THE ORCHID ENTHUSIAST

NEWSLETTER OF THE

CENTRAL NEW YORK ORCHID SOCIETY

Volume 3, Issue 8: April 2002

Affiliated with the American Orchid Society and the Orchid Digest

NEXT MEETING: BIENNIAL MOUNTED ORCHID CLINIC!

Epiphyte (ep'ə fīt'), n. *a plant that grows above the ground, supported by the structure of another plant or object, and deriving its nutrients and water from rain, the air, dust, etc.: air plant (Random House Webster's College Dictionary, 1998, 2ND ed.).*

Orchids are air plants: in the tropics, they are often found covering trees along with bromeliads & other epiphytes to such an extent that the tree's bark and branches are barely visible—the background image shows one such example. How orchids grow in nature gives us clues on how to grow them in our homes; epiphytes need a nice buoyant atmosphere with plenty of light and air circulation that allows the roots to dry. No matter how we attempt to grow them, the one constant is the need to supply air to the roots. It is this need that separates them from other more common house plants. That is why we use open potting mixes such as bark, aerolite, perlite, or sphagnum moss—all of these growing media are well-drained, allowing the roots to have access to both air and moisture. And growing orchids in pots provides a very convenient way of bringing them into our homes, to our windowsills, fluorescent light gardens, and greenhouses. However, there are two unfortunate drawbacks to growing orchids in pots: they are often forced to grow in an unnatural manner—even upside down for the common Phalaenopsis!—and the potting mixes tend to degrade and sour with time, making repotting necessary to keep the root system healthy.

Growing orchids as epiphytes allows them to grow more naturally than possible in pot culture. Indeed some orchids will only thrive if allowed to grow on a slab of bark or on a branch. And although they need to be watered more frequently, mounted orchids need never be repotted! For our April meeting (this Sunday, April 7TH, 2:00PM at St. Augustine's Church) CNYOS presents its third biennial Mounted Orchid Clinic.

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A selection of orchids have been made available by Andy's Orchids of Encinitas, CA for the club to mount—members were able to choose from nine different orchids and the order has been placed. Andy will ship mounts specific to each variety of orchid. At the meeting, the basics of mounting orchids will be demonstrated, and their cultural needs discussed.

Note: Jeff Stuart will be bringing members' individual orders for both the mounting clinic and the group order from Andy's Orchids to the meeting. If you have not yet paid for your orchids, payment will be required before the meeting (cash or check payable to Jeff Stuart). All materials necessary to mount orchids will be available at the meeting.

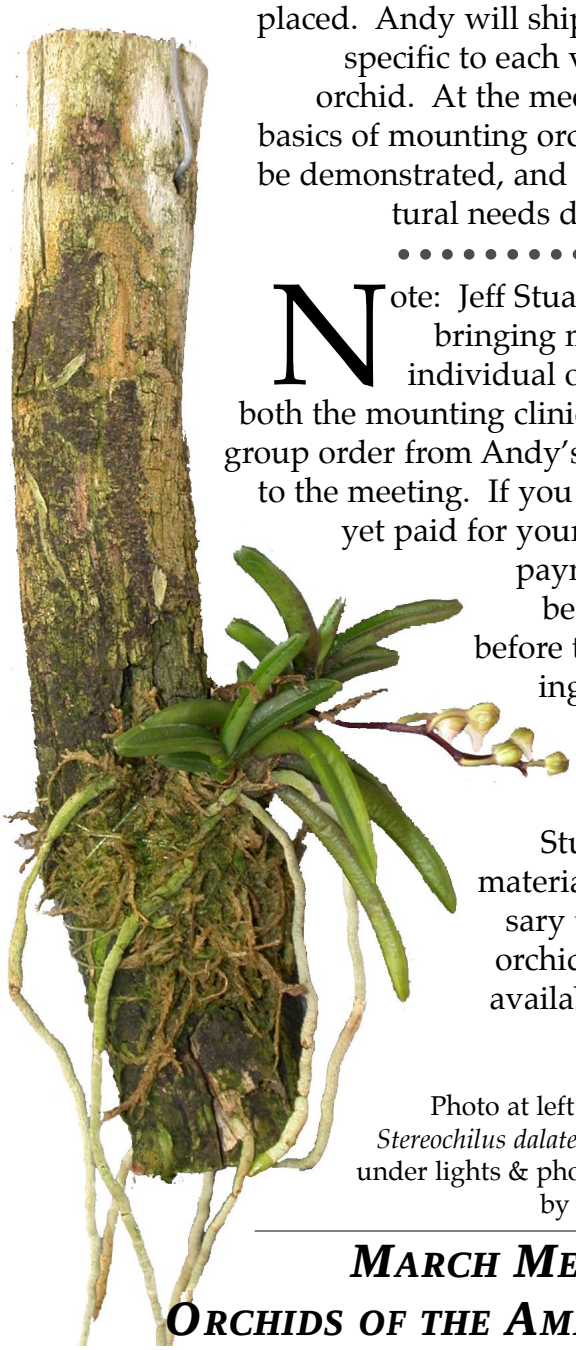


Photo at left: Mounted *Stereochilus dalatensis* grown under lights & photographed by the author.

MARCH MEETING: ORCHIDS OF THE AMERICAS

For our March 3RD meeting, CNYOS was pleased to welcome Dr. Luis Matienzo of the Southern Tier Orchid Society to discuss "Orchids of the Americas." Luis discussed what defines an orchid, and then outlined the geographical distribution of the wide variety of orchids endemic to the western hemisphere. His presentation included photographs of habitats and orchids in the wild everywhere from tropics to the more temperate climes of North and South America.

MEETING MINUTES FOR MARCH 3RD, 2002

1. Rochester Show (April 18-21): Barbara Weller, Judi Witkin, and Jeff Stuart agreed to set up the club display. Dave Ditz volunteered to take down the display.

2. The Southern Tier Orchid Society Show is April 26-28 (set up April 25): Judy Daly and Judy Witkin have volunteered to set up. Donna Coleman, Monica Kot, and Jeff Stuart will take down.

3. Flower & Garden Show: each volunteer needs a badge. The club will receive 4 free badges, and will pay for 12 additional badges. Deb Coyle will mail badges out to members. Directions once there, enter via gate 6—at the building enter through the back door. Judy Daly will pick plants up from Mary Carol Frier: Phalaenopsis, Oncidiums, Cattleyas, and Miltoniopsis. Maudiae-type Paphs have been purchased from A&P Orchids. All orchids will be sold at the show. Members and volunteers will receive a discount on the prices.

4. There was discussion about the club paying for a "Lindleyana" subscription. The club voted to fund this source.

5. Our speaker (Luis Matienzo) provided a correction to the STOS March meeting agenda; there will be a movie.

6. Welcome to visitor Beverly Costello (guest of Gary Stensland).

7. Thanks for the refreshments to Ken Renno, Judy Daly, and Betsey Keck.

Respectfully Submitted,
Barbara Weller, CNYOS Secretary

Photo Reference page 1: Photo © Jay Pfahl, The Internet Orchid Species Photo Encyclopedia, maintained Jay Pfahl, http://www.orchidspecies.com/collecting.htm. Digital modifications made by Jeff Stuart.

CNYOS CALENDAR

April 18-21	**Genesee Region Orchid Society Show**, Eisenhart Auditorium, Rochester Museum & Science Center, 657 East Ave., Rochester, NY. Contact: Jeanne Kaeding, 161 Crosman Terr., Rochester, NY 14620; (716) 442-3202.
April 25-28	**Sonnenberg Gardens Spring Bulb & Orchid Show & Sale.** Thursday through Sunday, General Admission: $5 Children under 14 free. Contact Christopher Goverts, cgoverts@msn.com.
April 26-28	**Southern Tier Orchid Society Spring Show**, Oakdale Mall, Reynolds Road, Johnson City, NY. Contact: Gail Kirch, 1099 Powderhouse Rd., Vestal, NY 13850; (607) 723-3414.
May 5	**Annual CNYOS Orchid Auction!**
June 2	**Annual CNYOS Summer Picnic!** Tentative date; details to be announced.
September 27-29	**2002 CNYOS Annual Fall Orchid Show & Sale**: Shoppingtown Mall. Details to be announced.

GREENHOUSE FOR SALE

A stand-alone detached metal frame greenhouse (20 x 50 feet), with frame, plastic covers, fan, gas burner and shade-cloth is for sale. Owner would ideally like to sell greenhouse and collection of plants. Buyer will disassemble and move greenhouse to new location. For more information, please call 607-748-0254.

STOS NEWS: NEWS FROM THE SOUTHERN TIER ORCHID SOCIETY

There is no regular program planned for the April meeting of the STOS; instead, planning will be done for the quickly approaching Spring show, scheduled for April 26-28. The May meeting will be the annual repotting clinic.

Monthly meetings begin at 2:00PM in the Vestal Public Library. For directions, etc. call STOS president Kenneth Lattimore at 570-553-2753 or e-mail him at <klatt@epix.net>.

GROS NEWS: NEWS FROM THE GENESEE REGION ORCHID SOCIETY

Our speaker for April 8TH will be Denise Wilson from Colorado speaking on orchid conservation; "Orchid Conservation Needs Your Help," is the title of her presentation, concerning Orchid Conservation in Central America. Denise spent the month of May, 2001, traveling around Costa Rica, visiting Monte Verde and other prominent orchid sites, and volunteering for Orchid Conservation at Hacienda Baru in Dominical. This was Denise' third visit to Costa Rica, and there will be many exciting stories about the jungle and a hundred beautiful pictures from the slides she shot during her adventures. She attended the 2ND MesoAmerican Orchid Conservation Conference in San Jose, and spoke at the 1ST International Orchid Conservation Congress in Perth, Australia in September. She will tell what each of us can do to help preserve these rare and beautiful plants. Denise' article on growing orchids in her passive solar home in Colorado appeared in the November 2000 issue of ORCHIDS Magazine. She will be bringing plants for sale (*via* Fantasy Orchids); members can preorder and will receive a 10% discount.

Taken with permission from *The Orchid Collection*, Newsletter of the Genesee Region Orchid Society, Vol. 24, No. 7, April 2002, Phil Matt, Newsletter Editor (716) 288-7025.

MARCH SHOW TABLE

Cypripedium Alliance

Paph. villosum — Coleman
Paph. Memoria Maurice Powers x *fairrieanum* — "
Paph. Rendezvous (Redezelle [sic] x Sandra Mary) — "
Paph. Herbert Bernhart (?) (*liemianum* x *glanduliferum*)* — Ditz
Paph. fairrieanum — "
Paph. Dellaina (*delenatii* x *chamberlainianum*) — "
Paph. Friedrich Mellin (Alma Gavaert x *fairrieanum*) — Lloyd
Paph. Jim Kie (*micranthum* x *stonei*) — Stuart
Phrag. Hanne (sic) Popow (*P. besseae* x *schlimii*) — "
Paph. Mietenkam (*niveum* x *wilhelminiae*) — "
Paph. Elfstone x Autumn Gold — "
Paph. Master Henry (*henryanum* x *mastersianum*) — Cohen
Paph. barbigerum — "
Phrag. Tall Tails (*caudatum* x *wallisii*) — Capella
Paph. villosum — Groll
Paph. exul — "
Paph. insigne — "
Paph. hirsutissimum — "
Phrag. April Fool (Cardinale x *besseae*) — Churchill
Phrag. Purpureum (*schlimii* x Dominianum) — "
Paph. malipoense — "
Paph. Auroreum x Spectrum — "

Cattleya Alliance

Lpt. bicolor — Bordoni
Cook. Bill (*Ctna.* Maui Maid x *Dial.* Snowflake) — "
Sc. Mini Collins (*C.* Michael Collins x *Soph.* Arizona) — Cohen
Pot. Cherub (*C. aurantiaca* x *Low.* Trinket — "
Blc. Lennea Trimble (Junka Gold x *C.* Hunabu Surprise) — "
C. Helen Jarzab (*C. aurantiaca* x *luteola*) — Weller
Soph. cernua — Groll
Slc. Pink Doll (Tangerine Jewel x *Soph. pumila*) — "
Mrclm. wendlandii — Capella
Rhyncholaelia glauca — "
Bark. palmeri — Stensland
Lc. Gold Digger (Red Gold x *C.* Warpaint) — Becker

Vandaceous

Phal. philippinensis — Bordoni
Dvra. Hawaiian Delight (*Phal.* Barbara Moler x *Dvra.* Hawaiian Rainbow) — "
Phal. Gold Tris (Taipei [sic] Gold x *equestris*) — "
Phal. aphrodite — Stuart
Phal. Yu Pin Pearl (Musashino x Ever-spring King) — Cohen
Phal. Suziana Wijanto x Deventeriana — Coleman
Phal. Timothy Christopher (Cassandra x *amabilis*) — "
Trgl. pusilla — Witkin
Kgw. Red Lava (*Ren. imschootiana* x *Ascda.* Meda Arnold) — Capella

Oncidium Alliance

Odcdm. Tiger Butter x *Odm.* Golden Halls — Capella
Mtdm. Issaku Nagata (*Onc. leucochilum* x *Onc. fuscatum*) — "
Onc. Golden Luis (Whithorn x Luis Ariza Julia) — Witkin
Mtdm. Pupukea Sunset (*Onc. cheirophorum* x *Onc. fuscatum*) — Coleman
Onc. Catherine Wilson (*Tolumnia triquetra* x *Tolumnia pulchella*) — Churchill

Dendrobium

Den. lichenastrum — Witkin
Den. aberrans x *rhodostictum* — "
Den. Princess (Komachimusume x *moniliforme*) — Coyle
Den. Ovoz's Lava Flow (Aussie Green x *pulchrum*) — Kot

Pleurothallid Alliance

Lths. maxonii — Groll
Lths. calodictyon — "
Masd. wurdackii — "
Masd. ayabacana — "
Masd. Misfit (*paivaeana* x *attenuata*) — "
Masd. Flashpoint (*sprucei* x *ignea*) — Coleman

Miscellaneous

Cym. unknown — Groll
Bulb. picturatum — "

*This hybrid was registered before *P. wilhelminiae* was accepted as a separate species for registration. You may actually have a different, unnamed plant.

Iris Cohen

THE GROS & STOS ORCHID SHOWS ARE JUST AROUND THE CORNER!

CNYOS will NEED your Blooming Orchids for the displays!

See page 11 for details.

MISCELLANEOUS BUSINESS...

CLUB REMINDERS

Orchid-Growing Supplies are now available, including fir bark, sphagnum, sponge rock, charcoal, and 40W fluorescent tubes. Call Rich Groll for details on pricing and availability (451-4248).

The **CNYOS Club Library** is now located at St. Augustine's church. Make arrangements with Val Introne (682-8595) if you want to borrow an item from the Library.

DON'T FORGET TO BRING YOUR BLOOMING ORCHIDS FOR THE MONTHLY SHOW TABLE!!!

Phalaenopsis bellina (violacea), photograph by Vagisha Sharma, with digital enhancement by J. Stuart.

CNYOS IS NOW ON-LINE!

CNYOS is on-line at **www.paphiopedilum.net**. The site is regularly updated and will be changed as the club's two crack web-masters (Jeff Stuart & Charles Ufford) have time to do so, so check back frequently!

REFRESHMENT SCHEDULE

April 7	**Donna Coleman & Monica Kot**
May 5	**Dave Ditz & Jen Wilson**

CNYOS DOES WELL AT CENTRAL NEW YORK FLOWER & GARDEN SHOW

As in past years, CNYOS participated in the annual CNY Flower & Garden Show at the state fairgrounds by setting up a sales booth and display. MaryCarol Frier once again provided us with a tempting selection of blooming Phalaenopsis, Miltoniopsis, Oncidiums, and Cattleyas to sell to the public. Budded Maudiae-type Paphiopedilums purchased from A&P Orchids were also sold. Out of 145 total orchids, only 10 remained unsold after the show—although all the final numbers are not in, it looks like the club made between $700-$800 combined profit from the sale of orchids and supplies. In addition, the club picked up at least one new member (*Welcome to Dorothy White!*). CNYOS is most grateful to *ALL* those members who helped make this happen by volunteering their time and energy. The set up crew (Dianne Bordoni, Deb Coyle, and Val Introne) wishes to express special thanks to Rick Braue, Cheryl Lloyd, and Judi Daly for the assistance during set-up on Thursday. And the club owes an extra debt of gratitude to Judi Daly for meeting MaryCarol Frier in Binghamton to pick up the orchids, *AND* her assistance along with Betsey Keck & Ken Renno in breaking down the display and booth at the end of the show.

SPOT LIGHT ON...

CATTLEYAS ACLANDIAE & SCHILLERIANA

Cattleya aclandiae is native to the state of Bahia where the climate is mostly hot and dry throughout much of the year. It is a dwarf growing bifoliate whose pseudobulbs are generally less than 5" high. Like *C. violacea* and *C. schilleriana*, the 3.5" flowers open shortly after maturation of the new growth in the late spring, with the buds appearing as the leaves unfold. *C. aclandiae* has a reputation for being temperamental. It will happily grow on the outside of a clay pot for years, covering the pot with its vigorous root system. Try to give it a new home in a new pot and it will languish. This is an indication that *aclandiae* roots do not like to stay wet. Indeed, *C. aclandiae* does much better mounted on a cork slab or piece of salt-free driftwood so that the roots can dry out within a few hours of being watered. Like many of the bifoliates, *aclandiae* can take high levels of light, as much as possible without burning. Water mounted plants every other day during warm weather and twice a week in winter, increasing the frequency if the recent pseudobulbs look too shriveled.

Cattleya aclandiae has yellow petals and sepals boldly marked with brown. It's bright amethyst lip is broad and flat.

Despite being small in stature like *C. aclandiae*, *C. schilleriana* shares none of its bad reputation as being tough to grow. On the contrary, *schilleriana* is tolerant of diverse conditions. It does have preferences, however. Although it does grow well in a pot, a cork or tree fern slab, or even a basket, is a better choice. The idea is to give it room to ramble and not have to disturb it too often. The leaves and pseudobulbs of this cattleya should appear dark green tinged with purple anthocyanin pigment which is produced under the high light levels in which it thrives. Provide intermediate to warm temperatures and do not overwater. The flowers can be large, up to 4" with the lip itself being 2" across and beautifully candy-striped. Many plants of *Cattleya schilleriana* have a unique fragrance which can only described as smelling like a taco! Native to Brazil.

C. schilleriana has deep brown petals and sepals, occasionally spotted. The three-lobed lip is red purple & deeply veined.

Reference: Photos © Greg Allikas. The Orchid Photo Page by Greg Allikas: http://www.orchidworks.com/. Text reference, Greg Allikas (http://www.orchidworks.com/) & Jeff Stuart.

MEALYBUGS ON ORCHIDS

Paul J. Johnson
Insect Research Collection,
Box 2207A, South Dakota State University,
Brookings, SD 57007

Anytime during the year, but especially about mid-winter, many of us may be seeing small whitish fluffs showing up on some of our plants. These fluffs will keep getting bigger and spreading out from the roots, rhizomes and leaf joints to other portions of our plants. But, instead of getting a yuletide-like frosting for decoration you now have a mealybug infestation to deal with!

Mealybugs are serious pests of orchids and are probably the most difficult-to-control pest of orchids in homes and greenhouses. Most definitely, they need to be dealt with immediately upon discovery. The damage done to plants by mealybugs is considerable, causing a loss of vigor and a weakening and loss of leaves, buds, and flowers through their feeding. In addition, mealybugs create copious amounts of honeydew which make plant parts sticky, attracts ants, and provides a substrate for sooty mold. Though some mealybugs vector plant viruses apparently no orchid viruses are known to be transmitted by these insects.

Probably all species of orchids are susceptible to mealybugs when cultivated. Various orchid species of the following genera have been reported being infested with one or more species of mealybugs: Angraecum, Ansellia, Ascoglossum, Barkeria, Bifrenaria, Brassavola, Brassia, Broughtonia, Calanthe, Catasetum, Cattleya, Chysis, Coelogyne, Cymbidium, Cyrtopodium, Dendrobium, Diacrium, Dodonaea, Epidendrum, Gomesia, Gongora, Laelia, Lanium, Lycaste, Melicocca, Mormodes, Mormolyca, Odontoglossum, Oncidium, Odontoglossum, Paphiopedilum, Phalaenopsis, Rodriguezia, Schomburghkia, Sobralia, Stanhopea, Vanda, and Zygopetalum. Undoubtedly, growers could likely list susceptible species from a wider variety of genera.

IDENTIFICATION

Nearly 300 species of mealybugs are known from Canada and the United States. Fortunately, only a few species are common or serious pests of orchids. Mealybugs are classified in the family Pseudococcidae, and are closely related to the scale insects. In fact, mealybugs are best thought of as a kind of soft scale that does not form the protective cover that most scales produce for protection. The pest species are in the genera Pseudococcus, Planococcus, Phenacoccus, and Dysmicoccus.

Immature to adult mealybugs may measure 0.5-8.0 mm in body length. All of the orchid feeding species are coated with a waxy secretion that hides the body of these insects. The more common species of these odd insects that infest orchids are immediately recognized in the adult stage by the white, yellowish-white, whitish-grey, or pale pink to pale blue color coating. The body is oval and the sides of the body have short waxy filaments; there may be 2-4 short to long filaments on the posterior end of the body. These filaments sometimes give the impression of numerous legs.

Mealybugs can be found on all plant parts, but especially roots, rhizomes, pseudobulbs, and the underside of leaves. They are adept at hiding on roots and rhizomes deep in the potting media, in crevices and under sheaths, and in cracks and under lips of pots, trays, and benches. Unlike scales, mealybugs will often wander in search of feeding sites. The immatures are tiny to small, and white to yellowish. Hatchling nymphs are not easily seen without a magnifier and hide under cover, but older nymphs appear like diminutive adults.

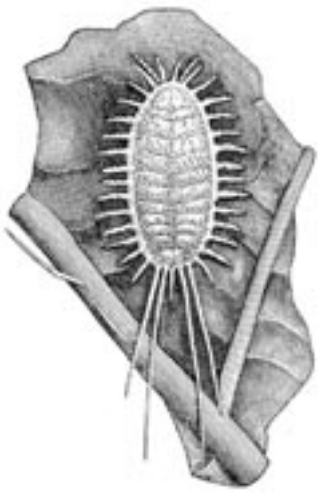
In the home orchid collection mealybugs are acquired by your plants in some combination of three methods: purchase of an infested plant, movement from infested to uninfested plants that are in contact with each other, and windblown colonization. The latter usually occurs when your plants are outdoors. Further spread of crawlers can also occur indoors and in greenhouses on air currents produced by circulating and heater fans. The occur-

rence of infestation hotspots may be due to crawlers settling on plants where the air currents are the weakest. Similar effects are found with aphids, scales, and spider mites. Infestations may also begin from specimens hiding in uncleaned pots and trays.

The identification of mealybugs is difficult and often requires the services of a taxonomic entomologist specializing on these insects. Because of this difficulty, accurate information on the identification and biology of species that may infest orchids is much poorer than one would hope. Undoubtedly, all the orchid infesting species were originally tropical in origin, but the most problematic species have adapted to indoor life and may feed on hundreds of species of ornamental plants other than orchids.

According to identification records kept by the Systematic Entomology Laboratory, U.S. Dept. of Agriculture, 39 species of mealybug are reported from orchids. Fortunately, only a few species are problematic in Canada and the United States. However, it is very easy for any of these species to be transported as unseen crawlers to areas and greenhouses from which they are not presently known. Consequently, extreme caution and due care is urged to anyone transporting orchids between states or countries.

In most of Canada and the United States, the longtailed mealybug (*Pseudococcus longispinus*) is probably the most common and problematic species on orchids, particularly in homes and greenhouses. This is also the most easily recognized species because of a pair of very long filaments on the posterior of the body.



In California the longtailed is very common. However, five additional orchid feeding species are known: orchid mealybug (*Pseudococcus microcirculus*), imported mealybug (*Pseudococcus importatus*), obscure mealybug (*Pseudococcus obscurus*), pineapple mealybug (*Dysmicoccus brevipes*), and the solanum mealybug (*Phenacoccus solani*). Apparently, the orchid mealybug is the most problematic species in California, particularly in greenhouses.

In Hawaii the longtailed and pineapple mealybugs are common on orchids. In addition there is the dendrobium mealybug (*Pseudococcus dendrobiorum*), Jack Beardsley's mealybug (*Pseudococcus jackbeardsleyi*), and the grape mealybug (*Pseudococcus maritimus*).

LIFE CYCLE

Mealybugs have a three-stage life history: egg, larva (nymph or crawler), and adult. Eggs are laid within a waxy coated egg sac produced by the female. However, the longtailed mealybug is parthenogenetic; no males are know of this species. The eggs hatch after about a 10 days into the mobile nymphs, the crawlers, that appear as diminutive adults. The crawlers are the most active stage that can move between plants and will develop through several growth periods before becoming adults. Adults of most species are also active. Thus, unlike scales where the crawler finds a suitable site for feeding and remains fixed, mealybugs will move about to find feeding sites.

Male mealybugs do little feeding and only in their youngest crawler stages. Mature males are small (1.5-2.5 mm) winged creatures whose only function is to mate and die. Females and immatures do not fly, but they will crawl off of the plant and immatures can float in air currents.

In temperate regions, mealybugs usually have only one or two generations per season. In a warm greenhouse or indoors there may be upwards of 8 overlapping generations per year. Out-of-doors in cold climates, cold-tolerant species of mealybug hide in protected places, such as under bark and among roots.

MANAGEMENT

Outdoor mealybugs are vulnerable to a variety of parasitic and predatory insects, including wasps, brown and green lacewings, and lady beetles. Weather, especially heavy rains, also help to keep mealybug populations low. Indoors, mealybug management is difficult because of their propensity to move into the potting medium and feed on roots, or for the crawlers to work their way into tight places. Repeated applications of a treatment are required to kill the immatures, and are at their greatest effectiveness against the small crawlers. Hand removal is effective only for the obvious adults and larger nymphs. All control efforts must begin immediately following discovery. Even light infestations restricted to one or a few plants can explode rapidly and necessitate chemical methods. When possible, immediately isolate infested plants from others to prevent the mealybugs from moving amongst them. Also, check the lips and cracks of pots, trays, and benches because females will wander and leave the plant to find hiding places.

Because the life cycle of mealybugs can be so short combined with the overlapping of generations, you will need to do a treatment every 10-14 days in order to bring a serious problem under control. The basic key to effective mealybug control is an all-out, no holds barred, and no sympathy approach.

Because mealybugs are such a problem there are few effective "home remedies" available. To deal with an established infestation, the use of an insecticide will likely be necessary. Be aware that non-insecticidal treatments are often not very effective for elimination of mealybugs without diligent application and followup treatments. Also, many common home chemicals are extremely toxic to humans, pets, and plants even in diluted forms, often being proportionately more toxic than the feared insecticides.

RUBBING ALCOHOL

Probably the most popular home remedy against mealybugs is to swab and daub plants with a Q-tip or ball of cotton dipped in isopropyl (rubbing) alcohol. Do not use other alcohols, such as ethanol or methanol, that will penetrate the plant tissues and cause considerable damage! The common 70% isopropyl available in stores is satisfactory. On hard-leaved plants, gentle rubbing with the fingers, a cotton ball, or a soft infants toothbrush is effective. Remove all mealybugs, large and small. Afterwards, you will still need to repeat the alcohol treatment to remove the tiny yellowish spots which are the recently hatched crawlers. Pay particular attention to the folds, crotches, branch bases, midrib areas, and roots. Spraying the alcohol with a misting bottle or small pump sprayer is effective, but dribbling alcohol into tight areas is necessary.

Many home growers will also mix in a small amount of mild liquid dish detergent, and sometimes mineral oil, neem oil, or horticultural oil. One recipe for a 1.5 liter spray bottle is to mix a 50:50 solution of isopropyl and water, with a few drops to about a teaspoon of liquid soap to act as a spreader, and a teaspoon of one of the oils. But, it seems that every grower has their own proportions of these ingredients, none of which seem to work significantly better than another. Caution is urged, however, as excessive amounts or too strong of a detergent, or use of an ammonia-based chemical cleaner may damage your plants, particularly buds and flowers. This is particularly true of dish-soaps and household detergents that could remove natural protective waxes from plant tissues. Also, spraying of alcohol is not always effective against eggs which are often well hidden, hence the need for thoroughness.

A potential problem with alcohol treatment that is occasionally reported may be chilling of the plant. The rapid evaporation of alcohol cools the plant tissues. Especially with air movement that increases evaporative cooling, this chilling is suspected of over-cooling tissues and creating zones of dead cells that can become necrotic with bacterial or fungal infestation. On warm days with a fan blowing consider wiping any residual alcohol with a tissue instead of permitting it to evaporate off the plant.

REPOTTING

Even a light to moderate infestation of mealybugs should be of concern. These insects like to move into the potting media and feed on roots, or move off of the plant to find hiding places to lay eggs. Unless the roots are checked and the media changed, removal of mealybugs from only the upper plant portions is not a guarantee of success. The potting medium can harbor eggs and crawlers, so dispose of it in a compost pile or in the garbage. When repotting, a close inspection, and if necessary a very gentle cleaning and spraying of the roots before repotting is essential.

OILS, SOAPS, AND STERILANTS

Horticultural oil, neem oil, mineral oil, insecticidal soaps, and sterilants form the next stage of chemical control of mealybugs. The oils and soaps are often regarded as "organic" or non-chemical methods, but this is a misconception or an extremely broad and nearly meaningless concept of "organic." Indeed, neem oil is extracted from the neem tree, but horticultural oils and mineral oil are petroleum distillates. Likewise, insecticidal soaps are a solution of synthetic pyrethroids mixed with a mild detergent that is made from petroleum products. Sterilants are anti-bacterial and anti-fungal chemicals that are also often effective on algae. However, all of these solutions are generally considered safer for humans, pets, and plants than usual insecticides. None provide absolute control over mealybugs, but frequent use during the presence of crawlers can serve to reduce their populations dramatically.

Horticultural, mineral, or neem oil solutions smother the insects, so complete coverage of all sprayed plants is essential. These oils are mixed with water and usually a plant-safe detergent for enhancing the spreading and sticking of the oil. The main caution with these oil solutions is that they should never be applied to plants on hot days (>85deg.F) or in direct sunlight, as to prevent burning of tissues. Leave the plant in shade until the application has dried. Unpublished anecdotes suggest that the flowers of some orchids are sensitive to neem oil, such as species of Miltonia and Masdevallia.

Insecticidal soaps are usually solutions of a synthetic pyrethrin and a plant-safe detergent. As with oils, the detergent acts as a surfactant and spreader for dispersing the pyrethrin evenly, and as a mild caustic against the insects. Also, to prevent sunburning apply the chemical and allow it to dry in shade. Pyrethrins are synthetic analogs of pyrethrum, the natural extract from certain Asteraceae. Caution should be urged with so-called "safe" insecticidal soaps as some plants are sensitive, particularly tender new tissues. Some non-orchid ornamentals will drop leaves and abort flowers when sprayed with insecticidal soaps, so caution is urged with prized orchids.

Sterilants are usually Physan, RD20, or Consan 20, and these are used as anti-bacterial and anti-fungal agents. These solutions are all composed of isomer cocktails of ammonium chloride and all have the same antibiotic activity. These chemicals can be used in diluted form, according to label directions, usually for controlling bacterial and fungal diseases on orchids. However, at these same dilutions there is some limited effectiveness on mealybug crawlers and other delicate insects. Frequent use of sterilants for insect control is not recommended, due particularly to potential damage on new growth, buds, and flowers, and should be done under shade to prevent sunburn.

INSECTICIDES

Persistent populations of mealybugs or infestation in many plants may demand the need for use of synthetic insecticides. There are few insecticides specifically registered for use on orchids, but there are several common, inexpensive, home-and-garden use chemicals labeled for ornamental plants. Insecticide

formulations not labeled for ornamental plants are often mixed with solvents that aide in the application of the active ingredient for specific purposes. These solvents, not necessarily the insecticide itself, often produce phytotoxicity and may seriously damage or kill plants. Thus, never use any insecticide that is not specifically labeled for ornamental plants.

There are a number of insecticides register to control mealybugs, but most are not suitable for use in a greenhouse or home. Some of the more available and effective insecticides that come in various brand names are acephate (e.g., orthene), malathion, carbaryl, and diazinon. Pyrethrins and rotenone have limited effectiveness. Of course, always follow label directions and never, never, never exceed the minimum recommended concentration given in mixing directions! Recommended solutions are based on extensive testing for selected pests and plants. Orchids are tough plants, but are sensitive to many chemicals, particularly under direct sunlight or high heat, and while certain species may not react to a given formulation others may, so testing is justifiable.

Some insecticides are occasionally discontinued for use because of some discovered hazard. For example, Cygon used to be available, but it no longer recommended and labeled for orchids because it will damage many plants, especially the buds and flowers, and is extremely hazardous to use. Although most insecticides with discontinued labels are legally allowed to be "used up," it may be best to dispose of such chemicals rather than continue their use and risk damage or loss of plants, or increase your own health hazard.

Most home orchid keepers and growers in northern states that need to apply insecticides during inclement weather need special care for applications. If you cannot spray out of doors, place your plant(s) inside a large plastic bag (remove the bag after the spray has settled!) and let the plant ventilate where the fumes will not be wafted around the house or work area. Again, you may have to consider removing the potting medium, spraying the plant, and repotting it with new media in a clean pot when the spray has dried.

GROWTH REGULATORS AND CHITIN INHIBITORS

These classes of insecticides have great potential for use in orchid pest management. Reliable test information and evaluation of their use on orchids is scarce, but they are used commercially on a wide variety of ornamentals. Growth regulators are relatively expensive for small volumes, but the cost per application is less than botanical oils.

Insect growth regulators, such as kinoprene (tradename = Enstar), are synthetic forms of juvenile hormone which is highly important in insects at critical stages of their metamorphosis. The use of growth regulators interrupts the normal development of the insects, including mealybugs, scales, aphids, and whiteflies. Apparently, there is little good and reliable information on their use on orchids, but there does not seem to be any plant health problems noted thus far. Also, they are regarded as safe for humans and pets under usual precautions. Bifenthrin and other growth regulators are available for use on ornamentals, but little information is available for orchids.

Azadirachtin (tradenames = Azatin and Neemazad) is a plant derived chemical that is a chitin inhibitor. Chitin is a primary compound used by insects when developing their integument, or exoskeleton. Azadirachtin reduces the insects' ability to properly develop its integument and causes mortality through incomplete development. There is little information available on this chemical for use on orchids, but it is available on a wide variety of ornamentals and is labeled for greenhouse applications.

BIOLOGICAL CONTROL

There are many parasitic wasps and various predatory insects that feed on mealybugs outdoors, but these species are rarely of value in a greenhouse, or in the home. Usually for the small collection orchid keeper the use of biological control agents is not effective. However, the keeper of many plants in a greenhouse or a grower may wish to consider the use of one or more parasitic or predatory insects to help keep mealybugs under control. As in all biological control efforts eradication is not possible. Also, anyone wishing to use biological control agents needs to balance their use with proper timing or avoid the use of insecticides so as not to kill the beneficial insects.

Biological control agents that are available commercially include a variety of tiny parasitic wasps, brown lacewings, green lacewings, and lady beetles. Montrouzier's lady beetle, or mealybug destroyer, *Cryptolaemus montrouzieri*, is highly effective for control of mealybugs in greenhouses.

FINAL CONSIDERATIONS

Heavy infestations of mealybugs, especially on many plants, may require severe control methods using insecticides. On the extreme side if you have a plant showing signs of decline from scale you may have to seriously consider destroying that plant, as the low likelihood of rejuvenating that plant may not justify the expense and effort of continued treatments. In addition, destruction of a sick plant can be used to justify the purchase of a new and healthier plant!

If you are battling mealybugs for long periods of time (e.g., >9 months) and have been using the same insecticidal control method then you may have built a bigger problem that you started with. Depending on the length of time of your problem and the intensity of chemical use you could have selected a population of resistant insects. The best resolution to this is to change methods and chemicals occasionally; that is, do not use the same chemical mix more than 3-4 times sequentially. After isolating infested plants give them a thorough application of something different from what you have been using. For example, if you used insecticide then switch to an oil, soap, or different insecticide.

Generally, never use an insecticide not labeled for ornamental plants. Whenever using oils, soaps, and insecticides, be thorough, change formulations frequently, and do not use less than the minimum concentration of mixture. Too little of a chemical enhances resistance, while too high of a concentration may damage the plant. Never use chemicals prophylactically, that is do not routinely use chemicals as a preventative as it is a waste of chemical (and money!) and such use allows resistant mealybugs to develop. Finally, keep up the manual removal of all mealybugs, if possible. Removing the adults is as important as killing the immatures.

Mealybugs are an excellent example of pests that are easily transported and create tremendous problems. Although most orchid keepers in North America obtain their plants from conscientious growers in either Canada or the U.S., many persons do purchase plants while traveling or from international sources. Everyone needs to be aware of the great potential of inadvertently dispersing species to new areas, particularly from international origins. There cannot be enough stress placed on the recommendation that all plants come from a reputable and quality grower, and are clean of pests.

Note: This article is reprinted with permission of the author, Dr. Paul Johnson, elater@itctel.com. All photographs © Paul Johnson. Website for the South Dakota Orchid Society: www.abs.sdstate.edu/sdnhcbs/orchids/SDOS.htm

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CNYOS TO PARTICIPATE IN UPCOMING LOCAL SHOWS

There are two local shows this month, the Genesee Region Orchid Society Show in Rochester and the Southern Tier Orchid Society Show near Binghamton. Both of these clubs never fail to enter high quality displays in our annual fall show, so now it's our turn to reciprocate. ***THE CLUB WILL NEED*** your blooming orchids for the displays—***PLEASE*** make arrangements with the volunteers listed below to help out in any way you can. If you send plants, please label each plant and the box with your name and provide a list all orchids included. Please also properly groom the plants & stake the flowers if necessary.

GROS Show, April 19-21: Jeff Stuart (471-1404), Judi Witkin (422-0869), & Barb Weller (468-5039) will be setting up the display in Rochester on April 18TH. Dave Ditz will break down; an additional volunteer for break-down is needed.

STOS Show, April 26-28: Judi Daly (696-5439) & Judi Witkin (422-0869) will set up on April 25TH. Donna Coleman, Monica Kot, & Jeff Stuart will break down.

THE AFRICAN VIOLET SOCIETY OF SYRACUSE …

...Will be having its Annual Show and Sale, Friday May 3RD(Noon - 9:30PM), Saturday, May 4TH (10:00AM - 9:30PM) and Sunday, May 5TH (11:00AM - 6:00PM), in Shoppingtown Mall, DeWitt. African Violets and their relatives (*Gesnariads*) often make great companion plants to orchids. Plants & supplies will be available for sale (African Violets, other gesneriads, plants from Ralph Robinson, Lyndon Lyon Greenhouses, Ethel Champion, and more). You all know the old adage, "If you can bloom a *Phalaenopsis,* you can bloom an African Violet!" Or something like that... Anyway, stop by and see what this wonderful and diverse family of plants has to offer!

THE CENTRAL NEW YORK ORCHID SOCIETY
Your local AOS & Orchid Digest Affiliate
351 Kensington Place
Syracuse, NY 13210-3309

May 5: CNYOS Annual Orchid Auction

Next Meeting: April 7, 2002: Andy's Orchids Mounted Orchid Clinic
GROS Show: April 19-21 STOS Show April 26-28

Central New York Orchid Society

Presidents:	**Deb Coyle**	(315) 445-9106
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Vice Presidents:	**Judi Witkin**	(315) 422-0869
	Ken Renno	(315) 652-6495
Treasurer:	**Elinor Burton**	(315) 682-6274
Secretary:	**Barbara Weller**	(315) 468-5039
Newsletter Editor:	**Jeff Stuart**	(315) 471-1404

The Central New York Orchid Society meets at St. Augustine's Church, 7333 O'Brien Rd, Baldwinsville, at 2:00PM on the first Sunday of each month from September through June. Yearly dues are $15.00 per individual, or $17.00 family. Dues should be paid to the CNYOS Treasurer, Elinor Burton.

THE ORCHID ENTHUSIAST

The **CNYOS Newsletter,** ***The Orchid Enthusiast*****,** is a publication of the Central New York Orchid Society and is distributed to the Society's members ten times per year, prior to all club meetings, events, or functions.

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