

October 2009 **The Orchid Grower**

Orchid Growers' Guild of Madison



Next Meeting October 18, 1:30 p.m.
“Happy Birthday Charles! Darwin’s Legacy as a 200 Year Old Orchid Enthusiast”
Ken Cameron, Associate Professor of Botany and Director Wisconsin State Herbarium, UW Madison

On February 12, 2009 the world celebrated the 200th birthday of Charles Darwin. This year also marks the 150th anniversary of the publication of his most influential book, "On the Origin of Species" (1859). Darwin's contributions to the study of evolution and human origins are well known, but his botanical research is under-appreciated. Darwin published eight different books that focused on domesticated plants, insectivorous plants, climbing plants, and other botanical subjects, but his study on orchids is the most notable since it was the first book he published after the Origin of Species.



Darwin’s book “On the Various Contrivances by which British and Foreign Orchids are Fertilised by Insects” (1861) was a systematic overview of both temperate and tropical orchid groups, and their pollinators. The nine chapters treated members of Orchideae, Arethuseae, Neottieae, Vanilleae, Malaxideae, Epidendreae, Vandaeae, Cymbidieae, especially Catasetum, and Cypripediodeae. Orchid flowers were described and illustrated by Darwin in great detail, careful observations on pollinator behavior were recorded, and a healthy dose of speculation was presented. Our understanding of the phylogeny, pollination, physiology, and overall natural history of these orchid groups has advanced tremendously in the last 150 years. Specific examples, especially incorporating molecular data, will be presented.

Finally, the importance of Darwin’s orchid book in his development of the theory of evolution by natural selection will be discussed. Few people realize that “the orchid book” is subtitled, “. . . and on the Good Effects of Intercrossing.” That subject was of great concern to Darwin, and the orchids provided concrete examples necessary to substantiate his theory. Even today orchids and Darwin’s orchid book continue to inspire evolutionary biologists, and exemplify the power of natural selection. Thank you, Charles, and happy birthday!

- Meeting Dates**
- October 18—Meeting Room
 - November 15—Orchids Garden Centre & Nursery
 - December 20—Meeting Room
 - January 17, **2010**—Meeting Room
 - February 21—Meeting Room
 - March 21—Meeting Room
 - April 3— Orchid Sale
 - April 18—Meeting Room
 - May 16—Meeting Room
 - June—Picnic TBA
 - September 26—Meeting Room
 - October 17—Meeting Room

Meetings start at 1:30 pm unless otherwise noted

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In Memoriam

Stanley Ivan Dodson (1944-2009)

Stanley died from injuries he sustained in a bicycle accident at the Colorado National Monument, the first such death in the monument's history.

Stanley was born in Lincoln, Ill. When Stanley was 10, his father moved the family to western

Colorado to prospect for uranium. The family loved the area so much that they stayed in Grand Junction. Stanley was a Professor of Zoology at the University of Wisconsin from 1970 until his retirement in 2008. His career encompassed nearly 40 years of research, teaching, mentoring, and public service. He was a respected scholar who made important contributions to the fields of aquatic ecology, community and population ecology, species interactions and community structure, environmental contaminants, and limnology. Stanley had many passions in life including: bicycling, tai chi and sensing hands, running, gardening, bird watching, and music. He and his wife Virginia were members of OGG. He was a wonderful father, friend, out-standing teacher, and mentor. He will be deeply missed by many.

Gweneth R. Lynch (1918-2009)

Gweneth Lynch, passed away June 20 of this past summer at age 90. Gweneth was a charter member of the OGG and a member from 1986 through 1994. She served as Guild Treasurer 1992-1993 and also helped with the Mother's Day sale at Olbrich. In addition to the Orchid Growers' Guild, she supported various organizations such as Olbrich Botanical Gardens and the Henry Vilas Zoo. Gweneth was a constant learner and took courses at the University of Wisconsin - Madison. She was an avid gardener, cook, bird watcher and traveler.

NATURAL AIR CLEANER

Now that winter is approaching, this item Sue Reed sent will be of interest

Cultivate Cleaner Air with Plants

Houseplants don't just add beauty to your home, they also act as natural air filters, absorbing carbon dioxide and releasing oxygen through photosynthesis. A 1989 NASA study found that many common houseplants--including philodendron, corn-stalk dracena, English ivy, spider plant, snake plant and ficus--effectively removed harmful elements such as formaldehyde and benzene from the air.

To filter the air in an average size home (about 2,000 square feet), the study recommends using at least 15 plants. Try it, and breathe easier.

OGG RIBBON JUDGING SEPTEMBER 2009

First Place

Lynn West
Meg McLaughlin
Nicole Amass
Sandy Delamater
Sandy Delamater
Sandy Delamater
Sandy Delamater
Sue Reed
Sue Reed

Phragmipedium schlimii
Phalaenopsis Malibu Bistro 'Floricultura'
Oncidium Sharry Baby
Zygosepalum 'Rhein Moonlight'
Oncidium Butterfly (papilio x sanderae) (sp)
Arpophyllum alpinum (sp)
Blc Hawaii Stars 'Paradise'
Ornithocephalus inflexus
Phalaenopsis bellina (violacea) alba

Second Place

Jeff Baylis
Meg McLaughlin

Dendrochilum magnum (sp)
Trichocidium Memoria Sarai Ribicoff 'H' x lanceanum 'Boynton'
Psychopsis Mendenhall 'Hildos'
Phalaenopsis Bellina
Oberonia demissa
Paphiopedilum concolor var chlorophyllum
Phalaenopsis Red Dots

Third Place

Sandy Delamater
Meg McLaughlin
Sandy Delamater
Sandy Delamater

Phragmipedium Sedenii 'Blush'
Masdevallia guttulata
Miltonia roezlii (sp)
Bc Island Charm 'OC'



Counterclockwise from top: *Phalaenopsis bellina* (violacea) alba grown by Sue Reed; *Zygosepalum 'Rhein Moonlight'* grown by Sandy Delamater; *Paphiopedilum concolor* var chlorophyllum grown by Sue Reed; and *Oberonia demissa* grown by Sue Reed

“Recent Insights Into The Evolution of Orchids” Synopsis of Prof. Givnish’s talk of September 27th



The orchids comprise about 900 genera and over 25,000 species, making this one of the most diverse families of flowering plants. Yet we know little of their evolutionary history. Until recently the ancestral history of orchid evolution has been largely inferred from flower morphology alone. Only one orchid fossil has ever been found, and that fossil was very recently discovered. Morphology provides only partial and weak evidence of common ancestry, as a similar function can force convergence to a similar form in different lineages, due to natural selection. However, modern molecular techniques have allowed us to examine the genetic history of lineages, using segments of the genome that do not directly affect flower structure. Recent studies using these molecular tools reveal the orchids are a far older lineage than originally thought.

Chloroplast DNA sequences indicate that the orchids are a sister taxon to all other members of the largest monocot order, the Asparagales. The remaining sister families in the order are from the southern hemisphere. The molecular data show that the orchids split off from their sister taxa about 100 million years ago, about the time Gondwanaland began to break apart. The orchid ancestor most likely arose in east Gondwanaland, with the ancient center of origin in what is now Australasia and South Africa.

Among modern living orchids, five subfamilies are recognized:

Apostasioideae – the most primitive orchid subfamily and the only one with three stamens; very few species, Australasian in distribution.

Cypripedioideae – the slipper orchids, with two stamens and a pouch-like labellum; American and Eurasian in distribution.

The remaining three subfamilies all have a single stamen with one or two pollinia; the stamen is fused to the style to form a single column.

Vanilloideae – pantropical in distribution, with some in North America.

Orchidoideae – terrestrial species; worldwide in distribution (except for Antarctica).

Epidendroideae – worldwide in distribution (except for Antarctica); often epiphytic; most diverse in the tropics.

Charles Darwin was fascinated with adaptation and diversity. He found plants to be fruitful subjects for studying both. Seven of the ten books he wrote after the *Origin of Species* were about plants, and one was on orchids and their mechanisms for achieving pollination. He noted that they showed great diversity for one single purpose: pollination.

Several adaptations appear to have been key steps in orchid evolution. All orchids are dependent upon fungal symbionts for initial seed germination at least, and many depend entirely upon such symbionts. Thus orchids can produce numerous dust-like seeds, containing just a few cells. The fusion of the stamens and the style to form the column characteristic of orchid flowers provided a ready mechanism for orchids to force outcrossing and prevent selfing, a topic which fascinated Darwin. The packaging of pollen grains into discrete pollinia allowed a single pollinator visit to fertilize numerous ovules. Finally, the morphology of the column, flower (especially the lip), and the structure of the pollinia could be used to precisely orient a pollinator and manipulate its behavior for the attachment or transfer of the pollinia. This could allow two orchid species to share the same pollinator but avoid crossing, by utilizing different parts of the pollinator's body. Taken together, these adaptations 1) place a premium on a single mating, which can produce an abundance of seeds, and 2) provide precise control over who one mates with. In the orchids, most species mating barriers are pre-mating mechanisms involving such mechanisms as habitat, phenology, and especially manipulation of pollinators. Post mating barriers are very weak, as evidenced by the fact that we can produce a huge range of artificial crosses that are not seen in the wild. What we see in the orchids is a form of sexual selection gone wild.

This emphasis on pre-mating mechanisms of mate selection reaches its most extreme form in the deceptive orchids. These are orchids whose flowers provide no food reward, yet attract pollinators who are seeking food, and orchids who use mimicry of a female insect species to attract male insects who attempt to mate with the flower, and thereby transfer pollen. The food deception orchids often mimic the appearance and scent of nectar providing 'model' growing in the same habitat. The sexual deception orchids mimic the appearance and chemical sexual attractants produced by a female insect to attract a mate. Sexual mimicry in particular can lead to a very precise tuning of pollination to a single pollinator species, once the key to the mating system of the insect has been found.

A Summer Surprise in the Westfield, Wisconsin, Woodland Area

Last June my husband Walt and I were itching to get out of the city to breathe in some fresh country air, see new countryside and explore nature. We were not disappointed.

After taking I-90 north, we got off at Hwy 39 (Westfield interchange) to start driving on the country roads. This is an area that was once inhabited by prairies. When we came upon a protected state wildlife area, we got out to go for a hike. It felt good to get out for a walk down a path through a heavily conifer forest. The soil was sandy, dry and covered with pine needles. It wasn't until we started back that we noticed some small green leaves poking through the forest floor. On closer examination, we discovered that from some of these leaves



there was an orchid like flower blooming. The flowers were very delicate and easy to miss. The flower turned out to be the Pink lady's-slipper moccasin flower (*Cypripedium acaule*). We may have seen a total of 50 flowering plants in different stages of bloom. The orchids grew the best where the forest was a little more open allowing the sun to peek in to the east forest floor.

In his book **Wild Orchid of the Prairies and Great Plains**, Paul Martin Brown states, "The moccasin orchid is perhaps one of the most familiar orchids found in eastern North America. Plants may occasionally be found in open woodland patches adjacent to a few prairies in Wisconsin. Although color is variable and presents itself in just about every shade of pink, some actually tend toward peach. Plants are notoriously difficult to transplant and re-establish. Resist the temptation to move plants, unless they are to be destroyed. It is far better just to admire them in their natural surroundings."

These orchids are common in Wisconsin but to us they were a rare treat on a summer day.

— Judy Stevenson

NO MAOC HERE IN 2012

For more than a year, the board of OGG has been discussing the possibility of hosting a MAOC meeting, specifically in 2012. At the September OGG meeting, the membership discussed the pros and cons of hosting the event. The consensus was that our society is too small to supply the amount of labor and expertise demanded by this type of event.

Wisconsin Orchid Society Show, September 19-20, 2009

Setup and takedown by Sandy Delamater

Display received 2nd place

First Place

Orchids Garden Centre & Nursery
Orchids Garden Centre & Nursery
Sandy Delamater
Sandy Delamater
Meg McLaughlin

Phalaenopsis Sogo Yukidian x Brother Oxford
Pot. Creation 'Summer Choice'
Psychopsis papilio (sp)
Pot. Burana Beauty 'Burana' HCC/AOS
Phalaenopsis Malibu Bistro 'Fortunata'

Second Place

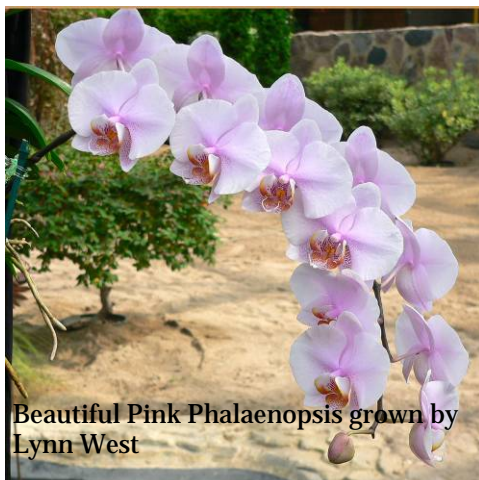
Sue Reed
Sue Reed
Meg McLaughlin

Phalaenopsis *bellina* (violacea) alba (sp)
Ornithocephalus inflexus (sp) Orcp.
Encyclia Green Hornet

Third Place

Sandy Delamater
Sandy Delamater
Judy Stevenson
Wayne King

Ascocenda Blue Tahourdin
Bc. Island Charm 'OC'
Potinara Chief Sweet Orange 'Sweet Orange'
Phalaenopsis Red Dots





Photograph by Judy Stevenson



Photograph by Judy Stevenson

Sandy Delamater setting up OGG exhibit; and Irene Mackie, Audrey Lucier and Annette Minter setting up Annette's ceramics exhibit

(Continued from page 4)

Recent Insights Into The Evolution of Orchids

All of these factors discussed so far emphasize the role of adaptation in the evolution of orchids. However, it is likely that genetic drift has also had a role in orchid evolution. This is suggested by a series of observations on orchid diversity. The greatest species diversity in orchids is found among tropical, epiphytic species. Yet, these same tropical epiphytic species tend to be self-incompatible, have smaller population sizes, and exhibit a rate of fruit set (denoting successful pollination) than terrestrial orchids. The epiphytic orchids also have pollinia that cannot be divided, and must be transferred on an 'all or none' basis. The situation of a small population size, low rate of reproductive success means that few individuals contribute to the next generation of offspring. It is in this situation that chance events can have a large evolutionary role, a phenomenon known as 'genetic drift.' Thus chance as well as adaptation may have had a hand in producing the extraordinary diversity we see today in the orchids.

Wayne King sent in this photo of his *Catasetum russellianum* x Breckenridge Onyx which bloomed last month. He won it at the MAOC silent auction in Mason, Ohio. It has since flowered twice, always with two spikes. Technically, he believes the *Catasetum russellianum* is now referred to as *Clowesia russelliana*.



12th International Slipper Orchid Symposium, November 7-8, 2009

For more than a decade, slipper orchid enthusiasts from around the globe have converged each Fall to learn from expert speakers, meet fellow slipper orchid enthusiasts and participate in lively roundtable discussions.

- Professor Harold Koopowitz describes the developments and advances in *Paphiopedilum* hybridizing over the last 100 years.
- Theresa Hill offers insight from her experience and a photo show of the complex *paphiopedilum* hybrids created at Hillview Gardens.
- Sam Tsui of Orchid Inn, Ltd. presents a program focused on the amazing developments in *Paphiopedilum leucochilum* breeding over the years.

Once again registrants are invited to Krull-Smith to tour and see Frank Smith's private orchid collection. This is the ONLY day of the year Frank opens his private greenhouses to the public, and it is something you will not want to miss!

Visit the official 12th International Slipper Orchid Symposium ebsite for more details, including program and speaker information, schedule of events, a list of vendors and special offers, hotel discounts, and how to register. A portion of the proceeds from the Symposium will be donated to the American Orchid Society. <http://www.slippersymposium.com>



You know you are addicted to orchids when....

....you are young and decide it is time to have orchids as kids.

... you go to bed thinking about them and wake up still thinking about them.

Up-Coming Events

- **October 10 – 11, 2009.** Illinois Orchid Society Fall Mini-Show. Chicago Botanic Garden, 1000 Lake Cook Rd., Glencoe, IL. Contact: Jean Becker, 901 Sunset Ct., Deerfield, IL 60015; (847) 945-0107; beckerjeanne@hotmail.com.
- **October 23-25** Blackhawk Orchid Society Show, Klehm Arboretum, 2715 South Main Street, Rockford, IL. Contact: Brian Lang, 509 S. Baileyville Rd., Freeport, IL 61032, 815-297-4723
- **October 30 – November 1, 2009.** Fall Mid-American Orchid Congress, Sponsored by the Orchid Society of Middle Tennessee; Franklin Marriott Cool Springs Hotel & Convention Center in Franklin, TN. Contact: Steve Burger, 9651 Fredonia Rd., Manchester TN 37355 Phone: 931-394-2713, gandsgh@blomand.net
- **February 20 – 21, 2010.** Chicago Suburban Orchid Show, Sponsored by the Batavia Orchid Society; Dupage County Fairground
- **March 13-14, 2010.** Northeastern Wisconsin Orchid Society Show, Holiday Inn Neenah Riverwalk, 123 E. Wisconsin Ave., Neenah. Contact: David Bluma, 1367 Eagle Feather Tr., Neenah, WI 54956, (920) 428-4595; davidbluma@aol.com
- **February 6 – 7, 2010.** Orchid Growers' Guild Orchid Quest, Madison, WI
- **March 20 – 21, 2010.** Illinois Orchid Society Spring Show, Glencoe, IL