

Welcome Cal PBR Training Session 9/23/2022



Cal PBR Network Mission

Promote process-based restoration approaches to increase the capacity of degraded river and stream ecosystems to retain water, support biodiversity, create fire resiliency, and adapt to climate change.



Guiding principles

- Work with the system to heal the system
- This is iterative, this is about developing a relationship with a place, let the system show you what is needed
- Do no harm, keep asking questions



| TIME | TOPIC | SPEAKER |
|----------------|--|------------------------------|
| 9:00–9:10 AM | Welcome and Overview | Karen Pope Carrie Monohan |
| 9:10–9:25 AM | Process-Based Restoration Concepts for Application | Damion Ciotti |
| 9:25–9:30 AM | Q & A | |
| 9:30–9:45 AM | PBR: Restoration Objectives | Kevin Swift |
| 9:45–9:50 AM | Q & A | |
| 9:50–10:05 AM | Field Lessons and Example Structures | Garrett Costello |
| 10:05–10:10 AM | Q & A | |
| 10:10–10:20 AM | BREAK | |
| 10:20–10:35 AM | Ecological Targets for Different Systems | Sabra Purdy |
| 10:35–10:40 AM | Q & A | |
| 10:40–10:55 AM | Site Analysis and Design of Landscape Features and Constraints | Adam Cummings |
| 10:55–11:00 AM | Q & A | |

11:00–11:15 AM Funding and Permitting: Overview and Case Study

Sheli Wingo
Carrie Monohan

11:15–11:20 AM Q & A

11:20–11:35 AM Bringing Back the Beaver

Kate Lundquist

11:35–11:40 AM Q & A

11:40–11:45 AM What to Expect in the Field

Jessica Dyke
Nick Graham

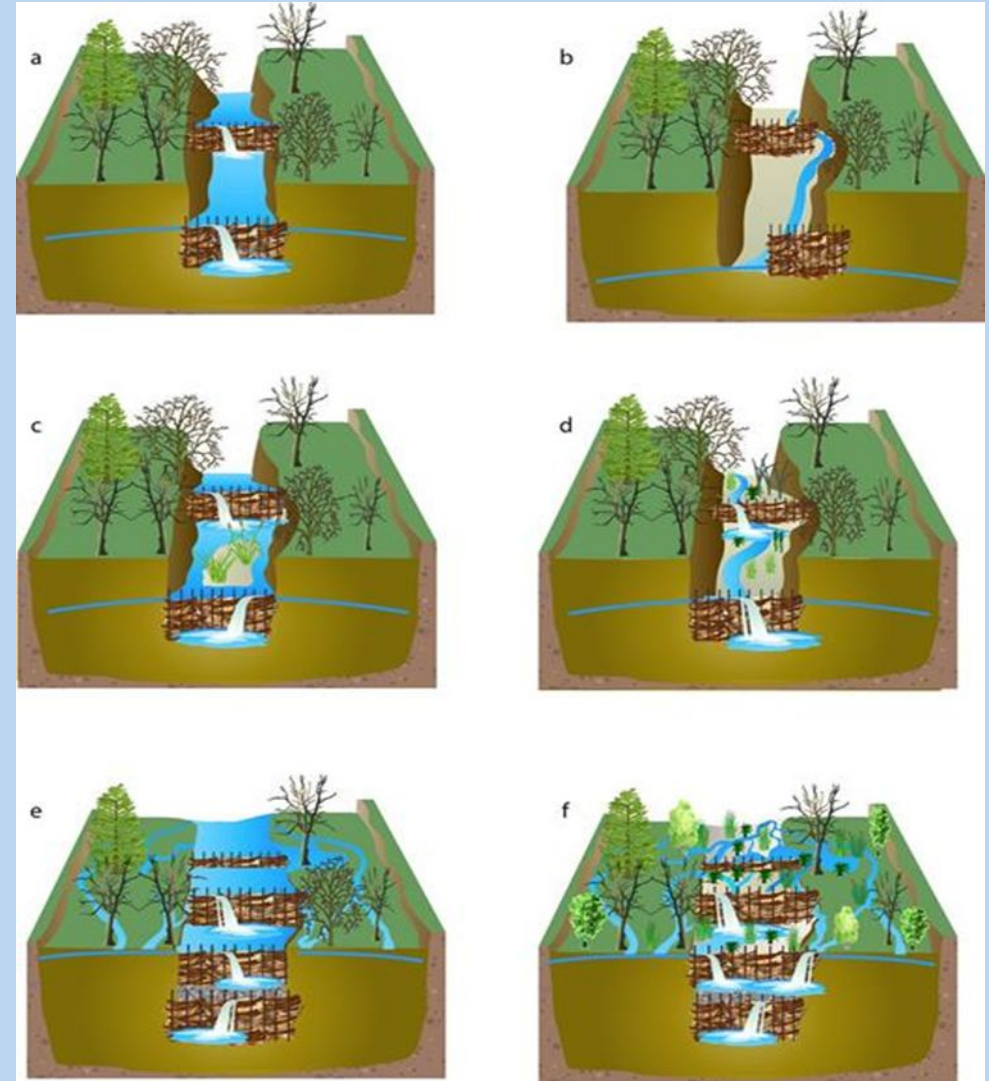
11:45–11:50 AM Q & A

11:50–11:55 PM Closing

Karen Pope
Carrie Monohan

Cal PBR Instructors

- Karen Pope, USFS-PSW
- Carrie Monohan, The Sierra Fund
- Damion Ciotti, USFWS
- Kevin Swift, Swift Water Design
- Garrett Costello, Symbiotic Restoration
- Sabra Purdy, Aquatic Ecologist
- Adam Cummings, USFS-PSW
- Sheli Wingo, USFWS
- Kate Lundquist, OAEC
- Jessica Dyke
- Nick Graham

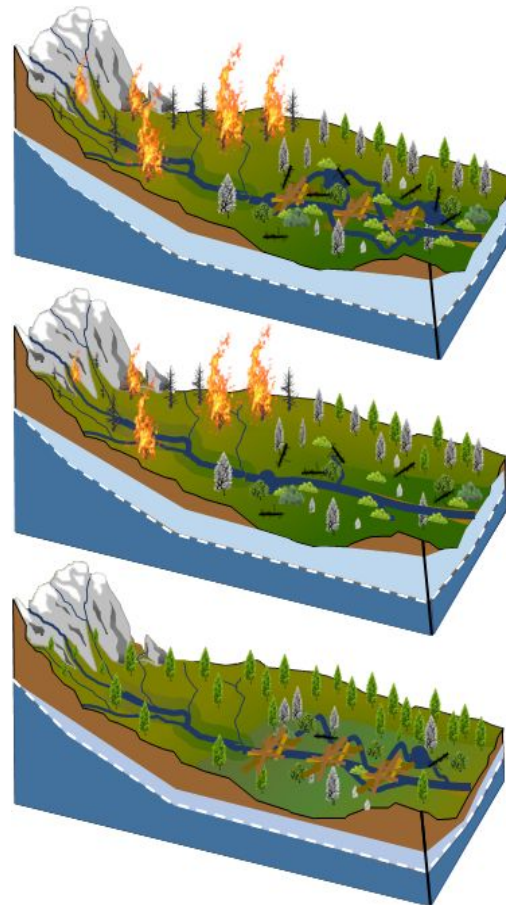


Karen Pope, Ph.D.

Research Aquatic Ecologist, USDA Forest Service Pacific Southwest Research Station.

Ph.D. in Ecology from UC Davis and M.S. in Biology from Cal Poly San Luis Obispo.

- Linking hydrological processes with biological responses to inform stream and meadow restoration.
- Understanding how invertebrate and amphibian communities are affected by aquatic restoration projects, pathogens, and invasive species.
- Pairing landscape disturbances, such as wildfire, with process-based meadow and floodplain restoration.



Fire +
Restoration

Fire +
No Restoration

No Fire +
Restoration



Amy Gallaher-Hall



Carrie Monohan, Ph.D (she/her)

Program Director, The Sierra Fund

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Our mission is to restore ecosystem and community resiliency in the Sierra



- PhD in Forest Resources and Hydrology, from University of Washington (2004)
- NMFS Research Assitant 2000-2004, Riparian Systems
- Program Director at The Sierra Fund (2007-present)
- Adjunct Professor at California State University, Chico Department of Geological and Environmental Sciences (2011-present), chair of >15 graduate students

Current Projects

- Process Based Restoration
- Hydraulic Mine Remediation
- Market Based Solutions
- Biochar
- Meadow Restoration Projects
- Clover Valley
- Tasmam Koyom



Nature is not a place to visit. It is home.



Damion Ciotti (he,him,his)

US Fish and Wildlife Service
Pacific Southwest Region San Francisco Bay Coastal Program Manager

Current projects and interests:

Process Based Restoration

Indigenous Ecological Knowledge and Stewardship



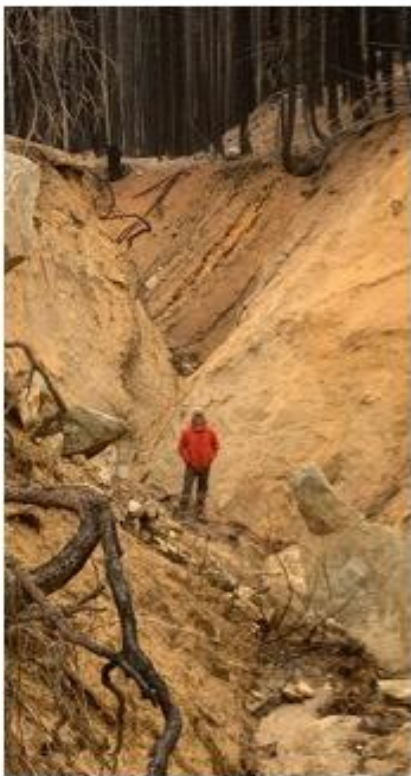
Kevin Swift
 Chief Cat Herder
 Swift Water Design
 Process-based restoration
 Beaver coexistence



In 3.5 years, with what you see below, we've built 1290 structures and restored 28+ stream miles. I'd rather do it than talk about it, and the sooner the better,

because there's a lot to do,

and the work will only get harder with climate change, fossil fuel depletion and mega-fires converging in our lifetimes.



- Profile**
- Systems thinker
 - Shovel ready
 - Instigator
 - Outside dog
 - Free-heel skier

Spectacular results for minimal disturbance and low cost. Add beavers to the mix, and things get even more interesting.

Good thing process works so well and happens so fast.

Look how many of us there are already





Garrett Costello
B.S Environment Mgmt & Protection
Minors: Ecological Restoration; Wildland Soil
Science; Environmental Ed & Interp
Implementing PBR since 2017.
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Sabra Purdy, M.S.
Aquatic Restoration Ecologist
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Assessment/Design/Implementation/Monitoring

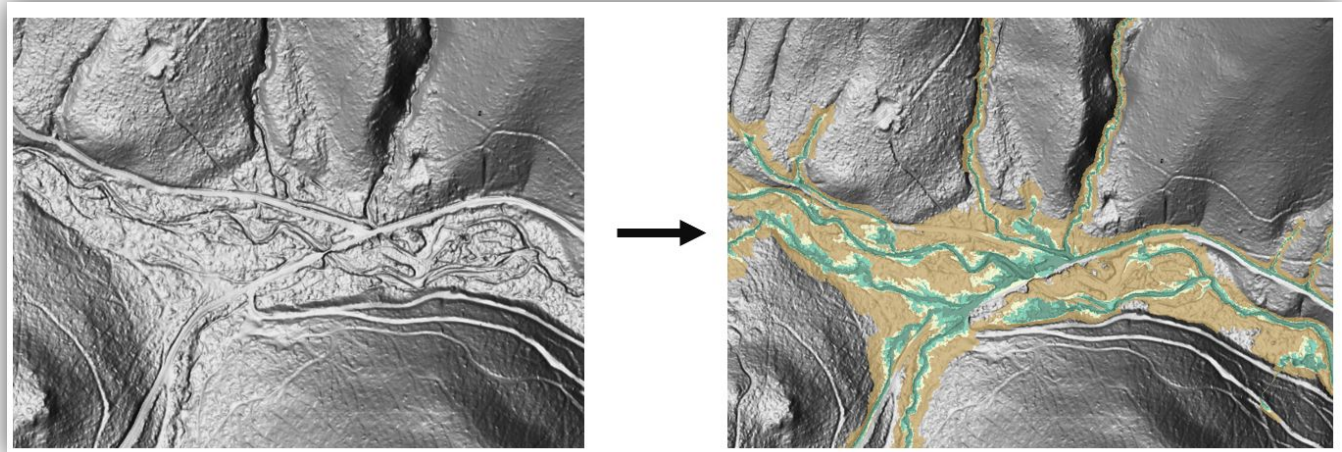
- Trout Unlimited
- UNR Aquatic Ecosystems Lab
- Anabran Solutions
- California Trout
- UC Davis Center for Watershed Sciences

- Use natural-system dynamic energy to support diverse, evolving, resilient landscapes
- Spend as little time as possible inside
- Help preserve the most ecological material and processes into the future
- Structure drives complexity, complexity drives diversity, diversity makes the world go round

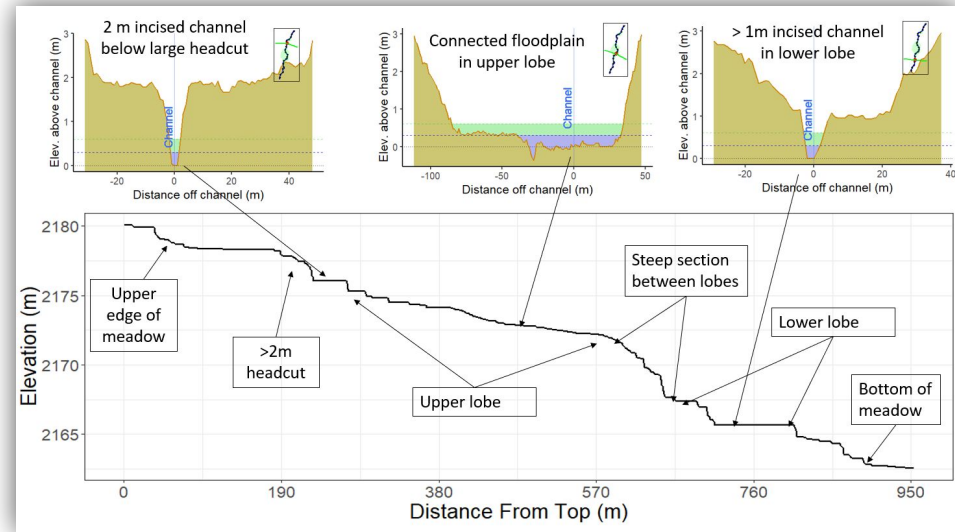


Adam Cummings

Ecologist, USFS-PSW
adam.cummings@usda.gov



An interest in amphibians (particularly meadow-breeding frogs) was my foot into the door of process-based meadow restoration. Now I'm interested in using high-tech analyses in the design stages of low-tech PBR projects to improve implementation and, ultimately, outcomes for the frogs (as well as other meadow species!).





Sheli Wingo

US Fish & Wildlife Service
Partners for Fish & Wildlife Program

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M.S. Biological Sciences, CSU Chico, 2005  
B.S Double major Biology and Botany, CSU Humboldt, 2001



Process-Based Restoration is a great approach for restoration of the habitats and species that I focus on through our Partners Program:

Focal Habitats include Sierra mountain meadows and riparian wildlife corridors

Focal species include beaver, Cascades frog, Willow Flycatcher, and Rocky Mtn. Elk







**WATER**  
INSTITUTE  
OCCIDENTAL ARTS &  
ECOLOGY CENTER

**Kate Lundquist** (she, her, ella, lei)  
WATER Institute Co-Director  
Occidental Arts & Ecology Center  
Coast Miwok & Southern Pomo Territory  
[www.oaec.org/beaver](http://www.oaec.org/beaver)  
[kate@oaec.org](mailto:kate@oaec.org)

I collaborate with landowners, communities, agencies, restoration practitioners and tribes to implement beaver and process-based restoration across CA. Interested in keeping the beaver in BDAs. Currently working on:

- Public and agency outreach and education
- Beaver co-existence demonstration at sites in Sonoma, Sutter National Wildlife Refuge, Roosevelt Ranch Duck Club
- PBR and beaver restoration implementation at Tásmam Koyóm, Tule River Reservation, Little Fallon Creek and...
- Beaver restoration policy advocacy - CDFW beaver depredation guidance and potentially other beaver & PBR pilots







## Nick Graham, M.S (He/Him)

Senior Environmental Scientist, The Sierra Fund

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[sierrafund.org](http://sierrafund.org)

Our mission is to restore ecosystem and community resiliency in the Sierra Nevada



### Current Efforts

Process Based Restorations  
Hydraulic Mine Remediation  
Market Based Solutions:  
Sediment/Carbon  
Geospatial Database  
Coding Enthusiast



- Masters in Hydrology/ Hydrogeology, from California State University, Chico (2017)
- Senior Environmental Scientist at The Sierra Fund (2018-present)





# Agenda Field Sessions 9-29/10-1

|            | Thu 9/29                                                 | Fri 9/30                                   | Sat 10/1                                                  |
|------------|----------------------------------------------------------|--------------------------------------------|-----------------------------------------------------------|
|            | DAY 1                                                    | DAY 2                                      | DAY 3                                                     |
| 8:00 AM    | Meet at Hunters Camp                                     | Meet at Hunters Camp                       | Meet at Hunters Camp                                      |
| 9:00 AM    | Tours & Concepts<br>9 am – 12 pm                         | Tours & Concepts<br>9 am – 12 pm           | Tours & Concepts,<br>Build BDA Structures<br>9 am – 12 pm |
| 10:00 A.M. |                                                          |                                            |                                                           |
| 11:00 A.M. |                                                          |                                            |                                                           |
| 12:00 PM   | Lunch 12–1                                               | Lunch 12–1                                 | Lunch 12–1                                                |
| 1:00 PM    | Build BDA Structures<br>1 – 5 pm                         | Build BDA Structures<br>1 – 5 pm           | Build BDA Structures<br>1 – 5 pm                          |
| 2:00 PM    |                                                          |                                            |                                                           |
| 3:00 PM    |                                                          |                                            |                                                           |
| 4:00 PM    |                                                          |                                            |                                                           |
| 5:00 PM    |                                                          |                                            |                                                           |
| 7:00 PM    | Group Potluck Dinner<br>Camp Chats<br>Music Jam Sessions | Dinner<br>Camp Chats<br>Music Jam Sessions |                                                           |