Summer News from Sedgwick Reserve

In this newsletter:

- ***Events****: In-person public programs are BACK!*
- ***Science Stories:*** *New paper explores the impacts of climate change on the soils of Sedgwick and Coal Oil Point*
- ***General Interest****: Reconnecting the Docent Community*
- ***Reserve Updates****: Meet Helen Dubee, our Grazing Management Intern*

Dear Sedgwick Supporters,

In March 2020, Sedgwick Reserve had to pause all public programs due to COVID-19. It has been a long year+ without you, and we are so excited to share that we are officially able to resume in-person public programs! Some modifications will be in place. We look forward to sharing the beauty of Sedgwick with you once again. Please see below for upcoming events and ways to get involved.

Sincerely,

The Sedgwick Team

Announcing:
2021-22 Walking Ecology Series

The theme of our 2021-22 ***Walking Ecology*** *series is "What's to Love about the Coastal Sage Scrub?" This year it will be a hybrid-program including a Zoom lecture followed by a chance to visit Sedgwick Reserve. Zoom lectures are free. Walks are $20 per person and space is limited.*

Our FIRST Walking Ecology of the year:

"Bobcats: The Wildcats Next Door"

Amy Zuckerwise,
California Fish & Wildlife

Lecture:
Thursday, July 22
7PM-8PM PST

Hike (Choose one):
Friday, July 23 5PM-7PM
OR
Saturday, July 24 8AM-10AM

California Department of Fish and Wildlife Environmental Scientist, Amy Zuckerwise, will provide an introduction to the bobcat *(Lynx rufus*), a local carnivore of the chaparral, coastal sage scrub, and woodlands of California, and its important role in our local ecosystems in Southern California. She will discuss bobcats' living habits, current conservation status, threats to their survival, and what to do if you come across one in the wild. Amy will also review current efforts by her team at the California Department of Fish and Wildlife to research bobcat populations in the state.

After the lecture, join Amy and other California Fish and Wildlife researchers Megan Senour

and Krysten Martin for a wildlife walk which begins and ends at Sedgwick's field station. As you enjoy the scenic beauty of Sedgwick Reserve, you'll learn about natural history and how to identify tracks and scat of bobcats and other wildlife. The hike is 2 miles and includes about 250 feet of elevation change.

Bio: *Amy Zuckerwise is a wildlife ecologist with a passion for feline conservation. She currently serves as the Bobcat Program Environmental Scientist for the California Department of Fish and Wildlife South Coast Region. Amy earned her Master of Environmental Science in 2020 from the Yale School of the Environment with a focus on indigenous and local knowledge of ocelots, a medium-sized spotted cat, in the Amazon Rainforest. In the past, she researched bobcats and mountain lions in the California Bay Area while pursuing her B.S. in Biology from Stanford University. Originally from Los Angeles, she has conducted field work throughout California as well as in tropical forests across the globe.*

Register Here

Science Stories: New publication forecasts the impact of climate change on the grasslands at Sedgwick and Coal Oil Point

"The progression of climate change and its potential impacts on the water balance demand a better understanding of how mean climate (temperature, precipitation) and soil water availability drive vegetation dynamics in lowland grasslands." ~Warter et al. 2021

Weather Station at Sedgwick Reserve

The growth and greening of plants is strongly tied to precipitation patterns and characteristics of the soil. This relationship is complex and incredibly place-specific, with little scientific data demonstrating how it all works among the grasslands of central California. Recently, researchers used data collected at Sedgwick Reserve and Coal Oil Point Reserve (also a UCSB NRS Site) to study how precipitation, soil moisture and vegetation greenness interact in grassland ecosystems and what this means for predicted climate scenarios. The paper, published in *Hydrology and Earth System Sciences*, was lead by Maria Warter at Cardiff University in the UK, and included researchers from University of New South Wales Sydney, State University of New York, and University of California Santa Barbara. It is a wonderful example of the value of long-term data collection, which can be undertaken at Natural Reserve System sites. Read the full paper **Here**

They looked back to look forward

Consistently collected data that spans years and is easily retrievable is a gold standard in the science world. In this case, meteorological and soil

moisture data continuously recorded at 15 minute intervals since 2007 at Sedgwick Reserve and Coal Oil Point were key pieces of data that allowed the researchers to assess historical patterns and build models to predict the future under three climate scenarios:

Climate scenarios for our Santa Barbara County

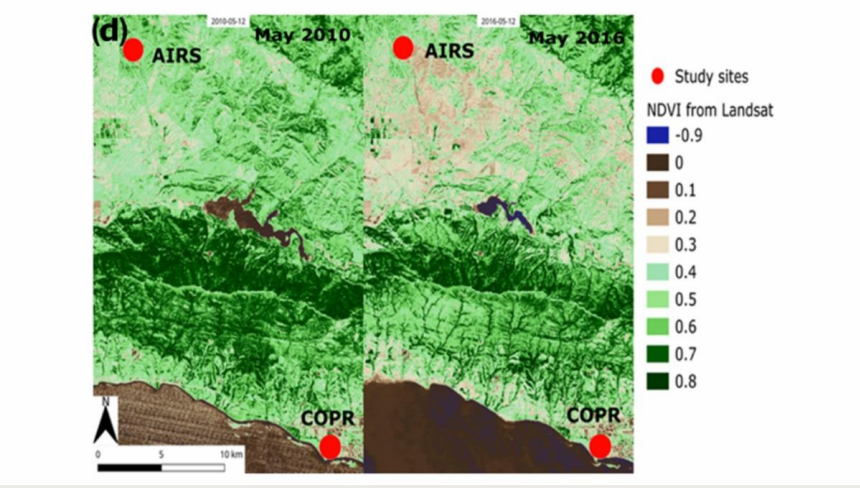
A. Shortened rainy season (Nov-Feb), meaning the loss of spring rains and an overall decline in annual precipitation

B: Shortened rainy season (Nov-Feb), but lost spring rains are re-distributed during this period, meaning an increase of intense rain events but no annual precipitation loss

C. Extreme Drought: The loss of spring rains along with decline in winter rainfall totals and temperature increase of 4C.

Using Remote Sensing to Understand Vegetation Growth Patterns

The research also involved remote sensing data which allowed the team to calculate the growth and greening of Sedgwick's and Coal Oil Point's vegetation. They used a measure called the *Normalized Difference Vegetation Index (NDVI)*. Here is how it works: Healthy chlorophyll-producing vegetation generally *absorbs* red and blue light and *reflects* near-infrared and green light. This quality is the reason that plants look green to the human eye (if we could see infrared, plants would appear to have both colors). Researchers can use satellite imagery to measure the amount of infrared light reflected and red light absorbed, creating a quantified measure of vegetation greening at a large scale. This along with soil sampling allowed the team to create a robust picture that linked weather, soil and vegetation changes at each site.



Decline in greenness throughout Santa Barbara County seen through NDVI images from Warter et al. 2021

What are some of their findings?

Compared to Coal Oil Point, Sedgwick has sandier, loamier soil that is not particularly effective at retaining moisture. In all three scenarios, a loss of spring rain was predicted to have a larger effect on the greening of grasslands at Sedgwick than the grassland at Coal Oil Point. For Sedgwick's soils, spring rain is important at a time when plant development is about to start and seeds are germinating. At the Coal Oil Point grassland,

redistributing the rain over a shorter rainy season would mitigate the effects of no spring rain into the summer, as the plants are able to access the retained moisture. While this information does not bode well for Sedgwick, the researchers point out that these soil retention differences also mean that in most scenarios, drainage can occur and Sedgwick's groundwater can be recharged, even in extreme drought.

The researchers conclude:
"Our findings suggest that arid sites such as our inland site [Sedgwick] with low water-holding capacities, which is widespread over the region and more broadly over the south- west and other Mediterranean climate systems, would become increasingly vulnerable to climate change that favors milder winter and hotter summer temperatures, as well as decreased precipitation in key months during spring."

Reconnecting the Docent Community

Docents practicing their track identification skills at a sand pit during docent 'Summer School.'

The COVID-19 pandemic has kept many away from Sedgwick Reserve, including our devoted team of volunteers and docents. This summer, we were able to re-convene this group for a 6 week series of 'summer school' in preparation for the return of public programs. It has been a wonderful opportunity to reconnect with one another and the Reserve, but it all boils down to preparing to host YOU at Sedgwick Reserve! The docent community is excited to be back and can't wait to take you out on the trails!

Discussing the history of the historic barn with Carol Gibbens

Brushing up on geology with Susie Bartz and Sabina Thomas

Meet new Sedgwick intern Helen Dubee

Helen assessing residual dry matter

Helen is entering her fourth year at Cal Poly, where she studies Animal Science. Prior to arriving at Sedgwick, Helen held a research position for the Diablo Canyon Power Plant Ranch Management Project helping to conduct environmental surveys and creating a working map of the ranch. She has also worked at several farms back east, where she is from. Helen has been brought on for the summer to help us develop a grazing management plan for Sedgwick. We're happy to have Helen here!

Other Upcoming Programs:

Registration opening soon!

September

Walking Ecology Series

Marc Mayes,
Geoscientist
University of California-Santa Barbara

"Using drones to study prescribed burning and coastal sage scrub ecosystems in greater southern California"

Lecture:
Thursday, September 23
7PM-8PM PST

Lab (Choose one):
Friday, September 24 5PM-7PM
OR
Saturday, September 25 8AM-10AM

October

Public Hike

Full Moon Hike

October 20
5:30-7:30

Join Sedgwick docents for a walk under the light of the full moon. The hike begins and ends at Sedgwick's field station and provides beautiful views of the Reserve under a moonlight sky. October's Hunter's Moon is also called the Blood Moon because of its red, eerie glow. You'll hike Sedgwick's Bone Canyon as you learn about the natural and cultural history of Sedgwick Reserve. Arrive to the Observatory Overlook in time to enjoy a view of the rising moon while you enjoy light refreshments. This event is family friendly.

November

Walking Ecology Series

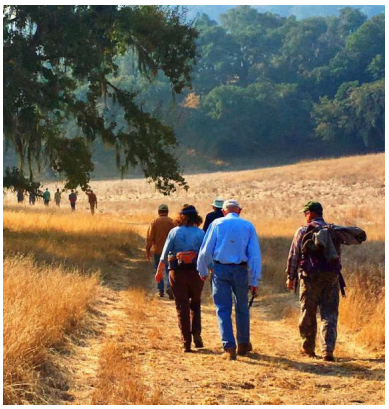
Sandy DeSimone,
Director of Research and Education
Audubon Starr Ranch

"Use of songbirds and other observable wildlife as metrics for selective acceptance of non-natives in restoration of grassland, coastal sage scrub and riparian woodland."

Lecture:
Thursday, November 4
7PM-8PM PST

Hike (Choose one):
Friday, November 5 5PM-7PM
OR
Saturday, November 6 8AM-10AM

Public Hike



Saturday Morning Hike

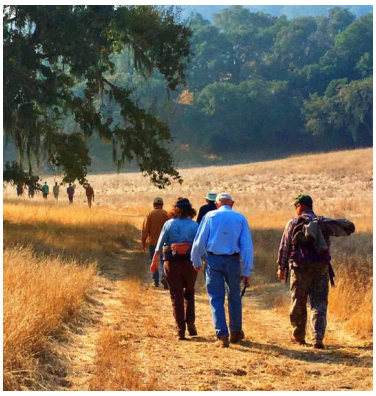
Saturday, November 20
9AM-12PM

Join Sedgwick docents for excursions through shady riparian corridors, coast live oak woodlands, and open grasslands, while learning about ongoing research and the unique geologic history, flora, and fauna of our spectacular Reserve. Hikers are welcome to bring a lunch and

enjoy it in the shade of beautiful valley oaks at our Field Station picnic area. Easy, moderate and moderate+ options will be available.

December

Public Hike

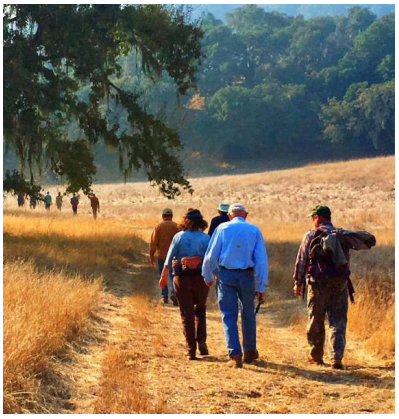


Saturday Morning Hike

Saturday, December 9
9AM-12PM

Join Sedgwick docents for excursions through shady riparian corridors, coast live oak woodlands, and open grasslands, while learning about ongoing research and the unique geologic history, flora, and fauna of our spectacular Reserve. Hikers are welcome to bring a lunch and enjoy it in the shade of beautiful valley oaks at our Field Station picnic area. Easy, moderate and moderate+ options will be available.

Public Hike



Saturday Morning Hike

Saturday, December 18
9AM-12PM

Join Sedgwick docents for excursions through shady riparian corridors, coast live oak woodlands, and open grasslands, while learning about ongoing research and the unique geologic history, flora, and fauna of our spectacular Reserve. Hikers are welcome to bring a lunch and enjoy it in the shade of beautiful valley oaks at our Field Station picnic area. Easy, moderate and moderate+ options will be available.

*Sedgwick Reserve depends on the support of our donors to fund our **docent program**, support **researchers**, and offer community-focused **public events**. Your gift ensures our ability to continue supporting world-class research and education with global impact. Click **here** to support Sedgwick today!*

Every Gift To Sedgwick Helps!