NEWSLETTER

Saskatchewan Orchid Society

Editor's Note: The newsletter is distributed electronically (blind copied so addresses remain private) to all members for whom we have an email address. If you do not receive an emailed newsletter please notify me at thues@sasktel.net.

Future Meeting Dates:

Saturday, Apr 25, 2020
Saturday, May 23, 2020
Saturday, Sep 26, 2020
Saturday, Oct 24, 2020
Saturday, Nov 21, 2020

SOS Executive

President:	Tracey Thue
Vice-President:	Vacant
Past President:	Bob Lucas
Secretary:	Donna Carlson-O'Keefe
Treasurer:	Cheryl Grummett
Social:	Shirley Keith
	Lynn Campbell
Plant Orders:	Heather Anderson
	Cheryl Adamson
Resources:	Don Keith
	Tom Kondra
Librarians:	Deb Huculiak
	Kathryn Hiller
Newsletter:	Sara & Tracey Thue
COC/AOS Rep:	Tom Kondra
Speakers:	Heather Anderson
Webmaster:	Calvin Lo
Facebook:	Sara Thue

Web Address: www.saskorchids.com

facebook: https://www.facebook.com/saskorchidsociety?

Mail Address: SOS, Box 411
Saskatoon, SK
S7K 3L3

March Meeting - Saturday, March 21, 2020

The general meeting will be held at Elim Church, classrooms 7 & 8, beginning at 1:30 p.m.

The presentation will be the remaining portion of the webinar "The Wonderful World of Phrags" by Jason Fischer.

ANNOUNCEMENTS

Meeting Agenda:

Announcements
Problem Corner
Show & Tell
BREAK:
Treats/Supplies/Library
Presentation - AOS Webinar
50:50 Draw
Plant Sale - Member's plants
Plant Raffle
Adjournment

SOS General Meeting

Beginning at 1:30pm Saturday, March 21, 2020
Elim Church, 419 Slimmon Road, Saskatoon
Entrance B, Classrooms 7&8

Guests are always welcome!

AOS Webinar Presentation: Jason Fischer
"The Wonderful World of Phrags"

The first half of this webinar was presented at our November 2019 meeting; the remainder will be presented at the March meeting.

SOS Members' Plant Sale

Members are welcome to bring orchids or orchid-related items to sell to other members of the society.
Attach a piece of tape to the pot with your name or initials, and asking price.
10% of the sale goes to the SOS.

Volunteers Needed for Gardenscape Display!

There are a number of shifts with only 1 person; please consider joining a fellow SOS member to supervise our display and provide information to the public.

SOS Executive Elections in April

If you have an interest in serving on the Executive, please speak with Tracey at the March meeting, or email her (thues@sasktel.net)

Volunteer needed to host our May speaker!

Glen Decker from Piping Rock Orchids will be our guest speaker May 23, 2020. If you are interested in billeting him please contact Heather Anderson.

Announcements

SOS Display at Gardenscape
March 27 - 29, 2020

LOCATION: HALL D/E, Prairieland Park, 503 Ruth St W, Saskatoon, SK

PLANT DROP OFF: Thursday, March 26 4:00-6:00pm. Please clean plants and stake flower spikes if necessary and place your name on the bottom of pots. Our display is #715 near the Hall E entrance.

PLANT PICK UP: Sunday, March 29 between 5 - 5:30pm. If you're unable to make this time, please make arrangements with someone to pick up your plants and care for them until you can get them.

GARDENSCAPE DAY PASSES FOR VOLUNTEERS: Will be distributed at the March 21 general meeting and during display setup on Thursday, March 26. If you cannot attend either of these events, please arrange for someone else to pick up your pass.

A Look Ahead to Future SOS Meetings

Apr 2020 - Silent Auction Fundraiser & SOS Executive Election
May 2020 - Glen Decker, Piping Rock Orchids
Sep 2020 - Sam Tsui, Orchid Inn
Oct 2020 - Alan Koch, Gold Country Orchids

FEBRUARY MEETING MINUTES

Recorded by Donna Carlson-O'Keefe

Announcements

Tracey Thue, President, welcomed members and guests to the meeting. One guest was attending.

There are 5 raffle plants, 4 *Phalaenopsis* donated by Vicky Wiley, and 1 *Oncidium* donated by the OSPF. Tickets are $1 each or three for $2, available at the library table.

There are 2 plant sale tables today, one with members' plants, and one with OSPF plants. If you are interested in buying plants, leave your membership number at the treasurer's table. Access is by lottery. If buying OSPF plants, please pay Dave Nixon directly, using cash or cheque.

Gabriele is selling 50:50 tickets, ten tickets for $5. Half of the proceeds goes to the winner, half to the Society to help offset costs of the room rental. The draw will be made after the break, before the plant sales.

SOS meeting Feb 2020
Guest speaker Tom Mirenda

Today's speaker is **Tom Mirenda**, speaking on orchid pollination. Dave Nixon from Orchid Species Preservation Foundation is driving Tom to society meetings in Western Canada. Thank you to Heather Anderson for hosting Tom and Dave.

Gardenscape will be held March 27 - 29, 2020. A volunteer signup sheet is being circulated; shifts are 2 or 3 hours long. Volunteers will receive a free entrance pass to Gardenscape. Deb Huculiak and Kathryn Hiller are organizing our display and need flowering plants. Plants can be dropped off at Prairieland Park on Thursday, March 26 between 4 - 6:00 pm, and picked up again at 5:00pm on Sunday.

If anyone is interested in helping Donna with secretarial duties, please see Donna, Tracey.

Treats today were brought by Judy Lozinski, Linda King and Donna Carlson O'Keefe.

From the Resource Table: Don Keith reported that they are now selling Grodan Grow-Cubes, stone wool cubes ideal for moisture loving orchids such as *Phragmipedium*. The 3L packs are $5 or $10 for 7L of cubes. The cubes should be soaked in a water solution with a pH of around 5.5 before use. Ask Don for instructions.
T5 fluorescent bulbs will no longer be supplied. Lighting Koncept, 718 Circle Drive East, sells 4' LED bulbs for $25. These are plug-and-play and daisy-chainable; when compared to regular fluorescent bulbs they use half the energy, produce half the heat, and last 5x longer. A 25 watt LED bulb is equivalent to a 50 watt fluorescent bulb.

From the Library: The library has a pH meter for borrowing.

Speakers: We need someone to host Glen Decker in May. If you would like to volunteer please see Heather Anderson.

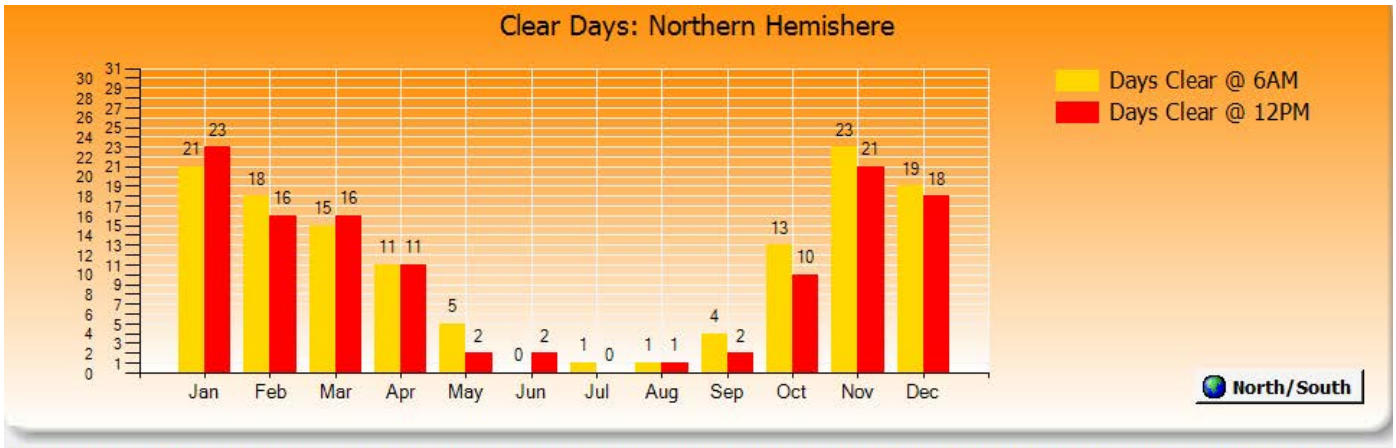
Show and Tell: Thirteen plants were shown by Lynn Campbell, Ellen Ross, Alanna Danilkewich, Pat Randall, Tracey Thue, Bob Lucas, Heather Anderson, Donna Carlson-O'Keefe, and Dave Nixon (OSPF).

50:50 Draw: $120 worth of tickets were sold, with $60 going to the society and $60 going to the draw winner, Gerald Pitka.

FEBRUARY MEETING MINUTES, CONT.

Problem Corner: *A member asked if you acquired a plant that originates in the southern hemisphere, and it is considered to be a winter bloomer, is that our winter (northern hemisphere) or its winter (southern hemisphere)?* Tom Mirenda suggested that would depend on how long the plant has had to acclimate to the northern hemisphere. A plant newly arrived from the southern hemisphere would probably bloom during the southern winter, but as it became accustomed to the northern environment it would probably bloom during the northern winter.

Editor's Note: Sunday after the meeting, Dave Nixon provided the graphs below, screen captures from Orchidwiz. This example is for *Coelogyne cristata*; under the cultivation tab you can toggle between northern and southern hemisphere for relevant information.

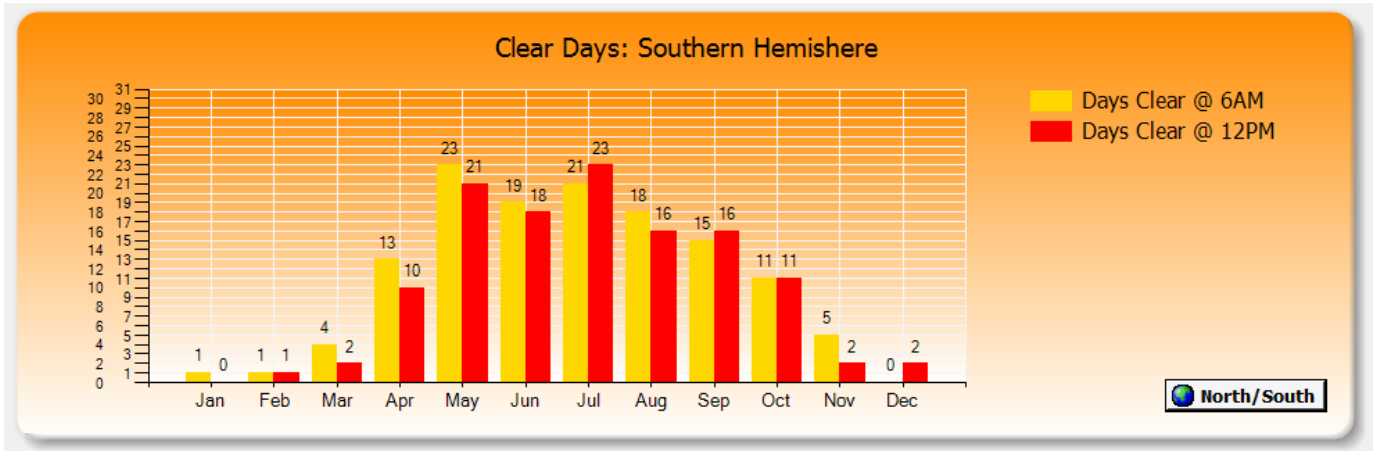


CLIMATE: Station #42398, Baghdogra/Shiliguri, India, Lat. 26.7N, Long. 88.3E, at 412 ft. (126 m). Temperatures are calculated for an elevation of 5900 ft. (2100 m), producing probable extremes of 83F (28C) and 15F (-10C). -- Charles Baker (www.orchidculture.com)

Profile Cultivate

LIGHT: 1500-2500 fc. Strong air movement is critical at all times. The heavy summer cloud cover indicates that some shading is needed from spring through autumn, but light should be as high as the plant can tolerate, short of burning the leaves. Light in the habiat is brightest during the winter dry season when skies are clear on more than half the days each month.

REST PERIOD: Winter days average 53-56F (12-13C), and nights average 29-33F (0 to -2C), with an increased diurnal range of 23-25F (13-14C). Due to the effects of microclimate, actual temperatures in the habitat may be 8-10F (4-6C) warmer than the calculated values in the table. In the habitat, rainfall is low for 4-5 months in winter, and in cultivation, water should be reduced but not eliminated. Water is available from the frequent, heavy deposits of dew, mist, fog, and low clouds. Therefore, from the orchid's point of view, the dry season in the habitat is actually only 1-2 months long. Cultivated plants need a light watering once every 2-3 weeks. Water is most benefical when bright, sunny weather is expected. Fertilizer should be reduced or eliminated. The cool, dry rest is essential for healthy growth and flowering, but it need not be quite as long or severe as the rest period indicated by the climate data. We have found that lows of 48-50F (9-10C) along with reduced water for about 3 months is sufficient.



FEBRUARY MEETING MINUTES, CONT.

Presentation:

Heather Anderson introduce Tom Mirenda from Hawaii. Tom as been growing orchids professionally for more than three decades. He contributes two columns monthly to the AOS *Orchids* magazine and has recently co-authored *The Book of Orchids* with collaborators from Kew Gardens. He was the Smithsonian Gardens' orchid collection specialist for 17 years, producing their educational exhibits for millions of visitors. After working several years as Co-director of the Hawaii Tropical Botanical Garden on Hawaii Island, Tom is now doing freelance work.

"Mysteries of Orchid Pollination" presented by Tom Mirenda.

Tom is working on a long term conservation project, the **Orchid Garden Conservation Network**, working with orchids from all over the world growing in their natural environments. There will soon be a Facebook page dedicated to this network. For this reason, he is very interested in the work being done by the Orchid Species Preservation Foundation in Edmonton.

The term "orchid" comes from the Greek word "orchis", meaning "testicles". When you dig up some of the terrestrial orchids in Europe, you find that the roots have two little spherical growths which to the ancient Greeks looked like testicles. According to the "Doctrine of Similars", which was popular at the time, this similarity led them to believe that these orchids would be a good male tonic.

Orchids are the largest family of flowering plants, with about 30,000 species and more being discovered all the time. In recent years (1978-2017), three to four hundred, and as many as five hundred, species are being described every year.

Orchids are very diverse. For example, there are 24 species of *Telipogon* in Ecuador alone. Why are orchids so diverse?

- They are found on all continents except Antarctica.
- They use many different creatures for pollination.
- Pollination is very species-specific.
- Many have a relationship with mycorrhizal organisms.

Habitat diversity fosters biological diversity. For example, in the Guayas area of Ecuador, all the small river tributary valleys have different species of orchids. The plants grow low to the ground and the seeds are not easily spread by the wind. This is an example of geographic isolation.

Orchids engage in precision pollination, often utilizing a specific pollinator or precise weather conditions. This leads to reproductive isolation. As an example, Tom showed a slide of two different *Maxillaria* growing on the same post beside a road in Costa Rica. Although they are in close proximity, they don't cross-pollinate. The two species have different fragrances so attract different pollinators. Also, sometimes two species use the same pollinators but deposit their pollen on different parts of the pollinator's body.

Another example is seen in the *Sobralia* family found in Mexico and Central and South America. They are roadside "weeds", growing in disturbed ground. As you go down the road you see many different species, blooming on different days because they have different triggers. For example, one *Sobralia* species blooms five days after the temperature goes down to 11^0C. Because of the different triggers, plants bloom at different times and they don't cross-pollinate. Unfortunately, now there is getting to be so much disturbed ground and so many species that they are starting to cross-pollinate.

Many orchid flowers have stripes on the lip. These stripes act as "landing lights" (nectar guides) telling the pollinator where to go. Many orchids have tubular lips (known as gullet flowers). These are very attractive to bees and wasps, which are attracted by fragrance and then go inside the tubular lip.

FEBRUARY MEETING MINUTES, CONT.

Flower Morphology

An orchid flower usually has a dorsal sepal, two lateral sepals, and two lateral petals. The third petal is the lip, or labellum. 95% of the time the labella have adapted to accommodate the preferred pollinator. The flower also has a column, in which male and female parts are fused together. The stem of the column is the ovary. At the tip of the column is the anther cap and under it are found the pollinia, which contain hundreds of thousands of grains of pollen. Below this is the stigma and a very sticky part known as the viscidium. The pollinator has to pass over this to get to the pollinia, so the pollen sticks to the pollinator. When it gets to the next plant, the pollen sticks to the stigma of that plant, and then passes down the stigma to the ovaries.

Pollination Rewards

- Nectar - food source for birds, insects
- Floral fragrances
- Resins - used by bees for nest building
- Oils - used to feed larvae
- Not pollen - the pollinator doesn't eat pollen and probably isn't aware that pollen is stuck to its body

Pollination Syndromes

Tom showed slides of flowers to illustrate the predictability of the pollinator. He showed a picture of a bright red flower which attracted bird pollinators such as hummingbirds. As you reach higher elevations, flowers are often more brightly coloured. This is to attract birds. Insects, being cold-blooded, are not as common at higher elevations. Interestingly, the colour red is invisible to most insects, so red flowers are the exclusive property of warm-blooded pollinators like birds and mammals. They often are long-lasting and have a hard leathery texture to withstand the onslaught of birds.

Birds tend to have dark coloured beaks so bird-pollinated plants tend to have black or dark blue pollinia. The dark colour of the pollen on its beak is not noticed by the bird so it doesn't try to wipe it off. In other orchid species such as the *Macroclinium*, the birds crawl through them looking for the fragrance on the leaves, and the pollinia get stuck to their feet.

Butterflies are attracted to small flowers in clusters. They tend to be rather indiscriminate, visiting any plants with clusters of small flowers, which leads to cross-pollination.

About half of all orchids engage in deception of some sort to achieve pollination. Tom showed a slide of an *Epidendrum* species that mimics milkweeds in order to attract butterflies. Milkweed has nectar and also soft leaves where butterflies lay their eggs. However, the *Epidendrum* has hard leathery leaves and no nectar so provides no reward to the visiting butterflies. In Colombia Tom found an *Epidendrum* apparently utilizing another plant species to enable pollination. This was the *Cuphea* (Mexican heather), an annual that grows in abundance in the forest understory. Every so often he would find, growing among the *Cuphea*, the *Epidendrum* which is small and similar in appearance to the *Cuphea*. Tom posed the question, "Did the *Epidendrum* shrink to attract the *Cuphea*'s pollinator?"

The famous ghost orchid, *Dendrophylax lindenii*, and other species of this genera, is pollinated by moths. It is white and shows up in the dark, and has a lovely nocturnal fragrance. It has a long nectar tube, and the moth that pollinates it has a long proboscis with which to suck the nectar out of these flowers.

Charles Darwin was given an orchid with a 12" nectar tube. He theorized that there was a moth with a 12" long tongue that pollinated this orchid. He was ridiculed at the time but many years later just such a moth was discovered.

Rhyncholaelia digbyana has a fringe on its lip, and it is thought that it is mimicking a night-blooming cactus. There could be a hawk moth that pollinates it.

There is an *Aeranthes* (meaning "flower in the air") species in Madagascar and Africa that has very long thread-like flower stems, so the flowers seem to be suspended and dancing in the air. It is speculated that they are pollinated by bats that echolocate them as a food source.

FEBRUARY MEETING MINUTES, CONT.

A *Calopogon* growing on the ground in New England has its lip at the top of its flower. A visiting bee climbs up the lip and, finding nothing, goes all the way to the top. The bee's weight causes the lip to fold over and if the bee's back touches the pollen, the pollen sticks to the bee. The bee is annoyed and won't go to nearby plants. Later the bee might go to another plant of the same species and pollinate that one. This prevents inbreeding.

Stanhopea are very fragrant, but the flowers don't last long. The fragrance is very complex, sometimes minty, sometimes sweet. Most are pollinated by male euglossine bees. Female euglossine bees will mate only with males that display the best array of fragrances. The male bees have a dorsal brush that scrapes the fragrant oils out of the flower, and they deposit these oils on their tibias which store the collected compounds. However, in this process, pollen sticks to the bees. *Stanhopea* flowers are smooth and waxy, and the bees sometimes fall off them and are funneled down to the stigma, where they deposit the pollen that has been stuck to them.

Catasetinae are almost all bee-pollinated. Their male flowers have bowl-shaped lips with a depression, and bees love to go into these holes. There is a little tendril hanging down over this depression and when the bee touches it, a wad of pollen comes flying out and hits the bee. The bee is startled so won't go to these flowers again. However, *Catasetum* female flowers are totally different. They have nectar inside them, and the bee will go to those flowers to get the nectar, and thus pollinates them.

Coryanthes vasquezii secretes a hormone that excites female bees. They often grow at the top of Brazil nut trees, which are also pollinated by euglossine bees, so there appears to be a symbiotic relationship there.

With climate change, euglossine bees are now appearing in Florida and California. They can be distinguished from similar-looking native bees by their long tongues.

Some *Oncidium* use mimicry in attracting pollinators. Some species are oil reward flowers, that is, they produce fragrant oils (triacyl glycols) to attract pollinators, as we have seen above. However, others simply mimic oil reward flowers, such as yellow *Malpighia* or *Calceolaria*. Similarly, the *Diuris* orchids of Australia mimic those of a local shrub. The *Diuris* flowers are larger than those of the shrub but not as numerous.

In most orchids, the lip is usually involved in pollination. However, the beautiful Queen of Sheba orchid *Thelymitra variegata* from Australia has no obvious lip. The column in the centre of the flower has "antennae" (ornaments), and the theory is that these attract insects. *Thelymitras* appear to have evolved to look similar to members of the lily family but their flowers are usually smaller than the lily flowers. In *Thelymitra*, the pollen is in a friable (loose) state, not in pollinia.

There is a species (I didn't catch the name) which has hollow stamens containing the pollen. The bee has to sit on the flower and buzz at a specific frequency to release the pollen. The anthers then turn red and the bee flies off. This is an example of buzz pollination mimicry.

As for *Maxillaria* species, some exude resin, while others look like they do, but actually don't.

Some orchid species engage in sexual deception: they look like female insects, so the male insects are attracted to them. Tom showed several slides of examples growing in Australia. There are orchids growing in the Mediterranean area of Europe, the *Ophrys* or bee orchids, which look like bees and which have a pheromone in their fragrance that attracts male bees. Pseudocopulation leads to pollination of the orchid.

Another form of sexual deception is practiced by the *Arachnorchis* orchid. Most species of *Arachnorchis* are pollinated by a specific species of wasp. When the wingless female wasp is ready to mate, she climbs to the top of a blade of grass and emits pheromones to attract the males. The male wasp comes along and carries her off to mate with her. The *Arachnorchis* orchid looks like a female wasp on blades of glass, so the male moths come and try to carry the flower away to mate, getting covered in pollen in the process.

FEBRUARY MEETING MINUTES, CONT.

Lepanthes glicensteinii may also be an example of pseudocopulation pollination. They are pollinated by fungus gnats but there is a mystery as to why the fungus gnats are attracted to the *Lepanthes* flowers, which don't seem to resemble fungus gnats at all. It is speculated that perhaps the pattern of colours in the flower resembles the pattern on the wings of the fungus gnats.

Some flowers look like territorial insects that attract enemies. For example, some *Telipogon* orchids look like *Tachinidae* flies. The bees hurl themselves against the flower to drive off the "intruder", pollinating the flower in the process. This is known as pseudo-antagonism.

Bulbophyllum phalaenopsis has bloody-looking hairy lips and a nasty smell. It is usually pollinated by carrion flies that think it is decaying meat. This is an example of food or brood site deception – it looks like a great place to lay eggs. Another example is slipper orchids that have glands that look like small insects that a hatching brood of flies could eat. The flies fall into the lip, and as they crawl out, they have to go past the pollen.

Some *Draculas,* such as *Dracula chestertonii,* have a lip that looks like a mushroom (shelf fungus) and they exude a scent like a mushroom; this also attracts fruit flies and fungus gnats. You tend to get hybrid swarms of this genus because fruit flies don't discriminate between species.

Some *Brassias* mimic spiders, attracting wasps that lay their eggs on the backs of spiders.

There are also some *Cypripediums* that smell like rotting fruit, attracting fruit flies. In others, flies go into the flower for shelter on a rainy day and then stay there. Some flowers emit a drug-like fragrance that drugs the fly. *Coryanthes* are known as bucket orchids. The liquid in their buckets attracts male euglossine bees. These bees fall into the liquid and are in danger of drowning. The only way out is to crawl through a tube in the back of the flower, and only the exact size of pollinator can crawl through this tube, collecting the pollen on the way out.

In Australia the *Crassifolium* orchid never emerges from the ground and depends on mycorrhizae in the soil for food. It is pollinated by fungus gnats, producing tiny seed pods which are eaten by bandicoots and "pooped out", thus expanding the plant's range. *Psychopsis* orchids look like butterflies, appearing to have antennae and eyes on the eyestalks. *Heliconius* butterflies have been documented attacking the *Psychopsis*.

Arpophyllum giganteum has large clusters of small pink flowers. One would expect butterflies to be attracted to the clusters of small flowers, but in fact, Tom has observed that hummingbirds are attracted to them. Interestingly, their pollen is dark blue, further indication of possible bird pollination.

One might think that orchids and their pollinators evolved together in order to perfect their symbiotic relationship, but Tom doesn't believe that is the case. Orchids are indeed highly adapted to use specific pollinators, but do orchids affect the evolution of their animal pollinators? He doesn't think so. For example, *Angraecum sesquipedale* depends on a hawk moth for pollination. However, *Angraecum sesquipedale* doesn't bloom long enough to keep the moth alive for its lifespan. Other plant species such as the baobab tree also have long tubular flowers, so the hawk moth also feeds on them. Thus, we see pollination syndromes that are parasitic on other pollination practices.

Interestingly, the Western Fringed Orchid of southern Manitoba, which has a wonderful nocturnal fragrance, is also pollinated by hawk moths. However, in spite of the great variety of orchid pollinators, we are the greatest pollinators of all.

Tom also talked about his present interest, the preservation of orchid species growing in their natural habitats throughout the world. He gave the examples of two relatively recently discovered orchids. The first was *Paph vietnamense*, discovered in Viet Nam in the 1980s. It was much sought after and collected to such an extent that it is extirpated in area where it was discovered. The Vietnamese government did nothing to protect it. Contrast that with *Phragmipedium kovachii,* discovered in Peru in 2001. Although it too was intensely collected, the Peruvian government stepped in and became involved in its conservation. They are now the sole source of propagation of this plant, and although its numbers in the wild are not what they once were, it has not been extirpated. To preserve or bring back any species, we must work together.

Plant sales: Nine of ten plants sold on the members' plant sale table; the OSPF plant sale saw lots of interest and half of the 33 plants sold. Thank you to Dave Nixon for bringing them.

Plant Raffle All donated plants were claimed.

Adjournment: Approximately 4:10 pm

FEBRUARY SHOW & TELL TABLE

Photos by Sara Thue

Caulaelia Mizoguchi 'Princess Kiko'
(*Caulaelia* Snowflake x *Laelia anceps*)
Grower: Pat Randall

*Cymbidium (*Winter Fair x Christmas Morn)
Grower: Tracey Thue

Paphiopedilum Tinicum
(*Paph. glaucophyllum x Paph. concolor*)
Grower: Lynn Campbell

Dendrobium Micro Chip x
Dendrobium Roy Tokunaga
Grower: Alanna Danilkewich

Dendrobium Lucky Girl
Grower: Ellen Ross

FEBRUARY SHOW & TELL TABLE

Photos by Sara Thue

Pleurothallis grobyii
Grower: Tracey Thue

Trizeuxis falcata
Grower: Dave Nixon, OSPF

Phragmipedium Jason Fischer
(Phrag Mem. Dick Clements 'Rocket Flash 4N' x *Phrag besseae* 'Cow Hollow II' FCC/AOS)
Grower: Bob Lucas

Phragmipedium Eric Young 'Slim Creek' AM/AOS CCM/AOS
(*Phrag besseae x Phrag longifolium)*
Grower: Bob Lucas

Paphiopedilum Bagley 'Mont Millais' AM/RHS x Global Challenger 'Winchester'
Grower: Tracey Thue

Slc Cosmic Delite 'SVO' AM/AOS x Pot. Louise Clarke 'Outstanding'
Grower: Donna Carlson-O'Keefe

Coelogyne fimbriata
Grower: Heather Anderson