



**Butte, Glenn, Lassen, Plumas & Tehama Counties**

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**Yahi Spring 2020 Outings and Events**

*Coordinated by Alan Mendoza*

[www.sierraclub.org/mother-lode/yahi/outings](http://www.sierraclub.org/mother-lode/yahi/outings)

**Lassen Preservation Group**

*By Patricia Puterbaugh, Yahi Group ExCom Member*



**Mt. Harkness Lookout,  
Lassen National Park**

The Lassen Forest Preservation Group is a committee of the Yahi Group. I attempt to represent Yahi regarding forest and tree issues in our North State.

Post Camp Fire, focus has often shifted to lands within and closer to Butte County. I joined the Butte County Fire Safe Council (BCFSC) board. BCFSC has grown exponentially, and we are trying to keep pace with the work including grant applications. Most grants are for clean-up and defensible space. PGE, FEMA, Butte County, CALFIRE and others are involved in tree removal in the fire footprint. Removal has often been controversial and fraught with frustration. The latest project will cut trees that potentially will fall on neighboring private and public properties. Many voices have insisted on an arborist and possibly two evaluations before tree cutting.

Three salvage projects were done on Plumas National Forest (PNF) post fire. One in Magalia, the Feather River Canyon and Concow. Generally, we oppose salvage after fire. However, within the Camp Fire footprint, close to

communities, it is difficult to challenge. PNFs Feather River Ranger District has a public collaborative for ongoing or planned projects anyone can join. Scientists are weighing in on how to "restore" the PNF in Concow. Butte County RCD is very involved in that effort. The RCD is launching a prescribed fire association to involve Butte County landowners in prescribed burning. I attended an excellent 2 day workshop on prescribed fire at the Big Chico Creek Ecological Preserve. Prescribed fire is an exciting prospect, one of several tools to "restore" fire resiliency to our lands.

I am following progress on biochar and plans to restart biomass. Biomass is controversial and SC is right, there are numerous alternatives to biomass. However, many folks are determined to start using this tool. The

county and CALFIRE support biomass, knowing it will have to pass muster with air quality at county and state levels.

The South Lassen Watershed Group plans projects on the South LNF. This is the new norm - collaboration between the USFS and private and non-profit groups such as Sierra Institute and Point Blue. The idea is to "increase pace and scale". One project is West Shore Lake Almanor. The project will update campgrounds, boat launch, bike trail and public access areas. I will closely follow, as there are nesting Bald Eagles and grebe among beautiful old-growth forest.

Another project is near Swain Meadows, north of Westwood. Knowledgeable, committed locals are involved. Wolves roam up there! Aspen thin, meadow enhancement and logging are proposed. I have big heartburn when they plan cutting trees up to 29". I know some in the SC oppose any logging or thinning. I feel differently. I have lived in the forest for 46 years, and it needs care. Native Americans "tended the wild" for centuries before we arrived. Nature cannot do all the work needed considering the extensive grazing, fire exclusion and logging in the last century. Our forests need scientific management to restore the resiliency and biodiversity we are losing. LFPG will continue working to protect old growth and growing more. Our invaluable North State forests, watersheds and old growth dependent species need our care.

## Yahi Election Results And Leadership Information for 2020

*By Suzette Welch, Yahi Chair*

The ExCom election resulted in re-electing Annette Carey and Wendy LeMaster to the Board for another 2 year term. Annette Carey will continue being Yahi ExCom secretary and Wendy will continue as Outreach Chair.

Suzette Welch will continue as Chair. Jane Coleman and Betty Volker are continuing in their second year in office as members at large.

For contact information on forest and clearcutting issues, Patricia Puterbaugh will continue to be the group's expert and go-to person.

Grace Marvin will continue to be our representative to the Mother Lode and Conservation Chair.

Alan Mendoza continues to be our Outings Chair.

Our Treasurer for many years has been Paul Krause.

We still have need for a Membership Chair and a Program Chair. If any of you are interested in either of these positions please contact Suzette Welch [booksontape@rocketmail.com](mailto:booksontape@rocketmail.com)

Contact information for all of these people may be found on our "about us" section of the Yahi Group Webpage and on page 2 of Newsletter.

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## Thank You to the Yahi Group

By Wendy Le Master, *Yahi Board*



I want to send out some immense gratitude for the Yahi Group of Sierra Club in helping to support me in developing and continue my Environmental and Climate Change Education program. I volunteer my time, knowledge, passion and love for the community I once called home to this project and put my heart into it fully, but I could not provide the level of financial support alone to get the necessary items required to make it as successful as it has been. The students at Ridgeview High in upper Magalia have been having a great time learning about bioremediative practices, mycology, microbiology, native plants, our local ecology

and ways they can be a factor of change in these ever changing times. They are learning skills that will not just help them find much needed jobs, but to be able to assist their community in recovering and be a voice. I hope to assist the graduating seniors at Ridgeview High in furthering their opportunities in environmental education, by encouraging them to further there education or enter technical programs and get certified in ways that will help them succeed. The board recently moved to approve much needed books for the program, that will help in fulfilling that goal and I am beyond grateful and moved by their support, not just for me but for the Ridgeview High Students especially.

## 41st Annual Endangered Species Faire



**BUTTE ENVIRONMENTAL COUNCIL'S** 

### 41st Annual Endangered Species Faire

Saturday, May 2nd  
Cedar Grove, Bidwell Park  
10:00 AM to 3:00 PM

**"Have to Have a Habitat!"**

**Fun For All Ages**  
**FREE EVENT**

- ECO SCAVENGER HUNT
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Since 1979, the Butte Environmental Council has been hosting the annual Endangered Species Faire in commemoration of Earth Day. With a full day of exhibits, activities, presentations and entertainment, approximately 5,000 individuals of all ages visit and participate in Northern California's oldest annual environmental fair held in Bidwell Park.

The Endangered Species Faire is FREE for all ages!  
Visit <http://www.becnet.org/endangered-species-faire>  
or call the BEC office at (530) 891-6424 for more information.

# Yahi Report To the Mother Lode Chapter

By Grace Maria Marvin, Conservation Chair

- We have an inspiring younger board member, **Wendy LeMaster**, who works with young people (including Girl Scouts) -- planting trees, restoring land in Paradise, working on science issues in schools, and doing Sierra Club tabling. Her home in Paradise had been destroyed in the Camp Fire, and she now lives with her 2 youngsters in a home she bought in Chico
- **Alan Mendoza** is still coordinating and leading hikes which he also advertises in other hiking groups. But we expect him to have shoulder surgery soon, while another hiking leader, Julian Zener, is recuperating from knee surgery and may not be able to lead hikes for a while.
- **Suzette Welch** is a very good chair of the Yahi Group and is attending some other environmental meetings in Chico. She coordinated a lovely holiday party for our club. She is wondering how the Mother Lode Chapter is doing in gaining Sierra Club support for Audrey Denney, who is running against Congressman LaMalfa this year.
- **Annette Carey** continues to serve as secretary. She and several others of us will be tabling at the upcoming Snow Goose Festival. Her house was not burned in Paradise.
- **Paul Krause**, our Treasurer for many years, does a fine job for the club. Thankfully, his house on the ridge in Paradise was not burned, although his next-door neighbor's majestic home was burned. So, Dr. Marcia Moore, a Sierra Club member, has now bought a house in Chico.
- **Jane Coleman**, a Yahi Board member, and I have been attending meetings of an advocacy organization in Chico, now called Smart Growth Advocates (SGA). The overall goal of fighting urban sprawl and lowering Vehicle Miles Traveled (VMT) has been a source of much energy this past year. This week, I attended an SGA meeting, as well as the Quarterly Environmental Meeting with the Chico City Manager -- coordinated by wonderful new young leadership in Butte Environmental Council. (BEC has board members on all but one Chico City Commission.) Two areas of particular interest to me involve planning for alternative housing, *e.g.*, affordable infill housing, as well as for the 1000 or so homeless. (It's an uphill battle.) Another major interest is keeping PG&E from slaughtering more trees in Chico. We will keep on top of such efforts as best as we can, while I am overjoyed by seeing and hearing from about 2 dozen activist citizens at the meeting today.
- I also have been attending challenging Butte County Water Commission meetings (including one this past week), where a special task is protecting Butte County groundwater, *i.e.*, not allowing big ag or outsiders to surreptitiously take away our water and water rights -- in the duplicitous name of helping Paradise. (**Grace Marvin**)
- Finally, **Louise Casey** continues to be the fine editor of the *Yahi News*, even though her home in Paradise burned, and she now lives in the state of Washington.

# Bioremediation – Butte’s Bioremediation

By Wendy LeMaster, Yahi Group ExCom Member



Bioremediation utilizes microorganisms to help remediate and repair areas in our environment that have been contaminated with toxic waste or debris. This practice has been around since 600 BC, where the Romans utilized bioremediative practices to treat their waste water and probably can be traced further back than that.

In the 1940’s the concept of utilizing microbes to clean up oil spills and petroleum hydrocarbon waste became a focus of interest for scientists, researchers and environmental advocates, though it was not well understood how to maximize the benefits of utilizing this method. In 1972, the practice was becoming more accepted and was implemented on a commercial scale to help clean up the Sun Oil Pipeline spill in Abler, Pennsylvania.

Since then it has been widely adapted and utilized in many situations to break down toxins and chemicals that otherwise previously couldn’t be removed from the environment and for which pose significant health concerns for people, animals, soil, and water.

It is now understood that many of these microorganisms are of immense importance in ecological health and that they have the potential to facilitate in the degradation of a vast array of toxic compounds.

Microorganisms consist of a wide variety of life and even some considered not life, that mostly are only visible through the lens of a microscope. It includes bacteria, fungi, protozoa, algae, and viruses. Each of which play key roles in our environment and are integrally connected with each other and all beings. Not all microorganisms are able to break down and consume toxic waste and some break down only a particular type of toxin or group of toxins. In much of the research that has been carried out in the practice and utilization of bioremediation, bacteria and fungi have been the main players.

Bacteria and fungi fall under two domains in the tree of life eukaryotes (fungi, plants, animals, etc.) and prokaryotes (bacteria), the third domain in the tree are archaea (ancient bacteria), which also have benefits in bioremediative practices.

## Bacteria and Fungi

Bacteria are capable of breaking down polycyclic aromatic hydrocarbons, which can contaminate our environment and cause great devastation to the health of an ecosystem. Most often bacteria are utilized in breaking down petrochemical waste and oil spills, however bacteria can also break down things like chromium, mercury, cadmium, and other toxic compounds, and effectively remove them from the environment.

In just a teaspoon of healthy soil there can be nearly a billion bacteria alone present. Excessive and non-sustaining agricultural practices have led to enormously devastating impacts on the health of our soil, by killing off some of these most essential microbes. Making crops less productive and the soil less fertile. Many farmers are now adapting bioremediative tactics to helping repair and care for their soils by adding soil microbes back into their lands after harvesting and utilizing crop rotation with a source of legume. Legumes provide homes for nitrogen fixing bacteria and help restore the nitrogen lost during farming.

The use of fungi for remediation of soil or water often falls in its own category of restoration often called mycoremediation. Fungi most commonly known to break down and degrade toxins are present in many environments, and are capable of breaking down and degrading fallen trees and other organic matter in a quick and efficient manner.

The breakdown of matter via fungi feeds the soil, the soil bacteria, plants and trees. This aids immensely in the health and regeneration of our forests. The fungi create large hyphae networks of mycelium which extend deep into the soil and penetrates through decaying matter, delivering nutrients, sugars and water to plants and communicate with them through chemotactic signaling. Fungi also have the ability to filter water while removing toxins as well. The potential for fungi is enormous from textiles, to medicine, water filtration, bioremediation and food, its definitely an organism of interest as science around these areas develop.

Many edible fungi including oyster mushrooms and stropharia (wine cap mushrooms) are capable and very efficient in degrading toxins in soil and aiding in removing toxins from water as well. Oyster mushrooms are capable of breaking down not only oil, but other polycyclic hydrocarbons such as benzene and can remove heavy metals from soil and water as well. Stropharia, also have this ability to break down these toxic compounds, but also can help remove harmful bacteria such as e-coli from water ways, and is very efficient in filtering water. Other fungi such as Turkey tail mushrooms help to break down and decompose fallen trees, such as pine trees, and aid in keeping our forests floors clear and healthy.

## Putting it to Action



*Wendy LeMaster and son  
replanting in family garden lost  
in the Campfire.*

After the climate fueled wildfire, sparked by PG&E's faulty equipment, had destroyed Paradise and decimated surrounding areas in 2018 my home was destroyed as were so many others. Our county forever changed, and the aftermath of the devastation sat in ruins for months. And as the rains came following the fire, washing away the toxic slurry of ash and debris into our streams and creeks, and trickling down penetrating our soil and seeping into the ground water below, many of us felt helpless to prevent it. However, a few, determined not to give up in the face of so much destruction, spent tireless hours volunteering and joining with Friends of Butte Creek, to help stop the runoff into Butte Creek Canyon and save the already dwindling salmon populations. Volunteers diligently worked to lay over 800 feet of wattles (long bundles of straw) along the creeks embankment in an effort to prevent the mass amounts of toxic waste and slurry that was running into the creek. I commend each and ever volunteer for their efforts in stopping the runoff and especially Friends of Butte Creek for their swift actions. Meanwhile other groups and individuals had ideas fruiting and soon more solutions were

being brought forth, in the form of microscopic warriors and mycelial connections, yes ideas where sporulating including my own.

As a graduate Microbiologist from CSU Chico, I knew somehow my tiny friends where soon to become big game changers in the aftermath of these natural disasters. Since I began my journey studying microorganisms 14 years ago, I have always been profoundly fascinated by the biodiversity within our soil and how that biodiversity is crucial to our environment and the health of our soils, plants, water, and animals. I was the girl with the dirty dishes, but those dishes meant something, they were doing something! I didn't know just yet their potential, but after the fire destroyed them, I knew it was just the beginning. Yes, my Winogradsky columns where gone, all my fungi gone, my microscope and all my odd experiments gone in a flash and it was devastating. I admit I felt helpless and as I sat there those first few rains, mourning the loss of the people that perished in the fire, the loss of my home and so many others, I wept for

I thought to myself how cool it would be to have an active bioremediative disaster response team. It was to my surprise a team such as this was already in the works, and they had dirty dishes of their own. Some of these groups such as Eco Sapien headed by Janel Ny was already hitting the ground, bringing donations of bioamendments, and mycelium spawn out to areas that she had access to and started implementing some of these practices. Mathew Trumm with Tree Top Permaculture and founder of the Camp Fire Restoration Project, was another game changer, bringing permaculture to areas affected and helping develop Camp Paradise, which is now considered the world's first Ecosystem Restoration Disaster Response Camps. Their goal is to provide community education and training, provide public demonstrations that engage with the youth, bringing pop up action days to engage with the community, while helping provide tools, resources and connections throughout the community and state. The most recent of these pop-up action days was held at the Paradise Community Guilds by the Campfire Restoration Project and Permaculture Action Network on October 13<sup>th</sup>, this event brought much joy and hope for the community. I was excited to bring and share my knowledge of bioremediation along with Catalyst Bioamendments and other amazing individuals whom all were sharing in the same goal of helping regenerate and rebuild our communities.



*Catalyst Bioamendments and Wendy Le Master - Permaculture Action Day Oct. 13<sup>th</sup> 2019  
Composting and Bioremediation Workshops*

Another incredible group formed in the wake of the fires know as Butte Remediation, a non profit organization established by Cheetah Tchudi, aka Farmer Cheetah, and founder of Turkey Tail Farms, has developed a mobile system of helping to bring his remediation program to the community. It is his goal to test for and remediate toxins generated by the Camp Fire, in which Butte Remediation will provide support to home and property owners by testing soils for contamination, targeting the contaminants with a specific set of fungi capable of remediating those toxins, and measuring success with follow-up fungal tissue and soil sampling. This project provides direct support to Camp Fire survivors, with quantifiable results and long-term goals for the recovery of our community. On the most basic level this program will help us understand the scope and types of contaminants that have been generated and will have far reaching applications in terms of understanding the fallout from future fires.

Yes, these socio-eco warriors, were rising up, and I was honored to have stood with one such amazing warrior, Ali Meders-Knight of the Mechoopda tribe, artist, activist and educator; just two months prior to the largest and most destructive, climate fueled fire in California history. In what was one of the largest Climate Mobilization events ever in San Francisco, myself and a group of other artists assisted Ali in bringing her mural “Weaving the Dream for Green” to life on the streets of San Francisco and stood in solidarity with those lives that have been lost or devastated due to the destruction caused by climate change. Ali’s knowledge of the indigenous people of these lands and the wisdom that she carries with her is invaluable. Her work spans and innervates socio-ecological practices beyond most peoples grasp. Ali is currently actively undertaking her own bioremediative restoration project on the Paradise High School Campus, where a large section of the campus was damaged in the fire. She brings to the community and shares her insight on Traditional Ecological Knowledge and is utilizing these long over looked and important practices in her teachings with the students on their project at Paradise High. In listening to Ali speak one can’t help but to feel motivated and want to learn more. Her workshops and presentation on decolonization are helping break down barriers and really moving us closer to weaving that dream for green.



*Wendy LeMaster and Ali Meders-Knight,  
Civic Center San Francisco September 8<sup>th</sup> 2018 Rise for Climate, Jobs & Justice*

For me, in the wake of these climate fueled disasters which are becoming all too common, working with the community and helping raise awareness about the disasters and ways we can combat and prevent the devastating damage that results from the aftermath of these catastrophes; gives me hope. Seeing so many others sharing in these goals inspires me, my kids inspire me, the youth that are rising in the streets and demanding a change inspire me. Bioremediation is an amazing tool we can use to help heal our lands when they are in ruins, but we must do more to prevent these disasters to begin with. With the support of local environmental groups such as the Yahi Group, Chico 350, the Sunrise Movement and many community volunteers and educators, I developed a Climate Change and Environmental Education Program in our area. My goals in doing so, is to provide the resources, information and community support to help assist our youth in acting as a catalyst for environmental and social change, and allow them the opportunity to work and lend their abilities to help in the recovery process and help protect their future. Beginning Nov. 4<sup>th</sup> I’ll be starting a year long project with a group of students from Ridgeview High, who’s campus was completely destroyed in the Campfire. They will assist with an onsite bioremediation project, help with replanting and regenerating areas devastated by the fires in Paradise and Concow. We will work toward developing an understanding of the climate emergency taking place and help them to develop skills as young activist in ways they can help combat this threat. I’m looking forward to seeing this project and others progress, together we will rise.

*The future belongs to those who believe in the beauty of their dreams.*  
~Eleanor Roosevelt



# Yahi Group Information

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Youth Activities: Position Open

## Newsletter Information

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For submissions, comments, or inquiries, contact Louise Casey, [Yahinews@comcaset.net](mailto:Yahinews@comcaset.net). Please include name, phone number, and address with each submittal. Short, single-topic articles are preferred. Deadlines for proposed articles and letters to the editor: February 1, May 1, August 1, and November 1.

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