# LIST & SEARCH INSTRUCTIONS

## Two methods to quickly find specific information in this document

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### QUICK SEQUENTIAL REVIEW OF INFORMATION BY BOOKMARKS (Like a TOC)

1) Click on this pdfs' "Bookmarks" or "Table of Contents" icon
2) A column will appear listing the contents by pages or sections
3) Scroll down the list and click on desired item to jump to that page

### SEARCH FOR PARTIAL OR EXACT WORDS ANYWHERE IN THE DOCUMENT

1) Activate the pdf "Find" function by clicking on its icon (or press Ctrl and F keys)
2) Enter your search characters in the white rectangle box at the top of the page
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4) If the document is large the search may takes a minute or two
5) As you type characters the number of matches will probably decrease
6) The found characters will be highlighted, the highlight is often very subtle
7) Use the up/down arrows or previous/next words to go to found word pages

jmf 10/24/20

# Tucson Cactus and Succulent Society

## August Meeting

August 3, 2006

Greg Starr

## "A 13 Day Journey Through Mexico"

## Part 1

Greg's program will cover his last trip to Mexico. He traveled with 7 other people for 13 days and covered over 5000 kilometers throughout much of northern, central, eastern, and western Mexico. During his presentation he will show pictures and add descriptions and comments along the way. The pictures will be of a variety of cactus, both large and small, many succulents and some surprising Agaves, with many in bloom. The pictures will all be fantastic! Brian Kemble, curator at the Ruth Bancroft Gardens in Walnut Creek, CA traveled along on this trip as he and Greg were looking to study as many Agave species taxonomically as they could while others were interested in various other types of plants.

Greg was initially interested in trees, shrubs, and perennials, but he had a peripheral interest in Agaves that continued to grow. Agaves as horticultural plants have always been his favorites for the past 23 years. More recently he has become more interested in Agaves taxonomically. "I've had a passing interest in cacti and other succulents for a number of years, and have just recently started to delve a little more deeply into these wonders of the world." He has written a monograph on the genus Hesperaloe, describing two new species and a new subspecies, and was a coauthor for the description of Agave ovatifolia, the Whale's Tongue Agave. Greg is also the owner of Starr Nursery, a Tucson based mail order nursery specializing in the families Agavaceae, Liliaceae, and Nolinaceae.

Please join us for a great opportunity to hear Greg's recent travel adventures throughout the succulent habitats of Mexico!

# Tucson Cactus and Succulent Society

## September Meeting

September 7, 2006

Greg Starr

## "A 13 Day Journey Through Mexico"

## Part 2

Come and resume the trip we started in August. Greg will take us deeper into eastern and southern Mexico where we'll check out some newly described Agaves and various cool cacti and weird succulents.  The climate down there should be warm and dry, and the roads dusty and bumpy so dress appropriately. There will be plenty of photo ops for the shutterbugs. So gas up the car and get ready for some travel time!

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# Tucson Cactus and Succulent Society

## October Meeting

October 5, 2006 at 7 pm

Jon Weeks

"*Salicornia*, The Sonoran Desert Succulent That Could"

Jon will open the eyes of succulent lovers and introduce a plant that manages to withstand almost anything. You must attend to get the real picture.

Nearly one third of the arable land on earth has a significant salinity problem. Not only does this reduce crop yields for a hungry planet, but the situation is most critical in the poorest countries which often experience poor harvests. The consequences of this are not only hunger but also include profound social and political consequences as hungry people migrate to other regions. From 1980 to 1992, Jon worked on the Halophyte Project at the Environmental Research Laboratory of the University of Arizona. There are approximately 400,000 species of plants in the world of which about 10,000 are believed to have some degree of salt tolerance. The objective of this research was to investigate as many as possible of the estimated 10,000 species of halophytes which occur mostly in coastal habitats worldwide to determine if any of the species possessed the features required to be a successful crop plant that could be irrigated with low quality brackish water or seawater. After reviewing several hundred species of halophytes, the Lab settled on a widespread western hemisphere halophyte, Salicornia bigelovii. This species occurs intermittently along the coastlines of the United States and Mexico as isolated ecotypes. These ecotypes have features which make them attractive candidates for a halophytic crop as well as numerous features which are barriers to becoming a crop plant. This research focused on condensing the required characteristics of a crop plant into a bred selection while simultaneously breeding out the characteristics which would prevent the type from being successful as a seawater irrigated crop. The research also included developing the farming techniques for a species which had never before been farmed. As is often the case in research, Jon started out with some ideas that appeared to make sense at the beginning but during the course of the work got an education from the plants which he claims are a lot smarter than he will ever be. The research also included traveling extensively throughout Mexico

Jon was born and raised in Stratford, Connecticut. He received a B.A. from Gettysburg College in 1971 and in 1975 started Landscape Cacti, a desert nursery devoted to growing cacti and agaves from seed fro landscape use. In 1986 he received a Ph.D. from the University of Arizona and worked as a research Scientist for the University from 1986 to 1992 while living along the coast of Sonora, Mexico. Jon collected halophytes and was farming them in Kino Bay at Puerto Penasco, Sonora. Since 1992 to the present Jon has operated Landscape Cacti where he grows landscape cacti and agaves. Be sure to join us for Jon's experience in growing landscape cacti and his talk on the *Salicornia*.

# Tucson Cactus and Succulent Society

## November Meeting

November 2, 2006 at 7 pm

Bob Webb of Arid Lands Greenhouses

"Travels in Africa and Arabia IV: Euphorbias"

Mark Sitter next to a Euphorbia horrida ssp. horrida in South Africa and Toni Yocum entering a forest of Euphorbia magnicapsula near Lake Naivasha, Kenya.
Photos taken by Bob Webb.

Bob Webb and Toni Yocum will open the eyes of Euphorbia lovers with their excellent views and photography. Bob will show the genus Euphorbia in various countries ranging from Yemen down to South Africa. Trees to tiny things.

Bob Webb has collected succulent plants for about 20 years. For his day job he is a hydrologist with the U.S. Geological Survey in Tucson; however, he has worked as a plant ecologist in the southwestern United States and Baja California for nearly 30 years. He's been traveling to the Arabian Peninsula and Africa since the mid-1990s and has visited Yemen, Oman, Kenya, South Africa, Namibia and Botswana in search of succulent plants.

Please join us for our last presentation of 2006. We started in January 2006 with Bob's presentation on Aloes and we finish with his look at the remarkable genus Euphorbia. Don't miss this program from a really excellent speaker and someone who really knows, grows and loves these plants.

# Tucson Cactus and Succulent Society

## January 4, 2007 at 7 pm

David Yetman

"The genera Neobuxbaumia and Pachycereus"

The genera Neobuxbaumia and Pachycereus contain the tallest and most massive columnar cacti as well as the most charismatic plants. Neobuxbaumia is of a somewhat narrow distribution and inadequately studied. Some species are confined to one canyon in southern Mexico. The genus includes at least one, probably more undescribed species. Pachycereus has become a bit of a dumping ground for monotypic genera, even if they are only vaguely related to those columnar cacti whose flesh turns black when cut, as Arthur Gibson pointed out. Both genera cry out for further research, both field and laboratory.

David Yetman is a research social scientist at the University of Arizona, where he received his Ph.D. in philosophy in 1972. A former Pima County supervisor, his studies have focused on the peoples and plants of the state of Sonora, Mexico. His book The Great Ones: Biogeography and Ethnobotany of Columnar Cacti will be available in the fall, 2007 from the University of Arizona Press. Other publications include Sonora: an Intimate Geography; Guarijíos: Hidden People of Northwest Mexico; and, with Thomas Van Devender, Mayo Ethnobotany: Land, History and Traditional Knowledge in Northwest Mexico. He is editor with Paul S. Martin of Gentry's Río Mayo Plants.

Yetman is host of the nationally syndicated PBS program The Desert Speaks. He reports that he cannot get enough of the Sonoran Desert or Latin America.

Please join us for this great program by David Yetman. It will be our first presentation and the start of another great year for the Tucson cactus and Succulent Society.

# Tucson Cactus and Succulent Society

**February 1, 2007 at 7 pm**

Mark Muradian

## "Cactus Hunting In Northern Argentina"

Trichocereus Pascana at Quebrada Del Toro, Argentina at 12,000 feet elevation. Small Inset Photo is Tephrocactus Geometricus

This program is about a 3 week jaunt through northern Argentina. We started at Cordoba and traveled north to the Bolivian border. Many plants were seen from the genera Gymnocalycium, Trichocereus (Echinopsis), Opuntia and Tephrocactus, to name a few.

We traveled over 15,000 foot passes to the high Altiplano desert, and also passed through seemingly tropical areas where bromeliads hung from trees - a very interesting trip.

Mark is a third generation fruit and grape farmer in the Fresno, California area. He has been interested in cacti and other succulents for over 20 years and currently is Vice President and Program Chairman for the Fresno Cactus and Succulent Society. About 10 years ago he started to produce his own pottery for his various plants. Many others admired his pottery and liked his many designs so much that he started making various pieces to sell to others.

Mark has agreed to bring a variety of his pottery pieces with him. They will be on display for anyone interested in purchasing. His pottery is superb!

Join us for this very special presentation and an extremely enjoyable evening!

# Tucson Cactus and Succulent Society

**March 1, 2007 at 7 pm**

Bob Cardell and Pat Hammes

## "Beautiful and Amazing Crestate/Cristate Saguaro Cacti of Arizona"

One beautiful and indeed amazing crested Saguaro

Scroll down for another picture!

Bob Cardell and Pat Hammes started a serious effort to locate and document crested saguaros in February, 2005. At that time Bob was president of the Southern Arizona Hiking Club here in Tucson and Pat was the club treasurer. Thus they were able to finance and well afford their aptly termed "Crest Quest".

Both Bob and Pat were, and still are, dedicated peak baggers. After they had climbed all the peaks on the club peak lists, they were in search of their next goal. Having noticed numerous crested saguaros during their peak bagging outings, they unconsciously started a friendly one-on-one competition; "I found one more than you did", "I'll find the next one", "I am one up on you" sort of competition. Thus was born their "Crest Quest".

They have now located, photographed and documented 640 crested saguaros in Arizona. Their ultimate goal is 1000 of these beauties. Then we will find at least one more.

Bob is a retired U.S. Marine and has the time to dedicate to their ongoing search. Pat is still a working lady with the Pima County Court system so her outings are mostly restricted to weekend trips.

The tools of their trade are superior optics, great patience, sincere dedication, dogged perseverance, bullheaded tenacity, a little hiking and a lot of luck. And . . . the ongoing love of the hunt.

Of great importance also is the quality time they spend together out there in our beautiful Arizona desert. And as Pat always says "I am still one up on you Bob."

Please join us for an excellent program on the great sentinels of Arizona. This is a very special presentation that everyone must see. Bob and Pat have taken on a monumental task. Please welcome them to our March meeting and be prepared for a very special night.

Tripple crested Saguaro

# Tucson Cactus and Succulent Society

## April 5, 2007 at 7 pm

Joe Clements

## "Southern California Hot Spots"

Joe and his wife Susan are currently living in Claremont, California. Joe's education was predominately derived from Whittier College and the University of Southern California, where he received a degree in Geology. He was employed with the Huntington Botanical Gardens as Curator of the Desert Gardens for 22 years. For the past five years he has been the Director of the Rodman Arboretum at Pitzer College. He is also the coauthor of "Dry Climate Gardening." Joe has served on the CSSA board since 1972, putting in more than 32 years on the board. He has been president of the San Gabriel Cactus and Succulent Society several times and cochairman of that society's Study Group. For long-standing service in the Cactus and Succulent Society of America, Joe has been granted the CSSA's Superior Service Award.

Joe's presentation is about the Deserts (Geology and Plants) of Southern California. He will present photos of locations within Joshua Tree National Monument, Mojave National Preserve, Borrego State Park, and surrounding areas.

Please join us to welcome Joe to our meeting where you will truly enjoy hearing his very special presentation on some great desert locations in southern California!

# Tucson Cactus and Succulent Society

**May 3, 2007 at 7 pm**

Brian and Shirley Loflin

## "Cacti of Texas"

Scroll down for more pictures!

Brian Loflin is a seasoned marketing leader within aerospace manufacturing and service organizations with a career that spans three decades as a marketing consultant, advertising manager, veteran photographer, and journalist.

He was born in Little Rock, Arkansas and graduated from nearby Hendrix College. Graduate degrees were also later earned from the University of Arkansas. During the early years, he worked as a medical photographer at the University of Arkansas School of Medicine and as a freelance photojournalist, serving regional Arkansas newspapers and United Press International.

After graduation, Brian served as a U.S. Navy officer where he coordinated many efforts of the Pacific Fleet Intelligence Center, flew intelligence reconnaissance missions over Southeast Asia, and was on the briefing staff of the Commander of the United States Pacific Fleet.

After leaving the service Brian teamed with two partners and founded an advertising and photography production service in Denver, CO. In this role he completed a wide variety of global advertising and photographic assignments, ranging from airplanes to zoological specimens. Although his specialty is industrial projects, he manages to produce a large amount of natural science photography, a passionate endeavor.

During his career, Brian's photographs have been published in more than 70 various national and international magazines, books and other publications. Brian's work has also been displayed by several galleries and has won numerous awards.

Shirley, Brian's wife of 11 years, was a manager of a printing company for more than ten years and has always been professionally involved in the graphic arts. She is also an accomplished artist and photographer. Today, Shirley uses her photography to accent her enduring love of nature. Shirley is a passionate naturalist, artist and photographer with a keen interest in plants and birds. They recently completed the first in a series of nature guides, "Grasses of the Texas Hill Country," a well-received volume released last April by Texas A&M University Press.

Continuing her involvement in the business of photography, she manages Loflin & Associates, their joint photographic stock business that comprises more than 100 thousand images. The Loflin stock photographs are published in various media on a global scale.

Brian and Shirley enjoy their passion as independent naturalists, photographers and writers. Together, they actively teach seminars and workshops in many areas of natural science and photography. As nature and travel photography tour leaders, they conduct specialized travel events around the world, including Mexico, Costa Rica, Europe, Asia and China.

They recently completed writing, producing and photographing "Cacti of Texas", a photographic guide book to be published this year. This publication will cover 100 species.

For further information please visit Loflin Images, their web site at **www.loflin-images.com**.

Please join us for this very special program. It will be a special treat to experience their excellent presentation.

# Tucson Cactus and Succulent Society

**June 7, 2007 at 7 pm**

Gary Lyons

Curator of the Desert Garden at The Huntington

## "The development of the Huntington Desert Garden from its beginning in 1907."

Scroll down for some beautiful pictures of the Huntington.

# Tucson Cactus and Succulent Society

**July 5, 2007 at 7 pm**

Greg Starr

## "2006 Mexico Journey part 3"

**Agave bovicornuta west of Yecora**

Scroll down for more Agave pictures!

With apologies to the Beatles; Roll up, roll up for the Mexico Tour. You have an invitation, to make a reservation. The Magical Mexico Tour is waiting to take you away.

Come along with Greg to complete the 5000-kilometer journey we started last year, taking us through much of northern and central Mexico. You might recall that we traveled many, many miles and saw some beautiful scenery along with flowering Agaves, Echeveria, Ferocactus, Fouquieria, Mammillarias, Yuccas, and even a snake. Part 3 will cover the last leg of the trip from central Mexico through northwestern Mexico, and has in store for us, pictures of surprise, Agaves, Echinocereus and more scenery.

Greg is still intent on studying the large and diverse Agave genus both horticulturally and taxonomically. (He promises not to put you to sleep with too much taxonomy). Greg and Jose Angel Villarreal described the amazing **Whale's Tongue Agave (Agave ovatifolia)** and is always on the lookout for other, possibly undescribed species of Agaves. Greg owns **Starr Nursery**, a Tucson based mail order and retail (by appointment) nursery specializing in members of the Agavaceae as well as other succulents and new to horticulture shrubs and perennials.

Please join us for the third and final leg of the 2006 Mexico adventure.

**Agave parryi truncata**

**Agave multifilifera at Basaseachic Falls**

# Tucson Cactus and Succulent Society

## August 2, 2007 at 7 pm

Miles Anderson

# Cactus and Succulent Plant Propagation

Like so many plant enthusiasts, Miles was hooked at the tender age of eleven and still maintains a passion for cacti and succulents. During the 1980s he attended the University of Arizona and earned a BS in general agriculture and an MS in plant protection. In 1991 he started the **mail order company Miles' To Go**, and in 1993 he and his wife Janice moved onto ten acres in Avra Valley just north of Saguaro National Park West to start their plant nursery. The nursery has 14,000 sq. ft. under production in covered greenhouses and shade houses. Although Miles' To Go first specialized in cristate, monstrose, and variegated cacti, the nursery houses more than 1500 different species of succulents from many plant families.

Don't miss this excellent propagation program. It will be an excellent way to further your knowledge of how to keep adding your plants to the landscape!

# Tucson Cactus and Succulent Society

## Thursday September 6, 2007 at 7 pm

Speaker is Gene Joseph from **Plants for the Southwest**

"Plant Sex in the City...and the County Too!"

The topic I am interested in promoting is local seed production of succulents and cacti. It is a logical 'next step' in growing these plants and will afford the grower/pollinator an opportunity to closely observe and learn more about these great plants and if successful, can provide some bargaining power with the local growers. With minimal tools necessary and a small amount of time, an individual can focus on a group of plants (Euphorbias or Pachypodiums or Mammillarias) or even a single species (Pseudolithos miguertinus or Euphorbia bupleurifolia or Echinocereus viridiflorus v. canus), producing hundreds, or even thousands of seeds in your back yard, on just a few plants. Pollinating tools and techniques, insect exclusion, seed collecting, cleaning and storing methods and suggested species will be discussed.

Gene has a degree in Plant Sciences from the University of Arizona and graduated in 1985. He was plant propagator at the Desert Museum, where he focused his energies on Sonoran Desert plants. Gene says "I knew where I was by what I was growing and if it was Sonoran, I was at work." "If it was not, I was at home." Gene's collection at home forced him to quit the Desert Museum and move to Jane's flower shop where he continued to maintain his collection under the guise of being in business.

Today Gene Joseph and Jane Evans own Living Stones Nursery & Plants for the Southwest, located at 50 E. Blacklidge, Tucson, Arizona 85705. They specialize in succulent plants and cacti from around the world, but also grow some of the interesting and uncommon desert shrubs, wildflowers and trees, mainly from our region here in the southwest.

Please welcome Gene as our September guest speaker and plan on attending this very important educational presentation.


**The Well-Equipped Pollinator**

# Tucson Cactus and Succulent Society

## Thursday October 4, 2007 at 7 pm

Cory Martin

"A Garden of Eden in Our Own Backyard"

Sycamore Canyon; Santa Cruz County, Arizona

Sycamore Canyon is one of the most diverse canyons in Arizona, and it's right here in our own backyard! Join Cory Martin in viewing some of the 640 species of plants, geology and wildlife that occur in this four mile long canyon on the Arizona/Mexico border. This is the fourth installment in the "cool places to see within a days drive from Tucson" series meant to inspire appreciation for our local hot spots of vegetation.

Cory got his start in the plant community at Bach's Cactus Nursery twelve years ago. After four years in wholesale and retail, Cory moved on to The Arizona Sonora Desert Museum. Joining the Botany Department at the ASDM as Horticulturist, he spent seven years caring for many different exhibits including but not limited to the Boojums and the Cactus Garden. Cory has spent the past year and a half as Horticulture Manager for Miraval Resort and Spa managing a crew of six and thirty acres of maintained property. Cory also likes to search out plants in habitat in his free time.

We want to welcome Cory as our October guest speaker. Don't miss this special journey to a great location along the border of Arizona and Mexico.


**Cory Martin at Sycamore Canyon**

# Tucson Cactus and Succulent Society

## Thursday November 1, 2007 at 7 pm

Kelly Griffin

"A Visit to Madagascar"

Be prepared for an exciting recent journey to Madagascar by Kelly Griffin, curator of xerophytic plants at Rancho Soledad Nurseries. Kelly spent a month traveling the country side looking for flora and fauna. He found plenty of both ….Lemurs, Aloes, Chameleons, Kalanchoes, Snakes, Alluaudias, Palms and Pachypodiums. Madagascar is a beautiful and very friendly albeit extremely poor country.

Kelly is currently employed at Rancho Soledad Nurseries in Rancho Santa Fe, California as the curator of xerophytic plants. Rancho Santa Fe is one of the largest Nurseries in Southern California specializing in rare and unusual Palms, Cycads and Succulents from around the world.

Please welcome Kelly as our November guest speaker and plan on attending our last educational presentation for 2007. Meet with Kelly and discuss his amazing program on one of the most magical, endangered environments on earth.

**Kelly with a very old Cycas thouarsii (northeast Madagascar)**

**Kelly with Aloe helenae 20 km northwest of Fort Dauphin, Madagascar**

**Bright form of Aloe capitata**

**A Chameleon in the Andringrita mountains**

# Tucson Cactus and Succulent Society

## Thursday January 3, 2008 at 7 pm

### Mark Fryer

### "A View From the Bench - trials and tribulations in succulent horticulture"

I started growing cactus and succulent plants as a young boy in the mid-Willamette valley area of Oregon. My Grandfather was a farmer and my parents always had a passionate interest in gardening and planting interesting shrubs and trees, so the appreciation of flora was one that was instilled over and over in the course of my formative years. My first cactus garden died in the family attic during it's first year of growth (I dehydrated everything in it), I remember clearly the every other day jaunts up the ladder in the garage to check on my little mini-desert up under the eaves.

20 years later I found myself surrounded by 1000's of living things that were constant companions and inspiration over the years, things that offered more questions than answers and that I couldn't seem to shake. While my various education paths were never really agriculturally oriented, there were always elements of the natural sciences involved with summer jobs and other activities. I accidentally flowered some cactus one spring and wanted to learn more, which is when and where I was first exposed to the Cactus and Succulent Society of America, and the Oregon Cactus and Succulent Society.

Several years later I was obsessed with studying north American cacti in habitat and growing as many different plants as possible. As luck or fate had it, one of my neighbors at the time had a little business called Banana Gardens that was an overgrown backyard nursery operation, and was soon to be moving into new quarters on some acreage, called "Rare Plant Research" which was specializing in Lewisias, cold-hardy succulents, and rare tender succulents. I had a part-time job that was feeding the obsession. I tried to launch my own backyard nursery and actually got very close to success with it.

I was very dedicated to the Oregon C&S Society, and served officially for several years. Fast forward another decade or two and time finds me working in a good corporate job, relegating my passion to "well-developed hobby", and still devoted to study and experimentation. The "dot-com burst" of 2000 placed me in a challenging position after having relocated to San Diego where I married the girl of my dreams and settled down a bit. Moving to southern California after almost 4 decades in the Pacific Northwest, I got to relearn everything I thought I knew about growing plants, especially succulents. In between consulting gigs and chewing on the notion of buying a nursery, I struck a deal with the owner of C&J Cactus Nursery to do some temporary grafting work. After a month or so of working there, they made me an offer to come on as a manager of sorts, a propagator of sorts, someone to potentially buy the place and learn the ropes. Now in my 5th year there, this program will be an overview of what it's like to bring several hundred species of cacti and succulent plants from seed-production into plant-production, some of the successes and failures, and some of the neat anomalies we encounter along the way. I look forward to meeting with you all on January 3rd!

Be sure to come and welcome Mark to our first meeting of 2008!

# Tucson Cactus and Succulent Society

## Thursday February 7, 2008 at 7 pm

### Dr. Jerald E. Wheeler

The notes of this meeting are included below!

Dr. Wheeler's program will cover these four important informational topics that focus on the essentials needed for insuring a beautiful and healthy plant collection.

- Essential Nutrients & Beneficial Nutrients
- Fertilizer analysis-an explanation of the numbers on a bag of Fertilizer.
- Fertilizer rates
- Principle nutrients needed to increase plant resistant to disease.

Jerald E. Wheeler, Ph.D. is a Plant Pathologist. For those who need a better explanation of what a plant pathologist does, here is a short definition. A plant pathologist is one who studies, interprets, and diagnoses diseases and abnormalities of plants. Plant Pathology is defined as the study of the organisms and environmental conditions that cause disease in plants, the mechanisms by which this occurs, the interactions between these causal agents and the plant (effects on plant growth, yield and quality), and the methods of managing or controlling plant disease. It also interfaces knowledge from other scientific fields such as mycology, microbiology, virology, biochemistry, bio-informatics, etc.

Educational background

BS. Purdue University, 1966, Agriculture and Plant Sciences
MS. U. of Arizona, 1969, Plant Pathology/Botany
Ph.D. U. of Arizona, 1970, Plant Pathology/Agricultural Biochemistry
1968-1970 U. of Arizona, In charge of plant disease clinic under Dr. Hine

Professional History

1970-1971 Assistant Professor of Plant Physiology, Univ. of Freiburg, Germany
1971-1973 Assistant Professor of Agronomy and Plant Genetics at the University of Arizona
1973-1975 Development Plant Pathologist, University of Wisconsin, Brazil
1975-1988 Owned and/or Managed Acre, Inc.
1988-2002 Product Development Manager, United Agri Products
2002-2004 Product Development Manager, Western Farm Service
2003-present Product Development Manager, Agriliance/Winfield Solutions

Dr. Wheeler has also been published with his writings in 17 Scientific Publications in refereed journals.

This will be a special program that everyone should attend and enjoy. Dr. Wheeler is presenting our first program on Plant Pathology and this will be a very important area to be presented. You may learn a lot more about your plants and their particular needs so please join us in welcoming Dr. Wheeler and be sure to also bring your questions.

# Reduction of Plant Diseases Using Nutrients

## "Fertilizer Labels-A Foreign Language"

**Jerald E. Wheeler**

**Plant Pathologist/Agronomist**
**Winfield Solutions, LLC**
**Product Development Manager**
**Tucson, Arizona**

# Essential Plant Nutrients

# 17

# Plant Nutrient Uptake

1. Dissolve in water (form ions)

   Soil Solution, Foliage

2. Gasses

   Carbon ($CO_2$), Nitrogen fixation ($N_2$)

# Nutrients: 3 of 17

**Carbon C (Carbon Fixation, Photosynthesis)**

**Oxygen O**

**Hydrogen H**

**Mainly from air and water**

# Essential Nutrients, 14

| Nutrient | Fertilizer | Uptake Form |
|---|---|---|
| Nitrogen N | Urea, NH4, NO3 | $NH_4^+$, $NO_3^-$ |
| Phosphorus P | Phosphate | $HPO_4^{-2}$, $H_2PO_4^{-1}$ |
| Potassium K | Potash | $K^+$ |
| Ca, Mg, Zn, Mn, Cu, Fe, Ni | (all as divalent cations) | $^{-2}$ |
| Sulfur S | Sulfate | $SO_4^{-2}$ |
| Chlorine Cl | Chloride | $Cl^{-1}$ |
| Boron B | Borate | $H_3BO_3$ |
| Molybdenum Mo | Molybdate | $MoO_4^{-2}$ |

# Beneficial Nutrients

**Not shown to be essential.**

**Many!  Maybe 12 or more!**

**Another seminar!**

# 14 Essential Nutrients Uptake

**Must be soluble in water!**

## Soil Solution: Equilibrium

**Insoluble ⟷ Soluble**

**Hydroponics**

**Foliar Feed Solution**

# Fertilizer Label

## Nitrogen (N)

**Percentage listed in pure form**

**20-20-20**

**20% Nitrogen**

# Fertilizer Label

## Nitrogen

## 3 Chemical Forms

**Urea**

**Ammonium**

**Nitrate**

# Fertilizer Label

## Phosphorus (P) & Potassium (K)

**Listed as % oxides.**

**Not in the elemental forms.**

$$P_2O_5$$

$$K_2O$$

# Fertilizer Analysis

## 20-20-20

| Nitrogen | $P_2O_5$ | $K_2O$ |
|---|---|---|
| 20% | 43.6% P | 83% K |

Nitrate

Ammonium

Urea

# Soil & Foliar Tests

**Nutrients are listed in elemental forms.**

**N, P, K etc.**

# Typical/General Concentrations Found in Dried Plant Material as Dry Weight

| Primary | | Plant/Mobility |
|---|---|---|
| Nitrogen (N) | 4.0% | High |
| Phosphorus (P) | 0.5% | High |
| Potassium (K) | 4.0% | Very High |
| **Secondary** | | |
| Calcium (Ca) | 1.0% | Low |
| Magnesium (Mg) | 0.5% | High |
| Sulfur (S) | 0.5% | Low -Medium |

# Typical/General Concentrations Found in Dried Plant Material as Dry Weight

| Micronutrients | | Plant/Mobility |
|---|---|---|
| Iron (Fe) | 200 ppm ? | Low |
| Manganese (Mn) | 200 ppm ? | Low |
| Zinc (Zn) | 30 ppm | Low |
| Copper (Cu) | 10 ppm ? | Low |
| Boron (B) | 60 ppm | High |
| Molybdenum (Mo) | 1 | Nitrogen Utilization |
| Nickel (Ni) | ? | Nitrogen Fixation |

# Fertilizer Analysis: 10-30-20

**Nitrogen** **10 % N**

**(Ammonium, Nitrate, Urea)**

**Phosphate 30 %($P_2O_5$) X 43.6%) 13.08% P**

**Potash 20% ($K_2O$ X 83%) 16.6 % K**

## Elemental Analysis: 10--13.08--16.6

# Soluble Fertilizer Rates/Soilless Mixes

**20-20-20, 10-30-20, 10-26-38**

**(all + micronutrients)**

## Normal Watering of Pots and Flats

## 2 lbs. in 100 gal.

**Applied at 1 quart per sq. foot or as normal watering.**

# Soluble Fertilizer Rates/Soilless Mixes

## Normal Watering of Pots and Flats

## 2 lbs. in 100 gal.

**1 oz. in 3 gallons**

**1 tablespoon in 3 gallons**

**¾ teaspoon in 1 quart**

# Soluble Fertilizer Rates/Soilless Mixes

**20-20-20, 10-30-20, 10-26-38**

**(all + micronutrients)**

## Injections Rates

**200-300 ppm N per 7-21 days**

**Some labels go as high as 470 ppm N.**

# Fertilizer Rates/Soilless Mixes*

***Lower rates of solubles by 25-50%!**

| Amendment | Oz/Cu. Ft. | Nutrients |
|---|---|---|
| Dolomitic lime | 2-10 | Ca, Mg |
| Lime | 2-10 | Ca |
| Gypsum | 2-10 | Ca, S |
| K-Mag (21/10/21) | 4-5 | K, Mg, S |
| Ammonium Phosphate | 2-3 | N, P |
| Ferrous sulfate | 1/4 | Fe, S |

# Soilless Mixes

## Slow-release

**14-14-14**

**N = 100%  P = 43.6%  K = 83%**

**14--6.1--11.62**

# Soilless Mixes

**Target soilless mix pH: 6.0-6.8**

**Best solubility of most nutrients best at 6.8.**

**Phosphorus most soluble at pH 6.5.**

# Soilless Mixes

## The pH becomes too low, too acid.

1. Degradation of organic matter

2. Application of soluble fertilizers

3. Organic matter has low pH, e.g. peat moss

# Soilless Mixes

**Adjust up, increase pH using lime.**

**Calcium carbonate**

**Calcium/Magnesium carbonate**

**(Dolomitic lime)**

# Soilless Mixes

## "Special Case"

## Fusarium oxysporum-Crown Rot

**This fungus kills ferrocacti if soil pH is acid.**

**Adjust soil pH to greater than 7.0.**

**Lime!**

# Cacti, Succulents and Native Plants Respond to Higher Nutrient Levels

1. Optimum Yield/Growth

2. Disease & Insect Resistance

# Most Important Nutrients for Disease Resistance

# K, Ca, Cu, B, Mn, S, Si*

*** Not essential, but beneficial**

# Most Important Nutrients for Disease Resistance

## "Context"

**Sufficient Quantities of all Essential Nutrients Must be Delivered to the Plant**

# Potassium

# $K^+$

**1992 Dr. Steve Petrie**

**534 References Reviewed**

# $K^+$ Most Important

# Insect and Disease Reduction

# $K^+$

## Potassium

1. Mobilization of Plant Defense System

2. Increases Cuticle Thickness

# K+

## Potassium

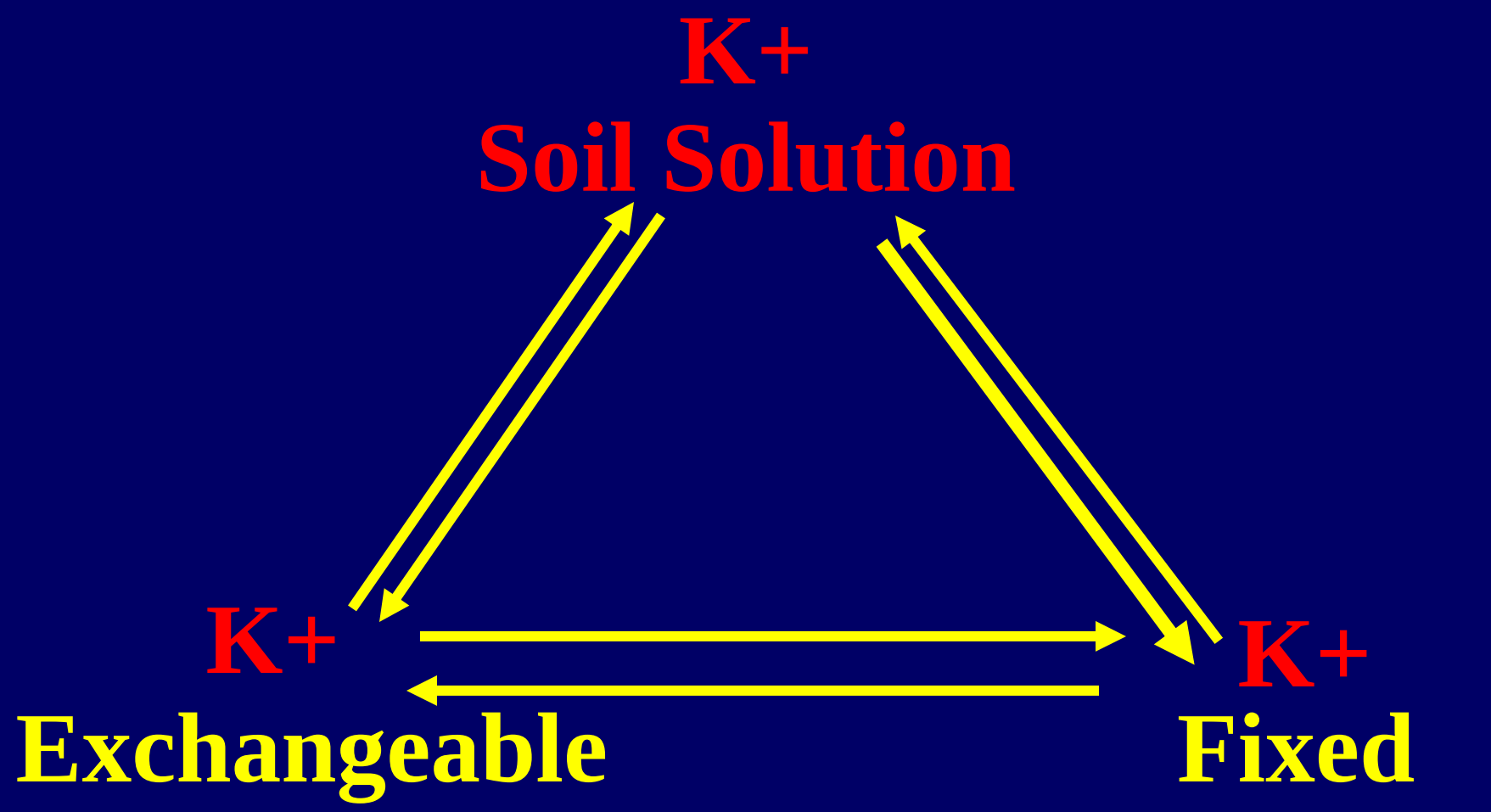
## Tolerance to Adverse Conditions

## Stress: Heat, Cold, Drought

# Potassium $K^+$ : 4 Issues

1. Tied up in clay soils
2. Slowly available from native soils
3. Leaches out in light soils
4. High nitrogen overcomes K effect

# Potassium Behavior in Soil




Source: Unocal Nitrogen Group

# Effect of K, N and Ca on Severity of Phytophthora Diseases

| Pathogen | Host/Disease | Factor | Effect |
|---|---|---|---|
| *P. infestans* | Potato Late Blight | K | Decrease |
| | | K | None |
| | | High K | |
| | | High N | Increase |
| *P.capsici* | Pepper Blight | K | Decrease |
| *P.drechsleri* | Pigeon Pea Blight | | |
| | | High K | |
| | | Low N | Decrease |
| *P.parasitica* | Citrus gummosis | | |
| | | High K | |
| | | Low Ca | Increase |

Phytophthora, Its Biology, Taxonomy, Ecology and Pathology, 1983 APS Press, St. Paul, MN Page 191

# $K^+$

## Potassium

**Solutions to K needs:**

**1. Increase soil concentration, apply more K more often (3% CEC)**

**2. Foliar applications of high K and low N fertilizers**

# Calcium $Ca^{++}$

1. **Fortifies the Middle Lamella**

**Middle Lamella = Calcium Pectate**

**2. Slows degradation by pathogens**

**(Especially soft rot bacteria that attack cacti and succulents.)**

# $Ca^{++}$

**More Calcium in Middle Lamella Reduces Pathogen Enzyme Activity**

**Pectolytic Enzyme Activity:**

**Polygalacturonase**

**$Ca^{++}$**

**Stops Motile Spores=Zoospores**

**Encyst or Stop Swimming**

**Phytophthora and Pythium**

# Pathogens of Cacti and Succulents

**Phytophthora species**

**Hosts**

**Boogum-trees**

# Pathogens of Cacti and Succulents

**Pythium species**

**Hosts**

**Agaves, Cacti & Euphorbiaceae seedlings**

# Calcium

1.Increases Plant Membrane Stability

2. Improves Soil Structure:
Water/Oxygen Distribution

3. Lime Increases Soil pH: Fusarim Spore Attachment (ferrocacti, bananas)

4.Reduces Rhizoctonia enzyme activity

# Relationship Between Cation Content and Severity of Infection with *Botrytis cinerea* Pars. In Lettuce

| Cation content (mg/g dry wt.) | | | Infection[1] with |
|---|---|---|---|
| **K** | **Ca** | **Mg** | ***Botrytis*** |
| 14.4 | 10.6 | 3.2 | 4 |
| 23.8 | 5.4 | 4.1 | 7 |
| 34.2 | 2.2 | 4.7 | 13 |
| 48.9 | 1.8 | 4.2 | 15 |

[1] Infection index:

0-5 slight infection
6-10 moderate infection
11-15 severe infection

Based on Krauss (1971). 1998. "Mineral Nutrition of Higher Plants." 2nd ed. Horst Marschner. P.447

## Tentative Summary of the Effect of Nitrogen and Potassium Levels on the Severity of Diseases Caused by Parasites

| | Nitrogen Level | |
|---|---|---|
| **Pathogen and Disease** | **Low** | **High** |
| **Obligate parasites** | | |
| *Puccinia spp.* (rusts) | + | +++ |
| *Erysiphe graminis* (powdery mildew) | + | +++ |
| **Facultative parasites** | | |
| *Alternaria spp.* (leaf spots) | +++ | + |
| *Fusarium oxysporum* (wilts and rots) | +++ | + |
| *Xanthormonas spp.* (spots and wilts) | +++ | + |

# Tentative Summary of the Effect of Nitrogen and Potassium Levels on the Severity of Diseases Caused by Parasites (continued)

| | Potassium Level | |
|---|---|---|
| Pathogen and Disease | Low | High |
| **Obligate parasites** | | |
| ***Puccinia spp.* (rusts)** | ++++ | + |
| ***Erysiphe graminis* (powdery mildew)** | ++++ | + |
| **Facultative parasites** | | |
| ***Alternaria spp.* (leaf spots)** | ++++ | + |
| ***Fusarium oxysporum* (wilts and rots)** | ++++ | + |
| ***Xanthormonas spp.* (spots and wilts)** | ++++ | + |

Based on Kiraly (1976) and Perrenoud (1977). 1998. "Mineral Nutrition of Higher Plants. 2nd ed. Horst Marschner." p. 443.

# $Cu^{++}$ - Copper

- **Increases cuticle thickness**
- **Cuticle: a barrier to infections**
- **Careful!**

# $Cu^{++}$ - Copper

- **Necessary for polyphenoloxidase activity.**

- **Polyphenoloxidase system produces some phytoalexins and other anti-pathogenic molecules.**

# $Cu^{++}$ - Copper

**Phytoalexins-antimicrobial compounds produced by plants in response to a host-parasite interaction.**

**Some phytoalexins are phenolics.**

**Others such as sulfur are not organic molecules.**

# Boron

# B

1. Increases the uptake of cations (Blevins, Schon, U. of Missouri)

2. K, Ca and Cu are cations that are vital for plant resistance to disease.

3. Involved in the metabolism of phenolics.

# Boron

# B

**Phenolics include phytoalexins and other molecules that are toxic to plant pathogens.**

**Phytoalexins are phenolics that are toxic to plant pathogens.**

**Qinones from phenolics may form: also toxic to plant pathogens.**

# Manganese $Mn^{++}$

**1988 Study by Huber and Wilhelm**

**82 scientific papers were review**

**Papers addressed disease and Mn content.**

**All but 4 papers indicated that added Mn decreased disease.**

**Two of the 4 papers showed Mn in the toxic range.**

# Manganese $Mn^{++}$

- **Involved in the production of lignin.**

- **Lignin is the principal component of wood and very difficult to degrade.**

# Manganese $Mn^{++}$

- **Wheat with higher uptake of manganese has a higher content of lignin and is more resistant to take-all disease.**

# Manganese $Mn^{++}$

- $Mn^{+2}$ inhibits the enzyme pectin methyl-esterase.

- Pectin methylesterase is a fungal pathogen exoenzyme for degrading host cell walls.

# Diseases Reduced or Controlled by the Addition of Manganese

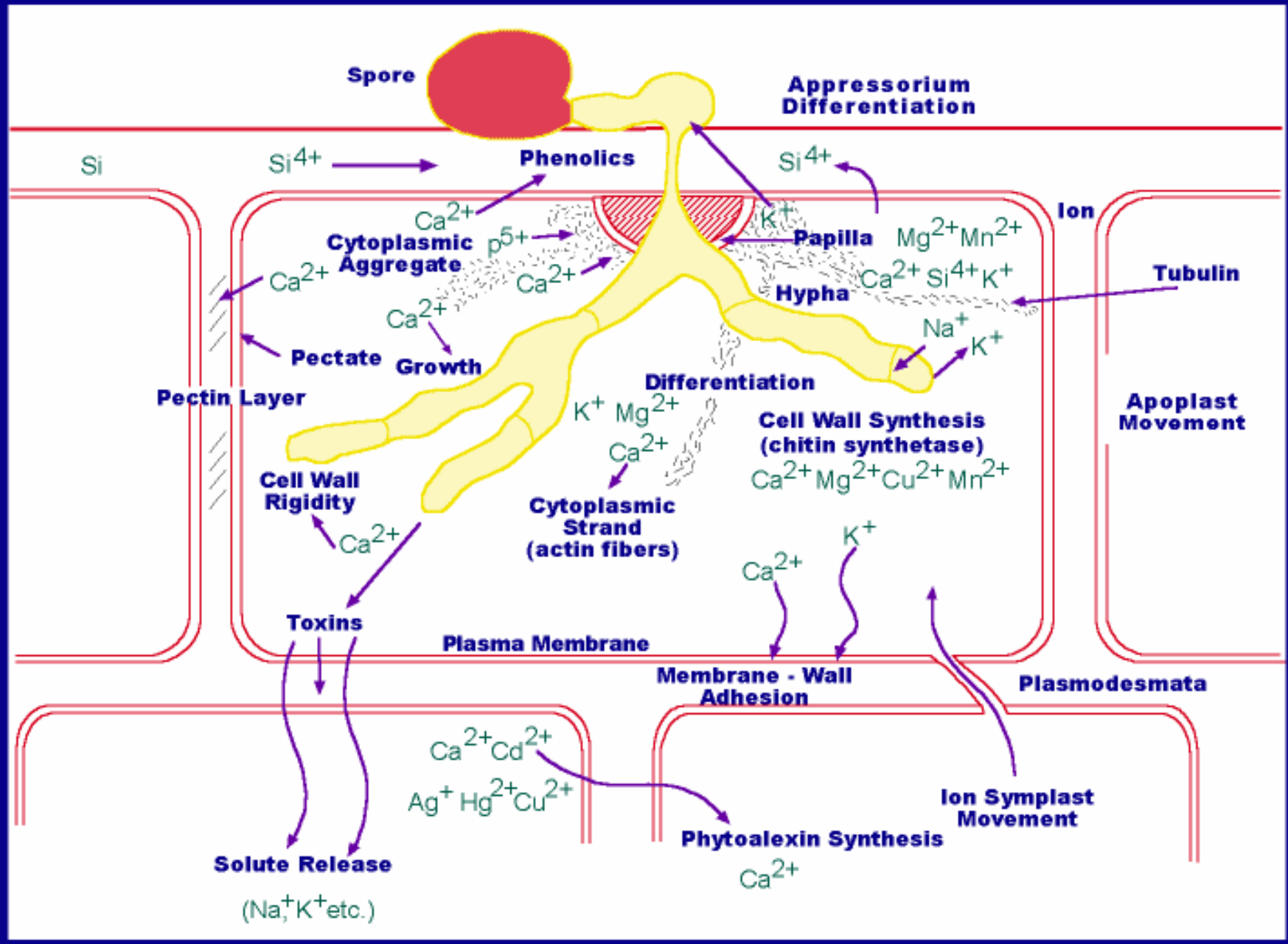
- Take-all and powdery mildew of wheat
- Common scab of potato
- Blast and leaf spot of rice
- Root rot of avocado
- Powdery mildew of canola, sorghum
- Nematodes attacking barley

# Zinc $Zn^{++}$

- Not directly involved in disease resistance
- Most important micronutrient in plants
- A cofactor for more than 100 plant enzymes
- Applications to foliar almost always produce a response in plans.
- Dicots are more reactive than monocots

**Thank you!**

Questions!

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ANN. REV. PLANT. 1990.
28:93-111.

# Major Turf Disease Problems

- Turfgrass patch diseases
- Pythium blight
- Dollar spot
- Fusarium blight

# Patch Diseases

- More prevalent during the past 3 year.
- More positive IDs during last year.
- Several fungal pathogens involved.
- Identification/taxonomy is unclear.
- All ascomycetes: Indicates the active fungicides.

# Pathogenic Patch Fungi

## Genera

- Leptosphaeria Magnaporthe Gaeumannomyces

- Sexual stages: Ascomycetes (powdery mildews)
- All form black or olivaceous ectotrophic hyphae
- Ectotrophic hyphae: mycelium over root surfaces

# Turfgrass Patch Diseases

- **Take-all** **Bentgrass**
  **Gaeumannomyces graminis var. avenae**

- **Bermudagrass Decline** **Bermudagrass**
  **G. graminis var. graminis**

# Turfgrass Patch Diseases

- **Necrotic Ring Spot** **Bentgrass** ***Poa annua, P. trivialis***

  ***Festuca rubra***

  ***Leptosphaeria korrae***

- **Spring Dead Spot** **Bermudagrass**

  ***Leptosphaeria narmari***

# Turfgrass Patch Diseases

- **Summer Patch** Fescues, Poa, Bentgrass

- **Magnaporthe poae**

# Reducing Take-All and Other Patch Diseases

- Soil pH in the acid range (?)
- Potassium 200- 250 PPM USGA Greens
- Sulfur (sulfate as nutrient and to lower pH)
- $Mn^{++}$ 35 or more parts per million

# Reducing Take-All and Other Patch Diseases

- Ca as gypsum (calcium sulfate)
- Cu, Fe, and Zn
- Control nitrogen, use $NH_4$ or urea

# Mineral Elements Affecting Take-all of Cereals

| Increase Take-all | Reduce Take-all |
|---|---|
| Potassium nitrate | Potassium chloride |
| Phosphorus excess | Phosphorus sufficiency |
| Calcium carbonate (lime) | Sulfur |
| Magnesium carbonate | Magnesium chloride |
| Magnesium sulfate | Calcium chloride |
| Molybdenum | Manganese |
| | Iron, Zinc |
| | Copper chloride |

Adapted from D. Huber, Purdue

# Forms of Nitrogen
# General Effects

**Ammonium, Urea----------Acid Forming**

**Rhizosphere pH decrease**

**Modify Rhizosphere Microbes**

**Increase available Mn, Fe, Cu, Zn**

**Acidification decreases nitrification: $NH_4$ to $NO_3$**

# Disease Suppression is Simple Interactions are Complicated

**Root Exudates**

**Rhizosphere Microbes**

**Plant Nutritional Status**

**Soil Type**

## Correlation of factors influencing the form on N in soil and severity of disease-Take all. Adapted from Huber , Purdue

| Factor | Nitrification | Disease |
|---|---|---|
| Nitrate nitrogen | -- | Increase |
| Ammoniacal nitrogen | -- | Decrease |
| Liming | Increase | Increase |
| Acid Soils | Decrease | Decrease |
| Chloride | Decrease | Decrease |

## Take-all Patch, Gaeumannomyces

- No resistance
- Manganese is most important nutrient. Why?

1. Direct toxicity to fungus?
2. Increase in photosynthesis corresponding to greater carbon supply and more organic compounds in soil.? Rhizosphere microflora

Research has ruled out #1 and #2.

# Take-all Patch, Gaeumannomyces

**3. Increase synthesis of ligneous defense products in roots.**

# Manganese in Equilibrium in Soil and Availability

**Acid pH in soil and rhizosphere = $Mn^{++}$**

**Alkaline pH in soil and rhizosphere = $Mn^{+4}$**

**$Mn^{++}$ Available**

**$Mn^{+4}$ Non-available**

# Manganese Influence on Root Lesions and Lignin in Wheat

| Variable | Total Length of Ggt lesions (mm) | Lignin Content ($Abs_{280}$/root system) |
|---|---|---|
| Mn, mg/kg soil | | |
| 0 | 38 | 0.14 |
| 3 | 28 | 0.12 |
| 30 | 23 | 0.25 |
| 300 | 22 | 0.28 |

From "Biochemistry of Metal Micronutrients in the Rhizosphere" Chapter 10, Regel, Pedler, & Graham.

# Root Lesions and Lignin Content in Root Tissues of Four Wheat Genotypes

| Genotype | Total Length of Ggt Lesions (mm) | Lignin Content ($Abs_{280}$/root system) |
|---|---|---|
| **Mn-inefficient** | | |
| Bayonet | 30 | 0.14 |
| Millewa | 27 | 0.16 |
| **Mn-efficient** | | |
| Aroona | 26 | 0.22 |
| C8MM | 23 | 0.27 |

Significance Turkey's 0.05; Adapted from "Biochemistry of Metal Micronutrients in the Rhizosphere" Chapt. 10, Rengel, Pedler, and Graham

# Fungicides for Control of Take-all and Patch Diseases

**Conditions: Soil Temperature at 2” 65 F for 6 days.**

**Fungicides:** **Heritage** **Banner MAXX** **Bayleton**
**Compass** **Eagle** **Rubigan**
**Sentinel**

**Benzimidazoles: Fungo, Cleary 3336**

**Application: 4-5 gallons per 1000 sq. ft.**

# Pythium Blight

- Pythium aphanidermatum (water mold)

## Often Seen During:

- High humidity
- Hot weather
- Summer rainy season

# Reducing Pythium Blight

- **High potassium:**

  **250 PPM  USGA Greens**

  **At lease 3% of cation saturation**

- **Higher potassium for greens with higher clay content and organic matter content**

# Reducing Pythium Blight

- Calcium-drainage and  nutrition
- Copper 1-3 PPM in soil
- Control nitrogen

# Dollar Spot

- **Sclerotinia homoeocarpa (fungus)**

## Reducing Dollar Spot

- **Maintain sufficient nitrogen**
- **Balance nitrogen with high potassium**
- **Collect clippings and reduce thatch**
- **Maintain calcium**
- **Gypsum and sulfur-water penetration, stress**

# Fusarium Blight

- Fusarium species (fungus)

## Reducing Fusarium Blight

- Reduce stress (potassium, calcium)
- Maintain soil pH close to neutral (lime)
- Control nitrogen

# Reducing Pythium and Phytophthora

- High potassium
- High calcium
- Good drainage-gypsum, sulfur
- Acivator 90  20 PPM kills zoospores

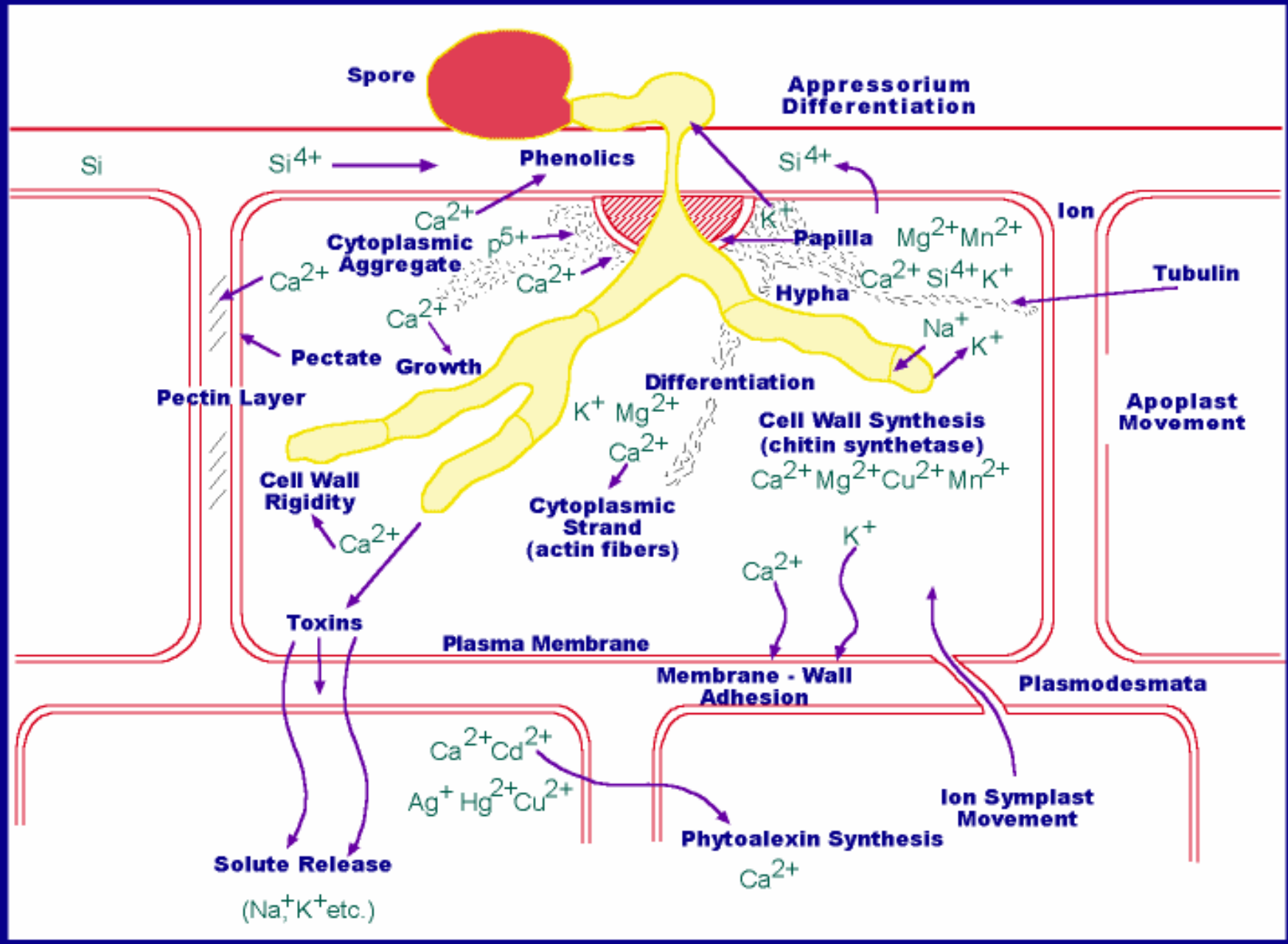
# Free Calcium

**Increases Plant Membrane Stability**

**Improves Soil Structure: Water/Oxygen Distribution**

**Lime Increases Soil pH:**

**Stops or Reduces Spore Pathogen Attachment**

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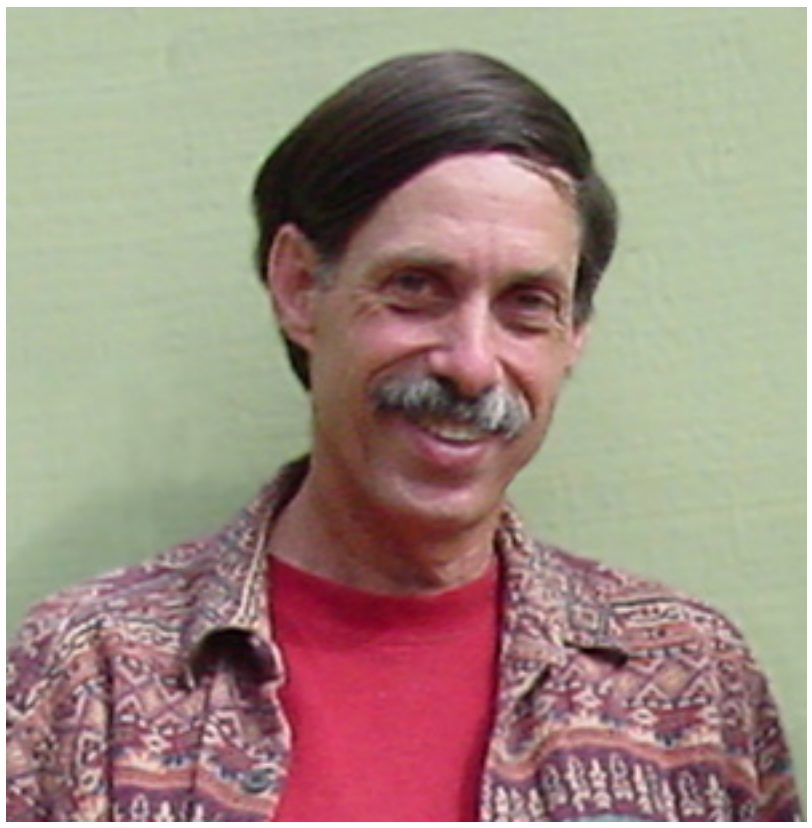
# Tucson Cactus and Succulent Society

## Thursday March 6, 2008 at 7 pm

"Grass Aloes and other botanical treats from the hills of eastern South Africa"

By Brian Kemble from the Ruth Bancroft Garden in Walnut Creek, California.



Brian Kemble is the curator at the **Ruth Bancroft Garden** in Walnut Creek, California. He has been working at this garden of succulents and other drought-tolerant plants since 1980. He has been a member of the Cactus & Succulent Society of America for over 30 years and has been a judge at many cactus & succulent shows. Over the years, he has made many trips to places such as Mexico , Madagascar and South Africa to see and photograph succulents in habitat. The genus Aloe has been a major focus for Brian and he is also vice-president of the **Institute for Aloe Studies**, based in Oakland, California.

Brian's program will cover his recent trip to South Africa, in November of 2007. He was fortunate to be able to get out in the field with Charles Craib, author of "Grass Aloes in the South African Veld". This book, published in 2005, is the only work devoted to this interesting group of diminutive Aloes. Seldom seen in cultivation, these plants grow in grasslands and can be very difficult to spot when not in flower. Along with the Aloes, Brian saw a variety of other succulents and bulbs.

This will be a very special program for anyone interested in the Aloes. We are really looking forward to having Brian as our special guest so please join us and bring a friend for this rare presentation.

**Aloe ecklonis**

# Tucson Cactus and Succulent Society

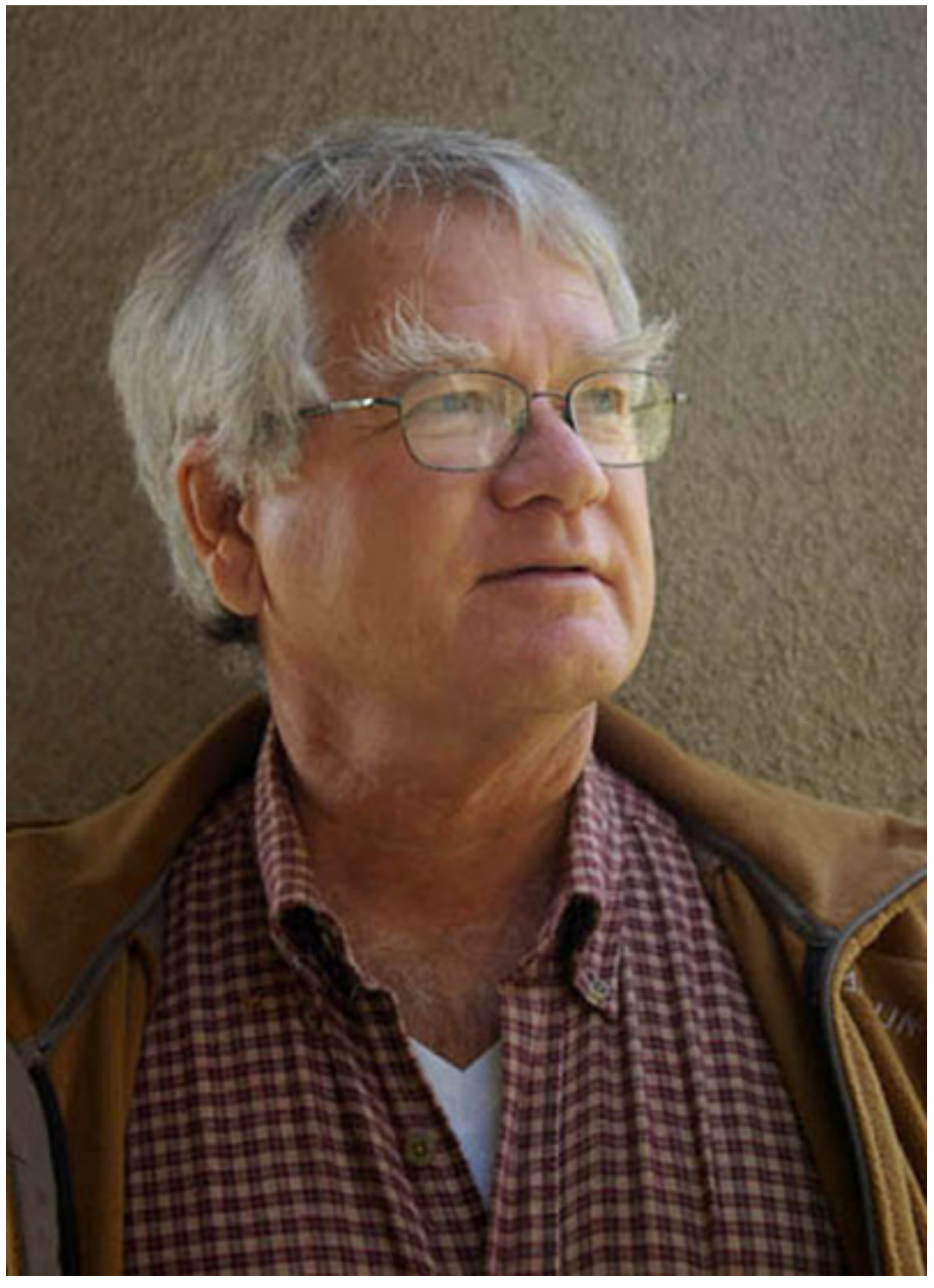
## Thursday April 3, 2008 at 7 pm

### Gary Lyons

Curator of the **Desert Garden at the Huntington Gardens**, San Marino, CA

*"A Gardener in Search of a Cactus Garden"*

Gary is a member of the World Conservation Union's Species Survival Commission and a fellow of the Linnean Society of London. He has also written many articles and books on desert plants.



This program is somewhat of a historical overview and retrospective of how Gary got into cacti. It is also a look at the people and events that have influenced his work, and an overview of the gardens with which he had a connection over the past fifty years.

Please join us for this great program and help the club welcome Gary back to Tucson.

**Additionally:**

David Yetman will be doing a book signing at the April 3rd meeting. He will be signing his new book "The great Cacti". David will also briefly talk about some very important conservation efforts. He will arrive at 6:30 for early bird book signings

**Free Plants of The Month:**

Echinocereus pectinatus variety rubrispina Red Spined Rainbow Cactus - Echinocereus - Hedgehogs

Hedgehogs are a popular group of cacti to grow either in pots or as landscape plants. The genus Echinocereus, being derived from Greek , echinos, hedgehog or sea urchin, referring to their spiny fruits. The genus is distributed widely from Oklahoma west to California and into Mexico including Baja. Most species are frost hardy, lending themselves well as landscape accents in southern Arizona. The bulk of the species flower in Spring or early Summer at higher elevations. Several species from Baja California actually wait until late summer or fall to bloom. Many species are commonly grown locally and will reward you with magnificent large showy flowers. Echinocereus will only flower once per year, but you may experience one to dozens of flowers depending on the size and species you grow. Another unusual flowering fact, watch where the flower bud emerges from, just above the aeroles, as to split from inside the stem of the cactus. Subsequent scarring remains where flowers had been borne. Some species of Echinocerus are single stemmed and others are low multi-stemmed. Some species perform better with morning sun and afternoon shade while others can be acclimated to full sun.

# Tucson Cactus and Succulent Society

## There will be NO "first Thursday of the month" TCSS meeting in May, 2008.

Instead, on Friday evening May 9, 2008, TCSS members and guests are invited (**see registration forms below**) to come to the kick-off of the **Sonoran VII conference** featuring a plated dinner for all TCSS members and conference registrants ($10.00 each, free to conference registrants and $20 for extra guest tickets) with your choice of beef, chicken or vegetarian complete dinner and followed by **a very special presentation by Susan Carter Holmes**, botanist and taxonomist at the **Royal Botanic Gardens, Kew**. The evening ends with a chance to shop for books, plants, and pottery!

**Dinner starts at 6 PM**

**Presentation by Susan Carter Holmes at 7.30 PM**

**Shopping for plants, pottery and books from 8.30 PM to 11 PM**

The dinner location is:

Copper Room at Inn Suites Hotel
Tucson City Center, 475 N. Granada Avenue
Tucson, Arizona

**Overview** **Program Schedule** **Workshop Schedule**

**Registration Form (.doc)** **Registration Form (.rtf)**

**Plant Show Rules (.doc)** **Sales Flyer (8.5x11)** **Programs and Workshops Flyer (8.5x11)**

# Tucson Cactus and Succulent Society

## Thursday June 5, 2008 at 7 pm

## "Phytotourism in Yemen"

### Presented by Dr. Robert Webb and Toni Yokum

Six weeks exploring Yemen on our own. Just Toni and I with various guides and drivers going where we wanted to go. While Socotra occupied 3 weeks of that time, we're going to talk about mainland Yemen. We'll discuss a wide variety of species there including Adenium, Euphorbias, Aloes, Commiphoras, yada yada yada and the culture, architecture, people, terrorists, etc. etc.

Bob Webb has collected succulent plants for about 20 years. For his day job, he is a hydrologist with the U.S. Geological Survey in Tucson; however, he has worked as a plant ecologist in the southwestern United States and Baja, California for nearly 30 years. He's been traveling to the Arabian Peninsula and Africa since the mid-1990s and has visited Oman, Kenya, Socotra, Yemen and South Africa in search of succulent plants.

Dr. Robert Webb has worked on land-use issues and landscape ecology of the southwestern United States and Baja California for more than 30 years. For the past 12 years, he has worked with Mexican government scientists on plant conservation issues in Baja California centering on cirio, cardon, and other charismatic species that are iconic to the peninsula. He has a Ph.D from the University of Arizona in Geosciences (1985) and has worked for the National Research Program of the U.S. Geological Survey for nearly 20 years. Bob Webb and Toni Yokum are owners of Arid Lands Greenhouses at 3560 W. Bilby Road Tucson AZ 85746 Phone: (520) 883-9404.

This will be a very special program for anyone interested in remote areas of the world where many rarely seen succulents are found. We are really looking forward to having Bob as our special guest so please join us and bring a friend for this very special presentation.

**"A foreigner (Bob Webb) pretends to be a Yemeni!"**

### Free Plants at the meeting

Mammillaria and Coryphantha ( various species) Mammillaria and Coryphantha are native to Mexico and the southwestern US, typically characterized by a short squatty appearance with tubercles instead of ribs. They are suitable for pot culture or growing out in the ground as landscape plants or in rock gardens once of adequate size. Mammillaria typically enjoy filtered light in our growing conditions, while some Coryphantha often grow in full sun and have more dense spination. Some species are opportunistic and can bloom multiple times throughout the growing season when water is plentiful. Our local Mammillaria grahamii is well known for its candy-striped blossoms during the monsoon and thousands have been collected by the TCSS Cactus Rescue Program. For more information, refer to **www.mammillarias.net** and see many photos by our very own Norm Dennis!

# Tucson Cactus and Succulent Society

## Thursday July 3, 2008 at 7 pm

## "Cactus Travels From Across The Atlantic"

### Presented by Stuart Riley

Stuart and Jane Riley will be returning to Tucson from their home in the United Kingdom to present another great presentation. As well as being keen cactus hobbyists, they have a cactus nursery in the UK and will be bringing a follow-up program to the one they gave in 2006 with more photos of collections, nurseries, shows and a few amusing stories from across the Atlantic with a bit of history thrown in too! This will be Stuart's first digital program and the first time any of the photos have been seen. Stuart and Jane have been spending their holidays in the United States since the early 1980s and always include Tucson on their travels.

Please plan to come in and welcome Stuart and Jane back to Tucson. Also be ready for a wonderful evening of fun and adventure from Europe!

Free Plants at the Meeting
Adenia Glauca

First described by Schinz in 1892, belonging to the Passifloraceae family. This species is from southern Africa and Botswana region, The caudex can get up to one meter or more in diameter (over time, of course) and the branches reach for up to three meters. It prefers well draining soil, should be heavily watered in the summer and can dry out in winter. The plant should be kept out of strong sun and prefers filtered/patio light. The flower is green/crème in color. Best for pot culture, as it is frost tender and should be moved indoors, left dry and dormant in the winter. Showy, tropical leaves are outstanding during the growing season. Chris Monrad

# Tucson Cactus and Succulent Society

## Thursday August 7, 2008 at 7 pm

## "Exploring and Knowing the Plants of the Rio Grande Area of Texas"

### Presented by Matthew B. Johnson

This presentation will focus on Matt's recent nine-day trip from Brownsville to El Paso where he identified cacti, trees, and other plants for some of his photographer friends. His program will include such species as Astrophytum asterias, Acanthocereus tetragonus, Echinocereus chisosensis and Grusonia densispina. Matt is very familiar with this fantasticarea of the country and knows the plants very well.

Matthew has a BS in Agriculture and a MS in Horticulture from the University of Arizona. He is currently a Research Specialist at the University of Arizona. Program Manager and Curator, **Desert Legume Program** (1989-present). The Desert Legume Program (DELEP) is a joint project of the **UA College of Agriculture and Life Sciences**, and the **Boyce Thompson Arboretum**. DELEP was established in 1988 to develop a comprehensive seed bank of wild species of legumes (Fabaceae) that are native to or adapted to arid and semi-arid regions, to preserve these seeds long-term, to provide seeds and information to individuals and organizations around the world, and to investigate potential uses for these plants. He has made extensive travels to study and photograph plants and plant habitats in southwestern United States and in arid regions of Mexico, Argentina, Australia, and South Africa. International travel has involved visits to 14 countries on six continents.

For those interested in cacti and other plants of the Texas Rio Grande area this will be a very special program you will not want to miss. We are really looking forward to having Matt as our special guest. Be sure to invite a friend and join us for this excellent program.

FREE PLANTS

**Ferocactus hamatacanthus**

**Turk's Head Barrel / Texas Barrel**

The Ferocactus is a popular group of cacti to grow either in pots or as landscape plants. The genus Ferocactus, being derived from Ferus, meaning wild or fierce and cactus referring to the very spiny character of the plants. The genus is distributed widely from southern Mexico, north to the Southwestern US and continuing westward to southern California and into Baja California. This species lends itself well as a landscape cactus for southern Arizona. It is both frost hardy and able to be acclimated to full sun. In the next year or so, your specimen will be large enough to flower. The Turk's Head Barrel will usually flower in July with large yellow flowers, they are diurnal and attract bees as pollinators. In about two months you will find a large ripe fruit containing hundreds of seed suitable for germinating next year. Plants will attain mature size at about 12"-14" wide and about 24" tall and are capable of flower each year. Some individuals will offset with multiple heads capable of also flowering. This species has a very dramatic long central spine which is curved at the end, so be careful when planting not to damage the beautiful long spines. The native range for theTurk's Head Barrel is southern New Mexico, west Texas bordering Mexico south to Brownsville and south into northeastern Mexico's Chihuahuan Desert and Tamaulipan Thorn Scrub.

Enjoy your plants!

Mark Sitter

# Tucson Cactus and Succulent Society

## Thursday September 4, 2008 at 7 pm

## "A Summer Succulent Sabbatical to South Africa and Namibia"

### Presented by Ernesto Sandoval from the University of California, Davis

Ernesto Sandoval is a plant person. No, he doesn't sprout buds or need occasional watering, but he does kind of like the bone-warming heat of a greenhouse. For Sandoval, Director of the **UC Davis Botanical Conservatory**, raising and rearing flora and foliage is a deeply meaningful way of life. Simply, his passion is his profession.

"Plant people are nice people," says Sandoval. "There's something about working in a garden and nurturing plants and flowers that makes one more peaceful and calm."

The greening of Sandoval's life started early on. He grew up in the Los Angeles area and from the age of 10 worked for his dad's landscaping business and aptly-described as the "Mo', Blow and Go" style. From cutting countless lawns to cultivating saplings and shrubs in the yards of the San Fernando Valley, Sandoval earned both a pair of green-stained shoes and a practical botanical education. More formally, Sandoval obtained his bachelor's degree in botany from UC Davis in 1996.

I spent the first two months of 2008, January and February, in South Africa and spent most of my days in the field visiting Nature Reserves within the fynbos vegetation of the Cape Floristic Region where over 8,700 species of plants are to be found on 6% of South Africa's land area! The name fynbos is Afrikaans for fine bush and refers to the fine, needle-like leaves of many fynbos species. One 15km sq reserve has 1,600 species of plants!! Of course there will be more than just a few succulents that I discuss and I'll share some highlights from short trips to Namibia including Welwitschia and tree aloes.

Please join us for this very special presentation with Ernesto's excellent photography, lots of fun and some great stories!

FREE PLANT GIVEWAY

Adenium

The giveaway this month is 'Black Ruby', a clone of Adenium obesum selected in Florida. A. obesum is one of several species of the genus which occur in scattered locations from the Arabian peninsula and the island of Socotra down to southern Africa. All of the species contain attractive brightly colored flowers, and have interesting succulent stems. Inter-specific crossing is resulting in many spectacular new clones every year. Much of the impetus for variety development resulted from the ideas and clones developed by our club member Mark Dimmitt. Examples of some of his crosses and much more information is available at **http://adenium.tucsoncactus.org/**. Adeniums are cold-sensitive, so are best kept in containers to allow moving to a warm spot in the winter. A care-sheet for Adeniums is available in the **publications section** of the club's website. The Adeniums are being donated by Dave Palzkill.

# Tucson Cactus and Succulent Society

## Thursday October 2, 2008 at 7 pm

### Presentation by Susan T. Fisher

### "Botanical Illustration - What Have You Done for Me Lately?"

"Botanical Illustration - What Have You Done for Me Lately?" is my way of putting a humorous spin on the history of botanical illustration; pointing out some of the common threads that weave this art form into the fabric of history - right into modern times where we continue to find its unique form of documentation useful and its aesthetics delightful.

Susan T. Fisher is the Director of the **Art Institute at the Arizona-Sonora Desert Museum**. She is the former Coordinator for the **Botanical Illustration Program at Denver Botanic Gardens** where she created the Certificate Program in Botanical Art and Illustration known throughout the United States. Susan is on the faculty of the **Art Institute and Filoli Gardens** in California. She conducts workshops throughout the United States. Her artwork is in many books, journals, and private collections. Susan is the Immediate past president of the **American Society of Botanical Artists**. Her BA degree includes three years of advanced study in art history at the **University of Bordeaux** in France. Susan's time is divided between her studios in Denver, Colorado and Tucson, Arizona.

Please join us for this very special presentation about an extremely historical artistic expression.


**FREE PLANT GIVEWAY**

**Agave multifilifera**

This is a medium size, generally non-offsetting plant, growing to about 24-36 inches tall by 24-48 inches across. The narrow leaves have nice white markings and thin, white threads along the edges. Plants are hardy to at least 15 degrees F, prefer a little afternoon shade, but will grow fine in full sun. They do require some water in the heat of summer to keep them from turning to crispy critters. They grow fine when planted in native soil; just make sure drainage is adequate.

**Agave schidigera**

This medium sized Agave will top out at about 24-30 inches tall and 36 inches across. The narrow, dark green leaves are decorated with white marks and thin white threads along the edges. Plants are hardy to at least 17 degrees F, prefer a bit of afternoon shade, but are fine in full sun as long as they get supplemental water in the summer. They grow fine when planted in native soil; just make sure drainage is adequate.

# Tucson Cactus and Succulent Society

## Thursday November 6, 2008 at 7 pm

### Presentation by Woody Minnich

### "Brazil, Bahia to Minas Gerais, Cacti under the blanket"

Photo by Stephen Cooley

This presentation will feature the cacti, bromeliads, and other succulents from Bahia to Minas Gerais, a region known as the Brazilian Highlands. This is my second excursion into these areas and this time I was joined by Brazilian cactus expert, Marlon Machado. Our adventure was from Salvador to almost Belo Horizonte and our group was small, thus allowing us to explore new areas as well as visit many of the old, must see sights. We will see 22 species of Melocactus, all the Uebelmannias. many Discocatus, most of the Micranthocereus and Coleocephalocereus (Buiningia), many Pilosocereus as well as the rare Arrojadoas and the new Pierrebraunia. As is usual, I will feature some of the people and their culture, the towns and their architecture and some of the creatures that live with our favorite plants. We will learn the importance of the coastal winter fogs, the Blanket, and how it affects the overall cultivation of these wonderful and specialized genera.

Woody Minnich grew up in the desert of California and has been a cactus enthusiast his whole life. He has made over 100 trips to Mexico and South America studying various genera of cacti and succulents, and is considered an authority on a number of genera. He has given numerous lectures and presentations about cacti in habitat from his trips all over the world. Woody is an avid photographer and has had many of his pictures published in various books and periodicals. Since 1975, he has owned the nursery Cactus Data Plants where he has become a primary source for rare and well grown cacti and other succulents. He has been a show chairman for various cactus shows, creator of the Inter-City Show, and has become a leader in the artistic presentation of cacti and succulents (habitat staging). Woody is an Honorary Life member of numerous C&S clubs and has served as President, News Letter editor, Plant Culture chairman, Program Chairman as well as most other positions where there is something that needs to be done. He has been in the process of writing 3 books: Cacti of Baja California, Field Observations of the Genus Mammillaria, and Rare Cacti of Mexico. Hopefully some day, one or more of these texts will be in the hands of his fellow hobbyists. He is a retired high school graphics arts and art teacher of 32 years, Now, in retirement, his main focus is on doing serious field study and observation of the Cactaceae. He and his wife Kathy live in Edgewood New Mexico where he runs his nursery CDP.

Please be sure to attend our last presentation meeting for 2008. Woody will present a great program that you should not miss! He will also be bringing plants from his nursery in New Mexico and those plants will be for sale to anyone interested.

### FREE PLANT GIVEWAY

Ferocactus latispinus - Crows Claw Barrel Barrel Cactus or Ferocactus are a dramatic group of plants that are excellent landscape plants. The genus is diverse and readily available at local nurseries. With some planning your landscape can have flowering Ferocactus 12 months out of the year. This month we are featuring the Crows Claw, which blooms in November and December with showy purple flowers, sometimes white, pink or even yellow flowering forms can be found. The species is an excellent landscape plant and can be acclimated to full sun and is hardy to cold in our region. Thorough regular watering will keep the plants well hydrated and able to grow into stunning thick spined specimens. In March the pollinated flowers will develop maroon fruits which will add interest to your landscape. They are native to Mexico from Mexico City Northwards.

# Tucson Cactus and Succulent Society

## Thursday January 8, 2009 at 7 pm

## Note: not the first Thursday of the month

### "Adenium: Twenty Years from Obscurity to Rising Star"

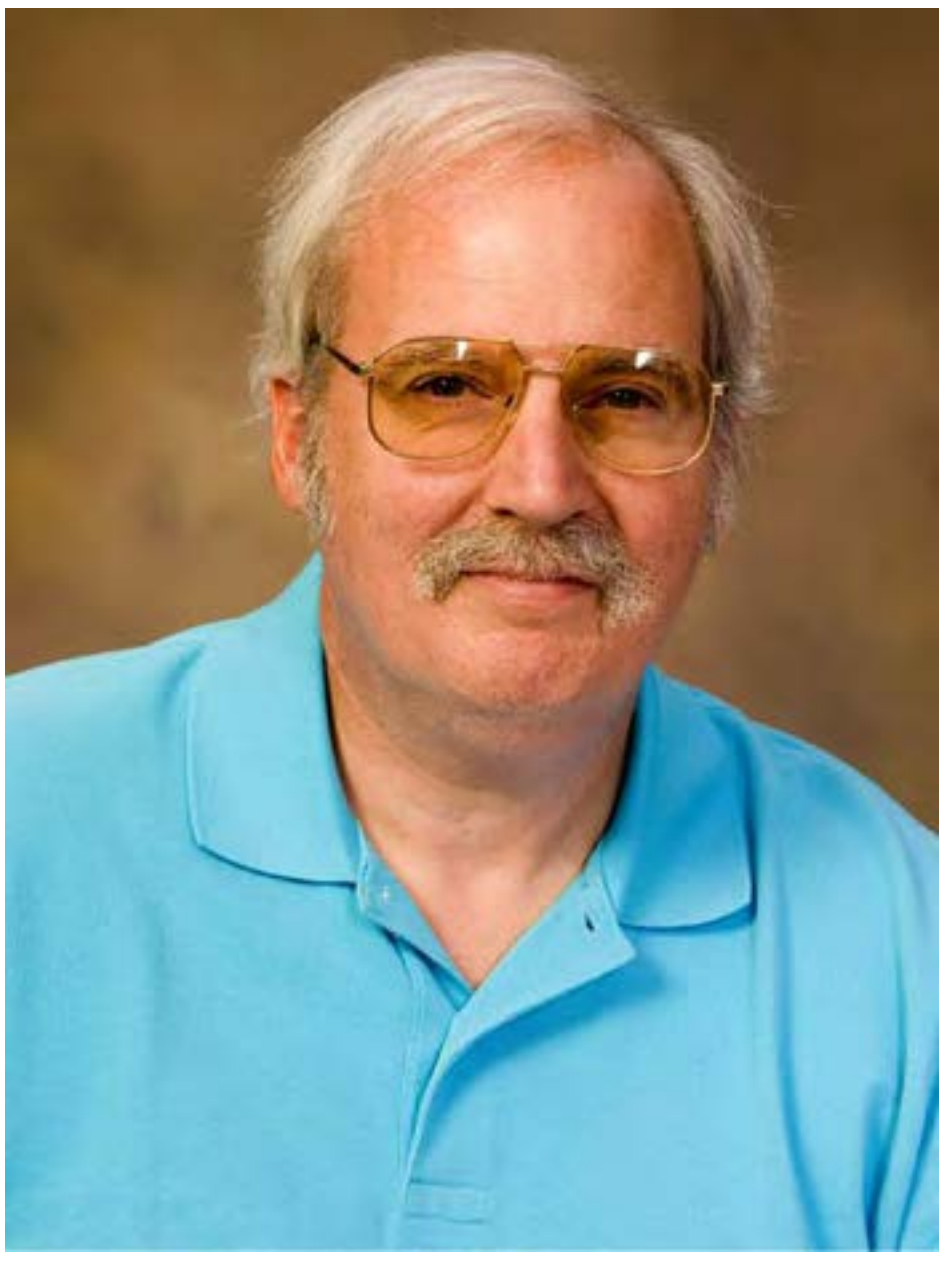
### Presented by Kevin Barber and Mark Dimmitt

Kevin will begin with a 10-20 minute quick introduction that features a short travelogue that will show Taiwan as a place to grow succulent plants and will display pictures of non adenium succulents as well as do some quick views of adenium nurseries in Taiwan and India.

Mark will be doing the major portion of the program and will present the adenium as the newest ornamental plant to be domesticated, with a history of its development over the last 20 years.

Mark is Director of Natural History at the **Arizona Sonoran Desert Museum**. He received his Ph.D. in biology at the **University of California Riverside**. He is well known for his hybrids, especially his study of the adenium and various cacti. In 1999, he received the Friend Award from **The Cactus and Succulent Society of America** for his outstanding accomplishments with cacti and succulents.

Please be sure to attend our feature presentation to begin the new year! This will be a great program that you should not miss!



Kevin Barber

Mark Dimmitt

FREE PLANT GIVEWAY

Aloe albida x saundersii. A cross between the two dwarf species of A. albida and A. saundersii, both grass Aloes. This hybrid offsets freely and is floriferous with pale cream flowers produced in the fall. This cross was done at Arid Lands in the late eighties. Aloes are succulent plants in the lily family and are native to the old world, specifically Africa, Madagascar and the Arabian peninsula. Many species grow well here in the arid southwest either as potted plants or as specimens in the landscape. They especially thrive under the south side of trees in dappled light that gives them some shade in the summer but more light in the winter when sun angles are lower. Most aloes are cool season growers. They need bright, filtered light with weekly waterings during the cool season and once every two weeks in summer. These aloes are cold tolerant to the high 20's and are easily protected at temperatures below that with a light piece of frost cloth draped over the plant. Flowering takes place normally from mid winter through spring and can range in colors from yellow to orange or bright red.

# Tucson Cactus and Succulent Society

## Thursday February 5, 2009 at 7 pm

### "E Namibia Semper Aliquid Novi - New Plants from an Old Place"

### Presented by Tim Harvey

Tim started growing cacti (almost exclusively) in England over 30 years ago. In the early 90s he moved across the pond to North America and in 1994 settled in California. Since then his interests had changed, focusing on the "other succulents", especially pachycaul and xerophytic trees. Tim also grows quite a few Aloes and geophytes. He has a Ph. D. in Biochemistry and having escaped the Biotechnology Industry with his morals intact, he now spends his time trying to get his backyard nursery to be more productive.

Against the spectacular backdrop that is Namibia, the program will cover the summer rainfall area (with a few diversions), with emphasis on the 'big' plants e.g. Cyphostemma and Commiphora. The effects of various factors, natural and otherwise, on the plants from year to year will be illustrated and a number of little-known or undescribed species discussed. Finally, the horticultural potential of Namibian plants will be illustrated.

Please don't miss this great presentation about an incredible area of the world. This is a presentation everyone should see.

**FREE PLANT GIVEWAY**

This month's free plants are Euphorbia resinifera and E. coerulescens , recommended for pot culture or under filtered light in the ground. Both are hardy to the mid or high 20's without protection, tree cover will provide some additional frost protection. Euphorbia is a genus of plants belonging to the family Euphorbiaceae. Consisting of about 2160 species, Euphorbia is one of the most diverse genera in the plant kingdom. Members of the family and genus are sometimes referred to as Spurges. The genus is primarily found in the tropical and subtropical regions of Africa and the Americas, but also in temperate zones worldwide. Succulent species originate mostly from Africa, the Americas and Madagascar. Euphorbia are annual or perennial herbs, woody shrubs or trees with a caustic, poisonous milky sap (latex) that will cause irritation to the eyes and mucous membranes. The roots are fine or thick and fleshy or tuberous. Many species are more or less succulent, thorny or unarmed. The main stem and mostly also the side arms of the succulent species are thick and fleshy, 15-91 cm (6-36 inches) tall. The deciduous leaves are opposite, alternate or in whorls. In succulent species the leaves are mostly small and short-lived.

# Tucson Cactus and Succulent Society

## Thursday March 5, 2009 at 7 PM

### "Cacti, Agaves, and Yuccas of California and Nevada"

### Presented by Stephen Ingram

Stephen Ingram's multimedia presentation explores some of the unique attributes of the cacti, agaves, and yuccas as well as highlights what makes them such intriguing components of our native plant communities. With stunning images of their colorful blossoms and unusual growth forms, this program showcases a number of species and varieties that occur in California's deserts and coastal areas. The main slideshow-talk will be approximately 40 minutes, with time for questions. A second 10-minute show set to music illustrates the beauty of these remarkable succulents. Following the presentation, Stephen will sign copies of his new book from Cachuma Press, "Cacti, Agaves, and Yuccas of California and Nevada."

About the Book: California and Nevada are known for their astonishing array of plant life, and few components of this diverse flora are more intriguing than the cacti, agaves, and yuccas. These spiny succulents -- which share many of the same arid habitats -- have long been a source of fascination for explorers, naturalists, and scientists. "Cacti, Agaves, and Yuccas of California and Nevada" features more than 60 species with a detailed text that is accompanied by 262 color photographs, 16 botanical watercolors, and 52 range maps. Much more than a field guide, this book examines the natural history of California's and Nevada's cacti, agaves, and yuccas, including their origins, ecology, and conservation. It also provides practical horticultural advice for their cultivation and describes some of the best places to see these remarkable succulents in the wild.

Botanist, writer, and photographer Stephen Ingram traveled more than 30,000 miles -- much of it on remote backroads -- to search out, study, and photograph the cacti, agaves, and yuccas of California and Nevada. He also delved into the scientific literature, visited numerous herbaria, and interviewed our region's leading experts on Cactaceae and Agavaceae. The result is a detailed, highly readable, and beautifully illustrated natural history and field guide. "Cacti, Agaves, and Yuccas of California and Nevada" is an engaging and substantive reference book that can be enjoyed by novice and expert alike.

Stephen is an excellent professional photographer and his program is exceptional. Be sure to mark your calendar and be at the TCSS meeting for our Thursday evening program in March. For more information and to see some of Stephen's work, please visit **http://www.ingramphoto.com**.

**FREE PLANT GIVEAWAY**

Haworthias are a genus of small succulent perennial herbs confined in the wild almost exclusively to the Republic of South Africa. The charm of Haworthias is in their small size, ease of growth, and the almost infinite variation of their delightful leaves. Haworthias rarely require a pot larger than 4 inches in diameter making them ideally suited for a bright windowsill. Perhaps the biggest problem you will encounter when growing Haworthias is that they tend to be addictive! If you acquire more than one plant, you may find yourself wanting more and more, and before you know, you are buying Haworthias with your lunch money. Although some Haworthias are more difficult to cultivate than other, most are very easy. Remember that Haworthias are succulents, so they require abundant bright light, though sudden introduction to direct sunlight will burn and even kill them. They also require a well drained soil that approaches dryness between watering. It is best to fertilize only sparingly, using a water soluble houseplant fertilizer diluted to 1/4 strength, no more often than monthly during active growth, and not all if the plant is resting. Many Haworthia aficionados, attempting to simulate the natural habitat, grow their plants "hard". These Haworthias are often grown in direct sunlight, with infrequent watering and no fertilizer. Occasionally one of these "hard" plants will show a spectacular array of stress induced colors, but more often they look burned and shriveled. (**www.haworthia.com**)

# Tucson Cactus and Succulent Society

## Thursday April 2, 2009 at 7 pm

### "The Golden Fishhook Barrel (Yellow flowered, yellow spined Ferocactus wislizenii)"

### Presented by Chris Monrad

Chris Monrad has been a TCSS member for nearly 20 years (now a paid life member) and was a co-founder of the Cactus Rescue program in 1999. During the numerous cactus rescues that he assisted with, he began noticing and marveling at the wide variety of spination patterns (black, brown, maroon, short, long, skinny, fat, nearly straight, highly recurved, etc) present in our local barrel cactus, Ferocactus wislizenii. (This interest in spination also spilled over into the Ocotillo / Fouquieria but that is another story.)

This fascination led to a keen interest in the entire genus Ferocactus and also the genus Echinocactus. His collection of these plants now includes several plants of nearly every species in each genus and he is now dedicated to the pollination and seed collection for many of these species as well.

During an early cactus rescue project at Saddlebrooke near Catalina, Arizona, Chris noticed a barrel cactus specimen with bright and pure yellow flowers as well as spines with a strong golden yellow cast. This plant would be the first of only five such specimens that would be collected by him over the next five years of rescue projects, with sites ranging from Saddlebrooke Ranch north of Oracle Junction to a new school site in Corona de Tucson, over 45 miles away from Saddlebrooke. Chris estimates this yellow spined/yellow flowered variety to occur in something like one in every 5,000 or 10,000 barrel cacti, based upon his numerous plant surveys and rescue activities.

Soon after acquiring the first two specimens, Chris wondered about the possibility of performing selective pollination between those two plants to develop a purpose-bred Ferocactus cultivar and began to consult with other noted Ferocacti propagators in the area. Some of the early results from the first efforts were encouraging and there are approximately 15 six year old yellows spined plants that may bloom this summer.

The summer of 2005 seed crop benefited from the presence of four available seed parents and the first crop of over one thousand seeds was planted in early 2006 with outstanding germination results and the ultimate reward of having numerous never-before-available plants to be given to attendees of the 2009 CSSA Convention at La Paloma and the celebration of the Golden Anniversary of TCSS.

This month's presentation will follow the production of this highly successful and exciting crop of plants from March 2006 thru today, with an eye toward the future landscape applications of the plant and the long term availability of this hardy, robust, and showy native Tucson cultivar.

Please come and enjoy hearing about the recovery of a rare find in our area and how we can make this plant a popular favorite part of our future Arizona landscapes (and beyond).

Chris Monrad

**FREE PLANT GIVEAWAY**

This month's free plants are robust three-year-old seedlings (red-spined versions) from the TCSS sponsored propagation of the Golden Fishhook cultivar of our native Ferocactus wislizenii. The four yellow-spined and pure yellow-flowered seed parents were found over several years during various cactus rescues ranging from north of Oracle Junction all way to Corona de Tucson. Hand pollination amongst the seed parents during the summer of 2005 resulted in an outstanding crop of fruit and seed that was sown in March 2006. Nearly 75% of the now three-year old seedlings have retained the yellow spination of the parents, but only approximately 25% of the seedlings have more typical red spines. Some of these rare red-spined specimens have been designated as the free plants for attendees of the April 2nd meeting. While the yellow spines of the parents did not carry through to these selected plants, it is possible that the yellow flowers will do so. In the interest of following the outcome of the offspring from this grand experiment, we encourage all members that acquire this plant to join an on-line registry to post the results from the future flowering of these plants.

# Tucson Cactus and Succulent Society

## Thursday May 7, 2009 at 7 pm

### "Shows, Showing and Judging"

### Presented by Woody Minnich

Photo by Stephen Cooley

This program will feature the up-to-date styles of presenting plants for shows or displays with artistic beauty as well as for competitive excellence. This most modern aspect of showing, sometimes called Staging for Habitat, shows how one can not only grow beautiful plants but present them in a very pleasing and attractive manner. This presentation will also cover the overall dynamics of how to create these stunning presentations as well as where to acquire the best staging materials. Another aspect of this presentation is the considerations that judges use in selecting or critically differentiating one plant from another. The final portion of this talk will show the different types of shows from competitive to noncompetitive as well as the various aspects of show organization and positive group participation. Shows, Showing and Judging was developed for many of the Cactus and Succulent clubs who have decided that a good show is one of the most positive activities that a club can provide. The excellence of horticulture, the perfection of presentation, the sharing of plant knowledge, and the camaraderie of sharing our hobby, the education of others and the introduction of our clubs to potential new members, all of these things are the valuable aspects of a good show.

This program will be a very important view into new ideas for the future as well as demonstrating what can be accomplished with preparing, planting and growing excellent choice plant selections for display. Please be sure to come and see what others are doing and let's look to the future with showing what we can do!

**FREE PLANT GIVEWAY**

Mammillaria and Coryphantha (various species)

Mammillaria and Coryphantha are native to Mexico and the southwestern US, typically characterized by a short squatty appearance with tubercles instead of ribs. They are suitable for pot culture or growing out in the ground as landscape plants or in rock gardens once of adequate size. Mammillaria typically enjoy filtered light in our growing conditions, while some Coryphantha often grow in full sun and have more dense spination. Some species are opportunistic and can bloom multiple times throughout the growing season when water is plentiful. Our local Mammillaria grahamii is well known for its candy-striped blossoms during the monsoon and thousands have been collected by the TCSS Cactus Rescue Program. For more information, refer to **www.mammillarias.net** and see many photos by our very own Norm Dennis!

# Tucson Cactus and Succulent Society

## Thursday June 4, 2009 at 7 pm

### Presentation by Greg Corman

### "Designing with Cacti and Succulents"

Greg Corman, landscape designer and horticulturist, will discuss ideas for creating beautiful, easy care, and ecologically sound gardens using cacti, succulents, and complementary trees and shrubs. He'll include tips for unifying a chaotic collection of plants, using monsoon plants for seasonal interest, and creating restful, sculptural gardens using only monocots.

Greg Corman is a landscape designer and horticulturist and owner of **Gardening Insights, Inc**. His landscapes are recognized for their artistry, ecological sensitivity, and unique combinations of native plants. Greg's experience includes thirty years of horticultural and design work, mostly in desert areas of Australia, the Middle East, and the Southwestern US. He is always looking for new species for landscaping and new ways to use native plants.

He is also recognized as a regional expert on native plants and teaches docents, master gardeners and the public on many horticultural and design topics. Greg is also a co-leader on bird and plant tours to Bolivia for **WINGS**, a local bird tour company.

To promote environmental education and research, Greg sits on the board of the **Drylands Institute** and is an advisory committee member for the **Watershed Management Group** and the **University of Arizona Arboretum**. Greg has BS and MS degrees in Agriculture from the **University of Arizona** and the University of Maryland, respectively.

Please mark your calendar and be sure to attend this very informative meeting where you will learn some great things about landscape design, selection of plants for your "succulent landscape" and much more. Be sure to join us and also, bring a friend!

**FREE PLANT GIVEWAY**

Thelocactus

The arid lands of the central Mexico plateau are home to many cacti, among which there are the Thelocactus species. These are small to medium sized plants of a globose to slightly upright form with a beautiful spination and large , showy flowers. They are very popular among collectors, mainly for their recurrent flowering throughout the spring and summer months with regular watering and low maintenance / frost hardy / full sun cultivation. The genus is small, made up of about 15-20 entities, the exact number of species varying according to the authority.

# Tucson Cactus and Succulent Society

## Thursday July 2, 2009 at 7 pm

### Presentation by Dr. Mary Olsen, Ph.D.

### "Diseases of Cacti and Succulents"

Despite their special adaptations such as thick waxy cuticles, modified leaves (spines), dehydration induced dormancy and other tactics, cacti and succulents suffer from diseases, insect pests and cultural problems just as all other plants. There is relatively little known about the diseases of these plants, but fungi, bacteria, viruses and parasitic nematodes can cause problems in cacti and succulents. Many of these problems are avoidable, but others are problematic in cacti and succulents even in their native habitats. Recognizing these problems is the first step toward knowing how to control or avoid them. Mary will discuss the problems with which she is familiar, and engage audience participation in expressing problems they may have encountered.

Dr. Mary W. Olsen, is an Extension Specialist in Plant Pathology with the Department of Plant Sciences at the University of Arizona. She received her Ph.D. in Plant Pathology at the University of Arizona in 1982 and a B.S. in Botany, University of Arizona in 1976.

Mary has been the Extension Specialist in Plant Pathology at the UA since 1997 and works at the the University of Arizona main campus in Tucson. She will diagnose plant diseases for clientele in Arizona including growers, landscapers and homeowners. She also provides information on the identification, prevention and control of diseases of plants in commercial agriculture, landscapes and native sites. Mary currently conducts research on the etiology, ecology and control of important diseases of cotton, grains, vegetables and turf. Information on many diseases of plants in Arizona is provided on her web site (http://www.ag.arizona.edu/PLP/plpext/), as is information for submitting plant samples for diagnosis.

If you would like to learn more about disease and pest problems, please be sure to attend this meeting!

## FREE PLANT GIVEAWAY

**Ceropegia stapeliiformis ssp. serpentina**
From the Republic of South Africa and Swaziland, this is one very "snaky" species of Ceropegia. The stems creep and twine, possessing peduncles that grab onto convenient surfaces to hold the plant up. The flowers are dark brown and white.

**Orbea variegata**
From the Western Cape Province of the Republic of South Africa, this widely distributed species is one of the mostpopular stapeliads. The stems are rather generic and unremarkable, but the flower is large, multicolored, and stinks to high heaven. In Tucson, these plants get leggy; it is best if the stems are short and densely packed.

**Huernia keniensis var. keniensis**
This small asclepiad grows among basalt rocks and on other rocky ridges in the Great Rift Valley of Kenya and Tanzania. The fragile stems resemble innumerable Huernia, but the flowers are bell-shaped and dark purple and about an inch across.

# Tucson Cactus and Succulent Society

## Thursday August 6, 2009 at 7 pm

### Presentation by Dr. Michael W. Douglas, Ph.D.
### Research Meteorologist, National Severe Storms Laboratory, Norman, Oklahoma

## "Understanding the Climates of Succulent Plant Habitats"

This will be a very interesting program that will include lots of photos of succulent habitat locations as Michael will present his ideas about the relationship of weather on the environmental conditions on succulent plants.

Dr. Douglas became interested in cacti from a friend while in high school in San Diego, and thereafter traveled widely through the desert southwest and Baja California before going off to graduate school in Florida. After a nearly endless period of graduate studies at two universities in Florida, he obtained his Ph.D. in Meteorology from Florida State University in 1987. His last 16 years have been spent in Norman, Oklahoma at the National Severe Storms Laboratory, where, contrary to normal expectations, he has not been chasing tornadoes but instead has been doing research on the climate and weather of the southwestern US and Mexico and also of regions farther afield, in South America and parts of Africa. Fieldwork for this research required extensive traveling and extended stays throughout Latin America and parts of Africa, most with his wife Rosario. This work travel, together with many personal trips made over the years, has afforded lots of exposure to succulent habitats. This has led to some of his current "unofficial" research, which involves seeking meteorological explanations for many of the succulent plant habitats around the globe.

This will be a must see program for everyone! I would highly recommend that you please try to attend this important look at the earth's meteorological patterns and the habitats that are always under the natural control from the climate.

## Free Plant Giveaway
## Agave

There are several hundreds species of Agave. They are native to the Southwestern US, throughout Mexico and into Central America. They were (and continue to be) cultivated for centuries by the native populations for fibers, food and drinks. They are also very useful plants in desert gardens and many of the species that are native to areas northerly of the tropics are quite hardy. Agaves are succulent rosettes, often clumping, occasionally on short trunks. They generally have a sharp spine a the end of their leaves, and for this reason should be away from paths. Each rosette blooms after many years (generally at least 8). The blooming rosette uses all its energy to produce the giant towering bloom, and seeds. When it has finished blooming, in almost all the species, the rosette dries out. Some species produce a large quantity of new plants on the flower stem (bulbils). These can be detached and planted.

# Tucson Cactus and Succulent Society

## Thursday September 3, 2009 at 7 pm

**"South Africa - Northern Cape Part One"**

**Presented By Doug Dawson**

Doug is a retired mathematics professor at Glendale Community College and now just teaches summer school each year to earn money for my trips. Right now, seed-growing seems to be his greatest botanical passion. It yields much needed biodiversity. So often, especially in the succulent area, propagation by cuttings and even seed seems to limit breadth of biodiversity. Much of what we grow or can even get seed from, comes from sources which have the same small gene pool for decades from a few select plants. It is good to introduce wild-collected seed with data from time to time to prevent a narrowing of genetic material. New sports or cultivars also effervesce when lots of seedlings are observed. With his lithops, it is like being able to go "rock" collecting for prettier, shinier "living" stones without even leaving his greenhouse.

Doug is a past president of the Central Arizona Cactus and Succulent Society up in Phoenix and also a member of the TCSS. He has done extensive botanical travels in Namibia and South Africa. Doug's program will include Mesembs, Euphorbias, Stapeliads and other succulents, wild flowers and many bulbs. Most of the photos from my talk were taken in August, 2008 (early Spring), with a few from a second trip in April and May of 2009 to show the same plants in blooming season or other conditions.

Doug will visit South Africa in September 09 to visit the Little Karoo and further explore the Northern Cape. At that time, Woody Minnich and Jan Emming will accompany him. Every time he returns at a different time of year, the plants show further characteristics of their growth cycles and give clues on how they should be grown in the very harsh Phoenix climate.

Please be sure to mark your calendar for this September 3rd presentation. It will be an excellent program that you will want to attend!

## Free Plant Giveaway

**Melocactus**

Melocactus the genus…A unique group of cacti which are native to the Caribbean, Central and South America. These plants over time will produce a characteristic cephalium, a terminal growth where flowers are born. They are usually small hot pink in color and open late in the day, closing up the next morning. A few weeks later bright red or pink fruits emerge when the seeds are ripe. Over many years, the cephalium will continue to grow and elongate, adding lots of reddish soft spines. Old specimens are quite the conversation piece.
In Tucson…Melocactus are not landscape plants, but great potted patio plants. They are best grown in morning sun or dappled light, do not attempt to grow them in full sun, they will burn. If they are kept dry during the winter when freezing temperature are possible, they will overwinter fine. On the coldest prolonged freezing nights a box inverted over your specimen will offer extra cold protection. In April resume watering and feed them monthly thru September using a balanced water soluble fertilizer at half strength. When seen in the wild, Melocactus or Turk's Caps look like aliens from another planet. Many of the seasonally dry islands of the Caribbean each have a species of Melocactus. These plants are good sized with many starting to produce their cephalium. Enjoy your plants.

# Tucson Cactus and Succulent Society

## Thursday October 1, 2009 at 7 pm

### "50 years in 50 minutes"

### Presented by Richard Wiedhopf, President of TCSS

From the first meeting in December 1960 to the Good Time Silent Auction a week or so ago the Tucson Cactus and Succulent Society has been going strong for 50 years. Pictures and stories about the members and events of the society will be highlighted. Dick is the Assistant Dean for Finance and Facilities and Curator of the History of Pharmacy Museum at the College of Pharmacy at The University of Arizona. He has been associated with the College for 48 years receiving BS and MS degrees and has published research on the chemistry of plants with potential anti-cancer agents.

For the last 30+ years his focus has been on finance and facilities. Dick and his wife Pat are long time members of the Tucson Cactus and Succulent Society, joining in 1970. Dick currently serves as president. He has co-chaired all the Sonoran conferences and is one of the founders of the Tucson Society's Plant Rescue program, which has saved over 46,000 cacti & succulents from destruction due to large-scale land development. Dick has been a member of the CSSA since 1975 and coordinated the 1977 convention in Tucson, was host President for the 1995 Tucson Convention and Program Chairman for the 2001 Los Angeles Convention. He is a grower and collector of all things cacti and succulent. Please join us for a look at 50 memorable years.

## SPECIAL 50TH ANNIVERSARY FREE PLANT

## CARNEGIEA GIGANTEA-GIANT SAGUARO

Want to get involved with a special event... that will only happen once in 50 years? Receive a one gallon seed grown Giant Saguaro. Plant it, nurture it, watch it grow and measure it's growth once every October and send your results annually in order to follow the growth from year to year. A special page will be set up to track and follow the growth of your seedling Saguaro. We can track how many Saguaros were initially planted, and see how they age each year, what will five and ten years produce in height? Who know's...when will the first one branch and throw an arm and how long will the first plants take to produce the first flowers? Stay Tuned for more details. Okay..so you have the Saguaro, you have the fertilizer, measure and record the date of planting, log details at the TCSS Website, dig the hole...plant the Saguaro, water and fertilize and off we go.

# Tucson Cactus and Succulent Society

## Thursday November 5, 2009 at 7 pm

### "The Use of Emulsified Pure Oils to Control Insects and Diseases Attacking Cacti and Succulents"

Subtitle: "Grandfather's Intestinal Lubricant Provides Excellent Control of Mites, Insects and Diseases"

**Presented by Dr. Jerald Wheeler**

Pure oils can be obtained from the local drugstore. "Mineral Oil" is a great intestinal lubricant, Odorless - Tasteless - Crystal Clear, 1-2 tablespoons at bedtime. My grandfather used it but I did not understand the actual significant use of oils until I started working and understanding their use in agricultural application. The use of pure oils for pest and disease control for cactus and succulents is safe, effective and really quite unknown to most people.

Jerald E. Wheeler, Ph.D. is a Plant Pathologist. For those who need a better explanation of what a plant pathologist does, here is a short definition. A plant pathologist is one who studies, interprets, and diagnoses diseases and abnormalities of plants. Plant Pathology is defined as the study of the organisms and environmental conditions that cause disease in plants, the mechanisms by which this occurs, the interactions between these causal agents and the plant (effects on plant growth, yield and quality), and the methods of managing or controlling plant disease. It also interfaces knowledge from other scientific fields such as mycology, microbiology, virology, biochemistry, bio-informatics, etc. Educational background: BS. Purdue University, 1966, Agriculture and Plant Sciences MS. U. of Arizona, 1969, Plant Pathology/Botany Ph.D. U. of Arizona, 1970, Plant Pathology/Agricultural Biochemistry 1968-1970 U. of Arizona. In charge of plant disease clinic under Dr. Hine. Professional History: 1970-1971 Assistant Professor of Plant Physiology, Univ. of Freiburg, Germany; 1971-1973 Assistant Professor of Agronomy and Plant Genetics at the University of Arizona; 1973-1975 Development Plant Pathologist, University of Wisconsin; Brazil 1975-1988 Owned and/or Managed Acre, Inc.; 1988-2002 Product Development Manager, United Agri Products; 2002-2004 Product Development Manager, Western Farm Service; 2003-present Product Development Manager, Agriliance/Winfield Solutions. Dr. Wheeler has also been published with his writings in 17 Scientific Publications in referred journals.

Please plan to come to this last regular meeting for 2009. Dr. Wheeler is a fantastic speaker who will add a lot of information that will be of value to you and your garden. It has been a very busy year for everyone in our organization. We have achieved many goals and are now looking to another amazing year in 2010.

Thanks to you all!

## Free Plant Giveaway

Lithops Care (Pot Culture)

LITHOPS should be given a dry rest in winter when the new growth is drawing moisture from the old leaves. At this time, water very lightly, just enough to keep the root hairs alive. As the old leaves dry up in the spring, give them more water until the long, hot summer days bring the growing period to a standstill. During summer only regular light watering is required to prevent the plants from shriveling and the soil from going bone dry. As flower buds appear in late summer and fall, another watering period begins, tapering off during winter after flowering has ended. (Those growing plants under lights will probably need to water some during the winter when the plants show signs of shriveling). Lithops should be grown in filtered sunlight. We pot our lithops in our standard succulent medium. It's approximately 50% pumice (perlite works just as well for the plant, though it tends to float). Two crucial factors in lithops cultivation are fast-draining soil and good air movement.

# Tucson Cactus and Succulent Society

## Thursday January 7, 2010 at 7 pm

## "South Africa - The Northern Cape Part II"

### Presented by Doug Dawson

In September, Doug gave our club a program on **Part I of a trip to the Northern Cape in South Africa**. This follow-up program will focus on that part of the Northern Cape from the coast at Port Nolloth, many Richtersveld locations, over to Pofadder and down to a bit south of Springbok. This is all part of the Succulent Karoo Region which accounts for over 40% of the World's known succulent species.

Doug is a retired mathematics professor at Glendale Community College and now just teaches summer school each year to earn money for his trips. Right now, seed growing seems to be his greatest botanical passion. It yields much needed biodiversity. So often, especially in the succulent area, propagation by cuttings and even seed seems to limit the breadth of biodiversity. Much of what we grow or can even get seed from, comes from sources which have the same small gene pool for decades from a few select plants. It is good to introduce wild-collected seed with data from time to time to prevent a narrowing of genetic material. New sports or cultivars also effervesce when lots of seedlings are observed. With his lithops, it is like being able to go "rock" collecting for prettier, shinier "living" stones without even leaving his greenhouse. Doug is a past president of the Central Arizona Cactus and Succulent Society in Phoenix and is also a member of the TCSS.

He has done extensive botanical travels in Namibia and South Africa. Doug's program will include Mesembs, Euphorbias, Stapeliads and other succulents, wild flowers and many bulbs. Most of the photos from his talk were taken in August, 2008 (early Spring), with a few from a second trip in April and May of 2009 to show the same plants in blooming season or other conditions.

Please be sure not to miss the second part of Doug's exploration in South Africa. It will be a great way to start the new year!

# Tucson Cactus and Succulent Society

## Thursday February 4, 2010 at 7 pm

## "Unusual Agaves, Aloes, and Yuccas"

### Presented by Chad Davis

### Curator of Agavaceae, Aloaceae, & Nolinaceae at the Desert Botanical Garden in Phoenix, AZ

Agaves, aloes, and yuccas are fascinating plants that feature bold forms, as well as dramatic colors and textures for our hot desert landscapes. The vast array of sizes, colors and forms makes them useful both as accents and specimen plantings. This presentation will focus on some spectacular, yet underused, agaves and yuccas, as well as durable aloes that can tolerate our climatic extremes. We will discuss preferred site selection, maintenance practices, potential cultural problems and pest of these amazing plant groups. Special attention will be given to large arborescent species of aloes and yuccas.

Chad has been with the **Desert Botanical Garden** since 2002. Prior to his promotion to Curator of Agavaceae, Aloaceae, & Nolinaceae in 2003, Chad served in the Security Department as a Ranger at the Garden.

As the Curator of Agavaceae, Aloaceae, & Nolinaceae, Chad curates and maintains three primary plant collections in the Garden. This entails tracking of collections, acquisition and propagation of suitable plant material, designing and planting of garden displays and serving on internal Garden committees. He regularly works with volunteer groups, has obtained and maintains a Certified Pesticide Applicator License, as well as teaching in the **Garden's Desert Landscaper School**. Chad has designed and installed the Arizona Agave Beds, expanded the Aloe Collection/displays in the Garden, coordinated the installation of the Succulent Gallery and the new Berlin Agave & Yucca Forrest. He has given numerous presentations to environmental groups and garden clubs such as the **Arizona Native Plant Society**, **Central Arizona Cactus and Succulent Society** and **McDowell Park Association**, as well as leading a workshop during the Cactus and Succulent Society of America National Convention. He is a regular contributor to the Garden's Sonoran Quarterly and has appeared on local and nationwide television shows.

Chad received an Associates of Applied Science in Urban Horticulture from **Mesa Community College** and is currently pursuing a Bachelor of Interdisciplinary Studies (BIS) degree combining the disciplines of Landscape Architecture and Urban Horticulture at **Arizona State University**.

Please make sure you attend this excellent program and welcome Chad as our guest speaker! This will be a great opportunity for every member. Please join us, bring a friend and come enjoy your evening!

## Free Plant Giveaway

Plants for February are in the genus Mammillaria. A double-serving of specimen plant door prizes is offered for this month's meeting to make up for last month!

# Tucson Cactus and Succulent Society

## Thursday March 4, 2010 at 7 pm

## "Wild Cacti and Succulents in the Eastern USA"

### Presented by Michael Chamberland from the Tucson Botanical Gardens

Succulents in the Eastern States are isolated in small areas of special habitat. Many are rare and local, little known, and seldom illustrated in mainstream wildflower guides. Succulent plants are few and rare in the Northeastern States. The number of succulent species increases exponentially as one travels into the Southern States, with Florida possessing more succulents than the other Eastern States combined. The number of succulents increases as one travels south through Florida, culminating in the Florida Keys, where columnar cacti and arborescent prickly pears grow. This is the northern margin of the Caribbean flora. Non-native succulent species in Florida include Aloes, Crown-of-thorns, Kalanchoe, Epiphyllum, and some other cacti. The non-native succulent species are almost as numerous as the native succulents in Florida. But they have not become truly invasive like the worst of Florida's exotics. In other States, the introduced succulents are principally Sedums and other Crassulaceae, usually of minor and short-lived occurrence.

Michael Chamberland is the Curator of Horticulture at the Tucson Botanical Gardens. He has studied plants at the University of Connecticut and Arizona State University. With a degree in Botany, he has worked both in herbaria and botanical gardens around the USA. Michael has mounted numerous treks into the most remote and forbidding parts of the Eastern States. Having lived to tell about it, he will shed light on the myths and dark secrets of this little known part of the succulent world.

This will be a very special program that may open your eyes to plants you never thought would be growing in the Eastern States. Please bring your friends, join us and welcome Michael as he takes the floor and presents a much needed subject to our club.

## Free Plant Giveaway

**Golden Barrel, Echinocactus grusonii**

Native to Mexico (Queretaro) where it is endangered in the wild. This plant is fairly slow growing to 3 feet tall (90 cm), 3 feet in diameter ultimately. The Golden Barrel is one of the most commonly used and widely available landscape cactus in the American Southwest . It is popular for its golden spines that keep looking attractive after several years. The Golden Barrel has 1.5 to 2 inches (4-5 cm) yellow flowers from the end of March to the end of April. The flowers are produced only on mature specimens receiving enough full sun. The flowers are not very visible, being small in relation to the size of the barrel, and lost in the creamy colored wool at the top of the globe. Water generously in summer. www.deserttropicals.com/Plants/Cactaceae/Echinocactus_grusonii.html

# Tucson Cactus and Succulent Society

## Thursday April 1, 2010 at 7 pm

### "Taxonomy For Cactus Lovers: Latin shouldn't be Greek to you"

**Presented by Mark Dimmitt**

*Why are these two plants unrelated? The answer is easy if you know a little taxonomy.*

*Why is this a cactus?*
*The answer is easy if you know a little taxonomy.*

This program will explain and richly illustrate the system of taxonomic classification (and nomenclature) in nontechnical language, explain its purpose, extol its benefits, and decry its considerable shortcomings. It will begin by reviewing an animal classification system, which everyone actually already knows (e.g., dogs, cats, hoofed animals). Mark will then transfer this innate knowledge to the plant kingdom, with emphasis on succulents. He will show how to identify several of the plant families that we grow. Finally, he will explain the value of having some basic knowledge of plant nomenclature when purchasing plants for your collection (and fruits for your table).

Mark Dimmitt, Ph.D. formally majored in zoology throughout his college career, but also studied botany and ecology extensively. After earning his Ph.D. in Biology from the University of California at Riverside, he spent four years as a vertebrate ecologist in the California Desert District of the Bureau of Land Management. He moved to Tucson in 1979 to become Curator of Botany at the Arizona-Sonora Desert Museum and in 1997 he became the Director of Natural History. This position allowed him to conduct field research and share oversight of the scientific aspects of the museum's operations. Mark has published numerous popular articles on horticulture (he is an avid plant hybridizer) and several articles on desert ecology. He is also the creator of the 'Desert Museum' hybrid Palo Verde. He is well known for his hybrids, especially his study of the adenium and various cacti. In 1999, he received the Friend Award from The Cactus and Succulent Society of America for his outstanding accomplishments with cacti and succulents. He has also co-authored a new book, "Adenium: Sculptural Elegance, Floral Extravagance".

Mark is an excellent speaker and will deliver a program that should be extremely educational to everyone. Be sure to mark you calendar now and join us on "April Fool's Day" for a program you will really enjoy.

*Why is this not a cactus? The answer is easy if you know a little taxonomy.*

### Free Plant Giveaway

**Gasteria Bicolor and other species**

Gasteria is a genus of succulent plants native to South Africa. Closely-related genera include Aloe and Haworthia. The genus is named for its stomach-shaped flowers and is part of an expanded Asphodelaceae family. Gasteria species should be grown in well-drained, sandy soils. The majority of the species prefer light shade and should be protected from direct sunlight or other extreme conditions. They do best in pots on patios in our climate. Inorganic pebble mulch can be placed around the plant to prevent weeds from growing and hold in moisture. Watering should occur frequently in the spring, summer, and autumn, but should not overwhelm the plant. It is suggested to suspend watering the Gasteria in the winter.

# Tucson Cactus and Succulent Society

## Thursday May 6, 2010 at 7 pm

## "Large Opuntias of the USA: What Are They and Where Are They"

### Presented by Joe Shaw

*Opuntia atrispina*

This program describes the large Opuntia species of the USA and provides photographic information about the plants, as well as information about where they occur. Information is presented for about 25 species of Opuntia. A 10-minute follow-up talk will be presented that describes Opuntia-animal interactions; mammals, birds and insects.

Joe obtained his B.S. in Botany (UC Santa Barbara) and a doctoral degree in Plant Pathology at (UC Davis). He was an associate professor in the Department of Botany and Microbiology at Auburn University from 1988-1998. Since 1998 he has worked in the biotechnology industry, first mining the mouse genome for druggable genes and now as a medical/scientific writer. For the past few years he has collaborated with David Ferguson (**Rio Grande Botanic Garden**, Albuquerque, NM) to document the Opuntia species of the USA in a Web site **http://opuntiads.com**. Joe lives in Germantown, Maryland with his companion and dog.

This will be a special program for everyone to enjoy. Please join us for an excellent topic for all who have wanted to know more about these marvelous cacti. Let's welcome Joe to our Tucson organization by coming out and enjoying the Opuntias.

*Opuntia spinosibacca and rufida at Big Bend*

### Free Plant Giveaway

**Free plant** (cuttings From Mark Dimmitt ): Opuntia alta 'Fruit Punch'. Opuntia alta is a hexaploid species that originated as a natural hybrid between O. engelmannii lindheimeri and O. stricta. In 1999 Tom Wiewandt gave Mark Dimmitt a pad of a plant he collected near McAllen, Texas. It was the most colorful prickly pear he saw there, with reddish-purple flowers. Mark Dimmitt grew about 100 seedlings from this plant, and selected this clone as the best of them. 'Fruit Punch' is an extremely vigorous and floriferous cultivar. (The plant in the photo is a five-year-old cutting.) It is covered with large purplish-red flowers in May, and continues to grow new pads and some flowers through the summer. It comes from a wetter, more humid climate, and needs supplemental water in southern Arizona.

**Raffle plant** (cutting): Opuntia unknown hybrid 'Tucson Ruby': This plant volunteered in the wash on Mark Dimmitt's property. It looks pretty much like a normal O. engelmannii, but it evidently crossed with one of the red-flowered plants in his yard. The flower color varies with the weather from blood red to red-orange to reddish-purple. 'Tucson Ruby' is a normal prickly pear in size, and is desert-adapted (plant it and forget about it). Flowers in May.

# Tucson Cactus and Succulent Society

## Thursday June 3, 2010 at 7 pm

### "Travels in Africa and Arabia: The Genus Sansevieria"

**Presented by Bob Webb and Toni Yocum**


Be sure to attend this program by Bob and Toni as they have put together yet another great exploratory adventure. You don't want to miss this presentation!

Bob Webb has worked on land-use issues, landscape ecology and conservation concerns of the southwestern United States and Baja California for more than 30 years. For the past 12 years, he has worked with Mexican government scientists on plant conservation issues in Baja California centering on cirio, cardon, and other charismatic species that are iconic to the peninsula. He has a Ph.D from the University of Arizona in Geosciences (1985) and has worked for the National Research Program of the U.S. Geological Survey for nearly 20 years.

Bob has collected succulent plants for about 20 years. For his day job, he is a hydrologist with the U.S. Geological Survey in Tucson; however, he has worked as a plant ecologist in the southwestern United States and Baja, California for nearly 30 years. He's been traveling to the Arabian Peninsula and Africa since the mid-1990s and has visited Oman, Kenya, Socotra, Yemen and South Africa in search of succulent plants.

Bob has produced around 200 publications, including 12 books, with many more on the way. Several of these books are benchmark volumes on environmental change in the Mojave and Sonoran Deserts. Bob Webb and Toni Yocum are owners of **Arid Lands Greenhouses** at 3560 W. Bilby Road Tucson AZ 85746 Phone: (520) 883-9404.


## Free Plant Giveaway

**Stapelia asterias:**
They are a medium sized, stemmed stapelia with dark purple, odiferous flat starfish shaped flowers about 4-5 inches across. They survive outside for years, with some die back during the coldest winters. They work well in pots or in the ground under cover of a tree or shrub.

# Tucson Cactus and Succulent Society

## Thursday July 1, 2010 at 7 pm

## "Spectacular Saguaros and Spectacular Lightning Strikes"

### Presented by Carl Noggle

*Lightning strikes in Tucson*

The Tucson area is famous for spectacular lightning and spectacular saguaros. We get about three or four flashes per square kilometer per year, and most of us have wondered how our favorite charismatic desert dwellers manage to survive in this threat environment. An intrepid local group of lightning researchers, arid-lands botanists and other assorted desert rats has investigated this for several years, and we will present the results of our study. Many important questions will be answered, including, but not limited to:

- Why aren't all the saguaros burnt to a crisp?
- Just what happens when a saguaro is zapped by lightning, anyway?
- I have a nice saguaro in my front yard. Can I protect it from being struck?
- How do I protect myself from being struck?
- Is there any way to recognize a lightning-struck saguaro?
- Is this really a serious research program, or are you guys just fooling around in the desert?
- How can I help?

Carl Noggle owes his life to the Sonoran Desert, having moved here as a child from Michigan because of asthma. He has lived here for 52 years, and has always had an interest in desert plants, animals, rocks, weather, etc. He has a degree in physics from the University of Arizona, and for much of his career has been part of a group that developed the first accurate real-time lightning location technology. This system is now providing accurate lightning locations and tracking storms worldwide. In his spare time Carl hikes and bikes around the area, grows a few cactus and gives occasional educational high-voltage electrical shows. He lives in Tucson, and although he has lived elsewhere for a few years on occasion, he has always seen the light and returned.

Please welcome Carl, one of our members, for a whole new way of thinking about our native saguaro, Carnegiea gigantea. Please be sure to attend his amazing look at the natural world of the saguaro and how it relates to the electrical forces of nature.

*** **Sent by Carl after the meeting**

**Lightning items of interest**--

Thanks for the opportunity to talk to the Society last Thursday. Members asked many excellent questions.

Here are a couple of really cool Youtubes of lightning development processes--

**http://www.youtube.com/watch?v=Nh15VjGkK5Y&feature=related**
**http://www.youtube.com/watch?v=t94m27jycrc**

A lightning-struck saguaro can be identified by the pile of green, healthy arms around the base, while the trunk is rotting, or has become a bundle of dry sticks. Please report any such saguaro to Carl Noggle at 318-9905 or at **lwx@cox.net**. Please give good location information and the date and time of striking, if you know it. GPS locations are always helpful.
A paper on lightning and saguaros is available at **lwx@cox.net**.

*Saguaro zapped by lightning*

## Free Plant Giveaway

**Agave victoriae-reginae**

Agave victoriae-reginae is a very slow growing but tough and beautiful Agave. It is considered to be one of the most beautiful and desirable species. It forms individual slow growing dense rosettes up to 45 cm in diameter (but usually rarely grows taller than 22 cm), most populations are solitary, but some offset heavily. It is extremely variable with the very open black-edged form sporting a distinct name (King Ferdinand's agave, Agave ferdinandi-regis) and several forms that are the more common white-edged form. Loves full sun with supplemental water or slightly filtered light, completely frost hardy. Does very well in pots or in the ground.

# Tucson Cactus and Succulent Society

## Thursday August 5, 2010 at 7 pm

## "Unusual Agaves, Aloes, and Yuccas"

### Presented by Chad Davis - Curator of Agavaceae, Aloaceae, & Nolinaceae at the Desert Botanical Garden in Phoenix, AZ

Agaves, aloes, and yuccas are fascinating plants that feature bold forms, as well as dramatic colors and textures for our hot desert landscapes. The vast array of sizes, colors and forms makes them useful both as accents and specimen plantings. This presentation will focus on some spectacular, yet underused, agaves and yuccas, as well as durable aloes that can tolerate our climatic extremes. We will discuss preferred site selection, maintenance practices, potential cultural problems and pest of these amazing plant groups. Special attention will be given to large arborescent species of aloes and yuccas.

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Please make sure you attend this excellent program and welcome Chad as our guest speaker! This will be a great opportunity for every member. Please join us, bring a friend and come enjoy your evening!

## Free Plant Giveaway

**Gymnocalycium asterium**

Gymnocalycium asterium has a low brown stem, short semi-erect brown spines, and whitish/pink flowers. Give ample airflow, bright filtered light, and protect from frost. Gymnocalycium is a genus of about 70 South American species. Their main area of distribution is Argentine, part of Uruguay, Paraguay, southern Bolivia and part of Brasil. Most species are globose, rather small varying from 1.5 to 6 inches in size (4 cm to 15 cm). They are popular for their easy flowering habits, although the flowers are generally brightly colored. They are also popular for their ease to care for. The genus name "gymnocalycium" comes from the Greek for "naked calyx" referring to the flower buds bearing no hair or spines.

# Tucson Cactus and Succulent Society

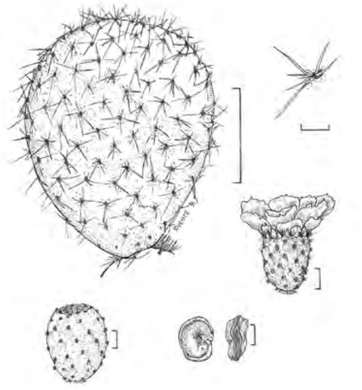
## Thursday September 2, 2010 at 7 pm

## "General Overview on the Subfamily Opuntioideae"

### Presented by Raul Puente-Martinez

**Curator of Living Collections and Research Botanist**
**at the Desert Botanical Garden in Phoenix, Arizona**

Raul Puente-Martinez divides his time at the **Desert Botanical Garden** in Phoenix, Arizona as the Curator of Living Collections and as a Research Botanist. He is responsible for curatorial aspects such as plant acquisition, maintaining the database and mapping of the Garden's Living Collection. His main research interest is the systematics of the genus Opuntia (pricklypears) in northern Mexico, particularly in the states of San Luis Potosi, Coahuila and Sonora. He is also working on a taxonomic revision of the genus Nopalea, a unique group of tropical prickly pears from Mexico and Central America which are pollinated by hummingbirds. Raul's studies are based on fieldwork as well as morphology, chromosome numbers and pollen morphology, among other techniques. As a collaborator for the **Vascular Plants of Arizona project**, he has written various family treatments as well as produced a number of plant illustrations.



### Free Plant Giveaway

**Echinocereus viridiflorus "Green Pitaya"**

This hedgehog is native to Northern Mexico and continuing from Texas, New Mexico, Colorado, Wyoming, South Dakota, Nebraska, Kansas and Oklahoma. Hedgehog cacti are reliable bloomers in Spring. This hardy, small clumping species is easy to grow in a pot. Beautiful greenish/yellow flowers appear in February and March. This species readily forms nice tight clumps and looks great in pots. Plants look best with morning sun and afternoon shade. Regular water and monthly fertilizer will enhance growth and flowering.

# Tucson Cactus and Succulent Society

## Thursday October 7, 2010 at 7 pm

## "Fog to Glaciers: A Tour of Peruvian Cacti and Bromeliads"

### Presented by Jan Emming

Oroya Matucana

Peru is known to possess some of the most dramatically varied scenery and diverse ecology in the world. Home to a huge variety of natural habitats ranging from hyper-arid coastal fog deserts to soaring Andean heights and Amazonian rainforests, the country is a botanical paradise. There are nearly 300 species of cacti known from Peru in over 20 genera, including a number of endemics. There are also numerous bromeliads, many of which are of interest to people who grow succulents since they frequently share the same habitats and growing conditions with the cacti and have showy flowers.

This visual tour of Peruvian cacti and bromeliads focuses mainly on the arid coastal regions, the steep Andean valleys located just inland from the Pacific Ocean, and the highlands set amongst the dramatic glaciated peaks in the western and southern parts of the country. There are many additional species that grow in the northern and eastern portions of Peru in dry tropical forest and even moist rainforest, but the huge size of the country (almost twice that of Texas) more or less precludes covering the entire nation in one trip, or one program. Nonetheless, some of the most iconic Peruvian plants will be shown in this presentation of an extremely diverse and beautiful place.

Jan Emming lives in the small town of Yucca, located in the far northwestern reaches of Arizona where the Mojave Desert inter grades naturally with the Sonoran Desert. In 1999 he started **Destination:Forever Ranch and Gardens**, a combination botanical collection and sustainable-living experiment on 40 acres set in the southwestern foothills of the Hualapai mountain range. After 11 years of work, Jan is about ready to complete his first residential structure, a 600-square foot guest house, and move permanently onto the D:F Ranch property for the first time. He has learned that cows will not eat papercrete. He also expects that major progress can finally be made on the horticultural aspects of the property since living there full-time will finally enable him to deal adequately with the legions of gnawing rodents that inhabit the wilderness, causing tremendous plant mortality unless closely monitored. In the desert, it seems that everything is always looking for a meal. A brief update will be provided as to the status of this venture, as requested by the TCSS' venerable president, Dick Wiedhopf.

We are very happy to again have Jan present us with a spectacular program that will take us to a truly magnificent cactus and succulent location far south of Tucson. Please don't miss this great program from one of our devoted members from Yucca, Arizona!

Puya raimondii

## Free Plant Giveaway

**Boojums**

Fouquieria columnaris "Boojums" are cool season growers. This means they are actively growing Fall, Winter and Spring in the Desert Southwest. In the summer when the temperatures soar they are essentially dormant. Boojums are native to a small spot on coastal Sonora and Central Baja, with the main population being in Central Baja. Mature Boojums should be encouraged to grow October through April in Tucson. This means regular watering at this time unless we receive adequate rainfall. Once the daytime high temperatures consistently stay near 100 degrees cut back on watering because the plant is dormant. Small plants should be watered regularly enough to keep green leaves. In many cases for a small 2 1/4 Inch potted plant that will be twice a week watering.

# Tucson Cactus and Succulent Society

## Thursday November 4, 2010 at 7 pm

## "Cacti of the Northern Mojave and Adjacent Areas"

### Presented by Donald Barnett Jr.
### Native Plant Horticulturist at the Springs Preserve in Las Vegas, Nevada


Echinocereus Canyonensis

Donald's parents both have Biology degrees and have always been his largest influence. At the age of 5 years old he was fascinated with Dinosaurs. Dinosaurs were extinct and his parents encouraged him into Herps (Reptiles and amphibians) and the outdoors. He did a large amount of traveling to Americas' National Parks and looked closely at the true beauty of nature. Around the age of 8 years old the "idea" of xeriscaping began showing up in Colorado. His father convinced his mom to convert their non-sustainable lawn into a desert rock garden. He started out with a handful of native cactus including the red flowering strawberry cactus, Echinocereus triglochidiatus and eventually he had over 100 species of cactus and 25 species of Agave. At 11 years old, he was more into cactus and succulents and began experimenting with growing Yucca and Agave from seed. Later he began growing many species of cactus including Sclerocactus and pediocactus from seed. At 17, he began working for Wild Things Wholesale Nursery in Pueblo, CO. They specialized in growing natives including succulents of southeastern Colorado to northern New Mexico. At 19 he found a job in Las Vegas, Nevada at the new

**Las Vegas Springs Preserve**. He is currently a horticulturist there with many duties, including managing the seed repository, herbarium and over seeing all the cactus and succulent propagation. Now at the age of 22 his main hobby besides plants is Photography, the website, **http://donnie-barnett.artistwebsites.com** has a large amount of photos taken while hunting for the rare species of cactus within the area.

"Cacti of the Northern Mojave and Adjacent Areas" originally was a book idea and is in progress. At the moment it is a PowerPoint presentation and is a 'complete' overview of cactus in Nevada, although the main area covered is from the Vermillion Cliffs National Monument, Arizona to Death Valley National Park, California and from Joshua Tree National Park, California to the Great Basin National Park, Nevada. Many genera of cactus are found throughout, including the genera Echinocactus, Echinomastus, Escobaria, Ferocactus, Opuntia, Pediocactus and Sclerocactus. Each Species will be pictured and described with great detail, including habitat, elevation and a few locations where the plants may be viewed. All the information on these plants has been acquired through reading and 3 years of field work. He will go into the Opuntiads with great detail and explain the differences between each of the Opuntias in Southern Nevada.


Opuntia X Curvispina

## Free Plant Giveaway

**Ferocactus macrodiscus**

Ferocactus macrodiscus is a small barrel cactus, reaching a full size of about 5-6 inches tall and 8-12 inches across. These are found naturally hiding out among the grasses in the southern Mexican state of Oaxaca. When traipsing about down there, one must keep the head down to avoid stepping on these hidden gems. This species is one of the most satisfying to grow as they will produce their pink, candy striped flowers when only about 3-4 inches across. Keep the plants shaded; water them about once a week in the summer, and then once every two to three weeks from fall until spring.

**Thelocactus hexaedrophorus**

Thelocactus hexadrophorus is a hardy, single stemmed, Chihuahuan Desert cactus that gets about 3-4 inches tall and up to 6-8 inches across. Beautiful, white or pink flowers will appear repeatedly throughout late spring and summer. These are found growing among small rocks on the slopes of limestone hills. Grow these in full sun or very light shade; water about once a week in summer, and then once every two to three weeks in the winter.

# Tucson Cactus and Succulent Society

## Thursday January 6, 2011 at 7 pm

## "Cactus Cultivation and More!"

### Presented by Scott McMahon,

### "Cactaceae Collections Manager" at the Desert Botanical Garden in Phoenix, Arizona

Scott McMahon is the Cactaceae Collections Manager at the **Desert Botanical Garden** (DBG). He received his Masters degree in Plant Protection from the U of A in 1977 and worked for 5 years in the agrichemical industry in Arizona and Southern California. Scott?s father was a commercial landscaper, and Scott gained valuable experience in landscape design, installation, and maintenance working for him on and off over the years. Scott has also worked in the electronics industry as a technician and has held a K-8 elementary teaching certificate. Scott is a member of the **Cactus and Succulent Society of America** and also of the local affiliate, the **Central Arizona Cactus and Succulent Society**, where he served two terms as President. Scott started with the DBG as their arborist and became a Certified Arborist a year later. Scott?s current duties include caring for the Garden?s extensive cactus collection, including numerous succulents from other families. Scott is an instructor in the **Desert Landscaper School**, teaching classes in both English and Spanish on desert trees, the Cactus Family, and on other succulents. Scott?s ability to speak Spanish has also enabled him to participate in workshops on desert landscaping in Mexico.

This will be a program that everyone should greatly enjoy. Scott is really good at presentations and will give you lots of ideas. If you haven't met Scott, please attend this program and introduce yourself. Join us for the new year and let's start 2011 with an excellent guest speaker!

Peru Day 7 Huaraz to Lima, fog granite canyon plants, Thursday, July 8, 2010.

## Free Plant Giveaway

### Aloe

Aloe, is a genus containing about four hundred species of flowering succulent plants. The genus is native to Africa, and is common in South Africa's Cape Province, the mountains of tropical Africa, and neighboring areas such as Madagascar, the Arabian peninsula, and the islands of Africa. Most of the smaller species are excellent for pot culture in Tucson, given filtered light and protection from hard freezes. Plants in well draining soil and keep pots on the small size to avoid rotting from excess water, especially in the summer when they are dormant. Aloe blossoms are a great source of winter and early spring color.

# Tucson Cactus and Succulent Society

## Thursday February 3, 2011 at 7 pm

## "An Introduction to the Hoyas and Dischidias"

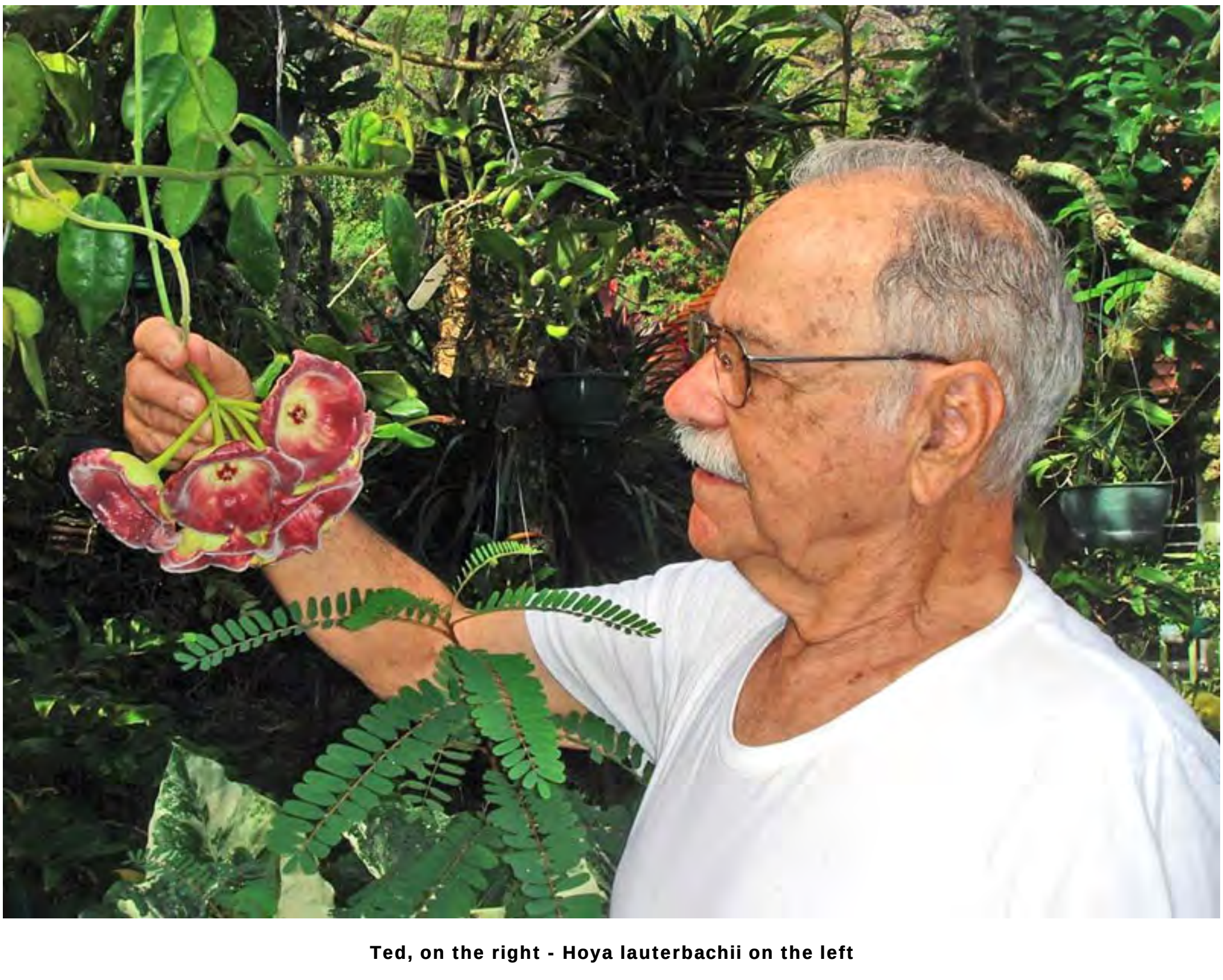
### Presented by Ted Green

Ted maintains a sizeable collection of Hoyas and Orchids in Kaaawa, Hawaii. Since 1963, he has field collected in Australia, Borneo, Fiji, Indonesia, Malaysia, New Guinea, the Philippines, the Samoas, Tahiti, Singapore, the Solomons, Thailand, New Caledonia and Vanuatu. Ted also goes collecting at least once a year to the South Pacific or to tropical Asia.

Ted operates **Green: Plant Research**, a company that investigates problems in horticultural and agricultural crops, does plant exploration for potentially economic horticultural plants and introduces them into the U. S. They will also propagate, by micro and macro methods, endemic and exotic horticultural and agricultural plants - Hoyas, Dischidias, orchids, bananas, etc. **Green: Plant Research** also sells collected and propagated, select plant materials.

**Green: Plant Research**
P O Box 597, Kaaawa, Hawaii 96730
Telephone/Fax: (808) 237-8672
Email: **GREENT010@HAWAII.RR.COM**

This will be a program that introduces something quite different to Tucson succulent collectors and enthusiasts. Hoyas are great plants to grow and will only need a little shade and lots of water during our hot summer months. Those who have greenhouses can easily start and maintain a good collection. Now is your excellent opportunity so please attend this program and introduce yourself to Ted Green. Ted will also be bringing some "well selected" Hoya cuttings to sell so please get some of these great plants from an expert grower and collector!



**Ted, on the right - Hoya lauterbachii on the left**

## Free Plant Giveaway

### Aloe

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Most of the smaller species are excellent for pot culture in Tucson, given filtered light and protection from hard freezes. Plant in well draining soil and keep pots on the small size to avoid rotting from excess water, especially in the summer when they are dormant. Aloe blossoms are a great source of winter and early spring color.

# Tucson Cactus and Succulent Society

## Thursday March 3, 2011 at 7 pm

## "Cactus Forays in the Madrean Archipelago"

### Presented by Tom Van Devender

Tom's program will include new information about quite a few cacti. Here is a list of the species included in his presentation: Coryphantha robbinsorum, Coryphantha vivipara, Coryphantha recurvata, Echinocereus pseudopectinatus, Echinocereus rigidissimus, Echinocereus stoloniferus, Echinocereus scopulorum, Echinocereus lauii, Mammillaria saboae goldi & haudeana and Peniocereus greggii.

Thomas R. Van Devender is the Manager of the **Madrean Archipelago Biodiversity Assessment program at Sky Island Alliance**. He was the Senior Research Scientist at the **Arizona-Sonora Desert Museum** from 1983 to 2009 where he conducted research on a broad range of natural history activities. He has published well over a hundred research publications including journal articles, book chapters, and books on the cacti of Sonora, desert grassland, packrat middens and the paleoecology of the southwestern deserts, and the Sonoran desert tortoise. He is coeditor with Francisco Molina on a book entitled Diversidad Biológica del Estado de Sonora published by the **Universidad Nacional Autónoma de México** in Hermosillo, Sonora in 2010. He has a long-term interest in the flora of the Sonoran Desert Region, and has collected over 25,000 herbarium specimens, which are deposited into the herbaria at the University of Arizona (Tucson), Universidad de Sonora (Hermosillo), and many others. In recent years, he has provided photovouchers of cacti to ten herbaria in the United States, Mexico, and Europe. He has surveyed plants in many vegetation types in Sonora. He and his wife Ana Lilia Reina-Guererro have a special interests in the plants of La Frontera, the 100 kilometer zone in northern Sonora just south of the Arizona border, and in the Yécora area in the Sierra Madre Occidental in eastern Sonora. They have studied the ecology of the Chihuahuan Desert night-blooming cereus (Peniocereus greggii var. greggii), the Cochise foxtail cactus (Coryphantha robbinsorum), the false rainbow cactus (Echinocereus pseudopectinatus), the El Trigo hedgehog (E. lauii), and the choyita (Mammillaria saboae var. haudeana).

He has a long-term interest in the flora of the Sonoran Desert Region, and has collected over 25,000 herbarium specimens, many of them deposited into the herbaria at the **University of Arizona** (Tucson), **Universidad de Sonora** (Hermosillo), and the **Centro de Investigaciones Biológicas del Noroeste** (La Paz, Baja California Sur). He has surveyed local floras in the Sonoran Desert in the Tucson Mountains, Sycamore Canyon, and Ironwood Forest National Monument in Arizona. He has also studied the plants in tropical deciduous forest near Alamos in southern Sonora and Mazatlán in southern Sinaloa, and the pine-oak forests near Yécora in the Sierra Madre Occidental on eastern Sonora. He and his wife Ana Lilia Reina-Guererro have a special interest in the plants of La Frontera, the 100 kilometer zone in northern Sonora just south of the Arizona border, where they have studied the ecology of the Chihuahuan Desert night-blooming cereus (Peniocereus greggii var. greggii), the Cochise foxtail cactus (Coryphantha robbinsorum), and the false rainbow cactus (Echinocereus pseudopectinatus).

Please make sure you have marked your calendar for this program by someone who has spent lots of time attending to various cactus research projects in Arizona as well as Sonora, Mexico. Please also bring a friend or relative who would like to learn more about cacti.

Pitahayal - From left to right, Toby, Analilia and Tom

## Free Plant Giveaway

**Aloe**

Aloe, is a genus containing about four hundred species of flowering succulent plants. The genus is native to Africa, and is common in South Africa's Cape Province, the mountains of tropical Africa, and neighboring areas such as Madagascar, the Arabian peninsula, and the islands of Africa.

Most of the smaller species are excellent for pot culture in Tucson, given filtered light and protection from hard freezes. These plants will want well draining soil and be sure to keep pots on the small size to avoid rotting from excess water, especially in the summer when they are dormant. Aloe blossoms are a great source of winter and early spring color.

# Tucson Cactus and Succulent Society

## Thursday April 7, 2011 at 7 pm

## "Colorado Cacti"

### Presented by Don Barnett

I acquired an appreciation for cactus at a young age. My father was an avid outdoorsman and our weekends and vacations were often spent hunting and fishing in Colorado's wild lands. I developed a reverence for the natural world that eventually led to a degree in biology from the University of Southern Colorado. When my wife and I moved into our home 15 years ago we decided to remove our lawn and put in a xeric garden. I thought it would be nice to have every cactus species occurring in Colorado. I eventually learned more about other cactus species from neighboring states and have about one hundred plus species in the garden. Panayoti Kelaidis of the Denver Botanic Gardens has called it one of the finest xeric gardens he has seen. I am currently president of the Walking Stick chapter of the **Colorado Cactus & Succulent Society**. I have travelled throughout Colorado and the southwest studying cacti with my son Donnie.

The presentation will cover all aspects of Colorado cacti. There will be detailed photographs of all species in habitat showing their identifying characters and colorful flowers. I will provide a Colorado range made for each species and give you some specific locations so you can see them for yourself in the wild. There are about twenty cactus species found in Colorado.

When people think of the state of Colorado they envision snow-capped peaks and sparkling alpine lakes. While much of the state is mountainous, there are more areas of dry grasslands, mesas and plateaus. Elevation ranges from a low of 3,300' to 14,000' high mountain peaks. This diverse topography leads to extreme climatic zones. The average precipitation for the overall state is 17 inches per year with some areas receiving less than seven inches per year and some mountain locations having an excess of 60 inches per year. Temperatures can range from well below zero in winter to 100 in the summer. Yet cacti inhabit the entire state with the exception of the high alpine zone. Many animals and plants, including cacti, are at their northern range limits in southern Colorado.

## Free Plant Giveaway

**Mammillaria**

Suitable for pot culture or in-ground cultivation, filtered light and well draining soil are recommended for optimal appearance. Flowering is generally in the spring and can also be opportunistic relative to watering or rainfall. The blossoms are often quite showy and typically display in a ring fashion around the crown of the plant.

# Tucson Cactus and Succulent Society

## Thursday May 5, 2011 at 7 pm

## "FUNctional Garden Art"

### Presented by Greg Corman

Tucson artist Greg Corman is fine with plants sitting in a garden looking pretty, but believes garden art should work for a living. He'll illustrate ways you can incorporate art in the landscape so it does double duty as planters, seating, walkways and other amenities that make life better for you and for local wildlife too.

Greg Corman is a sculptor and landscape designer in Tucson. His art work is primarily functional and includes wooden vessels, tables, benches and bee habitats: he creates most of them from recycled lumber and steel, found objects, and chunks of wood rescued from the firewood pile.

Please join us for a great evening presentation and much, much more. Enjoy sharing your thoughts and ideas with many others who enjoy growing, collecting and studying cactus and other succulents!

Greg Corman's web site is at: **Gardening Insights, Inc**.

## Free Plant Giveaway

### Ferocactus pilosus

Spring brings a very showy (but smallish) flower and vivid spination in Ferocactus pilosus, native to the San Luis Potosi region of Mexico. The red spines are often very thick and robust in better specimens, many of which are readily available from our member nurseries. The spination quality is best when grown in full sun, although our piercing summer sun and low humidity can cause some discoloration of tissue and sunburn. A reasonable compromise is to place the plant on the extreme south edge of the drip line of a Palo Verde such that the plant is in full sun most months of the year excepting three or four weeks on either side of the summer solstice. Older plants will often grow offsets. Specimens in my yard appear to have withstood the extreme cold of this winter, but I am aware of some casualties in other parts of town. In any event , this species is a must have for the Ferocactus aficionado.

# Tucson Cactus and Succulent Society

## Thursday June 2, 2011 at 7 pm

### "Variation and Evolutionary Processes in Cacti"

**Presented by Marc Baker**

Cylindropuntia munzii Copyright Michelle Cloud-Hughes 2011

Marc will be discussing variation in morphology and other characters, geographic isolation, polyploidy, and apogamy; and how these affect evolution and taxonomy of cacti. Marc will present examples of studies in various North American and some South American cacti.

I first began studying cacti at an academic level for my Ph.D. with Dr. Pinkava at ASU who brought to my attention problems in chollas centering on apogamy, hybridization, and polyploidy. I used various methods in an attempt to answer questions and test hypotheses with the most successful centering on cytogenetics and multivariate analysis of morphological characters. Since then, I have used these methods, along with classical taxonomic techniques to pursue problematic taxa in Opuntia, Cylindropuntia, Coryphantha, Echinocereus, and other genera.

Just a note from the program director. Tom Van Devender brought to my attention the need to have Marc Baker as a guest speaker because of his extensive knowledge of the Opuntia, Cylindropuntia and many other cacti genera. This should be a program you must not miss! Please join us for a great evening and bring a friend for an excellent program and so much more.

Cylindropuntia munzii Copyright Michelle Cloud-Hughes 2011

Cylindropuntia bigelovii © Michelle Cloud-Hughes 2011

Mystery Cholla © Michelle Cloud-Hughes 2011

Mystery Cholla Flower © Michelle Cloud-Hughes 2011

Mystery Cholla © Michelle Cloud-Hughes 2011

### Free Plant Giveaway

**Thelocactus bicolor**
Native to the Chihuahuan desert of Texas and northern Mexico, Thelocactus bicolor has stunning pink to magenta blossoms. Regular watering throughout the spring and summer can keep plants in nearly continuous flower.

# Tucson Cactus and Succulent Society

## Thursday July 7, 2011 at 7 pm

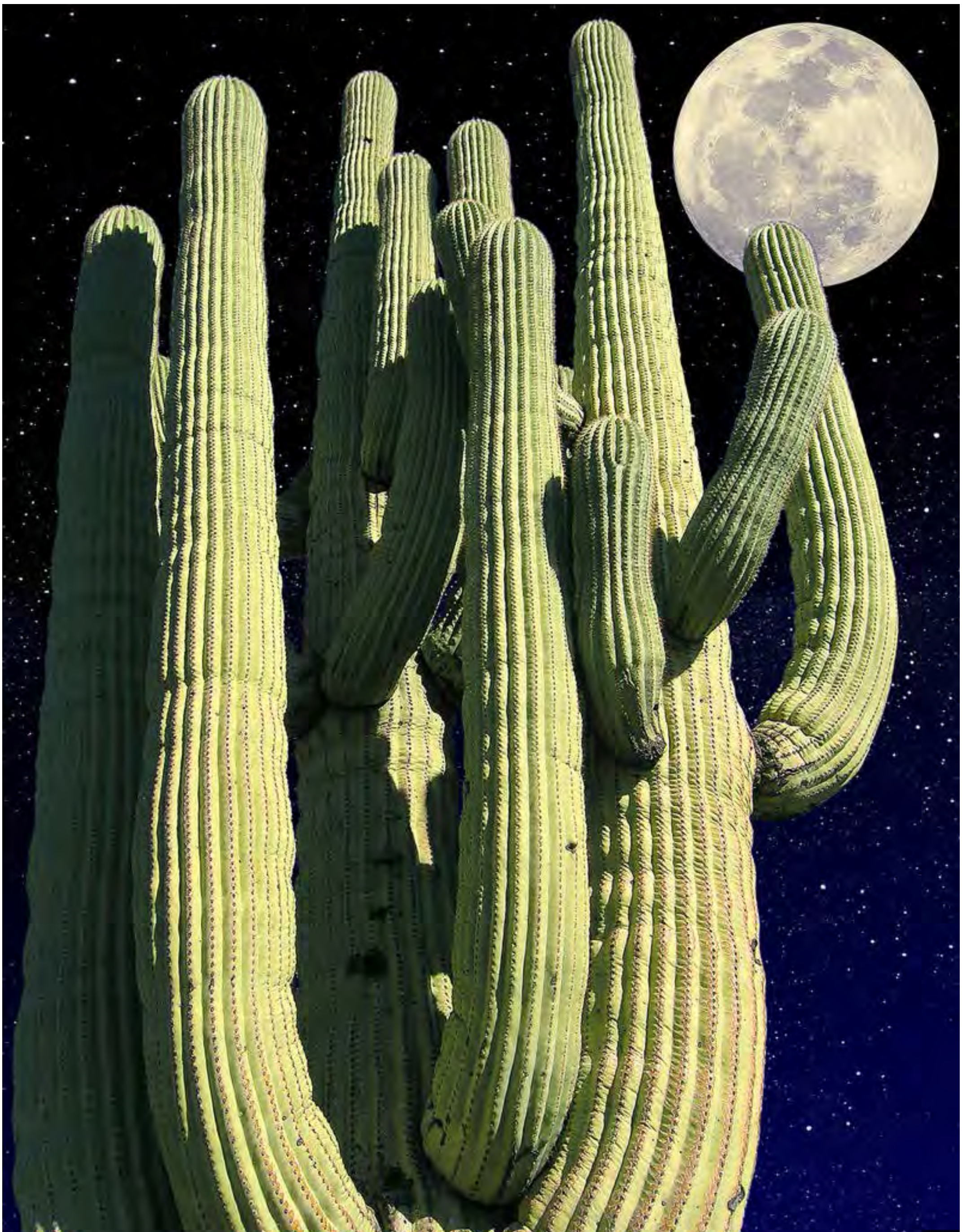
## "The 2010 Saguaro Census"

### Presented by Don Swann

Don Swann will present the results of the 2010 Saguaro Census, a once-a-decade "citizen science" program that **Saguaro National Park** uses to monitor its signature plant. He will also speak about the ecological history of the park, which was established in 1933. During the 1940s, large numbers of large saguaros were observed to be dying, and declines in the Rincon Mountain's "Cactus Forest" continued for several decades. Since the 1970s, large numbers of young saguaros have survived, and the number of saguaros in the park has increased. Don's presentation will focus on the census, recent saguaro mapping projects at the park, the relationship between saguaros and climate and Saguaro National Park's 2011 **BioBlitz**.

Don Swann is a biologist at Saguaro National Park. He has an MS in Wildlife Biology from University of Arizona, where his thesis was on long-term monitoring in national parks, and a BA in Geology-Biology from Brown University. Don has worked in state and national parks in Arizona and New England, and was an interpretive ranger for many years. He has been at Saguaro since 1993, and his duties include monitoring of plants, animals, and water; education about natural resources; and collaborative conservation and research projects such as the Saguaro Census and BioBlitz.

This program should be seen by all as the focus is on one of the representational plants of our state. The TCSS made contributions to this research project so you as a member should see what was accomplished. Please come and join all of us for this special presentation and please bring a friend.



© Copyright Protected 2007 Photo Illustration by Vonn Watkins

## Free Plant Giveaway

**Saguaro**

As in nature, young saguaros need a nurse tree in cultivation to avoid sunburn and frost damage. Plant in the ground on the south side of a native mesquite, acacia, palo verde or similar tree to provide filtered / dappled light .

# Tucson Cactus and Succulent Society

## Monthly Meeting

## Thursday August 4, 2011 at 7 pm

## "What is a Succulent?"

### Presented by Mark Dimmitt

Photo by Nathan Wong, 2008

The title of Mark's program presents us with something to truly think about and it may be a question that many people have a hard time answering. Be sure to mark your calendar and make sure you attend this important and informative program presentation. Your friends and anyone interested are also welcome to join us.

Mark Dimmitt, Ph.D. formally majored in zoology throughout his college career, but also studied botany and ecology extensively. After earning his Ph.D. in Biology from the University of California at Riverside, he spent four years as a vertebrate ecologist in the California Desert District of the Bureau of Land Management. He moved to Tucson in 1979 to become Curator of Botany at the **Arizona-Sonora Desert Museum** and in 1997 he became the Director of Natural History. This position allowed him to conduct field research and share oversight of the scientific aspects of the museum's operations. Mark has published numerous popular articles on horticulture (he is an avid plant hybridizer) and several articles on desert ecology. He is also the creator of the 'Desert Museum' hybrid palo verde. He is well known for his hybrids, especially his study of the adenium and various cacti. In 1999, he received the Friend Award from The Cactus and Succulent Society of America for his outstanding accomplishments with cacti and succulents. He has also co-authored a special Adenium book, "Adenium: Sculptural Elegance, Floral Extravagance".

## Free Plant Giveaway

**Echinocereus viridiflorus**
A green flowered hedgehog cactus, its native habitat includes New Mexico, Texas, and northern Mexico. Bright red and white spines contrast nicely with the bright green flowers that ring the stem in late spring.

# Tucson Cactus and Succulent Society

## Monthly Meeting

## Thursday September 1, 2011 at 7 pm

## "Cultivation of Boswellia"

### Presented by Jason Eslamieh

Boswellia rivae

Boswellia is probably best known as frankincense, and is well known within the family Burseraceae.

Jason will cover a wide range of topics including history, the species, cultivation, hybridization and staging. The presentation is geared toward less emphasis on the general cultivation but more discussion on individual species. The intent is to present all nineteen species in the genus showing habitat photos as well as cultivated plants, and to share a brief propagation method specific to each species.

Jason is part owner of the **Miniatree Garden**, a Tempe nursery whose primary focus is on the Burseraceae family with an emphasis on the Boswellia, Bursera and Commiphora species. He was intimately involved with the arboretum at Arizona State University and spent twenty years introducing a diverse group of species on the main campus which ultimately received "arboretum" status. In short, one could say that Jason is passionate about "plants" either in habitat or in cultivation.

Please invite your friends and anyone interested to join us for a great program, meet Jason and enjoy a discussion on the Boswellia.

## Free Plant Giveaway

**Agave**

Various species of frost hardy agave, grown by Gene and Jane at Plants for the Southwest, will be available to those members that stay for the complete meeting on September 1st.

# Tucson Cactus and Succulent Society

## Monthly Meeting

## Thursday October 6, 2011 at 7 pm

## "The Succulents of Mojave County"

### Presented by Jan Emming

Ferocactus cylindraceus and Cylindropuntia multigeniculata, Meadview AZ

Northwestern Arizona is a place that is not typically on the radar of cactus and succulent enthusiasts, although the diversity of the region is fairly high with at least 40 to 45 different taxa. On most maps showing human-created features, the region registers as a blank space, with relatively few towns and roads. This does not mean the area is devoid of beautiful scenery and fascinating plants, some of which are endemic. It is in NW Arizona that the ecological transition zone between three of America's major desert regions occurs - the Sonoran, the Mojave, and the Great Basin/Colorado Plateau all converge here, and each one contributes unique elements to the flora of the area. This program will feature the majority of the succulents to be found in this diverse and strikingly beautiful, less-traveled region of our great southwestern deserts.

We're waiting for the bus to come by.

Jan Emming lives in the small town of Yucca, located in the far northwestern reaches of Arizona where the Mojave Desert intergrades naturally with the Sonoran Desert. In 1999 he started Destination:Forever Ranch and Gardens, a combination botanical collection and sustainable-living experiment on 40 acres set in the southwestern foothills of the Hualapai mountain range. After 11 years of work, Jan is about ready to complete his first residential structure, a 600-square foot guest house, and move permanently onto the D:F Ranch property for the first time. He has learned that cows will not eat papercrete. He also expects that major progress can finally be made on the horticultural aspects of the property and gardens, since living there full-time will finally enable him to deal adequately with the legions of gnawing rodents that inhabit the wilderness, causing tremendous plant mortality unless closely monitored. In the desert, it seems that everything is always looking for a meal.

If you want to attend an excellent program from one of our Mojave County members and hear about Arizona's northwestern cacti and other succulents, please join us for this presentation. Also, your friends are welcome!

Unusually tall 2.5-foot high many-headed (cottontop) barrel cactus, Meadview AZ

### Free Plant Giveaway

The free plants will be a surprise.

# Tucson Cactus and Succulent Society

## Monthly Meeting

## Thursday November 3, 2011 at 7 pm

## "Preserving the pitaya reserves: Challenges from Sonora."

### Presented by David Yetman

Dave in Peru with a Calymmanthium--the evolutionary precursor of columnar cacti.

A few thousand hectares paralleling the coast of southern Sonora comprise a distinct habitat--coastal thornscrub--one of the world's richest columnar cactus habitats. It is also one of the most endangered. Beginning about fifteen years ago I began working toward preserving parts of it, especially seeing how quickly the forest was being plundered for firewood, trampled by cattle, and cleared for buffelgrass. Nongovernmental organizations in the Tucson area were instrumental in helping set up the preserves, but the political processes were more complicated than I imagined, and still are. Political and social blockages are quite different in Mexico from those in the United States. As I discovered, maintaining these precious habitats is like walking through unidentified minefields.

David Yetman is research social scientist and has been at the Southwest Center since 1992. He received his doctorate in philosophy from the University of Arizona in 1972. Yetman's research has been primarily directed towards the state of Sonora, its indigenous people, their history, and how they have incorporated native resources into their lives. His books include "Sonora. An intimate geography" (1996); "Scattered Round Stones. A Mayo village in Sonora, Mexico" (1998); "Guarijíos of the Sierra Madre. Hidden people of northwest Mexico" (2002); and "The Ópatas. In search of a Sonoran people" (2010). He has also written extensively on native uses of plants in Sonora. His Mayo Ethnobotany. Land, history, and traditional knowledge in northwest Mexico (2002, co-authored by Thomas R. Van Devender) combines ethnohistory and ethnobotany. His 2007 volume "The great cacti." Ethnobotany and biogeography of columnar cacti documents columnar cacti throughout the Americas, while a smaller work "The Organ Pipe Cactus" (2006) describes the natural history of the remarkable plant for which a U.S. Park Service National Monument is named. In addition, Yetman is author of numerous journal articles and book chapters. He frequently lectures on deserts, their people and their natural history. In addition to his writing, Yetman served for nine years as host for the PBS documentary television series The Desert Speaks and will host the upcoming PBS series In the Americas with David Yetman. He received an Emmy Award in 2007 for his documentary television work..

## Free Plant Giveaway

**Plants for the Southwest** is the source for this month's plants, an interesting selection of Lithops and Haworthia. Be sure to attend the November meeting to get your choice!

# Tucson Cactus and Succulent Society

## Monthly Meeting

## Thursday January 5, 2012 at 7 pm

## "The Survival of Salvaged Saguaros"

### Presented by Judy Mielke

The thousands of saguaros that ADOT (Arizona Department of Transportation) has salvaged and replanted in the course of highway construction provide a unique opportunity to study how well these giants of the Sonoran Desert survive the transplant process. Judy Mielke, Senior Landscape Architect with Logan Simpson Design, who was contracted by ADOT to conduct a research project on saguaro transplanting, will describe the project's methodology, results, conclusions, and recommendations. Judy also will discuss another research project conducted for ADOT, to evaluate a technique for improving survival rates of ironwood trees salvaged under "winter dig" conditions.

Judy Mielke is a senior landscape architect with **Logan Simpson Design** in Tempe. She is also a Certified Arborist and horticulturist, with a Bachelor of Science degree in horticulture from Washington State University and a Master of Environmental Planning degree from Arizona State University. Judy's interest in plants was apparent at a young age, as she helped tend the family's vegetable and flower gardens on their wheat farm and cattle ranch in eastern Washington State, and soon asked for her own garden plot. Judy's Dad supported her interest in plants by building a greenhouse, and before long it was filled with foliage plants, cacti and succulents. As a 4-H club member Judy gave demonstrations at the county and state fair; one of her favorites was titled "Get Stuck On Cacti And Succulents."

A summer internship at Longwood Gardens in Pennsylvania between Judy's junior and senior year of college introduced her to the field of public horticulture, and after graduation from WSU Judy combined her interest in cacti and succulents with the desire to work in a botanical garden by interning at the **Desert Botanical Garden in Phoenix**. Fortunately for Judy, a horticulture position became available after the internship ended and she stayed on at the DBG for nine years.

Judy's current position at Logan Simpson Design, where she has worked for 14 years, enables her to straddle the fields of landscape architecture and botany. She has prepared landscape plans for a variety of projects ranging from schools to parks to freeways and her specialty is native plant salvage and restoration. Judy also has conducted numerous native plant inventories, rare plant surveys, and vegetation community mapping throughout Arizona, Nevada, and Utah. She is author of the award-winning book Native Plants For Southwestern Landscapes and has served as Associate Professor in ASU's College of Architecture and Environmental Design teaching Arizona Native Plants and Landscape Plant Materials.

This evening she will tell us about the research on saguaro salvage and transplant survivability that she and Logan Simpson Design conducted for ADOT.

## Free Plant Giveaway

**TBD**

# Tucson Cactus and Succulent Society

## Monthly Meeting

## Thursday February 2, 2012 at 7 pm

## "Beyond Ouch!: Integrating Cactus into Residential Garden Designs"

### Presented by Scott Calhoun

Five years ago, while working on his book, Designer Plant Combinations, Tucson-based designer and author Scott Calhoun was shocked to learn that in most gardens in the United States, cactus were anything but standard issue. In fact, the bulk of home gardens he visited contained exactly zero species of cactus.

It occurred to Calhoun that perversely, being thus overlooked made cactus one of the most enticing plant families for those hoping to veer from the mundane toward the sharp side of gardening. In his own design practice, he tantalized clients with visions of "cactus flowers heavily scented of honey and chocolate; hedgehog species with fruit that tastes like strawberries; and lime-green columns whose skin feels like melted wax."

Calhoun's passion for including cactus in home landscapes resulted in his latest book, The Gardener's Guide to Cactus: The 100 Best Paddles, Barrels, Columns, and Globes, which he will be officially launching at the TCCS February meeting. Scott Calhoun is the author of six gardening books that address the unique aspects of gardening in the arid Southwest. His first book, Yard Full of Sun, was awarded the 2006 American Horticultural Society Book Award; his second title, Chasing Wildflowers, won the Garden Writers Association 2008 Silver Book Award. Scott writes a monthly garden column for Sunset magazine and has written for nearly every national gardening magazine. He runs Zona Gardens, a design studio, writes, lectures across the United States. When he is at home, he can be found working in his garden, hiking, and reading a good book. Find out more about Scott at **www.zonagardens.com**.

Scott's new book will be available and you can have your copy signed just after he completes his program presentation. Make sure you join us for a fun night with an excellent program, great food, books, free plants and much more!

## Free Plant Giveaway

**A surprise!**

# Tucson Cactus and Succulent Society

## Monthly Meeting

## Thursday March 1, 2012 at 7 pm

## "The Beautiful, Prickly History of The University of Arizona"

### Presented by Tanya Quist

Dr. Tanya M. Quist, Assistant Professor in the School of Plant Sciences and Director of the UA Campus Arboretum

The **University of Arizona** is the oldest, continually-maintained, public green space in the state. It is home to almost 8000 trees and many shrubs, cacti and succulents from arid regions throughout the world. The collection has evolved through the combined efforts of researchers, instructors, staff and public contributions and advocacy over the UA's more than 125 year history. The landscape features a spectacular array of mature desert-adapted plants but also highlights the diversity of life possible in the desert through the many microclimates a campus provides. To preserve and enhance cultural and historical preservation, and to ensure continued ongoing sustainability research and education, the **Campus Arboretum** was established. In 2002, the campus was officially dedicated and accepted as a member of the American Association of Botanical Gardens and Arboreta. Although few cactus are yet to be included in the inventory, the Campus Arboretum owes its beginnings to these prickly friends. These include the original cactus interpretive garden west of old main (ca 1900) and the centerpiece of the once expansive cactus garden east of Old Main, now known as the **Joseph Wood Krutch garden**. The UA Campus Arboretum continues to preserve historical and culturally significant specimens and is committed to research and educational programs promoting conservation and environmental sustainability.

Dr. Tanya M. Quist earned a PhD from Purdue University Dept. of Horticulture and Landscape Architecture in the Center for Environmental Stress Physiology and two additional degrees in Horticulture Science and Landscape Management. She teaches courses in Sustainable Landscape Management and Plant Propagation at the UA in the School of Plant Sciences and serves as the Director of the UA Campus Arboretum through Cooperative Extension in the College of Agriculture and Life Sciences.

This will be an excellent program to attend so please join us for a historical and prickly view of the Joseph Wood Krutch Garden at the University of Arizona. Ask questions, visit with friends, enjoy some great food have a excellent evening and always stay to get a free plant.

The Joseph Wood Krutch Garden at the University of Arizona, Tucson.

### Free Plant Giveaway

**TBD**

# Tucson Cactus and Succulent Society

## Monthly Meeting

## Thursday April 5, 2012 at 7 pm

## "Travels through Ecuador and Northern Peru, the Natal Area of the Family Cactaceae"

### Presented by Chuck Hanson

Chuck Hanson

This program will focus on the cactus and succulents of Ecuador and Northern Peru. It is surmised that the family Cactaceae arose in northern Peru and one species shown is presumed to be the most ancestrally basal member of the subfamily cactoideae. The cacti of Ecuador are poorly known and some of the taxonomic problems will be shown.

Chuck lived in Tucson for thirty years and founded **Arid Lands Greenhouses** in 1978. He moved to Iowa in 1995 and soon after, founded Orchid Renaissance, specializing in lithophytic and terrestrial orchids. He moved to the upper Amazon valley of southern Ecuador in 2008 with his wife Karen and 11 dachshunds, and has been studying and photographing the cactus and succulents of the area.

Espostoa frutescens, a native species found in Ecuador

## Free Plant Giveaway

**Hedgehog Heaven**

This month's free plants, door prizes and raffle plants include several Echinocereus species, including E. engelmannii, E. viridiflorus, E. dasyacanthus, and E. viereckii ssp. morricalii. Known for showy flowers, these species are cold hardy and their blossoms are an indicator that winter is over!

# Tucson Cactus and Succulent Society

## Monthly Meeting

## Thursday May 3, 2012 at 7 pm

## "Natural History Observations of Coryphantha robustispina, a jackrabbit cactus"

### Presented by Bob Schmalzel

(Photo Credit John Durham)

Bob will cover pollination by the cactus bees, fruit dispersal by jackrabbits and cottontails, seed burial by termites, and several other interactions with insects and mammals in southern Arizona.

Robert spent the early part of his career studying the seasonality and harvest of pollen by honey bee colonies in southern Arizona (USDA Honey Bee Research Center, Tucson) and western Panamá (Smithsonian Tropical Research Institute, Balboa). Upon returning to Arizona in 1993, he soon discovered that for most species of cacti, even those listed by the state and federal governments, very little - or nothing - was known about their natural history, including pollination, seed dispersal, seedling growth, causes of mortality, life span, and fecundity. Even today, the population sizes of most rare cacti have not been estimated. With small grants from Fish and Wildlife Service in the late 1990s, he set up a number of permanent plots to monitor growth and survival of Turks Head Cactus in the Waterman Mountains and on the Tohono O'odham Reservation. Since 1997 and as opportunity permitted, he has set up a number of plots to monitor Pima pineapple cactus in the Santa Cruz and Altar valleys. With the assistance of AmeriCorps, he set up about 15 80-acre Pima pineapple cactus plots in the Altar Valley in 2001-2003. He is wrapping up a study in the summer of 2012 on how the seeds of Pima pineapple cactus are dispersed. He continues to be interested in the spatial distribution of this plant, its pollinators, and herbivores.

Be sure to mark your calendar and come enjoy a fun evening with an excellent program, good food, free plants and more!


## Free Plant Giveaway

**Thelocactus bicolor**
Suitable for full sun or lightly filtered light, this species is noted for stunning showy flowers all summer long with regular watering.

# Tucson Cactus and Succulent Society

## Monthly Meeting

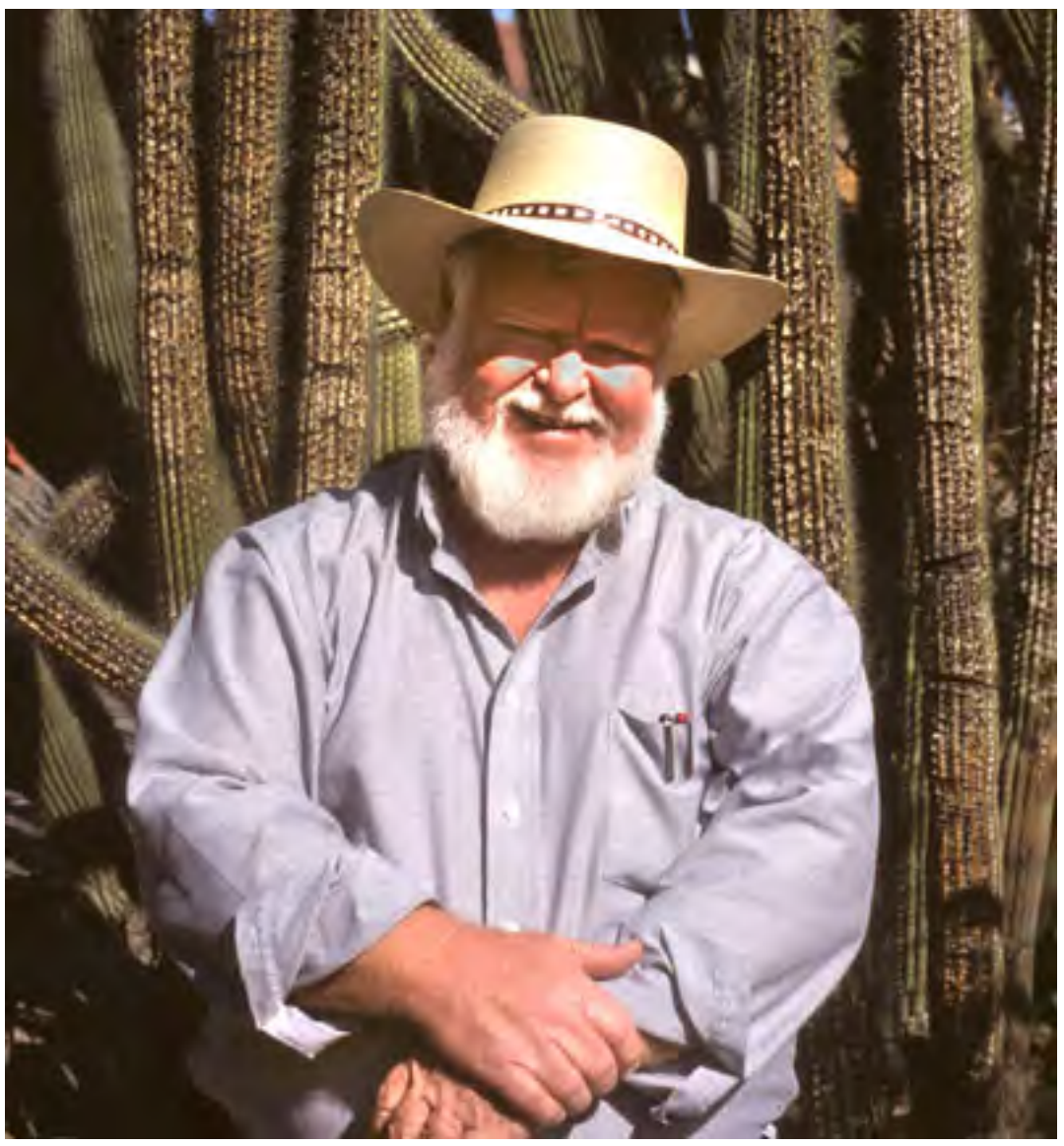
## Thursday June 7, 2012 at 7 pm

## "Searching for New Populations of Nichol's Turks' Head Cactus, Echinocactus horizonthalonius in Sonora, Mexico"

### Presented by Thomas R. Van Devender and Ana Lilia Reina-Guerrero

In June 2011, we found two Echinocactus horizonthalonius in a planter in Mazatán, Sonora. Mazatán is in central Sonora, 80 km east of Hermosillo, and 258 km south of the Arizona border. The Tucson Cactus and Succulent Society provided funds to learn the provenance of these cultivated plants and discover populations in nature.

The nominate subspecies of the Turk's Head Cactus Echinocactus horizonthalonius is widespread in limestone areas in the Chihuahuan Desert from southern New Mexico and western Texas south on the Mexican Plateau to San Luis Potosí. In his 1969 book The Cacti of Arizona, Lyman Benson described the western populations as Echinocactus horizonthalonius var. nicholii. In 1976, the variety was listed as an Endangered Species (USDI, Fish and Wildlife Service. 1976). Populations are known in Arizona from the limestone Koht Kohl Hills and Waterman and Vekol Mountains in the Arizona Upland subdivision of the Sonoran Desert. Another population is in Sonora in the Sierra del Viejo about 45 km SSE of Caborca, and 150 km S of the Arizona border in the Lower Colorado River Valley subdivision (Yatskievych and Fischer 1983, Paredes-A et al. 2000). It is not protected in Mexico primarily because the NOM-059-SEMARNAT-2010 legislation does not consider varieties or subspecies. The Mazatán area is distant from the known populations of Echinocactus horizonthalonius var. nicholii. The program will focus on the journey to investigate, follow information, and try to find the species in a new location.



Thomas R. Van Devender Is the Manager of the Madrean Archipelago Biodiversity Assessment program at Sky Island Allianace. He was the Senior Research Scientist at the Arizona-Sonora Desert Museum from 1983 to 2009 where he conducted research on a broad range of natural history activities. He has published well over a hundred research publications including journal articles, book chapters, and books on the cacti of Sonora, desert grassland, packrat middens and the paleoecology of the southwestern deserts, and the Sonoran desert tortoise. He is coeditor with Francisco Molina on a book entitled Diversidad Biológica del Estado de Sonora published by the Universidad Nacional Autónoma de México in Hermosillo, Sonora in 2010. He has a long-term interest in the flora of the Sonoran Desert Region, and has collected over 25,000 herbarium specimens, which are deposited into the herbaria at the University of Arizona (Tucson), Universidad de Sonora (Hermosillo), and many others. In recent years, he has provided photovouchers of cacti to ten herbaria in the United States, Mexico, and Europe. He has surveyed plants in many vegetation types in Sonora. He and his wife Ana Lilia Reina-Guererro have a special interest in the plants of La Frontera, the 100 kilometer zone in northern Sonora just south of the Arizona border, and in the Yécora area in the Sierra Madre Occidental in eastern Sonora. They have studied the ecology of the Chihuahuan Desert night-blooming cereus Peniocereus greggii var. greggii, the Cochise foxtail cactus Coryphantha robbinsorum, the false rainbow cactus Echinocereus pseudopectinatus, the El Trigo hedgehog Echinocereus lauii, and the choyita Mammillaria saboae var. haudeana.

Please make sure you have marked your calendar for this special program. Also, bring a friend or relative who would like to learn more about cacti.


Sign and church in Mazatán. Foothills thornscrub and view of Sierra de Mazatán from west of town.

### Free Plant Giveaway

Assorted agave and yucca from **Plants for the Southwest**.

# Tucson Cactus and Succulent Society

## Monthly Meeting

## Thursday July 5, 2012 at 7 pm

## "Travels in Africa and Arabia 8: The Hunt for Sansevieria in East Africa"

### Presented by Bob Webb

Sansevieria bhitalae

Traveling in East Africa is an interesting experience, to say the least. Most Americans seem to believe it is too dangerous to go there, but in our travels, we find it mostly to be filled with inconveniences, bribes, friendship, treachery, wild animals, and non-stop entertainment. Our recent trip, dedicated to hunting down species of Sansevieria, is representative of our travels in Africa and Arabia. We met three dedicated Sansevieria hunters with vastly different agendas, but all three are fascinated -- even consumed -- by this outstanding genus, which is far more than that Mother-in-Law's Tongue you see everywhere.

Taxonomically, the genus Sansevieria is a mess. This morphologically diverse genus spans the region from South Africa to southeast Asia, but the biodiversity hotspot is Kenya and Tanzania. We are working with Professor Len Newton of Kenyatta University in Nairobi to try and unravel the Gorgonian knot. We also are working with a molecular chemist to see if DNA can help solve some of the riddles this genus offers, but molecular data, while compelling, offers few answers and many more questions. Exciting new species are part of the norm with this genus as we travel into some of the most interesting parts of East Africa.

Bob has worked on land-use issues, landscape ecology and conservation concerns of the southwestern United States and Baja California for more than 35 years. For the past 17 years, he has worked with Mexican government scientists on plant conservation issues in Baja California centering on cirio, cardon, and other charismatic species that are iconic to the peninsula. He has a Ph.D from the University of Arizona in Geosciences (1985) and has worked for the National Research Program of the U.S. Geological Survey for nearly 25 years.

Bob Webb has collected succulent plants for over 29 years. For his day job, he is a hydrologist with the U.S. Geological Survey in Tucson; however, he has worked as a plant ecologist in the southwestern United States and Baja, California for nearly 35 years. He's been traveling to the Arabian Peninsula and Africa since the mid-1990s and has visited Oman, Kenya, Socotra, Yemen and South Africa in search of succulent plants.

Bob has produced around 200 publications, including 12 books, with many more on the way. Several of these books are benchmark volumes on environmental change in the Mojave and Sonoran Deserts. Bob Webb and Toni Yocum are owners of **Arid Lands Greenhouses** at 3560 W. Bilby Road Tucson AZ 85746 Phone: (520) 883-9404.

Bob's programs are always a must see for everyone. Please bring your friends and anyone interested in an inside look at these amazing plants that are seldom given the attention they deserve.

## Free Plant Giveaway

A selection of Ferocactus pilosus and Ferocactus latispinus.

# Tucson Cactus and Succulent Society

## Monthly Meeting

## Thursday August 2, 2012 at 7 pm

## "Survey of the Genus Mammillaria"

### Presented by Scott McMahon, Cactaceae Collections Manager
### Desert Botanical Garden, Phoenix, AZ

Mammillaria ernestii

Scott will present a survey the Genus Mammillaria that will include a brief history of the genus, descriptions of various plants and also add some of the details about classification. Scott will show lots of pictures and offer questions after his program presentation.

Scott received his Masters degree in Plant Protection from the U of A in 1977 and worked for 5 years in the agrichemical industry in Arizona and Southern California. Scott's father was a commercial landscaper, and Scott gained valuable experience in landscape design, installation, and maintenance working for him on and off over the years. Scott has also worked in the electronics industry as a technician and has held a K-8 elementary teaching certificate. Scott is a member of the Cactus and Succulent Society of America and also of the local affiliate, the Central Arizona Cactus and Succulent Society, where he served two terms as President. Scott started with the **Desert Botanical Garden** as their arborist and became a Certified Arborist a year later. Scott's current duties include caring for the Garden's extensive cactus collection, including numerous succulents from other families. Scott is an instructor in the Desert Landscaper School, teaching classes in both English and Spanish on desert trees, the Cactus Family, and on other succulents. Scott's ability to speak Spanish has also enabled him to participate in workshops on desert landscaping in Mexico.

Please join us in welcoming Scott back to the Tucson. He has always presented us with excellent programs and information so please bring a friend and enjoy an excellent program, great food, free plants and much more!

**Scott would like anyone that may have special Mammillaria questions to bring in a plant or suppy a photograph.**

Mammillaria pilensis

Mammillaria fraileana

## Free Plant Giveaway

Various species of Mammillaria.

# Tucson Cactus and Succulent Society

## Monthly Meeting

## Thursday September 6, 2012 at 7 pm

## "Agaves"

### Presented by Greg Starr

### Author of: "Agaves: Living sculptures for landscapes and containers"

*Agave bovicornuta* near KM 254 east of Hermosillo

Greg will discuss the history, interesting tidbits and show some of his favorite plants from his new book which is titled Agaves: Living Sculptures for Landscapes and Containers.

Greg was born and raised in Tucson, Arizona, has grown to love the desert and its flora and fauna. He graduated from the University of Arizona in 1979 with a Bachelor of Science in Horticulture, and after working in the landscape industry he went back to the University to study Botany and further his education in horticulture. Greg worked for Warren Jones (co-author of Plants for Dry Climates and Landscape Plants for Dry Regions) and Dr. Charles Mason at the University of Arizona herbarium. Greg made his first foray into the world of collecting in 1979 when he traveled with Warren and Bill Kinneson to Texas where he saw firsthand, in habitat, the many plants he had only experienced in the nursery or landscapes. He emerged from the University in 1985 with a Master of Science in Horticulture with a special emphasis on botany.

He opened **Starr Nursery** in the summer of 1985, and has specialized in low water use plants for landscaping in southern Arizona. Greg has traveled extensively in Mexico and the southwestern United States to study the plants for their potential landscape use in desert regions of the world. He has also traveled to South Africa in search of potential landscape plants for southern Arizona.

Greg has written several horticultural articles for the journal Desert Plants. Topics have covered various groups of plants as well as botanizing in South Africa. He has also described a new species of Agave, two new species and a subspecies of Hesperaloe, and revised the genus Hesperaloe in a monograph published in the journal Madroño. Greg worked with Dr. Jose Angel Villarreal in describing Agave ovatifolia which has been dubbed Whale's Tongue Agave, a reflection of the incredibly wide leaves that sometimes double as water harvesting vessels. Greg's book, Cool Plants for Hot Gardens, was released at the end of April 2009. His second book, titled Agaves: Living Sculptures for Landscapes and Containers, was released in early May of 2012. He has taught Plant Biology and Plant Materials classes at The Art Center Design College in Tucson for their program on Landscape Architecture.

Greg spends most of his days tapping at the computer hoping another book will take shape, preparing PowerPoint presentations and tending to Starr Nursery, specializing in Agaves and related plants as well as other succulents and new introductions of perennials, flowering shrubs, and small trees from arid and semi-arid regions around the world. He and his four legged pal Nikki spend many hours in the nursery potting up Agaves and other cool plants, chasing rabbits, and napping on the soil pile.

Please join us and invite your friends to this excellent program. Enjoy some great food, free plants, and the multitude of others who love to talk about cactus and succulents.

*Agave ovatifolia*

*Agave shawii* 8 miles north of Colonet

### Free Plant Giveaway

TBD

# Tucson Cactus and Succulent Society

## Monthly Meeting

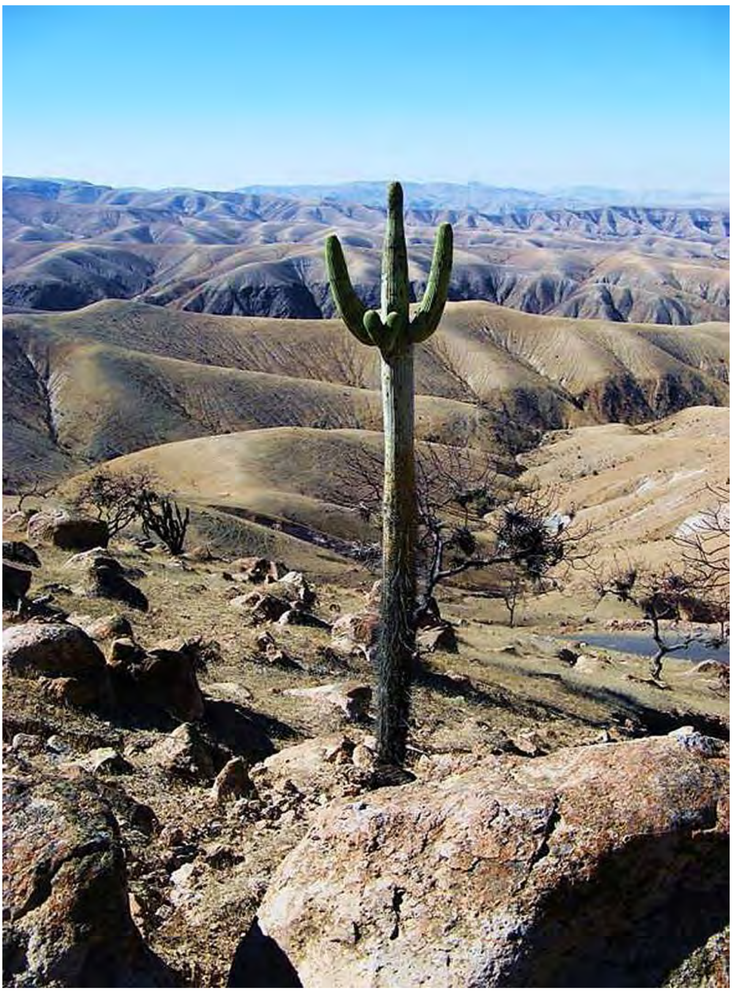
### Thursday October 4, 2012 at 7 pm

### "Peru - Land of the Inca, Land of Cacti"

**Presented by Mark Muradian**

This program, titled "Peru, Land of the Inca, Land of cacti" was taken in September of 2010. Starting in Chiclayo, and ending in Cuzco, we travelled by bus to many habitats, sometimes on roads no bus should ever attempt to drive! This program is a video presentation, with all the sounds and motion to help the viewer feel as if they are there. With the optional fly over of the Nazca lines and the mandatory visit to Machu Picchu, this was an exciting trip to be on. I have been in the cactus hobby close to 30 years and have been making pottery for some 17 years, and am a third-generation family farmer in the central valley, farming some acreage since 1915.

Mark will be bringing his special pottery and will have it presented for sale. This will be a video program presentation and should be a really special event that is quite different from all others. Be sure to come and view this special program, enjoy excellent food, win some choice plants and also stay and get your FREE plant at the ending bell.



### Free Plant Giveaway

A variety of cacti native to Peru and
South America will be offered this month.

# Tucson Cactus and Succulent Society

## Monthly Meeting

### Thursday November 1, 2012 at 7 pm

### "Cacti & Succulents the Rocky Mountain Way"

**Presented by Marcia Tatroe**

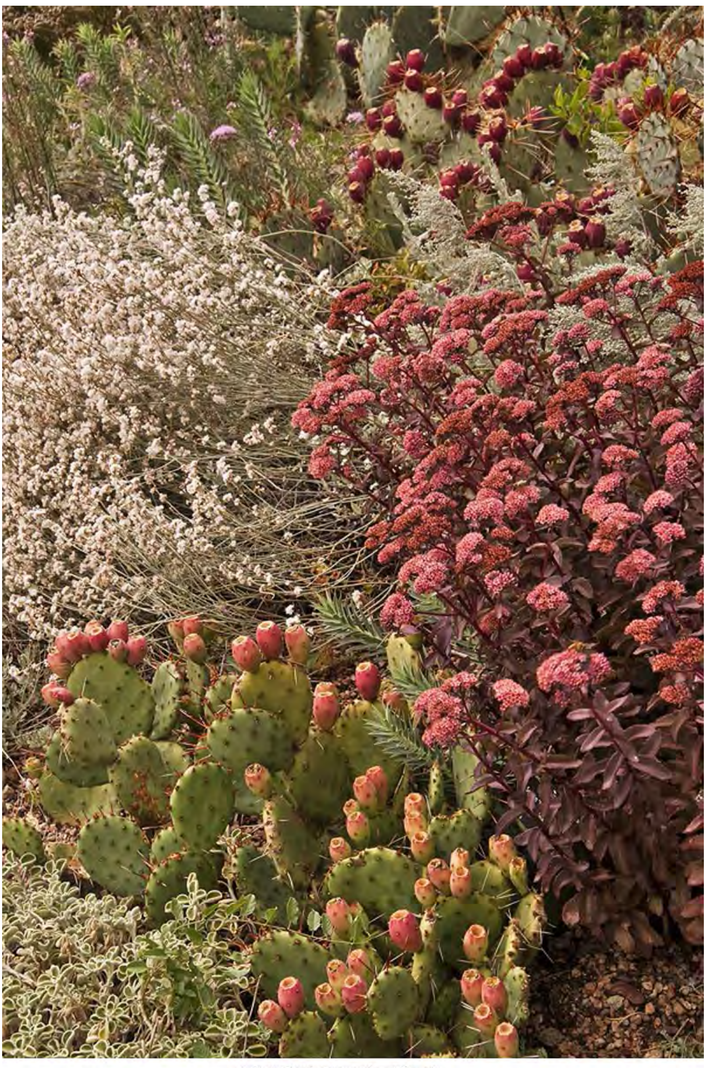
Sphaeralcea coccinea and cacti

Coloradoans grow many of the same cacti and succulents familiar to Tucson gardeners. But frost eight months of the year, hot summers and dry winters have fostered an entirely new garden paradigm. In Denver a trunked yucca grows alongside a fernleaf peony, or in another garden across town, next to a dwarf peach and a tall garden phlox. The Colorado gardener's willingness to incorporate new ideas without discarding the old has created a synergism between traditional garden design and the amazing diversity of plants that thrive in a high plains environment. The resulting gardens do not resemble anything heretofore - a style found only in the Mountain West.

Author of best-selling Perennials for Dummies, Marcia Tatroe writes the monthly "Mountain Garden Checklist" for Sunset Magazine, a weekly gardening column in The Denver Post, and is a frequent contributor to Colorado Gardener and other gardening publications. She has been gardening in Centennial CO for 25 years. Her garden has been featured in numerous books, magazines and nationally televised gardening shows. She lectures throughout the West focusing on garden design, perennials, xeriscape, and incorporating native plants into gardens and landscapes. In her most recent book, Cutting Edge Gardening in the Intermountain West, she advocates using drought-tolerant and native plants and indigenous materials to create a gardening aesthetic unique to this region.

This is our final speaker program for 2012 so please join in and welcome Marcia Tatroe as our guest on November 1. We will surely enjoy an excellent program, great foods, FREE plants and much more.

Yucca rostrata, fernleaf peony and catmint



Sedum 'Purple Emperor' and Opuntia

**Free Plant Giveaway**

An exciting assortment of winter-flowering
mesembs from South Africa will be
available for free plants, raffle and door prizes.

# Tucson Cactus and Succulent Society

## Monthly Meeting

## Thursday January 3, 2013 at 7 pm

## "The Road to Singapore"

### Presented by Val Little with Mark Dimmitt and Gene Joseph

*Aerial view of the Cloud Forest and Flower Dome, Gardens by the Bay, Singapore*

Trained as both a Landscape Architect and an Anthropologist,Val Little is best known as the Director of the Water Conservation Alliance of Southern Arizona. A long time traveller and plant geek, Val attended the opening of the new, Gardens by the Bay, botanic garden in Singapore last summer. This One Billion Dollar garden is the new home to many plants grown right here in Tucson by our local plant legends (Mark Dimmitt, Jane Evans, Gene Joseph, Dan Bach, etc.) These specimen plants have been integrated with the over 700,000 plants that make up this tough-to-describe, twenty-first century garden. Come share the travel experience of these plants as they are prepared to travel, and see the opulence of where they now live and are seen daily by thousands.

Be sure to place this program on your calendar as a "must attend" for the new year! This will be a special program that everyone should truly enjoy. Come and experience the program, find conversation with the multitude of cactus and succulent fans, ask some questions, have some great refreshments and truly enjoy an excellent start to 2013.

*Supertree Grove, Gardens by the Bay, Singapore*

*Baobab and Bottle Tree Garden, Flower Dome, Gardens by the Bay, Singapore*

# Tucson Cactus and Succulent Society

## Monthly Meeting

### Thursday February 7, 2013 at 7 pm

## "Rarely Seen and Rarely Found Native Cacti and Succulents of Arizona"

### Presented by Peter Breslin

Most well known for larger, charismatic flora such as the Saguaro, the Arizona deserts are also home to some of the smallest, rarest and hardest to find cacti and other succulents in existence. For the past several years, Peter Breslin has been traveling into many of the obscure locales of Arizona from his home base of Tempe, searching out the least well known, marginal, rare and endemic cacti of the state. From Peniocereus striatus in Tohono O'odam country to the vast expanses of the House Rock Valley and Kaibab Plateau areas, from the Mojave County transition zones to the Mojave Desert to the far southeastern transitions to the Chihuahuan Desert, Peter has found and photographed many of these elusive, cryptic cacti and succulents, not often seen in habitat except by luck or after a long search. His presentation will feature dozens of photos and a lot of information on the plants and their habitats.

Peter teaches high school mathematics at New School for the Arts and Academics, a charter school in Tempe, AZ. He has logged more than 80,000 miles on his 1991 Honda Civic in the past 7 years or so, searching out and photographing rare, endemic cacti in Arizona, New Mexico, California, Texas, Sonora and the entire Baja Peninsula. He is also a performing drummer and pianist, and he grows a collection of mostly North American cacti which now takes up every available square foot of sunlit space in his very small Tempe yard."

I hope that you will come to this special program presentation and find out what is truly out there in Arizona! Peter will present an excellent program that should truly be a challenge to those wanting to know more about the rare and unusual cactus and succulents of Arizona. We will enjoy Peter's excellent program, have some great food, win a few raffle plants and get a free plant at the closing bell!

**Do you know which three unusual Arizona cacti these (below) are and where they are found? Come to the February meeting and either brag about it or find out more!**

# Tucson Cactus and Succulent Society

## Monthly Meeting

### Thursday March 7, 2013 at 7 pm

### "The Agaves of Baja California: New Finds, Old Favorites"

**Presented by Greg Starr and Bob Webb**

The Agaves of Baja California have long fascinated botanists and hobbyists alike owing to their endemism, beauty, hardiness, and the landscapes that they evolved in. Howard Scott Gentry devoted a monograph to these Agaves, describing new species and speculating on their evolution on a long peninsula that once was separated into islands by shallow seas. Now, new species have been described, certain species groups have been revisited, and the time has come to revisit Gentry's assessment of the Agaves of this peninsula that is so iconic to the Sonoran Desert and succulent plants in general.

Bob Webb and Greg Starr have been evaluating the Agaves of Baja California for several years as part of larger, separate efforts. Webb has been mapping succulent plant biodiversity on the peninsula for 18 years and described Agave turneri, a new species from near Mexicali, in 2011. Starr has written extensively on the Agaves of mainland Mexico and recently turned his attentions to the Baja Agaves. Using the combined techniques of DNA analysis with good old-fashioned botany, Webb and Starr are coming up with a new framework for characterizing the 26 taxa on this peninsula, all but one of which are endemics.

This will be a special program presentation that you should not miss!. Please plan to attend and enjoy a great program, have some food, talk to those that love cactus and other succulents, win a few raffle plants and also, stay to the closing and take home a free plant!

Agave species nova Picachos 25

# Tucson Cactus and Succulent Society

## Monthly Meeting

## Thursday April 4, 2013 at 7 pm

## "Odd plants in odd places: Why an evolutionary and ecological theorist studies the natural history of cactus and succulents"

### Presented by Root Gorelick

Melocactus paucispinus with its tiny photosynthetic portion and enormous cephalium looks comical. If we had not been so familiar with these plants, we might think they were grafted or a hoax. Why would any plant evolve such a strange architecture, especially a genus that has been so successful, with representatives throughout most South American and Central American deserts, as well as the Caribbean?

Part I: **Plants in unexpected places**
Euphorbia antiquorum meters from the Andaman Sea, Stenocereus eruca on mainland Baja, Coryphantha dasyacantha in New Mexico and Ferocactus emoryi in Maricopa and Pinal Counties

Part II: **Surprising cactus biology**
Mammillaria grahamii without chlorophyll in Tempe and Gynodioecious cacti with showy flowers

Part III: **Cephalia are not adaptive**
Terminal cephalia: Melocactus, Discocactus, Backebergia, Arrojodoa, Stephanocereus
Lateral cephalia: Espostoa, Espostoopsis, Cephalocereus, Micranthocereus, Facheiroa
Branching cephalia and determinant growth of areoles: the odd case of Coleocephalocereus

While Discocactus catingicola is probably closely related to Melocactus, it is not quite as maladaptive as Melocactus. As can be readily seen here, unlike with Melocactus, photosynthetic portions of Discocactus can continue growing once a cephalium has formed.

**Root Gorelick** is an associate professor of biology, mathematics & statistics, and interdisciplinary studies at Carleton University in Ottawa, Ontario, Canada. He teaches plant form and function, evolution of sex, and Indigenous perspectives in ecology and evolution. His research is largely in evolutionary theory, mostly on evolution of sex and evolution of biodiversity, but is pleasantly surprised that many of his graduate students are working on climate change biology. Before Carleton and his PhD, Root worked and was trained in mathematics, physics, and economics. He also spent a year advising the Bush administration on their non-existent environmental policy. Root recently was appointed to a second term as editor of Haseltonia (send him your technical manuscripts). As is true with almost all decent academic botanists, Root has a brown-thumb. He only grows cacti that will survive with no care, except for weeding. Given that most years Ottawa has at least a week around -30Â°C, usually just a few weeks before he taps the surrounding sugar maples, these few species of Maihuenia, Pediocactus, Coryphantha, Cylindropuntia, and Opuntia have to be tough. Root usually commutes to work via canoe along the Rideaeu River, often seeing beavers, otters, muskrats, lots of birds, and many aquatic plants. Occasionally this entails over long stretches of frozen river . Sometimes this means showing up for teaching or meetings with a paddle in hand and really cold toes. While on sabbatical at the beach on the central coast of California, he is trying to make up for this lack of canoeing with the proxy of a stand-up paddle-board.

This will be a very special program presentation from the past and present editor of the CSSA Haseltonia Journal. Please plan to attend the excellent presentation that should be high on your list of things to do in 2013! Come and enjoy a fantastic program, have some food, talk to those that love cactus and other succulents, win a few raffle plants be sure to stay and take home a really special free plant!

Some specimens of Coleocephalocereus goebelianus defy expectations by branching from cephalia and only from cephalia. By contrast, when most other cephalium-bearing cacti branch, it is from photosynthetic parts, with the regularly accepted notion that cephalia cannot branch because (1) this would put too much mechanical strain on the stems and (2) areoles in cephalia have determinate growth, i.e. are no longer active.

Stephanocereus leucostele and other cacti with ringed-cephalia, however, show that Coleocephalocereus may not be as unique as usually thought because S. leucostele and Arrojadoa species usually only branch from cephalia. While this may not be maladaptive (pardon the double negative), it is also not obviously adaptive.

# Tucson Cactus and Succulent Society

**Monthly Meeting**

**Thursday May 2, 2013 at 7 pm**

## "The long-term monitoring study of *Echinocactus horizontahalonious var. nicholii*"

**Presented by Margrit Macintosh**



This program is about the long-term monitoring study of this one variety of Echinocactus that is native to only one small area of southern Arizona.

Margrit McIntosh grew up in Manhattan, spent many summers in the Berkshires of Massachusetts, and was a frequent visitor to the American Museum of Natural History in her young years. She has had a varied career and has a background in English Literature and Library Science. She received a Ph.D. in Ecology and Evolutionary Biology from the University of Arizona in 2001, and her dissertation was on the reproduction of barrel cacti, and the behavior of native solitary bees that specialize on cacti. Since graduating she has remained in Tucson working for the University as a web designer and programmer, while continuing to study cacti and cactus bees in her spare time.

Be sure to attend this special presentation and find out how and why these special studies can make a difference. Invite your friends, enjoy some great food, get a free plant and join the multitude of others in our organization who love to talk about cactus and succulents.

# Tucson Cactus and Succulent Society

## Monthly Meeting

## Thursday June 6, 2013 at 7 pm

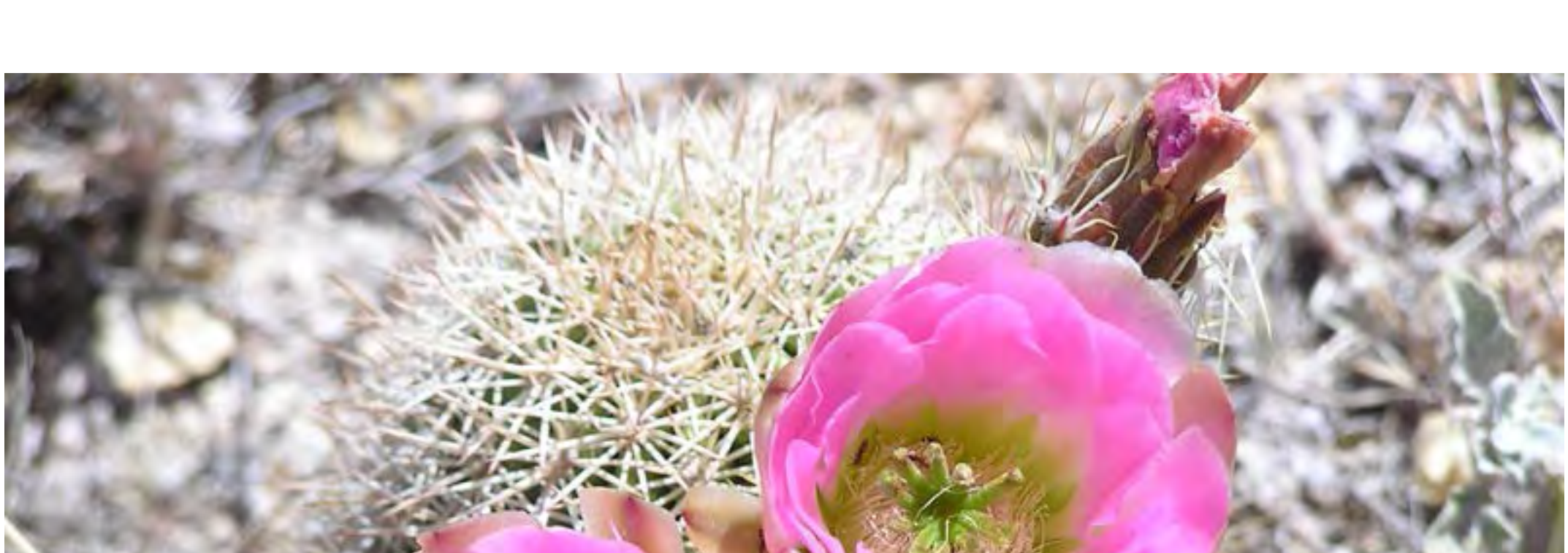
## "Hedgehog Heaven, the diverse *Echinocereus* of OroGrande."

### Presented by Rob Romero

The Jarilla Mountains near OroGrande, New Mexico are a special place indeed. A quite unassuming little range but the cacti within are quite spectacular. There are a few species of Echinocereus (hedgehog cacti) that grow here and they hybridize to create some incredible flowers of varying shapes and colors. In 2010, there had been good winter moisture in this region so the plants really put on quite a show.

Rob Romero has been a hobbyist cactus grower for about 20 years after a chance visit to the New Mexico C&SS show and sale in 1991. There he met Steven Brack of Mesa Garden and was officially bitten by the cactus bug. Originally from New Mexico, Rob moved to Tucson in 1998. In addition to growing cacti, Rob takes several trips a year to see the plants in habitat. His first visit to OroGrande was in 1992 and he kept going every year up until 2010. The program will focus on the 2010 trip and will show many different flowering plants to highlight the diversity of the population.

This will be an excellent program that everyone should really enjoy so please bring your friends. There will be lots of great snacks, food and more. We will have an excellent selection of raffle plants and you will even get a nice free plant to take home.



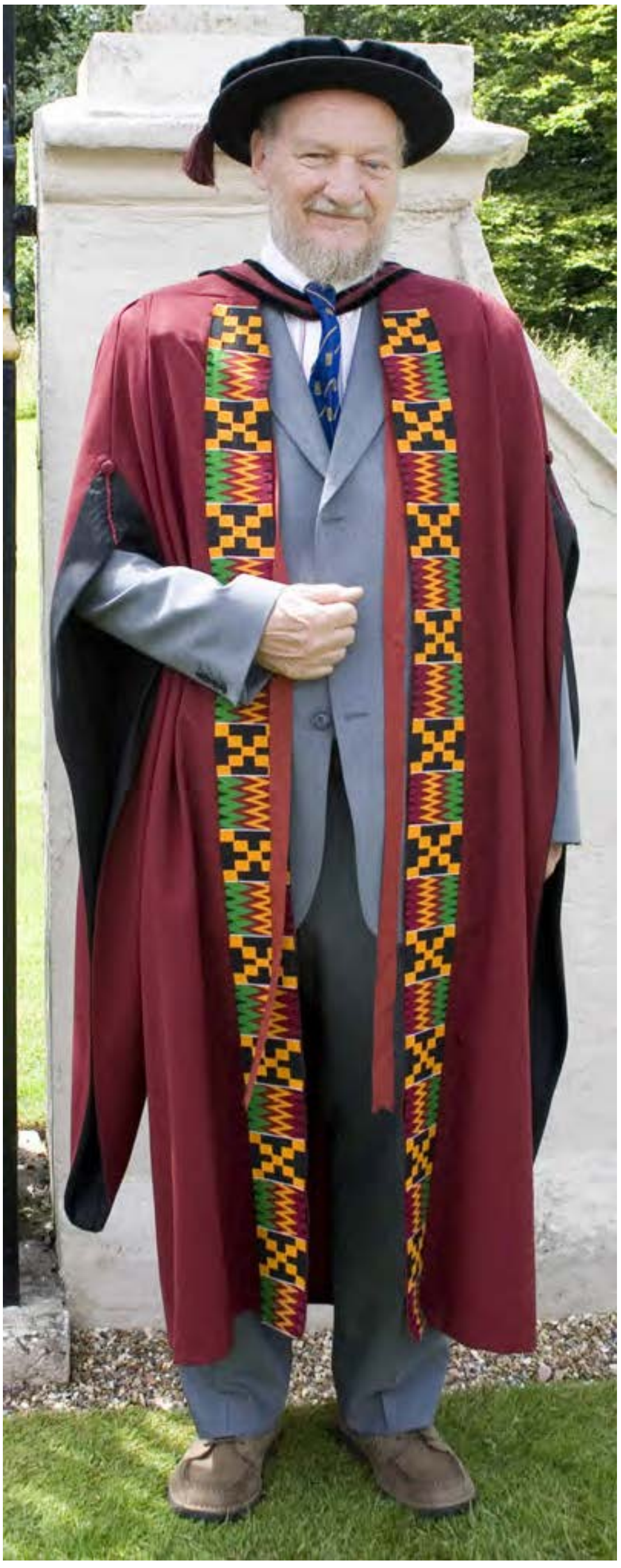
# Tucson Cactus and Succulent Society

## A Very Special Program Presentation Sponsored by Arid Lands Greenhouses and hosted by TCSS

### Friday June 14, 2013 at 7 pm

### "An Aloe Miscellany"

### Presented by Len Newton



Len's program will feature the Aloes he has named and Aloes named by others with interesting stories, primarily from West and East Africa. His program will be quite autobiographical in content and reflect his long career as a botanist interested in succulent plants from Africa. A movie by Gordon Rowley will also be shown. Gordon was the President of the British Cactus and Succulent Society, 1983 to 2003. The film is autobiographical and made for Gordon's 90th birthday party several years ago. The movie really covers much of the mid-20th century of cactus collecting in England and some of the more colorful characters involved, including Rowley himself (as well as Len Newton).

Len Newton
Highly censored biographical note.

Born in England a long time ago at the age of 0. Interested in living things at an early age, but too lazy to run after animals so became a botanist. Became interested in succulent plants whilst at secondary school, so studied botany at the university, eventually gaining his PhD on biosystematics of some tropical aloes. Since then I have persuaded several institutions to pay me a salary for continuing my schoolboy hobby, under the guise of being a botanist. After teaching in England for several years, went to Kumasi University in Ghana. Went to Ghana on a two-year contract as a Lecturer in Botany, and left 18 years later as a Professor. Returned to England to take up a Fellowship in the Botany Department of the Natural History Museum, in London, but after one year came to Kenya, as a Professor at Kenyatta University. Also an Honorary Associate at the Royal Botanic Gardens, Kew (UK). Main research interests are taxonomy, ethnobotany and anthecology. Have carried out field work in many countries, including Kenya, Tanzania, Djibouti and Yemen, and have described about 60 new species. President of the International Organisation for Succulent Plant Study (IOS) from 2006 to 2012.

The TCSS will be hosting this special program, so please mark your calendar and be sure to attend! Everyone is invited so please come, meet Len Newton and enjoy the evening.

# Tucson Cactus and Succulent Society

**Note the day change for the monthly meeting:**

**Tuesday NOT Thursday!!**

**Tuesday July 2, 2013 at 7 pm**

## "Crossing the Andes: Cactus and Succulents of Chile and Argentina"

**Presented by Guillermo Rivera**

The Andes, is the longest continental mountain range in the world and is the backbone setting for this trip. We will start in central Argentina, visiting the provinces of Cordoba, Salta, Jujuy, for their Gymnocalycium, Echinopsis, Parodia. The first cross to the west will lead us right into the Atacama dessert. The scenery combined with more than 15 species of Copiapoa will stun any cactus enthusiast. The spectacular crossing eastbound at 4700 meters will amaze anybody: aquamarine lakes, flamingoes, and volcanos reaching 6800 meters! Returning to Argentina we will see Puna bonnieae, Tephrocactus geometricus, and other cacti in the provinces of Catamarca and La Rioja.

Guillermo Rivera was born in Argentina and is the owner of South America Nature Tours (former Cactus Expeditions). His company is dedicated to the organization of tours throughout South America (Chile, Argentina, Brazil, Peru, Bolivia, Ecuador, Baja California and South Africa) with an emphasis on plants (bromeliads, cacti, and orchids), or birding. He is a former researcher at the University of Cordoba, Argentina. BS degree in Biology, University of Cordoba, MS in Marine Biology at Northeastern University and PhD in Botany at the University of Cordoba.

Be sure to keep Tuesday evening open and join us for a wonderful evening exploring the Andes of Chile and Argentina with our special guest, Guillermo Rivera. Also, stay and have some great refreshments, join in on excellent conversation, win something special and part with a free plant.

# Tucson Cactus and Succulent Society

## Thursday August 1, 2013 at 7 pm

## "Namibia - Drought to Deluge"

### Presented by Doug Dawson

*Aloe erinacea*

*Conophytum friedrichiae*

*Lithops ruschiorum*

Namibia, Africa, is always a fascinating succulent desert to experience. A new dimension of Namibia was shown during my May, 2013 trip. A severe drought occurred in 2012 followed by one of the most extreme wet periods in recent Namibian weather history. From January through April of 2013, it rained, and rained, ….. and rained. It would have been like living in Phoenix or Tucson and having a fall season with over three months of good rains most days. The rivers and dry arroyos all flooded. The Orange River, forming the Namibian/South Africa border was swollen for months, overflowing its banks dramatically. In the north of Namibia things were equally wet. Luckily when arriving in Windhoek, Namibia in early May, the timing was right. The skies opened up, rivers subsided and traveling to all the regions were safely conducted as planned.

Doug is a retired math professor and does extensive botanical travels to areas of the world where succulents grow. These include Mexico, Chile, Argentina, Yemen, Soccotra, and Africa as well as our own state of Arizona. In recent years, he has organized 8 botanical exploratory trips to South Africa and Namibia, camping on local farms and public areas by night and exploring the surrounding mountains and hills by day. To aid in his travels, he has a background in languages. These include German and French. Nowadays Afrikaans has become a much more useful language for him in rural South African areas.

For many years, one of his key interests has been seed-growing of cacti and succulents. Other interests are photography and PowerPoint presentations with succulent content. He has delivered many workshops and speaking engagements in Arizona and other states.

Doug's private plant collection has an emphasis on seedlings, lithops, other mesembs, Arizona natives, and other cacti. He is a member of the CSSA, Central Arizona Cactus and Succulent Society, and the Tucson Cactus and Succulent Society

Herero family

*Psilocaulon dinteri*

# Tucson Cactus and Succulent Society

## Thursday September 5, 2013 at 7 pm

## "Travels in Africa and ArabiaX: The Greatest Hits from East Africa"

### Presented by Bob Webb and Toni Yocum of Arid Lands Greenhouses

Bob holding a specimen of Sansevieria dawei at the type locality in Uganda

Bob Webb and Toni Yocum have travelled for 3 months in East Africa, mostly with Len Newton, renowned succulent plant taxonomist from Nairobi, and Bhwire Bhitala, a Sansevieria horticulturalist from Tanzania. Their trips have been focused on seeing and photographing succulent plants in the wild. The first trip started off focused on Aloes, but other plants were easily observed as well. Recent trips have focused on finding new species of Sansevieria and starting a revision of the genus. Bob and Toni have traveled to Kenya, Tanzania, and Uganda in their journeys, seeing a wide variety of landscapes in this highly variable region.

In this program, they will discuss their favorite 10 groups of succulent plants they have seen, arriving at a top 10 list of succulent plants they have observed in the wild. Ranking favorite finds from perhaps more than a thousand species seen in the wild is no easy task, but they sorted through their images to show everything from baobabs to small Euphorbias, from small succulent plants to arborescent Sansevierias. Included are several undescribed species that they have found with their friends, as well as some rare species observed well outside their known ranges.

Bob Webb and Toni Yocum are owners of **Arid Lands Greenhouses** at 3560 W. Bilby Road Tucson AZ 85746 Phone: (520) 883-9404. Bob and Toni have collected succulent plants for over 30 years. Recently, Bob retired as a hydrologist with the U.S. Geological Survey in Tucson; however, he has worked as a plant ecologist in the southwestern United States and Baja, California for more than 35 years. Toni retired as a registered nurse as well. They have been traveling to the Arabian Peninsula and Africa since the late-1990s and have visited Oman, Kenya, Tanzania, Uganda, Namibia, Botswana, Socotra, Yemen and South Africa in search of succulent plants.

Bob has produced around 200 publications, including 14 books, with many more on the way. Several of these books are benchmark volumes on environmental change in the Mojave and Sonoran Deserts. In his "retirement," he's focused on plant taxonomy and ecology, writing papers on Baja California and Africa.

Please be sure to come out and enjoy this fantastic program from our notable members, Bob Webb and Toni Yocum. It will really be a great way to begin the month of September. Be sure to bring a friend and also enjoy the great refreshments, win a plant and get a free plant at the end of the evening.

Toni looking at a large Kleinia odora

Bob, Bhwire and Len examine a Euphorbia quadrangularis

# Tucson Cactus and Succulent Society

## Thursday October 3, 2013 at 7 pm

## "The Long Term Effects of Cattle Grazing on a Population of Carnegiea gigantea in Saguaro National Park"

### Presented by Elizabeth Krone, Instructional Professional, ASU, Polytechnic Campus

The subject of this talk was also the subject of the Master of Science thesis Elizabeth Krone wrote, which you can read **here**.

Livestock-grazing, in particular cattle grazing, is a common use of public and private lands in western North America. As a result, the effects of grazing on both plants and animals are widely studied. Few studies, however, look directly at the long-term effects that cattle grazing may have on a particular species. The goal of this experiment was to continue research that began in 1988, to determine if the effects of cattle grazing are still seen in the age structure of two populations of saguaros at Saguaro National Park - Rincon Mountain District (SNP-RMD). The null hypothesis stated that enough time has elapsed since the cessation of grazing, and there is no difference in the age distribution of the saguaros of the two populations. The study area was comprised of a former fence line where a 20 year difference in cessation of grazing occurred. Belt transects were laid on each side of the fence line and height was measured for each saguaro encountered in a transect. Approximate age of the individual was then calculated using an age-height correlation for SNP-RMD. Statistical analysis showed no difference between the age structure of the two populations. After 34 and 54 years rest from grazing, the negative effects of cattle grazing on the retention and recruitment of saguaro seedlings have ended, and replenishment of the populations is now dependent upon factors such as temperature and precipitation. Other factors such as climate change, increasing fire frequency, encroachment by invasive species, and poaching are sources of concern and increased mortality for these and other saguaros.

Elizabeth Krone received her Master in Science degree from Arizona State University in May 2013. Prior to this, she graduated from ASU with a Bachelor's in Conservation Biology in 2008. She grew up in Phoenix surrounded by the beauty of the Sonoran Desert, and has fallen in love with it over the years. When given the opportunity to study the saguaro for her thesis project, she gladly jumped on the chance to learn even more about this iconic species. Elizabeth has continued her association with ASU and now teaches general Biology labs at the Polytechnic campus in Mesa. When not spreading her love of Biology to her students, she enjoys hiking, camping, fishing, and many other outdoor activities. She also keeps busy at home with a 2 year old son, husband, cat, dog, two hens, and a couple of fish tanks.

Please welcome our guest, Elizabeth Krone to our October meeting event. The focus of the program should be of great interest to all of us who love and enjoy the saguaro. Also, be sure to enjoy lots of great food, win some beautiful plants and get your FREE plant at the end.

# Tucson Cactus and Succulent Society

## Thursday November 7, 2013 at 7 pm

## "Madagascar 4"

### Presented by Kelly Griffin

**Aloe vaotsanda in Cape St Marie, southern most point in Madagascar**

The program I will present will be from my most recent trips to Madagascar in October - November 2012 and July - August 2013 just a little over two months ago. On the 2012 trip we traveled the country with Brian Kemble and Jeremy Spath to look primarily for Aloes but of course that was just the tip of the iceberg. The most significant find was a very large population of the supposedly very rare Aloe suzannae. We found at the very least, hundreds of plants. In part, the importance of this find motivated me to return and study that population in more depth. Some of the research will be documented in the CSSA journal by Jeremy Spath but most revealing is that it contradicts several important reported points.

1. Despite the claims in several journals and on the internet that there are fewer than 5 plants left, They do still exist in Madagascar in large numbers and of course there is very little recruitment in this population and the current farming practices and lack of protection are likely going to doom this species eventually.

2. Despite a reported bloom time of October and November in the southern hemisphere habitat, the plants were found in newly dehiscing seed in late October. Hundreds of plants that had flowered but with no sign what so ever of flowers so it is not in flower in southern Madagascar in October and November as stated in the recent work on the Madagascar Aloes The Aloes of Madagascar.

3. Despite the reports of this plant being nocturnally flowering from Wikipedia and in the notable books by Reynolds, the Aloes of Tropical Africa and Madagascar and Aloes, the Definitive Guide. This does not appear to be exclusively the case. In Reynolds book, he anecdotally refers to some flowers that had been removed from the plant that had opened at night and closed during the day. The fact that they had been removed from the plant could account for this. There are no other flowering details given. Wikipedia and the The Definitive Guide state that Aloe suzzanae is nocturnally flowering and perhaps pollinated by Bats and Lemurs without citation. The plants pictured herein where photographed mid day in habitat and show open flowers. In cultivation, they do indeed open during the day and are visited by bees.

4. While I can only slightly more than speculate as to pollinators, as I saw birds visiting the flower spikes and landing on them and I noticed that some seed had been parasitized by what appeared to be moth larva. I believe this plant is most likely bird and moth pollinated and certainly bat pollination is a possibility. Certainly a whitish flower color would be indicative of moth and/or bats. I think Lemur pollination sounds exciting but I doubt that this ever happens. Although I saw many lemurs in many different locations on this trip, I observed no Lemurs in the area where these plants grew.

More research to do and more details to come!

That was just part of the talk. We visited the Tsingy, limestone formations that are unworldly. The Pachypodiums on the second trip where in the best flower and form I have ever observed. The Aloe capitata were in full bloom as well also, notable were the Baobabs..... I will share what we saw and we saw a lot!

I have studied plants my whole life and I have had the great opportunity to travel to see so many of the worlds plants. Even so, there is so much to see. I currently work as plant development manager for a wonderful and well known company, Altman Plants based in Vista, Calif.

Please welcome Kelly Griffin back to Tucson and be sure to place this date on your to do list for the month of November! You don't want to miss this excellent program by one of the very best. This is the final program on the agenda for 2013 so be sure to attend and take a grand trip to Madagascar! We will also have some excellent plants for you to win as well as lots of good food, conversation, and yes, there will be free plants for those remain!

**Aloe suzannae.**

# Tucson Cactus and Succulent Society

## Thursday January 2, 2014 at 7 pm

## "A Digital Dozen: 12 Hints for Better Digital Plant Photography"

### Presented by Irwin Lightstone

Conophytum hanae

Faucaria tigrina

During the past dozen years, digital has gone from a novelty in a world ruled by film cameras to nearly totally supplanting film. In the course of this revolution, a bewildering array of cameras, techniques, software and equipment have flooded the market. In his program, Irwin seeks to make sense of this brave new world; and provide helpful, inspirational tips for your plant photography.

Irwin Lightstone's "UP CLOSE AND PERSONAL"perspective reveals a world easily overlooked. Using cutting edge digital technology, Irwin may merge as man as 100 nearly identical images, each with a different point of focus, creating final prints with unsurpassed clarity of detail, depth, and texture. With his command of lighting, intimate knowledge of his subject , and prodigious technique, Irwin's work reveals the mystery and wonder of a world not otherwise seen.

After 29 years practicing trial law, Irwin Lightstone closed his law firm to concentrate on his photography. Irwin is past president of the North Texas Cactus and Succulent Society, past president of the Texas Association of Cactus and Succulent Societies, and a vice president of the Fort Worth cactus and Succulent Society. He led numerous photographic seminars throughout the state including Houston, San Antonio, Austin, Fort Worth, Plano, Kerrville, McKinney, and Dallas and was a featured speaker at the Gulf States Photographic Conference. Additionally, he led programs sponsored by the Dallas Museum of Art, the Dallas Arboretum and the International Photography Hall of Fame and the Cactus and Succulent Society of America. His photography has won numerous awards and is often featured in the Cactus and Succulent Journal. Recently, many of Irwin's images of the artifacts of war in the book were featured in Exotische. Irwin was formerly the Director of Photography at the Wilson History and Center. He published Succulent Abstracts and Absurdities in black and white. Presently, he is working with Steven Hammer on the new mesemb book.

Irwin lives in Dallas with his wife, Robin, his two children, one cat and several thousand plants.

Conophytum armeiacvid harras

Conophytum maushanii

# Tucson Cactus and Succulent Society

## Thursday February 6, 2014 at 7 pm

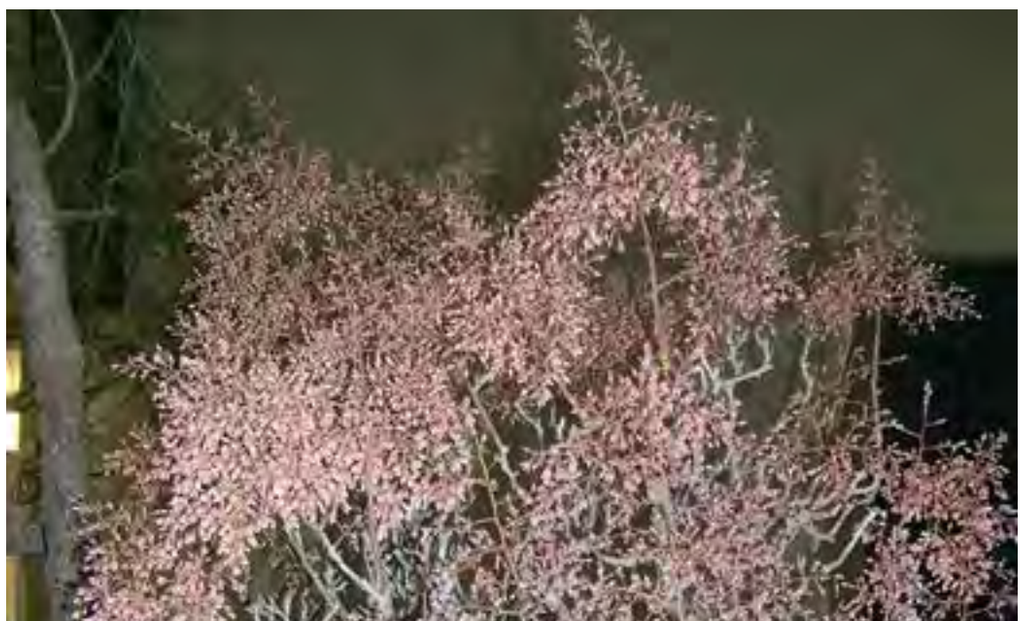
### "Creating Bonsai with Desert-adapted Plants"

**Presented by Tom Gatz**

Portulacaria afra, informal upright bonsai style

Tom will go over the basic steps of creating miniature living sculptures using desert-adapted leafy plants with an emphasis on those with succulent qualities including Ficus, Fockea, Bursera, Pachycormus, Portulacaria, Pelargonium, Adenium, and Operculicarya.

Tom is a retired wildlife biologist and an avid gardener. He volunteers as a horticultural aide and as a docent in the education department at the Desert Botanical Garden where he is certified as a desert landscaper. He is a member of the Tucson Cactus and Succulent Society, the Central Arizona Cactus and Succulent Society and the Phoenix Bonsai Society. He writes a monthly article for the DBG volunteer newsletter on various aspects of landscaping and desert gardens, with emphasis on cactus, succulents, birds and bonsai, as well as articles for the Central Spine. Tom's garden has been featured in Phoenix Home and Garden, The Sonoran Quarterly magazine published by the Desert Botanical Garden and The Humane Society's online magazine, All Animals and Modern Phoenix: The Neighborhood Network.



Pachycormus discolor in bloom

Ficus petiolaris, root-over-rock bonsay style

# Tucson Cactus and Succulent Society

## Thursday March 6, 2014 at 7 pm

### "From Road Kill to Rarity"

**Presented by Steve Martinez**

Steve Martinez  Photo by Marjan Donko

I started the cactus hobby in New York (Freeport, Long Island) in the early 1970s with a collection of dish gardens, A small greenhouse was to follow not too long after. It became a lifelong hobby. My home club is the Central Arizona Cactus and Succulent Society. I moved from New York to Phoenix about 30 years ago. I was President of the Club in 2010-11-12, at which time I termed out. I was Show Chair in 2008, and have been Sales chair for several years. I own a specialty nursery called Succulentia, located at the Farm at South Mountain (6106 S. 32nd St. Phoenix, AZ) which houses most of my collection as well as my sale plants. In recent years, I have been fortunate to be able to travel to numerous cacti and succulent habitats, including South Africa, Namibia, Argentina, and Baja (North and South). My companion on the Baja trip was Marjan Donko, a serious hobbyist from Slovenia, whom I met and became good friends with on our Argentina trip. With various warnings of danger to our lives and the risk of losing my new Silverado pickup truck (all unfounded in my opinion), we headed out in my wife's 2009 Hybrid Malibu and spent eight days driving along both paved and dirt roads in search of our beloved plants of interest. This presentation will be the story of the wonderful trip we took the week of Thanksgiving, 2012. Thank you, Steve Martinez

# Tucson Cactus and Succulent Society

## Thursday April 3, 2014 at 7 pm

## ARGENTINA

**"An exploratory trip to Northwestern Argentina"**

**Presented by Guillermo Rivera**

The presentation will cover the habitats of several provinces from central and Northwestern Argentina, from salt flats to high elevation Puna habitats. Gymnocalycium, Echinopsis, Parodia among many others will be well represented, as well as some bromeliads and some wildlife. Diversity and variability of plants in habitat within populations and between populations will be addressed. Importance of habitat knowledge will be discussed and its significance in plant taxonomy.

Guillermo Rivera was born in Argentina but currently residing in Florida. Owner of South America Nature Tours (former Cactus Expeditions), a company dedicated to the organization of tours for the last 12 years, throughout South America (Chile, Argentina, Brazil, Peru, Colombia, Bolivia, Ecuador), Mexico and South Africa, and Madagascar with emphasis on plants (bromeliads, cacti, succulent plants and orchids), and birding. Former researcher at the University of Cordoba, Argentina. BS degree in Biology University of Cordoba MS Marine Biology. Northeastern University. PhD in Botany University of Cordoba.

Please be sure to place this date on your calendar, come and join us for a trip to Argentina. Bring a friend and introduce them to our membership. Everyone is welcome.

# Tucson Cactus and Succulent Society

## Thursday May 1, 2014 at 7 pm

## "The Genus *Echinocactus*"

### Presented by Michael Chamberland

Echinocactus is a small genus containing some large barrel cacti. One species vies for the record of being the largest barrel cactus.

We'll look at what makes an Echinocactus different from those "other" barrel cacti known as Ferocactus. In this small genus some species are very rare in the wild and others are widespread across whole desert regions. Some species are seldom grown while the Golden barrel (*Echinocactus grusonii*) is likely the most common barrel cactus in cultivation, and might be in your yard.

Echinocactus includes plants which stand out in the dramatic landscapes of the Grand Canyon, Death Valley, Big Bend, and the Pinacate region of Sonora. Three kinds are native to Arizona and the nearest may be encountered in the Ironwood National Monument.

Michael Chamberland is the Director of Horticulture at the Tucson Botanical Gardens. He has also worked at other gardens including the Desert Botanical Garden, the US National Arboretum, and the Cheekwood Botanical Garden in Nashville. Michael holds a Master's degree in the advanced study of Echinocactus.

Be sure to attend this excellent program presented by our good friend Michael Chamberland. There will be refreshments, raffle plants and also, free plants for all who remain.

# Tucson Cactus and Succulent Society

## Thursday June 5, 2014 at 7 pm

## "Looking vs. Seeing"

### Presented by Michael McNulty



For the last ten years, Michael McNulty has been coming to grips with how Nature presents herself, visually. A nature photographer (among other things), Michael has been more or less methodically documenting the look and feel of the Sonoran Desert for some time; sample images can be reviewed on **his website**.

For this presentation, he will discuss the differences between how cameras see and how humans see, and will explore the differences between what we see, and what pollinators see, and why. And he will encourage us to slow down and think as we regard the cacti and succulents of the desert. All accompanied by a geyser of images!

Please be sure to come and see this excellent program presentation from one of our long time members. Michael will present his program and we will have some fantastic refreshments. Plus you can win some great plants and receive a free plant before you go home.

# Tucson Cactus and Succulent Society

## Thursday July 3, 2014 at 7 pm

### "Stuck on Texas Cactus"

**Presented by Steven Lovecky**

This presentation will focus on cacti from Texas. We will begin in Central Texas and move south near Corpus Christi, westward to Laredo, Zapata, Del Rio, and on to the Trans Pecos country. We will discuss most of the nearly one hundred species of cacti found throughout the state and even highlight a few other succulents of interest. The genera discussed will include Echinocereus, Mammillaria, Coryphantha, Escobaria, Echinocactus, Ancistrocactus, Ariocarpus, Echinomastus, Epithelantha, Thelocactus, Peniocereus, Lophophora, and others.

Steven Lovecky has been growing succulents in Central Texas for over 45 years. He has had the opportunity to attend many cactus and succulent conferences across the nation and has visited most of the cacti habitats in the US. His goal is to successfully grow and propagate these amazing plants and to share his successes and failures for the benefit of others. He has spent countless hours identifying and photographing cacti throughout Texas, guiding cactus clubs and individuals, sharing the beauty of these amazing plants. Steven is one of the founders of the **Central Texas Cactus and Succulent Society** and is a past TACSS (**Texas Association of Cactus and Succulent Societies**) president. He is a member of the **McLennan County Master Gardeners**, serving in various offices and speaking to gardening clubs in Central Texas. Steven and his wife Darlene live in Hill County, Texas where he is actively farming and ranching.

Please come and welcome Steven Lovecky to our club! He has prepared an excellent program on Texas cacti and everyone should come out and really enjoy the evening. There will be refreshments, raffle plants, great conversation, and also, free plants for those who remain.

# Tucson Cactus and Succulent Society

## Thursday August 7, 2014 at 7 pm

### "Survey of the genus Echinocereus"

**Presented by Scott McMahon**

*Echinocereus triglochidiatus v. arizonicus*

The genus Echinocereus, arguably is the prettiest in form and flower. There will be a brief description of the genus and its history and then photos of the different sections according to Hunt and Pilbeam. There will also be information about culture and pests. If some of the members would like to bring in some plants and talk about them, that would be great!

Scott is the Cactaceae Collections Manager at the **Desert Botanical Garden** (DBG) in Phoenix, AZ. The collection is one of the largest and most complete in the world. He received his Masters degree in Plant Protection from the University of Arizona in 1977 and worked for 5 years in the agrichemical industry in Arizona and Southern California. Scott's father was a commercial landscaper, and Scott gained valuable experience in landscape design, installation, and maintenance working for him on and off over the years. He has also worked in the electronics industry as a technician and has held a K-8 elementary teaching certificate. He is a member of the **Cactus and Succulent Society of America** and also of the local affiliate, the **Central Arizona Cactus and Succulent Society**, where he served two terms as President. He started with the Garden as an arborist and became a Certified Arborist a year later. His current duties include caring for the Garden's extensive cactus collection, including numerous succulents from other families. Scott is an instructor in the **Desert Landscape School**, teaching classes in both English and Spanish on desert trees, the Cactus Family, and on other succulents.

Scott has presented programs to our club on other occasions so please welcome him back. Learn a little more about this great group of plants, win a nice plant and even stay for a free plant when you go home. Please be sure to come and welcome Scott back to Tucson.

*Echinocereus rigidissimus v. rubispinus*

*Echinocereus pectinatus*

# Tucson Cactus and Succulent Society

## Thursday September 4, 2014 at 7 pm

## "Flora Oaxacana: A different perspective on the succulent and xeric plants of Oaxaca, Mexico"

### Presented by Andy Siekkinen

*Agave isthmensis*

*Echevaria lauii Hechtia Plumeri*

The landscapes and climate zones of the southern Mexican state of Oaxaca is large and diverse. Not surprisingly, the diversity of its flora is equally impressive. Andy will show many of the ecosystems found in the state as seen through the eyes of a bromeliad researcher (genera Hechtia and Tillandsia), but where you find one interesting plant you are almost always guaranteed to find others. Whether looking at the harsh desert or isolated rock formations in the tropical deciduous forests, there are many plants of the Cactaceae, Agavaceae, Crassulaceae, Bromeliaceae, and even Orchidaceae growing side by side (and sometimes on top of each other!).

After exploring Mexico and becoming amazed at the biological and cultural richness, Andy started leading small groups to experience these wonders first hand. While Andy's primary interest is in the plants, it was clear there is much more to see and do in Mexico. Food is always of interest and the different regional styles of cooking will never get boring. There is an active fostering of the arts, both modern and traditional. The cultural depth can be seen by the numerous and wonderful ruins to even the methods of regional artisanal crafts that continue to honor traditional methods.

Trained as a lab nanotechnology chemist, Andy has continued his earlier 'citizen scientist' biology work and applied it to the bromelaids of Mexico. Focusing on the oft ignored genus Hechtia, a group of bromeliads that are almost entirely found within Mexico. Along with the likely discovery of some new species, he has begun the molecular phylogenetic study of the genus using the Next Generation Sequencing methods--using the plants DNA to study the evolutionary history and relationships of these plants.

Andy Siekkinen is a shameless plant adventurer and researcher who loves exploring the natural world. Now organizing botanical and cultural adventures exploring the wonders of Mexico. Scientist, adventurer, researcher, tour guide.

Please be sure to come and enjoy an excellent presentation by an exceptional speaker. We will have lots of food at the break, excellent raffle plants and FREE plants upon departure.

*Hechtia isthmusiana*

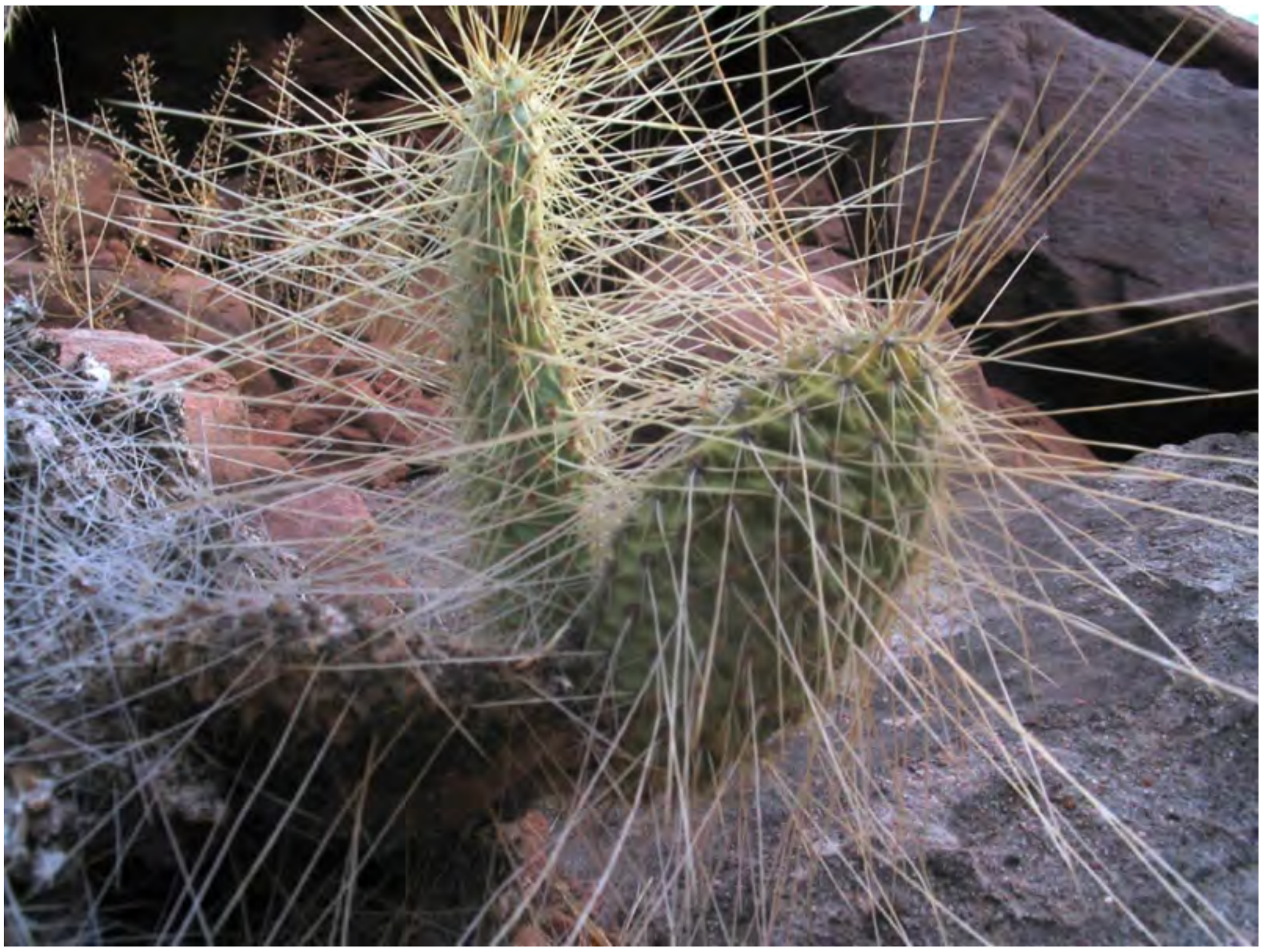
*Hechtia isthmusiana*

# Tucson Cactus and Succulent Society

## Thursday October 2, 2014 at 7 pm

### "Small Opuntias of the USA"

**Presented by Joe Shaw**

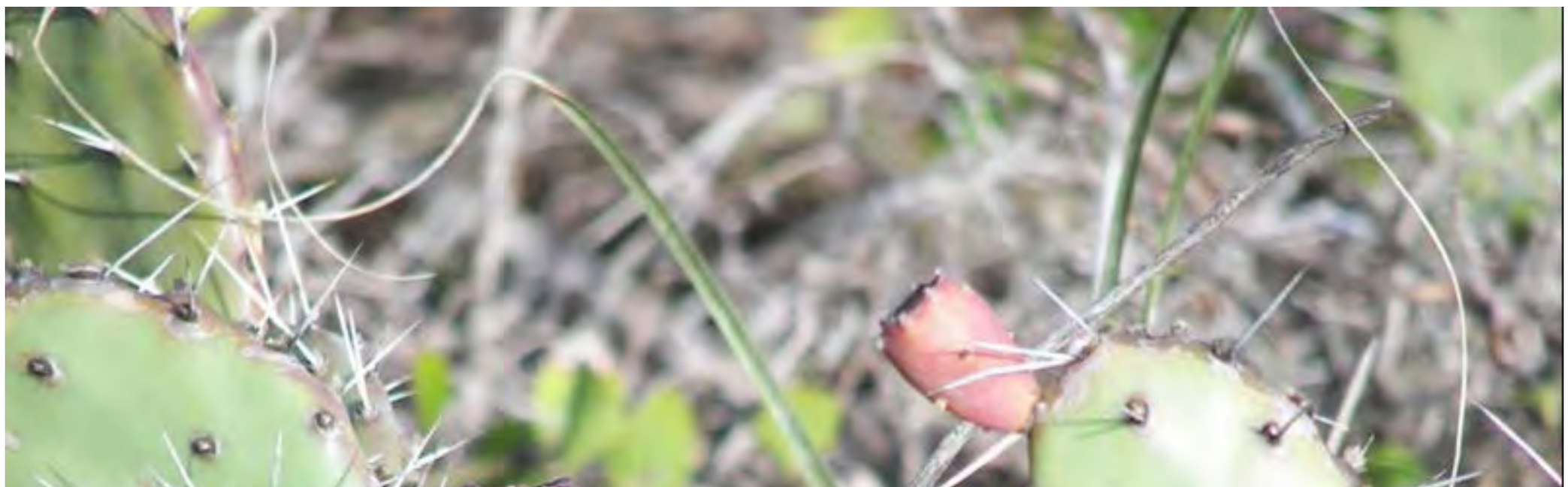


*Opuntia trichophora*

Joe received a BA in Botany from UC Santa Barbara and a PhD in Plant Pathology from UC Davis. For a while he was on the research and teaching faculty of Auburn Univeristy in Alabama. Later he moved to the biotechnology industry and worked on mammalian genomes and knockout mice. Over time he improved his writing skills and now is a scientific writer.

"I've studied opuntias for about 15 years and am still learning."

This will be Joe's second visit to our club so be sure to come and welcome him back to Tucson. There will also be some good food, great raffle plants and some nice free plants! We will have enough free plants for everyone and everyone will be able to take one home!



*Opuntia nitens*

# Tucson Cactus and Succulent Society

## Thursday November 6, 2014 at 7 pm

## "Out and Back, Adventures on the Arizona Cacti and other Succulents Field Guide Trail"

**Presented by**
**Peter Breslin, John Durham, Rob Romero, Greg Starr, Thomas Staudt and Vonn Watkins**

This program will feature some of the travel venture experiences while gathering photos and information for the soon to be published Arizona cactus and succulent field guide. Each of the above have contributed a lot of time and effort to selectively locate and study the huge amount of plants that will be featured in this book.

The book will be a comprehensive and detailed guide to the identification, distribution and appreciation of Arizona's botanical wonders, the cacti and succulents. Home to at least 4 distinct desert regions and multiple biomes, Arizona is a hotbed of botanical diversity, rarity and endemism. Among the most charismatic and breathtakingly beautiful plants in the state are the ones featured in this field guide. Designed to be detailed enough for armchair reading, but portable enough for hands on field work, this guide draws on the contributions of more than 6 author/photographers, all of whom are experts in Arizona field research. The authors have traveled and re-traveled hundreds of back road miles to establish not only species distributions and expand on current knowledge in populations, but also to capture that rare moment of peak flowering. The latest taxonomic, botanical and biogeographic information has been incorporated into this extensive regional treatment which the authors hope will be useful and entertaining for years to come.

This will be our final program presentation in 2014. Please come and enjoy a great program that will feature plant habitats throughout Arizona. Also enjoy meeting and talking with others, have some excellent refreshments, win a beautiful cactus or other succulent and be sure to take home a free plant!

# Tucson Cactus and Succulent Society

**Thursday January 8, 2015 from 7 - 9 pm**

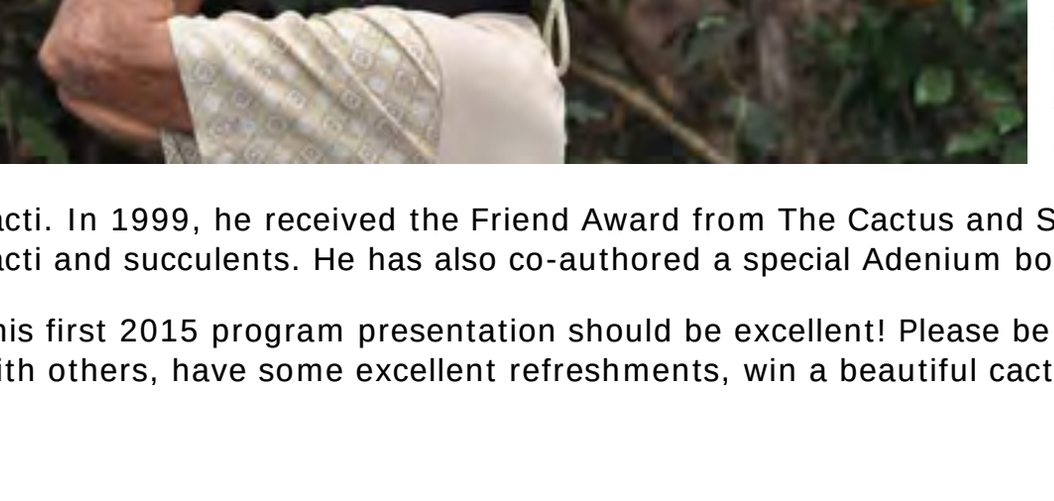
**"Why are there any plants in Africa?"**
**"A biologist's thoughts from a first visit to South Africa"**

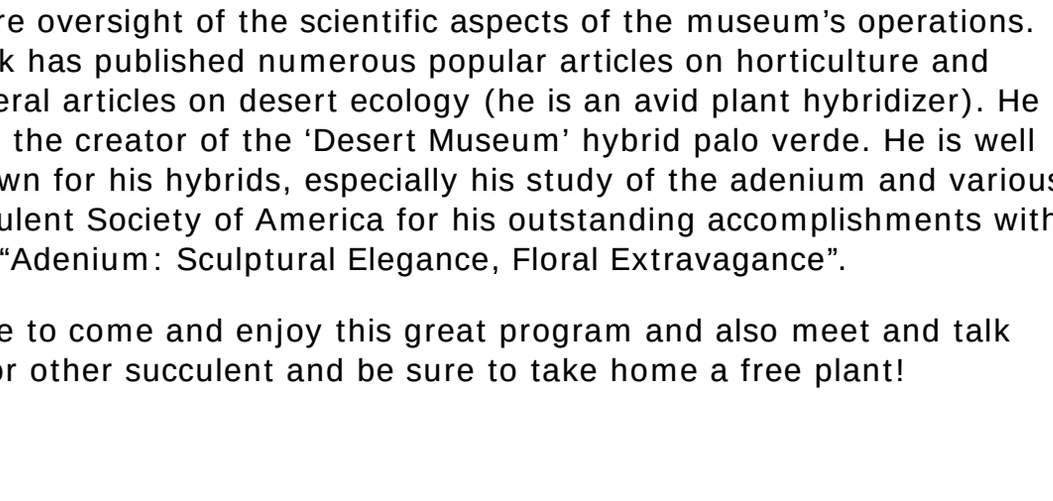
**Presented by Mark Dimmitt**

Mark begins with a summary of the diversity and abundance of big animals in Africa, then speculates on why they haven't destroyed the vegetation. Next he presents a tour of the plants (mostly succulents) that were found, with some information on how they're adapted to survive among abundant, giant herbivores.

Mark Dimmitt, Ph.D. formally majored in zoology throughout his college career, but also studied botany and ecology extensively. After earning his Ph.D. in Biology from the University of California at Riverside, he spent four years as a vertebrate ecologist in the California Desert District of the Bureau of Land Management. He moved to Tucson in 1979 to become Curator of Botany at the **Arizona-Sonora Desert Museum** and in 1997 he became the Director of Natural History. This position allowed him to conduct field research and share oversight of the scientific aspects of the museum's operations. Mark has published numerous popular articles on horticulture and several articles on desert ecology (he is an avid plant hybridizer). He is also the creator of the 'Desert Museum' hybrid palo verde. He is well known for his hybrids, especially his study of the adenium and various cacti. In 1999, he received the Friend Award from The Cactus and Succulent Society of America for his outstanding accomplishments with cacti and succulents. He has also co-authored a special Adenium book, "Adenium: Sculptural Elegance, Floral Extravagance".

This first 2015 program presentation should be excellent! Please be sure to come and enjoy this great program and also meet and talk with others, have some excellent refreshments, win a beautiful cactus or other succulent and be sure to take home a free plant!



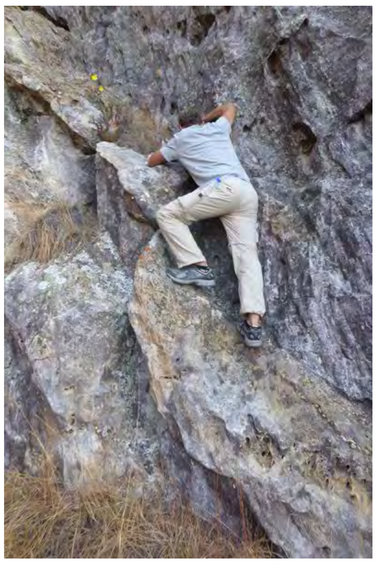


# Tucson Cactus and Succulent Society

## Thursday February 5, 2015 from 7 - 9 pm

## "Madagascar - A World-Renowned Island of Megadiversity"

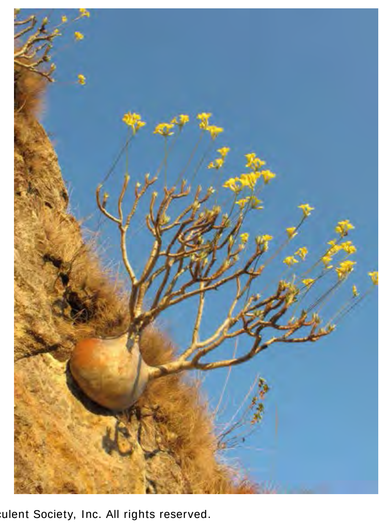
**Presented by Greg Starr**



Greg traveled to Madagascar with his best friend Carol, who he happens to be married to, Jean Lewis and Jerry Daharsh for an exciting excursion full of plants, birds, lemurs, chameleons, food and local flavor. Greg will discuss the process of setting up an organized tour and show a multitude of pictures of the unique flora and fauna native to the Ranomafana, Isalo N.P., the spiny desert around Ifaty, the tsingy near Bekopaka and the incredible baobabs near Morondava. This visual feast is guaranteed to make even the most sedentary couch potato crave an adventure to the fourth largest island in the world before all the really good stuff is lost to slash and burn agriculture.

Greg was born and raised in Tucson, Arizona, has grown to love the desert and its flora and fauna. He graduated from the University of Arizona in 1979 with a Bachelor of Science in Horticulture, and after working in the landscape industry he went back to the University to study Botany and further his education in horticulture. Greg worked for Warren Jones (co-author of Plants for Dry Climates and Landscape Plants for Dry Regions) and Dr. Charles Mason at the University of Arizona herbarium. Greg made his first foray into the world of collecting in 1979 when he traveled with Warren and Bill Kinneson to Texas where he saw firsthand, in habitat, the many plants he had only experienced in the nursery or landscapes. He emerged from the University in 1985 with a Master of Science in Horticulture with a special emphasis on botany.
He opened Starr Nursery in the summer of 1985, and has specialized in low water use plants for landscaping in southern Arizona. Greg has traveled extensively in Mexico and the southwestern United States to study the plants for their potential landscape use in desert regions of the world. He has also traveled to South Africa and recently to Madagascar in search of juicy succulents.
Greg has written several horticultural articles for the journal Desert Plants. Topics have covered various groups of plants as well as botanizing in South Africa. He has also described a new species of Agave, two new species and a subspecies of Hesperaloe, and revised the genus Hesperaloe in a monograph published in the journal Madroño. Greg worked with Dr. Jose Angel Villarreal in describing Agave ovatifolia which has been dubbed Whale's Tongue Agave, a reflection of the incredibly wide leaves that sometimes double as water harvesting vessels. Greg's book, Cool Plants for Hot Gardens, was released at the end of April 2009. His second book, titled Agaves: Living Sculptures for Landscapes and Containers, was released in early May of 2012. He has taught Plant Biology and Plant Materials classes at The Art Center Design College in Tucson for their program of Landscape Architecture. Since 2010, Greg has focused intensively on the Agaves of Baja California and he and Bob Webb have described Agave azurea, a new species from the Picachos de Santa Clara, and submitted a revision for the genus to the journal Haseltonia which should be published early in 2015. He is also a co-author for the upcoming Field Guide to the Cactus and Other Succulents of Arizona which is scheduled for publication in February 2015.
Greg spends most of his days tapping at the computer hoping another book will take shape, preparing PowerPoint presentations and tending to Starr Nursery, specializing in Agaves and related plants as well as other succulents and new introductions of perennials, flowering shrubs, and small trees from arid and semi-arid regions around the world.

Please be sure to come and enjoy the evening with an excellent program, have some nice conversations, get some wonderful refreshments, win some great plants and receive a free plant.



# Tucson Cactus and Succulent Society

## Thursday March 5, 2015 from 7 - 9 pm

## "Field Guide to Cacti & Other Succulents of Arizona"

**Presented by Thomas Staudt**

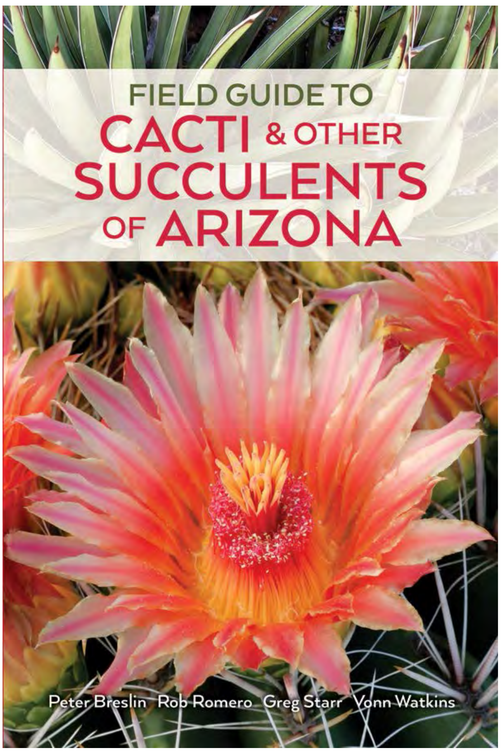
This March presentation will center on approaching the TCSS board with the idea for a field guide and convincing them of its need. It will take you step by step through the process of getting the Field Guide to Cacti and Other Succulents of Arizona completed and to the printers. This will include details on how the pages were formatted, photo selection and the use of the species distribution maps. Signed copies of the book will be available and authors will be on hand for questions.

Thomas grew up on a farm in Iowa where as the saying goes "the corn (not cacti) is as high as an elephant's eye." He attended the University of Iowa and graduated in 1973 with a BS in General Science, emphases on biology and local botany.

In 1990 Thomas moved to Portland, OR. and started duel careers as a wildlife biologist and a bicycle tour leader. As a cyclist he led a cross country ride in 1993. As a biologist Thomas covered 1000's of miles on the Pacific Ocean in search of whales, dolphins and seabirds—a long bout of seasickness cured him of any further pursuits in that direction. Other biological related works have taken him from above the Arctic Circle in Alaska to eight Summer season working in Antarctica, including a two week stint at the South Pole. While there, Thomas pulled a bike out of storage and did three trips around the world in one day. The off seasons between biking and Antarctica provided Thomas an opportunity to pursue his bird watching interest and during those eight Antarctic years he traveled extensively on all seven continents identifying more than 3000 bird species. In 2005, when the cold environments lost there appeal, Thomas settled in Tucson on a more permanent bases. He had lived there off and on since 1992.

In Tucson Thomas has worked for a number of environmental consultant companies, which provided opportunities to refine his interest in local cacti and other flora. Having used numerous field guides to identify birds around the world Thomas soon realized that an up-to-date, comprehensive cacti field guide would be an invaluable tool for his field work. Since none was available and no one was working to put one together Thomas formulated a plan for such a book.

The end of the presentation will be an introduction of everyone responsible for the publication. From the list, Rob Romero, Dean Stock, David Yetman, Chris Ginkel and Mary Irish will not be present.

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# Tucson Cactus and Succulent Society

## Thursday April 2, 2015 from 7 - 9 pm

## "The Renewal of the Cactus and Agave Gardens at the Arizona-Sonora Desert Museum"

### Presented by Jason Wiley

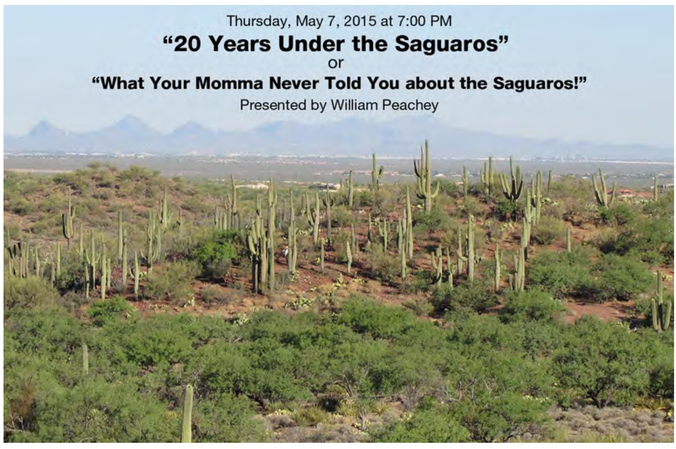
Jason Wiley

For the past year, two gardens at the **Desert Museum** - the Agave Garden and the Haag Cactus Garden - have been undergoing transformations. The Haag Cactus Garden might be of particular interest to current members of the Tucson Cactus and Succulent Society as it was named in honor of the founder of the Tucson Cactus Club, “Cactus” John Haag. John worked at the Desert Museum in its early days as a curator of plants and he endeavored to educate people about cacti and other succulent plants of the region. Shortly after his death in 1962, The Tucson Cactus Club dedicated a garden at the Desert Museum in his name, "The Haag Cactus Garden." And the Tucson Cactus Club, that John founded, evolved to become the Tucson Cactus and Succulent Society. This presentation will describe not only the current and ongoing improvements to these two gardens but will also cover plans for their future.

Jason joined the Arizona-Sonora Desert Museum in May of 2014 as horticulturist. He was raised in eastern Colorado and grew up on a sod farm so his interest in plants started early in life. He received his B.S. in Urban Horticulture from Arizona State University in 2007. His career includes positions at the Phoenix Zoo caring for the “Harmony Farm”, as the Lead Horticulturist and Landscape Designer for the Budweiser Tour Center and employment for a high-end horticulture services company, both in Fort Collins, Colorado. Jason relocated to Tucson in 2014 to join the staff at the Arizona-Sonora Desert Museum.

Be sure to place this date on your calendar, come and enjoy an excellent program by Jason, have some excellent refreshments, win some great plants and also take a free plant with you at the evening conclusion.

# Tucson Cactus and Succulent Society




William Peachey

Years ago as a paleontologist Bill had worked on a project that collected evidence of the presence of saguaros from fossil pack middens he had discovered in the San Pedro River Valley east of Tucson, Arizona. At the time he never dreamed that one day he would have a wide spectrum of research projects that concern this icon of the Sonoran Desert!

In the late 1990s, following a study of the nectar-feeding Mexican Long-nosed Bat (Choeronycteris Mexicana), he had ended up with a fine saguaro study plot on which to investigate in detail the blooming of the saguaro cactus.

Today, 20 years later, he has found that every other morning during the months of May and June each year he has been standing under the same saguaros on this plot to count their blooms, one-by-one, using binoculars and then recording their numbers. However, beyond the endless numbers on piles of dry data sheets that he has generated , he promises to uncover many other interesting aspects of saguaro reproduction, associated animal life, mortality, and anatomy that have come to light.

And, in his presentation, for the first time publicly, four features of saguaro anatomy that have not been previously described will be shown. These are 1) the manner of growth at the stem tips, 2) the “plumbing” for the nutrients supplied to buds, flowers, and fruits, 3) a division of the cortex into two types of tissue, and 4) the manner of growth of new arm buds.

Bill was born with the “Desert Rat” gene fully operational and then was blessed to have been able to grow up in the post-WWII Phoenix area when the Sonoran Desert could still be experienced there close at hand and in every direction. He was doubly fortunate to have been mentored in science and the practical aspects of its activities from grade school through high school by participation in a local Chapter of the “Grinnell Natural History Society” - then world leaders in field science education who developed the standard in field science note taking that is followed internationally today. From total immersion in their programs he developed a love for “field science” that he still and, will always, have.

College found him at the U of A in the mid-1960s where he fell quite willingly into the “black hole” of cave science. That path has led over the years to caving expeditions in the Grand Canyon, cave trips all over the lower 48 states, cave rescue training & cave rescues, membership on the committee that developed the “Arizona Cave Law”, work on cave management plans (National Park Service, Forest Service, etc.), bat research, cave minerals & decorations, cave paleontology, speleogenesis, and much much more. The above work and interests have led to his becoming a “consultant”( NOT for pay! ) to several indigenous groups in the U.S. & Mexico for the protection of their religious sites that are found in caves.....

During the 1970s he took up geology in the form of exploration in the western hemisphere for metals, uranium, oil, geothermal steam, and geological engineering. From a crew member he eventually became ( with a return to the U of A in Geology ) a “Consulting Geologist”. Engineering projects in teams from local geology contractors have included: Interstate Highway stability for the Ariz. Dept. of Trans., foundation stability for the MMT( the first telescope on Mt.Hopkins in the Santa Rita Mtns.), conditions underneath the Palo Verde Nuclear Power Plant. And, during that time period he was overjoyed to be able to help to design and build the cave exhibits at the Arizona-Sonora Desert Museum as Bill and his family had been very early and regular visitors to the Museum. He provided their plant list of the prominent limestone loving plant species of Sonoran Desert biomes as well as the plan for their incorporation in the landscaping of the cave exhibit site where they can be seen flourishing today - in addition to his involvement in several other projects inside of the “cave”(for instance, he is the one that INSISTED that they install the “kids crawlway” In the high passage that adults are “horrified” to find their kids have disappeared into!..)

By the 1990s he had become involved in studies of Arizonas two nectar-feeding bats – both of whom feed upon Saguaro flowers. During that time he became the “science guy” for Colossal Cave Mtn. Park. Also, his long term work on the natural resources of the Cienega Creek basin resulted in a request by the U.S. Congress for his information on the area for its deliberations concerning its designation of the then pending Empire Cienega Nat. Conservation Area. Along with pack rat midden-researchers, the Van Devenders, we reported, from the analysis of the very first fossil middens found in the San Pedro River Valley that he had discovered, to the BLM about the last 2,000 years of plant history there in “The Late Holocene Vegetation of the San Pedro River Valley, southeastern Arizona”. This report contains the eastern most paleorecord of the Saguaro in Arizona and the only fossil record of the “Needle spine Cactus”( Echinomastus erectocentrus ).

Starting in the late 1990s as part of an Arizona Game & Fish Dept. grant on the Mexican Long-tongued Bat( Choernonycteris Mexicana ), he began his ongoing research concerning the Saguaro Cactus, one of this bat’s major food sources.

Currently, he is engaged in a multitude of Saguaro projects. With co-researchers they are tendering for publication a major paper on the paleofauna of Pyeatt Cave in Cochise County, AZ and are circulating for publication a research paper on the Pallid Bat and its arthropod prey species. The very tip of the Saguaro information “iceberg” of his findings concerning this cactus has just been published by TCSS as a “factoid” in a picture caption in the new “Field Guide to Cacti & other Succulents of Arizona”.

Come and enjoy Bill's program and enjoy some great refreshments, win a great cactus or succulent and receive an excellent free plant as you depart.

February 2015 - a Fallen saguaro at the Rowsell's home was partially dissected and cored for oxygen isotopes

Photo contributed by C.T.Bethard ©2010

# Tucson Cactus and Succulent Society

## Thursday June 4, 2015 from 7 - 9 pm

## "The Horticultural aspects of Adeniums, Emphasizing Propagation, Repotting, Pruning, Pests, and New Varieties"

**Presented by Dave Palzkill**

Dave was raised on a mixed beef/hog/chicken farm in the hill country of southwest Wisconsin near the former mining town of Mineral Point. He majored in Horticulture and Plant Pathology at the University of Wisconsin – Madison. During his graduate studies he also spent 8 months at the University of California – Davis, a time which awakened his interest in the dry west. His dissertation research at Madison focused on the influence of environment on Ca-transport and Ca-related disorders of vegetable crops. Dave taught Horticulture and Agronomy courses at the University of Arizona for 14 years and conducted research on new/alternative crops for dry regions; primarily jojoba, but also low water-requiring landscape/ornamental plants and mesquite for energy production. Since 1990, he has worked as a consultant on new crops projects (jojoba, chia, lesquerella, mesquite, moringa) in several countries. For the past fifteen years, he has also managed a nursery in northwest Tucson specializing in Adenium, but also including lots of Pedilanthus (Lady's Slipper) and misc. cacti., especially small-padded/jointed Opuntioids which he first developed an interest in on travels in various S. American countries.

His talk will focus on several horticultural aspects of Adeniums, with emphasis on propagation, repotting and pruning, pests, and discussion of several new varieties.

Please make sure you come to this important program on a Tucson cultivation favorite. Enjoy great refreshments, win a plant and get a free plant before your evening departure.

# Tucson Cactus and Succulent Society

## Thursday July 2, 2015 from 7 - 9 pm

## "*Jatropha* in Mexico - Resolving the Evolutionary Relationships of the Mexican sub-genus *Curcas*."

**Presented by Nathan Michael LeClear**

Nathan's program will be about his field work collecting material of *Jatropha* in Mexico, primarily in Oaxaca, Puebla, Michoacan, Durango, and Sonora during the last two summers (including the current). His work is molecular, aimed at resolving the evolutionary relationships of the Mexican sub-genus *Curcas*.

His graduate program at UT and the plant biology program is a joint PhD program of Integrative Biology and Molecular Biosciences Departments at the University of Texas at Austin. Research themes span the range of evolution, biogeography. physiology, anatomy, ecology, molecular/cellular biology, and genetics.

Originally from Emporia, Kansas he studied botany as an undergraduate at Emporia State University under the advisement of Dr. Marsh Sundberg, and graduated in 2006. After working for the city of Eugene, Oregon as a seed collector for wetland conservation for a season he began his Masters at the University of Texas - Pan American in Edinburg, Texas under the advisement of Dr. Andrew McDonald. His thesis research was the ethnobotanical history of the economically important species *Jatropha curcas*, and a study of the seed oil chemistry of the same species, which was completed in 2010. After working as an arborist in Texas for a year he spent several seasons botanizing the western US with a consulting firm for the US Forest Service in California, Utah, Nevada, and Idaho.

Returning to academia in the Autumn of 2012 he began his doctoral research on the systematics, biogeography, and evolution of breeding systems in the neo-tropical species of *Jatrohpa* under the direction of Drs. Beryl Simpson and Randal Linder. His field work has taken him to Arizona and many states of Mexico, to which the majority of the nearly fifty species of sub-genus *Curcas* are native, many being narrow range endemics. This summer concludes the third year of his PhD, and after its completion he aims to continue to work in the field of botany with a focus on conservation and education.

This will be an exceptional time for all to gain added knowledge of these plants. Be sure to join us, hear a great program, enjoy some refreshments and get some marvelous plants.

# Tucson Cactus and Succulent Society

## Thursday August 6, 2015 from 7 - 9 pm

## "The Biology of Cacti"

**Presented by Dr. James D. Mauseth**

Backebergia militaris

Various changes have occurred as an ancestral group of plants (that resembled pereskias) evolved to be cacti. Any group is homogeneous only while it is new and consists of just one or two species; as it continues to evolve, new forms come into being and it becomes more difficult to make generalizations. At present some cacti are adapted to deserts but others are adapted to cold regions in the Andes, others are adapted to rainforests or grasslands. Some have evolved to be giant columnar cacti, whereas fraileas and blossfeldias have evolved to be tiny dwarf cacti. We are all too familiar with many cactus spines, but in some cacti, spines are soft and protect the plant by shading it or by causing dew to form on the spines rather than on the cactus surface where dew drops would block the stomatal pores and cause the plants to suffocate. Spines in many cacti are now glandular, secreting nectar on other substances. Many cacti have an adult form we know as the cephalia in Melocactus and Espostoa, and many other "cephalium-like" structures also occur.

James David Mauseth is from Richland, Washington.

Ph.D.: University of Washington; Seattle, Washington; 1975
Professor, University of Texas at Austin, 1995-Present.
Associate Professor, University of Texas at Austin, 1981-1995.
Assistant Professor, University of Texas at Austin, 1975-1981.

AWARDS
2009 Natural Sciences Foundation Advisory Council Teaching Award (UT)
1993 Teaching Excellence Award, College of Natural Sciences Foundation Advisory Council (UT)
1990 Teaching Excellence Award, College of Natural Sciences Foundation Advisory Council (UT)
1987 Andrew W. Mellon Faculty Fellowship in Latin American Studies. Institute of Latin American Studies (UT).
1983 Outstanding Teacher Award: Awarded by the Natural Sciences Council of the University of Texas.

COURSES TAUGHT
Botany 320 and 120C: General Botany (and Lab):Structure, Physiology and Reproduction of Seed Plants.
Botany 374 and 388K: Plant Anatomy. (this is now Biology 374 and 174L)
Botany 344 and 480N: Plant Morphogenesis.
Ultraestructura de la Celula Vegetal (Universidad Catolica de Chile)
Anatomia Vegetal (Universidad Catolica de Chile)
El segundo curso de actualización en cactáceas y suculentas (UNALM)
Curso Internacional de Anatomia de Plantas y el Medio Ambiente (UNALM)

FIELD WORK: Argentina, Bolivia, Brazil, Costa Rica, Chile, Dominican Republic, Ecuador, Mexico, Panama, Peru and Venezuela

PUBLICATIONS - BOOKS PUBLISHED
Mauseth, J. D. 1988. Plant Anatomy. (This is a large textbook, 560 pages). Benjamin/Cummings. Menlo Park, California.
Mauseth, J. D. 1991. Botany: An Introduction to Plant Biology. Jones and Bartlett, Massachusetts.
Mauseth, J. D. 2002. Botany: An Introduction to Plant Biology. Third edition.
Mauseth, J. D., R. Kiesling, and C. N. Ostolaza. (2002). A Cactus Odyssey: Journeys in the Wilds of Bolivia, Peru, and Argentina. Timber Press.
Bowes, B. G., and J. D. Mauseth. 2008. A Color Atlas of Plant Structure. Second edition. Manson Publishing.
Mauseth, J. D. 2009. Botany: An Introduction to Plant Biology. Fourth edition.
Mauseth, J. D. 2012. Botany: An Introduction to Plant Biology. Fifth edition.

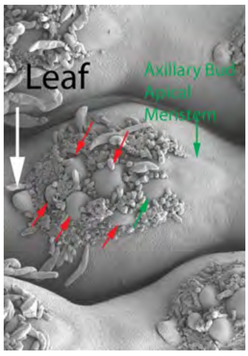
EDUCATIONAL WEB SITES
**Plant Anatomy Laboratory**: Micrographs of plant cells and tissues, with explanatory text.
I**Cactus Research website**: Descriptions of my research on cacti and travel in South America.

ARTICLES IN REVIEWED JOURNALS: 78 Articles.
ARTICLES IN SEMI-TECHNICAL JOURNALS AND NEWSLETTERS: 27 Articles.
PRESENTED PAPERS, SCIENTIFIC MEETINGS AND ACADEMIC DEPARTMENTS: 83 Presentations.
PRESENTED PAPERS, EDUCATIONAL OR SEMI-TECHNICAL: 22 Presentations.

Please make sure you are present for this program. It will be an excellent presentation of the various special anatomical structures of cacti and the relationships found in numerous locations. Dr. Mauseth will truly amaze you! Come and enjoy this very special program, have some great refreshments during the break, talk with all the wonderful cacti and other succulent friends, win some great plants, and be sure to get your free plant when you leave.

Ferocactus areole

Lemaireocereus marginatus apex ribs




Echinocactus grusonia (young areole 144x)

Micranthocereus densiflorus

# Tucson Cactus and Succulent Society

## Thursday September 3, 2015 from 7 - 9 pm

## "A Baja Adventure"

**Presented by Greg Starr**

Agave shawii ssp. goldmaniana north of Highway 1 road to Rancho Los Martires

Come out for an evening tour of Baja California with Greg Starr. He will present a visual feast of some way cool cacti and succulents, and who knows, maybe even a “leafy” plant or two to complete the Baja California experience. The peninsula of Baja California consists of two states, the northern one is simply Baja California (confusing, right?) and the southern one is Baja California Sur (BCS). The focus will be on the northern state, but we just might cross the line and even hop on over to an island or two, so be prepared for anything. Since it is monsoon season, we might run into a hurricane if we go into BCS. Undoubtedly we will visit some of the most iconic figures of the peninsula, including the Mexican Candle, the non-Saguaro, bloomin’ barrels, and maybe even an agave or two.

Greg’s first two forays to the land that time forgot were in the early 1980’s. He then took a 27 year hiatus, finally returning in 2010, along with Scott Calhoun, to research agaves to include in his book. The next year Bob Webb asked Greg to accompany him on a plant distribution expedition which then led to the two of them making 5 additional trips to Baja California to study the agaves on the peninsula. With his propensity to take multiple photos of nearly all the plants at each stop, it’s no wonder that Greg is a huge fan of the digital format and very large external hard drives. So sit back and enjoy the photos of fantastic plants found on this incredibly wonderful peninsula.

Be sure to be entertained with some excellent information about cacti and other succulents in Baja California. Enjoy some great food, win a few plants and also get a free plant as you leave.

Ferocactus chrysacanthus along hike from Punta Norte to Dudleya pachyphytum on north end of Isla Cedros

Ferocactus gracilis at Laguna Chapala

# Tucson Cactus and Succulent Society

## Thursday October 1, 2015 from 7 - 9 pm

## "Cylindropuntia chuckwallensis: a new cholla species from southern California"

**Presented by Michelle Cloud-Hughes**

Chucky Flowers

Cylindropuntia chuckwallensis is a newly-described cactus found in San Bernardino, Riverside, and northern Imperial Counties, California. Michelle's presentation will describe how this historically-misidentified cholla was determined to be a distinct new species and the characteristics that distinguish it from similar cholla species. This presentation will provide detailed information on where to see Cylindropuntia chuckwallensis and the many other intriguing cacti found with it.

Michelle Cloud-Hughes is a botanist and restoration ecologist specializing in desert flora and ecosystems. She worked for the Soil Ecology and Restoration Group at San Diego State University from 1997 to 2013 and spent most of those years doing restoration work in the central Mojave Desert at Fort Irwin National Training Center. In 2010 she started her company, **Desert Solitaire Botany and Ecological Restoration**, and since then has been involved in many rare plant surveys and other botanical projects throughout the southwestern U.S. Her main love is Cylindropuntia, but she is also fascinated by other cactus, particularly Echinocereus, Grusonia, Pediocactus, and occasionally even Opuntia.

October is an excellent time to come and enjoy a great program on a new species! During our break there will be lots of great food and many knowledgeable friends to talk with. Plants you can win and also as a great TCSS tradition, take one home with you.

Chucky Cholla First Flower

# Tucson Cactus and Succulent Society

## October Meeting

October 5, 2006 at 7 pm

Jon Weeks

"*Salicornia*, The Sonoran Desert Succulent That Could"

Jon will open the eyes of succulent lovers and introduce a plant that manages to withstand almost anything. You must attend to get the real picture.

Nearly one third of the arable land on earth has a significant salinity problem. Not only does this reduce crop yields for a hungry planet, but the situation is most critical in the poorest countries which often experience poor harvests. The consequences of this are not only hunger but also include profound social and political consequences as hungry people migrate to other regions. From 1980 to 1992, Jon worked on the Halophyte Project at the Environmental Research Laboratory of the University of Arizona. There are approximately 400,000 species of plants in the world of which about 10,000 are believed to have some degree of salt tolerance. The objective of this research was to investigate as many as possible of the estimated 10,000 species of halophytes which occur mostly in coastal habitats worldwide to determine if any of the species possessed the features required to be a successful crop plant that could be irrigated with low quality brackish water or seawater. After reviewing several hundred species of halophytes, the Lab settled on a widespread western hemisphere halophyte, Salicornia bigelovii. This species occurs intermittently along the coastlines of the United States and Mexico as isolated ecotypes. These ecotypes have features which make them attractive candidates for a halophytic crop as well as numerous features which are barriers to becoming a crop plant. This research focused on condensing the required characteristics of a crop plant into a bred selection while simultaneously breeding out the characteristics which would prevent the type from being successful as a seawater irrigated crop. The research also included developing the farming techniques for a species which had never before been farmed. As is often the case in research, Jon started out with some ideas that appeared to make sense at the beginning but during the course of the work got an education from the plants which he claims are a lot smarter than he will ever be. The research also included traveling extensively throughout Mexico

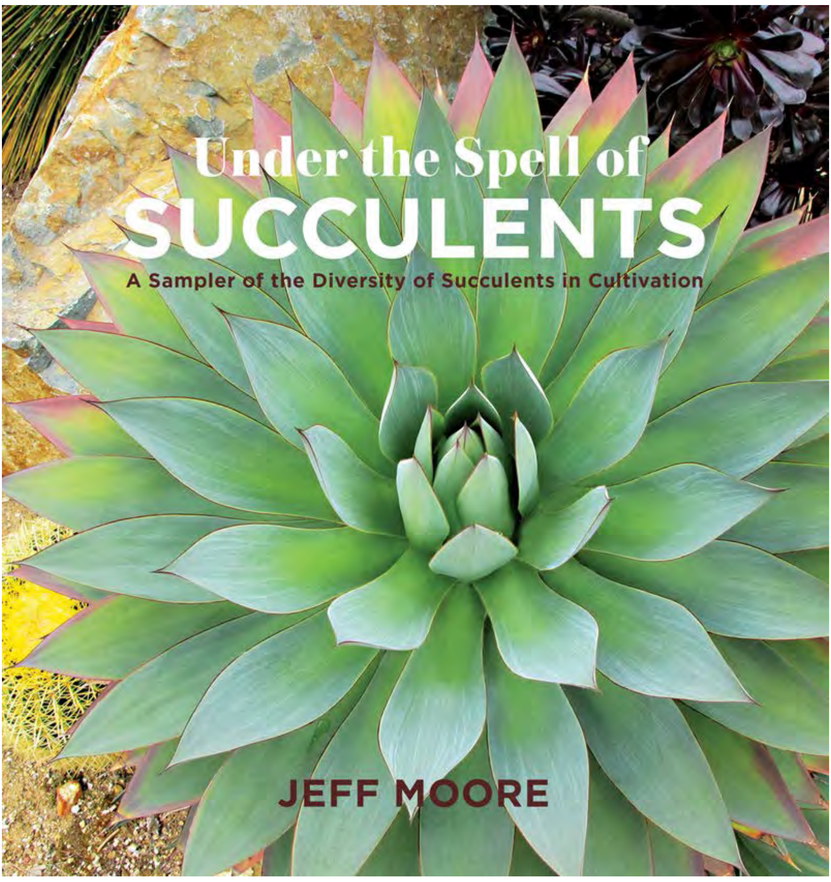
Jon was born and raised in Stratford, Connecticut. He received a B.A. from Gettysburg College in 1971 and in 1975 started Landscape Cacti, a desert nursery devoted to growing cacti and agaves from seed fro landscape use. In 1986 he received a Ph.D. from the University of Arizona and worked as a research Scientist for the University from 1986 to 1992 while living along the coast of Sonora, Mexico. Jon collected halophytes and was farming them in Kino Bay at Puerto Penasco, Sonora. Since 1992 to the present Jon has operated Landscape Cacti where he grows landscape cacti and agaves. Be sure to join us for Jon's experience in growing landscape cacti and his talk on the *Salicornia*.

# Tucson Cactus and Succulent Society

**Thursday November 5, 2015 from 7 - 9 pm**

**"An Overview of Succulents in Cultivation"**

**Presented by Jeff Moore, owner of Solana Succulents**
**Solana Beach, California**




Jeff's basic program parallels the flow of his book, which is an overview of succulents in cultivation. He will talk about how we engage with succulents - growers, collectors, landscaping, container gardening, bonsai, specialties like crests, variegates, etc., and he will also show representative images of the major genera - aloes, agaves, cacti, euphorbias, etc. He will also devote a bit of extra time to aloes and agaves, and show some samples from his next book. He hopes to have the new publication out by January/February. He's always happy to take questions during and after the program, and may bring a nice raffle plant.

Jeff has been a collector/enthusiast for over 30 years, opened **his nursery in Solana Beach**, California 23 years ago, and has gained a bit of minor fame amongst plant geeks for his "undersea" succulent gardens (highlighted in the book and slide show). He is adding author to his resume, with one book done, another in the works, and more on the back burner. Jeff is married with two sons, 17 and 20, and also tries to surf in his rare spare time, unfortunately with declining skills as entering the "it's now look out for the old out-of-control kook" phase of his abilities.

This will be our last meeting with a program presentation for 2015. Please come and enjoy a spectacular evening with Jeff Moore. There will be lots of friends, great conversation, delicious foods, raffle plants to win, excellent free succulents and Jeff will also bring plants and books to sell (credit cards accepted).

# Tucson Cactus and Succulent Society

## Thursday January 7, 2016 from 7 - 9 pm

## "Lithops: The Wild and the Tame"

**Presented by Doug Dawson**

Lithops julii fulleri

Lithops olivacea

Doug has completed fourteen 3-week botanical expeditions in Namibia and South Africa over the last 13 years, spending many nights sleeping on the ground and days hiking many mountains and rolling hills in search of mesemb species and other botanical riches. His latest interests include Namaqualand's many exotic crassulas and euphorbias.

As well as 37 known species of lithops, there are many subspecies, varieties and a non ending supply of cultivars. This yields a kaleidoscope of color, texture, and form. In his PowerPoint program, Doug will give us a glimpse of some of these "pretty faces" and also show many species as they blend with nature out in the veld of South Africa and Namibia.

Doug is a retired math professor and does extensive botanical travels to areas of the world where succulents grow. These include Mexico, Chile, Argentina, Yemen, Soccotra, and Africa as well as our own state of Arizona. In recent years, he has organized 8 botanical exploratory trips to South Africa and Namibia, camping on local farms and public areas by night and exploring the surrounding mountains and hills by day. To aid in his travels, he has a background in languages. These include German and French. Nowadays Afrikaans has become a much more useful language for him in rural South African areas.

For many years, one of his key interests has been seed-growing of cacti and succulents. Other interests are photography and presentations with succulent content. He has delivered many workshops and speaking engagements in Arizona and other states. Doug's private plant collection has an emphasis on seedlings, lithops, other mesembs, Arizona natives, and other cacti. He is a member of the CSSA, Central Arizona Cactus and Succulent Society, and the Tucson Cactus and Succulent Society.

This will be our first program presentation at the Sky Islands High School and an excellent way to wish everyone a "Happy New Year". Please come and enjoy a spectacular evening with our special guest, Doug Dawson. There will be lots of friendly faces, great conversation, delicious foods, raffle plants to win, and excellent free plants!

Lithops karasmontana bella

Lithops otzeniana

Lithops lesliei 'Albinica'

Lithops aucampiae eunicea

Lithops gracilidelineata waldroniae

Lithops hookeri lutea

Lithops lesliei venteri

Lithops verruculosa 'Rose of Texas'

# Tucson Cactus and Succulent Society

## Thursday February 4, 2016 from 7 - 9 pm

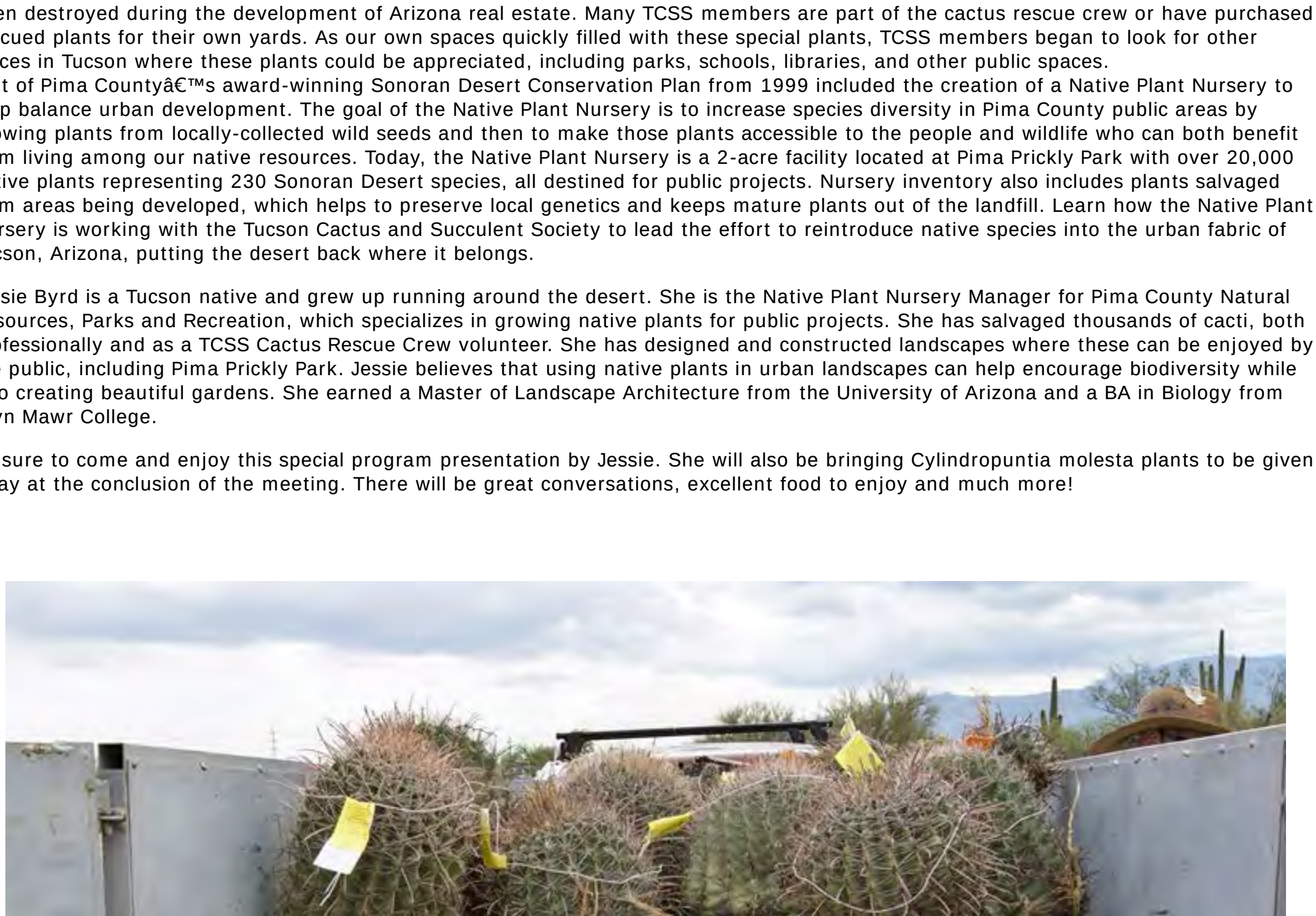
## "Cactus Rescue: Using salvaged plants to create meaningful landscapes"

**Presented by Jessie Byrd**

Starting in 1999, the Tucson Cactus and Succulent Society Cactus Rescue Crew has accomplished 363 rescues with over 26,000 volunteer hours to save 76,500 plants from being bulldozed, preserving a vast amount of cacti and other native plants that would otherwise have been destroyed during the development of Arizona real estate. Many TCSS members are part of the cactus rescue crew or have purchased rescued plants for their own yards. As our own spaces quickly filled with these special plants, TCSS members began to look for other places in Tucson where these plants could be appreciated, including parks, schools, libraries, and other public spaces.
Part of Pima Countyâ€™s award-winning Sonoran Desert Conservation Plan from 1999 included the creation of a Native Plant Nursery to help balance urban development. The goal of the Native Plant Nursery is to increase species diversity in Pima County public areas by growing plants from locally-collected wild seeds and then to make those plants accessible to the people and wildlife who can both benefit from living among our native resources. Today, the Native Plant Nursery is a 2-acre facility located at Pima Prickly Park with over 20,000 native plants representing 230 Sonoran Desert species, all destined for public projects. Nursery inventory also includes plants salvaged from areas being developed, which helps to preserve local genetics and keeps mature plants out of the landfill. Learn how the Native Plant Nursery is working with the Tucson Cactus and Succulent Society to lead the effort to reintroduce native species into the urban fabric of Tucson, Arizona, putting the desert back where it belongs.

Jessie Byrd is a Tucson native and grew up running around the desert. She is the Native Plant Nursery Manager for Pima County Natural Resources, Parks and Recreation, which specializes in growing native plants for public projects. She has salvaged thousands of cacti, both professionally and as a TCSS Cactus Rescue Crew volunteer. She has designed and constructed landscapes where these can be enjoyed by the public, including Pima Prickly Park. Jessie believes that using native plants in urban landscapes can help encourage biodiversity while also creating beautiful gardens. She earned a Master of Landscape Architecture from the University of Arizona and a BA in Biology from Bryn Mawr College.

Be sure to come and enjoy this special program presentation by Jessie. She will also be bringing Cylindropuntia molesta plants to be given away at the conclusion of the meeting. There will be great conversations, excellent food to enjoy and much more!



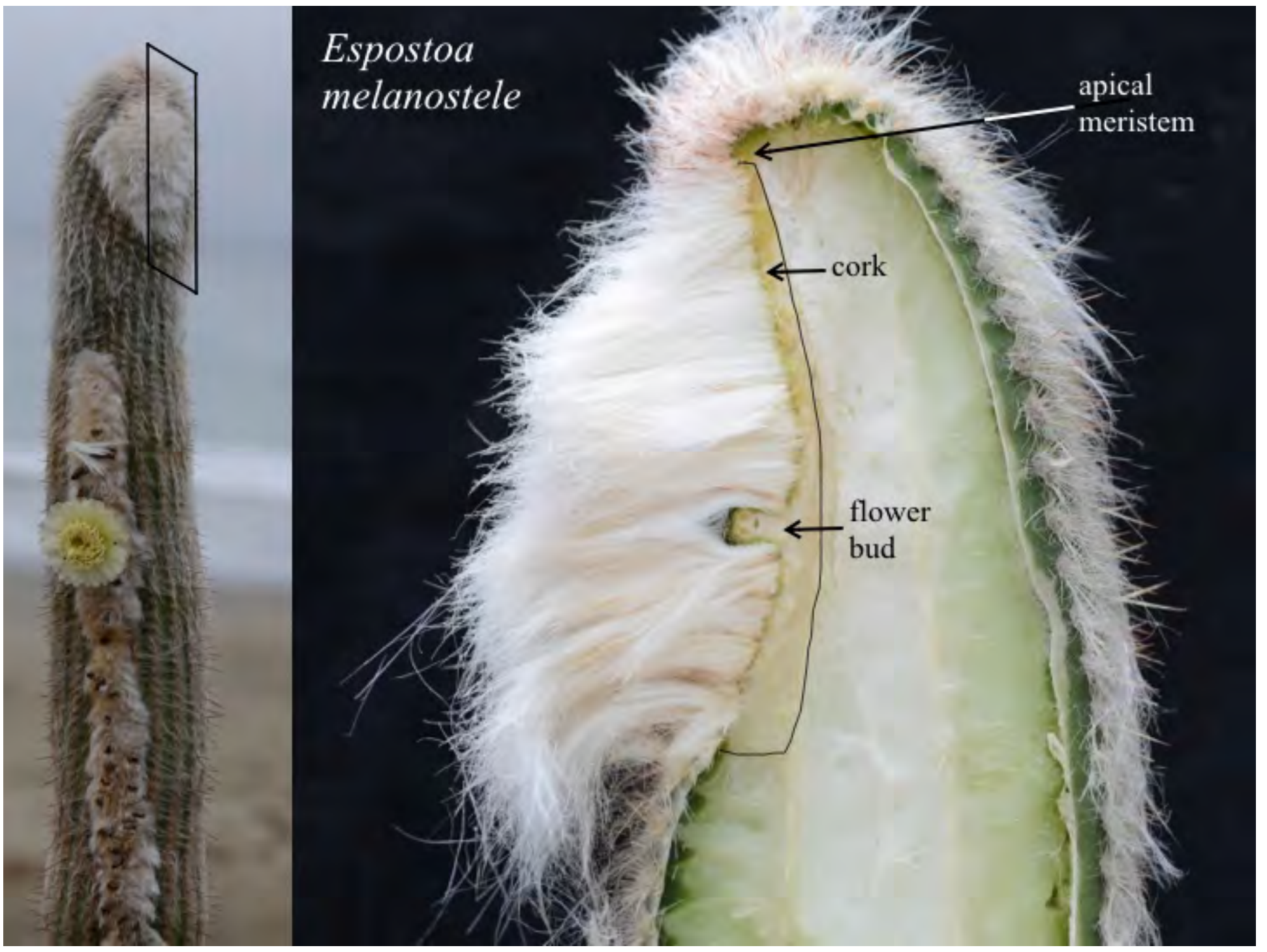
# Tucson Cactus and Succulent Society

**Thursday March 3, 2016 from 7 - 9 pm**

## "What are cephalia? Are they adaptive?"

**(The first part of this title is intentionally borrowed from the title of Franz Buxbaum's famous 1964 paper)**

**Presented by Root Gorelick**



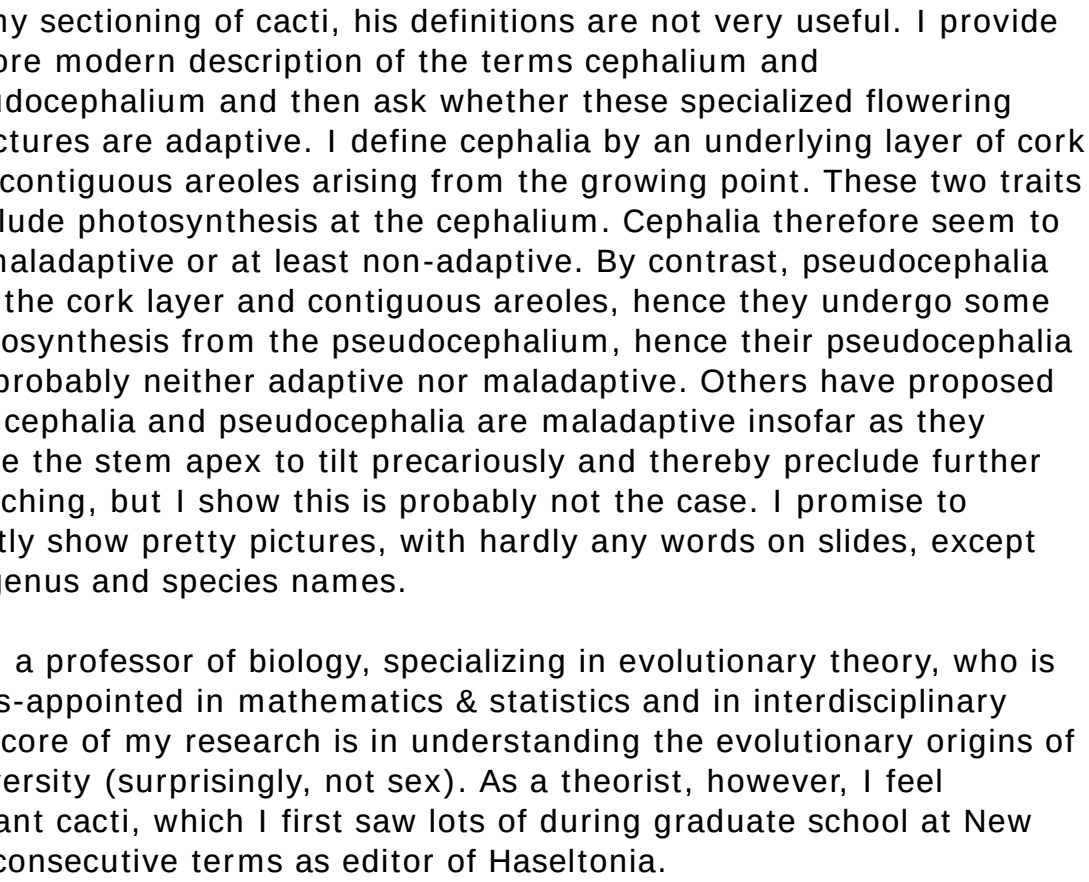

*Discocactus zehntneri* subsp. *araneispinus*

William Jackson Hooker, Alwin Berger, Britton & Rose, and Curt Backeberg used the terms cephalium and pseudocephalium, but only in 1964 did Franz Buxbaum try to provide reasonable definitions. Based on my sectioning of cacti, his definitions are not very useful. I provide a more modern description of the terms cephalium and pseudocephalium and then ask whether these specialized flowering structures are adaptive. I define cephalia by an underlying layer of cork and contiguous areoles arising from the growing point. These two traits preclude photosynthesis at the cephalium. Cephalia therefore seem to be maladaptive or at least non-adaptive. By contrast, pseudocephalia lack the cork layer and contiguous areoles, hence they undergo some photosynthesis from the pseudocephalium, hence their pseudocephalia are probably neither adaptive nor maladaptive. Others have proposed that cephalia and pseudocephalia are maladaptive insofar as they cause the stem apex to tilt precariously and thereby preclude further branching, but I show this is probably not the case. I promise to mostly show pretty pictures, with hardly any words on slides, except for genus and species names.

I am a professor of biology, specializing in evolutionary theory, who is cross-appointed in mathematics & statistics and in interdisciplinary studies, and who has also been an instructor in indigenous studies. The core of my research is in understanding the evolutionary origins of sex (from a feminist perspective) and understanding what generates diversity (surprisingly, not sex). As a theorist, however, I feel compelled to learn in-depth about real organisms, which for me has meant cacti, which I first saw lots of during graduate school at New Mexico State University and Arizona State University. I served two non-consecutive terms as editor of Haseltonia.

Please come and enjoy an excellent program where you will understand why this topic has been of curious interest over the years. Enjoy some great refreshments, win a great plant and also get a free plant!


*Coleocephalocereus aureus*


*Facheiroa cephaliomelana* subsp. *estevesii*

# Tucson Cactus and Succulent Society

**Thursday April 7, 2016 from 7 - 9 pm**

**"Plant Hormones, Grafting and Growth of Desert Plants"**

**Presented by Ernesto Sandoval**
**Collections Manager, UC Davis Botanical Conservatory**

Astrophytum asterias graft

Ernesto Sandoval has been wondering and seeking questions to why plants grow and look the way that they do for a long time. Now he explains and interprets the world of plants to a variety of ages and experiences from K-12 to professionals and Master Gardeners. He regularly lectures to a variety of western Garden Clubs throughout the year and particularly to Succulent Clubs throughout California and elsewhere since that group of plants is his particular passion and within his general interest and devotion to plants. He describes himself as a "Jose of all plants, master of none." Ernesto thoroughly enjoys helping everyone, and gardeners in particular, to understand why and how plants do what they do.

When he was about 13 he asked his dad why one tree was pruned a particular way and another tree another way. His dad answered bluntly "because that's the way you do it." Since then he's been finding the answers to those and many other questions by getting a degree at UC Davis in Botany and working from student weeder/waterer to Director over the last 25 years at the UC Davis Botanical Conservatory. He's long left the "mow blow and go" monoculture landscape gardening world of Los Angeles and has immersed himself in the world of polyculture and biodiversity by growing several thousand types of plants at the UC Davis Botanical Conservatory, many of them succulents. Several of his favorite garden projects involved converting lawns and or water loving landscapes to drought tolerant and diversity filled gardens! He likes to promote plant liberation by encouraging gardeners of all sorts to grow more plants in the ground when possible. He loves the technical language of Botany but prefers to relate information in more understandable methods of communication! By helping people to understand the workings of plants he hopes to help us better understand how to and why our plants do what they do and how we can maximize their growth, or at least appreciate what they do, with less effort and a better understanding.

Everyone who is interested in improving their cacti and other succulents education will want to be in the audience during this program by Ernesto. Come and join everyone for an excellent evening with, food, raffle plants and free plants.

# Tucson Cactus and Succulent Society

## Thursday May 5, 2016 from 7 - 9 pm

## "Untangling the complex evolutionary history of the promiscuous prickly pears and other cacti, where did they all come from?"

**Presented by Lucas C. Majure**
**Biologist of New World Succulents, Desert Botanical Garden, Phoenix, AZ 85008**

Opuntia lutea, Costa Rica, Palo Verde

Melocactus matanzanus

Lucas grew up in central Mississippi where he developed a love for all things natural and a deep connection with the flora of the southeastern United States. It was there that his fascination with cacti began during his master's work at Mississippi State University. He then migrated to the University of Florida where he earned a Ph.D. working on the evolutionary history of the prickly pear cacti. He is now a research botanist at the Desert Botanical Garden in Phoenix, where he has continued to focus on prickly pear cacti throughout the Americas, but with keen focuses on continental North America and the Caribbean region. He currently has ongoing projects on the cactus floras of Cuba and Hispaniola in the Greater Antilles, as well as numerous projects in the southwestern United States.

For anyone interested in seeing Lucas and learning about his research and current projects, please plan to attend his presentation. You will also enjoy being with lots of friends, enjoy some great refreshments, win some great plants as well as obtaining a free plant during your departure.

Opuntia basilaris, Utah

# Tucson Cactus and Succulent Society

## Thursday June 2, 2016 from 7 - 9 pm

## "Mexico, The Hidden Treasures of Coahuila"

### Presented by Wendell S. (Woody) Minnich

*Echinocereus pectinous*

**Woody's Band Renion**

Mexico is thought by many to be the richest region in the world for cacti. For all those individuals who travel in search of rare and unusual cacti, their first choice is often Mexico. The Sierra Madre Oriental is considered the center of diversity for Mexican genera, ranging from *Ariocarpus* to *Aztekiums, Echinocereus, Ferocactus, Geohintonia, Gymnocactus, Mammillaria, Obregonia, Pelecephora, Thelocactus, Turbinicarpus* and many, many more. Because of the plethora of plants found in the states of Tamalipas, Nuevo Leon, San Luis Potosi and Hidalgo, most field workers have just decided to ignore the little explored Coahuila.

For most of us, Coahuila and its neighboring state of Chihuahua were often only used as drive-throughs on our way to the succulent rich south. In recent years, many of the serious plant explorers have started finding new back country roads in these two states. These new roads have graciously opened up some of the rarely explored areas to extremely remote regions, and some of these back country roads (trails) are not even found on the maps! Coahuila, as close as it is to the USA, actually has some of the least explored and most remote regions in all of Mexico.

On our trip through Coahuila, we drove for many hours without ever seeing other vehicles or back country people. There were no urban or agricultural developments as these wild places are still virtually untouched! The valleys and mountains of these expanses will surely offer many new species for the field worker willing to do some serious exploring. Near the roads, if you wish to call them roads, I saw only a few dried-up old ghost towns where apparently some tough old Mexicans, probably from the Poncho Villa era, once resided.

From the unknown territories of Coahuila, there have been numerous new cacti and other succulents discovered and rediscovered. The crown jewel of these new plants is the fantastic *Mammillaria luethyi*. It was lost for over 60 years since its original siting, growing in a rusted tin can on a dusty ranchito porch. All of us exploring Mexico had searched for this very special Mammillaria, until only a few years ago, Luethy found it in northern Coahuila. The Sierra del Carmen, which abuts the Rio Grand and the Big Bend National Park, has also been the origin of other new species. Close to this area, we discovered a new, very beautiful *Echinomastus*, or possibly *Gymnocactus*? Also from this region we found a very handsome red *Sedum*, as well as *Echinocereus longisetus*, and the northern most of the *Echeverias, Echeveria strictaflora*. In a remote dry lake bed, Laguna la Leche, we admired the amazingly cryptic *Escobaria abdita*. Wow, just some of the treasures of Coahuila!

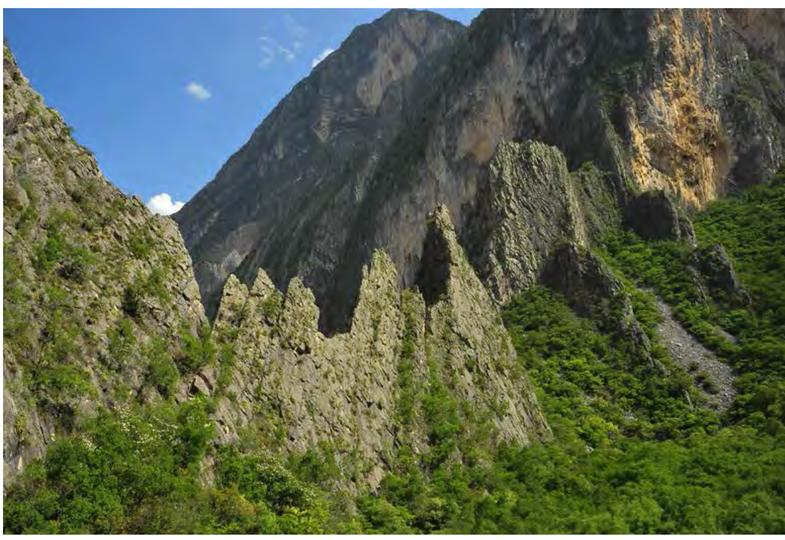
This trip was also to be an adventure in seeing some of the brand new *Agaves, Echeverias, Astrophytums, Echinocereus and Mammillarias*. We scored on almost everything we went to see, and never, in the 45 years that I have traveled Mexico, have I seen it so green. This talk will also feature many cacti and other succulents that have never been seen in books or presentations. Come explore Mexico with me!

Woody, as he is commonly called, has been in the cactus hobby for some 45 years and has become well known for his participation in many of the cactus and succulent clubs. He is an honorary life member of nine clubs as well as a life member and Friend of the CSSA (Cactus & Succulent Society of America.) He has served in almost all positions of leadership from president, to newsletter editor, to show chairman and so on. He is also known for his extensive field work studying primarily the cactus family. He has traveled throughout Africa, Argentina, Australia, Bolivia, Brazil, Chile, Madagascar, Mexico, Namibia, New Zealand, Peru, Socotra, the United States and Yemen. From these trips and his nursery experience, he has developed an extensive knowledge of the cactus family as well as many of the other succulent genera.

Woody is also known for his many presentations. His photography is considered to be special and his commentary very entertaining and educational. He is a recognized international speaker and has spoken for plant conventions - organizations all over the USA, as well as in England, Germany, Australia, New Zealand and Mexico. Woody has also authored a number of articles for various newsletters, the CSSA journal and his photographs are well published. Woody is the creator-originator of the first color version of the CSSA journal “Cacti and Succulents for the Amateur” that also featured show plants, shows and the growers of the pictured plants.

He is also known for his cactus and succulent nursery, Cactus Data Plants. CDP was started in 1975 and is still in operation today. Cactus Data Plants specializes in show specimens and rare cacti and other succulents with particular emphasis in *Ariocarpus, Astrophytum, Mammillaria, Gymnocalycium, Turbinicarpus, Melocactus, Copiapoa, Fouquieria, Pachypodium, Euphorbia, Cyphostemma, Adenium and Adenia*. Woody and his wife Kathy live in the beautiful mountains south of Santa Fe New Mexico, in a region called Cedar Grove. He has a small 1,200 sq. ft. greenhouse and a few cold frames where he grows his unique plants. He is always on the move and travels frequently to do presentations and shows throughout the western United States. Woody is the proud parent of three children, Leah, Denver and Sarah, all of whom are now grown and out in the big world. Woody is also the proud grandparent of three grandsons, Indiana, Ashton and Logan. He is a retired high school teacher of 32 years where he taught Graphic Arts, Architecture, Art and Health.

For a truly spectacular program presentation, please do not miss this one! Give Woody a great, welcome back to Tucson! Also be sure to enjoy being with lots of friends, enjoy great refreshments, win some beautiful plants and be sure to get a free plant during your departure.



Huasteca Canyon, site of *Agave albopilosa*

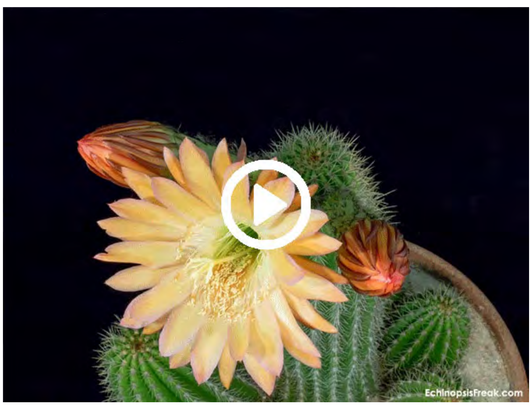
# Tucson Cactus and Succulent Society

## Thursday July 7, 2016 from 7 - 9 pm

## "Freaky Flowers: Exploring the crazy beauty and fascinating history of Echinopsis flowers"

### Presented by Echinopsis enthusiast Greg Krehel

(NOTE: To see this images animated in motion, go to http://echinopsisfreak.com)


Greg's presentation will feature:

- A selection of Greg's EchinopsisFreak timelapse videos of flowers blooming and wilting.
- Details on the timelapse creation process.
- A selection of Greg's focus-stacked still images of Echinopsis flowers.
- Details on the focus-stacking process.
- An overview of the interesting history of Echinopsis hybridization.
- Some tips and tricks for acquiring, growing, and getting great blooms from Echinopsis.

Greg Krehel: Upon retiring from software production a few years back, Greg reconnected with his childhood love of cacti and unwittingly stumbled onto the stunning flowers of the Echinopsis genus. The brief lifespan of these flowers led him to take up photography for the first time and resulted in his EchinopsisFreak.com website containing a host of time lapses and still images of these amazing flowers. Greg's work has been featured by National Geographic, the New York Times, Wired, the Singapore Botanic Gardens, and others.

The July program will feature some amazing video presentations featuring some very beautiful cacti that everyone needs to have in their garden! Be sure to be at this meeting! Other features from this excellent program will include your chance to win some really beautiful plants, enjoy great refreshments, talk with many other cactus and succulent fans and also receive a free plant provided by the TCSS.

# Tucson Cactus and Succulent Society

## Thursday August 4, 2016 from 7 - 9 pm

## "Cacti of Texas"

### Presented by Ad Konings

Echinocereus coccineus rosei-FranklinMnts

The cacti of Texas can be divided into three major geographical sections and the one with the most diversity occurs in the so-called Trans-Pecos area (West Texas). The other sections are the subtropical South Texas, and the wetter Central and East Texas. Inside the Trans-Pecos we find Marathon Basin in which several endemic species are found, but most Trans-Pecos cacti also occur in northern Mexico and some also in New Mexico. I will discuss in more detail the group of species affiliated with the Texas Rainbow (Echinocereus dasyacanthus), with the Green-flowered Hedgehog (E. viridiflorus), with the Claret-cup Cactus (E. coccineus), and with Sneed's Cory (Escobaria sneedii). The latter group is mostly restricted to higher elevations and it appears that some mountain ranges in the area have evolved their own (sub)species. Three of the cactus species that are endemic to the Marathon Basin are miniature plants that are difficult to spot in habitat outside of the blooming season, but when flowering appear to be much more common in their particular distribution area.

Unassuming and often armed with spines a small cactus often goes unnoticed in its natural habitat. This, however, radically changes after rains provide the juice of life; flowers, sometimes larger than the plant itself, materialize in a matter of days and seize the moment to propagate in their normally hot and dry environment. Rarely a cactus flower is open for longer than seven hours, usually during the hottest time of the day, after which it wilts before the night falls. Because most cacti in any given area are synchronized by the irregular rain showers, most bloom on exactly the same day—an arresting spectacle. For most visitors to the desert such a mass blooming is a once-in-a-lifetime event, not easily forgotten, which adds to the excitement of being in a desert.

Cacti have fascinated Ad Konings since he and his wife Gertrud moved to El Paso, Texas, in 1996. A few years later it became more than a fascination and both have traveled extensively throughout the state in order to locate and photograph each and every cactus species in its natural setting. With over 16 years of cactus hunting (shooting with a camera exclusively!) under his belt, he is one of the very few people who have seen and photographed each of the 132 Texas species in the wild. Ad is a biologist by profession (University of Amsterdam, Netherlands) and specializes in underwater observation and photography of cichlids (tropical freshwater fish) and has authored more than 20 books relating to these fishes. He is currently treasurer of the El Paso Cactus and Rock Club and also editor of their quarterly newsletter.

Please make August 4th an attendance mission for you and your family. This will be an excellent program that everyone should see. Be sure to make this a priority for August and also participate in getting an excellent raffle plant and also get a FREE plant per person when leaving.

Escobaria sneedii-FranklinMnts

Echinocereus davisii-Marathon

Echinocereus dasyacanthus-QuitmanMnts

# Tucson Cactus and Succulent Society

## Thursday September 1, 2016 from 7 - 9 pm

## "NOVEL CACTI IN THE NORTHERN CHIHUAHUAN DESERT OF TEXAS"

### Presented by Jim Weedin

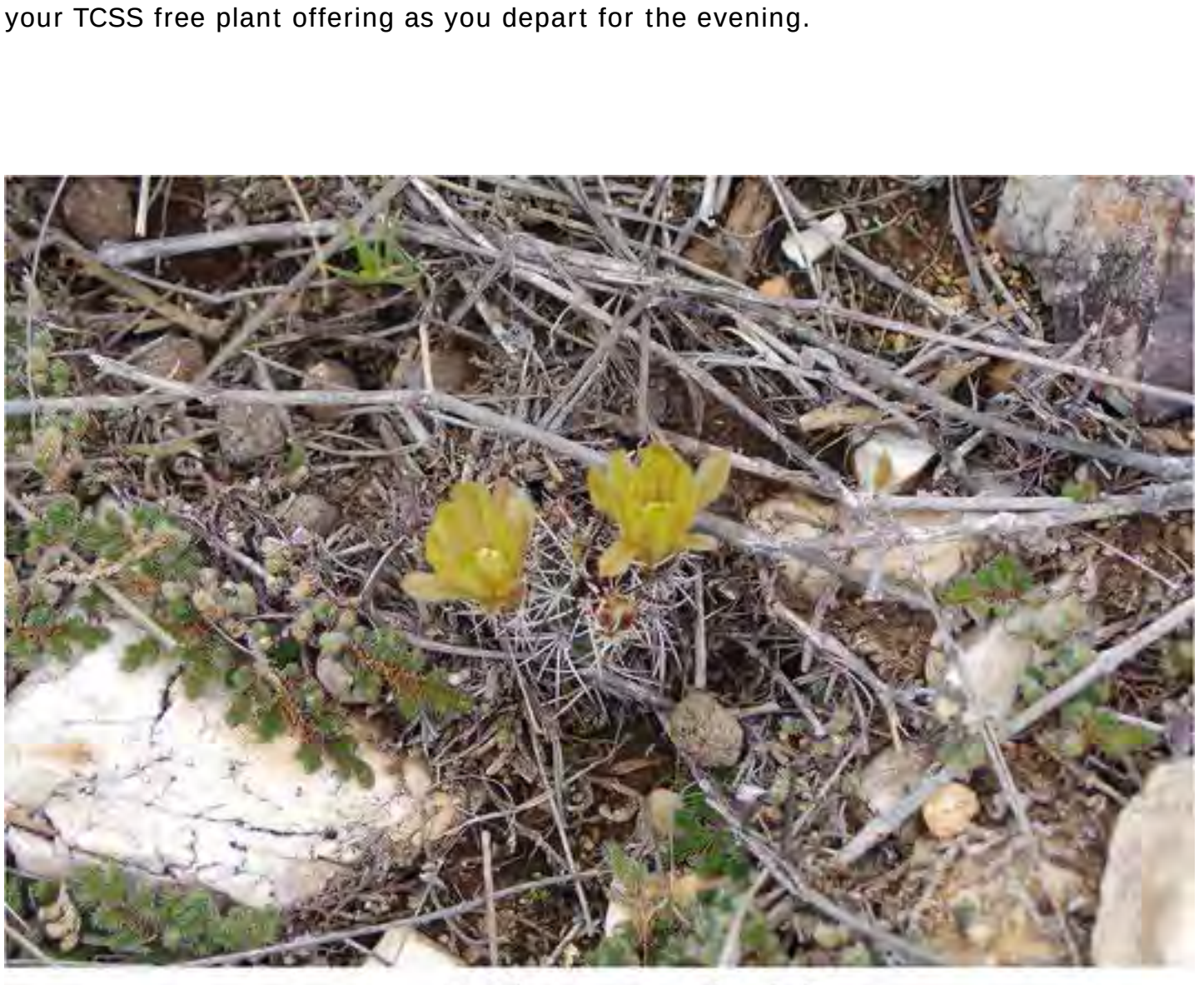
Echinocereus coccineus

Opuntia azurea - Teresa Weedin

The Cactus Family in Trans-Pecos Texas is a dynamic flora of ca. 120 taxa, including 77 species in 21 genera. This mountain and basin region in the Chihuahuan Desert covers 32,000 square miles of desert, grassland and mountainous areas up to 8,749 feet in elevation. Geology and climate create variable edaphic factors enhancing distribution and speciation. The biosphere reserve anchored by Big Bend National Park and Big Bend Ranch State Park are now adjacent to large preserves in Mexico. Conservation and horticulture are receiving increased attention especially at the Chihuahuan Desert Visitorâ€™s Center outside of Fort Davis, Texas.

Jim Weedin is a biogeographer specializing in the Cactus Family of the Rocky Mountains, especially far-west Texas. He has a B.A. in Geography from the University of Texas at Austin and an M.S. in Biology from Sul Ross State University in Alpine, Texas. He co-authored two books on Trans-Pecos Texas cacti as well as publications on chromosome numbers as an aide to taxonomy. He recently retired from 33 years of teaching at the Community College of Aurora, Colorado. He is a member of the CSSA and TACSS. Jim also scientifically collects fossil plants and is gathering historical information on his great uncle Tom Weedin (Florence, Arizona), who helped shepherd Arizona from Territory to Statehood.

Be sure to attend this special September program. There will be lots of great refreshments, conversation and excellent raffle plants. Also get your TCSS free plant offering as you depart for the evening.



Echinocereus davisii

Echinocereus chisoensis

# Tucson Cactus and Succulent Society

## Thursday October 6, 2016 from 7 - 9 pm

## "History and Evolution of the Sonoran Desert"

### Presented by Thomas R. Van Devender

Many of the adaptations in desert animals evolved in response to new extreme condition of light, heat, and aridity in dry topical forests that first appeared in the middle Eocene (40 mya), long before the deserts of North America existed. The uplift of the Sierra Madre Occidental in the late Oligocene-early Miocene (25-15 mya) caused many important changes. Tropical forests were no longer present coast-to-coast. Biotic communities were segregated out in elevational zones alone elevational gradients of rainfall and temperature for the first time. New vegetation types dominated by oaks and pines appeared on mountain tops. Immigration of new groups from Eurasia had dramatic impacts on the biota, including the replacement of primitive boas by colubrid, viperid, and elapid snakes, which radiated throughout North America. New species evolved on mountaintops, with more primitive ones persisting in tropical lowlands. Evolutionary radiatons in plants established the Asteraceae, Fabaceae, and Poaceae as floristic dominants. In the middle Miocene, a drying trend changed tropical deciduous forests isolated northwest of the Sierra Madre Occidental first to thornscrub, then to desertscrub as the Sonoran Desert formed (8 mya). At the same time, the land that is now Baja California split from mainland Mexico and began moving to the northwest in splendid evolutionary isolation. The uplift of the Sierra Nevada a million years ago formed the Mohave Desert, the youngest North American desert.

In the Pleistocene, changes in global climates restricted the Sonoran Desert to the lowest areas along the Colorado River and in central Sonora and southern Baja California for 80-90% of the last two million years. With cooler summers and shifts to winter rainfall, woodlands dominated by pinyons, junipers, and shrub oaks expanded widely into the desert. During each of 15-20 interglacial periods, desertscrub expanded and woodland retreated. Well-preserved plant and animal fossils in indurated packrat middens documented changes in vegetation and climate for the last 40,000 years. The Wisconsin-Holocene transition was at 11,000 years ago. The early Holocene (11-8.5 ka) was a transition period with junipers and oaks still at low elevations when saguaro and brittlebush returned. Sonoran desertscrub developed in the middle Holocene (8.5-4.0 ka), but was different than today with catclaw acacia and blue paloverde on rocky slopes. Modern desertscrub formed about 4000 years ago with the arrival of foothills paloverde, desert ironwood, and organ pipe cactus in Organ Pipe Cactus National Monument. Vegetation composition was never stable as climate fluctuated continuously. Hohokam cultures thrived during a wet period about a thousand years ago. The last 500 years were the hottest and driest period in the entire record.

Thomas R. Van Devender was the Senior Research Scientist at the **Arizona-Sonora Desert Museum** for 25 years, where he conducted research on a broad range of natural history topics. He has published well over a hundred publications on a range of topics, including natural history, paleoecology, desert grasslands, desert tortoise ecology, local floras, ethnobotany, herpetofaunas and the Madrean Archipelago. Tom is interested in the natural history of many areas in Sonora, especially the Madrean the Sky Island mountain ranges, the la Frontera zone within 100 km of the Arizona border, the Yécora area in the Sierra Madre Occidental, and tropical deciduous forest in the Álamos area.

In May 2015, he began as the Director of Biodiversity Programs at **GreaterGood.org**, where he organized biodiversity inventories to Sonoran Sky Islands in the Madrean Discovery Expeditions (MDE) program and manage the Predator Conservation Program. From 2009 to 2014, he was the Manager of the Madrean Archipelago Biodiversity Assessment (MABA) project at **Sky Island Alliance**. MABA documented the diversity of animals and plants in the 32 isolated Sky Island ranges and complexes in Sonora, Mexico. These biological records and high-resolution images are available to support conservation activities in the region. Tom organized twelve binational expeditions with large volunteer groups of taxonomic specialists, land managers, college professors and students, local residents, photographers, and journalists to make new observations in high-diversity areas in Sky Island ranges in Sonora. The MABA (**Madrean.org**) and the new MDE (**Madreandiscovery.org**) databases are the best sources of biological records in the Madrean Archipelago.

This will be a special program that everyone needs to see and if you want to know more about the Sonoran Desert, please attend this excellent program presented by a truly remarkable person. You will enjoy lots of excellent refreshments, win some great plants and go home with a free plant provided by the TCSS.

Basaseachi Falls

# Tucson Cactus and Succulent Society

## Thursday November 3, 2016 from 7 - 9 pm

## "Haworthia and Gasteria: Gems of South Africa"

### Presented by Bob Webb and Toni Yokum

Haworthia bayeri

Haworthia pumila

Haworthia esterhuizii

Haworthia chocolate

Haworthia pumila

Gasteria carinataverrucosa

Haworthia cooperi trun

Species within the related genera Haworthia and Gasteria are highly prized among succulent plant collectors around the world. Native mostly to South Africa, with small populations in Namibia and Mozambique, these gems of southern Africa range from easy to grow to very difficult in cultivation. More than 70 species of Haworthia are recognized by Bruce Bayer, but only 23 species of Gasteria are known after a recent revision by Ernst van Jaarsveld; both are prominent South African botanists with decades of experience growing and describing succulent plant species. Hybrids in both genera, as well as variegates, are highly sought after by plant collectors, particularly in Japan. We will present a program that shows what these plants look like in both wild populations and in cultivation, discuss the at-times murky world of plant taxonomy involving these genera, and discuss how to grow them in Tucson.

Bob Webb and Toni Yocum are owners of Arid Lands Greenhouses, and have grown succulent plants for more than 30 years, many of which were obtained from Arid Lands Greenhouses. They have traveled extensively in Africa and Arabia, looking for and photographing succulent plants. They have been to Oman, Yemen, Socotra, Kenya, Tanzania, Uganda, Namibia, Botswana, and South Africa to date. They live in the Sonoran Desert, and Bob travels regularly in Baja California.

This will be our final program presentation this year. Please come and enjoy talking with friends, enjoy a great presentation, have some refreshments and take home a free plant provided by TCSS on departure.

Gasteria bicolor bicolor ha

Gasteria royal

Gasteria blue ox glomerata

Gasteria batesiana barberto

Gasteria armstrong

Haworthia truncata

# Tucson Cactus and Succulent Society

## Thursday January 5, 2017 from 7 - 9 pm

## "Natural Selection: A Cross-Section of Biodiversity in South Africa"

### Presented by Jan Emming

In September 2016, Jan Emming joined five other members of the TCSS to make a several-week-long trip to the marvelous nation of South Africa. The excursion was specifically designed to take in many of the natural features of this very diverse country. While succulent plants were definitely a part of the itinerary there was much time spent on nonsucculent botanical features, as well as the various big game and smaller animals that South Africa is justifiably famous for. From elephants to elephant food trees (Portulacaria afra), penguins to cycads, and thornbush to fynbos, Jan's program will highlight some of the country's best natural features.

A note on the program itself: we did see numerous succulents, but we spent a greater share of our time in regions that are better known for nonsucculent plant species and big game animals, so the program will reflect this. I believe that many TCSS members have seen great programs that focused almost entirely upon the most succulent-rich habitats of the Western and Northern Cape Provinces, most notably the Karoo, Richtersveld, Namaqualand, etc, which were not actually regions we visited. We did spend two days in the Little Karoo and items we saw there will be reflected, but the program has lots of photos of animals, intriguing nonsucculent plants, and less-seen succulents in the north and east of the country. I am pleased with the numerous good photos I captured and I think that the TCSS membership will be as well.

Jan Emming has been a member of the Tucson Cactus and Succulent Society for 17 years, joining shortly after he moved to Arizona in 1999. That was the year he purchased a large, off-grid 40 acre parcel of land in the scenic and biologically diverse Hualapai Mountains south of Kingman, Arizona, where the Sonoran Desert merges with the Mojave Desert. This ecological conjunction brings together both saguaro cacti and Joshua trees, alongside a whole range of other species. Since then he's been working on accumulating a large horticultural collection of plants grown outdoors in the ground, mainly succulents but also other xerically-adapted trees, shrubs, and bulbs. Desert Sense Nursery at Destination:Forever Ranch and Gardens offers tours and plant sales by appointment. Jan assures people that the detour off of the main roads is worthwhile if they happen to be in the area!"

All our members that live within traveling distance to our meeting location should attend this excellent program presented by Jan Emming. We will also have some wonderful plants in our plant raffle, lots of great refreshments and excellent free plants offered to everyone by the club.

# Tucson Cactus and Succulent Society

## Thursday February 2, 2017 from 7 - 9 pm

## "An exploratory trip to Northwestern Argentina"

### Presented by Guillermo Rivera

Guillermo's presentation will cover the habitats of several provinces from central and Northwestern Argentina, from salt flats to high elevation Puna habitats. Gymnocalycium, Echinopsis, Parodia among many others will be well represented, as well as some bromeliads and some wildlife. This presentation is more than a simple travel log as it addresses the importance of habitat knowledge in order to determine the validity of plant names and the issue "too many names for the same plant". Diversity and variability of plants in habitat within populations and between populations will be addressed. The importance of habitat knowledge will be discussed and its significance in plant taxonomy.

Guillermo Rivera was born in Argentina. Owner of Plant Expeditions (former South America Nature Tours), a company dedicated to the organization of tours for the last 15 years, throughout South America (Chile, Argentina, Brazil, Peru, Colombia, Bolivia, Ecuador), Mexico and South Africa, Madagascar, and Namibia with emphasis on plants (bromeliads, cacti, and orchids), and birding. Former researcher at the University of Cordoba, Argentina. BS degree in Biology, University of Cordoba and MS Marine Biology. Northeastern University. PhD in Botany University of Cordoba

Next year we are planning another trip to Namibia, Ecuador, Bolivia, and a combined Chile-Patagonia venture. All these trips will focus on the cactus and bromeliad flora of these places. If you wish more information about planned trips, please visit **www.plantexpeditions.com**.To contact Guillermo directly, info@southamericanaturetours.com or plantexpeditions@gmail.com

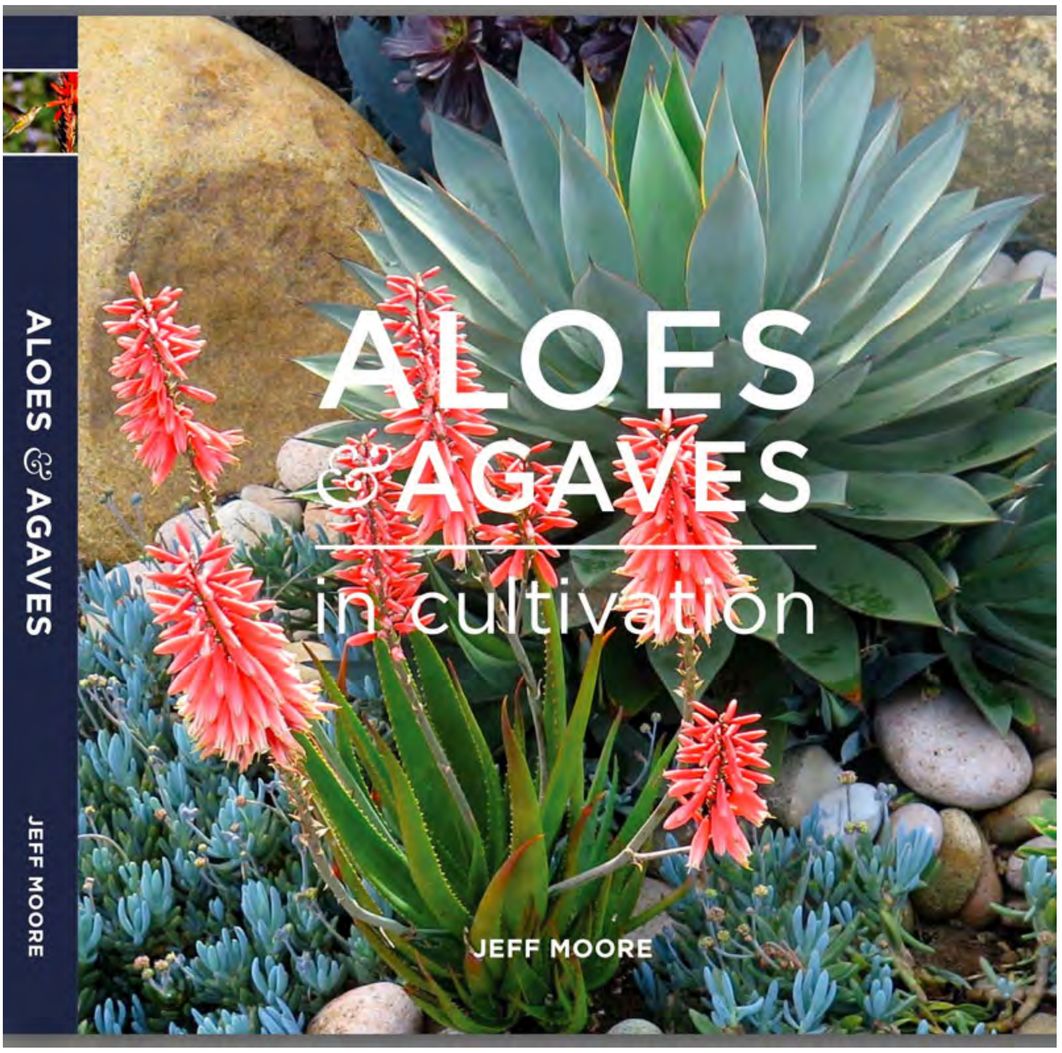
Be sure to attend the February program and enjoy the company of friends and visitors. Excellent refreshments, raffle plants to win and the club gives you a free plant when you depart at the end of the meeting.

# Tucson Cactus and Succulent Society

**Thursday March 2, 2017 from 7 - 9 pm**

**"Aloes and Agaves in cultivation"**

**Presented by Jeff Moore**




This program will follow the flow of Jeff's new book, "Aloes and Agaves in cultivation". There will be a lot of nice images on both genera (and a few of the related genera as well), and the emphasis will be on these plants in cultivation, not habitat. Of course cultivation for me is California, which is different from Arizona, but we'll talk about which plants will survive your climate and which won't. I'm sure I'll learn a bit from the audience on that subject. This book comes from my passion for aloes, and a lesser degree agaves, which I became more enthusiastic about as I put the book together. I combined them in one book as they make similar statements in the landscape, and quite a few aloe nuts also like agaves, and vice versa. I'll talk about the broad differences for those that are new to the succulent club.

Jeff has operated his nursery in Solana Beach for close to 25 years now, and has really enjoyed the book-making process and the opportunity it has given him to travel in California and Arizona to speak with the clubs. He is working on a third book now on soft succulents - aeoniums, echeverias, dudleyas, crassula, sedums, kalanchoes, etc..... Looks good on the computer, and he hopes to have it ready by the end of the year.

Be sure to come and enjoy Jeff's program that will introduce his book and give his insight on the cultivation of aloes and agaves. You may win a great plant, enjoy some refreshments and get your free plant before going home for the evening.

# Tucson Cactus and Succulent Society

## Thursday April 6, 2017 from 7 - 9 pm

## "Pediocactus and Sclerocactus; A Tour of the Colorado Plateau"

### Presented by Rob Skillin

Sclerocactus polyancistrus blond form from the El Paso Mts.

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This month's program will feature two little known genera of American cacti: Pediocactus and Sclerocactus. Presented by the **Central Coast Cactus and Succulent Society**'s Rob Skillin. The program highlights the best of 25 years of field study during which Rob photographed all species of the two groups, as well as the magnificent landscapes of the Southwestern US. He will explain what these plants are, where they are found, the often very specialized environmental conditions they have adapted to, and why they are so seldom grown in plant collections. Come to this month's meeting and learn about the smallest US cactus, the rarest US cactus, and the most widespread genus you've never heard of.

I have been growing cacti and succulents for nearly 40 years, and have been involved in various local societies for most of that time. The first office I held was Show and Sale Chairman for the **Santa Barbara C&SS**, during the late 1980's. After moving to California's Central Valley, I became a founding member, and later, President of the **Bakersfield C&SS**. In 2005, after another move, I was a founder the Central Coast C&SS and became its first President. This society now boasts 300+ enthusiastic members, and held its very successful tenth annual show and sale in May of 2016. I have also been involved with the CSSA as a member of its Board of Directors.

My first interest, which continues today, was cacti of the Chihuahuan desert, especially those unique genera such as Ariocarpus, Aztekium, and Strombocactus, etc. Gradually, I diversified my collection to include Mesembs, Haworthias, and other succulents, particularly caudiciforms. I've spent many years studying the cacti of the US, particularly Sclerocacti and Pediocacti. I am an avid grower of plants from seed, and now have a number of seed-grown specimens in my collection dating back to 1982. As an acknowledgment my expertise with these plants, I have been asked to judge numerous shows throughout California, including the CSSA, Intercity, NORCAL, LA, and San Diego shows.

Along with my interest in cacti and succulents, I enjoy photography and travel. These interests have come together in a wonderful way during my botanical explorations of the western US and Mexico, and portions of South America, Africa, Madagascar and the Middle East. I have several programs based on these trips, and I speak regularly to clubs in northern and southern California. Many of my photographs have been published as illustrations for articles and covers of the Journal and Haseltonia, as well as the Timber Press Book of Succulents of the World.

This should be an excellent program that will cover plants many people have never seen in habitat even though they are found growing in the United States. Come and enjoy friends, refreshments, view the educational library, win some plants and get a free plant at the end of the meeting.

Paul Skillin observing the physiological characteristics of Sclerocactus parviflorus.

# Tucson Cactus and Succulent Society

**Thursday May 4, 2017 from 7 - 9 pm**

**"Prickly prospects for cacti under climate change"**

**Presented by Michiel Pillet**


Using almost 40,000 records of individual cacti, and information on climate, land use, and seed dispersal, Michiel made predictions of the current and future ranges of hundreds of species. This allowed him to assess changes in range size for some of our favorite species. Such information is helpful for conservation biologists, who need to decide how to spend limited funding. It can also help with discovery of new species and populations. For example, based on known locations of the rare Mammillaria luethyi, are there other areas predicted by the computer models to be suitable but from which this species is not known? Or, where will prime habitat for saguaro be located fifty years from now?

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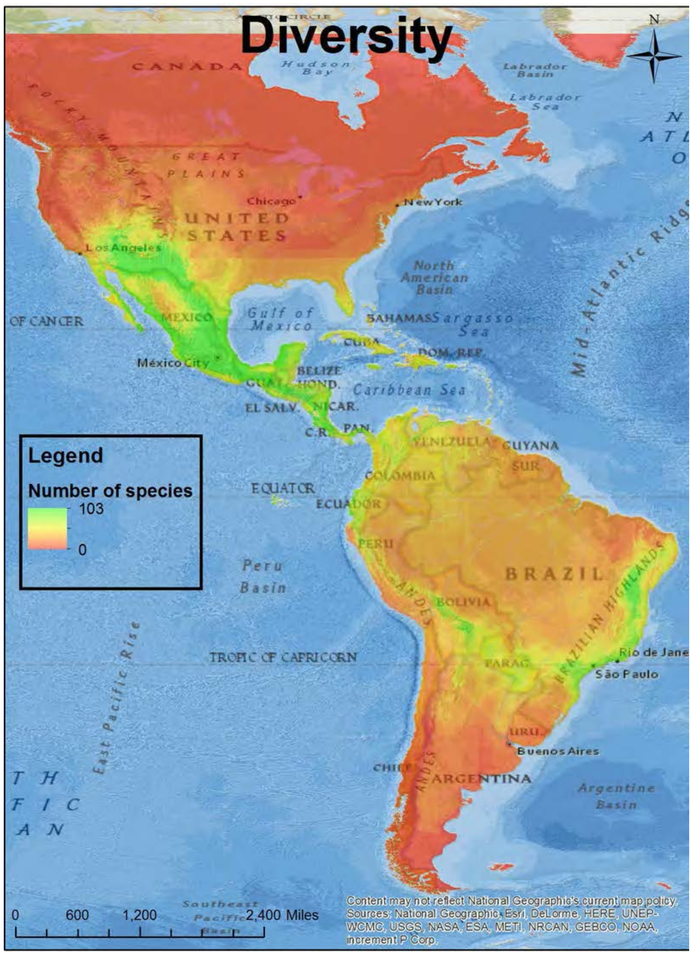
Recently, the International Union for Conservation of Nature (IUCN) completed an assessment of the conservation status of 1,478 species of cacti. They found that 31% of these species were threatened, a proportion higher than for birds and mammals. The most significant threats were found to be agriculture, development, and collection of plants in the wild. Climate change was noticeably absent from this list, but very few cactus studies have addressed this topic. Does climate change worsen the outlook for cacti?

Using tens of thousands of geographic records, Michiel assessed the potential impacts of climate change for several hundred species, including iconic taxa such as saguaro, Ariocarpus retusus, and Arizona queen of the night. Please join him in an exploration of the future of our prickly friends. Along the way, we'll learn about climate change, focus on the stories of some of the 99 species considered to be critically endangered, and discuss how we can all play a role in their conservation.

Michiel grew up in Belgium, and became fascinated by succulents as a teenager. After high school, he moved to Montana for college, unfortunately having to leave his first plant collection behind. He and his wife just moved to Arizona last year. Michiel is a doctoral student at University of Arizona, where he works primarily on computer models with application to conservation. Having been welcomed warmly by several members of TCSS, he quickly rebuilt his succulent collection, with several hundred plants and thousands of seedlings. He is working toward starting a succulent non-profit whose missions are conservation and making rare species more available to the public. Besides succulents, he is also interested in reptiles, insects, amphibians, and carnivorous plants.

Please be sure to come to the May 4th program and introduce yourself to Michiel. This should be a very good program that needs our attention. Also enjoy the refreshments, free plants and so much more.




Another way to use the occurrence data is the creation of diversity maps. Why are cacti so diverse in the Brazilian Highlands? Where did cacti originate? Those are some of the questions such maps can drive us to think about.

# Tucson Cactus and Succulent Society

## Thursday June 1, 2017 from 7 - 9 pm

## "Treasures of the Seri Madres --- Succulents and Adventure along the Coast of Sonora"

### Presented by Tom Van Devender and Ana Lilia Reina-Guerrero

View of Puerto Libertad. Photo by Vonn Watkins.

This program features the trip to the Gulf of California in Sonora, Mexico during the month of March, 2017. There were a total of 13 people on the trip plus the 2 guides, Tom and Ana Lilia. This program will show and highlight the amazing diversity of succulent plants and also describe the many adventures and locations that were visited and experienced.

Thomas R. Van Devender was the Senior Research Scientist at the Arizona-Sonora Desert Museum for 25 years, where he conducted research on a broad range of natural history topics. He has published well over a hundred publications on a range of topics, including natural history, paleoecology, desert grasslands, desert tortoise ecology, local floras, ethnobotany, herpetofaunas and the Madrean Archipelago. Tom is interested in the natural history of many areas in Sonora, especially the Madrean the Sky Island mountain ranges, the la Frontera zone within 100 km of the Arizona border, the Yécora area in the Sierra Madre Occidental, and tropical deciduous forest in the Álamos area. In May 2015, he began as the Director of Biodiversity Programs at **GreaterGood.org**, where he organized biodiversity inventories to Sonoran Sky Islands in the Madrean Discovery Expeditions (MDE) program and manage the Predator Conservation Program. From 2009 to 2014, he was the Manager of the Madrean Archipelago Biodiversity Assessment (MABA) project at Sky Island Alliance. MABA documented the diversity of animals and plants in the 32 isolated Sky Island ranges and complexes in Sonora, Mexico. These biological records and high-resolution images are available to support conservation activities in the region. Tom organized twelve binational expeditions with large volunteer groups of taxonomic specialists, land managers, college professors and students, local residents, photographers, and journalists to make new observations in high-diversity areas in Sky Island ranges in Sonora. The MABA (**Madrean.org**) and the new MDE (**Madreandiscovery.org**) databases are the best sources of biological records in the Madrean Archipelago.

Ana Lilia Reina-Guerrero received her undergraduate degree from the Universidad de Sonora in Hermosillo in Agricultural Sciences with a thesis on Medicinal Plants of the Mountain Pima Indians of the Municipio de Yécora, Sonora. She has been involved in ethnobotanical studies with the Seri and Mayo Indians, including the Mayo Ethnobotany book with David Yetman and Tom Van Devender. She is interested in the ethnobotany of Sonoran cacti and was a collaborator on the Cáctaceas de Sonora and My Nana's Remedies books. Since 1990 she has been involved in floristic surveys in the Arizona-Sonora borderlands in northeastern Sonora border region, and the Yécora area in association with the Arizona-Sonora Desert Sonora Desert Museum (ASDM) and Sky Island Alliance. She and Tom Van Devender have made over 20,000 plant collections mostly in the state of Sonora. Since 2009, she has led a US Fish & Wildlife Service (FWS) project to interview rural residents in Central Sonora about the Masked Bobwhite Quail. She has been very active in plant inventories on field trips to Sonora as part of the Madrean Archipelago Biodiversity Assessment project at Sky Island Alliance. She is a professional English-Spanish translator who has translated a broad range of natural history writings for ASDM, US Fish & Wildlife Service, the San Diego Natural History Museum, and other conservation organizations.

If you want to know more about the fantastic 5 day trip into the state of Sonora, please attend this excellent program. You will also enjoy lots of excellent refreshments, win some great plants and go home with a free plant provided by the TCSS.

The group gathers for information from Tom and Ana Lilia. Photo by Vonn Watkins.

# Tucson Cactus and Succulent Society

## Thursday July 6, 2017 from 7 - 9 pm

## "Agave Distribution from Coast to Coast and Deserts to Mountains"

### Presented by Greg Starr

*Agave sebastiana* on Isla de Cedros in Baja California

*Agave azurea* in the Picachos de Santa Clara in the Vizcaino Desert

Have you ever wondered where the epicenter of agave distribution is or where the greatest diversity of species occurs? Are there more species in the tropics, deserts, coasts or mountains? Greg has wondered the same thing and decided it was about time to dive into the subject matter and find some answers. He found some answers and wants to share the results with you. Come out on a hot July night and be prepared to be blown away be what he has found out. Okay, maybe mildly shocked is more likely. Agaves are wholly New World plants, being found in the southern U.S. throughout Mexico, Central America, northern South America, and even the Caribbean. They grow along the coasts of Mexico; in hot, hyper-arid desert regions; moist, steamy subtropics; semi-arid grasslands; and cool, high mountains. They grow in sandy soils, rich volcanic soils, limestone rocks, granitic rocks, gentle slopes, and steep, vertical cliffs. Greg will show examples from the major centers of diversity as well as from all the varied and diverse habitats in which agaves can be found. If you have even a mild interest in plant distribution, or if you just want a 45 minute nap, join your friends and colleagues for an evening of agaves, snacks and conversation. The presentation will not only focus on agave distribution, but will also include some of the best species for landscape use in the desert southwest. Greg has spent many years traveling throughout the desert southwest, and much of Mexico studying and photographing agaves along with other interesting desert adapted plants, and he will most likely show the cream of the crop in this brand spanking new presentation for which the members of TCSS are the lucky recipients.

Greg Starr was born and raised in the Sonoran Desert although he did not become a true plant-o-phile until his college days. His fascination with desert plants for landscaping lead to his first book, Cool Plants for Hot Gardens, which went viral and is now out of print. His second book, Agaves: Living Sculptures for Landscapes and Containers, is a direct result of his long standing interest in those amazing plants. He recently co-authored the Field Guide to Cacti and Other Succulents of Arizona, funded by the Tucson Cactus and Succulent Society and private donors. He travels throughout Mexico with many recent trips to Baja California researching a proposed book on the Agaves of Baja California. Greg is an advocate of mixing flowering plants with cacti and other succulents and promotes this idea whenever possible. Greg has presented talks on agaves, cacti and other succulents, and desert plants in general throughout the United States and will be going worldwide at Australia's Succulenticon 2018.

Please join us only a few days after July 4th for an excellent program that should be a great summer treat. There will be some excellent plants to win as well as lots of snacks and treats prepared by Patsy Frannea and all our refreshment volunteers, for everyone to enjoy. The TCSS will also give everyone a free plant when leaving for the night. Come and enjoy our July program presentation!

*Agave montana* on Cerro Pena Nevada in southern Tamaulipas

# Tucson Cactus and Succulent Society

## Thursday August 3, 2017 from 7 - 9 pm

## "Shoestring Travels: Botanical Discoveries in Chile"

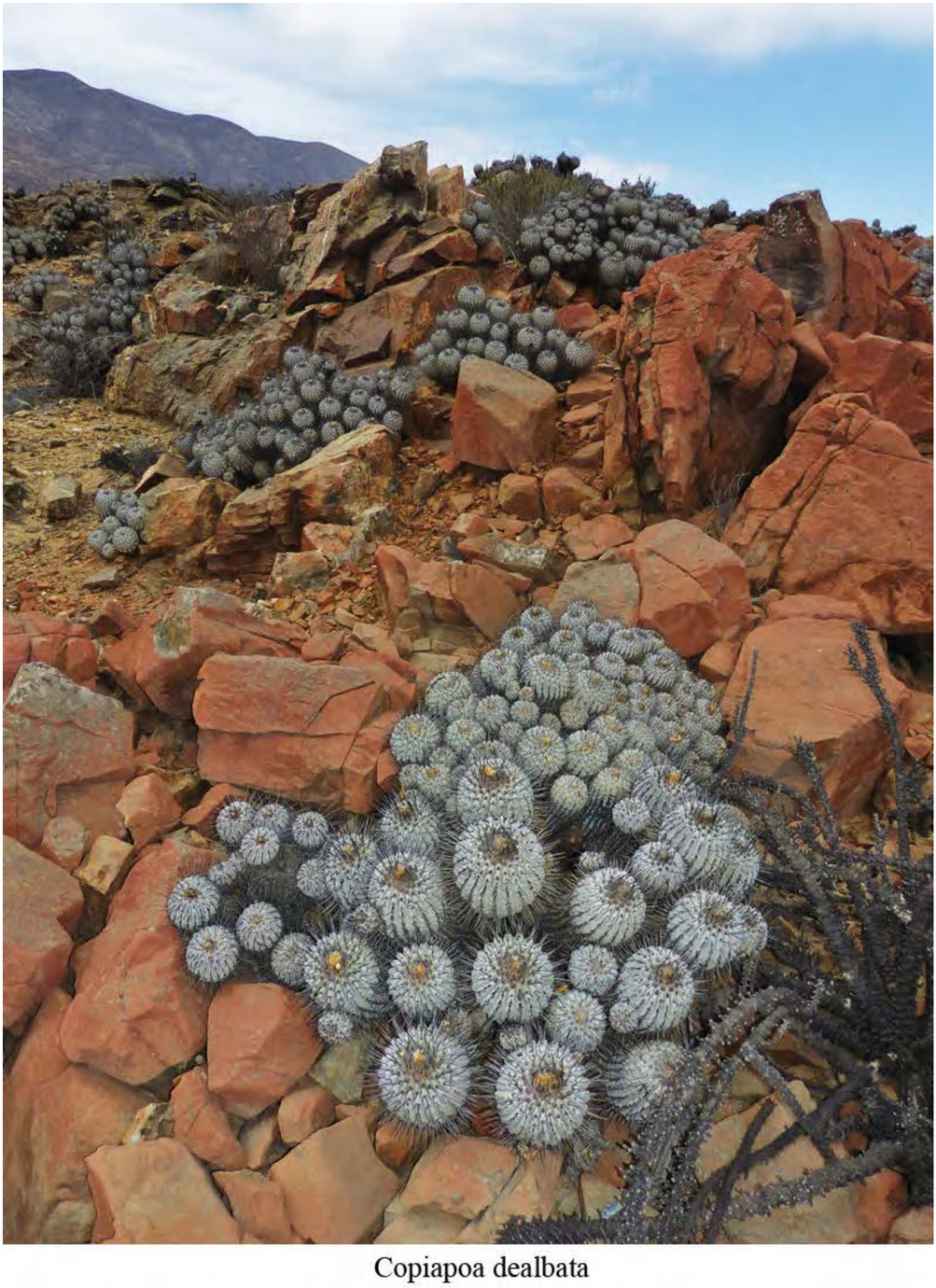
### Presented by Jan Emming

Volcan Villarica

Chile is the world's longest, narrowest country. Located on the west coast of South America, Chile spans climates from sub-Antarctic glaciers and temperate rainforests in the far south to the driest region on earth, the Atacama Desert, in the far north. The physical isolation of the ecosystems of Chile from both the rest of South America and the world by the Pacific Ocean and the Andes Mountains has led numerous unique species to evolve over time. Along almost all of its 2800 mile length, fascinating succulents and many other types of plants can be found. Join us for this presentation exploring some of the wonders to be seen in this beautiful and diverse nation.

Jan Emming has been a member of the Tucson Cactus and Succulent Society for 17 years, joining shortly after he moved to Arizona in 1999. That was the year he purchased a large, off-grid 40 acre parcel of land in the scenic and biologically diverse Hualapai Mountains south of Kingman, Arizona, where the Sonoran Desert merges with the Mojave Desert. This ecological conjuncti on brings together both saguaro cacti and Joshua trees, alongside a whole range of other species. Since then he's been working on accumulating a large horticultural collection of plants grown outdoors in the ground, mainly succulents but also other xerically-adapted trees, shrubs, and bulbs. Desert Sense Nursery at Destination:Forever Ranch and Gardens offers tours and plant sales by appointment. Jan assures people that the detour off of the main roads is worthwhile if they happen to be in the area!

Great monsoon weather welcomes our friend Jan Emming back to Tucson. Be sure to see this journey by Jan into the plant habitats of Chile. Take home an excellent raffle plant, join in on the most interesting conversations, enjoy lots of great refreshments and get your free plant offered to everyone by the club.



Copiapoa dealbata

# Tucson Cactus and Succulent Society

## Thursday September 7, 2017 from 7 - 9 pm

## "The New, Rare and Seldom Seen Cacti and Succulents of Mexico"

### Presented by Wendell S. (Woody) Minnich

*Agave albopliosa*

Mexico is considered by many to be one of the richest regions in the world for cacti. From the United States to the north, to its southern border of Guatemala, there are an amazing number of genera and species to be found. These range from the tiny Turbinicarpus to the giant Pachycereus. Within the reaches of Mexico, there are many diverse geologic environments. These habitats vary from the coastal and inland low lands to its many high mountain niches. For almost 50 years, I have been lucky enough to have traveled most all of Mexico. Thus, my favorite regions for exploring include the most popular Baja California, to the mysterious Sierra Madre Occidental, and the succulent rich Sierra Madre Oriental. It is from these famous territories that the majority of the highly desired collector?s taxa are to be found.

One might think that Mexico, being so close to the United States, would have been totally explored and there would be nothing new to find. Nothing could be further from truth! We are now finding new species of cacti and other succulents at an astonishing rate. These new finds have become a reality mainly because of the construction of many new roads leading us into what was previously unexplored territory. Coahuila, Durango and Zacatecas embody many of these remote regions where few explorers have had the opportunity to botanize. And now, these areas are rapidly opening up!

The ever-popular genera of: Agave, Dasylerion, Fouquieria, Ariocarpus, Astrophytum, Aztekium, Echeveria, Gymnocactus, Mammillaria, Pelecephora and Turbinicarpus, are just a few of the genera where the addition of new species has become common. Due to all of the excitement and interest in these new plants, there have been numerous negative side effects that have evolved. This increased interest in these new plants, combined with the commercial powers of the internet/google, has created new distribution avenues for the marketing of the rare and or endangered species. Plants I have seen for many, many years are now facing new threats from commercial collecting. CITIES and the enforcement of local and international laws, regarding illegally collected plants, has had very little impact on curtailing the destruction of specific plant populations. This is especially true when plants are new or highly desired because of their scarcity in the collector?s circuit.

Come join me, as I will show you many of the new cacti and other succulents of Mexico. Also, I hope to share with you what is happening to these wonderful plants, partly as a result of our new electronic world and the power of money!

Woody, as he is commonly known, has been in the cactus hobby for some 47 years and has become well known for his participation and contributions. He has been awarded honorary life membership to ten clubs, as well as, a life member and Friend award with the CSSA (Cactus & Succulent Society of America.) His many leadership roles include: National Show Chairman, Convention Sales Chairman, Convention Speaker coordinator, 2016 Mid-States Conference Co-chair, accredited C & S judge and writer -photographer. He has also served in almost all positions of leadership for many regional clubs and is currently the president of the new Santa Fe C & S club.

Woody is probably best recognized for his many presentations. His photography is considered to be special and his commentary very entertaining and educational. After all, he was a celebrated secondary school teacher for 32 years, where he taught Art, Graphic Arts-Design and Architecture. He has now become a recognized international speaker and has presented at cactus and succulent events all over the world.

He has also authored a number of articles for various newsletters and journals including the CSSA journal and his photographs are also well published. His work is featured in many books including: ?The New Cactus Lexicon? Hunt and Charles, ?Mammillaria? Pilbeam, and ? Echeveria Cultivars? Schulz & Kapitany. Woody is the creator-originator of the first color version of the CSSA journal article ?Cacti and Succulents for the Amateur? featuring show plants, shows, and the growers of the pictured plants. He is also often called upon to do new book reviews for the CSSA journal

His involvement in the cactus and succulent world is well represented by his 45 years of field work in regions including: Africa, Argentina, Australia, Bolivia, Brazil, Chile, Madagascar, Mexico, Namibia, New Zealand, Peru, Socotra, the United States and Yemen. He often goes to remote places where few, if anyone, have ever explored and as a result of this field work, he has introduced many new taxa. Also, being a recognized grower, Cactus Data Plants since 1975, Woody has developed strong interests in both succulent plant taxonomy and the many cultivation secrets that help us to grow these unique plants.

*Aztekium valdezii*

*Mammillaria bertholdii*

# Tucson Cactus and Succulent Society

## Thursday October 5, 2017 from 7 - 9 pm

## "Lithops in Cultivation, from Ed Storms to Living Stones Nursery"

### Presented by Jane Evans

Born in Tucson, I have been a Sonoran Desert devotee my entire life. I attended the University of Arizona where I received my BS in Plant Science. This is also where I met my husband to be Gene Joseph.

While in College my interest in Sonoran Desert Native plants as well as cacti and succulents began to develop. Perhaps one of my most memorable college plant moments was when Gene and I traveled to the **Boyce Thompson Arboretum** to meet Drs Frank and Carol Crosswhite.

Gene and I were members of the U of A Hort club. Feeling that the club should have a cactus collection but as you would imagine no money, it was suggested by our advisor Dr. Lemoyne Hogan, that we go to the Arboretum and ask the Crosswhite's for plants to start the collection. Meeting the Crosswhite's was an experience on its own but then they sent us home with my VW bug loaded to the gills with cactus. I remember still to this day riding home with cactus under my feet, all around me and in my lap!

After a year out of College working for the University Extension Service, I launched myself into self-employment on the corner of Stone and Blacklidge where I have worked for the last 38 years.

When I purchased the property in 1978 there was a flower shop and 2 greenhouses. For the next 12 years I ran the flower shop to pay the mortgage, always with my eye on the greenhouses and a way out of the flower business.

In 1986 Gene needed a place to start his nursery business and I had the perfect piece of property. The nursery, **Plants for the Southwest**, was born and the 2 greenhouses turned into 8! In 1987 we were able to purchase the Lithops collection of Ed Storms from his recently widowed wife Ruth and Living Stones Nursery was started.

In 1988 Gene and I married and you could say I came with a dowry:)

Finally in 1990 I was able to sell my flower shop accounts and move outside to the nursery. My working dream finally came to fruition.

The rest as they say is history or perhaps more correctly herstory!

Please be sure to come and enjoy a really special program that everyone will be sure to enjoy. Also, win a raffle plant or door prize, and pick up a free plant provided by the club then you depart the evening.

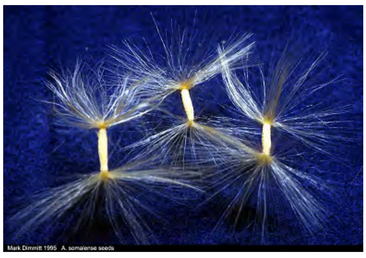
# Tucson Cactus and Succulent Society

**Thursday November 2, 2017 from 7 - 9 pm**

**"The science (and art) of taxonomy: How we make sense of nature's diversity"**

**Presented by Mark Alan Dimmitt**






Mark A. Dimmitt has a Ph.D. in biology (herpetology) from the University of California at Riverside after earning an M.S. from UCLA and a B.S. from Pomona College. He worked at the Arizona-Sonora Desert Museum from 1979 to 2011, first as Curator of Botany, and eventually as Director of Natural History (field ecologist). His areas of research included botany and vertebrate biology, and he is the author of more than 50 scientific and popular publications about ecology and horticulture. He is a Fellow of the Cactus and Succulent Society of America. His major publication is the plant and ecology chapters of A Natural History of the Sonoran Desert (2000), and is the senior editor of the revised edition (2015).
Mark's other and ongoing career is as a plant breeder. He spent a couple of decades hybridizing Trichocereus (Echinopsis, cacti), then Tillandsia (bromeliads); he has introduced about 50 cultivars. Since the late 1970s his main focus has been on hybridizing the genus Adenium; 'Crimson Star', 'Evelyn Marie', and 'Bouquet' are among his creations. He is coauthor of the book Adenium: Sculptural Elegance, Floral Extravagance (2008). Mark also collects and grows a number of other weird plants, mostly succulents and epiphytes.

This will be our last program presentation for 2017. Please be sure to come and enjoy a very special program (seeing in person will always be best). Win a raffle plant or door prize, and be sure to pick up a free plant provided by the club as you depart.

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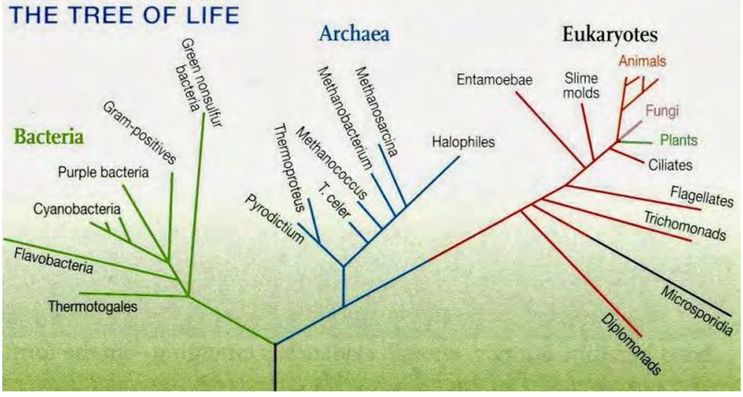


# Tucson Cactus and Succulent Society

## Thursday January 4, 2018 from 7 - 9 pm

## "Where Did I Go Wrong"

## Presented by Chuck Hanson

Come with me on a three-month safari to East Africa of the 1960's. Although much of the area looks like SE Arizona, it is(was) populated by an amazing and diverse megafauna. The safari is mostly in the savannahs of Kenya and Tanzania, but we also go north into the vast desert area of northern Kenya to join the Royal Geographical Society's Turkana Expedition. A safari such as this will never be possible again, for reasons you will soon see!

Curriculum Vitae for Chuck Hanson

1950-'51 US Air Force, Korea.
1952-'56 Virginia Tech, BSc in Zoology.

1957-'59 National Science Foundation Scholarship, Ohio State University, MSc in Zoology.

1959-'60 Ohio Division of Wildlife, Upland Game Biologist.

1960-'64 Naturalist, U. S. Forest Service, Coronado National Forest.

1965-'69 Naturalist, Tucson School District 1.

1969 3 months in East Africa.

1969-'78 Curator of Large Animals, ASDM.

1978-2007 Founded and ran Arid Lands Greenhouses. Made numerous trips to Africa, Madagascar and Asia studying succulents in habitat.

1993-'95 President, Tucson Cactus and Succulent Society.

2008-'12 Lived in Ecuador, studied native cacti, succulents and orchids.

2013 Retired to Sonoita, Arizona

I want to welcome everyone to our introductory program for 2018. Please come and enjoy a marvelous presentation, have some refreshments, meet and talk with friends, take home some plant giveaways and accept great raffle plants. Also, be sure to take a free TCSS plant provided as you leave for the evening.

# Tucson Cactus and Succulent Society

## Thursday February 1, 2018 from 7 - 9 pm

## "Lessons from Tortilla Flats or No Species is an Island"

### Presented by Ted Fleming

Lesser long-nosed bats

In this talk I will briefly discuss our 11-yr research program on the pollination biology of four species of Sonoran Desert columnar cacti that we conducted at Bahia de Kino, Sonora, Mexico. My recent book **'No Species is an Island' (University of Arizona Press, 2017)** summarizes our major findings, and I will highlight these with readings from the book. I will use illustrations from the book and my photographs to support our research results.

I have been a professional biologist for over 50 years. For most of my career I have studied ecological interactions between seed- and/or pollen-dispersing phyllostomid bats and their food plants in Latin America. My seed dispersal studies were conducted in tropical forests in Costa Rica between 1970 and 1986. My pollen dispersal studies were conducted in the Sonoran Desert of Mexico and Arizona between 1989 and 2000; my graduate students conducted parallel studies in Curacao, Venezuela, and Peru. My students and I studied the evolution of phyllostomid bats in the West Indies between 2000 and 2006. My current research involves the use of hummingbird feeders by nectar bats in southern Arizona.
I have been professionally employed by the Smithsonian Institution (1966-67), the University of Missouri-St. Louis (1969-78), and the University of Miami (1978-2008). I directed the theses or dissertations of 22 graduate students and have won several national awards for my research. I was associated with the Association for Tropical Biology and Conservation (ATBC) for many years and served as its president in 2001. I have authored/co-authored over 150 publications and eight books, including "The Ornaments of Life: Coevolution and Conservation in the Tropics (University of Chicago Press, 2013; co-authored with W. John Kress) and "No Species is an Island: Bats, Cacti, and Sonoran Desert Secrets" (University of Arizona Press, 2017). I retired from the U of Miami in 2008. My wife and I live in Tucson, AZ near our daughter and her family.

I've always had an interest in art and have used photography as a creative outlet for this for many years. I've become deeply involved in digital photography and digital art in retirement. I've enjoyed being a member of Club Camera Tucson and served as its president in 2010-12. My photo website is: **www.tedflemingphotography.com**

Please come and enjoy this special program presentation, have some refreshments, meet and talk with friends, take home some plant giveaways and more. Also, be sure to take a free TCSS plant provided for those who stay until our closing.

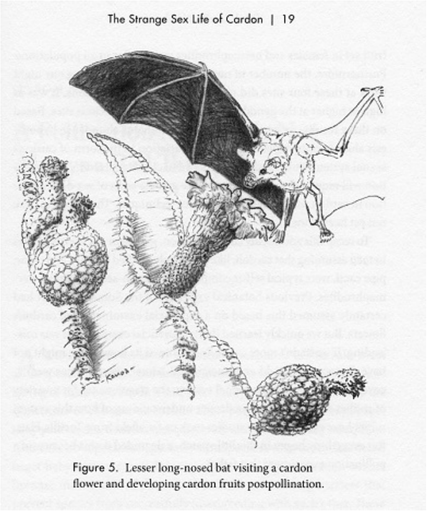



Figure 5. Lesser long-nosed bat visiting a cardon flower and developing cardon fruits postpollination.

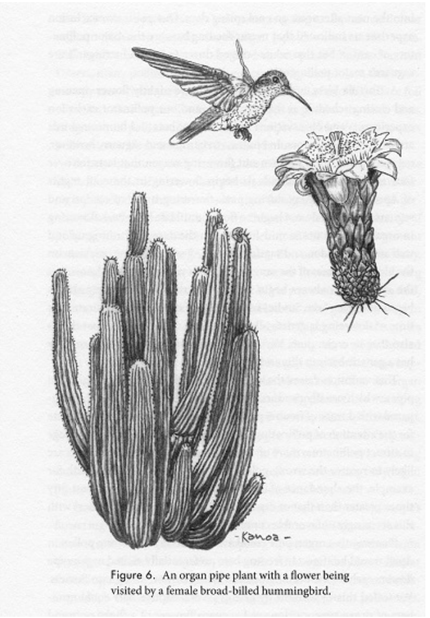


Figure 6. An organ pipe plant with a flower being visited by a female broad-billed hummingbird.

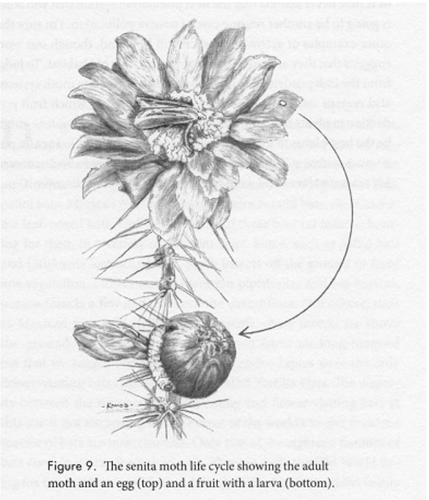


Figure 9. The senita moth life cycle showing the adult moth and an egg (top) and a fruit with a larva (bottom).

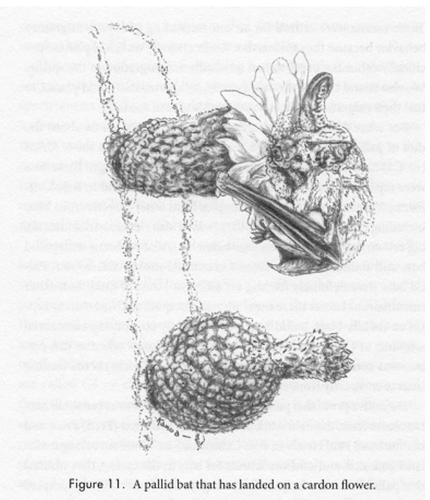


Figure 11. A pallid bat that has landed on a cardon flower.

# Tucson Cactus and Succulent Society

## Thursday March 1, 2018 from 7 - 9 pm

## "Rooted in the Islands: Documenting changes in the perennial flora of the archipelago of Bahia de Los Angeles, Mexico"

**Presented by Sula Vanderplank**
**CICESE (Centro de Investigación Científica y de Educación Superior de Ensenada) and San Diego Natural History Museum**

Sula Vanderplank is a field botanist who studies natural history, floristics, and conservation science, her research has focused on the botany and ecology of Baja California, Mexico. For the last thirteen years Sula has published broadly on the flora of this region including field guides, academic books chapters and more than 25 peer-reviewed papers. Sula also serves as an adjunct researcher at San Diego State University and the Center for Scientific Research and Higher Education of Ensenada (CICESE). Sula is also a research associate at the San Diego Natural History Museum (The Nat) and science advisor at Terra Peninsular.

Want to know more about what is happening in Baja California? Plan to attend this program presentation and enjoy a wonderful night with Sula Vanderplank. Also, enjoy some great snacks, win some beautiful plants and pick up your free plant when you leave.

# Tucson Cactus and Succulent Society

## Thursday April 5, 2018 from 7 - 9 pm

## "Relocation of the Loran Whitelock Cycad Collection"

### Presented by Gary D. Roberson
### Huntington Botanical Gardens, San Marino, California

Gary D. Roberson

In the spring of 2015, **The Huntington Library and Botanical Gardens** more than tripled their existing collection of cycads with a donation from the estate of a Loran Whitelock of Eagle Rock, California. Loran was a locally famous passionate plantsman whose collection included many unusual and rare plants, with an emphasis on cycads. Within a three month window, we transplanted 620 cycads from his private garden into a new planting at the Huntington. Each of those specimens had to be identified, labeled and recorded before this herculean move could even start.
Jim Folsom, our Director of the Botanical Gardens, worked with Loran to design a “ribbon” of cycads that cuts through from the easternmost Desert Garden to the westernmost Japanese garden. This allowed us to keep the cycads in botanical families and closely match the climates of their homelands. The plants have responded amazingly well to the transplant, especially remarkable when you realize we dug them out of the ground bareroot, trucked them down York Boulevard and plopped them into their new home in San Marino.

Loran’s estate has also generously endowed a permanent position on the Huntington Botanical staff for cycad research. We are already collecting and freezing pollen to attempt hand pollinations of these rare prehistoric species. Now that the plants are settling in, putting out lush new fronds and spectacular flowering cones, you’ll be able to walk the ribbon and sense the beauty that captured Mr. Whitelock’s heart.

Gary Roberson has enjoyed plants for most of his life, starting with his own garden at the age of 6, and was inspired to pursue horticulture as a career by his Grandfather. His involvement with Future Farmer’s of America took him to Germany and Australia as an horticultural intern. He has worked in the nursery industry, both retail and wholesale.
When an opportunity arose to work at the Huntington Library and Botanical Garden, he moved from Washington state to Southern California. Gary has worked in several gardens, including the Desert Garden, at the Huntington for over 15 years. He now serves as the Lead Project Gardener for the Cycad and Palm Collection.

When a large donation of cycads was willed to the Huntington from the estate of Loran Whitelock, Gary was instrumental in coordinating the move of over 640 cycad specimens from Eagle Rock to the Huntington grounds. All in all, over 2800 plants (clivias, staghorn ferns, orchids, aloes, agaves, palms, etc.) were collected from Loran’s extensive garden.

# Tucson Cactus and Succulent Society

## Thursday May 3, 2018 from 7 - 9 pm

## "Our Vanishing Cacti"

### Presented by Bill Thornton

Nearly 500 species of our favorite plants are threatened with extinction. Twenty seven species are listed as “critically endangered”.

In this program Bill Thornton looks at some of the leading threats to all cacti, with special attention to three endangered Arizona species, what has been and is being done, and with examples from some of the world’s most endangered plants and what needs to be done to save them. Are we up to the task?

Bill is a second generation native Arizonan, lifelong desert plant lover, long time TCSS member and frequent cactus rescuer. He also serves on the boards of the Arizona Heritage Alliance and Friends of Ironwood Forest.

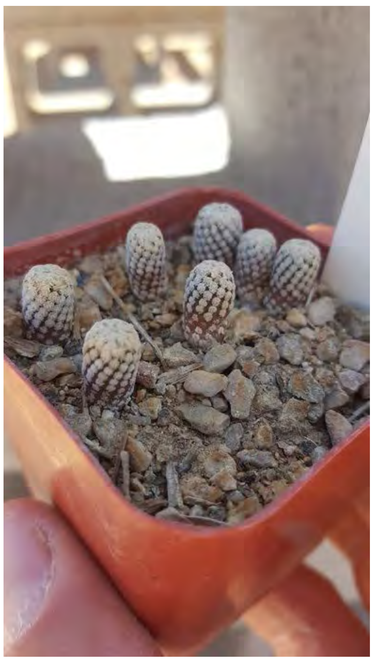
Please come and enjoy an evening with Bill. Have some excellent refreshments, win some wonderful plants and take home a free plant provided by TCSS. It is an opportunity to learn a few things, gather some plants and enjoy a great program.

# Tucson Cactus and Succulent Society

## Thursday June 7, 2018 from 7 - 9 pm

## "Sowing Cacti: where Art and Science meet"

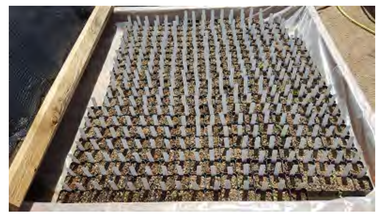
### Presented by Michiel Pillet



Cacti are everywhere here in Tucson. Simply looking at our prickly landscape, it is easy to forget that if you go back far enough in time, every single cactus you see was once a tiny seed. Growing cacti from seed is one of the most rewarding and educational activities a cactophile can engage in. It allows commercial growers to offer the plants we love. It also permits conservationists to propagate plants for reintroduction into the wild. Unfortunately, very few enthusiasts end up giving sowing a shot. As we will see, it really is not all that difficult. However, seedlings need vastly different conditions than their adult counterparts, and there is lots of conflicting information out there. Together, we'll attempt to make sense of it all, and hopefully some of you will go home having caught the seed-growing bug. Make sure to bring your glasses so you can enjoy the intricate diversity seedlings have to offer!

Growing up in Belgium, home of the biggest cactus and succulent conference in the world, I moved to Montana in 2008 for college. In 2016, I started my doctoral studies at the University of Arizona, working on the impact of climate change on plants, including cacti. Early this year, my wife and I acquired property here in Tucson to start a succulent conservation nursery. I currently grow the majority of critically endangered and endangered cacti, most from seed. My goal is to propagate every single species of cactus to protect against extinction and to make rarely grown taxa more widely available. Tucson is without a doubt one of the world's centers of cactus mania, much of it revolving around the many beautiful nurseries here as well as the activities of TCSS.

Please join us for an excellent presentation by Michiel. Enjoy some great refreshments (please bring food and snacks if your last name initials are requested). Also, win a plant and get a free plant (provided by TCSS) when you retire for the evening.



# Tucson Cactus and Succulent Society

## Thursday July 5, 2018 from 7 - 9 pm

## "Using DNA to help sort out Adenium species"

### Presented by Mark Alan Dimmitt and Taylor Edwards

How many species of Adenium are there? DNA analysis sheds light on the question

Adeniums are succulent plants native to Africa and the Arabian Peninsula and which are popular ornamental plants. Most botanists recognize 10 or 11 species, but both the taxonomy and nomenclature of this genus are unresolved. In fact, both are a mess. On the taxonomic side, we don't know how many species there are. Semi-spoiler – there is more than one species, but almost certainly fewer than 10. As for nomenclature, at least two "species" (arabicum and obesum) have invalid names that need to be corrected.

TCSS and CSSA funded a DNA analysis to help resolve these issues. We sequenced five loci (sections of chromosomes) of 43 cultivated Adenium specimens, mostly from known wild localities representing nine morphologically described species. In addition, we tested several additional specimens of unknown or hybrid origin. The results indicate that most of the currently recognized taxa are indeed valid species, while some others are probably not.

This was a preliminary study, and the project is ongoing. The DNA results will be correlated with physical character measurements and geographic distribution data to help settle the questions. Sequencing of more specimens is needed, as well as more field observations. The latter may be a difficult task. The least studied and understood Adenium populations are in countries that are not safe to travel in, such as Somalia, Yemen, and Mali.

Mark A. Dimmitt has a Ph.D. in biology (herpetology) from the University of California at Riverside after earning an M.S. from UCLA and a B.S. from Pomona College. He worked at the Arizona-Sonora Desert Museum from 1979 to 2011, first as Curator of Botany, and eventually as Director of Natural History (field ecologist). His areas of research included botany and vertebrate biology, and he is the author of more than 50 scientific and popular publications about ecology and horticulture. He is a Fellow of the Cactus and Succulent Society of America. His major publication is the plant and ecology chapters of A Natural History of the Sonoran Desert (2000), and is the senior editor of the revised edition (2015).

Mark's other and ongoing career is as a plant breeder. He spent a couple of decades hybridizing Trichocereus(Echinopsis, cacti), then Tillandsia(bromeliads); he has introduced about 50 cultivars. Since the late 1970s his main focus has been on hybridizing the genus Adenium; 'Crimson Star', 'Evelyn Marie', and 'Bouquet' are among his creations. He is coauthor of the book Adenium: Sculptural Elegance, Floral Extravagance (2008). Mark also collects and grows a number of other weird plants, mostly succulents and epiphytes.

Copyright John Bliznak

Copyright Bob Webb

# Tucson Cactus and Succulent Society

## Thursday August 2, 2018 from 7 - 9 pm

## "The Art of Naming a Species: Can They Really do That?"

### Presented by Greg Starr

Greg on a horse

Agave FO-076

Have you ever wondered how a new species gets named and described? Greg has had a little experience with the process in describing some Hesperaloe species and Agave species and will shed some light on the secret world of botany. For the past 20+ years, Greg has been especially interested in the genus Agave although he has dabbled in other plants, succulent and non-succulent, as well. The genus Agave is a relatively young one as far as plants go and seems to be in the process of speciating as we speak. In 1982, Howard Scott Gentry published his monumental monograph on the Agaves of Continental North America, in which he delineated a total of 136 species, 25 subspecies, and 29 varieties for a total of 190 recognized taxa in Agave sensu stricto, or in the strict sense, which does not include the genus Manfreda. Since publication of Gentry's book, there have been a total of 41 new species described or pulled out of synonymy and elevated back to species status. Some of the new species described are very localized while others are a result of splitting up some seemingly highly variable species.
In the past three years, Greg has traveled three times to Oaxaca, thanks in large part to funding by TCSS, to study the question of variability in Agave titanota. This has led to a larger study of the agaves in the Marginatae group, that is the one with a continuous woody margin, and to some other, very interesting side projects, including one which will be presented next month. The results of the Agave titanota project are still a long way off as the DNA sequencing still needs to be conducted and then the analysis will need to be performed.

Greg has both a BS in Plant Science and an MS in Botany/Plant Science from the University of Arizona. While working on his MS degree, Greg worked at the University herbarium under the tutelage of Dr. Charles T. Mason. It was there he learned the details of taxonomy and nomenclature and honing his skills at plant identification using botanical keys. For his MS, Greg blended his love of both horticulture and botany to produce a thesis covering the species of Salvia that had been in cultivation since 1900. Greg opened a small, native or near-native plant nursery in July 1985 and although he had an interest in cacti and succulents, it took several years for that interest to become an infection causing him to produce his book, Agaves: Living Sculptures for Landscapes and Containers, and to be a co-author on the Field Guide to Cacti & Succulents of Arizona. Currently, Greg spends the heat of summer days in the relatively cool environment of his house sitting in front of the computer hoping that a random assault of his hands on the keyboard will result in article for the CSSA journal or another book.

Please be sure to clear your calendar for Thursday, August 2, and join everyone at an excellent evening of friends, fun, books, raffle plants, free plants and lots of excellent refreshments. You will really enjoy Greg's program so, do not miss it!

Agave titanota at Rancho Tambor

Agave titanota

# Tucson Cactus and Succulent Society

**Thursday September 6, 2018 from 7 - 9 pm**

**"The Trail of the Unknown: Adventures in Discovery"**

**Presented by Tristan J. Davis**

Have you ever wondered what it is like to do botanical field work? How about field work in places where you are pretty sure no one who knew the plants has ever been before? Well, buckle up, because we are going to follow the best trail of all: The Trail of the Unknown. Tristan was honored to be invited to participate in botanical field work in 2017 by our very own Greg Starr to study – you guessed it – Agaves. And, for Tristan, who has spent over 30 years on scientific expeditions across the globe, this was his first botanical expedition.

Tristan will take you on his first trip with Greg to a potential study site for his agave research – a site secluded and difficult to reach: surely a site unknown botanically. And, of course, because Tristan's primary botanical interest is cacti (though Greg's influence is significantly making his interests shift a bit towards agaves), he was like a little kid in a candy shop the entire time. Cacti were around every corner…and under every foot! Tristan will show you the different plants he discovered along the way – ones he knew, ones he didn't (but others did), and ones that…well…no one really knew! It truly was an Adventure in Discovery!

Born into a very "outdoorsy" family, Tristan was introduced to the natural World at a very young age. His initial interest was specific to South American birds, and subsequent education at Louisiana State University and the University of Kansas allowed him to accompany scientific expeditions to most South American countries, as well as China, the Philippines, and Equatorial Guinea. It was obvious early on in his travels that Tristan much preferred those locations with less humidity (western Peru, the pampas of Argentina, etc.), and this was a significant reason he moved with his husband to Arizona in 2001. Once arriving in Arizona, Tristan readily transitioned his scientific passions to cacti and succulents, and although Tristan has authored numerous scientific publications related to ornithology, he published his first paper on desert succulents in 2011 in the Cactus & Succulent Journal. As most people know, Tristan's botanical passions are primarily centered around South American columnar cacti and the species of ocotillo (Fouquieria). Additionally, he continues to accompany scientific expeditions to locations around the World hoping to again get to some desert-like locations! Tristan currently resides in Chandler, AZ and is a member of the Central Arizona Cactus and Succulent Society; he served on the Board of Directors for the society, and currently administers the Propagation Education Group (PEG), the Research Grant Program, and the Seed Depot for the society. Tristan also volunteers in the Horticulture, Research, and Education departments at the Desert Botanical Garden.

Please be sure to join everyone at this very special program. Have an excellent evening with friends, fun, books, raffle plants, free plants and lots of great refreshments. Don't miss this evening with Tristan!

# Tucson Cactus and Succulent Society

**Thursday October 4, 2018 from 7 - 9 pm**

**"The Tropical Deciduous Forest: Where cacti became succulent, and other biological explorations in Sonora"**

**Presented by Robert A. Villa**

Robert is a proud Tucsonan deeply in love with the Sonoran region. He has been studying, exploring, and documenting it's biological and cultural diversity (often with violin in tow) most of his 32 years. He specializes in amphibians, reptiles, plants, ethno-ecology, and regional gastronomy. He has consulted for and assisted in the production of national and international broadcast television episodes, the 2nd edition of Natural History of the Sonoran Desert, Arizona's Amphibians & Reptiles: A Natural History and Field Guide, and published his findings in academic and popular outlets. He currently presides Tucson Herpetological Society, assists with ongoing developments at the Desert Laboratory on Tumamoc Hill, is a member of NextGen Sonoran Desert Researchers, and grows plants. He considers himself a follower in the footsteps of Sonoran naturalist explorers such as Howard Scott Gentry, Paul Martin, Charles Lowe, Tom Van Devender, and others, documenting and espousing the land where north and south embrace.

Please be sure to come and enjoy Robert's very special program. Have an excellent evening with friends, fun, books, raffle plants, free plants and lots of great refreshments.

# Tucson Cactus and Succulent Society

## Thursday November 1, 2018 from 7 - 9 pm

## "NAMIBIA A dry place in a wet time 2011"

### Presented by Wendell S. (Woody) Minnich

Namibia, rivaled only by the Chilean Atacama, is one of the driest regions in the world. Much of its western coast, located in the southern reaches of the African continent, rarely, if ever gets rain. Some of these areas are only sustained by the seasonal nightly fogs. Due to these unique conditions, it is in some of these very arid, Mojave desert-like landscapes, where many of the worlds most unique plants and animals can be found.

Similar to the infrequent rainy El Nino years that affect our California and Chilean coasts, Namibia had an extreme summer rain fall this last January thru April 2011.It is reported that this was one of the heaviest summer rains ever experienced in Namibia.

Our objectives were to visit this amazing country in this unusually wet time when the plants and scenery may be different than what most explorers might normally experience. We were in luck and our timing was perfect. When we arrived, the last of the torrential rains were spiting and sputtering off into the eastern reaches of the country. Windhoek, the capital of the country, was green and the weather looked promising. Needless to say, unlike some of our other friends who had visited the country the previous month, we were blessed with open roads and passable river crossings. The weather stayed sunny, warm and accommodating for the entire three weeks.

From Windhoek we took a giant clockwise loop to the south and then did the same from Windhoek to the North. We experienced the succulent rich areas to the Orange River, and from there we migrated up to the famous Luderitz Bay. The Richtersveld vegetation in these southern environments included many fantastic plants from the statuesque Pachypodium namaquanum to the many jewel like mesembs. One could spend a life time studying all these different genera, some of which included: the Lithops, Sarcocaulons, Tylecodons, Conophytums, Othonnas, Aloes, Hoodias, Cerarias, Haworthias, Titanopsis, Adromischus, Pelargoniums, Crassulas, Avonias, Larryleachias and many, many more. On our northern loop we traveled to the west towards Swakopmund and then up to the impressive Epupa Falls on Namibia's northern border to Angola. From there we eventually meandered our way back to Windhoek. On this northern journey we encountered a very different group of succulent genera. The plant taxa generally became larger and often very sculptural. We saw: Cyphostemmas, Pachypodiums, Welwitschias, Commiphoras, Sesamothamnus, Adansonias, Moringas, Aloes, Hoodias, Adenias, Adeniums and so on and so on. We also stumbled across many wonderful animals, not in the game reserves, as well as some of the most beautiful indigenous peoples. The Herero and Himba tribes were both unexpected cultural highlights of this amazing trip!

I took over 10,000 photos, and a few have found their way into this presentation. Be prepared to see the trip of a life time and the total of Namibia, edited of course!

Woody, as he is commonly known, grew up in the Mojave Desert and has had an attraction to desert plants and animals since the early 1950's. He has been involved with the cactus and succulent world as a grower, field explorer, club and organization leader, writer, photographer, lecturer and presenter.

Having been a speaker all over the world, Woody is most often associated with giving presentations on his field work from the places he has traveled, such as: Argentina, Australia, Bolivia, Brazil, Chile, Madagascar, Mexico, Namibia, New Zealand, Peru, Socotra, South Africa, the United States and Yemen. He is also recognized for having operated the nursery Cactus Data Plants since 1975. Woody's show quality plants were often considered one of the standards for staging and horticultural achievement. His favorite genera include: Adenium, Ariocarpus, Astrophytum, Copiapoa, Cyphostemma, Fouquieria, Gymnocalycium, Lithops, Mammillaria, Melocactus, Pachypodium, Turbinicarpus and Pachycauls in general.

He has published numerous articles in various journals and his photography is featured in many books including; "The Copiapoa" by Schulz, "The Mammillaria Handbook" by Pilbeam, "The Cactus Lexicon" By Hunt and Charles, as well as many others. As of this last November 2017, he is featured as the primary photographer in the new book "The Xerophile." This book specializes in what the authors call, The Obsessed Field workers from around the world.

Woody and his wife, Kathy, live in Cedar Grove, New Mexico. He is a retired secondary school teacher of 32 years where he taught Graphics, Art and Architecture. In the cactus and succulent hobby, Woody is recognized for his high energy and creative spirit. As an educator, he has become an important part of the hobby and thus is an honorary life member of ten C&S societies. With 45 years in the hobby and 64 years in the field, he has many experiences to share and numerous photos to show.

Again we have quickly arrived at the last program presentation for 2018. Please come and enjoy this very special program and have an excellent evening with friends, fun, books, raffle plants, free plants and lots of great refreshments.

# January Follows. . .

# Tucson Cactus and Succulent Society

**Thursday January 3, 2019 from 7 - 9 pm**

**"The Other Big Bend, Travels in Big Bend Ranch State Park"**

**Presented by Rob Romero**

Big Bend National Park is an incredible showcase of the Chihuahuan Desert. If one heads to the west, you run into Big Bend Ranch State Park, an equally incredible park that offers a more "rough it" style of park. Almost no one visits this park in comparison to the national park but it is home to some unique geography and an endemic cactus, Echinocereus viridiflorus var. canus.

Rob has been a desert rat and cactus enthusiast for over 25 years and with his first visit to Big Bend Ranch State Park in 2010 he was hooked and has visited the park 6 times (so far!). The geography and more importantly the cacti of the park will be presented to show just what a special place this really is.

Welcome to a New Year! Please come and enjoy a special program presented by Rob and really enjoy an excellent evening with friends, fun, books, raffle plants, free plants and lots of really great refreshments.

# February Follows. . .

# Tucson Cactus and Succulent Society

## Thursday February 7, 2019 from 7 - 9 pm

## "North Dakota Peace Gardens"

### Presented by Don Vitko

North America

Don Vitko was born and raised in North Dakota. He started growing cacti with a single seed packet in the early 1960's at his grandparents farm. His grandma was a grower of many plants and huge gardens and she actually got Don interested in growing plants. He picked cacti because they were the only plant that made it without daily care while he was in school. Mainly because the farm was 70 miles away from his home town Minot, North Dakota.

In 1968 Don got his first 8'X12' wood frame greenhouse. From there his collection started growing and expanding into many greenhouses until 2010 when the International Peace Gardens in North Dakota asked him about plants for their conservatory that was currently under construction. Don then decided to donate his entire collection of 6800 plants with over 5000 species. The move started with the big plants in 2010 then in 2011 Minot had a huge flood pushing the move into just a few days.

Don and his wife Kim retired in 2015-16. Kim was a nurse and Don was a salesman for beer for 20 years, then commercial tires for 25 years. He and his wife now live in the Oro Valley area. He is now a volunteer at Bach's Cactus Nursery and continues to propagate plants. Some of his favorites are Astrophytum, Copiapoa and Ferocactus plus many others.

The book, "Hens and Chicks The Vitko Collection" is being offered for sale at the special price of $16.95 (Regular Retail $19.95). If anyone would like to order the book online, it can be purchased (free shipping in the U.S.) at Memories Forever: mfphoto.homestead.com/TCSS.html

Please be sure to come and enjoy this special program with Don Vitko and have an excellent evening with friends, fun, books, raffle plants, free plants and lots of great refreshments.

The International Peace Garden

Dan Bach and Don Vitko

Don Vitko 1970

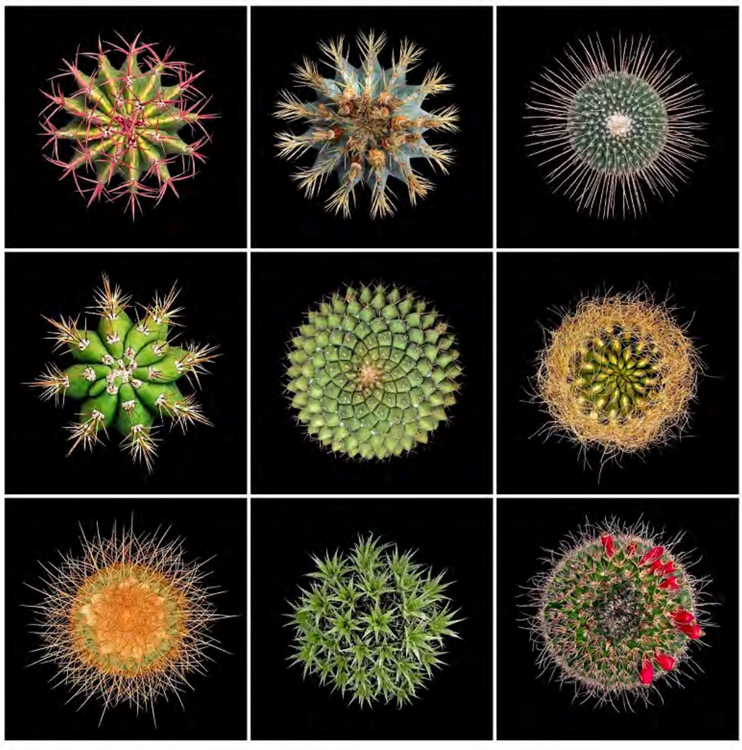
# March Follows. . .

# Tucson Cactus and Succulent Society

## Thursday March 7, 2019 from 7 - 9 pm

## "Arriving at Symmetry"

### Presented by Steven Derks



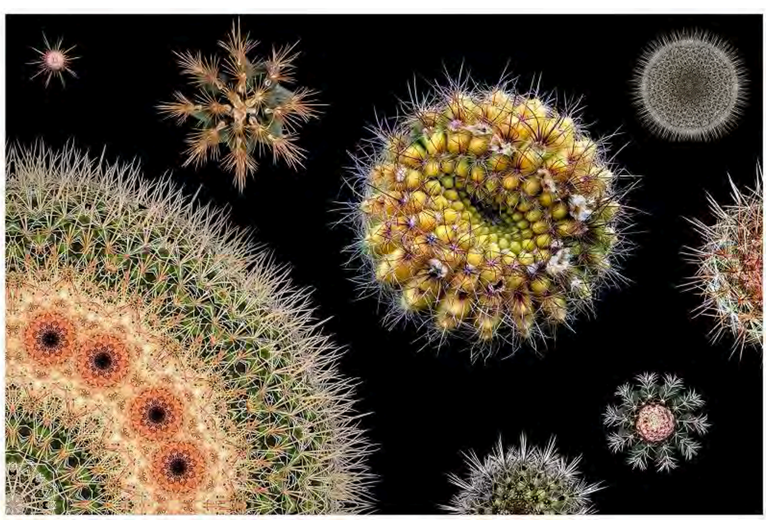
Throughout the 1980s, I worked as a Native Plant Specialist (cactus cop) for the Arizona Department Of Agriculture. I enforced the Endangered Species Act for threatened, rare and endangered plants in Arizona. This resulted in my appreciation for the aesthetic diversity of cactus and succulents. In 2001 I photographed a saguaro cactus at night from an overhead perspective. After numerous failed attempts, I was able to align the spines of the plant in such a way that it's symmetry was revealed. The resulting pattern resembles a snowflake. Recently I began thinking about other structural similarities found in nature. For example, the comparative pattern of a spiral galaxy and a spiral tubercle and spine pattern of a cactus. This interest inspired me to return to photographing cactus with an intent of isolating the plant in black background for the purpose of highlighting it's bio-symmetry. I want to make a photo that illustrates a close-up intimacy with the plant. The paradox in this is that the cactus, by its own spiny nature, defies intimacy. As I processed the images in Photoshop, I discovered that the shadows cast from the textural patterns were of special interest. My curiosity got the best of me and I had to research why the plant produced these shapes. To my delight and surprise, I learned that the shape of then cactus or succulent for all intents and purposes is simply a complex and beautiful water container. The patterns have evolved to allow the plant to regulate its temperature. While editing photos, I continually encountered imperfections. These anomalies could dominate the image based on their ability to disrupt the patterned balance of the image. As a solution I would attempt to repair these portions of the pattern by cutting and pasting selections from other areas of the image. This proved to be a sporadically effective solution. One day in a fit of frustration while attempting to repair particularly stubborn area of a photo, I resorted to a radical solution. I cut the subject in half, then I discarded the bad half and copied and pasted the good half mirroring the other side. The result was much more natural looking than I anticipated. I began to wonder about the perception of symmetry, in particular something I read that indicated humans prefer slight asymmetry in faces. To study this, I started to pay attention to the reactions of images I received from the samples I posted on social media. So far my findings indicate that people prefer the (Spherical Symmetry) reconstructed images over the natural images. Now as I make editing choices, I keep in mind these three basic forms of symmetry.....

• Radial symmetry: The organism looks like a pie. ... Rotational symmetry, also known as radial symmetry in biology, is the property a shape has when it looks the same after some rotation by a partial turn. An object's degree of rotational symmetry is the number of distinct orientations in which it looks the same.
• Bilateral symmetry: There is an axis; on both sides of the axis the organism looks roughly the same.
• Spherical symmetry: If the organism is cut through its center, the resulting parts look the same.

Another major consideration when editing cactus is emphasizing patterns keeping in mind the Golden Ratio.This is a common mathematical ratio found in nature that can be used to create pleasing, natural looking compositions in design work. We call it the Golden Ratio. Biologists, artists, musicians, historians, architects, psychologists, and even mystics have pondered and debated the basis of its ubiquity and appeal. In fact, it is probably fair to say that the Golden Ratio has inspired thinkers of all disciplines like no other number in the history of mathematics. Although I don't understand the math, I can appreciate the aesthetic choices I'm obliged to sacred universal patterns used in the design of everything in our reality, most often seen in sacred architecture and sacred art. With these concepts in mind I continue to experiment with the geometry of these plants. As I developed my methods of exaggerating the symmetry I realized that they were essentially " Digital hybrids" of the original natural composition. The cactus in particular,seem intrinsically suited to bridge natural selection and modern design. Cacti are so remarkable in their symmetry that it is difficult to believe they are living things. I'm endlessly fascinated by these expressions of nature.

Steven was born in Dubuque, Iowa in 1957. He is a practicing full-time self taught artist focusing primarily in metal sculpture with an emphasis on as is found object art, and a minor practice in non-objective painting and photography. His work can be found in numerous public,corporate,museum and private art collections both in the United States and abroad. Notably a six year exhibition in the oval office / white house during the Clinton administration, and an ongoing residency exhibit at the University of Arizona Bio 2 in Oracle Az. He is currently represented by eight commercial art galleries and four private and corporate art consulting companies. He maintains a prolific studio practice that is influenced by such artists a Jim Dine and Sir Anthony Caro. Steven is currently working in Tucson, Arizona. Steven G. Derks, 801 N. Main Ave., Tucson , Arizona 85705, 520.370.1610 www.stevenderks.com

Please come and enjoy a special program that will truly open your eyes to looking at cacti. You will enjoy an excellent evening with friends, fun, books, raffle plants, free plant offerings and a large selection of really great refreshments. Also, be sure to stay until the end of the meeting and get your free plant offered by the TCSS.



# April Follows. . .

# Tucson Cactus and Succulent Society

**Thursday April 4, 2019 from 7 - 9 pm**

**"The International Sansevieria Society Comes to Tucson and the TCSS"**

**Presented by Robert Webb**

New species: Sansevieria encheiridifolia

Potentially undescribed species from Kilaguni Lodge, Kenya

Dr. Robert H. Webb is a retired hydrologist who owns and manages Arid Lands Greenhouses in Tucson. Among the many species of succulent plants that he grows and loves, Sansevierias are around the top. He has described or is in the process of describing 9 new species or subspecies of Sansevieria. Alan Myklebust and Webb are the chairmen and editors of the International Sansevieria Society, a small specialty organization now based in Tucson and affiliated with the Tucson Cactus and Succulent Society. Their flagship publication, Sansevieria, just released issue 39. This talk, not surprisingly, is about Sansevierias, the diversity of form and size of the existing species (about 80) and discussion of the new ones being found in Africa.

This will be an excellent presentation that everyone will really enjoy. Please come and make some new friends, talk with members and guests, have some fun, check out our library books and be sure to enjoy the great refreshments. Also, be sure to stay until the end of the meeting and get your free plant offered by the TCSS.

New species, Sansevieria rugosifolia

Unusual species: Sansevieria francisii

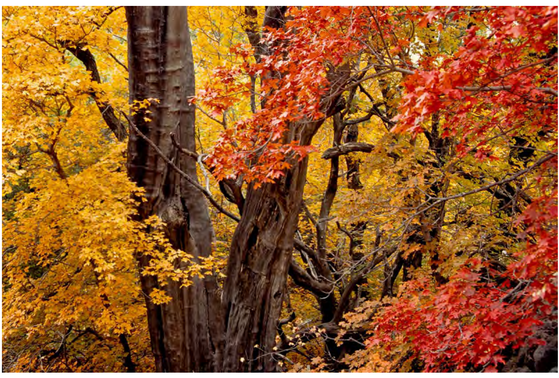
# May Follows. . .

# Tucson Cactus and Succulent Society

## Thursday May 2, 2019 from 7 - 9 pm

## "The Northern Chihuahuan Desert and its Texas Parks"

### Presented by Gary Nored



This program will consist of three parts. In the first part Gary will introduce this ecoregion and clarify the many ways in which it differs from the Sonoran desert (and others). He will discuss the climate and a bit of the geology and how it affects plant life and visitation. In the second part he introduces the three largest parks in this ecoregion and offers a few suggestions about what to see and do in each of them. Finally, he will discuss the Big Bend Ranch State park where he currently works, and suggest places to find different species. He will have photos of each of the cacti families that appear in this area. There are just over 50 slides and he hopes to keep the presentation to under an hour.

Gary Nored is a full-time volunteer for the **Big Bend Ranch State park** in Texas. He is the unoffical official photographer for the park and is currently living at the Barton Warnock Educational Center near Lajitas, Texas where he is also working on the interpretive gardens on the site. A lifelong writer, teacher, and photographer, Gary has dreamed of volunteering at the ranch since it opened 20 years ago. After 3 years as a volunteer at the Chihuahuan Desert Research Center, he moved to the Bofecillos mountains at Sauceda where he photographed and wrote about the area for 5 years. Today he is exploring the southern parts of the park. Gary wrote two books for the park. One, the Guide to Campsites of the Big Bend Ranch State Park has enjoyed wide public acceptance and appreciation. The second book, Guide to the Main Road at Big Bend Ranch State Park is currently in production. He is now working on a new chapter for the Texas Master Naturalists training manual.

This will be a wonderful presentation that everyone will truly enjoy. Please come and make some new friends, talk with members and guests, have some fun, check out our library books and be sure to enjoy the great refreshments. Be sure to stay until the end of the meeting and get your free plant offered by the TCSS.

*Bluebonnets on the Rio Grande*

# June Follows. . .

# Tucson Cactus and Succulent Society

## Thursday June 6, 2019 from 7 - 9 pm

## "All Hail the Queen: Rescuing the Peniocereus greggii var. transmontanus"

### Presented by Jessie Byrd

Peniocereus greggii has a lifestyle strategy unique from most cactus in the Tucson area that makes rescuing this plant from development sites a special challenge. Learn how to spot the plants in habitat, the correct approach to digging and how to care for wild plants in cultivation.

Jessie Byrd is the **Native Plant Nursery** Manager for Pima County Natural Resources, Parks and Recreation, which specializes in growing and salvaging native plant species for public projects. Jessie believes that using native plants in urban landscapes can help encourage biodiversity while also significantly reducing long-term maintenance inputs. She earned a Master of Landscape Architecture from the University of Arizona and a BA in Biology from Bryn Mawr College. She is the president of the Tucson Chapter of the Arizona Native Plant Society and Tucson Cactus and Succulent Society board member.

This will be an excellent presentation that everyone will enjoy. Please come and make some new friends, talk with members and guests, have some fun, check out our library books and be sure to enjoy the great refreshments. Also, be sure to stay until the end of the meeting and get your free plant offered to you by the Tucson Cactus and Succulent Society.

# July Follows. . .

# Tucson Cactus and Succulent Society

## Thursday July 11, 2019 from 7 - 9 pm

## NOTE THE DATE CHANGE: not July 4 but July 11

## "Chemicals from Cacti and Other Succulents"

### Presented by Dr. Art Friedman

There are an estimated 391,000 known plant species of which fewer than 10,000 are succulents. The number of known chemicals exceeds the number of plants by nearly three orders of magnitude. In this presentation, Dr. Art Friedman will examine a group of cacti and succulents from a chemical perspective, noting which plants contain compounds that are deadly poisons and which ones contain potentially life-saving drugs, as well as illegal controlled substances.

While no prior knowledge of chemistry is necessary (although it is helpful to have), a short discussion of how to interpret chemical structures will be provided and how these structures can be used to predict biological properties of the compounds in question.

"Dr. Art Friedman is a native of Philadelphia, but has lived and worked in the midwest for over 32 years. Art graduated from Drexel Institute of Technology with a B.S. in biological science, and after a few years of industrial employment returned to Drexel University where he received an M.S. degree in biochemistry and a Ph.D. in organic chemistry.

Although his career has been primarily evoted to R&D activities in the fields of pharmaceutical, agricultural and environmental chemistry, as well as teaching at both high schools and colleges, Art has also been involved in bringing the joy of chemistry to the masses for over 35 years. He created a program, "The Magic of Chemistry" that was seen by over 30,000 students in four states, and was featured on a nationally syndicated program "PM Magazine".

Art and his wife Erica, have resided in Tucson since January of 2018. He currently is offering a number of science classes through Pima County's Special Interest Programs."

Please come and enjoy knowing about the chemistry of cacti and other succulents. Talk with members and guests, have some fun, check out our library books and be sure to have the great refreshments. Win some plants and also, make it a point to stay until the end of the meeting and get your free plant offered by the TCSS.

# August Follows. . .

# Tucson Cactus and Succulent Society

## Thursday August 1, 2019 from 7 - 9 pm

## "Saguaros: Inventory, Salvage, and Landscape Use"

### Presented by Judy Mielke

Saguaro Transplant

Saguaros - iconic cacti of the Sonoran Desert - are often in the path of development, whether it be highways, shopping centers, or houses. Fortunately, the majestic plants are protected by state, county, and municipal laws and ordinances. As a result, many saguaros have been salvaged rather than destroyed. Judy's presentation will cover how to assess plant viability and transplantability during the inventory process. Recent research about salvaging and replanting saguaros will be reviewed. And Judy will offer guidance on placing saguaros and other cacti and succulents in the landscape, from both a horticultural and aesthetic perspective.

Judy Mielke is Senior Landscape Architect at Logan Simpson in Tempe, where she frequently conducts native plant inventories and prepares landscape restoration plans. Judy is author of the award-winning book "Native Plants for Southwestern Landscapes." She is originally from eastern Washington, where she grew up on a wheat farm and cattle ranch. After receiving a degree in Horticulture from Washington State University, Judy came to Arizona to pursue her interest in cacti and succulents. She did a summer internship at Desert Botanical Garden and ended up staying on for nine years as a Horticulturist. Judy received her Masters of Environmental Planning from ASU and is a registered landscape architect in Arizona, Utah, and Washington State. She also is a Certified Arborist and a Certified Water Harvesting Practitioner. Judy is an avid home gardener whose interests include wildflowers, cacti and succulents, plants for wildlife, and flowers for cutting.

This will be a presentation that everyone will enjoy. Please make plans to come and have fun making some new friends, talk with members and guests, check out our library and check out some books! You will truly want to enjoy the great refreshments. You have to also win some of the plants available in our raffle and finally, be sure to stay until the end of the meeting and get your free plant offered to you by the Tucson Cactus and Succulent Society.

Saguaro on Truck

Gonzo Pass Hwy and Nursery 2-18-08

# September Follows. . .

# Tucson Cactus and Succulent Society

**Thursday September 5, 2019 from 7 - 9 pm**

**"Who's Yer Daddy?**

**The story of Echinocereus X roetteri from the Jarilla Mountains, New Mexico**

**(With an introduction to introgressive hybridization)"**

**Presented by Gerald K. (Jerry) Arp Ph.D**

The pink Echinocereus

Greenhouse

Resolving the mystery of the "Pink Echino"
Gerald K. (Jerry) Arp Ph.D., Univ. of Colorado, 1972. Dissertation, Studies in the Colorado Cacti. Dr. Arp developed an interest in plants as a youngster while growing up in Colorado in the 1950's. His initial plant interests were horticultural but frustration with some horticultural practices and an abiding interest in plant relationships pushed him into the Science of Botany. By pursuing botany, he hoped to resolve many questions regarding botanical groups of interest to him. In the middle 50's he become fascinated by the flora and fauna of the deserts and plateaus of the American Southwest. Shortly after receiving his Ph.D. in 1972, Dr. Arp's career goals went upside down. When he finally hit ground, he had secured a position at NASA, where he worked with data from Landsat, the world's first Earth Resources remote sensing satellite. He went on to pursue research in areas of surface geochemistry, geobotany, and biogeochemistry as applied to mineral and petroleum exploration. Dr. Arp returned to the world of satellites as Senior Imagery Analyst and Manager of Technical Support for a satellite-based company in Washington, DC. After 911, his expertise was applied to research for a variety of Government agencies, ultimately landing him at White Sands Missile Range, New Mexico. He has since retired to a life of poking cacti and wincing when they poke back. His anonymous retired life ended abruptly when he was chatted up by Mark Sitter at B & B Cactus Farm, during a recent nursery visit and it has been downhill ever since.

Please make plans to come and enjoy this program. Talk with members and guests make new friends. Visit our library and check out some books! During the break, you will truly want to enjoy the great refreshments. Also, try to win some of the plants available in our raffle, then finally, be sure to stay until the end of the meeting and get your free plant offered to you by the Tucson Cactus and Succulent Society.

Front Garden

# October Follows. . .

# Tucson Cactus and Succulent Society

**Thursday October 3, 2019 from 7 - 9 pm**

**"The Desert Moonlight Garden"**

**Presented by Jason Wiley**

**Horticulturist, Arizona-Sonora Desert Museum**


Most desert dwellers know that during the hot summer, they spend the majority of their time outside during the early mornings and evenings. So why not create a garden that is designed to experience specifically at night? A Moonlight Garden does just that! A well designed Moonlight Garden goes beyond just the sense of sight; it touches on all five senses to create a fully immersive experience. When our sense of sight is compromised, we use the senses of smell, sound, touch, and even taste to fully understand our surrounding environment. When selecting plants for a Moonlight garden (**for a list of Low Desert Moonlight Garden Plant Selections**, **click here**), all of these senses should be considered. Not only do Moonlight Gardens benefit people, but many nocturnal pollinators that we have here in the desert as well, including moths and bats. There are also many night blooming plants that are native to the Sonoran Desert including Queen of the Night (Peniocereus greggii), Desert Four o'Clocks (Mirabilis longiflora), Sacred Datura (Datura wrightii), Night Blooming Hesperaloe (Hesperaloe nocturna), and many species of native Morning Glories. With so many desert nightblooming plants that attract nocturnal pollinators, the southwest makes a perfect setting for a Moonlight Garden. In this presentation professional horticulturist and designer, Jason Wiley, will discuss his plant selection technique as well as dive into other hardscape and lighting considerations for a Moonlight Garden.

Jason grew up on a sod farm cultivating his career in horticulture which inspired him and to connect people to their environment by creating meaningful experiences in the landscape. He received his Bachelors of Science in Horticulture from Arizona State University and also studied Landscape Architecture at Colorado State University for 3 years. He has worked in public gardens and for 9 years and has been a professional horticulturist for 16 years.

He currently curates the Tropical Deciduous Forest, Cactus Garden, and Agave Garden at the **Arizona-Sonora Desert Museum**. He self-initiated the transformation of the Cactus Garden which was once overlooked, and is now the most highly visited and photographed garden at the museum. He also designed, proposed, managed, and raised funds for the renewal of the Agave Garden. He is currently working on a project to expand the current Boojum Hill which represents the Catavina Boulder Field in Baja where Boojums naturally grow. His inspiration for this current presentation and hopefully soon to come garden is the purchase of his first house which sits on a blank 1/4 acre, where he will spend most of his time in the evenings.

This will be an excellent program that you will truly enjoy. Talk with other members and visitors and make new friends. Visit our library and check out some books! During the break, you will truly want to enjoy the great refreshments. Also, try to win some of the plants available in the raffle, and be sure to stay until the end of the meeting and get your free plant offered to you by the Tucson Cactus and Succulent Society.

# November Follows. . .

# Tucson Cactus and Succulent Society

**Thursday November 7, 2019 from 7 - 9 pm**

## "'The horror of man and beast': a relatively painless introduction to the Cylindropuntia (chollas) of Arizona"

**Presented by Michelle Cloud-Hughes**

**Desert Solitaire Botany and Ecological Restoration**

In this presentation, Michelle will provide a general overview of the cactus genus Cylindropuntia (chollas) and in-depth descriptions for the cholla species of Arizona. She will focus first on cholla of the Tucson area, followed by the other cholla of Arizona. She will also discuss the most common naturally-occurring hybrids, along with recent genetic research and taxonomic changes.

Michelle Cloud-Hughes is a botanist specializing in desert flora and ecosystems. She worked for the Soil Ecology and Restoration Group at San Diego State University from 1997 to 2013 and spent most of those years doing restoration work in the central Mojave Desert at Fort Irwin National Training Center. In 2010 she started her company, **Desert Solitaire Botany and Ecological Restoration**, and since then has been involved in many rare plant surveys and other botanical projects throughout the southwestern U.S. Her main love is Cylindropuntia, but she is also fascinated by other cacti, particularly Echinocereus, Grusonia, Pediocactus, and occasionally even Opuntia.

This will be the last program presentation for 2019, so please join in welcoming Michelle back to Tucson and thank you all for attending the various programs this year. On November 7, come welcome new members and visitors and make some new friends. Visit our library and check out some books! During the break, you will want to enjoy the great refreshments and also, try your luck to win some of the plants available in the raffle. Stay until the end of the meeting and get your free plant offered to you by the Tucson Cactus and Succulent Society.

**Tucson Cactus and Succulent Society Monthly Meeting Presentation**

Thursday January 2, 2020 from 7 - 9 pm

**"SPINY SUCCULENTS: Euphorbias, Cacti, and Other Sculptural Succulents and (Mostly) Spiny Xerophytic Plants"**

Presented by Jeff Moore
Owner of Solana Succulents Retail Nursery in Solana Beach, California

Nurseryman and author Jeff Moore has spent most of his adult life negotiating this spiny landscape and takes you herein on a tour of these remarkable plants in cultivation.
This program will explore the his new book's truly extraordinary succulents in cultivation: cacti, euphorbias, fouquierias, alluaudias, and a host of other dry-climate and often spiny architectural wonders. You will see images of some of these xerophytes in their native habitat, but the focus will be on spiny succulents in cultivation. Beautiful images of mature landscape plants will provide you with an appreciation of them at full size and maturity, but many are delightful little container specimens and are also highlighted.

While the structure of succulents is usually the first thing to draw you in, many will amaze you with their glorious and colorful flowers. You'll even learn to love the spines!

Jeff Moore has owned and operated Solana Succulents retail nursery in Solana Beach, CA since 1992. He grew up in Southern California, and is married with two grown sons. This will be his fourth self-published title on succulent plants. Jeff is an accomplished and well-known speaker on cultivated succulents.


Welcome to the first program in the New Year by attending this very special presentation by Jeff Moore. Please welcome our new members and visitors and also, make some new friends. Visit our library and check out an excellent book! During the break, you will want to enjoy the great refreshments and also, try your luck to win some of the plants available in the raffle. Stay until the end of the meeting and get your free plant offered to you by the Tucson Cactus and Succulent Society.

**Tucson Cactus and Succulent Society Monthly Meeting Presentation**

Thursday February 6, 2020 from 7 - 9 pm

**"Ray Turner and the Saguaro: A Research Retrospective"**
Presented by Robert Webb
Arid Lands Greenhouses

**Ray Turner and *Agave turneri***

Ray Turner (1927-2018) was a research botanist with the U.S. Geological Survey in Tucson before his retirement in 1989. He worked well into his 80s, and much of his final work dealt with adding to long-term research on saguaros in the northern Sonoran Desert. Turner and his colleague, Rod Hastings, started work on saguaros in 1959 in response to a general research push within the academic community of southern Arizona to understand long-term growth rates, demography, and fate of saguaros. Turner's multi-pronged approach included permanent plots that measured mortality, recruitment, and growth rates as well as some rudimentary physiological measurements looking at water uptake. His legacy of research is the reason why we have a broad understanding of the complicated responses of saguaros to climate change and land use across the northern Sonoran Desert.
Please be sure to come and enjoy some historical information gathered by one of our saguaro research pioneers, Ray Turner. Welcome our new members and visitors and also, make some new friends. Visit our library and check out an excellent book! During the break, you will want to enjoy the great refreshments and also, try your luck to win some of the plants available in the raffle. Stay until the end of the meeting and get your free plant offered to you by the Tucson Cactus and Succulent Society.

**Tucson Cactus and Succulent Society Monthly Meeting Presentation**

Thursday March 5, 2020 from 7 - 9 pm

**"An Island Apart – Travels in Madagascar"**
Presented by Fred Dortort
Author of The Timber Press Guide to Succulent Plants of the World

Fred's talk on Madagascar will cover a wide variety of things he and his friends encountered in over 3000 miles of driving. The main focus, of course, will be on the vast and unique population of succulent plants found only there, ranging from giant baobab trees to miniature, ground-hugging euphorbias. He'll also be showing examples of the giant island's equally unique assortment of people, architecture, fauna and geography as well. Home to wildly diverse ethnic groups, a place where pirates such as Captain Kidd once lurked and giant elephant birds used to roam, Madagascar stretches a thousand miles from its tropical north to its temperate south. It is truly like no other place on Earth.

Not long after Fred Dortort began growing cacti and succulents, he was seized by the urge to see them in their natural surroundings. Since then he's managed to travel to many of the places where they grow, from Arizona to Namibia, South Africa to Bolivia, and among other succulent hot-spots, Madagascar. Fred has maintained a relationship with the University of California Berkeley Botanical Garden for decades, teaching courses and, at various times, taking charge of the greenhouse cactus and succulent collection. Over the years Fred has written many articles for the Cactus and Succulent Journal and other horticultural publications. He is the author of The Timber Press Guide to Succulent Plants of the World, and always enjoys sharing stories and images of some of the things he's seen along the way with interested audiences.

You do not want to miss this program presentation by Fred Dortort! Fred authored the Timber Press Guide to Succulent Plants of the World. Be sure to come and welcome our new members and visitors. Make some new friends and visit our library and check out an excellent book! During the break, you will want to enjoy the many refreshments and also, try your luck to win some of the plants available in the raffle. Stay until the end of the meeting and get your free plant offered to you by the Tucson Cactus and Succulent Society.

***Pachypodium rosulatum***

***Kalanchoe linearifolia***

Kalanchoe linearifolia

***Adansonia rubrostipa***

***Aloe capitata***

## TCSS Monthly Meetings

We did not have any meetings due to Covid-19 concerns for the months of:
- April, 2020
- May, 2020
- June, 2020

We starting holding virtual Zoon broadcast meetings on first Thursdays per our regular meeting dates in July, 2020.

**Tucson Cactus and Succulent Society Monthly Meeting Presentation**

Thursday July 2, 2020 7:00 pm

Presented by Greg Starr
**"New or Reconsidered Agave species Post Gentry"**

Note this is a Virtual Meeting using Zoom technology

In 1982, Howard Scott Gentry produced the most comprehensive monograph titled, Agaves of Continental North America. Gentry was an intrepid explorer and collector, spending over 30 years studying the genus in addition to his primary research on the genus Phaseolus for the USDA. Agaves have become quite popular both scientifically and with more exploration of Mexico and the southwestern U.S., there have been many new discoveries. In fact, in the 38 years since the publication of Agaves of Continental North America, there has been so much activity surrounding the genus that 52 species plus 3 subspecies have either been newly discovered or reevaluated. For example, in the "group" Striatae, Gentry listed three species, Agave dasylirioides, Agave striata, and Agave stricta. That number currently stands at 11 species with potentially more on the horizon. Much of this is due to new roads opening areas that were previously nearly impossible to access. Sometimes, a species complex has been reevaluated and species names previously considered synonyms of another name are now considered valid. For example, Gentry considered Agave kerchovei to be a highly variable, polymorphic species and included five other names as synonyms. Further investigation has revealed that two of those names are distinct entities and have been elevated back to species status.

Greg has had a long-standing interest in the genus Agave both horticulturally and botanically. He has been growing agaves at his nursery since opening the doors in 1985 and has authored or coauthored 5 species and 1 subspecies. He described Agave ovatifolia in 2002 along with co-author José Angel Villarreal who had previously described Agave montana. More recently Greg has authored or coauthored Agave azurea, Agave calciphila, Agave cremnophila, Agave oteroi, and Agave parviflora subsp. densiflora. This brand-new presentation of Greg's will delve into some of the newly described species and some of the reconsidered names. He will take the mystery out of some of these new species and address controversy surrounding others. If you like agaves, there are now even more to like, so come on out and find a new favorite.

**Agave montana**

**Agave azurea**

**Agave calciphila**

**Agave oteroi**

**Tucson Cactus and Succulent Society Monthly Meeting Presentation**

Thursday August 6, 2020  7:00 pm

Presented by Rob Romero
**"Some Cacti of Cochise County Arizona"**

Note this is a Virtual Meeting using Zoom conferencing technology

Cochise County is unique in Arizona. It is where the Chihuahuan Desert extends into the state.  Because of this, there are a few cacti that are found nowhere else in Arizona.  With so many places to explore, Cochise County is the perfect place for any cactophile to get out and see these wonderful plants in nature. 7 different cacti will be discussed showing location, and specific habitat types. Rob is a long time cactus hobbyist and traveler. He has been all over Arizona and seen almost all of the state's cacti.

**Tucson Cactus and Succulent Society Monthly Meeting Presentation**

**Thursday September 3, 2020 7:00 pm**

**Cacti and Succulents Endemic to Baja California**
**Presented by Peter Breslin**

Note this was a Virtual Zoom meeting - It was recorded and available on YouTube

No meetings at Sky Islands High School are currently being planned due to Covid-19 concerns

You can view the July meeting with the aid of your cell phone, tablet. ipad, laptop or desktop computer, you will enjoy an excellent program! There will be a Q&A period at the end using written Chat questions, you do not need a microphone

Peter Breslin began Ph.D. studies at Arizona State University in the fall of 2014 and completed the Ph.D. in spring 2020, investigating questions regarding the biogeography and evolution of Cactaceae. Under the advisement of Martin Wojciechowski, with the help of committee members Lucas Majure, Shannon Fehlberg, Fabio Albuquerque and Jon Rebman. Breslin pursued research regarding the molecular phylogenetics, ancestral biogeography, climate change impacts on habitat suitability and population viability of the Mammillaria and Cochemiea (Cactaceae) of Baja California and adjacent regions.

Breslin is one of the authors of Field Guide to Cacti and Other Succulents of Arizona, published by the Tucson Cactus and Succulent Society, soon in its 3rd edition. He has been traveling to Baja California to find and photograph populations of rare cacti and succulents for the past 25 years. He recently moved to Los Angeles, CA, to teach biology and environmental science at Geffen Academy at UCLA, where he also hopes to continue several research projects.

**Tucson Cactus and Succulent Society Monthly Meeting Presentation**

Thursday October 1, 2020 7:00 pm

**"Mutant Cacti and Succulents"**
Presented by Tom Glavich

Note this is a Virtual Meeting using Zoom conferencing technology

Tom Glavich is a long-time grower of succulent plants. He has served on the Board of Directors of the Cactus and Succulent Society of America and is currently the co-chair of the Inter-City Cactus and Succulent show and sale, one of the largest C&S shows in the world. He is the author of the Beginner's Guide to Succulent Monocots, and the Beginner's Guide to Succulent Dicots. He is a frequent contributor to the CSSA Journal and an active member of several Los Angeles area Cactus and Succulent Societies.

This presentation will look at mutant cacti and succulents, with an emphasis on the genetic changes and their impact on the appearance of crests, monstrous and variegated cacti and succulents. A survey of typical and unusual forms will be followed by a short introduction into cultivation and propagation.

This will be an excellent program presentation. You are welcome to join us with the aid of a cell phone, pad, laptop or desktop computer, and you will enjoy a very special program! Please follow the Zoom connection instructions provided and enjoy this presentation by Tom Glavich.

This will be our 5th ZOOM program presentation. All are welcome to join us with the aid of a cell phone, pad, laptop or desktop computer, you will enjoy an excellent program! Please follow the Zoom connection instructions provided and enjoy this presentation.

**Euphorbia pseudocactus**

**Astrophytum crest**

**Tucson Cactus and Succulent Society Monthly Meeting Presentation**

Thursday November 5, 2020 7:00 pm

**"Aloes On My Mind: Exploring Aloe Hybrids One Generation at a Time"**
**Presented by Karen Zimmerman**

Note this is a Virtual Meeting using Zoom conferencing technology
There will be an informal chat 15 minutes before the meeting and a Q&A period at the end using written Chat questions - See our Zoom Instructions

Karen Zimmerman has loved and grown plants from a very young age thanks to her grandparents. Succulents became a major passion in 1994, and has never slowed down.

She has been with the Huntington Library, Art Museum and Botanical Gardens since 1999, and as succulent plant propagator for the Desert Collections since 2001. Aloe hybridizing became a “hobby” within her job since 2002. She has had 12 hybrids published and distributed through the ISI (International Succulent Introductions) program with more on the horizon.

Photography is another passion that she brings to her work, and has had many photos published in journals, a few books and a photography magazine.
Karen will start with an overview of the genus aloe; distribution and diversity of species. She will talk a little about the work of hybridizers up to the present, with a special mention about Kelly Griffin, and his inspiration to try her hand at it. She will show parent plants and offspring, some that became good enough to name and distribute, and others that became disappointments. She will also show some promising babies and future possibilities.

This will be a very special program presentation and anyone who has worked or collected an Aloe should see this presentation. Everyone is welcome to join us with the aid of a cell phone, pad, laptop or desktop computer, and you will be open to an excellent program! Please welcome Karen Zimmerman to our club and enjoy the evening.

# Tucson Cactus and Succulent Society Monthly Meeting Presentation

## Thursday December 3, 2020 7:00 pm

## The Presentation will be...

## Your Questions and Their Answers - Panel Discussion

## Featuring: Mark A. Dimmitt, Greg Starr and Jason Wiley

Note this was a Virtual Meeting using Zoom conferencing technology

This presentation is available on YouTube for viewing

This holiday Zoom program will feature 3 professionals that will take questions submitted by you through the Zoom Chat function. Please think about questions that may focus on cacti and other succulents, cultivation, home landscaping and more. For information as to how to access the chat function, please see https://support.zoom.us/hc/en-us/articles/203650445-In-meeting-chat. Once the chat window appears, look at the base of the window and you will see the word "Everybody". Immediately below that word, please type your question. The panelists will then verbally answer your question in the order received.

**Mark A. Dimmitt** has a Ph.D. in biology (herpetology) from the University of California at Riverside after earning an M.S. from UCLA and a B.S. from Pomona College. He worked at the Arizona-Sonora Desert Museum from 1979 to 2011, first as Curator of Botany, and eventually as Director of Natural History (field ecologist). His areas of research included botany and vertebrate biology, and he is the author of more than 50 scientific and popular publications about ecology and horticulture. He is a Fellow of the Cactus and Succulent Society of America. His major publication is the plant and ecology chapters of A Natural History of the Sonoran Desert (2000), and is the senior editor of the revised edition (2015). He is a coauthor of Adenium: Sculptural Elegance, Floral Extravagance.

**Greg Starr** has both a BS in Plant Science and an MS in Botany/Plant Science from the University of Arizona. While working on his MS degree, Greg worked at the University herbarium under the tutelage of Dr. Charles T. Mason. It was there he learned the details of taxonomy and nomenclature and honing his skills at plant identification using botanical keys. For his MS, Greg blended his love of both horticulture and botany to produce a thesis covering the species of Salvia that had been in cultivation since 1900. Greg opened a small, native or near-native plant nursery in July 1985 and although he had an interest in cacti and succulents, it took several years for that interest to become an infection causing him to produce his book, Agaves: Living Sculptures for Landscapes and Containers, and to be a co-author on the Field Guide to Cacti & Succulents of Arizona. Currently, Greg spends the heat of summer days in the relatively cool environment of his house sitting in front of the computer hoping that a random assault of his hands on the keyboard will result in an article for the CSSA journal or another book.

**Jason Wiley** grew up on a sod farm cultivating his career in horticulture which inspired him and to connect people to their environment by creating meaningful experiences in the landscape. He received his Bachelors of Science in Horticulture from Arizona State

University and also studied Landscape Architecture at Colorado State University. He has worked in public gardens for 9 years and has been a professional horticulturist for 16 years. He recently received the title of Director of Horticulture at Boyce Thompson Arboretum. Prior to that, he was a Horticulturist at the Arizona-Sonora Desert Museum where he maintained the Cactus Garden, Agave Garden, as well as various other gardens.

This will be our 7th ZOOM program presentation. All are welcome to join us with the aid of a cell phone, pad, laptop or desktop computer, you will enjoy an excellent program! Please follow the Zoom connection instructions provided and enjoy this presentation.