Friends of the Palomar College ARBORETUM

NEWSLETTER
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2014 Calendar of Events for SPRING

Palomar College Arboretum Home Page: http://www.palomar.edu/arboretum/

Hawaiian Gardens at Palomar College

by Tony Rangel

Many years ago while on vacation on the Hawaiian Island of Oahu, David Orr, director of the Waimea Valley Botanical Garden, showed me some very spectacular native Hawaiian plant species that were critically endangered. When I got back to my hotel room later that day, I grabbed my laptop and started looking into how many plant species native to islands actually were endangered. I discovered that Hawaii is home to 362 federally listed endangered species of plants! This shocked me. I then discovered that California is home to 180 and Florida has a total of 57. I was dumbfounded! How is it that a country that is so adamant about saving the rain forests of Brazil and the animals of Africa, could be so naive and have so many species at risk of extinction here in the Unites States?

I decided that people needed to be made aware of this information and that somehow I should contribute to this cause. So I started pondering ideas of how exactly could I help? I noticed a few of the Botanical Gardens in Southern California had native Hawaiian gardens and that was an exciting revelation to me. I also knew we already had a native California garden here at the college. I then decided that we should try taking advantage of an educational opportunity here at Palomar College and plant a native Hawaiian Garden on campus. The United States "Endangered Species Act" and each of the 50 states with their own "ESA" provide strict rules that were enacted with the intention of protecting and proliferating species endangered of extinction. Because of this I knew I needed to do my home work on this one. I decided to send out some emails and make some phone calls to see what the permitting process might be. I was particularly interested in species already commonly cultivated throughout the state of Hawaii and particularly species that might have a great chance at surviving in our climate. That meant species that are cold hardy and somewhat drought resistant. This strict criterion naturally whittled the list of possibilities down quite quickly!

Most people think of Hawaii as a wet tropical or subtropical island chain. It is! However, the islands also have dry desert regions that receive very little precipitation throughout the year and the highest peak on the big island of Hawaii, Mauna Kea, is over 13,000 feet. During the winter and for much of the year this peak will have snow on its summit. So with all the diverse habitats scattered throughout the Island chain I knew there had to be some species that we could cultivate here and use to educate students, staff, faculty and the general public about the world around us and how we have negatively affected it.

After formulating a list and completing a research proposal indicating my intent, I sent off the request for the seeds to the US Fish and Wild Life Service and the Hawaii Department of Land and Natural Resources, Division of Forestry. After six months I was granted permission to gather seeds from cultivated stock at specific botanical gardens of endangered species native to the state of Hawaii. The approval letters came just in time too!

My plane was scheduled to leave from San Diego in 19 days for the islands. As a result, the TLC building on the main campus is now home to many species of plants native to Hawaii and greater Polynesia. The grasses and sedges are California natives and there are some plants that are native to Southeast Asia that were vital to the Polynesian migration across the Pacific Ocean. Even plants like pineapples are growing in the garden. Though these plants were brought with the Europeans they were at one point a vital part of the Hawaiian economy. There is also a slightly older test garden planted by the Boehm Gallery that contains similar plants. Today, due to habitat destruction, urbanization and global warming, most of the lowland forests are gone. Most of these forests were replaced by sugar Cane and pineapple fields.

The nursery contains many more species of unique and rare plants native the Hawaiian Islands as well as greater Polynesia. When they get big enough to plant out we will add them to the garden in the hopes that they might act as ambassadors for conservation. If nothing else, just being in the garden they provide all of you a chance to see how beautiful and diverse our world is and hopefully entice at least a few to take some active role in the efforts protect them.

The Following Botanical institutions provided seeds for nearly all of the Hawaiian Native plants in these gardens.

- The National Tropical Botanical Garden NTBG
- The Honolulu Botanical Gardens
- The Waimea Valley Botanical Garden.

***Brighamia insignis* (Campanulaceae): A Rare Hawaiian Native**

see description on the next page

Photos by Wayne Armstrong

Brighamia insignis (Campanulaceae): A Rare Hawaiian Native

Alula (**Brighamia insignis**), a rare member of the lobelia family (Campanulaceae) endemic to steep sea cliffs on the island of Kauai. In 1994 the United States Fish and Wildlife Service reported five populations totaling 45 to 65 individuals, and listed the plant as an endangered species. The IUCN lists only 7 mature plants in the wild. According to the U.S. Botanic Garden, its only pollinator was a certain type of now-extinct hawk moth. This has made it impossible for ***B. insignis*** to reproduce on its own because individuals only produce seed when artificially pollinated by humans.

Alula is perfectly adapted for living on vertical volcanic cliffs. A single rosette of leaves arises from the top of a thick, succulent stem, like a cabbage head on a baseball bat. The rosette varies in size, depending on the availability of moisture. Roots penetrate the cliffs horizontally, and the base of the plant is rounded, permitting the plant to rock slightly in the wind. Water stored in the stem enables the plant to survive periods of drought which may last days or weeks. The flower is very different from members of the lobelia family on the mainland of North America. Another rare species with white flowers (***B. rockii***) grows on sea cliffs along the windward coast of Molokai. Like Hawaii's endemic silver sword alliance that evolved from an ancestral tarweed (Asteraceae), the alulu is another example of adaptive radiation. According to Sherwin Carlquist (***Hawaii: A Natural History***, 1980), the Hawaiian lobeliads evolved from several ancestral introductions rather than a single original colonization; however, molecular data from Thomas J. Givnish of the University of Wisconsin (***Evolution on Islands***, 1998) indicate that they are monophyletic in origin and represent the product of a single introduction.

Table For Record Breakers Part I

for the links to this information: http://waynesword.palomar.edu/BotRecords1.htm

Botanical Record	Name Of Plant	Comments & Runners-Up
Oldest Living Thing	Creosote Bush (*Larrea tridentata*)	King's Holly (*Lomatia tasmanica*) of Tasmania.
Other Old Life Forms	Crustose Rock Lichens	Glacier NP map lichen 8,600 years old.
Oldest Germinated Seed	Campion (*Silene stenophylla*)	Date palm seed (*Phoenix dactylifera*).
Oldest Living Fossil	*Ginkgo* Tree & *Osmuda* Fern	Found in Jurassic and Triassic Roacks.
Most Massive Tree	Giant Sequoia (*Sequoiadendron*)	Aspen clone and *Armillaria* fungus mycelia.
Tallest Living Tree	Coast Redwood (*Sequoia*)	Rivaled by Australian *Eucalyptus regnans*.
Hardest Wood	Lignum Vitae (*Guaiacum officinale*)	South African black ironwood (Olea laurifolia)
Smallest Fl. Plant	Watermeal (*Wolffia globosa*)	Rivaled by the Australian *Wolffia angusta*.
Smallest Flower	Watermeal (*Wolffia*) species	A single microscopic stamen & pistil.
Largest Flowering Plant	Sierra Madre Wisteria? (Probably Not)	Probably A Giant Banyan or Aspen Clone.
Largest Flower	Corpse Lily (*Rafflesia arnoldii*)	Rain forests of Sumatra & Borneo.
Largest Inflorescence	Bromeliad (*Puya raimondii*)	Talipot palm of India (*Corypha umbraculifera*).
Smallest Fruit	*Wolffia globosa* or *W. angusta*	One-seeded fruit is called a utricle.
Largest Fruit	Pumpkin (*Cucurbita maxima*)	Many-seeded fruit is called a pome.
Largest Fruit On A Tree	Jackfruit (*Artocarpus heterophyllus*)	Related to breadfruit (*Artocarpus altilis*).
Largest Bean Pod	Sea Heart (*Entada gigas*)	Heart-shaped seeds drift across oceans!
Largest Seed Cone	Tropical Cycads	*Lepidozamia* and *Encephalartos*.
Largest Sperm	Cycad (*Zamia roezlii*)	Almost as large as *Wolffia* plant body!
Largest Hitchhiker Fruit	Devil's Claw (*Proboscidea*)	North and South American anachronism?
Largest Vegetable	True Yam (*Dioscorea*)	Kelp (algae) & horseradish tree (*Moringa*).
Smallest Seed	Epiphytic Tropical Orchids	Seeds the size of spores or dust particles!
Largest Seed	Seychelles Is. Palm (*Lodoicea*)	Largest seed embryo: *Mora oleifera*
Largest Leaf	Raffia Palm (*Raphia regalis*)	Amazonian water lily (*Victoria amazonica*)
Smallest Leaf	Duckweed (*Spirolela polyrrhiza*)	Prophyllum is technically a reduced leaf.

Friends of the Palomar College ARBORETUM

Membership Application Form

☐Join, ☐Renew or ☐Gift Membership

Date: _____

Mr. and Mrs. / Ms. / Miss / Mr. / Mrs.

Name: _____

	Senior 60+	$10
	Individual	$25
	Family	$40
	Founding	$120
	Lifetime Membership	$500
	Corporate Museum Associates	$1,000
	Donations	
	1 Year Parking Pass (non-students)	$30 (optional)

$ _____ I have enclosed a donation to benefit the Arboretum

$ _____ Membership

$ _____ Optional 1 Year Parking Pass (Members cannot be enrolled in any classes at Palomar College.)

$ _____ Total Payment Enclosed

Credit Card: VISA MasterCard American Express Discover (Please Circle One.)

Account number: _____ Expiration Date: _____

Signature: _____

Address: _____

City, State & Zip: _____

Telephone: _____

Email: _____

If a family membership, please give names of others in your family to be covered by this membership. (Please write the names of other family members on the back of this form.)

Mail this form and check to: Palomar College Foundation Office
1140 West Mission Road
San Marcos, CA 92069-1487

Please make check payable to: Palomar College Foundation
Write “Arboretum” in the memo line.

Events, Workshops, Lectures and Tours for 2014

For Room Numbers Please Refer To The On-Line Events Calendar: http://www.palomar.edu/arboretum/calendarEvents.htm

*Wednesday, May 14
5:30 pm – 7:30 pm

Members Appreciation Dinner

Location TBA at a later time.

Please RSVP Tony Rangel if you are planning to attend this lecture.

email: arangel@palomar.edu
Or call: (760) 744-1150 ext. 2133

*Saturday, July 19
9:00 am – Noon

Cactus and Succulent Care

with Dick Henderson & Susan Snow
Cactus Garden Gate

The workshop is free and open to the public.
Please park in Parking Lot 14. (free parking for attendees)

The cactus and succulent garden, located at Comet Circle Drive and Mission Road, offers about 3,000 varieties of plants from around the world. The workshop includes a tour of the garden, a discussion of the use and history of the plants and the basics of succulent plant care. Participants will take cuttings of easy to grow succulents, pot them, and take their plants home with them.

For more information about the workshop:
call Mr. Henderson
at (760) 480-4181 or email: 37chinesedog@gmail.com

*Saturday, September 13
10:00 am – Noon

Integrating California Natives in the Landscape

with Tony Rangel & Wayne Armstrong
Room: NS-139

The lecture is free and open to the public.
Please park in Parking Lot 5. (free parking for attendees for this walk only)

There will be a lecture in room NS-139
Please bring a bottle of water and wear comfortable walking shoes. Sunscreen, sunglasses, snack and a hat is also recommended.

Please RSVP Tony Rangel if you are planning to attend this lecture.
email: arangel@palomar.edu
Or call: (760) 744-1150 ext. 2133

*Thursday, October 2
8:00 am – 3:00 pm

Annual Arboretum Fall Plant Sale

Near the Student Union Flag Pole
The public is welcome!

For more information email Tony Rangel
email: arangel@palomar.edu
Or call: (760) 744-1150 ext. 2133

*Saturday, October 11
10:00 am – Noon

Composting

with Kevin McLin, San Pasqual Valley Soils
www.spvsoils.com

Room: NS-139

The lecture is free and open to the public.
Please park in Parking Lot 5. (free parking for attendees only)

There will be a lecture in room NS-139
The talk will be on the benefits of using compost, how you can make your own compost, along with application and uses of compost. There will also be an open Q&A session to answer problems you may be having with making your own compost.

Please RSVP Tony Rangel if you are planning to attend this lecture.
email: arangel@palomar.edu
Or call: (760) 744-1150 ext. 2133

*Saturday, November 1
10:00 am – Noon

The Mushroom Talk

with Steve Farrar
Room: First Floor NS Building in room #139
Please park in Parking Lot 5.
(free parking for attendees for this lecture only)

Please RSVP Tony Rangel if you are planning to attend this lecture.
email: arangel@palomar.edu
Or call: (760) 744-1150 ext. 2133

*Read About Our Guest Speakers

NOTE TO FACULTY: You can receive Professional Development credit by taking our workshops, tours and lectures. Maximum of 2 hours of PD credit per semester.

Please sign-up with the Professional Development office.
http://www.palomar.edu/pd/
Call (760) 744-1150 x2250 for more information.

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