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EcoClimate News Southwest

November 2021

Reflections from SW CASC Consortium PI Mark Schwartz, UC Davis



Bobcat Fire, San Gabriel Mountains, Monrovia, CA, 2020. Credit: <u>Creative Commons</u>, Eddiem360

As northern California has its first fall rain and temperatures cool down, it is time to reflect on the 2021 fire season and to put it in perspective with respect to climate change. With the second driest year in California history, we might have expected to have a fire season that was as severe as 2020. The 2.5 million acres burned so far in 2021 falls squarely in between the astounding 4 million acres that burned in 2020 and the five-year running average of just over 1 million acres a year, as reported by CalFire. With respect to changing climates and changing wildfire conditions, 2020 taught us three lessons. First, the pattern of increasing wildfire acreage is inexorably trending up. The six million acres burned over the past two years is unprecedented in the age of tracking fire statistics and contributes significantly to an upward trend in total acres burned. However, we aren't seeing the signal in more fires so much as larger fires.

Second, there is a trend toward an increase in high severity fire. The consequence is that more of the area burned results in total mortality among the tree canopy, often over large areas, prompting agencies to respond with emergency reforestation plans. One of the areas that we have been working on at the SW CASC and the USDA California Climate Hub is in developing tools to help land managers apply climate-smart approaches to replanting large areas damaged by fire. Read more <u>here</u>.

The <u>American Indian Higher Education Consortium</u> will very soon be announcing a position for a Tribal Climate Liaison, housed at the SW CASC. The person hired will play a critical role in building strong relationships between the SW CASC and tribal nations and tribal colleges and universities within the SW CASC region. The position will come with a competitive salary, and we are hoping to on board the new liaison in early 2022. We will share the announcement as soon as the position is posted!



Come Rain or Shine Podcast

Drought & the 2021 Monsoon Season



Episode Art by Pixabay

2020 and the first half of 2021 were brutal drought years for the Southwest U.S., continuing a much longer term regional drought. But this monsoon season brought

usually dry washes, we must be out of drought. Unfortunately, this isn't the case, and almost all of the region is still in at least moderate drought, according to the latest U.S. Drought Monitor. This month we chat with three state climatologists, Drs. Dave DuBois (NM), Erin Saffell (AZ), and Steph McAfee (NV), to hear how the monsoon has affected drought conditions and how drought is impacting their states.

Listen Here

Special Session at Association for Fire Ecology Congress



For the upcoming Association for Fire Ecology Congress, the Joint Fire Science Program, the U.S. Geological Survey, and the Southwest and Southeast Climate Adaptation Science Centers are partnering to deliver a special session and fire circle -The Nexus of Climate Change and Fire: Taking Science to Action. We invite you to participate in an interactive discussion on advancing adaptation to changing fire regimes on Friday Dec. 3rd from 1:00 pm – 2:40 pm eastern time. To participate, you must register for the Association for Fire Ecology Congress at <u>afefirecongress.org</u>.

Changing climate and expansion of the wildland urban interface and invasive species are driving dramatic changes in fire regimes with sometimes devastating consequences for ecosystems and society. Devising solutions to address this challenge requires an unprecedented level of cross-disciplinary, sciencemanagement, and cross-organizational collaboration and partnership at multiple scales. In the companion special session, scientists, practitioners, and boundaryregimes. The purpose of this fire circle is to further the discussion and learn from participants on innovative approaches to addressing changing fire regimes and factors that lead to successful science-manager, cross-organizational collaborations and partnerships. Fire circle organizers will compile information shared in the fire circle and companion session and use it to inform future cross-agency partnerships and frameworks for advancing adaptation to changing fire regimes.

New Framework Outlines Path Toward Climate Change Refugia Conservation



Photo Credit: Creative Commons (Alexey Komarov)

Recently published <u>research</u> funded by the Southwest, Northeast, and National CASCs, describes an early roadmap toward climate change refugia conservation at an ecoregion scale in the Sierra Nevada. Climate change refugia are areas that remain relatively buffered from climate change and enable persistence of valued resources, despite climate changes in surrounding areas. The authors focused on six stakeholder-identified conservation priorities—snow, fire, meadows, giant sequoia, old growth forests, and alpine communities—structured within the <u>Climate change</u>

*This research is a part of a larger <u>SW CASC project</u> focused on climate-resilience habitat for at-risk species in the Sierra Nevada.

Global Network Takes Stock of Human Adaptation to Climate Change



Photo Credit: Creative Commons (N Chadwick)

As society experiences increasingly frequent and severe natural hazard events and environmental stressors—while making little progress at reducing carbon emissions —the need to adapt to the changing climate has become starkly clear. But what actions are we taking to adapt to climate change around the world—and how successful are our efforts? A global network of 126 researchers, including SW CASC USGS Deputy Director Carolyn Enquist, sought to answer those questions, producing the most systematic and comprehensive assessment of implemented human adaptation to climate change to date.

The <u>study</u>, published in the journal *Nature Climate Change*, found that adaptation, as documented in the scientific literature, is mostly fragmented and incremental,

Rethinking Forest Resiliency to High-Intensity Wildfires



This profile is a part of our consortium profile series, highlighting the people that make up the SW CASC—what inspires them, makes them passionate about their research, and gives them hope for the future. For this profile, Bryson Mineart (SW CASC communications student assistant and undergraduate student in the University of Arizona Computer Science program) interviewed USGS Research Ecologist, Phil van Mantgem, Redwood Field Station at Arcata, California.

Phil van Mantgem is a USGS research ecologist whose focus stems from a deeprooted passion for nature and the urgency of climate change. As a researcher, Phil is always trying to find the best, no-regret conservation strategies for managers to take in response to our changing climate. The information that Phil collects is used by numerous management agencies to make informed decisions. Outside of his career, Phil still ventures out into nature to recharge and soak in the beauty of nature. Read more <u>here</u>! The global climate is changing rapidly, already impacting both human and natural systems. Over the next few decades, changes in temperature, precipitation, and climatic variability are expected to drive even more change. As impacts become more pervasive, human and natural systems will accelerate adaptation. To face these challenges, the world needs a diverse group of leaders versed in the challenges of climate adaptation, aware of the multi-disciplinary nature of impacts, representative of the nation, capable of strong communication, and interested in policy-relevant science.

This undergraduate research experience is for rising sophomores or juniors in good academic standing, hoping to build their climate science skills and training with 12 other students over the next two years. Read more <u>here</u>!

PBS NewsHour Forum "Tipping Point: River on the Brink"

SW CASC consortium PI, Brad Udall, will be a guest on Tipping Point on **November 10**, **2021**, to explore the nexus between climate and the fate of the Colorado River Basin. Hosted by PBS NewsHour science correspondent Miles O'Brien in Phoenix, the program will foster a solutions-based dialogue with thought leaders in areas of science, agriculture, municipal water, Native American communities and conservation. Read more <u>here</u>!

Fellows' Highlights

A Sea of Change: Learning to Bridge the Disciplines



Tanner Waters is a Ph.D. candidate at the University of California, Los Angeles. His research focuses on using the emerging technique of environmental DNA to evaluate restoration and conservation efforts in coastal Los Angeles. Below are his reflections on the SW CASC <u>Natural Resources Workforce Development (NRWD)</u> <u>Fellowship</u>.

Our oceans are under a bombardment of threats, such as ocean warming, acidification, hypoxia, and pollution, which are culminating in the loss of our coastal ecosystems. My research centers around studying the restoration/conservation efforts that are being implemented to combat these issues. I was excited when I saw the 2020-21 NRWD Fellowship theme "Management in the Aftermath of Landscape-Scale Disturbances" because it fit exactly with the work of my thesis. When our cohort had its first meeting, however, it quickly became apparent that the other members were all focused on fire-related research. I was nervous, and admittedly a little confused, about how a molecular biologist who specializes in marine genetics would be able to contribute to a fire research group. Read more <u>here</u>!

Partner Highlights

OpenET: A New Platform to Estimate Water Consumed by Crops and

OPENET

OpenET is a new online platform that uses satellites to estimate water consumed (evapotranspiration) by crops and other plants in 17 western states. In the past, access to accurate, timely data on the amount of water used to grow food was fragmented and often expensive, keeping it out of the hands of many farmers and decision-makers. OpenET provides this data down to the field scale and allows users to easily view and download this water data for the current year and previous five years. OpenET has been developed through a public-private collaboration with input from more than 100 farmers, water managers, and other stakeholders, and led by Environmental Defense Fund, NASA, Desert Research Institute, and HabitatSeven. Additional partners include Google, U.S. Geological Survey, U.S. Department of Agriculture, and more. Try it out here!

Partner Events

Webinar: Tribal Experiences in Collaborative Fire Management in the Northwest

In this last webinar in a series highlighting Tribal Perspectives on Cross-Cultural Fire Management, we'll hear from tribal representatives who work in a variety of roles related to fire stewardship, research and management. These panelists will share their goals around managing and stewarding fire, their perspectives on how scientists and managers can help ensure collaborative fire projects meet the goals of tribal communities, what non-tribal scientists and managers can do to build trust with tribal communities, and the challenges they face in their work. RSS

RSS

Register Here!

Webinar presentation: Unique Climate Change Impacts on Water Resources of American Indians and Alaska Natives in the U.S.



Speaker: Dr. Karletta Chief

Hosted by The New Mexico State University Climate Change Education Seminar Series (NMSUCCESS), this presentation provides an overview of climate change impacts on tribal water resources and the subsequent cascading effects on livelihoods and cultures of American Indians and Alaska Natives living on tribal lands in the U.S.

> Date: November 17, 2021 Time: 7:00 PM MST

> > **Register Here!**

The most recent U.S. Drought Monitor indicates that nearly all of the Southwest is experiencing some level of drought, but summer and early fall precipitation has improved conditions. This short drought briefing will focus on winter drought conditions and forecasts for Arizona, Colorado, New Mexico, Utah, and Nevada. This month's presentation will be by Dr. Erin Saffell, from Arizona State University and the Arizona State Climatologist.

> Date: November 23, 2021 Time: 1:00 PM - 1:30 PM MT

> > **Register Here!**

Online workshop: Building a network for drought monitoring in Arizona



Community members, researchers, agricultural and mining professionals, and any other natural resource professionals are invited to attend this online workshop to discuss and learn about: ways to evaluate, measure, and report drought; available tools for analyzing and reporting drought; current and projected conditions through winter 2022. This event is hosted by the Southwest Drought Learning Network.

Time: 10:00 AM - 12:00 PM MST

Register Here!

Contact us at: University of Arizona, ENR2 Building, 1064 E. Lowell St., Suite N441, Tucson, AZ 85721

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