



2017 Calistoga Sierra Meadows Workshop **-ANNOTATED AGENDA-** “Emergence”

Emergence of a new year, emergence of the Sierra Meadows Strategy and emergence of new opportunities

The Goal: Bring together leaders from land management agencies, academia, non-profits, and source funders involved in meadow restoration to; 1) advance scientific efforts toward Sierra meadow greenhouse gas quantification and accreditation, and 2) establish an implementation plan for the newly completed Sierra Meadows Strategy.

Expected outcomes for day one of the workshop include a modernized understanding of greenhouse dynamics in Sierra meadow systems and a refined “Roadmap to Payment for Ecosystem Services in Sierra Meadows”.

Expected outcomes for Days 2 & 3 include; 1) an official adoption of the Sierra Meadows Strategy, 2) an action-level implementation plan for the Strategy and 3) a more informed understanding of funding opportunities supporting meadows related projects.

This workshop will include a series of discussions led by experts in their respective field along with input from all workshop participants. Workshop participants are expected to be actively involved in these discussions and be solution-oriented in their participation.

The Sierra Meadows Strategy is available online by following the links below:

Executive Summary:

http://caltrout.org/wpfb-file/sierra_meadow_strategy_4pager_shareable-pdf/

Full Strategy:

http://caltrout.org/wpfb-file/sierra_meadow_strategy_full_report_shareable_mid-pdf/

Summaries of sessions are displayed in blue italics below session descriptions. Many sessions utilized Powerpoint presentations and/or templates which will be available 2.27.17 at <http://caltrout.org/meadows-workshop-2017/>.

Agenda

Tuesday Evening, February 7th

6:00-8:00 Dinner & Roundtable Introductions

There will be an informal welcome and roundtable discussion regarding goals and desired outcomes for the Workshop.

This was a short introduction session following dinner. Attendees introduced themselves, their affiliations and goals for the workshop. Mark Drew offered an overview of the agenda and fielded questions, namely what does the MOU signify? - Answer: Support of the Strategy and the Partnership, but no "hard" obligations.

Wednesday, February 8th

Wednesday Morning: CA DFW Greenhouse Gas Restoration Funded Projects, Data and Synthesis of Research Findings

8:30 AM-9:00 AM: Welcome, Introductions, and Workshop Overview Session

Lead: Mark Drew

This session allowed for introductions of participants at the peak attendance of the Workshop. Barney Gyant, Deputy Regional Forester for Resources for the Pacific Southwest Region (Region 5), gave a short background on the USFS Region's interest in meadow restoration and the Strategy highlighting the importance of partnerships in landscape-scale conservation.

9:00-10:45: Prop. 1 DFW funded Cap & Trade Projects: Past, Present, and Future

Session Leads: Evan Wolf, Levi Keszey, Cody Reed, Lauren Hubert, Kristen Podolak, Rachel Hutchinson, Jim Wilcox, Beth Christman

Session Objective: Present and discuss the various projects funded by the Wetlands Restoration for Greenhouse Gas Reduction Grant Program being implemented across the Sierra. Provide a preliminary synthesis of research and restoration completed since June, 2015.

Desired Outcome: Improve understanding of the research and restoration being implemented to quantify greenhouse gas dynamics in restored and unrestored meadow systems as well as the progress of the associated restoration projects. An overview of the collective projects will be provided that will be followed by brief presentations of each project funded via the Wetlands Restoration for Greenhouse Gas Reduction Grant Program (DFW). Project presentations will include the following:

- Sierra Foothills Conservancy Project (Bean Meadow complex)
- South Yuba River Citizens League (Loney Meadow complex)
- Truckee River Watershed Council (Martis Meadow complex)
- Truckee River Watershed Council (Truckee Meadow complex)

- Plumas Corporation (Mountain Meadow complex)
- California Trout (Osa Meadow complex)
- Yosemite National Park (Yosemite Meadow complex)
- UC Davis (Childs Meadow complex)

This session updated the attendees on the progress of research and restoration of the 9 meadow projects funded through the CFDW Cap and Trade grant. Each of the project representatives provided a powerpoint presentation available at <http://caltrout.org/meadows-workshop-2017/>. Unifying themes among the presenters included a shared methodology, historical degradation due to management and the goal of continued monitoring post-restoration. The projects are a variety of stages in the restoration process, but more than half have had restoration treatments as of fall 2016. Of the 18 meadows being monitored, there are 7 impact (to be restored), 7 control, 2 reference and 2 previously restored meadows. Comparison of greenhouse gas fluxes and water storage in these meadows will provide empirical data on the effects, and potential benefits of restoration.

10:45-11:00: Break

Wednesday Morning Continued:

11:00-12:15: Synthesis of Research Findings to Date

Session Leads: Amy Merrill, Steve Hart, Cody Reed, Ben Sullivan, Kristen Podolak, Sarah Yarnell

Session Objective: Present the scientific framework as well as synthesized results of the data collected by the suite of greenhouse gas quantification projects presented in the preceding session. Additionally, this session will allow for discussions regarding challenges and next steps for research and restoration.

Desired Outcome: Improved understanding of scientific methodologies and research designs being employed, preliminary results and clarity regarding next steps in the research and restoration processes.

The Technical Advisory Committee for the GHG quantification project served as the session leads to present 1) the scientific background behind meadows as potential carbon sinks and 2) a synthesis of data collected to date by the preceding presenters and 3) next steps/questions. The shared methodology across the suite of meadows yielded comparable data from a variety of elevations, latitudes and hydrologic conditions. Nitrous oxide, carbon dioxide and methane fluxes as well as the covariates of soil moisture and soil temperature have been, and will continue to be monitored across the 18 meadows. Data collected to-date represents “pre-restoration” or baseline conditions which will become more indicative of net GHG sequestration or release when compared to post-restoration conditions. Initial results indicate: 1) Efflux of all 3 gases peak when soil moisture and temperature are at the highest (May-July, meadow dependent); 2) All meadows in the suite release carbon dioxide to the atmosphere, but with varying amounts of carbon also sequestered in soil that may or may not offset that released; and 3) meadow soils are the largest store of carbon. With multiple meadows restored in 2016, post-restoration data is forthcoming that will allow for better quantification of net carbon equivalent fluxes. Additional questions to be investigated through, and

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in concert with project include the role of microbial communities, spatial patterns in above and below-ground Carbon stocks and the role of iron in anaerobic soil respiration.

12:15-1:00: Lunch

Wednesday Afternoon: Payment for Ecosystem Services and Developing a Climate, Community, Biodiversity Accreditation (CCBA) Roadmap for Sierra Meadows

1:00-3:00: Payment for Ecosystem Services: What Does Today's Carbon Market Look Like? What Will Payment for Ecosystem Services Look like in the Future? How Does it Work on Federal Lands? What Would PES Look Like in The Sierra?

Session Leads: Gaby Roff (Caltrout), Robert Hrubes (SCS Global), Jason Ko (Region 5 USFS), Toby Janson-Smith (VCS)

Session Objective: Provide an overview of the Cap & Trade and Payment for Ecosystem Services Market, Protocol development and issues and challenges involved with establishing carbon credits/units.

A particular focus of this session will involve discussions regarding opportunities & considerations for carbon credit/units on federal & state lands.

Desired Outcome: Better understanding of the Cap & Trade Program, carbon credits/units, opportunities and challenges associated with developing a protocol in the Sierra.

This session provided an overview of the Payment for Ecosystem Services (PES) market from the variety of perspectives represented by the panel. Robert Hrubes of SC Global began with an overview of the market as a whole and stressing the need to be able to empirically prove quantifiable benefits of meadow restoration. Jason Ko of the USFS outlined history, challenges and opportunities associated with PES on federal lands. Toby Janson-Smith of VCS gave a short tour of the market based on 2015 figures emphasizing trends in price and location of PES credits. Takeaway messages from this session include: 1) charisma and location will be added values for meadows in the PES market, 2) the Climate, Community, Biodiversity standard is the best fit for Sierra Meadows, 3) The USFS is supportive, but inexperienced with PES on federal lands, and 3) U.S. companies will be looking for U.S.-based credits in the future. This session was successful in aligning the groups understanding of market opportunities.

3:00-3:30 Break

3:30-5:00 Establishing A Climate, Community & Biodiversity Certification Roadmap: What Are The Necessary Steps And Requirements For Establishing A Meadows CCBA Project Session

Leads: Letty Brown (SCS Global)

Session Objective: Identify a proposed roadmap that will direct those involved with meadow restoration for Payment for Ecosystem Services. Specifically, the session will focus on Climate Community and Biodiversity standards, what it is and what are the opportunities and challenges to

applying CCB standards to Sierra meadow systems. A “CCB project” that is slated to be the first of its kind utilizing meadows within the Sequoia National Forest will also be presented as a case example.

Desired Outcome: A better understanding of what is required to establish a CCB project and a path forward to developing a CCB template for future projects.

Letty Brown, of SCS Global outlined a “roadmap” to developing a methodology to meet the requirements of the CCB registry for Sierra Meadows to be viable in the PES market. Broadly, in order to be considered for CCB credits a project must 1) Climate- yield a net removal of GHGs from the atmosphere or reduce expected emissions; 2) Community- improve well-being of the public and 3) Biodiversity- increase/make more resilient biodiversity. Outcomes within each of the three fields must be net-positive and must have full and effective participation from all relevant stakeholders. The conversation led to identifying the large group of stakeholders necessary to involve in meadow accreditation. The Partnership was supportive of pursuing CCB credits and has a path forward to be led by CalTrout.

5:00 Break

Wednesday Evening Continued:

6:30-7:30 Dinner

7:30- The Sierra Meadows Partnership, signing of MOU and tribute to Rita Kelley Session
Leads: All

Session Objective: 1) formalize the Partnership with the signing of an MOU and 2) discuss opportunities for the evolving Sierra Meadow Partnership and to chart a course moving forward.

Desired Outcome: An agreed-upon pathway forward for the Sierra Meadows Partnership.

This session was one of multiple opportunities for agencies to sign the MOU to support the Sierra Meadows Strategy and the Sierra Meadows Partnership. Signing of the MOU signifies support for the goals and approaches of the Strategy but does not mandate any “hard” commitments. There were ~10 new agencies to sign onto the MOU at the Workshop with more opportunities to do so in the coming months. The desire to collect signatures for version 1 of the MOU by the end of March was articulated, Diana Craig of the USFS is the contact if you would like to sign the MOU.

Attendees also honored the memory of Rita Kelley of the USFS, a proponent of and contributor to the Sierra Meadows Strategy who will be remembered and missed by the Partnership. Her passion for watershed conservation in the Sierra will always be inspiration to those in the field.

Thursday, February 9th

The Sierra Meadows Strategy: Content and Implementation

Thursday Morning: The Sierra Meadow Strategy

8:30-9:00 Welcome, Recap of Day 1 & Overview of Day 2 Mark Drew

9:00-9:30 The Sierra Meadows Strategy: History, Content and Purpose
Session Leads: Amy Merrill, Mark Drew, Nina Hemphill, Levi Keszey

Session Objective: Familiarize the workshop participants with the newly completed Sierra Meadows Strategy. Specifically, presenters will cover 1) the document's origin, purpose and goal(s), 2) the three Approaches proposed by the strategy to reach the goal(s) and 3) the tasks required at the workshop and beyond to implement the Strategy.

Desired Outcome: A unified understanding of the document and the work to be completed in the afternoon.

After introductions and an explanation of the Workshop site, lead authors of the Sierra Meadows Strategy gave a short history of the document which arose out of political and scientific support for meadows in the region as well as an identified need for a guiding document for land managers and restoration practitioners. Attendees were asked to review the document for the morning session and identify 1) missing items/actions and 2) priority actions.

Ryan Peek of UC Davis gave a short talk outlining the current status, purpose and capabilities of the UC Davis Meadows Clearinghouse which aims to be the "one-stop-shop" of meadow data and projects in the Sierra. The need for active participation by Partnership was identified.

9:30-9:45 Break

9:45– 11:30 Group Breakouts to Review and Expand the three Approaches of the Strategy
Session Leads: 1A-Kristen Podolak; 1B-Judy Drexler and Amy Merrill; A2- Sheli Wingo; A3-Jason Ko

The four breakout groups will be:

- 1) Approach 1A: Restore and/or protect meadows to achieve desired conditions- **Implementation**
- 2) Approach 1B: Restore and/or protect meadows to achieve desired conditions- **Research**
- 3) Approach 2: Enhance regulatory and institutional funding capacity and coordination- **Permitting**
- 4) Approach 3: Increase and diversify institutional and partnership capacity for meadow restoration and/or protection in the greater Sierra- **Capacity**

Session Objective: A deeper look at each of the Sierra Meadow Strategy's three Approaches by breakout groups of specialists within the Approach's field. Specifically each group will identify any substantive gaps in the Approaches, prioritize the Actions within the Approaches and refine Approach Desired Outcomes, Actions & Milestones.

Desired Outcome: Identification of any additions and priority actions to the three Approaches.

This session will help facilitate the afternoon's discussions which focus on developing an "action plan" supporting implementation of the Sierra Meadows Strategy.

Four breakout groups met for ~1.5 hours to review the Approach Tables from the Strategy that outline desired outcomes, actions and milestones within 3 Approaches to complete the goals of the Strategy. The 4 groups proceeded in different ways to achieve the task, but all identified priorities and gaps. A template (available at <http://caltrout.org/meadows-workshop-2017/>) given to the groups served as guidance for the discussion. Group A1a (Research) saw long-term standardized monitoring across meadow types and conditions as well as climate resilience assessment as being top priorities. Group A1b (Implementation/on-the ground) identified the need for more implementers and better assessment of restoration techniques effectiveness. Group A2 (Permitting) saw streamlining the permitting processes a key next step. Group A3 (capacity) identified outreach/education and private landowner involvement as key ways to increase capacity.

11:30-12:15 Breakout group Reports and Synthesis

Session Leads: TBD during workshop-One per breakout group

Session Objective: Synthesize major conclusions of breakout groups, including common goals and priorities and integration of the three Approaches.

Desired Outcome: Refined, comprehensive Approaches to be the basis for the afternoon's action plan development.

This session allowed the breakout group leaders to report the full audience summaries of the morning's conversations. The main outcomes of each group are outlined above, but there were priority themes that emerged between groups. Some of the priority actions for all breakout groups include: 1) long-term monitoring meadows to test restoration effectiveness, 2) increase in coordination between NGOs and agencies, 3) training for implementers and permit staff to build capacity and 4) outreach to diverse stakeholders. Discussion lead to an emphasis on data and resource exchange within the Partnership.

12:15-1:00 Lunch

Thursday Afternoon: Strategy Implementation Action Plan Development

1:00-1:30 Introduction to the Task at Hand

Session Leads: Kristen Podolak, Mark Drew

This short session will outline the template (To be developed) to structure breakout groups' development of an action plan for the priority Actions identified in the morning sessions.

The afternoon began with a short "Update on Forest Service R5 meadow mapping" from Dave Weixelman. Revising Fryjoff-Hung & Viers (2012) meadow layer, the USFS is re-delineating and Hydrogeomorphic (HGM) typing all meadows in Region 5. The total polygons 1 acre or greater now totals 18,949. This geospatial layer will be available for use by May 15th, 2017 and will be available on the UC Davis Meadows Clearinghouse and from the USFS. This layer will be extremely helpful in 1) management of meadows across the Region, 2) planning/prioritizing restoration projects and 3) assessing geospatial impacts of restoration.

1:30-3:00 Develop Action Plans for Priority Needs Session

Leads: Approach breakout leaders

Session Objective: Re-structure the morning's Approach-based discussions into specific action plans.

Desired Outcome: Outline of proposal for the priority actions identified in the morning session(s).

A template guided the afternoon discussion which aimed to outline an "Action Plan" to accomplish priority tasks identified in the morning sessions. The template asked groups to consider desired outcomes, milestones, challenges, costs, timelines, collaborators, potential funding sources and next steps to accomplish the priority actions. The goals of this session was to aid the Partnership in actuating the actions within the Sierra Meadows Strategy.

3:00- 3:15 Break

3:15- 4:30 Continue Refinement of Action Plans

Session Leads: Approach breakout leaders

This session is a continuation of the previous session with common desired outcomes.

4:30-5:30: Synthesis of Action Plans

Session Leads: Approach breakout leaders

This session is a continuation of the prior afternoon session with an emphasis on sharing the outputs for each of the three Approaches, opportunities for integrating Actions across Approaches and identification of next steps.

This session began with breakout group leaders summarizing the outcome of their group's discussion.

Group A1-Research identified the guiding question of: "Where do we want to restore meadows and how can we best do it?" To answer this question, the Partnership must: choose a large set of diverse sites at which to measure conditions, with a subset of meadows as "sentinel" study meadows for additional monitoring; and, these monitoring methods must be cheap, easy and replicable. Ideally no meadow restoration project occurs without monitoring to contribute to the dataset. Next steps include 1) identify current datasets, 2) identify data gaps, 3) develop protocol for monitoring and 4) conduct outreach and training. A key area of study will be what makes a meadow resilient, or vulnerable to climate change.

Group A1- Implementation outlined an action plan to 1) increase the number of knowledgeable meadow restoration practitioners, and 2) increase the effectiveness of meadow restoration techniques. Increased training, scientific site and restoration technique selection and strategic efficacy assessment were proposed as approaches to increase the pace, scale and efficacy of restoration projects. The group identified next steps of 1) develop a restoration handbook to the current techniques, 2) develop a decision tree to help guide practitioners in choosing techniques, 3) develop a training/peer review group to increase the number of practitioners.

Group A2- Permitting outlined an action plan to work with permitting agencies to streamline the permitting process required for meadow restoration projects. A work group was formed to 1) revise and update the current meadow restoration permitting and compliance manual, 2) write a "white paper" outlining the current permitting process and the associated challenges and 3) meet with permitting agencies to discuss "alternatives" to streamline permitting process. A timeline was established to complete these tasks.

Group A3- Capacity identified priority actions in order to increase the capacity of the Partnership including 1) increase and diversity stakeholder involvement, especially focusing on private landowners 2) utilize training programs and mentorships and 3) increase outreach/ education efforts. The group outlined next steps, challenges and budgets for these three tasks and established work teams to address each action. The need for marketing expertise was identified as a key piece to the success of Meadow Restoration gaining needed support.

5:30 Break

6:30-7:30 Dinner

7:30-8:30 The Momentum of People and Meadows: Meadow Project "TED" Talks on Various Research and Restoration Projects.

Session Lead(s): All

Session Objective: Present recent studies, findings, restoration projects or other efforts within the goals of the Partnership and the Strategy. Each presenter will have 10 minutes.

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Desired Outcome: A better understanding of meadow-related projects taking place throughout the greater Sierra Nevada.

This evening allowed an open time slot for attendees to share quick updates on their respective projects and/or research. Presenters' topics included: river and meadow restoration projects, American River Scorecard application as a prioritization tool, greenhouse gas flux from Sierra Meadows, beaver historical distribution and their utility as a restoration tool, South Fork Kern River meadows and willow planting techniques. The short presentations were a good sample of active restoration and progress to date.

Friday, February, 10th **Funder Match-Making Day**

8:30-9:30 Welcome, Recap Roll Out of Thursday's Work-is a Sierra Meadows Challenge too Challenging?
Session Leads: Mark Drew, session leads from Thursday

Breakout group leaders presented short summaries of their breakout group's discussion from the previous day. Key points from Thursday include: 1) the need for training programs, for monitoring, permitting and design; 2) meadows as "assets" to be managed and 3) better exchange of data and resources to communicate the efficacy of meadow restoration.

9:30-10:00: Break-check out of rooms

10:00-11:00 Funding Strategies and Opportunities for Meadow Restoration in the Sierra: A Panel Discussion

Session Leads: Sarah Peterson (NFWF), Bob Kingman (SNC), Helen Birss (CDFW),

Session Objective: A panel discussion comprising of representatives from different funding sectors, along with workshop participants.

Desired Outcome: A better understanding of strategic opportunities and partnerships supporting the implementation of the Sierra Meadows Strategy.

The session began with short talks from the members of the panel outlining their respective agency's funding opportunities and how they may align with the work of the Partnership. Helen Birss (CDFW) outlined past and current grant programs that have supported meadow projects and emphasized collaboration and partnerships in leveraging resources from CDFW. Sarah Peterson (NFWF) discussed 1) the importance funding NFWF has already provided the Partnership, 2) advice on writing an application to NFWF, 3) NFWF's eagerness to fund "shovel-ready" projects, and 4) projects that offer species, water and community benefits are priorities for NFWF funding. Bob Kingman (SNC) outlined considerations for SNC funding including the importance of a meadow-forest link in proposals. Conversation lead to other potential funding sources for the priority actions including PG&E, USFWS, NFF and public fundraisers.

11:00-12:00 Discussion/wrap up and ID Action Items. *Session*

Leads: Nina Hemphill

Session Objective: Summarize work conducted at the workshop and identify next steps for implementation of the Strategy and action plans.

Desired Outcome: Collate a list of Action Items and a renewed, unified movement towards the implementation of the Sierra Meadows Strategy.

This session allowed for final words from any attendees of the workshop regarding next steps, strategies and opportunities. Attendees primarily articulated action items and targeted funding opportunities. Mark thanked attendees.

12:00-1:00 Lunch/Workshop Adjourned.

Thank you all!