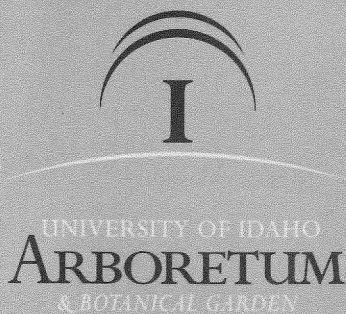


# ARBORNOTES

A Newsletter of the Arboretum Associates

December 2007



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## Inside this Issue

Short History of the UI Arboretum Ponds	1
HER VIEW: Autumn is a time of fruits and berries	3
Plant Sale	4
Message from the President	5
Arboretum Research	5
Donors	6
Annual Meeting	7
Report from the Horticulturist	8
Arboretum Ponds	9
Arboretum Projects	10
What's Cutting Notches on Leaves of My Garden Shrubs?	11

## Arboretum Ponds I

### A Short History of the UI Arboretum Ponds

Water features in arboreta and botanical gardens enhance potential habitats for plants and birds. During the many public hearings and seminars conducted in the late 1970's to plan for UI's "new" arboretum, water features were encouraged and endorsed to the extent that the accepted 1980 master plan for the UI Arboretum and Botanical Garden incorporated several ponds into the schematics for the 63-acre valley.

Ideally, the ponds in the arboretum would be pond basins excavated with the large 'Euclid' or 'LeTourneau' types of earth moving equipment—a process which would have been prohibitively expensive when no funds were available for such construction. As a consequence, the Moscow office of the USDA Soil Conservation Service now the Natural Resources Conservation Service was engaged in the early 1980's to design less costly dams for the ponds in the arboretum. The two large ponds in the arboretum are the result of that design process; they meet the engineering and safety parameters set by the U.S. Department of Agriculture's standards.



Overview of the UI Arboretum and Botanical Garden and its newly constructed ponds. Summer, 1987. Photo by the late Leonard Kawula.

In the dry summer of 1986, from late June through July, the two ponds were constructed with most of the labor and expenses contributed. Grading-bulldozing was completed by Howard Schoepflin, Gerald Weitz and Jim Givan with the TD-9 and TD-14 bulldozers, owned respectively by Weitz and Givan. Compaction of the dam soils was completed by Consuelo and Gerald Weitz, Dean Vettrus, and Ken Hall who drove Gerald Weitz's John Deere tractor and used the sheep-foot roller loaned by the Latah County Highway Department. Costs of the fuel for the machinery were partially compensated by the UI Arboretum Associates from unrestricted contributed dollars.

We hoped that the resulting two delta-shaped ponds would fill from surface drainage of the 1985-1986 autumnal rains and winter snowfall. Unwittingly, there were two

*continued*

COME GROW WITH US

## ARBORNOTES

A Newsletter of  
the Arboretum Associates  
University of Idaho  
Arboretum and Botanical Garden

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DECEMBER 2007

undisclosed, un-mapped tile drainage lines installed in the arboretum valley when the ASUI Golf Course's driving range was constructed in the valley that became the UI Arboretum and Botanical Garden. The two parallel drain tile lines, oriented in a North-South direction, were underneath the two ponds and the newly constructed dams. As a consequence, attempts to fill the ponds with effluent water in 1986 resulted in significant leakage from the ponds; they would not hold water to the overflow levels of the designed overflow cap in each pond.

In mid-September 1987 we attempted to fill the ponds with effluent water but water levels dropped within hours of cessation of the hose filling. Subsequently, trenches were cut upward of the dams to expose the intact drain tiles. Cement was injected into the two drain tiles above the dams of each pond. In addition, dry bentonite (an absorptive, expanding colloidal clay) was packed over the cement plug sites. These actions significantly reduced the leakage from the two ponds.

In 1990, the north end of each of the two ponds was excavated to form their respective islands, increase the pond volumes, enhance their aesthetics, and make islands for planting. The 18-foot-deep well was constructed by inserting a 6' X 18' corrugated culvert south of the arboretum's cross road to collect



Excavating the upper pond and compacting its dam. July, 1986. Note the sparse vegetation, compared with the lush plantings that are now established in the arboretum in 2007.

stream water from the valley; a pump was installed to recycle water into the upper (north) pond of the arboretum. In most summers, recycling valley drainage water has been adequate to keep the two major ponds filled.

Soon after the major ponds were constructed, someone illegally introduced goldfish into the ponds; by 1995, Clint Rand (local Game Warden) had identified six species of illegally introduced fish in our ponds. In recent years, species of problem aquatic plants have appeared in the ponds—most likely as a result of human introduction—and causing significant and costly problems for aquatic plant control and/or eradication.



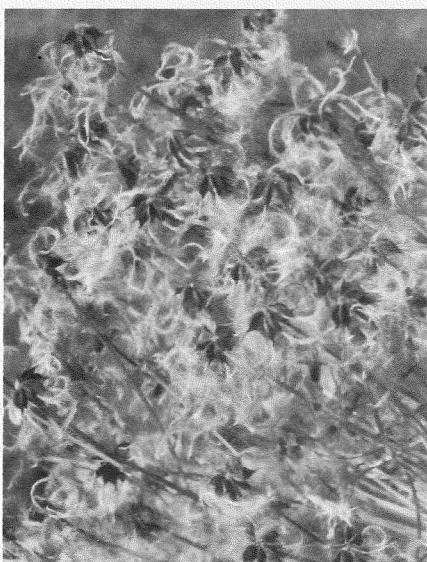
Professor Maynard Fosberg drills a soil core to find the depth of intact, impervious 'blue clay' for setting the depth of pond grading for the dams. June, 1986.

Richard J. Naskali

## HER VIEW: Autumn is a time of fruits and berries

It was a magic moment. It had rained a little overnight, resulting in one of those moist but crystal-clear mornings. At 7 a.m., as I arrived at the University of Idaho Arboretum for my morning walk, the sun's rays were slanting almost horizontally across the landscape. I paused to admire a dwarf crabapple tree just at the arboretum's entrance off Nez Perce Drive. The tree was almost leafless — its leaves scattered on the ground below — but the tree has dark bark and its branches take interesting twists and turns. Plus, it was chock-full of plump cranberry-size red crabapples. Suddenly, as I walked past the tree, it lit up like a chandelier, taking my breath away.

How had this happened? On closer inspection I found that a plump drop of water from last night's rain hung suspended from the bottom of each little crabapple. All the drops would come showering down at the first gentle breeze, but at this moment they still clung to the fruit. As I walked past and put the tree between me and the sun, at just the right angle the water drops caught the sunlight and sparkled.



Manchurian Clematis (*Clematis mandshurica*) mature fruits. R.J. Naskali photo, October 21, 2007.

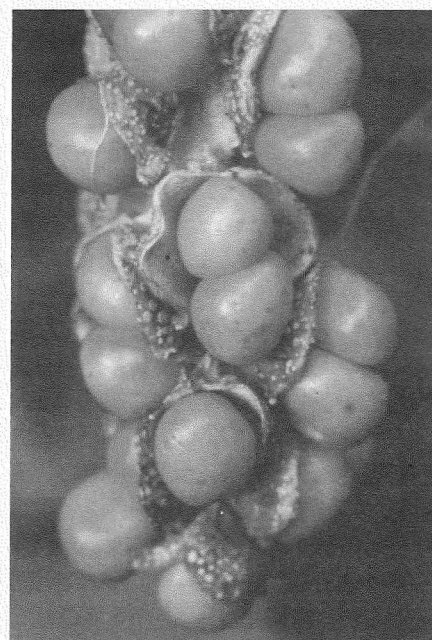
I wandered on through the arboretum, discovering more chandeliers along the way: a crabapple with cherry-size golden fruit here, a flowering pear with pea-size greenish brown fruit there. Over on the arboretum's west side, I was surprised to see a Mongolian linden sparkling like a chandelier. I didn't think lindens bore fruit. But sure enough, this one does: tiny pear-shaped golden brown fruits no bigger than the head of a porcelain-headed pin — normally I would never have noticed them — but big enough to hold a drop of water and sparkle on this morning.

I used to think of crabapples primarily as flowering trees that added beauty and wonder to springtime. However, I have come to enjoy their contribution to fall — colorful foliage, fruits in varied sizes and colors, interesting growth habits — at least as much. If I had a 4- or 5-year-old in my life right now, we would go to the arboretum together for a treasure hunt to discover how

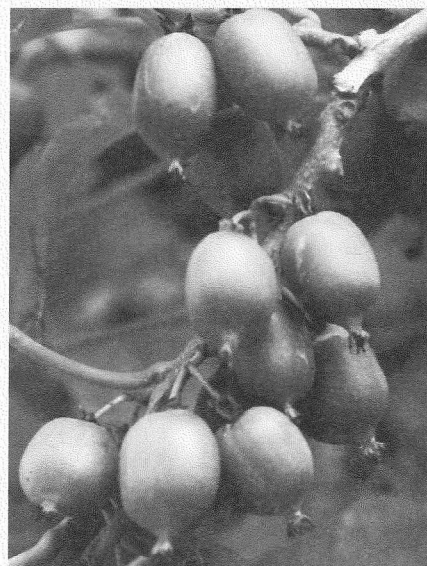
many different kinds of crabapples we could find. It would be quite a few, with fruits ranging in size from that of a peppercorn to that of a pingpong ball and ranging in color from golden yellow to red and purple and even black.

And crabapples are not the only fruits to admire at the arboretum now. There are all sorts of other beautiful fruits and berries too.

The rose hips are amazing. Many roses — wild roses, old roses, hybrid roses — are scattered throughout the arboretum and each produces its own rose hips. My favorites though are found on the old David Austen English roses in a bed by the path that leads from the main tail on the arboretum's west side to the boardwalk across the top of the more southern of the two large ponds. One rose has large, orange-red hips the size and shape of a jumbo olive. Another has slightly smaller, round red hips. A third has glistening black hips tinged with sumptuous plum. They look good enough to eat. Actually, a couple of hundred years ago, the mountain men and trappers did eat them. Rose hips are bursting with vitamin C. Munching one a day will keep away



Opening fruit of 'Leonard Messel' Magnolia (*Magnolia x loebneri* 'Leonard Messel') with emerging, brilliant red seeds. R.J. Naskali photo, October 7, 2007.



Fruiting female branch of *Actinidia arguta*. This *Actinidia*, derived from northern China, is a vigorous twining vine which is hardy in Moscow, ID. Its smooth green fruits, each the size of a cherry, are fragrant and delicious when ripe. This species is closely related to the *Actinidia chinensis*, native to warmer parts of China—and now exploited and commercially cultured in New Zealand (and known in the U.S.A. as the "Kiwi Berry"). R.J. Naskali photo, October 21, 2007.

scurvy, although the taste can be quite bitter. Nowadays, I prefer rose hips made into tea — or else just left on the bush to admire.

These and so many other fruits and berries are all around the arboretum. Although I have been frequenting the arboretum for years, this fall I have noticed for the first time the grape-purple berries of the beauty bush and the shiny black berries of the buckthorn. When I walk past the luscious-looking clusters of the champagne grapes on a couple of the grape vines, I am sorely tempted to taste a few.



Ripe fruit of Medlar (*Mespilus germanica*). Medlar fruits are edible and used in cooking and confections after a long ripening period and "retting." They were portrayed centuries ago on the bronze doors of the baptistry adjacent to the Duomo in Florence, Italy. R.J. Naskali photo, October 21, 2007.

This has been such a glorious fall on the Palouse, with maples and oaks as beautiful as any fall here that I can remember. The foliage, although still beautiful to be sure, is past its peak now. The leaves will continue to fall but the fruits and berries will be there to enjoy on into the winter, until gradually the birds make winter meals of them. I hope you will take time to delight in them too.

*Judith L. Brown is an economist and director of the Idaho Center on Budget and Tax Policy. She lives in Moscow with her family and can be reached at [jlbrown@turbonet.com](mailto:jlbrown@turbonet.com).*

Moscow-Pullman *Daily News*, October 27-28, 2007

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Judith L. Brown

## Plant Sale

Saturday morning and the tension is building; the line to get in the door stretches way out into the parking lot. It is hard to imagine that in less than three hours this ice rink that is now filled with annuals, perennials, trees, and shrubs will be cleaned out and once again the Arboretum Associates plant sale will have come to a successful conclusion.

While the plant sale is over in a relatively short period, the preparation for the sale stretches out many months. About the time winter hits the Palouse plant sale chair, Marlene Johnston, and the arboretum horticulturist, Paul Warnick, start investigating the next exciting source of perennials. This past year the sale featured plants from Darwin Nursery of the Netherlands and Bluestone Nursery of Madison, Ohio. The goal has been to bring in plants that are not readily available in our area. An expanding offering at the plant sales includes a variety of



The winners of the plant sale drawing were Andrea O'Sullivan and her daughter Brigid. Bill Bowler photo, June 2, 2007



Final instructions to the sale volunteers before the doors open. Bill Bowler photo, June 2, 2007

plants propagated from the Arboretum including iris, daylilies, grasses, lilacs and xeriscape plants. Many volunteers contribute time planting and dividing the young plants in the greenhouse in late winter and early spring.

The days leading up to the sale are a flurry of activity. The sale site needs to be set up, and the plants must be transported from a variety of locations around town. Once the plants are at the ice rink, they must be priced and sorted by type and ideal growing conditions.

The sale is the single largest fund raiser undertaken by the Arboretum Associates. This year's sale netted \$7,573 to be used for further development of several projects in the arboretum.

Joy Fisher

## Message From the President

It's the onset of the holiday season that makes me nostalgic...taking me back through the fun of the seasons in the Arboretum.

I love the spring – from the first seed catalog arriving in your mailbox and the anticipation of the grocery stores putting up their parking lot greenhouses, to the tiny green tips of the first crocus leaves coming through the last of the snow...spring comes with such promise. We'll pot up tiny plants for the plant sale, and choose the guest speaker for the annual meeting. I wander through the nurseries with my yard plan folded in my wallet, looking for the latest new *Echinacea* or the cool new coral delphinium.

The Arboretum Plant Sale heralds summer's arrival for me...with three crazy days of carrying flats of plants, hanging baskets of brightly colored petunias and lobelia, pots of scented geranium, new plants from Marlene Johnston that I have never seen before, and finally, getting that sweet-smelling soil under my fingernails! As I greet all of our wonderful volunteers, I am humbled by their willingness to share both knowledge and time on behalf of our Arboretum. These same people sit beside me as I listen to Daniel Bukvich's summer concert in the Arboretum. We come together to share the beauty – both sights and sounds – of the Arboretum once again.

The fall means walking through the Arboretum, gazing at the incredible color of the leaves. I especially love the

fleeting reds of the *Euonymus alata* and the purple of the 'Crimson King' maples. I scour the local nurseries for the last few perennials that I just can't pass up, and my list of must-have plants has dwindled. I listen to the last few geese, as they make their way south, and I get my yard ready for rest. I spread compost one last time, and mulch a few spots that look like they'll need extra protection. I'll divide a few peonies for the plant sale next year, and take starts off of some of my scented geraniums for some much-needed green during the winter. I know that when the snow falls, we'll all be ready.

Winter in the Arboretum is serenely beautiful. The color scheme has drastically changed, and I have to dress a bit warmer, but the scene that awaits me is well worth the extra layers of clothing. I love spying the blue of the spruces under their frosting of snow, and watching for the occasional bubble in the stillness of the deep grey pond. I like watching the squirrels dig through the snow for their hidden meals, as I stand among the trees, silent sentinels asleep after their fiery autumn.

Thanks for sharing the beauty of the Arboretum with me. Thanks for being a great group of volunteers and committed individuals who show up, shovel-in-hand, whenever we need you. You help make our Arboretum beautiful. On behalf of the Arboretum Associates, I wish you much health and happiness in the coming year.

Gina Taruscio

### Arboretum Research



Jessica Yanyin Xu gathering data for research project. Michelle Field photo, August 24, 2007

Jessica Yanyin Xu, a graduate student in the Department of Rangeland Ecology in the College of Natural Resources, has been working on a research project in the Arboretum all summer. Jessica came from Peking University in China in 2006 to work on a master's degree. She is planning on returning to China to work with a non-governmental environmental organization similar to The Nature Conservancy.

Jessica measured the spectrum and the rates of photosynthesis of various plants in the Arboretum during the changing day lengths of the seasons. Her work involved packing a lot of heavy, high tech equipment around to various plants to make the readings. If you visited the Arboretum this summer, you may have seen Jessica working on data collection. We are always happy to do whatever we can to accommodate more research and educational usage in the Arboretum.

## *Arboretum Associates Donor Roll*

Thank you to the many generous donors who supported the University of Idaho Arboretum and Botanical Garden from July 1, 2006 to June 30, 2007. A total of \$15,589 was received from membership gifts, gifts for Arboretum endowments, and gifts to support specific Arboretum projects. Your support makes a difference.

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 Marlene Johnston  
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## Annual Meeting

The 30<sup>th</sup> Annual meeting of Arboretum Associates was held on April 19, 2007 at the University of Idaho College of Law courtroom. President Bill Bowler welcomed members and guests as he called the meeting to order. He introduced the past year's board members and thanked them for their fine work and dedication. Treasurer Beverly Rhoades distributed the Treasurers report showing a December 31, 2006 general fund balance of \$37,925. The minutes of the last annual meeting and treasurer's report were approved as presented on the agenda handout. The nominating committee presented a slate of officers and directors to the membership. The following slate was elected by unanimous voice vote:

Officers – 2 year terms:  
 President – Gina Taruscio  
 Vice President – Jan Leander  
 Secretary – Richard Naskali  
 Treasurer – Joy Fisher

Directors:  
 Beverly Rhoades – three year term  
 Dave Wenny – three year term



Lauren Springer Ogden. Speaker  
 2007 Annual Meeting. R.J. Naskali  
 photo, April 19, 2007.

Bill reported that the Arboretum Associates Board has two main agendas this year. The first is the completion of the Master Plan revision, and, secondly, to reestablish the Arboretum Advisory Board. It is the role of the Advisory Board to represent the policy-making aspects of the academic side of the Arboretum, while the role of the Arboretum Associates remains to raise funds and support various projects related to the Arboretum. Hans Kok, Advisory Board chair, spoke to the importance of completing the Master Plan revision. There have been several meetings between the Advisory Board and the Arboretum Associates Board to 'iron-out' the process with the Walker-Macy design firm. It now appears that we will have to complete the Master Plan at UI without the involvement of Walker-Macy. When the Master Plan revision is completed, it will be posted on the Arboretum website [www.uidaho.edu/arboretum](http://www.uidaho.edu/arboretum) and provided in print when requested.

Bill encouraged audience members to show their support for the UI Arboretum and Botanical Garden by becoming members of Arboretum Associates or renewing their annual memberships. Numerous door prizes were awarded, including two \$25.00 gift certificates for the Arboretum Associates' plant sale.

The keynote speaker was Lauren Springer Ogden, who presented an informative slide-lecture program on 'Design Inspirations for Water-wise Gardening.'

## Report from the Arboretum Horticulturist

An excellent group of students does virtually all the maintenance and development work in the Arboretum. For 2007 there were three students from the University of Idaho and one from BYU Idaho: **Jesse Dahl**, a senior majoring in horticulture; **Nick Camp**, a junior majoring in landscape architecture; **Will Richardson**, a senior majoring in landscape architecture; and **Michelle Field**, a freshman majoring in horticulture. All four students were enthusiastic, hard workers who contributed a great deal to the Arboretum. The three University of Idaho students continued working whenever possible after classes started, allowing us to keep up with most of the maintenance chores during the fall.

This year they enjoyed a wide variety of experiences, as we continued to work improve the Arboretum. The biggest projects this year were installing a new aeration system in the Arboretum ponds (please see the separate article about the ponds for more information), expanding the parking lot from ten spaces to twenty seven spaces, installing five new phases of automatic irrigation, constructing new trails, both in the 'new' Arboretum and also in the Shattuck Arboretum, and planting over 500 new 'permanent' plants. These plants included additions to the *Hosta* walk that was started last year, a collection of native firs (*Abies* spp.) and their naturally occurring hybrids, and additions to the J.F. Schmidt trial pack evaluation program which evaluates new ornamental trees for commercial production. With these new additions to the collections we will surpass 2,000 separate documented taxa of plants and over 10,000 individual living plants this year. I will be updating the Arboretum database over the winter and will post the updated lists on the Arboretum website when that is complete.



Wind damage clean-up. Paul Warnick photo, September 4, 2007.



Andrew Berglund Eagle Scout service project trail building. Paul Warnick photo, October 20, 2007.

I think it has been the showiest year for color since I started in July 2000. The spring flowering season was cool and mild enough to prolong the show, and there were no severe late frosts or strong winds to limit the flowering. Both the lilacs and flowering crabapples were especially beautiful this year. We continue to try to add more color during the summer months to the Arboretum. We planted over 1700 annual flowers in three separate beds. The permanent collections of daylilies and Asian lilies are beginning to mature. The fall season has been great for color as well. There were a few light frosts early on, then mostly cool dry weather through October. Oftentimes the later-coloring trees such as American ash, Ginkgo, and flowering Pear will freeze before they have a chance to color up, but this year all of them were quite showy.

As always, not all the weather was benign. On Friday, August 31 a fairly strong thunderstorm blew through the area.



Arboretum Barn with new expanded parking lot. Paul Warnick photo, October 9, 2007.

The winds caused more damage in the Arboretum than any other single storm since 2000. It broke two trees entirely, and severely damaged 11 others. It took six full loads on a one ton dump truck to haul off the brush. All

of the woody pruning debris from campus was hauled to a central location and chipped. The chips were sold to a mill in Lewiston to fuel its boilers. The storm did not do much damage any where else on campus or in the Shattuck Arboretum.

After four years of discussion, we are finally getting close to being ready to move forward on some major projects, including the Asian pergola and a new entrance garden at the top of the Arboretum. We will be soliciting help, both financial and creative, for both of these projects as they come closer to reality. Since all of the assets and plantings are provided from donations, your support through membership in Arboretum Associates and donations to specific projects and endowments are vital to the continued success and growth of the Arboretum. Thank you very much for your continued support, please come and enjoy your Arboretum frequently!

Paul Warnick



## Arboretum Ponds II – Current Challenges

The Arboretum ponds are man-made, filled with natural run-off that is recirculated through the ponds by a pump. The pump, located in the stream about 2/3 of the way down the Arboretum valley, was installed at that location because it was the closest site to accessible electricity. The water is pumped through a 2" diameter pipe that can be opened in either the upper or the lower pond. The pump is set down in a large metal culvert standing on end within the stream bed. Originally a submersible well pump was set 18' down in the culvert, but as time went by that culvert has silted in to the point that the pump is now less than 10' below the stream surface. After replacing the submersible pump several times (and digging up and replacing a significant chunk of the outlet pipe) we switched to a sewage effluent pump that was better able to cope with the materials floating down the stream. That seems to be working well so far (after a year and a half). Due to the distance involved (more than a quarter of a mile) and the small diameter of the pipe we are pretty much at the upper limit of the amount of water that can be pumped back through the ponds.

For the seven years that I have worked in the Arboretum the ponds have been plagued by excessive algae growth which is particularly unsightly late in the summer. Algae becomes a problem when there are high levels of nutrients in the water. Those nutrients come from a variety of sources, including run off from the reclaimed water used for irrigation, waste from the over population of gold fish in the pond and waste from the large number of Canada geese that visit during the summer months.

The gold fish were not introduced on purpose—no doubt someone couldn't take their pets home when they left for the summer and decided that releasing them in the pond was a good idea. Enough people have done that to start a successful breeding population, and they had multiplied to the point of becoming a problem. Three years ago I contacted the Idaho Department

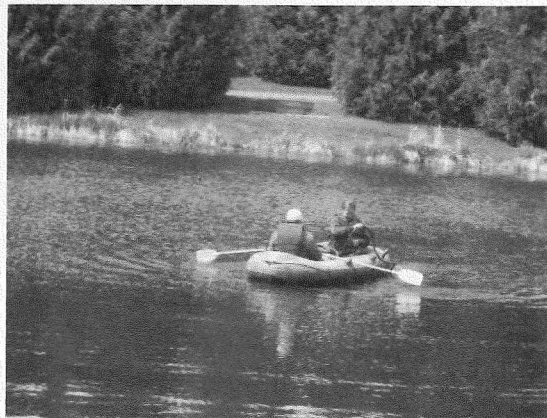


Algae in lower pond. Paul Warnick photo, September 27, 2007

of Fish and Game. They provided some large mouth bass caught for a research project in Spring Valley Reservoir east of Moscow. Bass are carnivorous and the goal was for them to control the gold fish population. After three years I think we are finally starting to see the results. There are still gold fish in the upper pond, but I do not see the huge masses of them that were there earlier.

Three years ago, we tried an organic solution to the algae problem by using decomposing barley straw to control algae growth. Apparently as the straw decomposes it releases chemicals that inhibit the algae. The straw may have reduced the algae, but not enough to justify the expense and effort. Last year, the growth of algae and other aquatic weeds, primarily duck weed (*Lemna minor*) and mosquito fern (*Azolla* sp.), were so bad that by late summer you could no longer see the surface of the water in either pond. The problem was so severe that we used an aquatic herbicide and chelated copper to control algae. We applied the chemicals twice in the summer of 2006. Like most chemical controls they worked quite well, but it is impossible to achieve 100% eradication and within a couple of weeks the surviving algae and plants had rebounded to virtually cover the water surface again. After looking at the costs and the potential environmental issues of continued chemical applications, we decided to look at other solutions.

The consensus of most experts is that the best solution to excessive algae growth is to increase the oxygen content of the water. This can be done in several ways, including fountains, increased water circulation, or aerators. Aerators seemed like the most economical and aesthetically appropriate solution in the Arboretum. So, with funding from the Arboretum Associates we purchased a system and installed it this spring. I had assumed that would require installing electricity closer to the ponds to power the aeration compressors; but the supplier said it would be much cheaper to pump



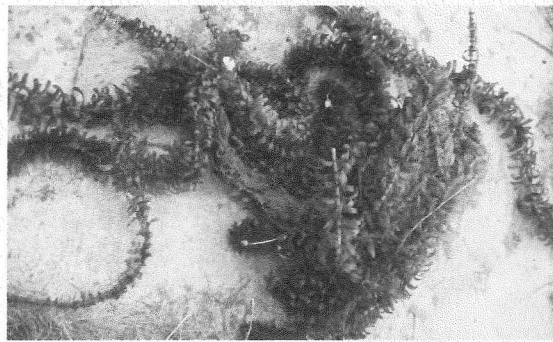
Aeration installation. Paul Warnick photo, April 25, 2007.

air over the distance than to install electricity. The system consists of two air compressors installed by the power source in the lower part of the Arboretum valley, over half a mile of 1" plastic pipe to move the air from there to the ponds, then almost 1,000 feet of specially weighted pipe that sinks to the bottom of the ponds. That pipe connects to the two 'diffusers' in each pond to release the bubbles up through the

water. The ponds are about six feet deep where the diffusers are located. The bubbles start as tiny bubbles at the bottom and increase in size as they rise to the surface. The bubbles actually accomplish two things, adding oxygen to the water and forcing the water to circulate, bringing cooler water up to the surface. The oxygen primarily encourages the growth of beneficial microbes which compete with the algae for the available nutrients.

The aerators have definitely helped the water quality in the ponds, particularly noticeable by the clarity of the water. There is still more algae than I would like to see; but the supplier assures me that it is a matter of time for the water quality to improve.

Another serious problem was identified this summer. An aquatic plant growing in the upper pond was identified as Brazilian Elodea, *Egeria densa*. This was the first time this plant has been found 'in the wild' in Idaho. It probably was introduced along with some of the goldfish. The plant used



Brazilian Elodea, *Egeria densa*, Paul Warnick photo, September 27, 2007.

to be commonly sold as an aquarium plant until it was discovered naturalizing in outside lakes and ponds. It has become a serious problem in Washington state, primarily on the west side of the Cascades where it has virtually filled in several lakes. It has been declared a noxious weed in Idaho. By law, efforts at controlling the weed must be done within 15 days of the discovery of the plant.

After consulting with a weed specialist with the University and chemical company representatives a control strategy was developed. After shutting off the recirculating water flowing into the pond and sealing off the outlet to avoid any contamination down stream, we applied a granular aquatic herbicide in September. According to the supplier it will take at least one more application in the spring to control the Elodea. The next challenge from this process may be that if we stop the Elodea, it won't be using more of the nutrients in the pond and that may result in even more algae growth.

Both the gold fish and the Elodea demonstrate the problems with introducing exotic species into situations where they are not subject to predators or parasites and they may be more aggressive competitors for existing space and resources. We will continue to try to balance management of the ponds to encourage wildlife and aesthetics, without excessive chemical use.

Paul Warnick

### *Arboretum Associates Projects*

During the past year funds donated to Arboretum Associates as well as funds raised from the plant sale have been used to support the arboretum in a number of ways. Projects and expenses include:

South End Parking Lot expansion	\$5,100
Pond Aeration	4,795
Annual Meeting/ Speaker	2,143
ArborNotes publication	782
Dues & Memberships	680
Web Site Updates	595
Concert	585
Arboretum Plantings	435
Walking Tour Maps	129

Your donations and support of Arboretum Associates ensures the continued development and enhancement of the grounds and programs of the Arboretum.

## What's Cutting Notches on Leaves of My Garden Shrubs?

Many gardeners notice notches cut on leaves of their garden shrubs such as lilacs, roses, strawberries, and rhododendrons. In the case of lilacs and roses, the damage may be merely cosmetic, and not a threat to the survival of the plant. In the case of notching of rhododendron leaves, the damage may indicate a high potential of killing of the plant. Below are examples of leaf notches from my Moscow garden.

Circular and oval notches on lilac and rose leaves often result from the activities of leaf cutter bees of the genus *Megachile*, family Megachilidae. Adult bees cut the circles and ovals from leaf margins and use them as lining and cell partitions in their nest tunnels in wood, soil, or stone and brickwork. These solitary bees, which collect pollen and nectar and carry their loads on the underside of their abdomens (as contrasted with the social honeybees which carry pollen on their legs), place the pollen in individual cells in their tunnels with an egg to each chamber. Leaf cutter bee larvae consume the pollen and nectar, and later emerge as adult insects. Leaf cutter bees are important pollinators of many native and introduced plants. In the case of commercial alfalfa and carrot seed production, commercial exploitation of introduced leaf cutter bees is important to successful seed yields. The production, sale, and use of "bee boards" in Western North America is a money-making enterprise for successful alfalfa pollination and seed yields. You should not endeavor to control or eradicate these valuable insects!

In the case of rhododendrons, strawberries, yews, and some other woody plants, irregularly notched leaves may be a

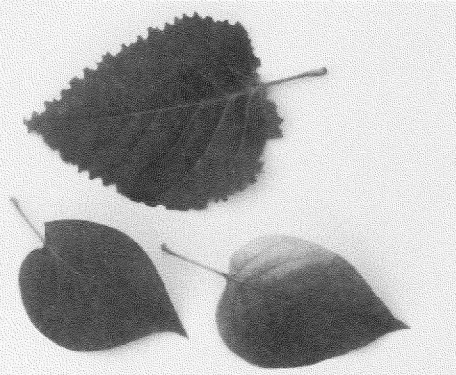
powerful sign that there are black vine weevils (*Otiorhynchus* sp.) active and endangering the plants. The most significant damage by these introduced pests is caused by the underground feeding of larvae ("grubs") of these weevils. The larvae feed on roots of conifers, rhododendrons, and many other garden and nursery plants. Regrettably, these de-

structive pests have been widely and unwittingly introduced to many gardens through interstate transport and sales of contaminated nursery stock.

Black vine weevil larvae can girdle underground stems and cause significant loss—especially on young plants. Adult black vine weevils, about 0.25 inches long, are slow-moving, flightless, nocturnal guerillas; the adults hide under pots and in leaf litter or mulch during daylight hours and emerge at night and do their feeding on aerial plant parts.

In my home greenhouse, uncaught adult weevils have a predilection for night-time feeding on orchid petals and leaves of *Sansevieria* ("Snake Plant"). In a home greenhouse situation, night inspections with flashlight and forceps is one means of control and eradication. Alternatively, sticky traps (e.g., Tanglefoot©) can be employed to catch the adults. Outdoors, control of black vine weevils can be accomplished through the application and use of specific parasitic nematodes and other specific pesticides. For more information on black vine weevil problems, contact your local Agricultural Extension agent, licensed pesticide applicators, or search the Internet.

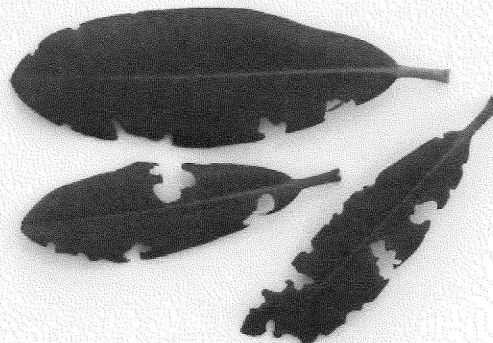
Richard Naskali



One notched and two intact lilac (*Syringa vulgaris*) leaves from my Moscow garden. The notches were cut by leaf cutter bees. R. J. Naskali photo, October 13, 2007.



Enlarged view of an adult black vine weevil with the typical 'elbowed' antennae. R. J. Naskali photo, October 13, 2007.



Rhododendron leaves damaged by adult black vine weevils. R. J. Naskali photo, October 13, 2007.

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