



Orchidacea

Newsletter of the
Triangle Orchid Society

Associated with
Sarah P. Duke Gardens

September 13, 2014

!AUCTION TIME!

SEE PAGE 3 FOR DETAILS

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Join Nick Plummer, Harry Gallis and
Bob Meyer as they
auction great orchids for our lucky
bidders.

REMEMBER-NO MEETING

ON SEPTEMBER 8

No Monday Dinner This Month

The Triangle
Orchid Society
meets at the
Sarah P. Duke
Gardens,
Durham, NC
The Second
Monday of the
Month
at 7:30 PM

www.Triangle
OrchidSociety.org

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The August 11 2014 membership meeting of the Triangle Orchid Society was called to order at 7:30pm by Nancy Harvey, the TOS President. Eight guests were present. Approximately 50 people attended the meeting this night. Louanne Shea was recognized for covering the Welcome Table and selling raffle tickets. Everyone was encouraged to purchase raffle tickets. (Raffle tickets are \$1 each or 6 for \$5.00.) Members receive a free ticket for each plant they bring for the show table (maximum of 3 free tickets).

All members were reminded to volunteer for the many activities that need support including the refreshment table, raffle and welcome table. All members were encouraged to attend the Fall Auction on September 13 at Lake Crabtree Park. There is not meeting in September; please come to the Auction to learn about the orchids to be auction.

The presentation for this meeting was "Why are our Native Orchids so Difficult to Grow?" The presenter was Dr Melissa McCormick of the Smithsonian Environmental Research Center in Maryland. Many of the visitors came to specifically hear our speaker.

Following the speaker presentation, there was a short time for refreshments. Thanks were extended to Anne Williams and Nancy Harvey, who provided the refreshments and drinks for the evening.

Harry Gallis and Nick Plummer discussed the orchids on the show tables this month. The Jack Webster Award Plants were:

Greenhouse Awards were:

1st Place: *Encyclia alata*, grown by Nick Plummer

2nd Place: *Phalaenopsis pulchra*, grown by Lee Algood

3rd Place: *Dendrobium dichaeoides*, grown by Paul Feather

The Non-Greenhouse awards were:

1st Place: *Vandaenopsis Newberry Whimsey*, grown by Sarah Patterson

2nd Place: *Dendrobium uniforme*, grown by Charles Walker

3rd Place: *Goodyera pubescens*, grown by Sidney Cox

Please Note:
We are having our Fall Auction in lieu of our September meeting



Triangle Orchid Society Orchid Auction September 13 2014



Lake Crabtree Park, Raleigh NC
Pot Luck Dinner at 12:00 noon
Auction Starts at 1:00 pm
Saturday Sept 13, 2014



A great way to start or expand an orchid collection. A wide variety of unusual orchids will be available, from well know orchid nurseries. Enjoy good food and enthusiastic local orchid growers.

Open to the public

Directions:

White Oak Shelter at Lake Crabtree Park
Enter Park from Aviation Parkway. Turn right at the 5th driveway. White Oak shelter will be on the right. Parking is first come first serve.



Melissa McCormick

Why are our native orchids so difficult to grow?

Dr. McCormick began her presentation by making the assertion that Orchids are the “Canary in the coal mine” for plants worldwide. She made the observation that orchids are the first casualties of any change in the environment, regardless of location. She stated that of the 250 species native to North America, fifty seven percent, more than half, are threatened or endangered at either the state or federal level. Conservation and preservation is difficult because most of our native orchids are not commercially available. Many are terrestrials **and grown from seed. Most don’t survive efforts to transplant them, and many are very difficult to grow.** **Dr. McCormick’s work, through the Smithsonian Environmental Research Center in Edgewater, Maryland, has focused on trying to understand how orchids are different from other plants and how their survival can be facilitated.**

Orchid propagation, Dr. McCormick pointed out, is significantly more complicated than that of many other plants. Not only do many orchid species require specific pollinators, there is an elaborate interaction between orchids and fungi. She referred to this as a mycorrhizal symbiosis, a symbiotic association between the orchid root and fungi. For orchid seeds to germinate it is essential for them to have access to nutrients and water, and for them to be protected against environmental pathogens. This applies to both terrestrial and epiphytic orchids and is supplied by the fungi they are associated with in this symbiotic relationship. Because orchid seeds contain no nutrients of their own they have evolved a symbiotic relationship with fungi and survive by eating the nutrients available in the fungi. In fact orchid seeds that are in the germination process are parasitically dependent upon fungi for all of their nutritional needs early in life, essentially until they develop their first leaves and roots. This process can take several months or up to a year, depending upon the orchid species.

Orchid seeds are produced in the millions. A single seed pod can contain more than a million seeds. The seeds themselves are very small and light, light enough that a single seed can be carried by wind currents for thousands of miles. Most of the seed produced will never germinate, but the seeds that are fortunate enough to find themselves in a location where their specific symbiotic fungi exists have all of their nutritional needs supplied by the fungi. Developing seeds, or protocorms, begin to turn green early in their development. They acquire the ability to photosynthesize even before they have foliage or roots and remain dependent upon fungi until they are developed sufficiently to be considered plantlets.

For many years it was believed that this symbiotic association between orchids and fungi ended when the plantlets were sufficiently developed, with their own root systems, to be able to survive on their own. However, scientists such as Dr. McCormick, are now finding that adult orchid plants also consistently have fungi on their root systems. Fungi grow into the roots, forming pelotons (fungal coils) in the root cells. Many orchids, it has now been established, continue to obtain nutrients from fungi even as adult plants. Most critically however, scientists are now finding that fungi help orchids tolerate stress. This despite the fact that there does not appear to be any benefit to the fungi in this relationship.

Dr. McCormick’s research has helped to establish that fungi enable orchids to tolerate drought conditions better. She has also established that most terrestrial orchids, and most of our native orchids are terrestrials, need specific fungi to survive. Her research, therefore, has focused on how to improve fungal conditions for orchids.

By understanding how to improve the conditions for fungi, it is hoped that scientists can intervene when orchids are endangered or stressed, or just how to grow orchids better. Dr. McCormick has focused her research on determining what specific fungi specific orchids require, where these fungi are located, and what particular conditions they need in order to support orchids.



Dr. McCormick selected three native orchids to study based on their availability, their diverse needs and the fact that all three are relatively easy to grow. She selected *Liparis lillifolia*, *Tipularia discolor* and *Goodyera pubescens*. These three orchids are fairly common in the area where she lives. Each requires a specific fungi to survive, and each has unique growth and bloom characteristics. Dr. McCormick stressed that not enough is currently known about fungi. She only had one slide of fungi – a greyish-brown slightly pebbled slab of material that could have been the bark of a tree or a puddle of sand and gravel found in any meadow. Dr. McCormick said **fungi can look like a “smear of jelly” and that most are unimpressive to look at. However, there are thousands of species, each with their own DNA sequencing data. It is virtually impossible to identify any particular species of fungi except in a controlled laboratory setting. Each species of fungi functions independently and differently, although many are similar and closely related.**

Most fungi are found in soil. Dr. McCormick said that as many as 150 species can be found in 0.5 grams of soil and that it is possible to extract that many DNAs from that limited sample. Additionally, soil samples taken only **10 feet apart may share only 25% of the same species. Dr. McCormick’s research established that when seed packets of orchid seeds were distributed in controlled plots, the best germination occurred in areas where fungi were abundant. She has therefore focused her work on making fungi more abundant by studying old and new forest sites. She dropped orchid seed packets into chopped or decayed wood samples as well as into crushed leaves collected from native trees. Almost universally she found that fungi grew best in older, decomposed wooded areas. She defined “old” forest sites as areas that have been undisturbed for 150 years or more.**

“New” forest sites were areas that have only been undisturbed for 50 years.

Dr. McCormick found that fungi were most abundant in old forests and that this where the orchids she studied tended to be found in greatest abundance. She also found that in the newer forest indigenous or native earth worms have been totally replaced with invasive species brought to the New World by immigrants as they settled **the continent. She described settlers arriving with twigs and root bundles of plants “from home” and noted that these root bundles frequently contained earth worms as well as other life forms. These invasive species are now so abundant that they totally replaced the native earthworms that were here previously.**

In summary, Dr. McCormick said that all orchids are limited in their populations by the availability of their specific fungi. Today, orchids persist where fungi are abundant. To ensure fungi survival it is critical that our old forest, with their rich supply of new growth and decomposing wood, be maintained and preserved.

Dr. McCormick noted that there are a number of ways that hobby orchid growers can help to maintain orchid **populations. We can try to create medium that most closely resembles that found in the orchid’s natural environment. We can make mature orchids less dependent upon fungi by fulfill their nutritional needs more specifically. We can choose to grow orchids that are less dependent upon specific fungi and able to thrive by utilizing additional species. And lastly, we can help to maintain the conditions under which fungi live and thrive.**

Dr. McCormick recommended that hobby growers consider supporting the efforts of the North American Orchid Conservation Center through the US Botanic Garden at the Smithsonian. The mission of this organization is to preserve orchids through a number of efforts such as establishing seed banks and mycorrhizal fungal collections. They also are working to restore natural populations through planting seed grown species back into their native environments. Most critically, they are working to preserve the genetic diversity of native orchid populations by propagating these species. And, critically, they are working to educate the public about native orchids. Their website www.gorochids.northamericanorchidcenter.org. has photos of many of our native orchids which can be useful when identifying orchids in the wild.

**Our thanks to Joy Lemieux for transcribing Dr. McCormick’s
presentation**



Jack Webster
Awards
Greenhouse Grown

1st Place Ribbon:
Encyclia alata
Grown by Nick Plummer



2nd Place Ribbon:
Phalaenopsis pulchra
Grown by Lee Allgood



3d Place Ribbon:
Dendrobium dichaeoides
Grown by Paul Feaver





Jack Webster
Awards
Non-Greenhouse

1st Place Ribbon:
Vandaenopsis Newberry Whimsey
Grown by Sarah Patterson

2nd Place Ribbon:
Dendrobium funiforme
Grown by Charles Walker



3^d Place Ribbon:
Goodyera pubescens
Grown by Sidney Cox



Thanks to Alan Miller For taking these showtable photos

ANNOUNCEMENTS

Charlotte Orchid Show

NC Piedmont Orchid Society will be hosting a show in Charlotte on October 3, 4 & 5. TOS will be creating a table top exhibit. Anyone who wants to volunteer to help should contact Nancy Harvey at triangleorchidsociety@gmail.com.

North Carolina State Fair

TOS will be creating a tabletop exhibit at the State Fair in Raleigh this year. Anyone who wants to volunteer to help should contact Nancy Harvey at triangleorchidsociety@gmail.com

BOTH OF THESE ARE FUN AND REWARDING. GET INVOLVED!

Triangle Orchid Society Meeting Agenda:		Calendar 2013	Speaker	Topic
7:00-7:30	Set Up Show Table and Chairs	Sept. 13, 2014	TOS Fall Auction	Fun and great Orchids
7:30-7:40	Business Meeting Announcements			
7:40-8:30	Program	Oct. 8, 2014	Tom Harper	Stone River Orchids Phalaenopsis
8:30-8:50	Refreshment Break			
8:50-9:20	Show Table Review, Show Table Awards	Nov. 10, 2014	Tom Mirenda	Smithsonian Institution
9:20-9:30	Raffle			

Welcome Table	Refreshments
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Sept.	Outdoor Auction September 13, 2014	Pot Luck Lunch..Enjoy!! Lunch starts at Noon
October	See host to volunteer	See Suzanne Hens to volunteer



Associated with
Sarah Duke Gardens

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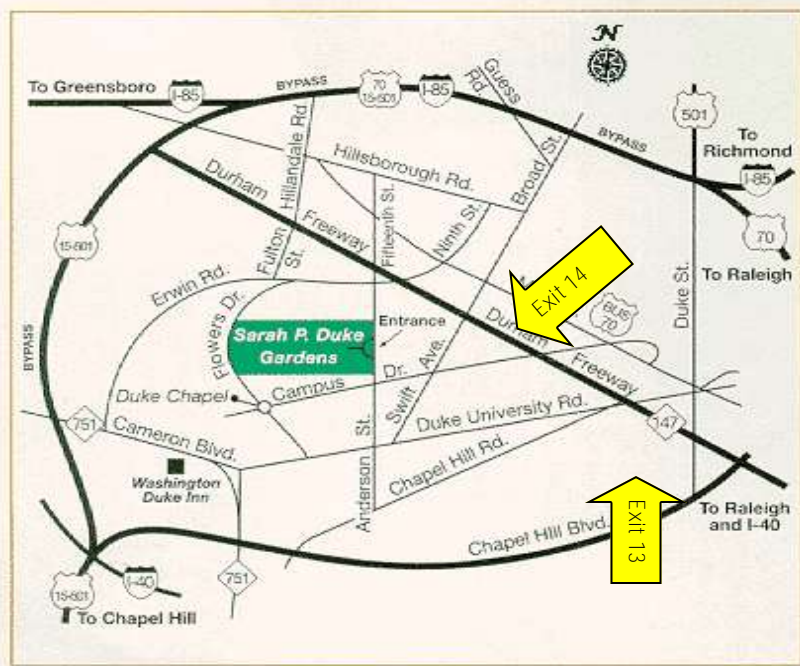
Anne Williams

Volunteers

Anne is our treasurer. She has helped at the welcome table, has tabulated at auctions and a host of other volunteer roles. She knows that volunteering is fun, satisfying and a great way to increase your understanding of orchids.



Volunteer !!



The Triangle Orchid Society
meets at the
Sarah P. Duke Gardens,
Durham, NC
The Second Monday of the Month
at 7:30 PM

Visitors are Welcome!
www.TriangleOrchidSociety.org

From the East. Exit 13 on the Durham Freeway(#147)
Head South on Chapel Hill Rd. Turn right on Anderson St.
The Gardens are on the left.
From the West. Exit 14 on the Durham Freeway (147)
Head South on Swift Ave. Turn right on Campus Drive ,
Turn right on Anderson St. The Gardens are on the left.

Triangle Orchid Society Dues are:

\$20 per year single, or \$26 per year for two persons living at the same address.

Send your dues to: Anne Williams, TOS Treasurer, 1506 Kent St. Durham, N.C. 27707