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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 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.

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Jessie Byrd

“Cactus Rescue: Using salvaged plants to create meaningful landscapes.”  
Presented by Jessie Byrd

Thursday, February 4, 2016 at 7:00 PM

Thursday, March 3, 2016 at 7:00 PM

“What are cephalothoraces? 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
President's Message
Winter is half gone! My friend and Honorary Life Member of our Society, Dan Birt, has defined winter as that time from November 15 to March 15 when we should protect our plants from cold and frost. I try to do this religiously, it seems to work and it's easy to remember. I am so glad that there is only six more weeks of cold weather (that's defined by me as anything under 70 degrees).

Another important date to remember is February 14. Yes it's Valentine's Day but it is also the day to use super bloom on all your Trichocereus Hybrids and Echinocereus to stimulate a great spring bloom. I wish I could remember to do this. That's why I am reminding you.

There is an exciting event about Saguars that you might want to attend. All the information is in this newsletter, so be sure to check it out. Some of the information is coming from a research grant we funded for Dario Copetti on the Saguaro genome. He will do a meeting presentation later this year.

The Environmental Research Laboratory at the Tucson Airport has closed. One of the interesting facts is Harrison Yokum (deceased) worked there for many years and planted numerous cacti, succulents and tropical plants in and around the facilities. We were invited to remove any of these plants that were of interest and move them to Pima Prickly Park.

Numerous cutting and plant were removed and are being re-established in our park. For all of us who knew and really enjoyed our friendship with Harrison, we are so happy to have part of his collection at the Park.

Thanks to the group who gave up most of their Saturday to do this. Sonoran XI information will be out soon. Save the dates, April 16 & 17.

Hope to see you at our February 4th meeting at Sky Island School, you will love the facility.

Thank you for your support
Dick Wiedhof, President

Saguaro Genome
January 27, 2016 12:00 pm
By Mike Sanderson Special to the Arizona Daily Star

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My research combines these two potentially enormous data sets – millions of species and billions of letters in each of their genomes – to try to understand the place of specific biological species in the tree of life.

Lately, we have turned to an icon of the Sonoran desert, the saguaro cactus, to gather genome sequence data and reconstruct where among the thousands of other species of cactus it belongs. Perhaps no plant is as firmly lodged in the imagination of people when they think of the deserts of North America than the saguaro, if for no other reason than their appearance on classic Bugs Bunny-Roadrunner cartoons or in Hollywood westerns.

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Together with a large consortium of Mexican and Arizona scientists, funded mainly by the University of Arizona College of Science and National Autonomous University of Mexico in Herencia, and as colleagues at Arizona State University and a recent grant from the Tucson Cactus and Succulent Society, we have been gathering genome sequence data from saguaro samples across its geographic range in Sonora and Arizona.

The main genome sequence is being assembled from an individual plant from the Tumamoc Hill reserve in Tucson, which has a century-old legacy of studies of saguaros. One small chunk of the genome is now complete, the small separate genome of chloroplasts, which is the site of photosynthesis in plant cells.

Surprisingly, this chloroplast genome is the smallest yet found for any flowering plant that still undergoes photosynthesis — a fairly baffling finding. In the next year, we will assemble a draft sequence for the whole genome, identify a large fraction of its genes and map how these genes vary across the diversity of habitats found within the Sonoran Desert.

For me, much of the pleasure in this work comes from alternating between massive but esoteric computational challenges and the in-your-face biology of such an interesting and extreme organism as the saguaro. Genomes like this are assembled first by breaking them into billions of small pieces, sequencing each of those, and then using algorithms on large computers to put the puzzle together.

But, living where we do, all of the members of our team have the singular pleasure of being able to turn their eyes away from the computer screen from time to time and look out their windows at this striking cactus, which is now beginning to give up its secrets.

About the scientist
Mike Sanderson is a professor in the Department of Ecology and Evolutionary Biology. His lab’s research is aimed at reconstructing the history of life on Earth, mainly plants, using a combination of genomics and high performance computing. This work is a necessary mixture of developing and testing new methods to solve problems in big data analysis and of applying them to interesting groups of plant species.

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Some of Britain’s most remarkable works of botanical illustration were created by Arthur Harry Church (1865-1937), a reclusive Oxford botanist who was a prolific writer and a talented and entertaining lecturer. Church’s scientific accomplishments were well known during his lifetime, but his unique artistic achievements have only recently gained wide exposure.

Church was a competent artist from an early age, and he later used those skills to illustrate his botanical writings and lectures. The drawings he produced for his lectures on floral morphology and reproductive mechanism were the beginnings of his best-known work, Types of floral mechanism, a selection of diagrams and descriptions of common flowers arranged as an introduction to the systematic study of angiosperms. Church’s plan was to illustrate and describe 100 types of floral structures occurring in British gardens and to arrange them by blooming season, with the first volume presenting 12 types of spring flowers. The completed work contains 39 color plates of vertical sections of the flowers and numerous line drawings and floral diagrams (see The Desert Breeze, January 2016). This volume, published in 1908, was well-received but its sales were disappointing.

Planning to complete his project eventually, Church continued working on the illustrations until 1915. It was then that his wife died of food poisoning, and within a few months his youngest daughter succumbed to tuberculosis. This terrible and sudden loss, coupled with the deaths of so many of his students and colleagues in the Great War, caused Church, in the words of a close friend, to “hover on the brink of insanity”. Gradually he recovered and began a period of intense productivity in his writings. Yet despite the completion of the second volume of Types of floral mechanism and of all the artwork for a third volume, his publishers declined further involvement with a project of such scale.

After Church’s death, most of his papers, including 773 of his flower paintings, eventually made their way to London’s Natural History Museum. In 2000, the Museum produced a biography of Church by British botanist and author David Mabberley, the first such work to include these amazing works of art. Arthur Harry Church: The Anatomy of Flowers contains a wealth of information about Church’s life and writings and 57 exquisite color plates, most of which were previously unpublished.

Rarely does an artist reach Church’s level of skill in portraying the detail and beauty of a sectioned flower. He was known among his students for his mastery of the sharp razor, and for botanical illustrators, these works are an inspiration and challenge to improve one’s dissecting abilities.

Original copies of Types of floral mechanism are still available from rare book dealers. It can be also be downloaded from the Internet Archive (https://archive.org/), but sadly the colored plates are missing. Mabberley’s superb book is out of print but is available from used book dealers.

Shown here are two works depicting Cydonia japonica, the Japanese quince. Church’s striking watercolor is paired with a pen and ink illustration of the same flower that includes a floral diagram and vertical sections of the flower, fruit, and seed. Four additional paintings from Types of floral mechanism are included here to illustrate the unique beauty and bold style of Church’s works. —CLH
President's Message

I have had the privilege of serving you for the past decade and a half as president. It is the most rewarding and gratifying experience anyone could have. What a wonderful group of members!

I can't help from telling anyone who will listen to me that our society is made up of over 1100 members who do wonderful things for our hobby, our environment, our education, our conservation, our literature, our aesthetics our economy and everything else that is cactus and succulent, for the sheer enjoyment of participation.

I am very excited about this New Year. We have a new home at the Sky Island School. It provides us with more space and opportunities. We had the largest holiday party in our history and it didn’t seem crowded. Thanks to everyone who helped make it a special event.

Pima Prickly Park will see a lot of development this year. We will start on the design and planting of the “Monrad Pima Prickly Park” Garden. We will make this one of the best collections of Ferocactus anywhere. Many plants have already been purchased or donated and we are always interested in new acquisitions.

The entrance to the garden is being designed and planted with the potential acquisition of a large number of mature plants. The plants are free but the removal and transportation will be expensive. The board will be working on those details.

We have contracted for and completed an extensive mapping project of the park which will be presented at the January Board Meeting. This will really help us move forward.

More plants are always needed for the Park and we will print a want list in upcoming Newsletters.

The Sonoran XI committee is working on the final details which should be sent out in late January. This is our biennial conference of speakers, workshops, show and sales, highlighting growing cacti and succulents from and in the Sonoran and other deserts.

The new chair of our rescue program is Donna Ellis. Donna has a committee of dedicated volunteers who will assist her managing this incredible activity. All of you need to be the eyes of this program. When you see signs go up, fences go up or any other activity that indicates development, we need to know. Get us the contact information and the rescue community coordinator Noe Mayotte nonoemayotteaz@yahoo.com will do the rest.

This will be another great year thanks to all of you.

Dick Wiedhof, President

Acknowledgement of Contributions

The names below represent Tucson Cactus & Succulent Society members and friends whose donations helped make this year a success. We extend our sincere thanks for your support.

Educational Outreach

Chris Bondante & Family
Research Fund
Elizabeth & Nancy Viassis
Conservation Fund
Barbara Walker & Phil Feigin
Pima Prickly Park
Chris & Sandra Marshall
Publication Fund
Sue Haffner
Unrestricted General Fund
James & Felicia Kukula
Ravi Seth & Diane Mak-Seth
Anu Pundari
Fiona Clark & Jim Boggs
Sandi Kilkuts & Family
Nancy Tom & Family
Tris Bonar & Family
David Bishop & Charla Dain
Dean & Jenny Brick
Lisa & Frank Walters

Abbay Garden Rescue Sale

Back in October, Boyce Thompson staff trekked over to La Habra, CA and brought back 24“ U-Hauls full of cacti and succulents from the former Abbey Gardens Nursery. Many of the plants have been subsumed into the Arboretum’s plant collections but a good many went to our retail nursery for some TLC. These have been diligently cared for and repotted and are now ready for a special sale. On Saturday, March 5th, from 8:00 a.m. to 5:00 p.m. BTA will hold a special sale of these plants that should appeal to all cactus & succulent collectors. There are many rarities and others not often seen, some special euphorbias and many others.

Boyce Thompson Arboretum is located on US Highway 60 just west of Superior.

Cathy Babcock
Director of Horticulture
Boyce Thompson Arboretum
37615 Highway 60
Superior, AZ 85173-5100
520/689-2723 phone
520/689-5585 fax
cbabcock@cats.arizona.edu

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