

SUMMARY

JOINT STAKEHOLDER SCIENCE COMMITTEE AND STAKEHOLDER COMMUNITY COMMITTEE MEETING

LAKE TAHOE WEST RESTORATION PARTNERSHIP

Tuesday, May 1, 9:00 am to 3:00 pm

Tahoe Regional Planning Agency, 128 Market St, Stateline, NV 89410

All meeting materials are publicly available on the Lake Tahoe West website <http://nationalforests.org/laketahowest>. For questions please contact the program manager/facilitator Sarah Di Vittorio at sdvittorio@nationalforests.org or (530) 902-8281.

Meeting Synopsis

The Lake Tahoe West Restoration Partnership (LTW) Stakeholder Science Committee (SSC) met on May 1, 2018, from 9am to 3pm at the Tahoe Regional Planning Agency (TRPA) in Stateline, Nevada. Specific meeting objectives were to: (1) Discuss what success would look like for the Lake Tahoe West Landscape Restoration Strategy; (2) Provide an update on modeling efforts for the Lake Tahoe West project; (3) Share revised Intended Landscape Outcomes; and (4) Build shared understanding of the Ecosystem Management Decision Support Tool (EMDS) and its intended use in the Lake Tahoe West project. The discussion highlighted questions about the Landscape Restoration Strategy including what scale the Strategy will focus on and how a 60,000 acre Strategy will inform the project-planning level. Participants also expressed that the LRS should: set LTW up for adaptive management, address social-institutional context, achieve both stakeholder and implementer buy-in, identify restoration “hot spots,” and strike a strategic balance on treatments by focusing on how and where, not just now much. The EMDS workshop in the afternoon provided opportunity for learning and questions about this tool and its role in our process. The next Stakeholder meeting will be a Joint SSC and Stakeholder Community Committee (SCC) meeting on June 5 from 9am to 4pm at the Lake Tahoe Basin Management Unit, 35 College Drive, South Lake Tahoe, CA 96150. An all-day field trip is planned for June 12.

Contents

Meeting Synopsis	1
Welcome, Agenda Review, and Introductions	1
1. General Business	2
2. Lake Tahoe West Landscape Restoration Strategy: What does success look like?	3
3. Modeling Update.....	5
4. Workshop: Ecosystem Management Decision Support (EMDS) Tool.....	7
Meeting Attendees	9

Action Items

1. **DONE - Sarah** will send out information on the steep slopes demo and look into arranging a LTW-specific timeslot.
2. **Sarah** will resend the April Stakeholder Meeting Summary for approval.
3. **Pat Manley and Jonathan Long** will track down how LANDIS addresses growth and harvested wood supply, and if confidence intervals may be used to address potential error.

4. **Sarah** will work with Science Team on an approach to build stakeholder understanding of the modeling efforts.

Welcome, Agenda Review, and Introductions

Sarah Di Vittorio welcomed the group, reviewed the agenda, and provided time for introductions. Primary agenda items are expressed as numbered headings, referenced in the Table of Contents and Meeting Synopsis, above.

Three members of a Karuk tribe fire crew, in town for prescribed fire training, were present for the first half of the meeting. The crew participates in the Fire Adapted Communities Restoration Partnership – a collaboration designed to exchange ideas, increase exposure, and share projects to increase efficiencies and maximize results of forest restoration efforts.

There were no interested party comments.

1. General Business

Ms. Di Vittorio reviewed 2018 meeting dates, noting that a meeting has been added to the calendar to address the needs of the Landscape Restoration Strategy (LRS) in a timely manner. The meeting is tentatively scheduled for **August 7, from 9am to 4pm**. Stakeholders requested that we provide a call-in option for this meeting.

A field visit is scheduled for **June 12th from 9am to 4pm**.

With regard to modeling:

Ms. Di Vittorio provided a brief update on modeling efforts. LANDIS Scenarios are currently being run. A Sub Team is working on how to weave non-modeled pieces such as meadow function, aquatic invasive species, in-stream, etc., into the Strategy.

With regard to environmental analysis:

The organizing agencies are currently considering what approach to take for the environmental analysis. After completing the Landscape Restoration Strategy, LTW will develop a Proposed Action. The environmental analysis will be initiated after that.

With regard to communications:

A one-page communications piece on the Landscape Resilience Assessment (LRA) is being drafted, which will be used as a communications tool to the public and will also be available for Stakeholders to share with their peers. Ms. Di Vittorio will share draft of the one-page communications piece when available.

Sarah also updated Stakeholders on Todd Gilins' progress on the Visual Arts project. The project is planned to be a two part process. Phase 1 will ask the public for their thoughts on forests, disturbance, and change (likely through postcards) while Phase 2 will create an art installation about forests which incorporate these responses with other materials assembled by the artist. Phase 1 will also spread awareness about the LTW project.

Discussion followed:

Q: Is there anything that the Stakeholders would like to see during the Field Visit on June 12?

- Suggestion: Showcase some of the older and more recent approaches to active management to observe difference and help stakeholders to visualize approaches.
- Suggestion: Include a visit to a riparian area or meadow restoration.
 - Baldwin Beach could be a good option – there is restoration planned, which would allow for before and after visualization.
- Brian Garrett and Christina Restaino will consider options for Field Visit Locations.
- **ACTION ITEM**: Ms. Di Vittorio will send out information on the steep slopes demo and look into arranging a LTW-specific timeslot.
- **ACTION ITEM**: Ms. Di Vittorio will resend the April Stakeholder Meeting Summary for approval.

2. Lake Tahoe West Landscape Restoration Strategy: What does success look like?

Ms. Di Vittorio noted a tension between a desire to get more concrete with the LRS, while not being able to without modeling results. She proposed a brainstorming session around the question: “What does success look like?”

Feedback prior to this exercise has suggested that the LRS should be action-oriented, be internally consistent (i.e., not propose approaches that are in conflict with one another), identify how the LRS achieves California state goals, and be transferable to other regions.

Discussion followed:

What are the top 1 or 2 things that the LRS needs to accomplish? What does success look like?

- Makes the case for getting more fire on the ground.
- Clearly informs project development – sets us up to design projects.
- Brings together modeling with institutional/manager (on-the-ground) knowledge.
- Strikes a strategic balance on treatments (how much, where, type) – how and where is as important as how much. (Does not over-prescribe treatments.)
- Links to the network of implementers. Enables implementers to buy in.
- Achieves buy-in from stakeholders by addressing their needs and issues.
- Projects have a clear and direct link to meeting the Strategy (and Strategy communicates how projects will meet the Strategy).
- Educates public – what we are doing and why, how to get involved.
- Fosters a sustainable pool of staff/contractors to plan and implement the necessary projects.
- Addresses issues and questions around scale (landscape scale vs. project scale). How do strategies/projects vary by scale? What happens at landscape versus other scales?
- Provides a reasoned methodology for achieving an optimized approach, particularly with respect to determining tradeoffs and prioritization.
- Provides a clear understanding of what success looks like (relative to resilience) and offers a scorecard for how well it is being achieved.
- Identifies “hot spots” where multiple goals can be achieved and puts them into context with the rest of the landscape.

- Identifies major milestones and an endpoint for baseline completion (Is it possible to implement rapidly? Can we set up monitoring for success?).
- Identifies an adaptive management timescale and shows how we will learn/adapt.
- Describes how we will avoid returning to the current state and achieve resilience by allowing natural processes to function.
- Helps build the social-institutional context (“social capital”) that we need for resilience.
- Clarifies scope/boundaries: what LTW will not be doing.
- Creates boundaries around what treatments and levels of treatment are necessary to achieve success and establishes environmental anchors. See pictures.

Ms. Di Vittorio opened up the floor for discussion:

- **Questions about the LRS:**
 - Can the LRS perform some of the environmental analysis? Or is it too large-scale?
 - At what level/scale will the LRS identify zones of agreement? The more refined we can get (i.e., closer to project level), the more it will help streamline project planning.
 - Will the LRS include an adaptive management chapter? Will it identify our monitoring and adaptive management strategies?
- The level of agreement in LTW will influence what the LRS can accomplish.
 - **Klamath Strategy:** Strong agreement throughout. It only involved treating plantations and therefore was not as controversial. Specified projects up front. The community there is very supportive of fire.
 - Klamath really just had one goal – increase fire on the landscape. LTW may be more similar to Dinkey as it has multiple goals.
 - **Dinkey Strategy:** High level agreement at landscape scale, but not site specific. Used a high level strategy and outlined an implementation timeline. Agreed on priorities, performed an assessment on project areas, prioritized treatments, gained consensus on treatments. But there was still disagreement at project-level that stakeholders had to work through for each project.
 - **Sagehen Strategy:** Also started out with broad consensus on their goals, asked participants for input on how to achieve these goals on the landscape, and then sought buy-in on projects.
- The LRS should identify areas of agreement and disagreement, and identify how we will address the areas of disagreement. (E.g., can we test some ideas through adaptive management?)
 - General geographic locations of treatment could be an area of agreement – e.g., south and west aspects, ridgelines.
 - Our current strategy (WUI-focused) may be an area of agreement.
- EMDS might help us address intermediate scales (get more specific than overall landscape scale). It will allow us to look at the modeling results at multiple scales.
- Q: Will there be room/acceptance for experimentation?
 - Yes, experimentation is good, but must keep in mind cumulative effects.
- Q: What is the appetite for Categorical Exclusions (CEs)?
 - CEs may have a role with some projects. This administration wants the Forest Service to use them more.
 - Excessive use of CEs may violate the trust of stakeholders and wouldn’t allow for scaling up. CE’s do not address cumulative impacts.
- It would be helpful to have a discussion about failure. What would failure look like?

- Be mindful that the public may not be happy with rapid implementation – it could be too disruptive to the forest and have other negative impacts. The landscape should still look and function like a forest (during/after restoration work).
- The LRS analysis may not be project-specific enough for an alternatives analysis under NEPA/CEQA.
- Q: What sort of specifics will the modeling tell us? Would modeling results from the first four Scenarios help inform location?
 - Modeling results will be at a mix of coarse scale and fine scale, and can be partitioned in ways to help answer a variety of questions.
 - Modeling results from Scenarios 1-4 may help inform location. We can also set up Scenarios 5 & 6 to better inform location of treatments.

3. Modeling Update

Jonathan Long provided a brief update on the different modeling efforts taking place. The modeling teams are at different points along their timeline. Many are currently running their models and will evaluate their results upon completion. More will be available to share in June after a preliminary review with the different management teams.

Modeling team updates are detailed, below:

Fine-scale Fire

The Fine-scale Fire team is ready to launch their modeling. The modeling is designed to explore variations in the intensity of treatments and fire conditions.

Water Quality

The Water Quality team was originally going to model 4 watersheds, but now is including 20 watersheds in their analysis. Most of these watersheds are smaller in size than the first 4. Some watersheds were excluded from the analysis, for example, the watershed around Homewood Resort (weren't sure how to address ski runs), and very small watersheds near shore. Currently, the team is working to evaluate the model's performance on the watersheds of Ward, Blackwood, General Creek, etc.

Water Quantity

The Water Quantity team has preliminary results from modeling, and will have more substantial results to share in June.

Air Quality

The Air Quality team is refining their proposal to utilize LANDIS outputs to evaluate the effects of management scenarios. They are also exploring what fire events to include in the modeling, as well as some of the temporal aspects of burning.

LANDIS

The LANDIS team has preliminary results generated for Scenarios 1-3 and are working on representing treatment sizes and calibrating pace for Scenario 4.

Wildlife

The Wildlife team's modeling will be interacting with LANDIS outputs. The Wildlife team is therefore developing a framework for translating LANDIS outputs into wildlife inputs.

EMDS

The EMDS team is also working with the LANDIS Team to develop a framework for translating LANDIS outputs.

Economics Team

The Economics team will be using outputs from many models and therefore modeling will occur later in the timeline. The team has been making progress, however, and has been performing research to inform their modeling. The team currently has access to a Real Estate database, which they are using to observe the effects of fire on home prices. They will also be exploring the economic consequences of fire to water quality, and healthcare consequences of air quality impacts.

Discussion followed:

- Q: How will the modeling inform the areas of the LTW landscape that are critical for protecting the things we are concerned about?
 - Identifying the areas we agree on could help identify the best sites for CEs. These are areas that are less contentious and still have value to treat.
- Q: Does LANDIS consider site-specific variables like soil type? Slope and aspect?
 - Site conditions are incorporated into the expectations of tree growth.
- Q: How is LANDIS simulating Rx fire?
 - LANDIS simulates Rx fire more similarly to how a wildfire would behave, and does not have set boundaries. The LANDIS team is working to ensure that these modeling efforts properly mimic what an actual Rx fire would do.
- Q: How is managed wildfire different from Rx Fire?
 - Managed wildfire would occur in specific areas that are zoned to allow wildfire with a "modified" suppression. Rx fire is started intentionally and has a designated intensity. The modeling would also be coded in a way that distinguishes managed from non-managed wildfire.
- Suggestion: Angela White's work on cross-walking basal area to diameter classes may have implications for quantifying heterogeneity.

With regard to the Intended Landscape Outcomes Table:

Forest Schafer reviewed the Intended Landscape Outcomes (ILO) Table, which was created to link the work of the LRA Phase 1 to modeling and performance measures. Some LRA indicators do not have a one-to-one relationship with the modeling outputs and/or monitoring measures. The ILO Table will set ranges, rather than specific targets, of what results would be considered "successful."

Updates to the table:

- Added phrasing "restore and maintain," when applicable.
- Explicitly recognized the goal of achieving resilience.

Discussion followed:

- Q: With different fire scenarios, is there a component that represents regeneration potential?

- Regeneration is one of many attributes are addressed, though simplified, in the modeling. LANDIS uses “distance to seed source,” as a variable to account for the probability of successful establishment and may take into account burn severity.
- Q: Does the modeling take into account source strength for tree regeneration after fire (i.e. highly reproductive, healthy trees)?
 - Modeling will likely not take into account source strength.
- Q: Will LANDIS provide outputs on the severity of fire?
 - Yes, LANDIS provides outputs for fire severity on a pixel-by-pixel basis.
- Suggestion: Consider the strengths and weaknesses of the model in relation to realistic outcomes on the Basin when developing Scenarios 5 and 6.
- Q: Will modeling be able to estimate future harvested wood supply and account for factors such as species, size class, saw-log volume, and biomass volume?
 - Yes, LANDIS can account for all of these harvested wood factors. There will be some uncertainty in translating from biomass to size class.
 - These figures may help to attract and communicate to industry.
 - The Tahoe Central Sierra Initiative (TCSI) could benefit from this effort.
- **ACTION ITEM:** Pat Manley and Mr. Long will track down how LANDIS addresses growth and harvested wood supply, and if confidence intervals may be used to address potential error.
- Some stakeholders requested more information about the modeling (explanations of how the models work, what are the outputs, what questions can/can't the models answer).
 - **ACTION ITEM:** Sarah will work with Science Team on an approach to build stakeholder understanding of the modeling efforts.

4. Workshop: Ecosystem Management Decision Support (EMDS) Tool

Eric Abelson presented a workshop on the Ecosystem Management Decision Support (EMDS) tool to Stakeholders and other LTW team members. EMDS will allow for integration of analyses across landscape components and at different scales. EMDS will encourage collaboration through its ability to provide explicit relationships, compare alternatives, and identify limiting variables transparently.

A recording of the webinar is available to LTW team members and stakeholders. Email Sarah for access (sdivittorio@nationalforests.org).

The two main aims of EMDS are to provide: (1) decision support to choose between management scenarios; and (2) tools to strategize management locations. It is important to note that EMDS is a Decision support system, not a decision making system.

There are three main mechanisms to the EMDS tool: (1) a logic model; (2) ArcGIS integration; and (3) a decision model.

First, EMDS modelers will populate a logic model using biophysical data to describe the state of the system, landscape conditions, and issues of concern. The model establishes a proposition (ex. “forest is resilient”) and builds in the system’s dependencies and complexities to test model results against this claim. The logic model can work at different scales (spatially and temporally) and is able to test “success” in a variety of ways (binary, ranges, function, etc.). Relationships/functions can be empirical, theoretical, or based on the distribution of data (if there is no a priori way to determine success). The logic model will integrate spatially with ArcGIS.

The decision model allows for the prioritization of benefits (i.e. what factors are more important than others) and can account for different perspectives in a variety of ways. The model uses a Multi-criteria Decision Analysis (MDA) methodology to synthesize perspectives through pairwise comparisons and inform which strategies work best. Strategies are scored by their performance across these priorities, with the analysis allowing for a breakdown of how each priority contributes to an overall score.

Discussion followed:

- Q: What determines what will be in the logic model versus the decision model?
 - The logic model is used to understand the biophysical state of the system, while the decision model deals with factors that contribute to the decisions land managers will have to make. The decision model is where stakeholders prioritize the outcomes we want to see on the landscape.
- Q: When can Stakeholders weigh in on management priorities?
 - Building the logic model and decision model will be an iterative process and the stakeholders will have a chance to weigh in. The exact process is still being determined.
- Q: Is there a constraint behind the uncertainty weights for each variable?
 - There is a verbal scale (ex. “strong,” “average,” “weak”).
- EMDS can perform a sensitivity analysis to determine importance of each variable and any missing data.
- Q: Is there a risk of giving users too much flexibility to change results if they do not like them?
 - In a sense, this risk is unavoidable, as models are subjective and reflect judgements.
 - However, the managers who are helping to build the model generally understand the landscape and how it might be reflected.
 - Suggestion: We should develop consensus on the prioritization rather than use complicated weighting mechanisms.
 - Suggestion: Design the model without data first.
 - Suggestion: Evaluate the tradeoffs of putting too much (or a lot of) weight on a given variable to gauge impacts on the EMDS analysis.
 - Suggestion: Revisit the topic of weighting variables at a later meeting (TBD).
- Q: How do changes in the scaling of one variable affect the scaling of the others?
 - Modelers examine this issue using a measure of “robustness.” In order to be a robust model, changes in values of variable of 10% or less should not affect the order of the prioritization.
 - These values will be shared and are important as they will effect discussion of variables.
- Q: Will the EMDS team create summary reports of why certain scenarios outweigh another? Will input/data be needed from the Science Team/Design Team?
 - Yes, the EMDS team will need input on the “relationships” between variables, but can procure data from the other modeling teams on their own.
 - The Design Team is developing thresholds for acceptable values for indicators. Not every indicator will have a threshold.
- Q: What progress has been made on EMDS and model translation?
 - The EMDS team and Design Team are figuring out what data is being output and what needs to be done to translate that data.
- We need to identify the scales at which EMDS should be set up to inform us.

- Value sets must be connected to performance conditions. These answers will feed into landscape metrics.
- Suggestion: Be mindful of issues of data redundancy, data biases, and a discounting of variables where data is absent.
- Q: How is information displayed over time steps?
 - Information is displayed graphically, which can be done for any variable at any level of the hierarchy.
- Q: Is summarizing of 40-acre plots redundant/necessary?
 - Setting up scale is critical because it will influence how we can monitor for success in the future, and is necessary for other reasons as well.
- Q: How can Scenarios be assessed as better or worse without assessing location?
 - For LANDIS it's more important to understand trajectory and trend line. If we were using to prioritize locations, accuracy becomes far more important.
 - LANDIS will take into account spatial factors in management zones and in the application of treatments. EMDS will help to strategize where, but it will not select locations.
 - EMDS is not intended to select treatment sites for us. It is not the appropriate tool in this Phase because it is set up based on LANDIS, which is a probabilistic model.
 - Scenarios 5 and 6 may help to answer some of the questions about location.
 - LANDIS is spatially explicit, but scale is one hectare – it will not result in fine scale data.
- Suggestion: Need to be able to have comparisons on location.
 - For instance, if our answer is 2x pace and 2x intensity - could we accomplish the same thing with 2x pace and 0.5x intensity by strategizing location?
- LANDIS is currently being developed to allow the ability to aggregate stands for treatment.

Meeting Attendees

Organizing and Participating Agencies

CSP – California State Parks

CTC – California Tahoe Conservancy

NFF – National Forest Foundation

TFFT – Tahoe Fire and Fuels Team

TRPA – Tahoe Regional Planning Agency

USFS LTBMU – U.S. Forest Service Lake Tahoe Basin Management Unit

USFS PSW – U.S. Forest Service Pacific Southwest Research Station

USFS PNW - U.S. Forest Service Pacific Northwest Research Station

Stakeholder Science Committee Members

1. Jennifer Quashnick
2. Sue Britting
3. Roland Shaw
4. Tricia Maloney
5. Jeff Brown
6. Mollie Hurt
7. Matt Freitas (afternoon only)

Draft for Invited Stakeholder Review

Staff

8. Svetlana Yegorova, CSP
9. Whitney Brennan, CTC
10. Jen Greenberg, CTC (afternoon only)
11. Evan Ritzinger, NFF
12. Sarah Di Vittorio, NFF
13. Forest Schafer, TFFT
14. Christina Restaino, TRPA
15. Mason Bindl, TRPA (afternoon only)
16. Brian Garrett, USFS LTBMU
17. Stephanie Coppeto, USFS LTBMU
18. Shana Gross, USFS LTBMU (afternoon only)
19. Keith Slauson, USFS PNW (afternoon only)
20. Angela White, USFS PNW (afternoon only)
21. Eric Abelson, USFS PSW (afternoon only)
22. Pat Manley, USFS PSW
23. Patrick Wright (morning only)

Interested Parties (morning only)

24. Herman Albers, Karuk fire crew
25. Spencer Bentley, Karuk fire crew
26. Marshall Super, Karuk fire crew