.
Is this a natural succession or is it the result of past and current fire suppression policies?	Many have argued that expansion is a result of the lack of fire in these systems as it is in other systems where juniper species have expanded. So it could be argued that fire suppression policies have aided in the expansion of juniper. It can be viewed and others have argued that it is natural succession. It should be noted though that Clementsian succession did not account for natural disturbance regimes.
Scenario: Power lines are located in a remote mountainous region that is classified as a riparian area within wildfire footprint. Trees must be cut down to protect powerlines. Question: Considering trees are being cut in a riparian area that is remote. What would be the best wood management prescription?	That could certainly be one of the options. Each site would have to be evaluated to determine which treatments fit your management objectives.
Title of the paper or 'environmental review' that's being referred to?	Becky - can you clarify your question please?
The National Geographic article talks about 'trees being ripped out despite environmental review' or something to that effect and Mark said that the two scientists on the review were not rangeland scientists. Just curious what the environmental review paper is titled.	https://static1.squarespace.com/static/57c5f6aa579fb31d71581457/t/5c746d0a9140b757cca49418/1551133978337/2019_MechVegTrt_LitReview.pdf Do Mechanical Vegetation Treatments of Pinyon-Juniper and Sagebrush Communities Work? A Review of the Literature February 2019
Is there an optimal density of juniper? A number of trees/acre? that can be used to help determine what phase you are in?	https://www.fs.fed.us/rm/pubs/rmrs_rp069.pdf page 5
Has there been inclusion or consideration of how these treatments disrupt soil and the associated biological soil crusts (intact biocrusts have been shown to reduce cheatgrass invasion)? Specifically, have land managers been moving away from more disruptive methods like chaining in favor of lop-and-scatter and mastication?	live answered
If the article is referring to a general collection of reviews on woody restoration treatments, no worries. Just wanted to make sure I didn't miss it if a specific scientific paper was mentioned.	live answered

are you aware of successful agency public outreach that promoted a woodland treatment and subsequently changed the local thought around such activities? what public outreach strategies were used?	live answered
Where is the suggestion that the decline of pinyon jay may be due to a lack of mosaic pattern stand ages coming from? Is this available research somewhere? Thank you!	A good place to start learning about this issue is an article in the SageSTEP newsletter from 2018 (http://sagestep.org/pdfs/newsletter/SageSTEP_News_Issue_32.pdf). This is a good summary, and there are references if you'd like further information.
Not much has been mentioned about the role of livestock grazing in pinyon-juniper expansion, though research indicates that livestock grazing significantly contributes to woody vegetation expansion. Without addressing grazing (and fire suppression) in conjunction with PJ treatments, why expect that PJ expansion would not continue into the future, requiring re-treatment every few decades, as is currently	live answered
Has there been a concern that the control method of "lop and drop" or "chaining" leaves behind too much fire fuel? Perhaps a blend of of the those methods and mastication provides both habitat, protection for new plants and reduce fire fuel.	live answered
Beyond climatic reconstructions and oral/written records, what paleoecological data have reviewed understand makeup of plant communities on a centennial scale, or even millennial scale?	One of the best sources of information, for those who are trained to "read" the information, is phytolith analysis. Phytoliths are created in plants when silica accumulates through years of uptake. The silica structures take on the distinctive shape of cells for a particular species, and being sand/quartz they remain after plants decay or burn. Phytoliths have been isolated from soil samples and dated back millenia, allowing scientists to estimate relative cover of different species centuries ago. FOr more on this, see https://journals.sagepub.com/doi/abs/10.1177/0959683610362809
Mark,	
Am I correct to take away the fact that erosion and runoff is reduced AFTER the trees are removed? It seems like runoff would only be reduced by treating after a fire has gone through the woodland.	live answered
Are you aware of silvapasturing? Could this not be incorporated?	Silvipastoral systems work if forage remains in the understory of a woodland. But with pinyon and juniper, as the plants continue to grow the understory eventually is lost as woodlands transition to Phase III.
are the cleared areas left to recover on their own or is this seeded?	often they are seeded. It is evaluated and determined on a case by case basis though.

<p>85% decline in Piñon Jay? Any other theories as to their decline? Insects?</p>	<p>By "insects" do you mean a decline in food sources during the chick-rearing season? I haven't seen any suggestion of that but it might be worth exploring.</p>
<p>One of the sources of misunderstanding identified was "misapplication of research results - Great Basin may not Reflect outcomes for Colorado Plateau"; can you give some examples of what kinds of outcomes are commonly misapplied or that leads to the misunderstanding?</p>	<p>I guess I must not have been as clear as I should have been in my presentation (this is Mark writing). I think what I meant by "misapplication" was the combination of results from various regions, and various rangeland woody vegetation types, into a single analysis as was done in the literature review called "Do Mechanical Vegetation Treatments of Pinyon-Juniper and Sagebrush Communities Work?" But I caution land managers to be careful of that issue, too. In SageSTEP we've seen a lot of variability across sites, even within the Great Basin. It seems important to me to be cautious about doing treatments on the Plateau based on findings from the Great Basin, where soils and climatic regimes are quite different.</p>
<p>What monitoring programs are in place already, and what type of monitoring programs have been the most helpful?</p>	<p>live answered</p>
<p>To what extent are problems of perception based upon the difficulty in distinguishing between expansion woodland and persistent woodland, that perhaps has infill?</p>	<p>I think you could answer your own question Stan. However I (Eric) think that prioritization of phase 1 and 2 stands helps reduce the chance of removing trees from areas where they should be. Addition from Mark: I also think it depends on whose perceptions we're talking about. Some people think the only good juniper is a dead juniper; others think one should never take a chainsaw to a tree in anger. But you're right that we're not taking time to determine whether a developing P-J stand is re-filling or expanding. Short of doing phytolith analysis in each proposed treatment, which seems difficult and expensive, I'm not sure how we can always get that right.</p>
<p>So in the presentation you spoke about the clearing of trees changes the landscape and reducing heterogeneity. Is it advised to work in a mosaic pattern to address the balance of sagebrush and/or forest</p>	<p>live answered</p>
<p>Has there been any use of removed/downed material for making biochar that might have a positive impact on the landscape?</p>	<p>live answered</p>

<p>What are thoughts on treating pinyon differently than juniper trees?</p>	<p>Eric: I am not sure if that is happening often now but each site should be considered on a case by case basis. I know if parts of Northern Utah areas of pinyon are avoided because of their cultural value. Mark: I'd be curious to know if there have been instances where treatments were planned with active collaboration by Native American stakeholders. That would be worth considering in potentially sensitive areas.</p>
<p>Another thing to look at is the high mortality of PJ during huge Ips outbreaks in these forests. Also the huge outbreak of pinyon scale in the type 1 community has also taken a loss of this type of community, but these things are often ignored in the + and (-) PJ columns. Does your research add this in? This data is readily available through FIA and FHP of the FS.</p>	<p>The Pinyon Ips outbreak was primarily in the Southwest, and didn't really express itself in most of Utah or the Great Basin. If we have an extreme drought accompanied by insect invasion it could change our thought processes about the need to reduce pinyon-juniper coverage. Similarly, I haven't heard about pinyon scale being an issue outside of New Mexico and Arizona although I suppose it could become one, especially with climate change.</p>
<p>Can we get annotated notes for future reference?</p>	<p>I'm not sure what kind of annotation you're looking for. The presentation itself is available online to reference back to if needed.</p>
<p>How can researchers help make more on-the-ground people feel comfortable implementing treatments?</p>	<p>Rory - I addressed this live, but I am happy to re-emphasize that I believe we need to be better about doing translational science in rangeland management. We know that when scientists and field personnel are able to work together in the field, both groups learn a lot. In SageSTEP, managers have repeatedly told us that they get the most out of field tours with knowledgeable scientists, but I'm really interested in expanding that to do so "co-production" of science where managers and scientists are also present during the actual implementation of treatments, working elbow-to-elbow to see how ideas from the lab are translated operationally.</p>
<p>What about the carbon budget? Is there any consideration given to loss of carbon to removing Pinyon and Juniper?</p>	<p>Yes, we have definitely thought about that. The loss of carbon is greatest, however, when we get a canopy fire in Phase III woodlands. Generally speaking, rangelands carry most of their carbon below-ground, where it's better protected against disturbance. Here's a brochure that outlines my research group's current thinking about rangeland vegetation treatments and carbon: http://www.sagestep.org/pdfs/Carbon_brochure.pdf</p>

Are there any concerns with soil acidification in high density juniper treatments?	I am not sure anyone has looked at this specifically but most of the soils in Utah are very basic (high ph) therefore it is unlikely that this is a significant issue.
Do you worry about the system transitioning from PJ to annual invasive grass conversion rather than sagebrush steppe?	live answered
As a member of the public, truly the concern is that the research and monitoring to support these treatments and the methods, scale, and purposes given during the planning process are NOT articulated or shown to the public. Agencies need to do a much better job of showing what they're doing does actually achieve the stated project goals- at least on the Colorado Plateau this is severely lacking.	Your question was really more of a comment, but I (Mark) agree. Eric and I have been asked to considering doing a second webinar that would focus specifically on this issue, and I think we'll do that sometime in 2020 (maybe through Great Basin Fire Science Exchange).
Is there a need to time work efforts around wildlife habits such as nesting birds activity or animal dens?	it is and should be considered as part of the NEPA process.
Very little was mentioned of herbicide treatments. Selective herbicide treatments seem to have great potential in pinon juniper control particularly in the earlier, ie smaller stem size, woodland phases???	Herbicide application can indeed be effective in earlier woodland phases, but it's best if it involves direct application of chemical to cut stems or stumps. That would be enormously costly and time-intensive at the scale of the hundreds of thousands of acres of encroaching woodland on public lands in the Intermountain West.
In general, how much monitoring is occurring in these treatments, and how many years post-treatment are they monitored?	Highly variable, difficult to speak generally.
Could you speak to changes to the lands carbon sequestration ability from different treatment methods?	In SageSTEP we treated 10 woodland sites using different methods in 2006-2008. We have been trying to track effects on carbon sequestration ever since. (See https://www.youtube.com/watch?v=pOifPk79vog for some basic info.) Unfortunately our soil scientist took a job back east so we're looking for a new one to join the team so we can continue this work.
It is my understanding that chaining can also create fire breaks and this makes a very valuable tool. Is this true?	Yes, chaining can create fuel breaks when combined with piling and burning the piles, and then effectively reseeding to reduce the risk of cheatgrass invasion in the chained locations. Here's a good publication summarizing what we know about fuel breaks to reduce habitat loss from wildfire: https://pubs.er.usgs.gov/publication/ofr20181034 . There definitely are other tradeoffs to consider, however, and I wonder whether mastication might achieve similar success in a less invasive way.

<p>I think masticators and operators must vary widely in prescription and expertise. The photo you showed is the best looking masticated plot I have ever seen. Normally I feel like sobbing. It is good to see this process performed well.</p>	<p>Agreed. One of the challenges is that land managers often are too swamped with work to be able to be in the field with the contractors as often as they should be.</p>
<p>As a NEPA contractor, it is often difficult to get agency personnel to be specific when identifying what treatments would be used in a project area. They often recognize they need to be specific, but across the landscape they may need to use several different treatment types. What would be the best way to be specific at the landscape level?</p>	<p>live answered</p>
<p>It seems like there is a climate change and/or modeling component here? If we have catastrophic wildfire don't we lose PJ and sage? Any good discussions/communication about that?</p>	<p>Yes, climate change is definitel part of the equation. The climate models for the Great Basin differ from those in the Colorado Plateau, and unfortunately they're better at predicting temperature than they are precipitation, and what we're learning is that it's the combination of temperature and precipitation that dictates how a landscape will respond to disturbance. There are a number of scientists, myself included, who are dedicating a lot of time to the question of how we can better restore sagebrush and P-J landscapes after wildfire so that we are able to retain native bunchgrass and sagebrush-dominated communities, but the challenge is proving to be very great.</p>
<p>follow up to monitoring question: what are the best ways to sustain monitoring i.e. do stakeholders understand or value the monitoring over time?</p>	<p>I(Mark) believe most stakeholders do appreciate the value of monitoring over time, but they often don't have the resources. It always seems that when budgets are tight, monitoring is one of the first things to go because it's largely done by seasonal employees.</p>
<p>It is unclear what you are managing for.</p>	<p>In this presentation we were talking about managing for native sagebrush- and bunchgrass-dominated communities that provide good wildlife habitat, store carbon, and reduce erosion. Many people also see cattle as part of that equation, and we don't oppose that although we don't believe it should be the primary impetus for woodland treatments on public lands. On private lands, it's up to individual owners to identify their primary management objectives.</p>

<p>Has removal of PJ been an effective factor to restore Sage Grouse populations?</p>	<p>So far we're not doing as well as we'd like for sage grouse. Partly that's because we're not very good at re-establishing native sagebrush/bunchgrass communities after they've been eliminated by fire or conifer encroachment. Many scientists are working on this problem, however, and I believe we're making progress (slowly but surely).</p>
<p>SUWA recently had a publicity campaign opposing chaining and vegetation removal in the Colorado Plateau region. Has there been an effective agency response, or any resolution that may have changed implementation techniques and public opinion to the practice of pj mgt?</p>	<p>Ken, one reason why we did this workshop was to address the concern that there hasn't been an effective agency response. Part of the challenge is that most of the public isn't attentive to this issue, which means a relatively small number of people get to "represent" broader public opinion even if their views don't really reflect what most people might think. Another challenge is that land management agencies simply can't allocate funds to public relations campaigns in the same way that advocacy groups can. But for me, the biggest challenge is that the issue is really nuanced - there are shades of gray - and PR campaigns are never good at expressing complex issues.</p>
<p>Utah Division of Wildlife Resources Monitoring database (WRI monitoring Eric referred to): https://wildlife.utah.gov/range-trends.html. This includes monitoring other than just PJ treatments.</p>	<p>Kevin, yes, there is monitoring going on. But as you and I have discussed, it may not be set up to monitor the variables we need to ask specific questions about impacts of treatments. I'd like to see us move toward adaptive management approaches co-designed by scientists and managers such as yourself.</p>
<p>Very interesting. Y'all keep up the good work</p>	

<p>Some of the social perceptions are that PJ woodland sites are natural but there's not always a crosswalk between what the site condition is and say what an ecological site description would say the site should look like and many PJ woodland ecological site descriptions state that trees should be 10-15% of the species composition; so while it is a PJ woodland site doesn't mean that it shouldn't have other shrub, grass, forb components to the site and that closed canopy should be what land managers manage for. Thoughts?</p>	<p>Yes, there are always disputes about what constitutes "natural," and that's a major factor in social acceptability of any land management practice. (For more about this topic than you ever wanted to know, here's a link to a publication I co-wrote on this topic about 12 years ago: https://www.fs.fed.us/pnw/pubs/pnw_gtr537.pdf). But fundamentally I think you're on to something here. These different vegetation types have been here for millennia, and the mosaic has shifted over time due to climatic conditions and disturbance regimes. What I see is that we're in the process of simplifying (homogenizing) the landscape, and that's likely going to be detrimental to some species such as pinyon jay. Closed-canopy woodlands existed, too, but if the ratio of Phase III to other types increases, in an era where we also have cheatgrass invasion and other disturbance regimes that have shifted habitats to less desirable states, we're going to be losing species and ecological integrity.</p>
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