

Hey, Plant ID Nerds:
What is this plant?



The new website for the
Santa Rita Experimental Range:
120 years of research fully available online

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Today's goal:

Let's talk about 120 years of research on the SRER!

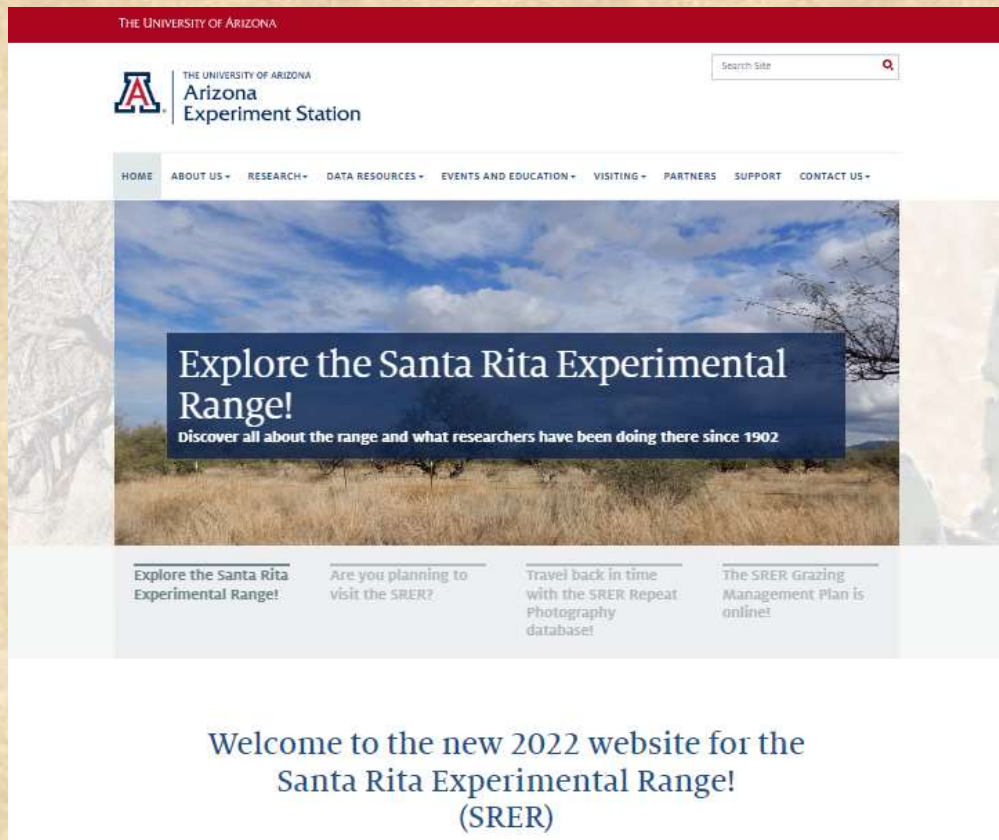
I'm kidding, there's no way we can make it in 30 minutes

So, let's find out where we can find everything about the 120 years of research on the SRER

1. Where can we learn more about the SRER history and research?
2. What kind of data are available and where can we find them?

Well, sorry, but we won't make it in 30 minutes anyway...

The answer to (*almost*) all our questions is...



..the new SRER website!

<https://cals.arizona.edu/srer/>

The Santa Rita Experimental Range

AKA the coolest place in the world to do research

1. Some amazing history and research numbers to begin with:

- ✓ **120-years old:** the SRER is the longest continuously active rangeland research facility in the world (*and in the United States*)
- ✓ Over [**1000!**] scientific publications from 1902 to the present
- ✓ Over **150** research projects in the last 15 years (*other than the data collections regularly repeated over time*)



United States
Department of
Agriculture

Forest Service

Rocky Mountain
Forest and Range
Experiment Station

Fort Collins,
Colorado 80526

General Technical
Report RM-GTR-276



The Santa Rita Experimental Range History and An



Citations from work performed on Santa Rita Experimental Range: 1951*-present.

* This bibliography adds some citations between 1951-1988 that were not included in the bibliography in Medina, A.L. 1996. The Santa Rita Experimental Range: history and annotated bibliography (1903-1988). General Technical Report RM-GTR-276. USDA Forest Service, Rocky Mountain Forest and Range Experiment Station. (<https://cals.arizona.edu/srer/history/>).

Compiled by M.P. McClaran. Last update 07 September 2022

In Press

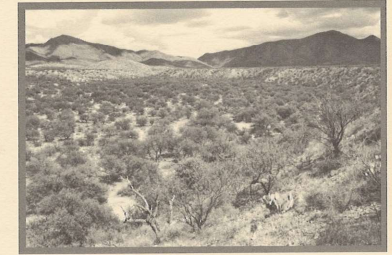
Rieke, E.L. others, M.P. McClaran, others. In press. Evaluation of Aggregate Stability Methods for Soil Health. *Geoderma* 428: GEODER_116156.

2022

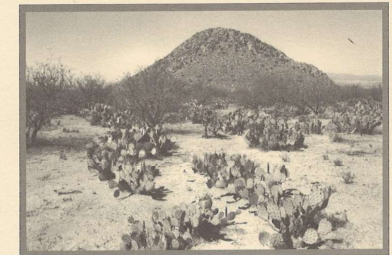
- Bisch-Knaden, S., Rafter, M.A., Knaden, M. and Hansson, B.S. 2022. Unique neural coding of crucial versus irrelevant plant odors in a hawkmoth. *eLife* 2022;11:e77429. DOI: <https://doi.org/10.7554/eLife.77429>
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- Wang, X., Biederman, J.A., Knowles, J.F., Scott, R.L., Turner, A.J., Dannenberg, M.P., Köhler, P., Frankenberg, C., Litvak, M.E., Flerchinger, G.N., Law, B.E., Kwon, H., Reed, S.C., Parton, W.J., Barron-Gafford, G.A., and Smith, W.K., 2022. Satellite solar-induced chlorophyll fluorescence and near-infrared reflectance capture complementary aspects of

Santa Rita Experimental Range: 100 Years (1903 to 2003) Accomplishments and Contributions

Conference Proceedings
October 30–November 1, 2003
Flagstaff, AZ



2003



The Santa Rita Experimental Range

AKA the coolest place in the world to do research

1. Where can we learn more about the SRER history and research?

History: <https://cals.arizona.edu/srer/content/history>

Research/Publications: <https://cals.arizona.edu/srer/content/research>

Historical Research Project Archive:

<https://cals.arizona.edu/srer/content/historical-research-project-archive>

(temporarily out of service)

The Santa Rita Experimental Range

AKA the coolest place in the world to do research

2. Now, let's talk about the SRER data:

- ✓ Digitalization started in **1995**. The mission?
Making all SRER data available to the scientific community worldwide
- ✓ **13 digital archives**, 7 of which updated regularly adding new data
- ✓ The oldest archive (*i.e.*, *Repeat Photography*) dates back to **1902**
- ✓ Over [**1000!**] files available for download: *datasets, docs, spatial files, graphs & figures, photographs, protocols, etc.*

The Santa Rita Experimental Range

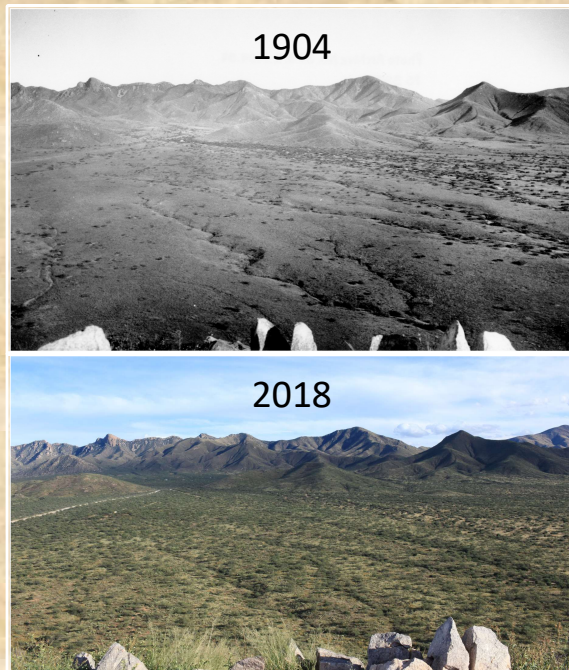
AKA the coolest place in the world to do research

*2. What kind of data are available
and where can we find them?*

Data Resources: <https://cals.arizona.edu/srer/content/data-resources>

Repeat Photography

AKA one of the largest and most accessible photo collections in the world



- ✓ 124 Photo Stations (PS) since 1902
- ✓ 115 PS still active
- ✓ PS can have 1 to 7 orientations
- ✓ Since 2007, about 20-25 PS collected/year & then repeated every 6 years (= 115 total)
- ✓ All photos + descriptions available for download

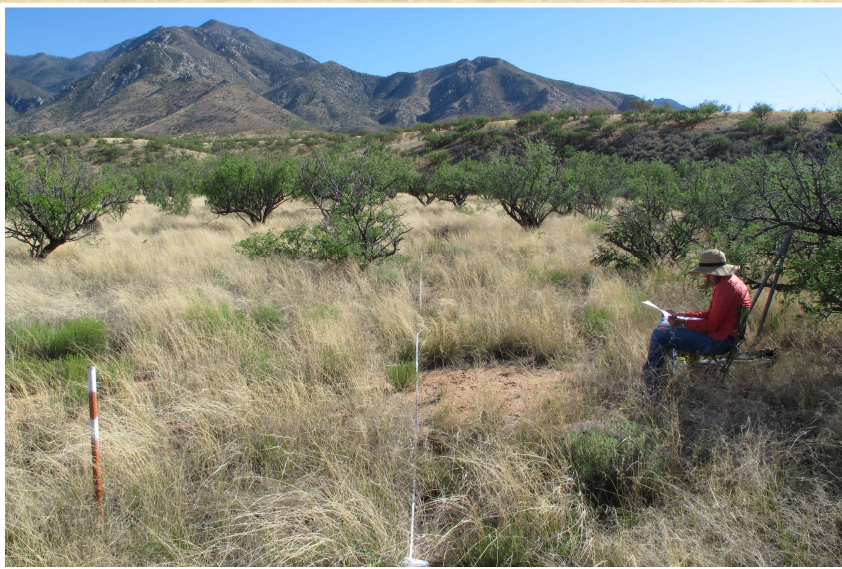
Photo Archive No. 333.2.1904.09, SEP 1904
Photo Archive No. 333.2.2018.10, OCT 2018

Repeat Photography archive:

<https://cals.arizona.edu/srer/content/repeat-photography>

Long-term Vegetation Transects

AKA one of the longest series of vegetation data in the world



Transect 8-5 from 0 2015 Apr 10

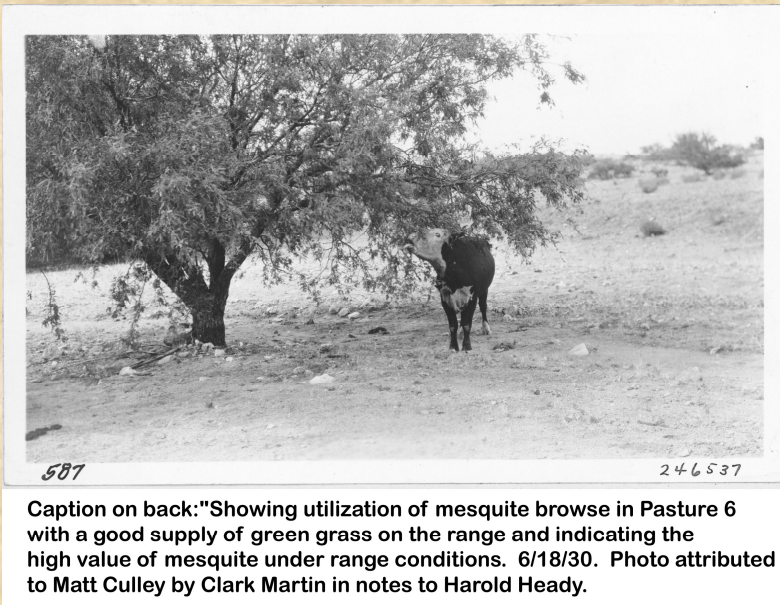
- ✓ 131 Vegetation Transects since 1953
- ✓ 96 Exclosure Transects since 2011
(but exclosures are up to 106 years old!)
- ✓ Each transect repeated every 3 years
- ✓ Cover & Density (*shrubs & perennial grasses*) and Basal Diameter & Biomass (*perennial grasses*) data for download

Long-term Vegetation Transects archive:

<https://cals.arizona.edu/srer/content/long-term-vegetation-transects>

Livestock Use

AKA the history of grazing management on the SRER since 1908!



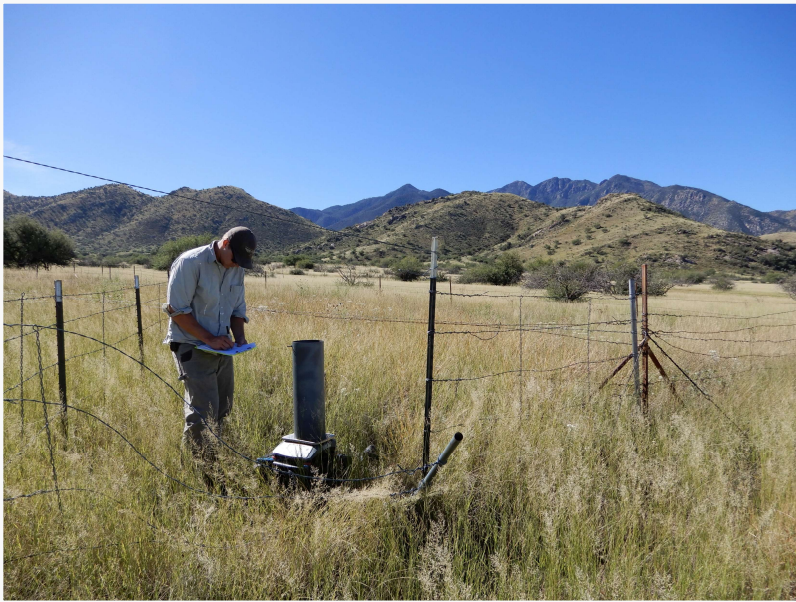
- ✓ Current & past grazing plans since 2006
- ✓ Livestock History file since 1908 with monthly stocking rates per pasture
- ✓ Grass utilization by pasture since 2010
- ✓ Grass production by pasture (*coming soon*)

Livestock Use archive:

<https://cals.arizona.edu/srer/content/livestock-use>

Precipitation

AKA the history of precipitation over the SRER since 1922



- ✓ Precipitation data collected monthly since 1922
- ✓ 24 active Rain Stations (out of 75)
- ✓ Links to additional resources (*ARS records, SPI explorer tool, etc.*)

Precipitation archive:

<https://cals.arizona.edu/srer/content/precipitation>

Other archives available on the website:

- ✓ Flora (e.g., *plant lists, publications*)
- ✓ Soils and Ecological Sites (e.g., *maps, publications*)
- ✓ Static Maps
- ✓ Drone Imagery
- ✓ Historical Research Project Archive
- ✓ National Ecological Observatory Network (NEON)
- ✓ USDA-ARS Ecosystem-Atmosphere Water and Carbon Exchange
- ✓ Additional Research Datasets (*from ongoing and past projects*)

SRER archives:

<https://cals.arizona.edu/srer/content/data-download>

The Santa Rita Experimental Range

*The coolest place in the world to do research ... **needs you!***

*The vast opportunities for future research
at the Santa Rita Experimental Range
are built on the rich legacy of a century of observation and research.
In addition to opportunities,
there are obligations to maintain and add to this legacy.
Therefore, our future efforts should ensure
a second century of research on the Santa Rita.*

(McClaran 2003)

Also, let's respectfully acknowledge that...

*The University of Arizona is
on the land and territories of Indigenous peoples.
Today, Arizona is home to 22 federally recognized tribes,
with Tucson being home to the O'odham and the Yaqui.
Committed to diversity and inclusion,
the University strives to build sustainable relationships
with sovereign Native Nations and Indigenous communities
through education offerings, partnerships, and community service.*

And now it's your turn...

TAKE action

LEAD research

COLLECT and SHARE data

USE the resources available

LOVE the Santa Rita Experimental Range

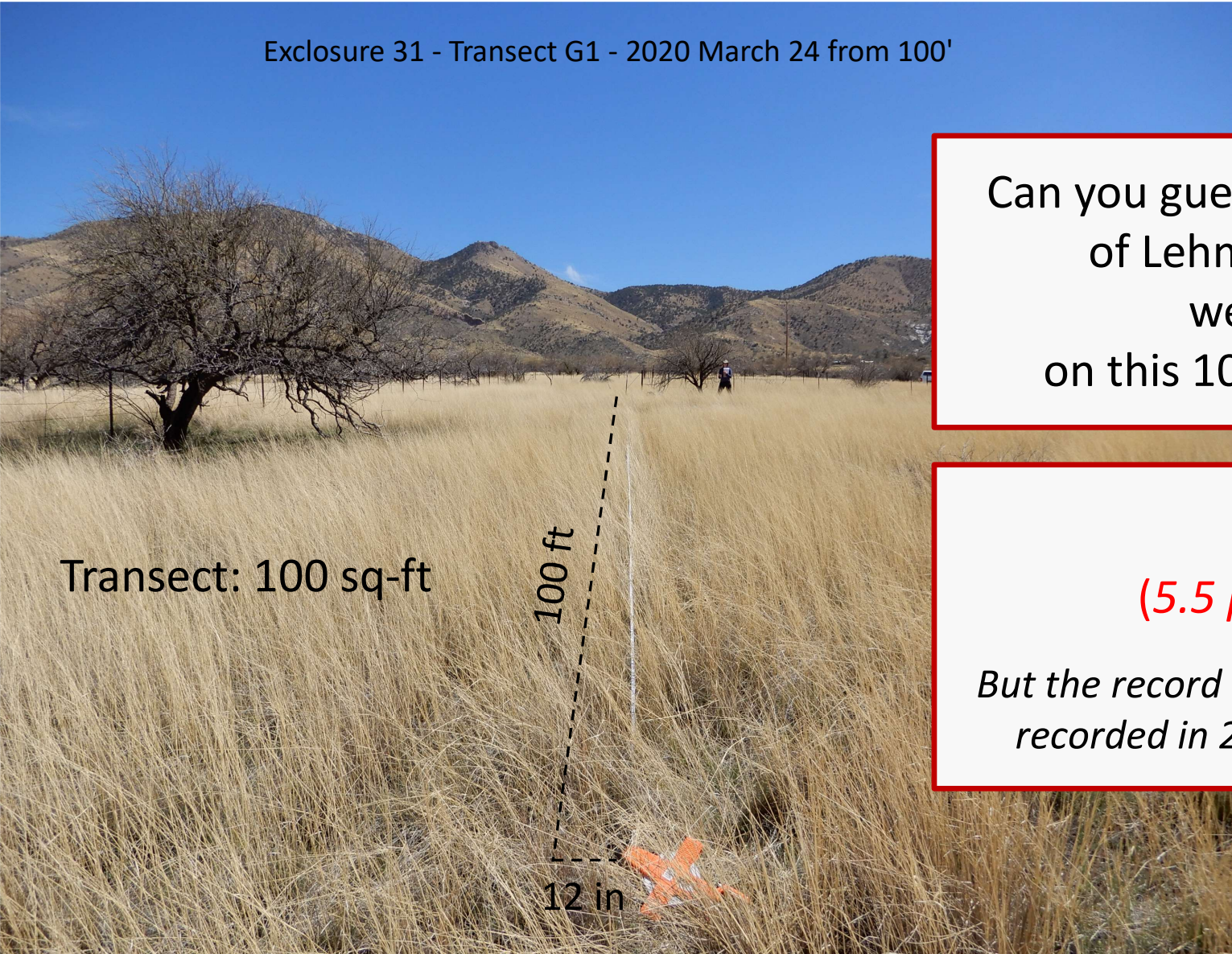


Thank you!

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Final quiz of the day

Exclosure 31 - Transect G1 - 2020 March 24 from 100'



Transect: 100 sq-ft

100 ft

12 in

Can you guess how many plants
of Lehmann lovegrass
we counted
on this 100 sq-ft transect?

555!

(5.5 plants/sq-ft)

*But the record is 1772 plants/100 sq-ft
recorded in 2018 in transect 22-4!*