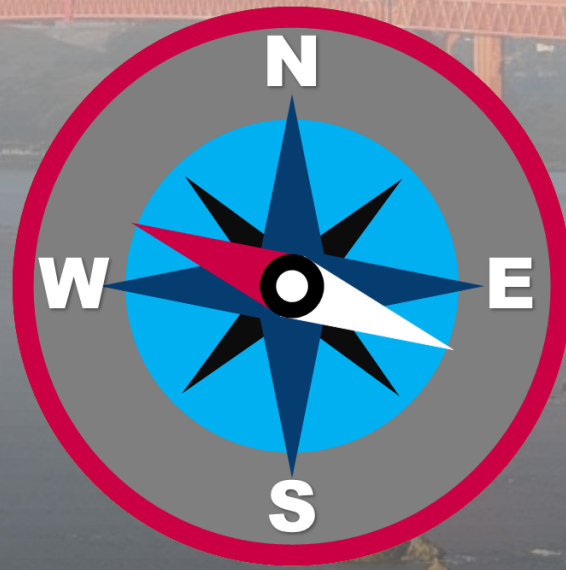


Pacific West Region

Natural Resource Stewardship Training Workshop

**2024 WEST X
NORTHWEST**



San Francisco, California

**General's Residence at Fort Mason
Golden Gate National Recreation Area**

April 22-26, 2024



GENERAL INFORMATION

Welcome to the 2024 WxNW Natural Resource Stewardship Training Workshop!

One of our goals this week is to be as sustainable as possible.
We will be limiting the amount of disposable waste at this training.

----- WHAT TO BRING -----

Reusable travel mug



Tea, coffee, and water will be provided at breaks.
A limited number of metal cups and mugs will be available.
They will need to be cleaned by you daily and returned at the end of the week.
NO disposable cups will be available.

Reusable water bottle



Reusable utensils



NO utensils will be available (even for snacks and reception).
Snacks and reception will be finger foods.

Walking shoes



Most hotels are located less than one mile from the General's Residence, so we encourage you to travel on foot.

If travel on foot is not possible, there are a limited number of parking spaces at the venue.

Clothing



***** Dress in layers!! *****

San Francisco Avg Temp in April – High: 65 F / Low 52 F
Weather can range from overcast, rainy days to clear and sunny skies. **Check the forecast before your trip.**

We will be keeping windows and doors open for ventilation.

Recommended:

warm jacket, rain jacket, gloves, beanie, hat, sunscreen, mask (optional)

----- AT THE VENUE -----

We will have receptacles for Recycling, Compost, and Trash.
Go paperless! We will utilize QR Codes to link to the program, evaluations, etc.

Fort Mason is an historic army post located at the edge of the San Francisco Bay and is the headquarters for Golden Gate National Recreation Area. Paved, accessible trails connect Fort Mason's upper and lower units. Our training will be held at the **General's Residence** in Upper Fort Mason (Address: 1 Fort Mason, San Francisco, CA 94109).

Cellular Service + WiFi

- There is no WiFi at Fort Mason but most cell phone providers have coverage.
- Power strips will be available to charge your phone. Bring your own charging cable.

Covid-19

- Bring a mask to protect yourself and others.
- We will keep windows and doors open for ventilation (dress in layers!).

Parking (refer to map on p. 35)

- We strongly recommend attendees **walk to the venue** if you are staying at a nearby hotel or **carpool in a government vehicle**.
- Upper Fort Mason
 - Parking is **limited** at Upper Fort Mason.
 - Government vehicles are free to park at Upper Fort Mason at no charge.
 - Parking is free for those staying at the Fisherman's Wharf Hostel.
 - Rental and private vehicles will need to pay the daily parking fee and is limited to a maximum of 4 hours.
 - A **limited** number of all-day parking passes will be available. Please contact Denise Louie or Lena Lee prior to the training if you need to drive to the venue in a rental or private vehicle and require a parking pass.
- Lower Fort Mason
 - Parking spots can be found at Lower Fort Mason Center. The Lower Fort Mason Center lot is entered at Marina Blvd and Buchanan Streets. Visitors may walk back to the General's Residence either up the steep set of stairs (¼ mile) or through the wheelchair accessible paths through the Great Meadow (<½ mile). Elevation change is approximately 55 feet. See map on page 35 for walking routes.
 - The daily parking fee at Lower Fort Mason is \$15.
- Parking can also be found on adjacent city streets per posted regulations.
- Overnight parking is not permitted anywhere at Fort Mason. However, if you have a government vehicle, you can park overnight, preferably near the park headquarters (Building 201).

Safety

- San Francisco is a big city by a big bay and, overall, is quite safe but always be aware of your surroundings.
- There are many workshop attendees. Buddying up is a great way to feel comfortable when walking around the city, especially at night.
- If you are driving, **do not leave anything in your car** - break-ins are a problem.
- Take the time to memorize your directions beforehand. This ensures you are hands-free and appear to fit in with everyone else living in the city.

TRAINING SCHEDULE

Monday, April 22, 2024							
3:30p	Registrant Check-in						
4:00p–4:15p	**Welcome**						
4:15p–5:15p	PLENARY: Perspectives from NPS Natural Resource Alumni <i>Sarah Allen, former PWR Science Advisor; Jay Goldsmith, former PWR Natural Resources Team Lead; Linda Mazzu, former Resources Lead, Yosemite National Park and Superintendent, Bryce Canyon National Park</i>						
5:15p–5:45p	**Meet and Greet**						
Tuesday, April 23, 2024							
7:30a	Registrant Check-in						
8:00a–8:45a	Announcements and Welcome <i>Denise Louie, PWR Natural Resources & Science Program Lead; Dave Harmon, Executive Director, George Wright Society; David Smith, Superintendent, Golden Gate National Recreation Area; and Craig Kenkel, Superintendent, Point Reyes National Seashore</i>						
8:45a–9:45a	PLENARY: Redwood National Park and the Yurok Tribe: Co-Stewardship in Condor Restoration and How We Got Here <i>Tiana Williams-Claussen, Director of Wildlife, Yurok Tribe and Karin Grantham, Resource Management & Science Program Manager, Redwood National Park</i>						
9:45a–10:15a	Tea/Coffee Break						
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3:30p–4:15p	PLENARY: NPS Natural Resource Actions, Investments, and Relevance–Perspectives from the Washington Office <i>Ray Sauvajot, NPS Associate Director, Natural Resource Stewardship and Science</i>						
4:15p–5:30p	**Evening Reception with light refreshments**						
Wednesday, April 24, 2024							
8:15a–8:25a	Announcements						
8:25a–9:30a	PLENARY: Pacific West Action for Global Progress on Human-Caused Climate Change and Ecosystem Integrity <i>Patrick Gonzalez, Executive Director, Institute for Parks, People, and Biodiversity, Climate Change Scientist, UC Berkeley</i> From Modeling to Mayhem: A Journey of Climate Change and Giant Sequoias <i>Christy Brigham, Chief of Resources Management & Science, Sequoia and Kings Canyons National Park</i>						
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11:30a–1:00p	LUNCH						
12:00p–12:55p	Art Project – Planting Seeds: Science Messaging and Letterpress						

-----Continued next page-----

TRAINING SCHEDULE

Wednesday, April 24, 2024 - continued			
	----- Plenary Room -----	----- Ballroom -----	
1:00p-1:30p	Lightning Presentations 1	Lightning Presentations2	
1:30p-3:00p	<p><u>Protecting Natural Resources in a Changing Climate</u> David Lawrence, <i>NPS Climate Change Response Program</i>; Alison Forrestel, <i>GOGA</i>; Sheri Shiflett, <i>JOTR</i>; Tom Rodhouse, <i>UCBN</i></p> <p style="text-align: center;">Group Nudibranch</p>	<p><u>Science Communication</u> Hazel Galloway, <i>NCCN</i>; Anna Christie, <i>PWRO</i>; Sonya Daw, <i>KLMN</i>; Keith Lombardo, <i>SCRLC</i>; Laura Booth, <i>GOGA</i>, Taro Katayama, <i>PWRO</i>; Michael Vamstad, <i>JOTR</i></p> <p style="text-align: center;">Group Tardigrade</p>	
3:00p-3:30p	Tea/Coffee Break		
3:30p-5:00p	Concurrent Workshops		
	----- Plenary Room -----	----- Ballroom -----	----- Lounge -----
	<p><i>Fire and Resources Management</i></p> <ul style="list-style-type: none"> ▪ Jennifer Gibson, NPS-NIFC Post Wildlife Coordinator ▪ Cedar Drake, Acting PWR Fire Ecologist ▪ Garrett Dickman, YOSE Veg Ecologist 	<p><i>Collaborative Conservation and Partnerships</i></p> <ul style="list-style-type: none"> ▪ Jaimie Baxter, National Forest Foundation ▪ Seamus Lands, University of Montana 	<p><i>Building Relationships with Indigenous Knowledges and Resources Management</i></p> <ul style="list-style-type: none"> ▪ Moderator: Jason Lyon, PWR Cultural Anthropologist
Thursday, April 25, 2024			
8:15a-8:30a	Announcements		
8:30a-9:30a	<p>PLENARY: Changing the Conversation Around Climate Change <i>Adam Ratner, Director of Conservation Engagement, The Marine Mammal Center and Laura Castellini, Sustainability Coordinator, Golden Gate National Recreation Area</i></p>		
9:30a-10:00a	Tea/Coffee Break		
	Concurrent: Case Studies from Parks		
	----- Plenary Room -----	----- Ballroom -----	
10:00a-11:30a	Session 1: Conservation in a Changing Climate	Session 2: People and Places	
11:30a-1:00p	LUNCH		
12:00p-12:55p	Art Project – Planting Seeds: Science Messaging and Letterpress		
1:00p-1:30p	Lightning Presentations 3	Lightning Presentations 4	
1:30p-3:00p	Session 3: Innovative Techniques	Session 4: Ecosystem Resilience	
3:00p-3:30p	Tea/Coffee Break		
3:30p-4:30p	<p>PLENARY: Coproducing Justice—and Equity-centered Research Programs with Local Communities <i>Christopher Schell, Department of Environmental Science, Policy, and Management, UC Berkeley</i></p>		
4:30p-5:00p	**Wrap Up**		
5:00p-5:30p	<i>Venue is available to connect with colleagues, meet up for group dinners, etc.</i>		
Friday, April 26, 2024			
8:00a	<i>Venue is available for any side meetings.</i>		
8:30a-4:00p	<p>Field Trips to Point Reyes National Seashore and Golden Gate National Recreation Area <i>Meet in front of General's Residence.</i></p>		
4:00p	END		

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Plenary Session: Perspectives from NPS Natural Resource Alumni

Sarah Allen, Jay Goldsmith, and Linda Mazzu

4:15 – 5:15 pm

Moderator: Irina Irvine, Ocean & Coastal Program Manager, Pacific West Region

NPS Alumni Panel Bios

Sarah Allen retired in 2019 after serving more than 25 years in the National Park Service. Growing up, Sarah was always interested in conservation, particularly in marine ecosystems. Her mentors, including Starker Leopold, son of famed conservationist Aldo Leopold, encouraged her to turn her interests into a career. Sarah has worked on the Farallon Islands tracking seabirds, whales, and seals, and in Antarctica, studying penguin colonies. She has also authored a Field Guide to Marine Mammals of the Pacific Coast. With the National Park Service, Sarah has served as a marine ecologist for Point Reyes National Seashore, as well as Science Advisor, Coast and Ocean Program Lead, and Research Coordinator for the California Cooperative Ecosystem Studies Unit in the Pacific West Region.

Jay Goldsmith retired in 2019 after an impressive 43-year career with the Department of Interior. Jay began as an outdoor recreation planner for the Bureau of Outdoor Recreation and Heritage Conservation and Recreation Service, later joining the National Park Service Pacific West Regional Office where he ended his career as the Natural Resources Team Lead. In his time in the regional office, Jay helped design and implement the next generation of resources management plans that identified the most significant natural resources issues facing each park and a set of project statements aimed at addressing them; getting parks the funding they needed to address their natural and resource management and research issues, including the establishment of the Natural Resource Cyclic Maintenance Program; and was instrumental in developing the regional approach to Servicewide Comprehensive Calls that we still use today. Jay is enjoying retirement traveling, gardening, and spending time with his family.

Linda Mazzu retired in 2021 after almost 39 years of federal service. She has worked with the NPS Rivers and Trails Conservation Assistance program, at Grand Canyon National Park, with the Bureau of Land Management, U.S. Forest Service, the National Interagency Fire Center, and Yellowstone National Park. Linda's last two positions are where she most hopes her legacy will last. First as Chief of Resources Management and Science in Yosemite National Park, and as Superintendent at Bryce Canyon National Park. "There's nothing better than being able to help others along their career paths. It's the only way to ensure our parks are cared for and protected for future generations. Long ago and along the way someone took a chance on me. It's been my greatest honor to pay it forward to others just getting started. To go from unpaid intern to Superintendent at Bryce Canyon has been a career of dreams and I hope I have inspired others to what is possible."



Sunrise at Heartbreak Rock, Joshua Tree National Park (NPS Photo)



Sunset from Inspiration Point, Channel Islands National Park (NPS Photo / Elena Ruggeri)

Plenary Session: Redwood National Park and the Yurok Tribe: Co-Stewardship in Condor Restoration and How We Got Here

Tiana Williams-Claussen, *Director of Wildlife, Yurok Tribe*

Karin Grantham, *Program Manager, Resource Management and Science, Redwood National Park*

8:45 – 9:45 am

Location: Plenary Room

Moderator: Jason Lyon, Cultural Anthropologist, Pacific West Region

Plenary Speaker Bios

Tiana Williams-Claussen is a member of the Yurok Nation, from the village of Wehl-kwew', and Director of the Yurok Tribe Wildlife Department. She received her bachelor's degree in Biochemical Sciences from Harvard University and was instrumental in the creation of the Yurok Tribe Wildlife Program and the development of many of its conservation initiatives, including the effort to reintroduce California condors to Yurok Ancestral Territory. Tiana relies on her native upbringing and formal education to bridge the beliefs, knowledge, and practices of the Yurok with those rooted in Western-science, and to work toward a cohesive, well-informed perspective on holistic ecosystem management.

Karin Grantham is the Program Manager for the Resource Management and Science Division, overseeing both the natural and cultural resources programs at Redwoods National Park. With a background in cultural resources, archeology and anthropology, Karin also serves as the Tribal liaison for the park (a role she has played since 2001) and has in-depth experience in negotiating Tribal agreements. Karin is passionate to integrate Indigenous knowledge into western science projects. She has created a successful partnership with the Yurok tribe to co-steward park resources including the reintroduction of California condors back to Yurok tribal lands. Karin has also worked internationally with sister park Alerce Costero National Park in Chile on indigenous people exchanges.



California Condors in the Northern California Condor Restoration Program's flight pen (Yurok Tribe / M.Mais)

Concurrent Training Session: Building Relationships through Indigenous Knowledge and Resources Management

10:15 – 11:45 am (Group Tardigrade); 1:30 – 3:00 pm (Group Nudibranch)

Location: Plenary Room

Moderators: Brent Johnson, Vegetation Ecologist & IPM Coordinator, Pacific West Region
Jason Lyon, Cultural Anthropologist, Pacific West Region

Indigenous knowledge (IK) is recognized as one of the many important bodies of knowledge that contributes to our collective understanding of the world. As Dr. Robin Wall Kimmerer tells us, "Science asks us to learn about organisms, traditional knowledge asks us to learn from them." This session will focus on working with Indigenous partners to better understand and incorporate IK into park resource management.

Discussions will touch on the importance of building relationships with knowledge holders, ways to identify opportunities for successful collaboration, and how Indigenous perspectives play a pivotal role in shaping effective management.

Session Presenters

Jennifer Talken-Spaulling, NPS Bureau Cultural Anthropologist

Jennifer Talken-Spaulling currently serves as the National Park Service Bureau Cultural Anthropologist. She manages the nationwide Cultural Anthropology Program and oversees the management of the NPS Park NAGPRA (Native American Graves Protection and Repatriation Act) Program. She has degrees in Anthropology from Western Michigan University and George Mason University where she completed fieldwork on authenticity, place, heritage areas and the identification of urban ethnographic resources. She has worked for the National Park Service since 1995 in national parks and programs in Montana, the Southwest, California, Hawaii, the Mid-Atlantic and Washington DC.

Kent Lightfoot, Professor Emeritus, Department of Anthropology, University of California, Berkeley, (facilitator)

Kent Lightfoot is an archaeologist with the Department of Anthropology at the University of California, Berkeley. He is currently involved in archaeological research at Fort Ross State Historic Park, Point Reyes National Seashore, and the Santa Cruz Coast, as well as studying museum collections in the Phoebe A. Hearst Museum of Anthropology and the Richmond Museum of History.

Alex Apodaca, PhD Student, Department of Anthropology, University of California, Berkeley

Alex Apodaca is an environmental archaeologist and PhD student in the Department of Anthropology, University of California, Berkeley with research interests in environmental archaeology, ethnobotany, and historical ecology in California. The goal of his work is to better understand how resource management strategies (e.g., cultural burning, selective harvesting) developed and changed over time. The other goal is to work collaboratively with contemporary tribal organizations and other agencies to integrate eco-archaeological research and re-implement indigenous stewardship techniques in order to restore native plant and animal species along the coastal region of central California.

-----Continued next page-----

Session Presenters (continued)**Karin Grantham**, Resource Management and Science Program Manager, Redwood National Park

Karin Grantham is the Program Manager for the Resource Management and Science Division, overseeing both the natural and cultural resources programs at Redwoods National Park. With a background in cultural resources, archeology and anthropology, Karin also serves as the Tribal liaison for the park (a role she has played since 2001) and has in-depth experience in negotiating Tribal agreements. Karin is passionate to integrate Indigenous knowledge into western science projects. She has created a successful partnership with the Yurok tribe to co-steward park resources including the reintroduction of California condors back to Yurok tribal lands. Karin has also worked internationally with sister park Alerce Costero National Park in Chile on indigenous people exchanges.

Valentin Lopez, Chair, Amah Mutsun Tribal Band

Valentin Lopez has served as Chair of the Amah Mutsun Tribal Band since 2003, and the President of the Amah Mutsun Land Trust since its inception. Valentin is a Native American Advisor to the University of California, Office of the President. He is also a Native American Advisor to the National Alliance on Mental Illness (NAMI). Valentin is actively involved in efforts to restore tribal indigenous knowledge and ensure their history is accurately told.

Tiana Williams-Claussen, Director of Wildlife, Yurok Tribe

Tiana Williams-Claussen is a member of the Yurok Nation, from the village of Wehl-kwew', and Director of the Yurok Tribe Wildlife Department. She received her bachelor's degree in Biochemical Sciences from Harvard University and was instrumental in the creation of the Yurok Tribe Wildlife Program and the development of many of its conservation initiatives, including the effort to reintroduce California condors to Yurok Ancestral Territory. Tiana relies on her native upbringing and formal education to bridge the beliefs, knowledge, and practices of the Yurok with those rooted in Western-science, and to work toward a cohesive, well-informed perspective on holistic ecosystem management.

Nakia Williamson-Cloud, Program Manager, Nez Perce Tribe Cultural Resources Program

Nakia Williamson, Ipeliikthil'aamkaw'aat (One Who Gathers the Clouds) graduated from Lewis Clark State College, with a Bachelor of Science in Social Science. He gained much of his knowledge and education concerning the traditional 'Way of life' of the Nimiipuu (Nez Perce) from Nimiipuu Culture Bearers over a lifetime. Nakia has worked in the area of Cultural Resource Management for 27 years, and currently serves as Program Manager for the Nez Perce Tribe Cultural Resource Program. He conducts and coordinates technical consultation with various federal/state agencies, such as: U.S. Army Corps of Engineers, Bonneville Power Administration, 13 National Forests, and Bureau of Land Management, to name a few.



Redwood forest along the West Ridge Trail, Redwood National Park (NPS Photo / S. Niehans)

Concurrent Training Session: Conservation at Scale**10:15 – 11:45 am (Group Nudibranch); 1:30 – 3:00 pm (Group Tardigrade)**

Location: Ballroom

Moderators: Lena Lee, External Energy & Minerals Program Specialist, Pacific West Region
Matt Nicholson, Landscape Ecologist, Pacific West Region

Conserving sustainable landscapes is one of the most significant challenges facing society in the 21st century. Unfortunately, the challenges we face are larger than the Parks we work in. As Rachel Carson said, “In nature, nothing exists alone.” The National Parks play a crucial role in landscape-scale conservation, given their responsibility for managing and preserving some of the country's most iconic and ecologically significant areas.

The goal of this training will be to provide participants with the tools and knowledge to think and act within a large-scale landscape context. Topics covered will include leveraging opportunities through partnerships and collaboration, identifying conservation priorities across landscapes, and addressing challenges and opportunities for landscape planning and initiatives within parks.

Session Presenters

- What is Landscape-Scale Conservation?

Arthur Middleton, Associate Professor of Wildlife Management and Policy, University of California, Berkeley and Senior Advisor for Wildlife Conservation, United States Department of Agriculture

Arthur Middleton is an ecologist and conservation scientist on the faculty at the University of California, Berkeley. He has active field research on wide-ranging large mammals in the western US and southern South America. Arthur currently serves as Senior Advisor for Wildlife Conservation at the US Department of Agriculture.

- What is Collaborative Capacity and How Does it Support Landscape-Scale Conservation Efforts?

Jaimie Baxter, Collaborative Capacity Program Manager, National Forest Foundation

Jaimie Baxter works with the National Forest Foundation as the Collaborative Capacity Program Manager. This new program provides funding, technical assistance, and peer learning to collaborative groups, Tribes, and Indigenous communities, and underserved and historically excluded communities, with the aim of supporting equitable cross-boundary collaboration for environmental stewardship. Previous to her current role, Jaimie conducted research on collaboration and landscape-scale stewardship in the US, provided facilitation support to collaborative groups across the country, and spent eight years working with the Golden Gate National Parks Conservancy.

Seamus Land, Research Fellow, University of Montana

Seamus Land is a researcher and collaborative restoration practitioner based out of the University of Montana in Missoula, where he received his MS in Environmental Studies. He has worked to study and facilitate a variety of community-based stewardship efforts around California and Montana. Seamus currently teaches a graduate seminar “Ethics of Restoration” and pursuing several interdisciplinary research questions with collaborators in the USFS, USGS, and the California Landscape Stewardship Network.

Plenary Session: NPS Natural Resource Actions, Investments, and Relevance: Perspectives from the Washington Office

Ray Sauvajot, *NPS Associate Director, Natural Resource Stewardship and Science*

3:30 – 4:15 pm

Location: Plenary Room

Moderator: Katy Delaney, Wildlife Ecologist, Santa Monica Mountains National Recreation Area

Plenary Speaker Bio

Ray Sauvajot serves as Associate Director for Natural Resource Stewardship Science for the National Park Service (NPS), where he provides leadership and direction for natural resource management and science programs of the NPS. As Associate Director, Ray oversees national programs in biology, air and water resources, climate change response, geology, natural sounds and night skies, environmental quality and compliance, ecological inventory and monitoring, and science communication. Ray leads a diverse team of scientists, policy experts, planners, program managers, administrators, and technicians at offices in Washington, D.C., Colorado, and other locations to help advance the mission of the NPS. Ray has served in positions with the NPS for over 30 years and has also held adjunct faculty appointments in biology, ecology, and environmental science at UC Berkeley, UC Los Angeles, and California State University Northridge. Ray received a B.A. degree in biology from UC San Diego (1987) and M.S. and Ph.D. degrees (1993, 1997) in ecology from UC Davis.



Uncollared mountain lion in the Verdugo Hills, near Santa Monica Mountains National Recreation Area (NPS Photo)

Plenary Session: Pacific West Action for Global Progress on Human-Caused Climate Change and Ecosystem Integrity

Patrick Gonzalez, *Executive Director, Institute for Parks, People, and Biodiversity, Climate Change Scientist, University of California, Berkeley*

From Modeling to Mayhem: A Journey of Climate Change and Giant Sequoias

Christy Brigham, *Chief of Resources Management and Science, Sequoia and Kings Canyons National Parks*

8:25 – 9:30 am

Location: Plenary Room

Moderator: Ben Becker, Science Advisor, Cooperative Ecosystem Studies Unit

Plenary Speaker Bios

Christy Brigham leads the Resources Management and Science Division at Sequoia and Kings Canyon National Parks. These parks are seeing alarming impacts of anthropogenic climate change in a wide variety of ecosystems, from streams to forests; understanding and addressing these changes has been one of Christy's focal areas since she first took on the role in 2015. She has co-authored several reports on fire impacts to park resources, including giant sequoias, as well as peer-reviewed articles on climate change research in national parks. Christy received her Bachelor of Science degree in Ecology from the Evergreen State College in 1994 and her doctorate in Ecology from UC Davis in 2001. She began her National Park Service career as restoration ecologist at Santa Monica Mountains National Recreation Area. She has been working in resources management and science in the NPS for over 17 years.

Patrick Gonzalez is a climate change scientist and forest ecologist at the University of California, Berkeley. He advances science-based action on human-caused climate change to protect nature and people, through research on climate change, ecosystems, wildfire, and carbon solutions and assistance to local people and policymakers. Dr. Gonzalez has conducted field research in Africa, Latin America, and the U.S., published in *Science*, *Proceedings of the National Academy of Sciences*, and other journals, and assisted field managers and local people in 25 countries and 269 U.S. national parks. He has stood publicly for scientific integrity and broadened public understanding of climate change in the *New York Times* and other media. He served as Principal Climate Change Scientist of the U.S. National Park Service and Assistant Director for Climate and Biodiversity of the White House Office of Science and Technology Policy. Dr. Gonzalez has served as a lead author for four reports of the Intergovernmental Panel on Climate Change, the science panel awarded a share of the 2007 Nobel Peace Prize.



*Sequoia forest, Sequoia and Kings Canyon National Parks
(NPS Photo / Kiel Maddox)*

Concurrent Training Session: Protecting Natural Resources in a Changing Climate
10:00 – 11:30 am (Group Tardigrade); 1:30 – 3:00 pm (Group Nudibranch)

Location: Plenary Room

Moderators: Lara Rozzell, External Energy & Minerals Program Coordinator, Pacific West Region
 Ryan Monello, Program Manager, Pacific Islands Network Inventory & Monitoring Program

One thing we know for certain about climate change – even the best data from the past is not predictive for the future. How do we work within this uncertainty and unpredictability? What resources exist to support your park management decisions?

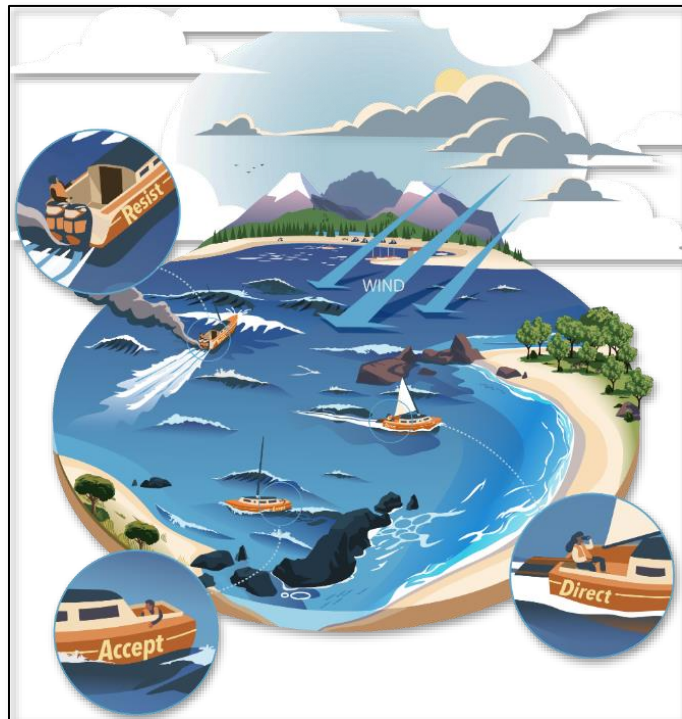
The goal of this training is to ensure you know about the available NPS resources – the resist-accept-direct (RAD) framework, climate change vulnerability assessments, and ecological forecasting. We will facilitate breakout sessions to learn from others, cultivate new ideas, and create lasting connections.

Session Presenters

- **Managing in a Non-stationary World: Frameworks and Tools to Address Climate Change in Park Management**

David Lawrence, Ecologist, Climate Change Response Program, National Park Service

Dave Lawrence is a scientist in the NPS Climate Change Response Program (CCRP) and specializes in aquatic ecology. In his role with CCRP, Dave conducts and translates research to help parks adapt to climate change. This work includes incorporating climate change into planning efforts, developing vulnerability assessments, and advancing our understanding of the sensitivity of park resources to climate change. Prior to his NPS appointment, Dave was the Director of Aquatic Conservation at the National Fish and Wildlife Foundation. He is based in Fort Collins, CO where he enjoys hiking the Front Range with his family and flat-coated retriever.



Graphic representation of the RAD framework using the sailboat analogy. The **Resist** boat powers upwind in an attempt to return to where it started. The wind and waves push the **Accept** boat to parts unknown. The **Direct** boat captain uses the prevailing conditions to steer to a new location of choice.

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Session Presenters (continued)

- Climate Change Adaptation and Vulnerability Assessment at Golden Gate

Alison Forrester, Natural Resources Management and Science Program Lead, Golden Gate National Recreation Area

Alison Forrester is the Program Lead for Natural Resource Management and Science at the Golden Gate National Recreation Area and is currently on a detail as the Acting Interpretation Division Lead at Golden Gate. She has worked for the National Park Service for more than 20 years in a variety of roles related to fire and natural resources management. Her areas of expertise include restoration ecology, fire ecology, landscape scale conservation and management, and biodiversity preservation. She co-leads the Golden Gate Diversity, Equity and Inclusion committee which is focused on creating park communities that are welcoming, inclusive, and relevant to all people. She also leads the Golden Gate Biosphere Network, which brings together land and water conservation organizations in the Bay Area under the umbrella of the UNESCO Man and the Biosphere Program. Alison holds a Master of Forestry from Yale's School of Forestry and Environmental Studies and a PhD in fire and forest ecology from UC Berkeley's Department of Environmental Science, Policy, and Management.

- Joshua Tree Climate Change Response

Sheri Shiflett, Science and Resource Stewardship Division Lead, Joshua Tree National Park

Sheri Shiflett recently became the Division Lead of Science and Resource Stewardship at Joshua Tree National Park. Sheri was formerly the Science Coordinator at Yosemite National Park and worked across branches within Resources Management and Science to develop the science strategy, participate in visitor access management planning, and conduct research with visitor use and impacts to resources. Her interdisciplinary background includes research in the fields of plant ecophysiology, landscape and urban ecology, wetlands ecology, and an applied background in Clean Water Act (CWA) permitting, wetland management, invasive plant management, ecosystem restoration, and natural resources management. The National Parks have allowed her to connect with nature and share kinship with others in a way she never thought possible before arriving at NPS. She considers the environmental problems facing humanity as “wicked” problems lacking simple solutions, that require incorporating interdisciplinary science, societal perspectives, and effective communication with diverse stakeholders. Apart from being a naturalist and ecologist, her favorite activities are yoga, botanizing and exploring nature, photography, reading, crochet and knitting, puzzles, games, most anything Star Trek related, and French studies. She also cherishes spending time with husband, family, and friends.

- Climate, Fire, and Weeds Oh My! Aiming for Climate Resiliency Across the Sagebrush Biome

Tom Rodhouse, Ecologist, Upper Columbia Basin Network Inventory & Monitoring Program

Tom Rodhouse is an ecologist for the National Park Service Inventory & Monitoring Program in the Upper Columbia Basin Network. He has recently served in a detail capacity for the Biological Resources Division Landscape Restoration and Adaption Branch to coordinate IRA and BIL investments for parks with sagebrush steppe habitats. Tom represents NPS on the DOI sagebrush keystone initiative and works closely with parks in the Northwest on climate, fire, and invasive weed challenges. Over the years Tom has also championed other topics including bat conservation. Tom maintains a courtesy faculty appointment with Oregon State University, lives in Bend, Oregon and enjoys outdoor time with his family, including a corgi and cadre of garden gnomes.

Concurrent Training Session: Science Communication**10:00 – 11:30 am (Group Nudibranch); 1:30 – 3:00 pm (Group Tardigrade)**

Location: Ballroom

Moderators: Taro Katayama, Science Communication Fellow, Pacific West Region
Michael Vamstad, Wildlife Ecologist, Joshua Tree National Park

Durable conservation wins require a broad community-wide understanding of what's at stake and how we can move forward in protecting our biosphere. PWR completed a framework for science communication to help with this greater awareness, focused on telling stories about the conservation work happening in our parks. Creating compelling storytelling is a skill that can be put into practice by people working in science in our region.

The goal of this training is to introduce PWR staff working in natural resources to tools and techniques to improve science communication from our programs.

Session Presenters

- Introduction and Exploration

Hazel Galloway, Science Communicator, North Coast & Cascades Network

Hazel Galloway is a science communication specialist for the North Coast & Cascades Network parks through the North Coast & Cascades Research Learning Center. Prior to that, she worked with the NASA/NPS Earth to Sky Partnership developing and leading climate change communication workshops and was a frontline interpreter at Yosemite and other parks. She shares science stories with park staff and the public through web articles, a quarterly newsletter, and other online and print media. Hazel supports interpreters developing science-related programs and interpretive media and promote science news and resources to frontline staff. She also coordinates the new network-wide virtual science symposium. Hazel is based in Port Angeles, Washington, at Olympic National Park.

Anna Christie, Historian – Outreach & Communications, Pacific West Region

Anna Christie is a historian with the Pacific West Region Cultural Resources & Science Program. She's passionate about digital communications and serves as a Science Communication Ambassador to share the science behind preserving cultural resources. Her background is as an interpreter where she spent nine years honing her communication skills working with the public at historic sites around Boston.

- Concept Invention: Best Practices in Science Communication

Sonya Daw, Science Communication Specialist, Klamath Network and Mediterranean Coast Network Inventory & Monitoring Programs

Sonya Daw serves national parks across the western United States as a science writer-editor with the Inventory and Monitoring Division. She draws on her background in wildlife biology (MS) and in communication (MA) to engage the public with NPS science. She also edits technical reports for professional publication. She hopes her work sparks appreciation for nature and the role of science in protecting nature in parks.

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Session Presenters (continued)**Keith Lombardo**, Director, Southern California Research Learning Center

Keith Lombardo is a Coastal Ecologist and the Director of the Southern California Research Learning Center (SCRLC), where he is charged with facilitating cross-cutting scientific partnerships, engaging the public in scientific exploration and communicating science that supports our stewardship of three uniquely southern Californian National Parks (Cabrillo National Monument, Santa Monica Mountains National Recreation Area and Channel Islands National Park). Keith's current research interests are wide-ranging and include topics such as coastal ecology, genetic conservation and ecosystem responses to climate change.

- **Applying Science Communication on the Job**

Laura Booth, Biologist, Golden Gate National Recreation Area

Laura Booth is a biologist with Golden Gate National Recreation Area's natural resources team, where she teams up with NPS staff, partners, interns, and volunteers to restore and protect Tennessee Valley's coastal prairie, scrub, and herbaceous wetlands. Laura's enthusiasm for vivacious science communication has followed her from banding hawks with the Golden Gate Raptor Observatory, to sharing the story of Muir Woods with visitors, to enhancing meadows in the Presidio. You can find her connecting poems to prairie restoration in Tennessee Valley and the southern Marin Headlands.

Taro Katayama, Science Communication Fellow, Pacific West Region

Taro Katayama is the Science Communication Fellow at the Pacific West Region, Natural Resources & Science Program. His main role consists of creating communication strategies for projects, as well as writing digestible science articles. He also co-leads a science communication ambassador group, dedicated to increasing public awareness of pivotal scientific work within national parks in the Pacific West Region.

Michael Vamstad, Wildlife Ecologist, Joshua Tree National Park

Michael Vamstad has been working at Joshua Tree National Park since 2004. He started working for the park as the restoration ecologist and made the move to the park's wildlife ecologist in 2007. Michael received his undergraduate degree in field biology and for eight years he worked on many avian field research projects in California, Arizona, Rhode Island, Guam and Baja California, Mexico. While working for Joshua Tree National Park, he attended graduate school at the University of California – Riverside. In 2009, Michael received his Master's in Ecology by completing a thesis on small mammal and vegetation responses from wildfire.



Wildflower blooms on Mori Point headlands, Golden Gate National Recreation Area (NPS Photo)

Concurrent Lightning Presentations: Session 1**1:00 – 1:30 pm**

Location: Plenary Room

Moderator: Alison Ainsworth, Science Advisor, Cooperative Ecosystem Studies Unit

1 Desert Tortoise Recovery in Mojave National Preserve**Michael Burchett**, Biological Science Technician, Mojave National Preserve

Abstract: The Desert Tortoise (*Gopherus agassizii*) is a charismatic keystone species within the Mojave Desert and Mojave National Preserve. These tortoises are responsible for providing ecosystem services such as habitat creation and seed dispersal. Over the past 50 years, the species has undergone a significant population reduction range wide because of a multitude of threats such as land development, road mortality, human caused changes in predator dynamics, and climate change. As a result, it is now federally listed as Threatened and California listed as Endangered under the respective Endangered Species Acts.



*Desert tortoise, Mojave National Preserve
(NPS Photo)*

This important animal is a species of focus for conservation and restoration for Mojave National Preserve. The Preserve is undertaking important steps to further goals of protecting the remaining tortoises and to augment areas where human actions have created depressed population zones. Management actions such as installing tortoise exclusion fencing along roads, completing predator management and research, head-starting juvenile tortoises, and habitat modeling will help the Preserve meet its goals of long-term Mojave Desert Tortoise recovery.

2 A Quick Evaluation of a Conservation Hatchery in Jumpstarting the Coho Population in Redwood Creek (Marin Co.), CA**Darren Fong**, Aquatic Ecologist, Golden Gate National Recreation Area

Abstract: Redwood Creek (Marin Co., CA) is a small coastal stream (8 sq miles) that drains to the Pacific Ocean. It supports a small population of federally endangered coho salmon (*Oncorhynchus kisutch*) near the southern extent of the species' range. Following poor ocean conditions associated with El Niño, two of the three cohorts/year classes declined in numbers such that there were concerns about local extirpation of the species. NPS worked with regional partners to implement a captive rearing program where juvenile coho salmon were collected from Redwood Creek for 3 years, reared at the Don Clausen-Warm Springs Hatchery and released adults back to Redwood Creek over 4 winters. Genetic sampling and analyses indicated that hatchery reared adults made up over 80% of the summer juveniles (F1 generation) for the 3-year study period (2017-2019). A small number of precocious males (jacks) that were progeny of the hatchery reared adults returned to spawn and produced viable offspring (F2 generation, aka “grandkids”).

3 Protecting and Monitoring Caves in a Changing Climate

Jason Walz, Resource Management Program Lead, Oregon Caves National Monument & Preserve

Abstract: Caves are unique environments that are sensitive to changes in climate and can provide valuable information about past conditions to help make informed decisions. By monitoring caves, these changes can be detected, quantified, and potentially can reveal trends over extended time. Implementing a cave monitoring plan and partnering with outside groups can help Parks protect caves in a changing climate.

4 High Elevation Hawaiian Plant Communities: Implications for Conservation Under Climate Change

Alison Ainsworth, Science Advisor, Pacific Northwest and Great Basin Cooperative Ecosystem Studies Units

Abstract: Globally, subalpine and alpine plant communities are receiving increasing attention due to disproportionately rapid warming at high altitudes, and the resultant habitat shrinkage leaving high-altitude specialists with nowhere to migrate. The Hawaiian subalpine zone (1700-3000m) is an interesting example of this potential phenomenon because of the high endemism and relatively stable, well-defined lower boundary driven by the trade wind temperature inversion capping cloud development. This boundary has been identified as an important floristic break where the onset of climate change may be easily detected. We analyzed plant species richness, cover, and density within the subalpine zone and the adjacent treeline ecotone of Haleakalā and Mauna Loa volcanoes on Maui and Hawai'i islands, respectively. The sampled communities spanned from sparse endemic *Vaccinium* and indigenous *Leptecophylla* subalpine shrublands above the trade wind inversion layer to endemic *Metrosideros* dominated wet forests. We quantified habitat specialization for 170 plant species using species co-occurrence data to rank species' realized habitat niche breadth using the Jaccard index. We then applied these rankings to plants within the Hawaiian treeline ecotone to compare vegetation types and assess the sensitivity of climatic boundaries. Within the highest elevation vegetation types--subalpine shrublands and woodlands--the synergistic effects of invasive plant species and climate change are increasing threats even within conservation lands. We highlighted species likely to be especially vulnerable to climate change due to narrow habitat niche breadth and emphasized the increasing threat of non-native species. These data provide a critical baseline description of high elevation vegetation and demonstrate the importance of moisture availability in this zone.

Concurrent Lightning Presentations: Session 2**1:00 – 1:30 pm**

Location: Ballroom

Moderator: Daniel George, Inventory & Monitoring Program Manager, Pacific West Region

1**An Analog Human in a Digital World: Mapping Across Eleven States to Guide Solar Development and Protect Park Resources****Mel Graf**, Scientist-in-Park GIS Assistant, Pacific West Regional Office**Lara Rozzell**, External Energy and Minerals Program Coordinator, Pacific West Regional Office

Abstract: The National Park Service (NPS) collaborated with the Bureau of Land Management (BLM) to produce the 11-state Western Solar Programmatic Environmental Impact Statement (PEIS). The NPS team produced 784 maps reflecting NPS resource protection concerns at 98 parks. We talk here about completing the effort as imperfect, analog humans in a world that demands digital perfection.

The PEIS determines where and how solar projects can be built on BLM lands, often near NPS resources. The NPS supports DOI's energy development goals by providing good resource protection data to guide BLM planning and project decisions across the Intermountain and Pacific West Regions.

Technical and human-centered challenges permeate the process of developing maps. When encountering challenges – technical or otherwise – it can be easy to forget that to be human is to be flawed, particularly in a field where even the smallest error can be enough to disrupt an entire workflow. The highest quality maps require stumbling through data processing by maintaining human determination. We acknowledge the undeniably human elements of geospatial analysis and accept them as an integral part of the process.

2**Visitor Use Monitoring to Preserve Resources at Yosemite National Park****Sheri Shiflett** Science and Resource Stewardship Division Lead, Joshua Tree National Park

Abstract: Protection of natural resources in Yosemite is particularly challenging during high visitation periods which include the February Horsetail Fall (HTF) "Firefall" event, many weekends and holidays, and peak season between Memorial Day and Labor Day. In 2023, visitor impacts associated with HTF were assessed by measuring soil compaction and ground cover at primary viewing areas. During summer 2023, a suite of additional visitor use and impact monitoring took place, including visitor use and associated impacts in giant sequoia groves and visitor behavior observations in Yosemite Valley meadows. We observed that soils in HTF viewing areas were lightly to moderately compacted, but within acceptable levels for plant growth (*i.e.*, <2.0 kg/cm²). Within sequoia groves, up to 20% of mature trees (*e.g.*, Merced grove) have social trail impacts compared to 6% of mature trees in Mariposa grove and there is at least one tree per grove where average soil compaction near the base of the tree is >2.0 kg/cm². We also observed that within Valley meadows most visitors adhere to formal trails, but there are hotspots of social trail use. Visitor activity types (*i.e.*, stationary vs. active) were also compared to a previous study from 2013 and appear to be changing to more active use patterns. This research can be used to develop protocols for monitoring visitor use in key park locations as well as, measure impacts associated with visitor use to inform and assess management strategies aimed at reducing impacts to sensitive resources.

3 Using Available Pilot Data for Power Analysis to Detect Trends: A Retrospective Assessment from SIEN and MEDN

Leigh Ann Starcevich, Principal Statistician, Western Ecosystems Technology, Inc.

Abstract: Power analysis is a useful tool to inform the design of monitoring programs because tradeoffs among different allocations of limited survey resources over space and time can be quantified and compared. Accurate estimates of variation in monitoring indicators are a critical requirement for an informative power analysis. Generalized linear mixed models of trend may include variance components for year-to-year variation, site-to-site variation, variation among site-level trend lines, and variation among measurements taken at a site within the same year. To inform power analyses of trend tests in MEDN terrestrial vegetation and SIEN lake indicators, estimates of variance composition were obtained from trend models applied to available pilot data. In this talk, I compare the initial variance estimates that were used to inform power analyses for the two monitoring designs to updated variance estimates obtained from data collected during the current monitoring programs. We will examine our success in estimating variance components from available data for power analysis of trend tests.

4 From Valley to Summit: Investigating Copper from Distant Sources in a Remote Alpine Lake Basin of Sequoia National Park

Kelly Martin, Physical Scientist, Yosemite National Park (*presenter*)

Erik Meyer, NPS Natural Sounds and Night Skies Division

Steve Blumenshine, Professor, California State University, Fresno

Aric H. Mine, Associate Professor, California State University, Fresno

Abstract: Copper-based pesticides are widely used in agriculture of California's Central Valley. However, traces of these applied pesticides are observed far from the source. Models incorporating pesticide drift predict trace copper (Cu) particles are atmospherically transported and deposited across the landscape. Sequoia National Park (SNP) in the Sierra Nevada range, is downwind of the Central Valley, making it vulnerable to atmospheric deposition of Cu pesticides. Although Cu is a naturally occurring essential micronutrient, elevated concentrations can be toxic to aquatic species. Six oligotrophic alpine lakes in SNP were chosen for an in-situ basin-wide ecotoxicology study. Copper was investigated in physical and biological media of each lake. The largest difference amongst lakes occurred between mean periphyton Cu in the lowest ($8.86 \pm 0.33 \mu\text{g/g dw}$) and highest elevation lake ($29.90 \pm 1.46 \mu\text{g/g dw}$). Fishless lakes had significantly higher Cu in sediment ($p = 8.7\text{e-}19$) and periphyton ($p = 5\text{e-}06$) compared to lakes with fish. Mean Cu was highest in predacious diving beetles compared to other macroinvertebrates, suggesting possible biomagnification. Mean Cu in brook trout, revealed higher Cu in female gonads ($32.92 \pm 3.20 \mu\text{g/g dw}$) compared to males ($2.25 \pm 0.24 \mu\text{g/g dw}$), but no significant differences between sexes in liver or muscle tissue. Lastly, gonad Cu was highest in July for both male and female brook trout compared to other months, suggesting transfer and release of Cu from mature gonads.

Concurrent Workshops**3:30 – 5:00 pm****Fire and Resources Management**

Location: Plenary Room

Facilitator: Kayla Fermin, Natural Resource & GIS Program Manager, Lewis and Clark National Historical Park and Complex Incident Management Team (CIMT)
Northwest 13 GIS Lead

Presenters:

- Jennifer Gibson, Post Fire Coordinator, National Park Service – National Interagency Fire Center
 - Cedar Drake, Acting Regional Fire Ecologist, Pacific West Region
 - Garrett Dickman, Vegetation Ecologist, Yosemite National Park
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Collaborative Conservation and Partnerships

Location: Ballroom

Moderators: Lena Lee, External Energy & Minerals Program Specialist, Pacific West Region
Matt Nicholson, Landscape Ecologist, Pacific West Region

Facilitators:

- Jaimie Baxter, Collaborative Capacity Program Manager, National Forest Foundation
 - Seamus Land, Research Fellow, University of Montana
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Building Relationships with Indigenous Knowledges and Resources Management

Location: Lounge

Facilitator: Jason Lyon, Cultural Anthropologist, Pacific West Region

Presenters:

- Karin Grantham, Program Manager Resource Management and Science, Redwood National Park
 - Jeanine Lomaintewa, YAS Crew Coordinator, Yosemite National Park
 - Jennifer Talken-Spaulling, Bureau Cultural Anthropologist, National Park Service
 - Valentine Vaeoso, Biological Science Technician, National Park of America Samoa
 - Irene Vasquez, Cultural Ecologist, Yosemite National Park
 - Tiana Williams-Claussen, Director of Wildlife, Yurok Tribe
 - Nakia Williamson-Cloud, Cultural Resource Program Director, Nez Perce Tribe
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Plenary Session: Changing the Conversation on Climate Change

Adam Ratner, *Director of Conservation Engagement, The Marine Mammal Center*
Laura Castellini, *Sustainability Coordinator, Golden Gate National Recreation Area*

8:30 – 9:30 am

Location: Plenary Room

Moderator: Linh Anh Cat, Natural Resource Management Division Lead, Kalaupapa National Historical Park

Plenary Speaker Bio

Adam Ratner began at The Marine Mammal Center in 2009 leading educational programs for high school students and visitors. Over the years, he has challenged people to think differently about ocean conservation using the stories of individual patients that are rescued by The Marine Mammal Center. By providing hopeful stories of action and tangible solutions, Adam helps people find inspiration and empowerment to become the heroes of their own environment and community. Today, as the Director of Conservation Engagement, Adam serves as an expert on topics related to ocean health, such as climate change, ocean trash and sustainable seafood. His ability to break down big and complex ideas helps people understand how their actions have an impact on the ocean.

Laura Castellini is the Sustainability Coordinator at Golden Gate National Recreation Area. Laura manages the implementation of the park's Climate Action Plan, working with subject matter experts to reduce the park's carbon footprint and implementing projects on energy and water conservation, recycling and composting, renewable energy, and electric vehicles. Laura also chairs the park's Green Team and works with staff and interns on climate change education and outreach.



Harbor seal closeup, Channel Islands National Park (NPS Photo / Shireen Shipman)

Concurrent Case Studies from Parks: Conservation in a Changing Climate

10:00 – 11:30 am

Location: Plenary Room

Moderator: Woody Mallinson, Biologist, Haleakalā National Park

10:05 Mission Blue Butterfly Translocation – The Return of the Extirpated

Jesse Fujikawa, Butterfly Lead Biological Science Technician, Golden Gate National Recreation Area

Abstract: The Mission blue butterfly (*Icaricia icarioides missionensis*) is a federally listed subspecies of Boiduval's blue butterfly. It is found only in the grasslands surrounding the San Francisco Peninsula. The caterpillar only eats three species of lupine, silver lupine (*Lupinus albifron* var. *collus*), summer lupine (*Lupinus formosus*) and varied Lupine (*Lupinus variicolor*). Urbanization, vegetation changes and fungal infections have dramatically reduced the habitat for both the butterfly and its host plants.

The loss of host plants due to fungal outbreaks at several sites correlated with butterfly populations declines. To help maintain the distribution Mission blue butterflies were translocate to those sites. The successful translocation stabilized the populations at both Twin Peaks and Milagra Ridge and inspired biologist to imagine other spaces where the butterfly could thrive.

The Mission blue butterfly was last seen at Sweeney Ridge in Pacifica in 1987. Golden Gate biologists have worked hard to restore the costal prairie found at Sweeney Ridge anticipating the return of this tiny blue butterfly. Invasive plants and encroaching scrub were removed to open more coastal prairie habitat. Host lupine species were planted to ensure the butterflies would have everything they would need upon their arrival.

NPS biologists re-introduced this endangered butterfly to Sweeney Ridge in 2022, 2023 and plan to continue this year. Adult butterflies were found at Sweeney Ridge after the first year of translocation, but before additional releases, showing the butterflies had successfully completed their lifecycle at Sweeney Ridge. I will discuss the process and past two years of results after returning this extirpated butterfly this formerly occupied site.

10:25 Conservation Paleobiology in the National Park Service

Nick Famoso, Paleontology Program Manager, John Day Fossil Beds National Monument

Abstract: Conservation Paleobiology is a relatively new field that focuses on the application of the methods and theories of paleontology to the conservation and restoration of biodiversity and ecosystem services. The long-term data on species, communities, and ecosystems offered by the paleontological record is the primary utility of this field. Deep-time approaches use examples of response to environmental changes in the geologic record to hypothesis how modern taxa may respond in the present or future. The use of fossil insect damage to predict changes to global climate changes and changes in fossil mammal communities in volcanically perturbed areas are recently studied examples. Additional applications may be drawn from NPS units with long fossil records such as John Day Fossil Beds National Monument which contains a nearly continuous record of 40 million years of climate change in what is now eastern and central Oregon which shows a transition from subtropical, to temperate, to sagebrush steppe. Conservation Paleobiology has great potential to better inform the ways we manage our public lands and may bring insight into more sustainable long-term practices.

10:45 Assisted Colonization of Albatrosses on the Channel Islands: Thinking Beyond the Park!

Ken Convery, Chief of Natural Resources Management, Channel Island National Park

Abstract: Channel Island National Park is known worldwide for successful and bold conservation initiatives, including the removal of non-native species such as black rats, turkey, pigs, deer, sheep, elk and cattle from park lands. Early park managers had clear baselines and a simple philosophy—if a species is not native, it doesn't belong and should be removed. The threats and uncertainties associated with climate change have complicated conservation management and have forced managers and partners alike to reconsider how best to steward park resources while achieving broader scale conservation goals. This presentation will highlight a collaborative effort by the park, The Nature Conservancy, Pacific Rim Conservation, and other partners to explore if and how the Channel Islands can support Laysan and Black-footed Albatross conservation. These two species face substantial threats from storm surge and sea level rise that will eliminate key breeding habitat in the North-West Hawaiian Islands. Using expert knowledge and the NPS analysis framework developed by Karasov-Olson et al. (2021), researchers determined that assisted colonization of albatrosses to the Channel Islands is feasible and the risks of action are generally low. This work did not answer the question of “should action be taken?” for the two species that use park waters for foraging but are not known to have historically bred within the park.



Enhydrocyon basilateralis, hypercarnivorous "dog", Sutton Mountain, 24 Ma,
John Day Fossil Beds National Monument (NPS Photo)

Concurrent Case Studies from Parks: People and Places

10:00 – 11:30 am

Location: Ballroom

Moderator: Katy Matthews, Natural Resource Specialist, Big Hole National Battlefield, Nez Perce National Historical Park, Whitman Mission National Historic Site

10:05 Co-Stewardship: A Heritage of Grief and a Process Towards Healing

Erin (Echo) Davenport, Supervisory Archaeologist, Yosemite National Park

Abstract: We are not the first land managers, stewards, storytellers, or knowledge keepers of these landscapes. This privilege was not given to us but taken from the people and communities who came first. We benefit from the injustices that enabled us to be here today. Some of us carry grief and shame for these colonial circumstances. But grief is not in our job descriptions or workplans, and grief is our most significant barrier to co-stewardship. We don't want to make things worse but maintaining the status quo does not make things better. We can move forward in a process of healing as we learn to better honor our responsibility to build a more inclusive story of stewardship.

We can use the example of the NPS role in the co-stewardship of the Village of Wauhoga in Yosemite Valley as a step towards healing. This project is not our legacy, but that of the tribal leaders who have been working towards realizing their vision over 50+ years, continuing their culture through education, stewardship, and healing.



Reconstructed Indian village behind the Yosemite Valley Visitor Center, circa 1976, showing four cedar bark structures in sparsely forested area [RL-Roll76.17.5]

10:25 Redwood Rising – Landscape Scale Ecological Restoration Through Partnerships at Redwood National and State Parks

Keith Bensen, Fish and Wildlife Biologist, Redwoods National Park

Abstract: Redwood Rising is a landscape scale ecological restoration program currently taking place within Redwood National and State Parks. Of the approximately 120,000 forested acres within the parks, 80,000 acres were clearcut sometime in the last 75 years previous to the parks' creation. Almost all of those previously harvested areas are in various stages of overly dense, slow growing, second growth forest regeneration. Hundreds of miles of logging roads, most substandard in design, were built to access the trees for harvest. Most of those roads are failing and have or could cause severe damage to the remaining forest and aquatic ecosystems due to erosion and mass wasting events. Finally, many park streams contain very low levels of vital, aquatic habitat forming large woody debris as compared to streams entirely within old growth forest watersheds. Many ecological restoration methods addressing those three problems have been either invented or improved upon at Redwood National and State Parks. Previously, both the state and national parks implemented smaller scale ecological restoration independently. The Redwood Rising partnership between the National Park Service, California State Parks, and Save the Redwoods League as well as many other government and private contributors, is the result of a need to greatly expand restoration to the landscape scale. Redwood Rising is approximately five years old and currently spending between \$5 - \$10 million dollars per year and involving up to 100 people from the parks, partners, and contractors. The goal is to increase the rate of old growth forest characteristics regeneration across 35,000 acres, remove approximately 150 miles of former logging roads, and increase habitat complexity across dozens of stream miles over the next few decades. A summary of how this successful landscape scale restoration program partnership was formed, environmental planning was accomplished, funding secured, implementation processes worked out, and lessons learned for other large restoration projects will be explored.

10:45 Engaging Diverse Young Adults in the NPS Through Environmental Stewardship

Antonio Solorio, SAMO Youth Program Manager, Santa Monica Mountains National Recreation Area

Abstract: The SAMO Youth Program is a shining example of how the NPS meets environmental conservation goals and specific youth development targets through inclusive community engagement and culturally appropriate programming. The program centers on a rich park work experience that 1) promotes an ethic for conservation and stewardship, 2) inspires students toward careers in public service, and 3) provides job experience that produces competitive job skills. The program has been around for 24 years and has demonstrated success in advancing students in their careers, increasing access, inclusion, and relevancy of the NPS to communities that have been historically excluded. This presentation will share Lessons Learned and Best Practices from our program that answer the following questions: How can programs reach beyond environmental goals and meet youth development objectives for participants? How important is it to include families and their communities in program activities? In what ways do organizations need to adjust program goals and delivery to help youth and their communities feel comfortable, welcomed, and contributory?

Concurrent Lightning Presentations: Session 3

1:00 – 1:30 pm

Location: Plenary Room

Moderator: Ben Becker, Science Advisor, Cooperative Ecosystem Studies Unit

1 Including Interns, the "Service Workers of the Outdoors"

Josephine McCormick, Native Seed Collection Intern, Golden Gate National Recreation Area

Abstract: Have you ever worked in a restaurant? Slung coffee or croissants at six in the morning? Shouted “corner!” at your coworkers? If you are among the many of us who have transitioned from service work to the outdoor field, or who may be familiar with that seasonal cycle between plants and pastries, you may recognize the similarities in these two industries. Long days on your feet. Smiling and answering strangers’ sometimes silly questions. The excitement and frustration of navigating shifting environments, teammates, and managers’ styles of leadership. Job insecurity. Perpetually overworked and underpaid. Class is one of the cornerstones of any JEDI (Justice, Equity, Diversity, and Inclusion) initiative, but, like the work we do, it can also be the dirtiest. The least seen and discussed, the most unpleasant for many of us to acknowledge. Class barriers and differences in this industry are some of the most expansive and critical to address because our socioeconomic status affects how we show up to work, and, more importantly, how work needs to show up for us.

As an intern with varied experiences as a service worker, the social and economic impacts of this position are felt most acutely and addressed least frequently. Interns are among the hardest working and least protected group in this organization, and it’s not only our youthful energy that can be exploited. How can thinking of interns as the “service workers of the outdoors” help us appreciate their efforts, protect their interests, and enhance their futures?

2 Restoration During Biodiversity Decline: Large-scale Restoration in Occupied Listed-species' Habitat

Ninette Daniele, Ecologist, Yosemite National Park

Abstract: The desperate state of our world's ecological systems will increasingly require dramatic, large-scale actions to restore ecological functions. The restoration of Ackerson Meadow in Yosemite is the largest project of its kind to restore a Sierra Nevada meadow. The site is occupied by Northwestern pond turtles (proposed for federal listing as threatened) and restoration will be achieved through extensive disturbance using heavy equipment, creating unique challenges in protecting this declining turtle during restoration. We will report recent findings that further the development of protections for the species during projects that impact occupied habitats. We share highlights from the first phase of restoration implementation regarding turtle clearance and approaches to minimize potential impacts, that may be relevant to other large-scale restorations.

3 Cultivating Camas Connections

Katy Matthews, Natural Resource Specialist, Big Hole National Battlefield, Nez Perce National Historical Park, Whitman Mission National Historic Site

Abstract: *Camassia quamash* (qémes/ camas) is a facultative wetland hydrophyte with cultural ties to many Tribes and First Nations across western North America. It is considered a cultural keystone species occupying an important ecological niche in the region's wetland prairie ecosystems and a prominent role in the cultures of Northwest Tribes. Traditional Indigenous management of camas dominated prairies allowed for dependable and sustainable, yearly harvests of camas bulbs securing the important position this food source played in the yearly round of Indigenous peoples.

Across the Pacific Northwest most of these wetland prairie habitats have been privatized, drained, and converted to agricultural lands. With Indigenous management practices removed from the landscape, the important ecosystem functions provided by these wetlands have been greatly altered and degraded. One such location is the Weippe Prairie site of Nez Perce National Historical Park which once supported a thriving camas population that was managed for thousands of years by the Nimiipuu (Nez Perce).

Weippe Prairie is a cultural keystone place and exemplifies the connection between natural and cultural significance. For Nez Perce National Historical Park, camas is a focal species and we've committed to restoring healthy camas populations to both improve the ecosystem and provide opportunities for resumption of traditional cultural practices. These efforts require prioritizing and building partnerships with tribal partners, conducting research, administering management actions that encourage restoration of the land, and connecting with people across the region to increase camas conservation, restoration, and access in a respectful and responsible way.

Camas has the unique ability to connect people across backgrounds, cultures, and disciplines. Management strategies incorporating traditional uses of species like camas and more broadly, the biological and cultural landscapes in which these species grow, deserve special attention. We invite you to hear how camas has helped the park in this endeavor.

4 Accomplishing NPS Research, Technical Assistance, and Education Priorities Via Cooperative Ecosystem Studies Units

Ben Becker, Science Advisor, California Cooperative Ecosystem Studies Unit (*presenter*)
Jade Moniz-Nakamura, Science Advisor, Hawaii Pacific Islands Cooperative Ecosystem Studies Unit
Alison Ainsworth, Science Advisor, Pacific Northwest and Great Basin Cooperative Ecosystem Studies Units

Abstract: The National Park Service (NPS) relies on timely and sound scientific research to meet its mission. While the NPS employs a world-class scientific and technical workforce, science and technical services are not always available in-house. Cooperative Ecosystem Studies Units (CESU) are multi-agency, university-based collaborations providing scientific research, technical assistance, and education to partner federal agencies. The CESU Network includes more than 490 nonfederal partners and 17 federal agencies across seventeen CESUs representing biogeographic regions encompassing all 50 states. This network is a platform supporting research, technical assistance, education, and capacity building that is responsive to long-standing and contemporary science and resource management priorities. Here, we give an overview of how NPS staff and partners can engage with the CESU to fulfill natural and cultural resource research and education needs.

Concurrent Lightning Presentations: Session 4

1:00 – 1:30 pm

Location: Ballroom

Moderator: Brent Johnson, Vegetation Ecologist & IPM Coordinator, Pacific West Region

1 Recovering Endangered Mission Blue Butterflies at Golden Gate National Recreation Area**William Merkle**, Wildlife Ecologist, Golden Gate National Recreation Area

Abstract: The federally endangered Mission blue butterfly (*Icaricia icarioides missionensis*) occurs in coastal grasslands both north and south of the Golden Gate Bridge in the Golden Gate National Recreation Area (NPS). NPS has worked extensively on monitoring and recovery actions for this species since the mid-1990's. Habitat loss and fragmentation were major factors leading to the Mission blue butterfly listing in 1976. Currently, a fungal pathogen that affects host plants, scrub encroachment into coastal grasslands, and invasive plants are major threats. The fungal pathogen seems to be most prevalent in strong El Nino years, with warm, wet springs that may become more common with global warming. We have focused on removing woody vegetation, including invasive trees and broom, as well as native coyote brush and California sagebrush to keep coastal grasslands open. We have worked to increase the abundance and diversity of host plants through outplanting and, more recently, direct seeding. Seed amplification work has increased our ability to direct seed. Additionally, we have worked to establish summer lupine (*Lupinus formosus*) in areas with silver-leafed lupine (*L. albifrons*), as the summer lupine appears to not be susceptible to the fungal pathogen that affects silver-leafed lupine. Finally, we have NPS has brought Mission blue butterflies back to two sites through translocations to restore stable populations. Our extensive work on Mission blue butterflies, as well as other agency efforts, are moving the needle for this species, such that it may be downlisted in subsequent status reviews. Our work on Mission blue butterflies benefits the broader coastal grassland ecosystems in which they live.

2 Conservation Translocations of the California Red-legged Frog to Yosemite National Park

Rob Grasso, Aquatic Ecologist, Yosemite National Park (*presenter*)
 Andrea Adams, Ecologist, University of California, Santa Barbara
 Rachel Mazur, Natural Resources Program Lead, Northeast Regional Office

Abstract: Resource managers are challenged with maintaining historical species assemblages, or whether to consider species shifts in step with a changing climate. In the past, protecting and restoring native species in National Parks was based on specific definitions of what a native species was. In 2016, park managers “introduced” a population of California Red-legged frog (CRLF) to Yosemite Valley to provide a safe harbor for the species. Concerns over assisted migration that may result in establishment of invasive species is warranted, however, in this instance reintroducing CRLF to the Yosemite Valley was considered low-risk. Using historical reference points likely limits resource managers in conserving native species, especially federally listed species. Only by adopting open-minded approaches to novel methods and dramatic interventions, can managers then resist conceptual shortcomings that have limited the effectiveness of traditional conservation actions. Successful breeding and recruitment of CRLF has taken place annually in Yosemite Valley from 2019 to 2024. Now that this conservation translocation population has been established future reintroductions and translocations in the southern Sierra region can now occur. As a result, management agencies as well

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as biodiversity can benefit from new direction away from traditional policies and opinions and accept more flexibility and risk when choosing actions to combat climate change and anticipated species' range shifts. The successful introduction of CRLF to Yosemite Valley documents that suitable habitat can provide a safe harbor for an endangered species even if it is marginally outside of the species' known or previous historical range. This action is an intrepid forward step for the U.S. National Park Service to lead the way for novel approaches to restoration in a perennially dynamic future.

<https://zslpublications.onlinelibrary.wiley.com/doi/full/10.1111/acv.12863>

3

Restoring Wai to Waikolu Stream in Kalaupapa National Historical Park, Moloka'i, Hawai'i

Anne Farahi, Biologist, Pacific Island Network Inventory & Monitoring Program

Abstract: Wai or freshwater is highly recognized globally and throughout the Hawaiian Islands as a critical resource. In the Hawaiian language ('ōlelo Hawai'i), the term "wai wai" means "wealth" and there are over 200 words for rain, which illustrates the importance wai played in Hawaiian culture. On the island of Moloka'i, within Kalaupapa National Historical Park (KALA), lies Waikolu Stream winding through Waikolu Valley, a place of interwoven cultural and natural significance and history. Currently, streamflow is diverted to supply water to the rest of Molokai. Stream flow alteration including diversions and groundwater withdrawal can dewater a stream and impede the dispersal of their unique animals. The stream hosts numerous native, endemic species, all of which have an amphidromous life cycle with a partial marine larval stage hence any alteration threatens them. Therefore, data was collected by the National Park Service Pacific Island Network Inventory & Monitoring Division to support the 2022 revision of Instream Flow Standards for the watershed, which would restore stream flow to previously dewatered areas and ensure proper water flow.

4

Developing Naturalistic and Sustainable Geologic Infrastructure Through the Geology and Imminent Threats Program at Mount Rainier National Park

Scott Beason, Geologist, Mount Rainer National Park

Abstract: The dynamic geomorphic environment at Mount Rainier National Park (MORA) and changing climate trends in the Pacific Northwest have led to changes in river behavior that has adversely impacted park infrastructure. Over the last several decades, the overall effects of glacial retreat and associated increases in aggradation rates, increases in surface events like debris flows, and impacts from flooding have led to infrastructure damage that has caused total loss of several roadways, destabilized trail networks, and a steady loss of access to much of the park. To combat these trends, MORA has implemented an Imminent Threats Program that uses adaptive management to address scientific-based multi-phased approaches for assessing, prioritizing, and mitigating flood hazards to park infrastructure. The most recently employed methods include the use of targeted engineered log jams (ELJ's), soil bioengineering practices, minimalistic construction practices, and rock barb flood mitigations. The use of methods is relatively new to MORA's Maintenance Division and while these designs are all well accepted methods in many regions and professions, the extreme settings of MORA test them in ways they were not designed. Each design is experimental in the settings we have installed them, and each has ongoing monitoring efforts attached to assess their viability as adaptive resource management practices for the NPS. Several of our structures have been in place for many years now and are still working effectively with minimal ongoing maintenance. Lessons learned from each installation improve the overall effectivity of future structures and help inform the development of similar structures in other locations at MORA.

Concurrent Case Studies from Parks: Innovative Techniques

1:30 – 3:00 pm

Location: Plenary Room

Moderator: Daniel George, Inventory & Monitoring Program Manager, Pacific West Region

1:35 Saving an Endangered Seabird at Redwood National and State Parks Using Social Marketing Communication Techniques

Keith Bensen, Fish and Wildlife Biologist, Redwood National Park

Abstract: Adaptive management and social marketing communication techniques have been applied to a visitor behavior change program to conserve the endangered marbled murrelet (*Brachyramphus marmoratus*), an old growth forest nesting seabird. The majority of California's marbled murrelets nest within Redwood National and State Parks. Continued marbled murrelet population decline within protected areas has been linked to high rates of nest predation by corvids, primarily Steller's jays (*Cyanocitta stelleri*). Elevated Steller's jay densities, and subsequent elevated rates of predation on marbled murrelets, occur near high use visitor areas (e.g., campgrounds and picnic areas) because of supplemental food supplied inadvertently by park visitors. An increasingly intensive corvid management program that uses targeted visitor education based on social marketing methods and other techniques has significantly changed, and succeeded, over the past 18 years based on feedback from biological and sociological monitoring data as well as numerous targeted scientific studies. The evolution of the parks' corvid management program, decision triggers, and general lessons applicable to similar human/wildlife conflict and visitor/natural resource impact issues in parks and protected areas will be discussed.

1:55 Messaging for Behavioral Change: Non-Lead Ammunition Outreach Methods

Dan Ryan, Invasive-Wildlife Biologist / Non-Lead Ammunition Specialist, Pinnacles National Park

Abstract: Firearms and ammunition can be a contentious issue in this country right now and throwing in an endangered species to that mix can make meaningful dialogue difficult. After over a decade of trying to thread the needle on the issue of lead poisoning in scavenging wildlife due to the inadvertent consumption of fired ammunition, the NPS and its partners have developed outreach and education methods that work to find common goals and emphasize science over emotions. Find out what we have learned over time on communicating with an audience that varies from committed partners who champion your message, to those who are convinced you are actively working to take away their constitutional rights. How do we reach the entire spectrum of this audience with a scientifically accurate message that could change a behavior that will then have lasting widespread impacts on wildlife health? I'll discuss what works, what didn't, lessons learned, concepts of innovation diffusion, and the broad themes of science communication aimed at human behavioral shifts on a national scale.

2:15 Navigating Uncertain Climate Futures with RAD: Harnessing ‘Online’ Machine Learning and Data Science for Effective Environmental Stewardship

Maya Weltman-Fahs, Senior Program Manager, Eric and Wendy Schmidt Center for Data Science & Environment, University of California, Berkeley

Nicholas Gondek, Data Scientist, Eric and Wendy Schmidt Center for Data Science & Environment, University of California, Berkeley

Abstract: In our rapidly changing environment, maintaining and managing our priceless natural assets present demanding challenges. In this regard, the Resist, Accept, Direct (RAD) framework proves to be a valuable directive - but how do we know when to resist, when to accept, and when to direct?

Of course, academic research, long term monitoring efforts, and institutional knowledge can help the agency make effective decisions. However, these efforts require repeated analyses and publications to keep land managers up-to-date, even when methodologies remain the same. ‘Online’ machine learning systems, on the other hand, are updated programmatically every time new data become available - keeping predictions and insights accurate and up-to-date by design.

UC-Berkeley’s Eric and Wendy Schmidt Center for Data Science and Environment (DSE), in collaboration with NPS Pacific West Inventory and Monitoring Division, is developing such an ‘online’ tool to help land managers understand the severity of fires within their parks, using remotely sensed data tuned to field observations of fire severity.

2:35 The Northwest Bat Hub and NABat: The Collaborative Model to Track Bat Populations Across the Northwest

Tom Rodhouse, Ecologist, Upper Columbia Basin Network Inventory & Monitoring Program

Abstract: In response to the bat disease White-nose Syndrome (WNS) and general lack of consistent population monitoring across sufficiently broad scales, NPS and partners built the North American Bat Monitoring Program and regional collaborative hubs to implement the program. The first of these hubs formed in 2016 in the Pacific Northwest, which became a model for subsequent hubs to form across the US and Canada. Since 2016 > \$2 million (~\$300,000/year) has been pooled among partners at the Oregon State University-Cascades Campus to fund a small core staff and coordinate collaborative bat monitoring and associated research and bat habitat stewardship projects, including a Spanish-language citizen science project, across Oregon, Washington, and Idaho. Tribes, states, federal agencies, and non-governmental organizations comprise the partnership. Accomplishments include a comprehensive protocol, coordinated deployment of bat call recorders (bat “detectors”), management of millions of recorded bat call files, trend detection across the region, species distribution maps, and disease and habitat surveillance. Guidance to partners have included tree snag and fuels management for bat population welfare, cave and abandoned mine stewardship, and state wildlife action plans. Twenty-two NPS units and the three Inventory & Monitoring Program Networks (UCBN, KLMN, NCCN) that overlap the 3-state region participate in the effort, guided by a protocol implementation plan which outlines how NPS operates within the broader interagency partnership. This program exemplifies large landscape collaborative conservation and provides the baseline foundation upon which numerous other scientific and management activities can be conducted. This talk will describe this background, current progress, and key next steps.

Concurrent Case Studies from Parks: Ecosystem Resilience

1:30 – 3:00 pm

Location: Ballroom

Moderator: John Wooster, Fluvial Geomorphologist, Pacific West Region

1:35 Bridging the Landscape Connectivity Gap: A Look into National Park Service Wildlife Crossings

Morgan Darby, Natural Resources Fellow, Pacific West Region, Natural Resources & Science
Mel Graf, Scientist-in-Park GIS Assistant, Pacific West Region, Natural Resources & Science
Taro Katayama, Science Communication Fellow, Pacific West Region, Natural Resources & Science
Gina Yaroli, Ecosystem Restoration Fellow, Pacific West Region, Natural Resources & Science

Abstract: Wildlife crossings have emerged as a vital solution to address the pressing issue of habitat fragmentation, gaining significant attention and acclaim in recent years. But what exactly are they, and why are they crucial for conserving resources across boundaries in the National Parks? Join us for an illuminating discussion led by the Pacific West Region's Natural Resources Fellows, as we delve into the intricacies of wildlife crossings and showcase various exciting projects happening across the region.

In this talk, we will explore the diverse array of wildlife crossings deployed across parks in the Pacific West Region, unveiling their innovative designs and strategic placements. From elevated bridges to underpasses these crossings serve as lifelines for countless species, allowing them to navigate fragmented landscapes safely and effectively. Discover how these crossings not only facilitate movement but also promote genetic diversity, essential for the long-term health of ecosystems.

This project incorporates captivating StoryMaps that vividly illustrate and synthesize the journey and impact of various wildlife projects within the region. StoryMaps are a useful interactive multi-media tool that allows us to represent information visually and compellingly. It also acts as a landing page for wildlife crossing projects happening across our parks, making it easy to connect, share, and learn more about projects happening across our region!

1:55 Hawaiian Forest Bird Conservation Keystone Initiative

Ryan Monello, Program Manager, Pacific Island Network Inventory & Monitoring Program (*presenter*)
 Seth Judge, Terrestrial Ecologist, Pacific Island Network Inventory & Monitoring Program
 Chris Warren, Forest Bird Program Coordinator, Haleakalā National Park

Abstract: The non-native Southern house mosquito (*Culex quinquefasciatus*) is the vector of non-native avian malaria in Hawai'i, a disease that is decimating Hawaiian forest bird populations. Until recently, elevations above 5,000 feet were a relatively disease-free refuge because avian malaria and mosquitoes are cold intolerant and were limited by lower temperatures in high elevation bird habitat. Increasing temperatures and altered rainfall patterns are allowing mosquitoes to disperse into this refuge, spreading avian malaria and causing rapid population declines. Four species are predicted to be extinct within 10 years and eight additional species, which represent almost all the remaining native forest birds in Hawai'i, are at risk of extinction without management action. To address this crisis, Department of Interior bureaus are working together, along with the State of Hawai'i, Native Hawaiian community, and numerous public and private partners, to lead the Hawaiian Forest Bird Conservation Keystone Initiative. This strategy provides a shared vision for a comprehensive approach to prevent the extinction

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of Hawaiian forest birds by applying a science-based approach, various conservation techniques, and Native Hawaiian biocultural knowledge and practices. It includes the planning and implementation of landscape-level mosquito control using Incompatible Insect Technique (IIT - a naturally occurring bacteria *Wolbachia*), translocation of birds to higher elevation islands, the establishment of captive populations of the most at-risk birds, development of next-generation tools that increase the scope or efficacy of these actions and conducting the suite of these activities in a culturally appropriate and integrated approach. These programs have or are in the process of being rapidly implemented; landscape scale application of IIT, establishment of captive populations, and biocultural integration began in 2023. This talk will discuss key findings, partnerships, program establishment, and ongoing management actions of the Keystone Initiative.

2:15 Ackerson Meadow: Largest Wetland Restoration Project in Yosemite's History

Tim Kuhn, Ecohydrologist, Yosemite National Park (*presenter*)

Matt Freitas, Director – California Headwaters Conservation, American Rivers

Melissa Steller, Biological Science Technician, Yosemite National Park

Athena Demetry, Supervisory Natural Resource Manager, Branch Lead, Yosemite National Park

Curtis Kvamme, District Soil Scientist, Stanislaus National Forest

Abstract: In 2023, Yosemite National Park embarked on the largest single wetland restoration project, Ackerson Meadow, in its history through collaboration with American Rivers, Stanislaus National Forest, and Yosemite Conservancy. This restoration project is the largest full-fill restoration project in the Sierra Nevada, to date. Earth-moving for Phase 1 of the project was completed in November 2023, with revegetation planned for May 2024, and completion of Phase 2 by June 2025. The project goal is to restore 84 acres of lost wetland and protects 111 acres of eroding wetland, by completing full fill of a more than 3-mile human-caused erosion gully network that has eroded 151,000 cubic yards of wetland soils. The purpose of this project is to stop excess soil erosion, slow water loss through runoff, and reverse habitat conversion, thereby enhancing resistance of Ackerson Meadow, downstream communities, and the Tuolumne River watershed, to effects of climate change. Ackerson Meadow is unequalled as one of the largest public-owned mid-elevation meadows in the Sierra, and is an ecologically and regionally critical wildlife corridor, supporting the Pacific fisher (Federal endangered), Northwest Pond Turtle (proposed Federal threatened), Great Grey Owl (CA endangered), and Little Willow Flycatcher (CA endangered), as well as 3 Native Plant Society listed plants. After restoration, the meadows may be suitable for reintroductions of Federal listed amphibians including CA red-legged frog, and foothill yellow-legged frog. This presentation provides project background and status update, as well as contrasts the alternatives considered by the project team, highlighting details and complexities of restoration at this scale: the largest fine-scale we could imagine.

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2:35 Reconnecting Floodplain Function: An Investment in River Ecosystem Resilience

John Wooster, Fluvial Geomorphologist, Pacific West Region, Natural Resources & Science

Abstract: Disconnecting floodplains from their riverscapes has been a pervasive practice in the U.S. since early European colonization and prolific since the passage of the Swamp Land Act of 1850. While reclamation of floodplain areas for agriculture and development as well as building defenses from floods are many of the key causes for widespread floodplain disconnection, several other common practices such as road and trail construction within the floodplains or at stream crossings can contribute to significant floodplain disconnection. The benefits of reconnecting overbank flows to their floodplains are vast and reach all levels of the riverscape ecosystem. Some of the measurable benefits include decreased instream water temperatures, higher and more sustained summertime baseflows, greater hyporheic exchange, increased groundwater tables capable of supporting native riparian and meadow vegetation, and greater nutrient and food web connectivity. While all these ecosystem benefits are invaluable to many critical habitats increasingly under pressure from anthropogenic impacts, widespread floodplain reconnection is likely essential in the face of climate change, where temperatures are rising and often the quantity of precipitation (and thus streamflow) decreasing, if the ecosystems dependent on riverscape functions are going to persevere. Some examples of floodplain disconnection and efforts to restore proper function are presented for JODA, NOCA, and GOGA.



The mouth of the Stehekin River, North Cascades National Park (NPS Photo)

Plenary Session: Coproducing Justice- and Equity-centered Research Programs with Local Communities

Christopher Schell, *Department of Environmental Science, Policy, and Management, University of California, Berkeley*

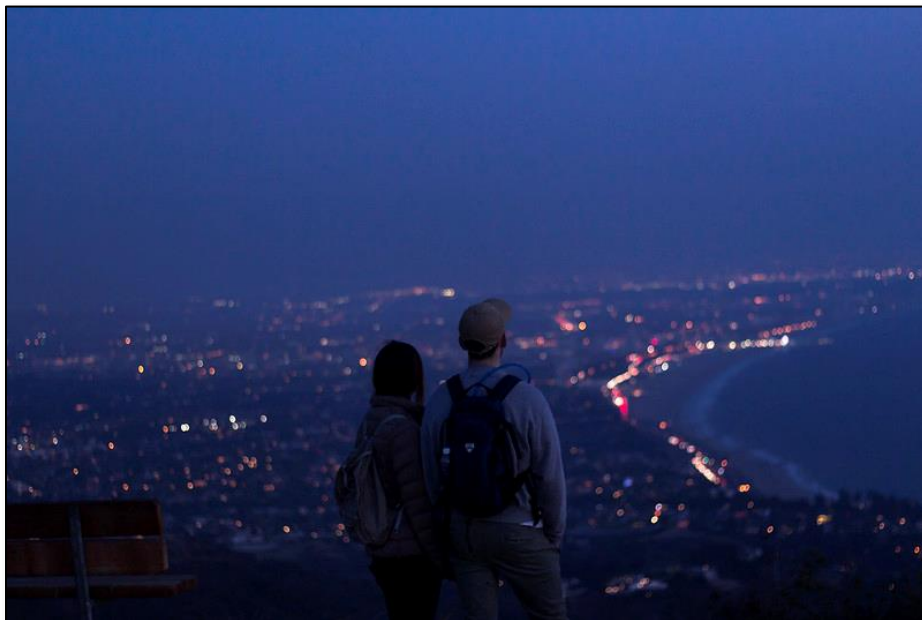
3:30 – 4:30 pm

Location: Ballroom

Moderator: Alison Forrestel, Natural Resource Management and Science Program Lead, Golden Gate National Recreation Area

Plenary Speaker Bio

Christopher Schell is an urban ecologist, professor, Afrofuturist, father, and writer. Schell's research sits at the intersection of animal behavior, physiology, urban biodiversity conservation, environmental justice, and One Health to investigate how carnivores – namely coyotes, foxes, and raccoons – adapt to life in cities. In addition, Schell's lab integrates critical discourses on how structural oppression (*e.g.*, redlining, pollution burden, and socioeconomic disparities) directly shape the very urban features associated with human-wildlife interactions, conflict, and adaptation. This transdisciplinary work aims to disentangle how environmental injustices have structured our urban ecosystems and how we can harness those lessons to build more just, biodiverse, and resilient cities. Schell is a National Geographic Explorer, Grist Fixer, Cal Academy Fellow and Board Member, and Affiliate Faculty with the Museum of Vertebrate Zoology, with his work featured in *The Atlantic*, *The New York Times*, *Vox Explained*, and various NPR radio events. Since 2021, Schell has served on the faculty in the Department of Environmental Science, Policy, and Management (ESPM) at the University of California, Berkeley. A born-and-raised Los Angelean now firmly planted in the Bay Area, Schell weaves his lived experiences as a Black man and Californian to coproduce justice- and equity-centered research programs with local communities that regenerate urban nature, environmental health, and access for all peoples.



Evening hikers at Santa Monica Mountains National Recreation Area (NPS Photo / Wing Sze Lee)

Field Trips: Crissy Fields (Golden Gate National Recreation Area)

Walking tour from Fort Mason to Crissy Field (approximately 3-4 miles round trip of walking) where we will see a landscape transformed by restoration from an abandoned airfield to a matrix of wetlands, dunes, and visitor infrastructure.

Guides: Kristen Ward and Michael Chasse

Point of Contact: Alison Forrestel

Muir Woods and Muir Beach (Golden Gate National Recreation Area)



*Muir Woods bridge overlooking Redwood Creek
(NPS Photo / Kirke Wrench)*

A walk in Muir Woods to see recent creek restoration work designed to improve creek function and habitat for coho salmon. Later, a visit to Muir Beach for lunch and view the restoration efforts there.

Guides: Carolyn Shoulders and
Darren Fong

Point of Contact: Gina Yaroli

Abbotts & AT&T Dunes (Point Reyes National Seashore)

Walk and learn about PORE's extensive and varied efforts to restore coastal dunes for T&E and other rare species. Includes mechanical excavation and prescribed burning.

Guides: Lorraine Parsons and Jenna Allred

Point of Contact: Lorraine Parsons

Tomales Point (Point Reyes National Seashore)

Five-mile round-trip hike out along the Tomales Point Trail at the northern end of Point Reyes National Seashore. Along the way, we will discuss the history of tule elk management on the peninsula, what changes to expect with the forthcoming Tomales Point Area Plan, and how the park is incorporating both tribal and wilderness values into the development of the plan.

Guide: Dave Press

Point of Contact: Ben Becker



Boulder on Tomales Point at sunset, Point Reyes National Seashore (NPS Photo / Dan Wells)

8:30 am – 4:00 pm

Location: Meet in front of the General's Residence

Planting Seeds: Science Messaging and Letterpress

12:00 pm, Tuesday, Wednesday, and Thursday

Location: Lobby

Host: Deirdre Visser, Curator/Writer with Chad Johnson, Studio Director, Center for the Book

Please join us during lunchtime Tuesday, Wednesday and Thursday for a **hands-on exploration of science communication through letterpress**. What are the possibilities of short descriptive language to catalyze, communicate and engage audiences in the 4 themes of our training? Using the centuries-old analog technology of large-scale letterpress type, we'll pull prints, exploring language, color, fonts, and point sizes. Bring your own lunch – but light refreshments will be provided.

[Tuesday will be a lecture and demo; Wednesday and Thursday will be opportunities to pull your own prints].

Networking Lunch and Dinners

Connect over a meal with others in the region that share the same interest.

LUNCH

Date	Interest	Lead	Meeting Location
Tuesday	Early Career	Linh Anh Cat	Greens Restaurant (Bldg A), 2 Marine Blvd
	Habitat Restoration practitioners	Terri Thomas	Ballroom
Wednesday	Climate Change cadre	Ryan Monello	Ballroom
Thursday	Science Communication cadre	Laura Booth	Ballroom

DINNER

Date	Interest	Lead	Meeting Location
Monday	PWR Natural Resources & Science Team + any guests	Denise Louie	SF Brewing Co & Restaurant, 3150 Polk Street
Tuesday	Natural Resources Advisory Committee (NRAC)	Denise Louie	TBD
Wednesday	Fire and RM cadre	Brent Johnson	Ballroom
Thursday			

Core Values

We promote resilience in a changing world

We seek to anticipate, prepare for, and help park staff respond effectively to disturbances that threaten natural resources. We do this by identifying strategic ways to improve park resiliency to better cope with challenges and reduce the burden on park staff.

We strive to build and sustain relationships

We are stronger when we work together to protect and preserve the natural resources in our parks. The most effective strategies for natural resource conservation and management at the regional and national levels are created when we build and sustain strong relationships among natural resource staff, indigenous communities, scientists, and land managers.

We strive to be just and equitable in our communities

Conservation is a human endeavor. We aspire to be an inclusive team in which the contributions and leadership of all members are valued. Holding ourselves accountable for critical self-reflection and lifelong learning, we seek to confront personal and cultural biases, foster equity, and showcase untold and historically marginalized stories and perspectives.

We foster subject matter expertise

Effective and sustainable natural resource management requires a deep understanding of ecosystems and cultural connections. We build and sustain knowledge and expertise through formal and informal professional mentorships at all levels of experience. In this way we foster a nationwide community of conservationists.

We maintain wellness and interconnectedness

Our well-being is inextricably linked to the well-being of others and the landscapes we tend. We can better care for others and the parks when we prioritize self-care.

Fort Mason

Golden Gate National Recreation Area



Pacific West Region
2024 WxNW Natural Resource Stewardship Training Workshop
Planning Team

Training Theme Leads

Building Relationships with Indigenous Knowledge and Resource Management

Jason Lyon
Brent Johnson
Denise Louie

Conservation at Scale

Lena Lee
Matt Nicholson

Science Communication

Hazel Galloway
Anna Christie
Sonya Daw
Keith Lombardo
Laura Booth
Taro Katayama
Michael Vamstad
Marie Denn

Protecting Natural Resources in a Changing Climate

Ryan Monello
Lara Rozzell
Matt Nicholson

Fire and Resources Management Workshop

Jennifer Gibson
Cedar Drake
Garrett Dickman
Brent Johnson
Denise Louie

Alumni Panel

Irina Irvine
Denise Louie

Planting Seeds: Science Messaging and Letterpress

Deirdre Visser (volunteer)

JEDI Scientists

Guiding a JEDI lens to our training

Linh Anh Cat
Kayla Fermin
Taro Katayama
Lara Rozzell
Alison Forrestel
Brent Johnson
Suzanne Pegas (JEDI coach)
Denise Louie

Core Logistics Team

Lena Lee
Marie Denn
Gina Yaroli (Conservation Fellow)
Taro Katayama (Conservation Fellow)
Alison Forrestel (GOGA)
Dave Harmon (George Wright Society)
Emily Dekker-Fiala (George Wright Society)
Terri Thomas (George Wright Society and NPS alumni)
Linda Mazzu (George Wright Society and NPS alumni)
Denise Louie