

University of Arizona Santa Rita Experimental Range

The theme for this spring 2015 season of Discovery Events is how the Santa Rita Experimental Range and other field research stations are relevant to 21st century social and scientific challenges. Please join us for fascinating and informative events.

New Discovery Talks announced (more details follow, below)

March 7, 2015: ***It's not easy being green – linking phenology and climate change at the Santa Rita Experimental Range***

March 21, 2015: ***The Range and the Ranch – blending tradition and adaptation for family, social and environmental values at SRER***

March 28, 2015: ***Life on a slippery slope – the Merriam-Powell Research Station and new research on ecological adaptation to climate change***

April 11, 2015: ***The buzz on the Range – impacts of forage availability and nutritional stress on honey bee colonies***

April 25, 2015: ***Through the haze darkly – a look at drought, dust, and plant death***

- Discovery Talks
 - Presented by the University of Arizona, Santa Rita Experimental Range
 - Open to the public
 - 10:00 AM to 11:30 AM
 - Station opens 9:15 AM for informal birding and enjoyment
 - Seating is on a first come – first seated basis
 - Talks are followed by an optional potluck lunch – stay and join the fun!
 - Held at Florida Station, 12 miles east of Green Valley
 - For map and directions, or more information: markh@cals.arizona.edu)
 - Please carpool if possible. Thanks!

- Link to Florida Station weather

<http://www.wunderground.com/personal-weather-station/dashboard?ID=KAZGREEN15>

Here are details of the next three Discovery Talks

Discovery Saturday Illustrated Talk:

It's not easy being green – linking phenology and climate change at the Santa Rita Experimental Range

WHEN: Saturday **March 7, 2015, 10:00 – 11:30 AM**, followed by potluck lunch

WHERE: **Florida Station**, Santa Rita Experimental Range (map provided on request to markh@cals.arizona.edu)

WHO: **Shirley Papuga**

Ph. D., Associate Professor and Program Chair, Watershed Management and Ecohydrology Program, School of Natural Resources and the Environment, University of Arizona.



Dr. Shirley Papuga and instruments she installed on the Santa Rita Experimental Range

Talk Summary:

You've encountered it wandering the local desert. You've seen it in empty lots and possibly in, or just beyond, your own yard. You've noticed its spindly shoots, yellow petals, waxy leaves, and that pungent smell in humid air after rains. For Shirley Papuga, this pervasive arid land plant—*creosotebush* – is especially fascinating as a survivor of harsh conditions, and a bellwether of future environments.

Working on the Experimental Range since 2008, Shirley and her students have used time-lapse digital photography to study the phenology (lifecycle activity such as

greening and flowering) of creosotebush. Coupling these observations with data on weather and soil moisture, they are discovering what triggers creosotebush activity, including the challenge of being green in the desert. They seek to understand how projected climatic shifts may affect this plant and its distribution.

The ecological future of arid western landscapes is being studied on the Santa Rita Experimental Range. Please join us to learn more about a plant you thought you knew, and how research on the Experimental Range yields insights into our changing world.

More about Shirley Papuga:

Shirley Papuga completed her Ph. D. in Geology, with a focus on hydrology, at the University of Colorado, Boulder. Since joining the University of Arizona she has been active in research, teaching, publishing, advising and encouraging students. Her research program focuses on the land-atmosphere exchange of energy, water, and carbon. These interactions are a major source of uncertainties in climate change projections, as well as associated mitigation and adaptation strategies.

Discovery Saturday Illustrated Talk:

The Range and the Ranch – blending tradition and adaptation for family, social, and environmental values at SRER

WHEN: Saturday **March 21, 2015, 10:00 – 11:30 AM**, followed by potluck lunch

WHERE: **Florida Station**, Santa Rita Experimental Range (map provided on request to markh@cals.arizona.edu)

WHO: **Andrew and Micaela McGibbon, Mark Heitlinger**

The McGibbons are owners and managers of the Santa Rita Ranch; Mark is Range Manager of SRER



Andrew and Micaela McGibbon host a delegation from western Africa at their Santa Rita Ranch, 2006; half million dollar building site advertising it borders the Experimental Range, 2006.

Talk Summary:

We talk of the high environmental and energy cost of producing meat instead of crops. But livestock grazing on Arizona ranges generally involves no synthetic fertilizer, no pesticides, consumes mostly solar energy and plants of no direct nutritional value to humans, occurs on unirrigated land where no crops would otherwise grow, and where precious rain water can percolate down rather than running off.

We talk of overgrazing and nature destruction. But western ranchers today pride themselves for practicing wildland conservation. Your neighboring ranchlands are supporting endangered jaguars and Pima pineapple cactus. Recreational hunters flock to well-managed ranchland, for good reason. Private houses enjoying rangeland views also enjoy greater property values. Yet few of these and other services from ranching yield revenues to the ranchers who enable them.

What is the emerging future of agriculture in a drier, warmer, thirstier and hungrier world? It might mean more of what you'd see on a visit to the McGibbon's ranch.

A "tour" to their ranch is what this Discovery Saturday offers. First Mark will present information developed by University of Arizona Professor George Ruyle. His presentation is on Arizona ranch history, range research on the Experimental Range and the current adaptive livestock management program. Then Andrew and Micaela McGibbon will talk about the challenges, methods, and gratifications of modern-day ranching.

Please join us for this unique chance to learn about the partnership between the Range and the Ranch, and hear firsthand about Arizona ranching today.

Discovery Saturday Illustrated Talk:

Life on a slippery slope – the Merriam-Powell Research Station and new research on ecological adaptation to climate change

WHEN: Saturday **March 28, 2015, 10:00 – 11:30 AM**, followed by potluck lunch

WHERE: **Florida Station**, Santa Rita Experimental Range

WHO: **Amy Vaughn Whipple**

Ph. D., Assistant Research Professor, Director of the Merriam-Powell Research Station, and SEGA Co-Principal Investigator, Northern Arizona University,



Dr. Amy Whipple, and the backdrop of the Merriam-Powell Research Station near Flagstaff, Arizona

Talk Summary:

Just beyond the doorstep of the Northern Arizona University (NAU) Merriam-Powell Research Station, located on the grounds of The Arboretum at Flagstaff, are ponderosa pine forests, alpine meadows, experimental wetlands, the 47,000 acre NAU Centennial Forest, the tallest mountains in Arizona, and the Nation's highest concentration of National Parks and Monuments. Combine this majesty and biodiversity with the environmental challenges of a burgeoning human population and climate change, and you get exciting opportunities for natural science education and ground-breaking research.

Amy will talk about the Merriam-Powell Research Station and the Merriam-Powell Center for Environmental Science: their history, programs, facilities, and scientific achievements. A research initiative, the Southwest Environmental Garden Array (SEGA), based at Merriam-Powell and other sites along an elevation gradient, launches a new generation of genetics-based ecological research. One of the goals is to identify genotypes of native species best adapted to survive in predicted climates.

The ecological future of Northern Arizona is under investigation at NAU and its field biology facilities. Please join us to learn more about these programs and what the future of northern Arizona may look like.

More about Amy Whipple:

Amy Whipple is an Assistant Research Professor in the Department of Biological Sciences and the Director of the Merriam-Powell Research Station, NAU. Dr. Whipple manages the day-to-day activities needed to establish and operate SEGA's experimental gardens. She oversees the Merriam-Powell Research Station, which provides affordable housing and research facilities for visiting research scientists and field classes. Dr. Whipple's research focuses on evolutionary ecology and adaptations of plants to drought and climate change. She works from the molecular scale to biotic communities, and with species including bacteria, fungi, trees, and mammals.