

Bay Area Ecosystems Climate Change Consortium
Thursday, July 10, 2013, 10 a.m. – 2 p.m.
11th Floor Conference room, 26th Floor, California State Coastal Conservancy
1330 Broadway, Oakland, CA 94610
Meeting Summary

Attendees:

David Ackerly, *UC Berkeley*

*Whitney Albright, *CA DFW*

*Sarah Allen, *National Park Service*

Sheila Barry, *UCCE*

*Erin Chappell, *CA DWR*

Ellie Cohen, *Point Blue Conservation Science*

Caitlin Cornwall, *Sonoma Ecology Center*

*Deanna DiPietro, *Point Blue CS/CA LCC*

Jenn Fox, *Bay Area Open Space Council*

Matt Gerhart, *CA State Coastal Conservancy*

Geoff Geupel, *Point Blue*

Wendell Gilgert, *Point Blue Conservation Science*

Andy Gunther, *BAECCC*

*Tom Kimball, *USGS*

David Loeb, *Bay Nature*

Lisa Micheli, *Pepperwood Preserve*

Sara Moore, *Consultant*

*Carl Morrison, *Bay Area Flood Protection Agencies Association*

Elizabeth Murray, *USACE*

Heidi Nutters, *SF Bay NERR*

Ernie Pacheco, *Communication Workers of America*

Nadine Peterson, *CA State Coastal Conservancy*

Cynthia Powell, *Calflora*

Marina Psaros, *Coravai*

Bruce Riordan, *Joint Policy Committee*

Laura Sasso, *Climate Corps, JPC*

Nancy Schaefer, *Land Conservation Services*

Christina Sloop, *SF Bay Joint Venture*

Sierra Stevens-McGeever, *Scripps Institution of Oceanography / SBBJV*

Caitlin Sweeny, *S F Estuary Partnership*

Linda Tandle, *CEMAR*

Michael Vasey, *SF Bay NERR*

*Erica Yelensky, *US EPA*

* = via teleconference

1. Introduction of participants and their BAECCC-related projects

Participants introduced themselves and the interests of their organizations in BAECCC.

2. Review Agenda

No new items were added to the agenda. David Loeb announced that the article, "Baylands Reborn: Restoration and Renewal on San Francisco Bay", is in the latest issue of *Bay Nature* magazine.

3. Group discussion: Climate Smart Actions for Working Lands

Wendell Gilgert, Director of the Working Lands Program at Point Blue Conservation Science (PBCS), gave a presentation on their Rangeland Watershed Initiative. The goal of the initiative is to "improve watersheds by enhancing grazing lands and connecting them with riparian areas and

valley wetlands, with a focus on the foothills surrounding the Central Valley.” Their vision for rangelands includes: (1) rangelands hold and store more water, release water more slowly through the year, (2) watersheds linked to valley floor riparian and wetland habitats, (3) increased ground water recharge, (4) ranchers and farmers active partners in eco-friendly management, (5) ranching remains a viable enterprise, and (6) improved landscape resilience to predicted extension of dry season conditions and other impacts of climate change.

The Initiative is implemented with help from five partner biologists working strategically out of local NRCS offices throughout the Central Valley. They help prepare and implement enhanced grazing plans that include controlling elements of timing, intensity, and season of use.

The Initiative is based on work conducted in Upper Stony Creek (Glenn/Colusa County) in the mid-1980s. The biggest problem was surface soil compaction with the top 4 to 12 inches of soil heavily compacted due to many years of heavy domestic livestock grazing during wet conditions. Compaction created landscapes that “shed” water (and sediment) rather than catching and storing water. The goal is to restore the soil “sponge,” slow down the sediment loss, and build up the substrate to foster the soil aggregation process that makes soils more stable and less susceptible to erosion.

Wendell showed pictures that documented the changes in Upper Stony Creek due to the changes in grazing management. As part of the grazing strategy, one rancher, a voluntary participant, moved cattle through 26 paddocks during the year. At the start of the project, the area didn’t have any apparent perennial grasses; later, with prescriptive grazing management there were many. During the project, prescribed grazing was continued annually and no vegetation was planted. Eight years after the new practices were implemented, the re-watered creek was clear and bordered with riparian vegetation—sedges, rushes, shrubs and trees. The vegetation naturally moved toward more perennial grasses that break up soil surface compaction aided by prolific long roots. Every year about 50% of the roots die off, creating pore space for air, nutrients, and water to move through the soil: recreating the “sponge”. In one study of a participating ranch, perennial grass pastures demonstrated 24 inches of infiltration compared to nine inches for annual grass pastures. Additionally, productivity periods for perennials are much longer than for annuals, improving both early and late season forage.

The Initiative’s Conservation Management Practices include (1) prescribed grazing management, (2) management and restoration of rare and declining habitats, (3) wetlands wildlife management, and (4) upland wildlife habitat management. Conservation Facilitating Practices include fencing, spring development and watering facilities. Conservation Accelerating Practices include (1) brush management, (2) range planting, (3) fire breaks and, to a lesser degree, (4) prescribed burning.

Key economic outcomes of the six-year Upper Stony Creek prescribed grazing case study for one participating ranch were: (1) cattle feeding requirements went from 300 tons of hay per year to no hay, (2) herd size increased from 300 cow/calf to 500 cow/calf, and (3) flows initiated in the 1st and 2nd order streams.

Andy Gunther noted that the economic outcomes would be affected by different types of ranch operations. Sheila Barry added that many ranchers rely on public leases that have recreation or endangered species objectives that would make such a program impossible. Wendell responded that each operation is unique, no one size fits all; each has to be assessed individually.

The Initiative's objectives for managing for soil, water, and biodiversity include: (1) enhancing soil, water and habitat values on 1.13 million acres in the Sacramento River watershed, (2) increasing soil water storage by 15% (estimated to yield the equivalent of two Hetch Hetchy reservoirs of storage in the subsequent 5 years), (3) increasing soil carbon sequestration capacity by 15% (8.4 million metric tons total after 10 years); (4) facilitating/enabling 45 Leopoldian watershed land stewards, (5) leveraging Farm Bill habitat improvement funds, and (6) improving ranching operations for 110 ranchers. Leopoldian Land Stewards and Point Blue Partner Biologists are engaging rancher/landowners by providing training in field techniques, questionnaires, and workshops.

Research support is provided by UC Davis Rangeland Watershed Lab to document and evaluate hydrological and soil carbon sequestration, and wildlife benefits of prescriptive grazing and associated rangeland management practices. This includes benchmark and implementation metrics, field metrics (soils and vegetation), hydrologic characteristics (streamflow metrics) and biological characteristics (presence/absence of birds and focal species).

Questions:

- Caitlin Cornwall asked about documentation of the cost and benefits of different water capture approaches. Wendell answered that in three to five years Point Blue will have strong data to support rangeland management techniques; they are doing benchmark and implementation measurements. He noted there are many different attributes to different types of grazing and different ecological responses to management strategies.
- In a response to question from David Loeb, Wendell said there is the potential for cap and trade funding although the protocol still must be worked out. Wendell noted it is important for the environmental amenities that ranches provide to be recognized by compensation to ranchers.
- In response to Andy's question, Wendell said "mob" grazing occurs where there are many cows in a small pasture for short periods of time. A mobile, usually electric, fence is moved frequently depending on variables: size of pasture, growing period, size of herd, etc.
- Nadine Peterson asked about the source of funding for monitoring. Wendell responded that funds are coming from a private source.
- In a response to a question about grazing on public lands, Wendell stated that almost all of the state parks are in bad shape; that smartly managed herbivory could be good for the lands and create an income stream for the State. Sheila Barry added that representatives of the California Rangeland Conservation Coalition met recently with the new state parks director to discuss this very topic; the Coalition is developing a proposal for state parks.

Nancy Schaefer then spoke about plans for a BAEECC workshop, tentatively entitled *Grazing as a Management Tool for Climate Change Mitigation and Adaptation*. The goal of this workshop is to bring together ranchers from diverse communities (traditional, organic, mob grazing),

public and private rangeland managers (e.g., East Bay Regional Park District, Midpeninsula Regional Open Space District), and rangeland experts to develop “conservation management practices” for rangelands that can mitigate for and/or facilitate adaptation to a changing climate.

Sheila Barry commented that how topics are presented and discussed would be very important, as these subjects can be polarizing especially in the context of a changing/variable climate. Nancy said the context would focus upon the changes ranchers are seeing on the ground that affect their operations.

Proposed Grazing Workshop Committee members are: Sheila Barry (Certified Range Manager, UC Extension), Wendell Gilgert (Working Land Program Director, Point Blue Conservation Science), Pelayo Alvarez (Director, California Rangeland Conservation Coalition), Clayton Koopmann, (rancher and rangeland manager for Midpeninsula Regional Open Space District), Lynn Huntsinger (UC Berkeley), and Mark Swisher (rangeland manager for Contra Costa Water District).

Caitlin Cornwall commented that even without the climate change discussion, there is always the need to improve rangeland management. Andy Gunther asked about the benefits of herbivory. Wendell commented that some major landowners don’t appreciate or aren’t aware of the beneficial impacts to the land of herbivory. Sheila Barry noted that such benefits depend on the specific site and specie type grazing; she referred to a grazing experiment being conducted by Contra Costa County Public Works along Walnut Creek using goats. Jenn Fox asked if there is any agreement on metrics for “sponginess.” Wendell responded the metric is bulk density (weight of the soil per unit volume), which represents the pore space that allows for air infiltration and water movement. Bulk density tests are not difficult or expensive. Most NRCS offices have the soil probe equipment to conduct the tests.

Nancy asked for feedback on the following proposed agenda:

- Welcome and Introductions
- Overview of agenda and goal for the workshop
- Predicted climate change impacts for rangelands
- Examples of rangeland management practices that mitigate for climate change
 - Local Rancher
 - Wendell Gilgert, Point Blue Conservation Science
- Develop rangeland conservation management practices for climate change adaptation/mitigation (depending on size, either large group or breakouts)
- Summary of rangeland conservation management practices
- Next steps and adjourn

Comments:

- How are best management practices (BMP) addressed? Wendell commented that perhaps a better term would be “beneficial” practices. BMPs may be too imprecise when it comes to rangelands, as the optimal (or “best”) practices vary from ranch to ranch.
- Focus on conservation management practices to reach specific goals that benefit the ranching operation

- Framing of the discussion depends on the audience. Should focus be at the land manager level because they make the decisions? Or, are there multiple audiences with multiple goals? And, are there legal constraints to rangeland management? Example: some land managers have legal obligations because of requirements of endangered species and water quality acts.
- Andy Gunther commented that BAECCC's objective isn't to tell ranchers what to do; that this is part of a long term objective to build trust so that there can be a real conversation about the multiple objectives of land management.
- Sheila Barry commented that it is important to frame the discussion. Many ranchers recognize opportunities but they have obstacles to implementing changes. It's important to find areas of agreement and also address some of the barriers, *e.g.*, finding a way for everyone to succeed at using adaptive management techniques for landscape restoration.
- Focusing on soils has a multitude of benefits. There are opportunities to sequester much more carbon and herbivory plays an important role.
- Andy invited everyone to contact him or Nancy with comments and suggestions.

4. Updates

a. Project developments from Point Blue Conservation Science (Geoff Geupel)

- Point Blue and the Our Coast Our Future (OCOF) team are partnering with Marin County on a proposal to the OPC/Coastal Commission/Coastal Conservancy Sea-level Rise Adaptation RFP to complete an assessment of the possible impacts, mitigations, costs, and adaptation strategies to reduce the vulnerability of people, natural coastal resources, and the built environment, and increase local capacity to adapt, to sea level rise. The work would directly inform the county's new Local Coastal Program Amendment.
- Point Blue was recently awarded \$50K by the California Landscape Conservation Cooperative to conduct a scenario planning workshop with the South Bay Salt Pond Restoration Project Management Team (PMT) to develop management plans that address uncertainty in future Bayland conditions due to sea-level rise and sediment availability. Specific objectives include:
 1. Identify critical decisions for the project management team that are hindered by uncertainties in future conditions.
 2. Conduct a scenario planning analysis to consider impacts of a set of plausible scenarios, analyze those impacts and assess how targets respond to proposed management strategies. The process will include intensive PMT feedback on initial management opportunities, how management actions can be adapted if targets aren't met and consultation on final recommendations.
 3. Develop a set of robust management actions for the critical decisions identified in #1.
 4. Communicate results of the project to the greater Bay Area science and management community utilizing partnerships in BAECCC and the SF Bay JV so that the approach can be applied in other projects/areas.
- We participated in the BAECCC climate change communication workshop, with OCOF and SF Bay Future Marsh tools serving as case studies.
- Students and Teachers Restoring a Watershed (STRAW) has planned ~55 days to work at the following restoration sites this next winter/spring. We continue to

maintain and monitor sites from past years as well. We will be working at 17 Restoration Sites. Below is a list of the restoration sites and nearby watersheds and cities. Note: this is a preliminary list; some sites need to be finalized. .

1. Sonoma Baylands, San Pablo Bay, Petaluma
2. Taylor Mountain Regional Park, Todd Creek, Santa Rosa
3. Crane Creek Regional Park, Crane Creek, Rohnert Park
4. Pickleweed Park, San Rafael Bay, San Rafael
5. Hamilton Wetlands, San Pablo Bay, Novato
6. Boyle Park, Warner Creek, Mill Valley
7. Novato Watershed, Stafford Lake, Novato
8. Tolay Ranch, Tolay Creek, Petaluma
9. TomKat Ranch, Pescadero
10. Thacher Ranch, Chileno Creek, Petaluma
11. Brazil Ranch in Tomales, Walker Creek, Tomales
12. Straus Ranch, Tomales Tributary, Marshall
13. Leiss Ranch, Chileno Creek, Petaluma
14. Bloom Ranch, Marin County
15. Lawson Ranch, Dillon Beach
16. Doyle Park, Matanzas Creek, Santa Rosa
17. Miller Creek Park, Miller Creek, San Rafael

b. Report on the BAECCC Communications Workshop (Marina Psaros)

The workshop, attended by 70 people, is seen as a first step in developing a more cohesive narrative about climate change in the Bay Area. There were three plenary sessions with the most popular being the panel of elected officials that discussed the way they receive and process information. There were 12 breakout sessions where specific programs highlighted their planned or ongoing work and received feedback from attendees and identified collaborators for building more effective messaging efforts. A report from the Workshop will be available soon that includes information from evaluations provided by the attendees and potential next steps for BAECCC to undertake. Suggestions for next steps included more training in communication techniques, a toolbox of available resources on climate change, and how to talk to the media (hot button words). Contact Andy or Marina to provide additional feedback.

5. Group discussion: Outreach to Land Managers from TBC3

Lisa Micheli (Pepperwood Reserve) gave a slide presentation on “TBC3-BAOSC’s emerging tools for land and watershed adaptive management.” Terrestrial Biodiversity & Climate Change Collaborative (TBC3), facilitated by Pepperwood Reserve and UCB, is a “team of 35+ climate and ecosystem researchers who are developing a unique, high resolution, scientific basis for climate adaptation strategies with a focus on application to the Bay Area Open Space Council’s Conservation Lands Network.” The outreach focus is through the Conservation Lands Network, which provides a nice fit of management applications in the study area of ten bay area counties. Their vision is to eventually make these tools available statewide.

The tool uses high-resolution climate, water hydrology, vegetation cover, and corridors/species distributions to develop a spatially specific adaptation management framework. The climate layers are downscaled to 270 meter pixels (1 pixel = 18 acres). The GIS layers are available through California Climate Commons. Lisa noted these are scenarios not predictions. One example using the tool is the relative probability of vegetation transition. David Ackerly commented that the tool shows water deficit (how much more water the soil complex would have used had the water been available), which is an excellent predictor of probability of vegetation change.

Jenn Fox described the Bay Area Open Space Council (BAOSC) which was founded 23 years ago. The Council collaborates with land trusts, public agencies and conservation organizations to protect the land, connect people to land, and convene efforts to steward Bay Area parks, trails, and agricultural lands. There are approximately 300 owners/operators of open space in the Bay Area

Jenn described the Conservation Lands Network's "Explorer" tool available at (<http://www.bayarealands.org/explorer/>). Explorer allows users to draw an area of interest, explore the natural resources that may be present, and evaluate how it fits within the Conservation Lands Network. Users can use a pencil tool to draw a custom area, access datasets including vegetation types, rarity rankings, protected lands, streams, and topography, instantly display a brief report from key datasets, (e.g., climate information, vegetation type, conservation targets), and print a Biodiversity Portfolio Report.

TBC3 results are being used to add to the Explorer tool a Climate Portfolio Report that incorporates climate variables as layers (min/max temperature, water balance metrics). The Climate Portfolio Report will allow users explore historic climate data, and future projections from two different models based on higher or lower emissions scenarios. There was a general discussion on how to communicate constraints of the model and appropriate use of the data; the outcomes are all physically possible scenarios, but there is great uncertainty as to which will happen and when. Lisa explained a water balance graph that the interactive database generated for Pine Gulch Creek for the period 1980-2009. The graph displays what water balance looks like on the landscape as a graph (mm/month for October to September for CWD, AET, runoff, recharge and soil).

A workshop, *The New Normal: Climate Change and Land Conservation*, is scheduled at the Pepperwood Preserve on November 14. The interactive field trip and problem-solving session is sponsored by Pepperwood, the Open Space Council, and TBC3. Goals of the workshop are to share information and tools generated by the TBC3 specifically for land managers. We'll use Pepperwood as a case study, energizing land managers to test incorporation of TBC3 tools in their work, and collecting feedback and ideas for the potential next phase of the project outreach and workshops. Nadine Peterson suggested running the draft agenda by possible attendees to make sure topics of interest are included. At a minimum the workshop will hopefully encourage land managers to think about their own long term plan to adapt to climate change.

Nadine Peterson asked about decision-making analysis, *i.e.*, now that you have the information what do you do with it? For example, in removing invasive species, when do you give up and

allow for natural shifts that would happen no matter how much time and money you spend? Where can you/should you stick with a conservation agenda, and where should you re-examine conservation goals? David Ackerly commented that it has a lot to do with a particular patch of a given vegetation type, especially when it's located at a vulnerable boundary. The California Invasive Plant Council website (www.cal-ipc.org) was mentioned as a possible source for information on current and future distribution. Matt Gerhart commented that there is variety and vulnerability; how do you describe the axis of risk? People need to understand the relative changes. High probabilities of change occur where vegetation patches are near the edge of their climate envelope.

Lisa summarized by saying these tools offer an incredible ensemble of climate futures. The challenge is letting people know the tools are available and getting people to rethink about what happens when the landscape changes.

6. Updates (continued)

a. Climate Ready Grant Program, California Coastal Conservancy

Nadine Peterson announced that \$1.5 million is available for climate change projects, especially those with an on-the-ground nexus or tool development/application. The notice is available [online](#); applications are due August 28.

b. BAECCC Support from the Moore Foundation

Matt Gerhart announced the Moore Foundation has awarded BAECCC a two-year grant that will again be administered through the Conservancy. The funding will be a little more topically apportioned than previously, e.g., support general meetings and workshops, the resilient shorelines initiative, scenario planning for a to-be-selected terrestrial location, and policy analysis focused on potential policy barriers to climate-smart action. The Moore program officer for BAECCC, Gary Knoblock, has taken a new position with the Bechtel Foundation. A new program officer has not been selected.

7. Review of action items, other business

Sara Moore reported she has written a [report](#) (with co-authors Nat Seavy and Matt Gerhart) on how to conduct scenario planning that draws from the results a case study done in Marin County. It's meant to be a guide what to do and what to avoid in scenario planning. She added that Erica Rowland (CA LCC) is doing a much larger scenario for climate change.

8. Adjourn

The meeting was adjourned at 2:00 p.m.