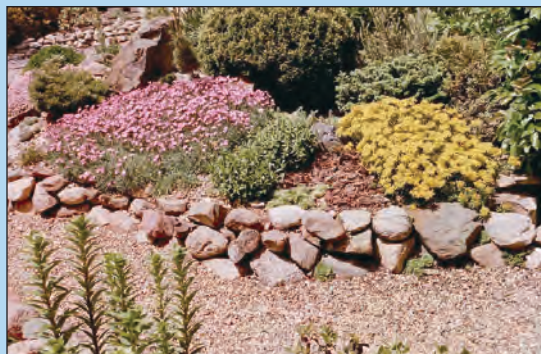


Conifer Quarterly

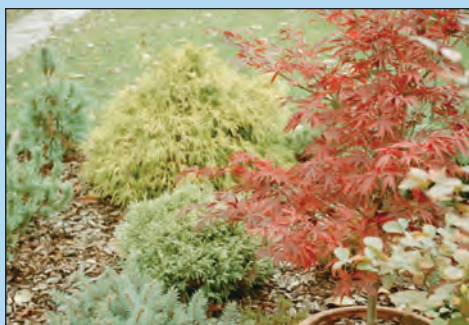
Vol. 21 No. 2

Spring 2004





Photos by Gary Whittenbaugh



Gary Whittenbaugh can't resist incorporating *Chamaecyparis* into his Iowa garden, while at the same time he warns against becoming too attached to them. Read about these plants' role in the Midwest on page 20. Shown here are (top) *C. pisifera* 'Plumosa Compressa' as a background plant, 'Golden Mop' in the fall (left) and Gary's favorite, 'Snow.'



Tony Green

Grafting is an important part of conifer propagation, from the largest nurseries to the hobbyist plant collector. Review the basics of side grafting on page 30, as taught by expert George Okken.

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Cover photo: An unusually cold Pennsylvania winter melts away with the snow from *Chamaecyparis obtusa* 'Crippsii', just as last year's muted foliage will soon disappear behind the glowing golden spring flush for which this cultivar is known.

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You are invited to join our Society. Please address membership and other inquires to the Conifer Society National Office, P.O. Box 3422, Crofton, MD 21114-0422. Membership: US\$30 (basic), \$30 (institutional) \$50 (sustaining), \$100 (corporate/business) and (\$130 (patron). If you are moving, please notify the National Office 4 weeks in advance.

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PRESIDENT'S MESSAGE

BY DENNIS GROH

Your Board of Directors met in St. Louis on February 7th. Most arrived one-half day early to participate in a strategic planning session. On behalf of the Conifer Society, I thank these dedicated individuals for their personal sacrifices of time and travel in winter weather.

Extended and spirited discussion centered on what is a fair price for a member to pay for National Meeting attendance. Several participants were surprised to learn just how dramatically the cost of hotel food and services, bus costs, etc. have escalated. Subsequently, the Board requested I use this opportunity to better explain both Conifer Society costs and budget concerns.

At March 2004 membership levels, the total annual Conifer Society costs are about \$52 per member. (The Board has scrutinized the budgets and these costs are as efficient as possible.) \$32 of this total is required to produce and deliver all member printed material. The balance of \$20 is required to operate the National Office (phones, supplies, rent, insurance, IRS filing, contract, web site & credit card fees, etc.), plus reimburse volunteers for their expenses.

Since basic dues are \$30/yr., there is a shortfall of about \$22 per member per year. The shortfall is covered primarily via our Regional and National Meetings and their associated plant auctions, Seed Exchange, advertising, and merchandise sales also contribute revenue. The National Office provides support for each region, and consequently the Regions are assessed a charge of \$8 per member. This lowers the shortfall to \$14 per

member. The National Meeting plus all other non-Regional sources must generate adequate revenue to cover this \$14 per member shortfall to avoid a deficit.

This underscores the financial risk and our dependence on the generosity of those who donate our auction items and the enthusiasm of the bidders. The shortfall also impacts the amount of premium that must be charged to the members who attend National Meetings over the (rising) breakeven cost. A balance is selected between expected attendance (risk management) and an appropriate surcharge to enjoy the privilege of walking a private garden or a trail with experts (e.g. 2003 generous member-experts Jerry Morris and Don Howse).

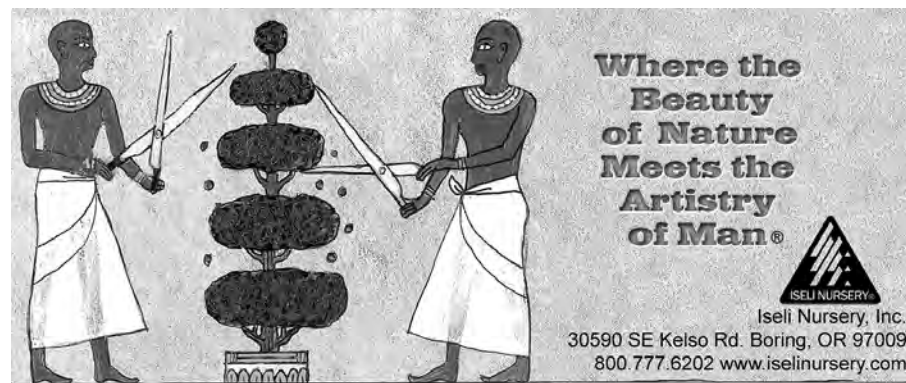
There are two broad categories of costs: 1) **fixed costs** stay the same independent of the number of members, and 2) **variable costs** change (usually decrease) as the number of members increases. While a simplification of a complex subject, this should help to im-

prove awareness and understanding.

Of the \$52 annual per-member cost, about \$28 is relatively fixed and \$24 is somewhat variable. My best estimate is, if we doubled our total membership at current costs, our annual per member cost would drop from \$52 to about \$35. (However, since this change would significantly increase the workload of the National Office, perhaps some of the fixed costs would not remain fixed.)

Enclosed in this CQ is a membership application brochure. If each person is able to recruit a new member, who remains a member, we can help to take the financial pressure off the Regional and National meetings. An alternative to recruiting a new member would be to consider moving from a Basic membership to a higher membership category, helping to offset the true current cost of your membership.

What will YOU do in the next 90 days to make the Conifer Society better? ▲



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Welcome, Spring! I hope that those of you in temperate climates are all enjoying the greening of lawns, gardens and especially the conifers.

This issue features the conifer genus *Chamaecyparis*, and we begin with an important article about the use of *Phytophthora*-resistant rootstocks for *C. lawsoniana* that are helping this species' cultivars make a comeback in the nursery trade. Thanks to our friends at Pacific Horticulture magazine who originally published the article, and to member Dan Montague in Olympia, Washington, who brought it to our attention.

Next we hear from Peter Jones in Virginia, who began propagating *C. obtusa* 15 years ago from seeds he harvested from his own garden. He shares with us the pitfalls and successes of what began as a hit-or-miss endeavor.

Where did all of those cedar shingles come from – the ones we still see on older East Coast homes? *C. atlantica*, the Atlantic white-cedar, covered vast swampy regions of New Jersey and North Carolina in colonial times. Learn more about the history and status of this species on page 16.

Our counterparts across the pond have recently succeeded in forming the British Conifer Society as a means of appreciating the plant resources in their country and sharing that knowledge with conifer enthusiasts everywhere. Two of their founding members attended our national meeting last summer in Denver and were warmly received by our group. One of them, Derek Spicer, updates us on their organization's status and future plans on page 24 and reviews the rich history of

the genus *Chamaecyparis* in Britain's horticultural heritage.

Highly-respected plantsman and Conifer Society member Robert Tomayer passed away in January, leaving behind many fond memories among those who knew him. Two of his friends and colleagues share their memories of Bob on page 29.

Grafting – now there's something I've never quite been able to get my mind around. We skimmed over it in my college horticulture classes, so about all I remembered was my classmate who sliced her finger with the grafting knife and needed stitches. Our Society's plant auctions overflow with grafted plants, suggesting that this is something everyone does, yet I had never really seen anyone do it. Then a dozen Northeast Region members and I attended George Okken's grafting workshop in February and, while I am far from proficient, I feel empowered to try a bit of grafting on my own next winter. You too might pick up some pointers, starting on page 30.

Our Regions are enthusiastically planning summer and fall events for the remainder of 2004, so be sure to check out the preview articles in this issue. And finally, don't miss the trivia contest question on page 23! I hope to make puzzles a regular part of the *Conifer Quarterly*, so if you have ideas, I'd love to hear from you.

See you in the summer!

Anne

As previously announced...

The Summer issue will feature the genus ***Picea***!

From the dramatic *Picea orientalis* 'Skylands' to the common yet beloved bird's nest spruce (*P. abies* 'Nidiformis'), many of us have placed representatives of this group into our gardens. Tell the Conifer Society why you love them!

Please send your photo or comment to the Editor by May 15th.

Start planning now...

The genus ***Thuja*** will highlight the Fall issue.

Perhaps the most often misused and misunderstood landscape conifer, arborvitae does have endearing qualities when planted and maintained correctly. Some members of the genus are native trees with an important place in our regional ecosystems. What do you love (or hate) about *Thuja*? Let the Editor know by August 15th.

Bonus color pages planned for the *Winter Conifer Quarterly*...

Check the Summer issue for details about an expanded color photo section we've scheduled for Winter 2005. We'll have even more room to display your favorite plants in all of their glory during the season when you need it the most. Stay tuned!

Publication Dates

Issue	Calendar Quarter	Deadline to submit articles	Publication Date (approx. mailing)
Winter	Jan/Feb/Mar	Oct 31	Jan 15
Spring	Apr/May/June	Jan 31	Apr 15
Summer	Jul/Aug/Sept	Apr 30	July 15
Fall	Oct/Nov/Dec 31	July 31	Oct 15

Submit articles/photos to:

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Resurrecting Lawson Cypress for the 21st Century

By Tanya DeMarsh-Dodson

Anyone raised in the maritime Pacific Northwest, from Portland to Vancouver or Victoria, is familiar with Lawson cypress in residential gardens and public parks, as it is here that the greatest concentration of cultivated trees is found.

Accounting for its popularity as a garden plant are its gracious habit, the range of blue, yellow, green and gray green tones in its leaves, the densely held cascading foliage typical of many forms, its tolerance of some degree of shade, and its suitability for this region's dry summers. There are more than two hundred cultivars in cultivation worldwide.

Not long ago in *Pacific Horticulture* (October '02) Douglas Justice lamented the demise of Lawson cypress or Port Orford cedar (*Chamaecyparis lawsoniana*), one of the more important conifers in ornamental horticulture here in the Pacific Northwest. Its nemesis has been a water-borne mold, the fungus *Phytophthora lateralis* that attacks the roots of the cypress and kills the plant. Since its introduction in the 1920s, this fungus has spread so widely that it is now regarded as endemic in the Pacific Northwest. It now affects Lawson cypress not

only in our gardens but also in their relatively remote native range (the mountains of Northern California and along a narrow strip of the Oregon-California coast). As Justice indicated, attempts to control the disease have met with limited success: chemical controls are ineffective, and controlling ground water and surface runoff to curtail movement of the fungal spores into unaffected areas is not possible in most landscapes.

A twenty-year-old specimen of *Chamaecyparis lawsoniana* 'Minima Glauca' grafted onto *C. pisifera* 'Plumosa Vera'



Tanya DeMarsh-Dodson

The experimental use of biological agents, both mycorrhizae and microbes antagonistic to water molds, has been somewhat effective, but is too complicated to be a practical treatment for use by most gardeners. It may be, however, that the nurserymen who propagate the plants have outwitted the disease by the choice of rootstocks onto which the trees are grafted.

It may be that the nurserymen who propagate the plants have outwitted the disease by the choice of rootstocks

Nurseryman Gordon Hallgren grew up in Everett, Washington, appreciating the beauty of Lawson cypress in his neighborhood and in the parks where he worked for a decade. Like many in the nursery business, Hallgren grew various selections of Lawson cypress for many years at Peacedale Nursery, for sale to retail nurseries in the Puget Sound Basin. He propagated the cultivars from rooted cuttings, growing them first in small containers and then planting them in the ground and growing them on until they reached a size appropriate for retail sales.

In the 1980s, he found that the plants he sold did not always thrive in the gardens where they were planted, and, as the decade progressed, he began to lose more and more plants in production. The cuttings he made grew, but the plants failed when set out in the field. Because he valued their contribution to the landscape, Hallgren continued growing a few popular cultivars, 'Wisselii'

and 'Ellwoodii' among them, into the 1990s. When plants of 'Ellwoodii' began to fail in his fields in the mid-1990s, he phased the Port Orford cedars out of production, convinced that *Phytophthora lateralis* was an inextricable presence in his soil.

A Rootstock for Grafting

For more than twenty years, Hallgren had enjoyed a twenty-five foot tall pair of *Chamaecyparis lawsoniana* 'Wisselii' growing in front of his home on the nursery grounds; he had used these plants as a source of cuttings for the 'Wisselii' he grew for sale. Because of its dark green foliage and its structured but whimsical form, 'Wisselii' remained one of Hallgren's favorite cultivars. In 2000, he noticed branches on the two 'Wisselii' in front of his house had begun to discolor, becoming a dull dark green.

Realizing he was seeing the effects of *Phytophthora lateralis* attacking their roots, Hallgren tried to save the plants he loved by grafting scions from their more vital branches onto the rootstock of moss sawara cypress (*Chamaecyparis pisifera* f. *squarrosa*). The grafts took and the plants grew well; it seemed his strategy was successful.

After a year or so, however, Hallgren noticed that there had been some overgrowth on these grafted plants of 'Wisselii'; that is, the scion (the top growth) was out-growing the rootstock. While this phenomenon did not affect the health of the young 'Wisselii', it was not particularly attractive. There was also the possibility that, as the plant grew and matured, it might become too heavy for the slow-growing rootstock, which could result in a break at the graft site in a

Foliage of *Chamaecyparis pisifera*
'Plumosa Vera'

heavy snow or in a strong wind. He then tried using the faster growing boulevard cypress (*Chamaecyparis pisifera* 'Boulevard') as a rootstock instead of moss sawara cypress; boulevard cypress produces a "beefier" trunk more rapidly.

He has been watching all of these grafted plants grow for two and a half years now, and they are vigorous and healthy, both in containers and in the field. His observations have led him to conclude that *C. pisifera* 'Boulevard' and *C. pisifera* f. *squarrosa* rootstocks are suitable for dwarf forms of Lawson cypress, such as 'Minima Glauca', 'Nestoides', or 'Lutea Nana', but he remains skeptical about the long-term physical compatibility of the faster growing selections on either of these rootstocks. Hallgren is convinced, however, that grafting will resolve the conundrum gardeners have faced with this wonderful group of garden plants.

A young plant of *Chamaecyparis lawsoniana* 'Minima Glauca' grafted onto a rootstock of moss sawara cypress (*C. pisifera* f. *squarrosa*); the enlarged base of the topgrowth could eventually create problems for the grafted plant.



Tanya DeMarsh-Dodson



Tanya DeMarsh-Dodson

Earlier Experiences

The work of two other nurserymen suggests that Hallgren has discovered an effective means of propagating viable Lawson cypress for garden use in the twenty-first century. Tony Van den Akker and Maurice Ravensberg (now both deceased) emigrated from Holland to the United States after World War II to pursue their careers in horticulture. Both came from families that had been in the nursery business for more than a generation. After working for a few years for other growers in the Seattle area, both started their own businesses. Van den Akker's Nursery soon became known for its conifers and its exceptional deciduous azalea hybrids (known as the Van den Akker hybrids). Ravensberg Landscaping created many award-winning residential and commercial landscapes in the Seattle area. Ravensberg continued to propagate plants for use in the landscapes he created.

Both of these nurserymen were knowledgeable grafters, having learned the art as part of their education in Europe. Both grew Lawson cypress and both used a selection of *Chamaecyparis pisifera* as the understock, though different from the one Gordon used. Their reasons for using *C. pisifera* were also different. They chose *C. pisifera* 'Plumosa Vera' (syn. 'Plumosa Viridis'), which is similar in many respects to other plume sawara cypress; it will grow into a large tree with dense prickly juvenile foliage and scale-like softer adult foliage. Their concern was producing a plant that would be well suited for landscape uses; *Phytophthora lateralis* was not an issue when they began their grafting work.

They carried the knowledge of *C. pisifera* as rootstock with them from the nursery center of Boskoop, where the Dutch had long studied and experimented with the process of grafting conifers. Collective evaluation recommended *C. pisifera* 'Plumosa Vera' as a suitable rootstock for *C. lawsoniana*. Ravensberg and Van den Akker valued the vigorous, fibrous root system of plume sawara cypress and the ease with which it handled transplanting. They

Their concern was producing a plant that would be well suited for landscape uses

were also aware that the growth rate of the rootstock was compatible with that of Lawson cypresses; they had no trouble with overgrowth using this particular cultivar as a rootstock.

The plantings of the Lawson cypress these men grafted in the 1950s, 1960s, and 1970s offer testament to the wisdom of Hallgren's strategy for protecting this conifer by grafting the susceptible plants onto a rootstock resistant to *Phytophthora lateralis*. His choice of *Chamaecyparis pisifera* as a rootstock is one that is effective for the long run, provided care is given to match the growth rates of the rootstock and the scion. Several cultivars of Lawson cypress that Van den Akker and Ravensberg grafted still grow in commercial and residential landscapes in the Seattle area; some are now more than forty years old.

Continuing Research

Hallgren continues to search for other rootstocks that might protect the delightfully ornamental selections of Lawson cypress from phytophthora and grow a well-shaped, easily cared for cultivar. The U.S. Department of Agriculture has been experimenting with seedlings of *Chamaecyparis lawsoniana* in an attempt to find one resistant to *Phytophthora lateralis*. They sowed thousands of seeds and then inoculated the seedlings with the fungus. They have found a seedling variant that is, thus far, totally resistant. Hallgren hopes to obtain some plants of this resistant Lawson cypress next year, to serve as the understock for grafting some of the cultivars he favors.

Grafting Lawson cypress onto itself carries little risk of any of the problems

that can at times be associated with the grafting process. Thus, there may now be at least two rootstocks for nurserymen to consider when grafting to protect the most desirable cultivars of Lawson

*Gardeners need not fear
that Lawson cypress
will disappear from
the landscape*

cypress. The search for the “best” rootstock may not be over, but, as long as interested, committed, and creative nurserymen, dedicated to growing the best plants for ornamental horticulture, are in the business—men like Van den Akker, Ravensberg, and now Hall-

gren—gardeners need not fear that Lawson cypress will disappear from the landscape.

In a year or two, gardeners in the maritime Pacific Northwest will be able to appreciate the results of the work of these committed nurserymen. Great cultivars like ‘Blue Surprise,’ ‘Minima Glauca,’ ‘Pembury Blue,’ ‘Wisselii,’ ‘Tamariscifolia,’ ‘Pelt’s Blue’ and ‘Stewartii’ should be available in our local nurseries on protective rootstock. Before you buy, however, ask if the Lawson cypress you have chosen was grafted and on what rootstock.

Hallgren may also realize his wish to return Lawson cypress to the landscape of two great parks in Everett, Washington: Forest Park and Legion Park. In the

1980s, Lawson cypress cultivars such as ‘Lutea,’ ‘Erecta,’ and ‘Alumii’ were removed as they became diseased and were replaced with giant sequoia (*Sequoiadendron giganteum*). It would be wonderful to have these parks once again graced by the appealing form of Lawson cypress—elegant pyramidal trees densely clothed to the ground with gracefully cascading fans of foliage. Our Canadian neighbors in Vancouver and Victoria may also be able to reverse the decline of Lawson cypress in their landscape, choosing their cultivars with a discerning eye for this new century. ▲

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Seedling Conifers Offer Challenge and Variety

By Peter C. Jones

Like many Conifer Society members, we are driven to seed propagation by the hope of finding that unique and choice conifer. It is well known that conifer cultivars don't produce true from seeds, but in some cases a seedling can produce a true jewel of a plant.

Many years ago, my wife Caecilie and I noticed that several *Chamaecyparis obtusa* growing in front of our home had produced seeds (see photo below). I first collected seeds about 15 years ago and planted them just to see if anything would grow. The first few years, seedlings would emerge but we had difficulty keeping them alive. This raised many questions: Are we using the best propagation medium? Have we placed the seedling flats in the best location in the yard? Are the trees pro-

ducing the seeds healthy?

To answer these questions, one must keep good notes, and I had not. However, we now make every effort to insure that the trees are healthy and growing

A seedling can produce a true jewel of a plant

well. We use mainly organic plant foods and holistic methods for dealing with problems.

In our seedling flats, we now use a mixture of 50% leaf mold, sieved through a 1/4-inch sieve, and 50% coarse builder's sand for our basic mix. Over the years, we've tried various soil mixtures for rooting cuttings and germi-



Peter C. Jones

Abundant annual seed production by the author's *Chamaecyparis obtusa* inspired him to give propagation a try.

nating seeds, but we found that the leaf mold and sand mix works best for us.

Members of the local Rock Garden club told me about soaking seeds in gibberellic acid before planting. In researching gibberellic acid, I learned that it naturally occurs in leaves, which are a major part of our soil mix as mentioned above. Arlington County, Virginia, where we live, has an excellent program for recycling leaves; county residents can pick up as much leaf mold as they want.

Over the years, we have seen some nice plants developing from the seeds we've collected and planted. One of our most prized *Chamaecyparis* is now 13 years old (see photo on page 14). From that year's seedling batch, many germinated and 11 seedlings survived the winter. Of the 11, two remain in our yard in pots for a show-and-tell when friends, gardening clubs, horticulture groups,



Peter C. Jones

and/or plant societies visit. Keeping these conifers in containers also helps when I present a lecture on dwarf conifers or growing Bonsai trees. Due to space limitations, we can only keep one

Our plan is to keep reporting our progress with the hope that some of our local Conifer Society members may do the same

or two plants from each batch of seed that we germinate.

Our first experience with the Conifer Society's Seed Exchange program came about four years ago. From that seed order, two species have performed well, and we are pleased with their dwarf growth rate, foliage color and root development thus far (see photo). We now have several *Abies koreana* (Korean fir) and *Tsuga* (hemlock) to evaluate. This year we hope to share some of these plants with friends that have the space to plant them in the ground for further observation. I believe that both the *Abies* and *Tsuga* will require afternoon shade here in the Washington D.C. area.

We've tried using nursery markers to track the seeds we've planted, but unfortunately this marker did not perform well and the seedling information was lost. Our plan is to keep reporting our progress with the hope that some of our local conifer society members may do

Eight-year-old seedlings display a variety of forms and textures.



Peter C. Jones



One of Pete's older seedlings has found its place as a bonsai-in-training.

the same, joining us in this study of seedling conifers.

As soon as seedlings appear, variations in growth are evident. However, at least three years must pass before one can

At least three years must pass before one can begin to predict what shape or form the plant will have

begin to predict what shape or form the plant will have. It is also during this time frame that the weak seedlings are lost.

Each year, we try to send our excess seeds from the front yard *Chamaecyparis* to the Seed Exchange. My observations of the seedlings so far are most rewarding. Our Society's Seed Exchange offers us an excellent opportunity to obtain seeds from around the world, and the people running it deserve a medal for the service they provide. ▲

About the Author: Peter C. Jones lived in Fuerth/Bay, Germany from 1960 to 1970. It was during this time that he became interested in horticulture, after seeing some of the old gardens in Europe. In 1971, he visited the Gotelli Collection for the first time and has been searching for rare, choice and unique conifers to grow since that visit. He is also working with Arlington County to develop a conifer collection.

Conifers on the Web

SaveOurHemlocks.org

As you may know from reading past issues of the *Conifer Quarterly*, we are in danger of losing our eastern hemlocks. The hemlock woolly adelgid (*Adelges tsugae*) is an introduced insect from Asia that is devastating the hemlocks throughout Appalachia. Infestations have been confirmed from New Hampshire to Georgia – already much of the range of the Eastern hemlock (*Tsuga canadensis*) in the Appalachians. Besides the Eastern hemlock being a key species to a heavily shaded and acidic soil environment, the Carolina hemlock (*Tsuga caroliniana*) is in great danger since it has a very limited distribution along Appalachian slopes from Virginia to Georgia.

Most of the newly infested counties in the year 2002 were found in southern Appalachia, causing great alarm. In answer to this need, the Hemlock Woolly Adelgid (HWA) Action Team was created under the direction of the Southern Appalachian Man and the Biosphere (SAMAB) program. The action team comprises about 50 members from multiple federal and state agencies along with private organizations that are focused on combating this invasion.

Timely information-sharing is needed to provide quick action, so members of our national biological information network helped the action team create an informative website which is available at <http://www.saveourhemlocks.org>. (The Southern Appalachian Information Node (SAIN) team is a part of the National Biological Information Infrastructure (NBII) commissioned with providing in-

creased access to information on the nation's biological resources.) Please visit the "Save Our Hemlocks!" website to find out what you can do on your property and how you can help protect our



public lands from hemlock woolly adelgid – as well as view a collection of resource web links and an iPIX photo tour of one of the oldest hemlock groves in the Great Smoky Mountains National Park.

Additional information on the Web:

- National Biological Information Infrastructure (<http://www.nbio.gov>)
- Southern Appalachian Information Node (<http://sain.nbio.gov>)
- Southern Appalachian Man and the Biosphere (<http://samab.org>)

About the author: Pamela J. Nabors is a biogeographer employed by the Tennessee Valley Authority, currently working through a joint venture with the Southern Appalachian Information Node (SAIN) of the National Biological Information Infrastructure (NBII).

Origin, Distribution, and Variation of Atlantic White-Cedar

Kristin Mylecraine

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John Kuser

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Introduction to *Chamaecyparis*

Atlantic white-cedar (southern white-cedar, locally “juniper” in the Carolinas), *Chamaecyparis thyoides*, belongs to the redwood or cypress family, Cupressaceae. The family includes coast redwood (*Sequoia sempervirens*), dawn redwood (*Metasequoia glyptostroboides*), giant sequoia (*Sequoiadendron giganteum*), baldcypress and pondcypress (*Taxodium* spp.), China-fir (*Cunninghamia lanceolata*), cryptomeria (*Cryptomeria japonica*), and a large variety of “cedar”-like trees including arborvitae (*Thuja* spp.) and our familiar redcedar (*Juniperus virginiana*).

Its lineage is ancient, dating back to the time of dinosaurs in the Mesozoic. An early fossil, possibly ancestral to our white-cedar, discovered in the Magothy formation along the Severn River in Maryland, was named *Cupressinoxylon bibbinsii*, and is thought to have lived about 130 million years ago. However, the specimen was poorly

preserved, and not definitely *Chamaecyparis* (Clark, 1916).

A series of 44 *Chamaecyparis* or *Chamaecyparis*-like fossils, ranging in age from late Cretaceous to Pliocene, is described by Kotyk *et al* (2003). Their paper chiefly concerns a new fossil species, *C. eureka*, which grew in swamp forests on Axel Heiberg Island in the Canadian Arctic (78° N.) about 45 million years ago, when the climate was warmer than today’s. The exquisitely-preserved remains of this tree resemble *C. pisifera* more than any other extant species of *Chamaecyparis*, but do not exactly match it. Our present species, *C. thyoides*, was present in New Jersey about 10,000 years ago, according to Watts (1979), who found fossil leaves and cones at Helmetta Swamp in Monmouth County.

Today there are five recognized species of *Chamaecyparis*, with *C. thyoides* along the east coast of North America, *C. lawsoniana* on the west

coast, *C. pisifera* and *C. obtusa* in Japan, and *C. formosensis* in Taiwan. Most are large trees, up to 150 feet (45 m).

Tracking the Atlantic white-cedar

Atlantic white-cedar is the smallest member of the genus, usually 60-70 feet (18-21 m) high and relatively slow-growing. It occurs in dense, pure stands or in mixture with hardwoods in swamps along river and streams, mainly near the coast. In New Jersey, it is our only obligate wetland tree species. It is found mainly in the Pine Barrens, but also occurs in isolated locations in the northern part of the state. Good specimens can be seen along North Lemon Road, south of park headquarters in Brendan Byrne State Forest, and at Cheesequake State Park, where a boardwalk traverses the cedar swamp. There is an isolated stand at High Point State Park, the farthest inland and highest elevation site where the species occurs (Mylecraine and Zimmermann, 2000).

Nationally, Atlantic white-cedar ranges from Appleton Bog, Maine, to

Ocala National Forest, Florida, and westward to southern Mississippi (Hardin *et. al.*, 1996). In early 2001, a Rutgers team collected cuttings and foliage samples throughout the entire range. They rooted the cuttings, and within two years had established three

Construction along the New Jersey Turnpike in 1998 unearthed many cedar stumps, of which the largest measured over five feet across.

provenance-test plantations in New Jersey and North Carolina. They also compared allozymes from 30 locations within the range, to determine the degree of relationship among provenances.

It is estimated that in colonial times, cedar occupied as much as 100,000 acres (400 km²) in New Jersey and about 300,000 acres (1200 km²) in



Courtesy of Rutgers University

Figure 1. White-cedar cuttings rooting in mist bed at Cook College Greenhouse, Rutgers University, New Brunswick, NJ.

North Carolina. There were extensive cedar forests in the Meadowlands; construction along the New Jersey Turnpike in 1998 unearthed many cedar stumps, of which the largest measured over five feet across. Today New Jersey's largest two specimens, both approximately 10 feet (3 m) in circumference, grow in swamps near Nixon Branch and Muskee Creek in Cumberland County. The national champion, 13 feet (4 m) around, is near Brewton, Alabama.

Atlantic white-cedar was prized for its decay-resistant wood, which was used for shingles, siding, boats, buckets, and channel markers (Little and Garrett, 1990). Many houses in Philadelphia and Baltimore were roofed with cedar shakes. The wood is used less extensively today because its supply is very limited.

Today's trees

Over the last 200 years there has been a significant decline in the area occupied by the species. Cedar swamps are valued now because of their ecological functions: they filter and purify water, mitigate flood and drought, and provide habitat for diverse bird, reptile, and amphibian species and several rare plant species.

Efforts underway today to restore cedar swamps are being led by foresters and ecologists at Rutgers University, Richard Stockton College of New Jersey, New Jersey Forest Service, North Carolina State University, and North Carolina Division of Forest Resources. Restoration has been most successful on sites formerly occupied by cedar, which grows best on muck soils underlain by sand or gravel. ▲

Both natural seeding and hand plantings are used for restoration; natural regeneration depends on an adequate seedbank in the soil or presence of mature, cone-bearing cedars within 100 yards (90 m) upwind. Planting can be done either with seedlings, which are difficult to produce, or with stecklings

C. thyoides 'Glauca' is a selection from the bluest forms found in the wild

(rooted cuttings), which are relatively easy (Fig. 1). The State Forest Tree Nursery at Jackson, NJ, produces 10,000 to 20,000 a year of these, using parent material from Brendan Byrne State Forest. In restoration efforts, great care must be taken to protect the young cedars from destruction by white-tailed deer; the most widely used devices are electric fences, which can be moved to new locations after the trees have grown above browse height.

There are several horticultural cultivars of *Chamaecyparis thyoides*. One, *C. thyoides* 'Glauca,' is a selection from the bluest forms found in the wild. These occur more often in the northern part of the species' range, from High Point, NJ to Appleton Bog, ME. Two others appear to be single clones which are vegetatively propagated: *C. thyoides* 'Andelyensis,' a relatively compact, heavy-coning cultivar; and *C. thyoides* 'Heatherbun,' a low-growing, round-headed cultivar with juvenile needles which feels soft and fuzzy to the touch. ▲

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About the authors:

Kristen Mylecraine expects to complete her Ph.D. this Spring at Rutgers University. In 2000, she wrote the *Atlantic White-cedar Ecology and Best Practices Manual* now used by the New Jersey Forest Service.

Dr. John Kuser is Professor Emeritus at that institution, having spent his academic career studying forest genetics and urban forestry.

For the past five years, the two have traveled the entire range of Atlantic white-cedar, collecting plant samples from Maine to Florida and west to Mississippi. From that data, Kristen devised a dendrogram showing the relationships between the populations, which will be published at a later date.



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Chamaecyparis in Iowa and the Upper Midwest

by Gary Whittenbaugh

The *Chamaecyparis* of choice for this area is *Chamaecyparis pisifera* and its cultivars. The most popular one seems to be 'Boulevard.' It is a nice plant but like some of the other *pisifera* cultivars it is better as a young plant than an older plant. However this is not all bad, as

*Do as I say, not as I do,
and don't grow C. obtusa –
they'll just break your heart*

they are relatively inexpensive and make wonderful filler plants. If used correctly, as some of the slower growing and more choice miniature and dwarf conifers get larger and plants such as 'Boulevard' or other *pisifera* start to look a little shabby they can be removed. We love to remodel our kitchens, bathrooms, and even the whole house every so often so why not remodel our landscape or garden every 15 to 20 years or so.

Some of the *Chamaecyparis pisifera* cultivars we have here in Franmara Garden that seem to retain their charm as older plants are 'Gold Spangle,' 'Golden Mop,' 'Plumosa Compressa,' 'Sun Gold,' and my favorite 'Snow' (see photos, inside front cover). One thing I have noticed about 'Golden Mop' is it seems to

have a tendency to burn when first planted but after established it is fine. Some plants seem to be more prone to burn than others.

I do have about ten different *Chamaecyparis obtusa* growing in Franmara Garden here in Oelwein, Iowa. However I tell visitors to the garden do as I say, not as I do, and don't grow *C. obtusa* – they will just break your heart. They may go seven or eight years then we will have a winter when the temperatures may reach minus 25 and the foliage will burn. I use them quite often in my trough gardens and they always come through the winter in fine shape. The reason for this being during cold weather I can place them out of the wind and winter sun. Some of the *C. obtusa* we have had in the garden for over five to ten years are 'Elf,' 'Gazebo,' 'Nana' (very good in troughs), 'Nana Aurea' (planted over fifteen years ago) and 'Rigid Dwarf.'

The only *Chamaecyparis thuyoides* we have is 'Heatherbun', which is doing nicely. I have tried 'Red Star' and 'Top Point' (both rated hardy in Zone 4) but they always burn badly. Surprisingly I have had some success with *Chamaecyparis lawsoniana* particularly in trough gardens. I have the cultivar 'Snow White' which has been in the garden for



Gary Whittenbaugh

In contrast to the more traditional landscape uses of *Chamaecyparis* (see inside front cover), this *C. obtusa* 'Nana' grows in a crevice and is highly recommended for troughs.

over six years and went through a winter of minus 25 and is looking good. But I wouldn't bet the farm on many *C. lawsoniana* doing well in Iowa or any place else here in the upper Midwest. ▲

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Conifer Society Slide Sets Available to Members for Local Presentations



Would you like to talk to your garden club or social organization about gardening with conifers?

Two slide sets featuring attractive plant combinations and design ideas are available to Conifer Society members. Many of the images come from the collection of Charlene Harris.

Contact coordinator Byron Richards to borrow the slides via e-mail at barhr@cytechcis.net or call (828) 696-0801.

Chamaecyparis nootkatensis ‘Bridal Veil’

We discovered the plant at our nursery about 12 years ago. It probably resulted from a bud sport of *Chamaecyparis nootkatensis* ‘Pendula.’ As a young graft, it was noticeably different so we kept it for observation. Over the years it has developed its own unique character and is now about 10 feet wide and 18 feet tall.

The primary branching habit is open and airy compared to other weeping Alaska-cedars. The secondary branchlets are quite closely spaced along the main branches and hang straight down, giving the appearance of a fan or veil, hence the name ‘Bridal Veil.’

The plant retains a dark sage green throughout the year with no winter yellowing, and we’ve seen no evidence of pest or deer damage.

We propagate this plant by side grafting the scion onto *Juniperus chinensis* ‘Hetzi’ in January or February. We feel the juniper understock reduces cold weather root injury and root rot.

– Andy and Carol Duvall, Duvall Nursery. South Lyon, Michigan



Duvall Nursery

Chamaecyparis nootkatensis ‘Bridal Veil’ at Duvall Nursery in Michigan.

CONIFER PUZZLE PAGE



Maud Henne from Charlottesville, Virginia, poses this trivia challenge:

Which plant is known as the smallest naturally occurring conifer (species, not cultivar!) in the world, and where is its native habitat?

Maud is offering a prize to three members who send her the correct answer by May 15th. Have you seen the beautiful conifer-themed notecards she creates? You could win a set of notecards if you know the answer to this puzzle!

If she receives more than three correct responses, she will conduct a random drawing to select the three winners from those responses.

Send your guess to:

Maud Henne
1670 Milton Rd.
Charlottesville, VA 22902
Lamina72@aol.com

GOOD LUCK!

PHOTO CORRECTION:
Cedrus deodara
‘Silver Mist’



John Routa

John Routa bought this *Cedrus deodara* ‘Silver Mist’ from Blue Sterling Nursery in 2000 for his garden in Marysville, Pennsylvania. He reports that, of their 120 conifer cultivars, this is his wife’s favorite plant.

Editor’s Note: We regret that the wrong ‘Silver Mist’ Deodar cedar was pictured with John’s caption on the inside back cover of the Winter 2004 issue. Here is the beautiful tree that he and his wife enjoy so much!

Hands Across the Sea

British Conifer Society plans Web site, journal to share the region's horticultural treasures with the world

by Derek Spicer

As some of you are aware, we have formed a Conifer Society in Britain. How ironic that with our history of botanical exploration and dwarf conifer collecting, we are 20 years behind you in getting started! I can remember some of us saying back in the early 1970s that we ought to have a society but nobody had enough time, so we missed an opportunity and a generation of enthusiasts passed on.

Daniel Luscombe and myself discussed the matter again while in New Caledonia on an International Dendrology Society Tour after the Auckland Araucariaceae Symposium. In February 2003, we gathered a group of enthusiasts for an inaugural meeting and formed our initial committee. The generous offer of office facilities by Bedgebury National Pinetum enabled us to get

started in Spring 2003 with minimal financial backing.

We seem to have been very fortunate with our coincidental choice of committee members. Chris Reynolds, curator of Bedgebury Pinetum, brings a forestry background. Our secretary, Daniel Luscombe, is the horticulturalist at Bedgebury and brings down the average age of the committee quite a lot. Our treasurer is Stephen Grubb. Stephen is one of our foremost collectors of dwarf conifers and is already known to a number of American members. We also have three enthusiastic and experienced nurserymen (i.e. we are all getting old) with plenty of committee experience and diverse interests – John Tate, John Tilbury, and myself.

Stephen's influence has already

brought about a strong sense of friendliness and cooperation between the British and American societies. Bill Barger in the U.S. has generously offered to develop our Web site and we hope to have a direct link to yours. I suspect that we will develop along similar lines but with subtle differences. (There

How ironic that, with our history of botanical exploration and dwarf conifer collecting, we are 20 years behind you in getting started!

is no shame in mimicking the success.) Initially we are only able to afford to publish two journals each year, but we hope to increase this number as our membership grows and provides more time, expertise and funding. I am hopeful that the tone of our publication reflects the diverse interests of the conifer world and bridges the gap between the dwarf conifer enthusiasts, academics and the tree enthusiasts.

We have a rich heritage of arboreta and old collections of conifer varieties. This will enable us to have a full program of one day and weekend visits. This is fine for our domestic members but I hope that visitors from abroad will be able to join in or use the reports to plan their own itineraries.

Britain's wealth of conifers

It is worth noting that, although we have only three native conifers in Britain, our

Chamaecyparis cultivar history rooted in Britain

Gardening and the popularity of rock gardens in the Victorian era beginning around 1850 encouraged the selection of smaller growing shrubs and dwarf conifers. By 1923, Murray Hornibrook's book *Dwarf and Slow-Growing Conifers* listed 230 varieties. Many of these were witches' brooms, but increasingly nurserymen were selecting dwarfs and colorful varieties from seedlings.

It is pertinent that *Chamaecyparis* is the theme for this issue of the *Conifer Quarterly*. The genus has been incredibly successful in the British climate. Your own native *Chamaecyparis lawsoniana* can be seen growing well in all parts of the British Isles. The fact that it is flourishing should be of some comfort to those of you concerned about threats to the wild population in Oregon. The species was introduced to Britain in 1854, and within a few years many different forms had been selected. By the 1960s it had become synonymous with the word "conifer" for many British gardeners (though it was likely supplanted in the 1990s by the Leyland cypress).

While probably excessive, there are now over 600 varieties named, many of which were originally selected in Britain during the early days. However, most of the older cultivars were discarded as succes-

(continued on page 27)

Chris Reynolds (left) and Derek Spicer attended our own Conifer Society's national meeting in Denver, Colorado, last July. Their visit generated a lot of interest in the new British Conifer Society from our American members.



***Chamaecyparis* cultivar history rooted in Britain (continued)**

sive batches of seedlings yielded better colors and shapes.

It is interesting to note the differences between the types of conifer cultivars selected and used in British and American gardens. You have a rich population of native species and so have been able to continue selecting witches' brooms from firs, pines and spruces. This was really brought

*Selections displaying
bright yellow, blue and
winter-russet foliage
were emphasized over
those with unusual form*

home to those of us at your National Meeting in Denver, Colorado, last year where we saw just a fraction of Jerry Morris's achievements.

In Britain, the introduction of *Chamaecyparis lawsoniana* – and *C. obtusa*, *C. pisifera* and *C. thyoides* at about the same time – triggered an explosion in cultivar numbers. *Thuja* species were also involved. The vast majority of these new cultivars were seedling variations and sports rather than brooms. Selections displaying bright yellow, blue and winter-russet foliage were emphasized over those with unusual form.

One nursery in particular deserves a mention for its contribution to the

dwarf conifer scene. W. H. Rogers of Red Lodge Nursery at Eastleigh near the South coast of England introduced the dwarf yellow *C. lawsoniana* 'Aurea Densa,' *C. lawsoniana* 'Minima Aurea' and *C. lawsoniana* 'Lutea Nana,' all seedlings from an unknown taller yellow cultivar.

In the 1920s a mature plant of *C. obtusa* 'Nana Gracilis' set seed for the first time, and from the seedlings the famous and extremely dwarf "Tennis Ball cypresses" were selected. This seemed to inspire a wave of conifer collecting that reached its peak in the 1960s and '70s. Humphrey Welch's *Manual of Dwarf Conifers* was published in 1979.

A little later there was a surge of interest in slow-growing and colorful forms of *Chamaecyparis*, *Juniperus*, *Cryptomeria* and *Thuja*. These were often grown in association with heather, a combination popularized by Adrian Bloom.

We have always benefited from a steady arrival of new forms from continental Europe, especially Holland and Germany. There now seems to be a resurgence of interest by the collectors in dwarf forms of pine, spruce and fir, especially from North America. Perhaps our two societies can work together to solve the problems of import restrictions.

The British Conifer Society will have around 100 members at the end of its first year. I believe this modest beginning is similar to that of your organization, so we look forward to the future with optimism. – D.S.

(continued from page 25)

extremely varied climate enables us to grow more of the world's conifer species than any other comparable area. Pines and spruces were introduced from continental Europe beginning in the 1500s. Introductions from further afield included pines and firs from Eastern

*Our extremely varied
climate enables us to
grow more of the world's
conifer species than any
other comparable area*

North America in the 1700s. Plant collecting, largely by Scottish plantsmen, began in earnest in Western North America and the Himalayas from 1800 to 1850, and Japan and S. America from 1850 to 1900. Significant plants from China were introduced from 1900-1930 and has recently resumed.

Several arboreta, now quite extensive, were established in the nineteenth century and many smaller pinetums were planted. All of this activity was fueled by the Victorian enthusiasm for collections. Domestic conferences on conifers were held in 1891 at the Chiswick RHS garden and in 1931 and 1970 at the RHS halls in London. A truly international conifer conference was hosted by Wye College, Kent in 1999. In retrospect, with all that interest and our history of forming gardening and other specialist societies – the RHS is 200 years old this year! – it is puzzling that a conifer society was not established.

These early activities have left us a wonderful legacy of mature trees from all over the world; many of these plants are part of less well known collections or exist as individual trees. I suspect that many of us do not realize quite what valuable resources we have here.

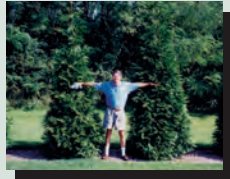
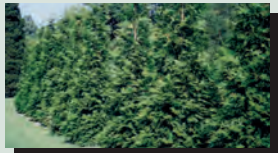
We hope to send regular updates on our progress to the Conifer Quarterly and highlight notable plant collections in our own journal. Whether or not you have visited Britain before, we will help and guide you as much as possible so you can share the most interesting features of our conifer landscape. ▲

About the author: Derek Spicer is a founding member of the British Conifer Society and is presently serving as the organization's chairman. He entered the trade in 1970, running his nursery part time while employed as a Metal Trader. Having earned degrees in botany and taxonomy, Derek's plant interests have evolved from Arctic plants and alpine to dwarf and ornamental conifers, and now he is most fascinated by seeing conifers in the wild.



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The above 3 pictures were taken at the National Arboretum in Washington D.C. in August of 2001. When planted in the fall of 1998, they were 3 feet tall and planted on 6 1/2 foot centers. They grew 3 feet in the first year (1999), and are now 10-12 feet tall. It can be trimmed to any height or width to create the ultimate natural or formal hedge.

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Robert L. Tomayer



May 2, 1920 – January 10, 2004

About 20 years ago, I came across the wonderful Wavecrest Nursery in Michigan, created by Robert Tomayer. Over the years he became a cherished friend, and we traded many plants.

One year he gave me a seedling viburnum that looked like *Viburnum sieboldii* except that the foliage was very large and heavy, and the fall color was fire-engine red. Along came Dr. Harrison Flint, an expert who had written excellent articles on viburnums. He walked around the plant, crumpled a leaf under his nose, took a sniff and proclaimed that yes, it was *Viburnum sieboldii*. Thus was born *V. sieboldii* 'Wavecrest,' a cultivar now listed by Dr. Michael Dirr in the latest edition of his *Manual of Woody Landscape Plants*.

Being around Bob was always a treat. He was so knowledgeable and so very kind and generous – the epitome of a wonderful nurseryman. I always came away having learned something new. He was a true master at grafting and taught me to graft some of my own trees and shrubs.

His passing is a great loss to everyone who knew him.

Gene Coffman
 Bellevue, Iowa

I got to know Bob pretty well during the last five years. We frequently compared propagation strategies, though I must admit, I was more often on the receiving end.

One of those most memorable experiences I had with Bob occurred during the Central Region's meeting in 2002 hosted at his nursery, Wavecrest. The Sunday following the meeting was yet another, hot, desiccating summer day. Bob was not exactly chipper that day but, as always, mentally active. He said to me, 'Let's get in my truck and I'll show you the field beds.' So we took off. The field beds were virtually pure sand, so it was not exactly a smooth ride, but Bob didn't seem to mind as he was more focused on showing me plants.

He showed me some of his unique grafting techniques, the most famous of which were the multi-grafted weeping larches. We also visited the original Concorde barberry (*Berberis thunbergii* 'Concorde'). All in all, we spent more than an hour spinning around in the sand, and I saw things I'd never seen before even though I've been around a bit. It was always an education with Bob.

Who will replace Bob? Do we have a generation of young and committed plantsmen waiting in the wings? Unfortunately, our brightest young minds in the field of horticultural science seem to gravitate away from practical horticulture. Simply put, Bob was unique, for he combined scientific theory with art and craftsmanship.

Richard A. Larson
 Propagator
 Dawes Arboretum

The Art and Science of Grafting: A Demonstration by George Okken

by Anne M. Brennan

Grafting expert and member George Okken stresses sharp knives and straight cuts for best results

Which aspect of woody plant grafting is the most difficult to master? Choosing the right understock can be confusing. Then, one must decide where to cut – how high on the understock, and on which side? Once the cuts are made, what if the understock’s cambium

Plants have been known to thrive for years after grafting, only to suddenly die after 10 years or more

doesn’t match the scion’s? And then there’s the “tying off” that can seem impossible without a third hand.

As rubber bands flew and knives glinted in George Okken’s propagation greenhouse in Pompton Plains, New Jersey, about a dozen Conifer Society-member students tested their hand-eye coordination while George demonstrated his technique. Connecticut member Stanley Eyre helped to organize the event.

Why graft?

“Grafting is a form of cloning,” George reminded the group, so a grafted plant possesses exactly the same genes as the

source plant and will display the same physical characteristics. While this is also true of plants grown from rooted cuttings, grafting can be a more efficient way to propagate difficult-to-root cultivars.

In some cases, the species of understock used for the graft can influence the growth rate or hardiness of the overall plant, which can add value to that plant. On the other hand, plants have been known to thrive for years after grafting, only to suddenly die after 10 years or more when the area where the graft occurred suddenly stops transporting materials from the roots to the top growth.

George makes a two-part recommendation to reduce the incidence of graft failure after the plant is installed in the landscape. First, graft as low on the understock as possible – that is, close to the soil. When planting outdoors, situate the plant so that the graft union is one inch below the soil surface. “The scion has a very good chance of rooting,” says George, after which the original rootstock will no longer be needed and will disappear, leaving a plant on its own roots with a better chance of long-term survival.

“Some people prefer to make high grafts, such as to produce standards,” noted Stanley, referring to certain dwarf

or weeping forms that are held off the ground by a long, branchless trunk. But unless there is an aesthetic reason for doing so, he and George agree, low grafts are superior since they can be buried just below the soil surface.

Plant preparation

Grafting requires planning in terms of both tools and plant materials. George buys seedlings in tree tubes a year in advance to use for understock and keeps them in his nursery under 50% shade. Shortly after the plants’ arrival, he removes the lowest side branches and prunes excess root growth to increase their suitability. Some must be discarded due to poor health or shape; a sickly understock is unlikely to produce a successful graft, George contends.

Once these seedlings go dormant in winter, he moves them into the 58 °F

(14 °C) propagation greenhouse for two to three weeks before grafting begins. He wants to see new healthy root growth starting before he begins.

At Okken Nursery, the grafting marathon begins with maples since they

While success in grafting does rely somewhat on the grafter’s own technique, there’s no getting around the need for a very sharp knife!

break dormancy earlier than the conifers, so the window of opportunity is shorter. For all species, the scion material (taken from the plant he wishes to propagate), is grafted while dormant, since an actively growing shoot would likely die from desiccation long before the graft successfully heals.

Knife tips

While success in grafting does rely somewhat on the grafter’s own technique, there’s no getting around the need for a very sharp knife! You will need to sharpen yours before you begin and frequently while you work. If you will be buying a new knife, keep the following in mind:

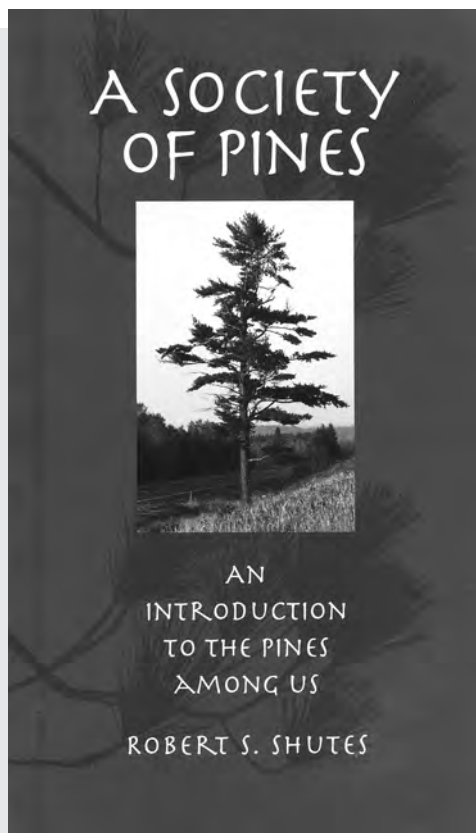
- A carbon-steel blade can be sharpened to a finer edge than can a stainless-steel blade. Most folding pocket knives are stainless steel because they

George looks for new root growth on his understock plants.



Tony Green

Every forest is filled with characters – some delightful and some that are better left alone



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do not rust and are more practical for other uses, so George does not recommend them for grafting.

- For this type of grafting, sometimes called side grafting, the knife blade must be flat on the back and beveled on the front. This allows control over the depth and direction of each cut. It also means that a left-handed person will need a left-handed knife.

Before attending the workshop, I bought a \$25 knife packaged and sold as a grafting knife at a well-known local garden center. Unfortunately, the knife has a double-sided, stainless-steel blade – two thumbs down from George. This type is apparently intended for bud grafting, in which the point of the knife is inserted straight

into the bark to make a shallow T-shaped cut so the bark flaps can be peeled back. So for George's workshop, the inexpensive, red-handled pocket knife I'd brought as backup worked better, simply because it had the flat-backed blade.

Making the cut

Some of us were starting to realize this was a lot more complicated than we re-



Tony Green

Above: A straight, smooth cut made in one quick motion is essential for maximum contact between the scion's and understock's cambium layers, but it takes practice.



Tony Green

Left: George recommends grafting as low on the understock as possible.

alized, with so many possible pitfalls to avoid. But the returning attendees reassured us that it would be fun, and the trays of cut plant material and potted understocks waiting on the benches in front of us reminded us why we were there. We watched intently as George pulled out his knife and started slicing.

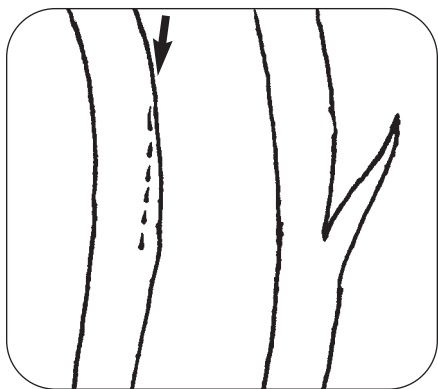


Figure 1. When you cut into the understock, you must keep the knife almost perpendicular to the stem. Avoid gouging.



Figure 2. Cut the scion so the exposed surface will be the same length as the understock cut.



Figure 3. A much smaller, second cut on the opposite side of the scion allows a better fit when the scion is inserted into the understock.

First, George made a cut on the convex (outward-curving) side of a spruce understock plant, as low as possible on the stem. He kept the knife almost perpendicular to the stem; starting the cut at too deep an angle will gouge the wood and the cut will not be flat (see Figure 1).

“The cuts you make must be straight,” he insisted. “No bevels, or you won’t get good contact between the cambium. You don’t want air pockets.”

Next he took a spruce scion of the same caliper (stem size) from one of the trays. Similar size is important because it allows better matching of cambium layers when the scion and understock are joined. He identified the convex side and cut all the way through the wood at the same angle as the understock cut (see Figure 2).

Finally, he made a small second cut on the opposite side of the scion, to remove a small part of the tip left by the

first cut. This allows a better fit when the scion is inserted into the understock and covered by the understock’s flap (see Figure 3). Sure enough, when George inserted the scion into the cut in the understock, they matched perfectly.

“The hardest part may be wrapping the graft union,” said Stanley, looking ahead to the next step, “but the art is in making the proper cuts.”

Banding together

One more demonstration was in order before we tried this ourselves. The process of tying off the graft is meant to

close the wound, conserve moisture and apply pressure to the exposed cambium surfaces so they will heal as intended. Grafting bands are short, narrow rubber bands about three inches long before they’re stretched.

While the exact motions George recommends to wrap and secure the graft – without letting the scion slip out of position – are difficult to describe exactly, I can pass along a few important hints:

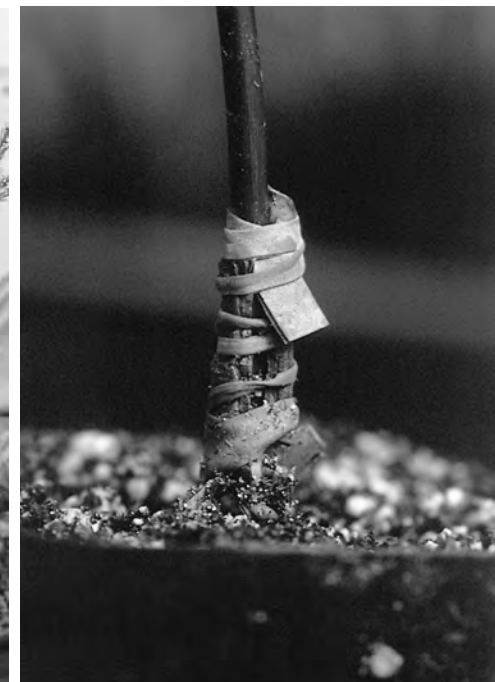
- While pressing one end of the band against the top of the graft union, stretch it as much as possible while

Below left: It’s important to stretch the band taut before you start wrapping the graft union. This holds the graft together more tightly.

Below right: A properly tied-off graft includes a small loop or tab. Simply pull on the tab to release the band after the graft heals.



Tony Green



you wrap it three to four times around the graft. This pulls the scion and understock together and still leaves extra length at the end of the band to secure it.

- To keep the band from unraveling, you must secure the loose end beneath the final “wrap.” George manages this by holding two fingers of his left hand alongside the stem during the final wrap of the band, so that the fingers are wrapped along with the stem. Then he uses these two fingers to pull the end of the band through, ideally leaving a small loop for easy removal of the band once the graft has healed.

Helping to heal

Now, what was to become of our little creations? They would need time to recuperate from their surgery, and George has just the place.

After we labeled our plants for retrieval in three months, George buried the pots in bottom-heated greenhouse benches filled with a 50/50 peat-perlite mix and watered them in. In doing so, he situated the graft unions beneath the surface where the surrounding media would prevent desiccation as the tissues healed. If we were lucky, at least some of our scions would flush with new growth by the time we returned to claim the plants in May. If not... well, there's always next winter!

Like any physical skill, grafting requires a lot of practice. One must

Buried beneath a 50/50 peat-perlite mixture, the graft unions are protected from desiccation during their twelve-week healing process.

become comfortable using a sharp knife, learn to anticipate the amount of cutting resistance encountered with various plant species, and reach a certain level of proficiency in tying off the grafts. (Beware of airborne rubber bands!) Perhaps we should have spent a couple of hours just cutting up twigs and tying the pieces together before we attempted a live graft. But fear of failure aside, working with living plant material is no doubt the best way to learn – and the most rewarding, if any of the grafts succeed!

George Okken invites interested Conifer Society members to contact him with questions about grafting at (973) 835-5189. ▲




Tony Green

About the author: Anne M. Brennan is Editor of the *Conifer Quarterly*. Though unsuccessful at grafting apple trees in

college, she remains optimistic that some of her conifer grafts from the recent workshop will flourish.

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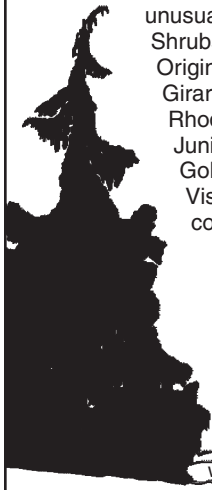
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One Acre in Rochester

by Gerald P. Kral

Three hundred conifer cultivars and rarely seen companion plants await Northeast Region meeting attendees this Fall

My first conifers were a pair of weeping Norway spruce (*Picea abies* 'Pendula') purchased over 20 years ago. Fourteen genera, 55 species and over 300 conifer cultivars later, I admit to a serious case of Addicted Conifer Syndrome.

Try to find the Secret Garden ... Listen to the splashing water in the Alpine Stream Garden

Terraced, raised fieldstone beds greet visitors as they approach the front yard. These beds display a forest of rare and unusual conifers, shrubs, small trees, grasses and perennials. Conifers of note include a specimen-size *Abies koreana* 'Silberlocke' (Korean fir), the windswept silhouettes of two 15-foot (4.5-m) *Picea pungens* 'Iseli Foxtail' (Colorado spruce), an *Abies pinsapo* 'Aurea' (Spanish fir) and a golden fountain by the name of *Juniperus x pfitzeriana* 'Gold Lace #2' (Pfitzer juniper). The original pair of *Picea abies* 'Pendula' also stand among this group.

The terraced-bed theme continues in the backyard where more than a quarter-mile of meandering, bluestone pathways lead visitors through dozens of "garden rooms." Aesthetic appeal is emphasized here, as hundreds of conifers are dis-

played with over 300 taxa of companion plants. Try to find the Secret Garden. Listen to the splashing water in the Alpine Stream Garden. Stop to enjoy the Goldfish Pond, the Dragon Fountain Garden and the Fat Cat Garden. Unusual statuary includes a fiber-optic harp and a five-foot praying mantis, and benches along the way encourage contemplation.

Notable plants include redbuds (*Cercis canadensis*) 'Covey' and 'Forest Pansy' as well as Chinese dogwoods (*Cornus kousa*) 'Gold Star,' 'Wolf Eyes' and the weeping cultivar 'Elizabeth Lustgarten.' Over 30 cultivars of Japanese maple (*Acer palmatum*), including 'Oridono Nishiki,' are displayed in the garden. Outstanding Japanese cedars (*Cryptomeria japonica*) include an 8-foot 'Sekkan,' a 14-foot (4-m) 'Cristata' and a teenaged 'Spiralis.'

Canada hemlocks (*Tsuga canadensis*) 'Cole' and the rare 'Betty Rose' are featured, and unusual cultivars of boxwood (*Buxus*), holly (*Ilex*), euonymous, rhododendron and hydrangea abound beneath the dappled canopy of a grove of black locust (*Robinia pseudoacacia*) reaching 120 feet (36 m) high.

Recent changes

The winter of 2002-'03 claimed some choice specimens and damaged others. Freezing damage to a 12-year-old coral-bark Japanese maple (*Acer palmatum*

'Sango Kaku') left the tree's bark completely separated from the underlying wood and the plant did not survive. Another cultivar, 'Oridono Nishiki,' was severely damaged in the same manner, but enough bark remained viable to permit the tree's survival after two-thirds of it were removed. Several Japanese cedar (*Cryptomeria*), Japanese black pine (*Pinus thunbergiana*) and Japanese red pine (*P. densiflora*) suffered winter burn but all candled well and have survived.

The removal of a 75-year-old yew (*Taxus*) hedge from the front of the house provided room for two new gardens. The hedge was a bear to maintain, quite overgrown and – as we discovered during its removal – was the cause of some serious structural damage to the

The huge witches' broom on this *Picea abies* 'Pygmaea' serves as a show-and-tell example for inquisitive visitors.

house. Initially I was hesitant to destroy such old shrubs, but the excitement of clearing a new canvas for unusual plants quickly doused any regrets I had.

People who tour my gardens and see the hundreds of conifer taxa on display

The topic of witches' brooms invariably arises, and I often wished I had an example of one to better explain what they look like.

often ask where all the different kinds come from. The topic of witches' brooms invariably arises and I often wished I had an example of one to better explain what they look like. Finally I was able to obtain a 5-foot (1.5-m) dwarf Norway spruce (*Picea abies* 'Pygmaea') with a huge witches' broom comprising



Gerald P. Kral

at least half the plant (see photo). While the plant pushed its usual two inches of annual growth, the broom pushed only 0.25-0.5 inches (0.6-1.3 cm) – a great example I can show to curious visitors.

In the same planting area in front of our house, I added an unusual weeping



Gerald P. Kral

Chamaecyparis nootkatensis 'Van den Akker'

Alaska-cedar (*Chamaecyparis nootkatensis*) called 'Van den Akker' (see photo). At a height of 15 feet (4.5 m), it may not sound appropriate for a foundation planting but as you can see, it has no horizontal branching and is less than 18 inches wide with all foliage weeping straight down. I consider it to be the ultimate vertical statement that adds drama and excitement to this garden bed. I've also added three 25-year-old specimens of Chinese elm (*Ulmus parvifolia* 'Hokkaido'), grouped forest-like and underplanted with miniature ferns and *Astilbe*.

Only 12 years in the making and designed almost entirely by my wife Karen and me, the garden has been featured on a local public television special, *The Secret Gardens of Rochester*. We recently hosted the 100th tour of our garden by local, regional, national and international garden groups. Visitors have included Michael A. Dirr, Allan M. Armitage, Daniel J. Hinkley and Tony Avent.

We're looking forward to seeing you during the Northeast Region meeting in September! ▲

About the author: Gerald Kral retired from 27 years as a high school science teacher in 1993. Jerry and his wife, Karen, garden on a one-acre parcel in the city of Rochester, NY. The garden was begun in 1993 to indulge Jerry's severe case of "Addictive Conifer Syndrome," and Jerry has been a member of the Conifer Society since 1996.

LETTER TO THE EDITOR

Searching for photo of mature *Abies lasiocarpa* 'Du Flon'

In 1989 after freedom was restored in my country, I reported in the Czech Rock Garden Club periodical *Skalnicky* on the pretty American fir cultivar *Abies lasiocarpa* 'Du Flon.' I published the article under the English title "Challenge" to describe this beautiful miniature conifer. My contribution then was based on information compiled from a 1985 ACS *Bulletin*. I was taken in first by its "story." (The story is an integral part of any cultivar, without which it would not be complete – at least for me.) That is, however, not the reason for my writing this letter. It is respectful of the cultivar's portrait.

Because a good quality photo was not available, I did not include one in my article and thus introduce the plant to Czech readers in all its beauty.

Since 1989, many things have changed, and a few 'Du Flons' have found their way to our specialists' gardens, but they are young plants and not yet too photogenic. I still feel indebted to readers of *Skalnicky* for the absence of its picture, so I wonder if

there exists any good color photograph of the mature *Abies lasiocarpa* 'Du Flon' in the Society's possession for reprinting. If not, would you kindly publish an appeal in the *Conifer Quarterly* for furnishing one?

Sincerely,
Jaroslav (Aousek) Kazbal
Slezská 98
13006 Praha 3
Czech Republic

If you are able to send our fellow member a color photograph of *Abies lasiocarpa* 'Du Flon,' please send it directly to him at the address above or contact the Editor, Anne Brennan, who will forward it to him.

Thanks in advance for your help!

– Anne Brennan, Editor

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Central Region Builds on Past Success with Local Gatherings and Tours

by Gary Whittenbaugh, Central Region President

Exciting news and opportunities abound for members in the Central Region this year.

This year the National Meeting is “The Meeting” in the Central Region.

Mark your calendars for the first weekend in August, and join us at the Dawes Arboretum in Newark, Ohio for a Conifer Short Course. Here is your chance to come visit with people you read about or see in the Conifer Quarterly but have never met.

Don't miss this opportunity. Details and photos are now on the Conifer Society Web Site and registrations will be mailed to all members in late spring.

In lieu of a regional meeting we have several local one-day events being planned. Conifer Society members are welcome to join us for any of the following events.

Iowa: June 13th

Ellen and Jim Kelley will host the 2004 Garden Rendezvous in Bettendorf, IA, which is located in eastern Iowa on the Mississippi River near the Quad Cities.

In addition to the Sunday events, there are plenty of gardens in the area. Less than 30 minutes from Bettendorf, you could visit The Heartland Collection of Conifers at the Bickelhaupt Arboretum in Clinton plus several local member gardens noted for conifer collections. I invite everyone to the Rendezvous.

Michigan

Plans are in process for a three-day whistle stop tour of Michigan in mid-June.

Friday, June 18th - Kicking off my trip I'll visit Fernwood Botanical Garden and Nature Preserve for their 40th Anniversary Celebration where I've been asked to give a Trough Gardening demonstration Friday Morning. To celebrate their 40th Anniversary, Fernwood is open to the public at no charge from 10:00AM-6:00 PM the third weekend in June with complimentary refreshments for all visitors. Fernwood is located in the southwestern corner of Michigan near the town of Niles.

Saturday, June 19th - I'll travel north to participate in the first Iosco County Master Gardener Rendezvous in Tawas City. Trough gardens and conifers will be the focus of this Rendezvous with garden visits to top off the day.

Sunday, June 20th - My trip to Michigan will wrap up with a trough making and planting session for the Great Lakes Chapter of NARGS at Saguaro's Nursery and Gardens near Ann Arbor, MI.

Minnesota: June 23-26

The Tri State Master Gardener Conference in St. Cloud, Minnesota will feature a presentation on “Gardening With Conifers” plus a program on “Trough Gardening”. This is a super conference with many speakers and garden tours.

Western Region Update

by Randy Oster, Western Region President

On Saturday, Oct. 4, 2003, the Western Region fall event, “Northwest Conifer Craftsmanship,” was hosted by Monrovia Nursery in Dayton, Oregon. The stunning courtyard setting at Monrovia found 110 guests mingling among waterfalls and plant displays on a beautiful fall afternoon. The group's enthusiasm was peaked by the tours, panel of speakers and plant auctions.

Monrovia staff led us through their propagation areas where we were provided with demonstrations ranging from grafting to rooted cuttings. The opportunity to view a large-scale production facility presented us with many ideas for our own projects.

Our distinguished panel of experts included Vern Holden, who provided us with a detailed look at the benefits and the nuts and bolts of Hot Callus Tube Propagation. Jason

Julian from Monrovia Nursery shared information regarding propagation trials and techniques in use at their facility. Tom Fetting of Jeff Viers Nursery Supply spoke to us about a complete line of products for conifer propagation, explaining each product and its use.

The Verbal and Silent Auctions were a much-anticipated success. Larry Stanley and Don Howse shared auctioneer duties while Cindy Lou Pease presided over the can raffles. Thanks to all of our plant donors who supported us with plants for the auctions!

Denim shirts and hats embroidered with the Conifer Society logo were a big hit and provided an additional avenue for fundraising.

The Western Region is blessed with a great group of folks who love to make these events informative, profitable and fun!

If you are interested in more information about these or other events in the Central Region, or if you would like to plan a Garden Rendezvous, contact me at (319) 283-3050 or Email franzmar@trxinc.com.

The Central Region 2005 Meeting will be in the Minneapolis, Minnesota area, June 24-26th. The Minnesota Landscape Arboretum and Lyndale Park

Rock Garden are on our program. We are looking forward to our first ever meeting in the “Land of 10,000 Lakes”.

In closing I would like to introduce three new state representatives: Charlene Harris (Michigan), Terri Park (Indiana), and Richard Rodich (Minnesota). Rick's first job has been helping with the preparations for the MN meeting. Thanks Charlene, Terri, and Richard. ▲

Northeast Region To Visit The "Flower City"

by Elmer Dustman and Gerald Kral

Rochester, New York, earned the nickname "Flower City" in 1860 when more than 2000 acres of the city land was devoted to the nursery and seed industry. The region included growers of fruit, ornamental and evergreen trees, annuals and perennials.

The Ellwanger & Barry Nursery became what is reported to have been the largest in the nation and later gained recognition for helping to develop the nursery trade. Wholesale distributors were established and stock was shipped by Erie Canal, railroad and mail order to developing areas of the country.

The jewel of Rochester's arboreta and park system, Highland Park, began with donated nursery land and a design by Frederick Law Olmstead. Once Durand Eastman Park and Genesee Park were added, the park system became a testing ground for woody plants from China via the Arnold Arboretum, and many mature specimens can be observed today.

The Rochester park system distributed thousands of seeds, plants, trees, shrubs, scions and cuttings to hundreds of botanical and horticultural institutions throughout the United States and abroad. The largest institutional distribution was a 10,000 pound shipment of seeds and small plants to the Royal Botanical Garden at Kew, New London, England in 1931.

This horticultural tradition remains alive and well, as you will see when you visit several Conifer Society members' gardens and arboreta this September.

The Oesterly Gardens

This two-acre, Japanese-influenced estate unveils one remarkable feature after another. Enclosed by a cedar fence and a viewing shelter is a dry Zen garden complete with raked gravel and a classical hill rock vista. A pathway takes you under a Torii gate and leads to a large Japanese feature. Indian runner ducks and koi may be seen swimming around a massive Japanese Lantern set into the pond itself.

Dozens of rare specimen-size Japanese Maples dot the rolling landscape, and large Tanayosho, Scots, Eastern white and Japanese black pines abound. Many of these conifers have been sculpted to reflect different styles of Japanese presentation. A large 15-foot bamboo grove and an Asian-style gazebo seem to transport visitors away from this Rochester suburb to a village in Japan.

International Bonsai Arboretum

William N. Valavanis's International Bonsai Arboretum is the finest in North America. Valavanis is an acclaimed Bonsai artist, and viewing his collection is an awe-inspiring experience. See conifers as you have never seen them before. Imagine a decades old Japanese pine clinging to a porous rock no larger than a basketball.

Valavanis has introduced numerous rare and unusual Japanese yatsubusa cultivars to bonsai enthusiasts throughout the United States and Canada. The Arboretum reflects over 40 years of Valavanis's work. Several hundred

Visit Marlowe Marcus' Garden and Support the Northeast Region!

Marlowe Marcus' garden will be open to the public on Saturday, May 22, 2004 as part of the Garden Conservancy's Open Days Program. This is a very intense collector's garden on one-half acre. It contains 1,000 cultivars, including 260 Japanese maples, 105 European beech trees (the largest collection in the U.S.), and 600 conifers, many of them miniature.

In the spring, which is the best time to see the garden, the colors of the maples are magnificent. The conifers include many rare specimens, and the colors range from yellows to various shades of green and blue. These colors are present all year. The European beech collection has about fifteen cultivars that cannot be found anywhere else in the U.S. at present.

The Garden Conservancy's Open Days Program supports the Conservancy's mission of strengthening the public's commitment to garden preservation by inviting the public to visit America's very best, rarely-seen private gardens. Part of the proceeds from the tour benefit the Conifer Society's Northeast Region; admission is \$5.

For more information about this event, visit the Garden Conservancy's Web site at www.gardenconservancy.org, or contact Harry Oefinger of the Northeast Region at 973-597-5810.

plants will be on display in an outdoor courtyard. On Friday evening, Valavanis will create one of his works of art before your eyes and the result will go home with some lucky raffle winner!

Oriental Garden Supply Nursery

Bring your truck, trailer or car with a large trunk. Even leave your clothing home – you'll need the room, as you won't be able to visit Oriental Garden Supply and leave without making a purchase.

Owner Al Pfeiffer, a fellow Society member, shares his passion for plants with us by offering for sale some of the most unique plant material available today. Seedling to specimen-size examples of hundreds of rare and unusual

taxa are for sale. Choose from 140 Japanese maple cultivars, 200 dwarf to landscape sized conifer cultivars and 25 varieties of Bamboo. Select specimens of beech, dogwood, ornamental grasses, ferns and perennials round out this feast of plant material. This is a nursery you don't want to miss! ▲

The meeting and tours will be held **September 17th & 18th**. Members in or near the Northeast Region will receive registration information by mail shortly. Others interested in attending are invited to contact meeting chairman Elmer Dustman at (585) 248-5156 or edustma1@rochester.rr.com.

Southeast Region Announces Itinerary for 2004 Conference and Tour

Dear Conifer Friends:

We're sending you this notification earlier than usual because the news is so exciting we just couldn't wait any longer to share it with you. Also, since this is a conference you will definitely not want to miss, we wanted to give you an early opportunity to put it on your calendar.

This year's Southeastern Region conference will be held in Raleigh, North Carolina starting on Friday, October 8th and running through Saturday evening, October 9th.

For starters, Raleigh is home to the

JC Raulston Arboretum. You plant lovers know it's almost impossible to pick up a catalog or garden book and not find the name JC Raulston. Unfortunately Dr. Raulston met an untimely death in 1996 but he left a garden legacy that is unrivaled in the Southeast. He was one of the pioneers in testing conifers for the south as well as working with commercial nurseries such as Iseli in an effort to select rootstock that would survive southeastern temperatures, high humidity, clay soil and drenching summer rains. Today this effort continues in high gear.

Your experience will begin Friday evening with a guest lecture by Dr. F. Todd Lasseigne, Assistant Director, JC Raulston Arboretum. Dr. Lasseigne studied under Dr. Michael Dirr and Dr. Raulston as well in the U.K. for 1 year.

We will travel to the personal gardens and nursery of another horticultural giant – Tony Avent

He has traveled the globe in search of new plants. On Saturday morning Dr. Lasseigne will treat us to a personal tour of the JC Raulston Arboretum (www.ncsu.edu/jcraulstonarboretum/) which contains over 7,000 taxa.

Following this unique experience, we will travel to the personal gardens and nursery of another horticultural giant – Tony Avent. Tony is the owner of Plant Delights Nursery www.plantdelights.com, which is an International Mail Order Business specializing in rare and hard to find plants. Tony's personal paradise, the Juniper Level Botanical Garden is connected to the nursery. You will not want to miss the opportunity to see this garden which is rarely open to visitors. One of the true garden gems found anywhere in the U.S.; it is a garden experience you will not forget. While there, we will be served a BBQ lunch and will have some time to stroll and enjoy the many unusual plants.

We are in the process of coordinating visits to two other major collections in the area and will have this firmed up by

June. Also, while in the area you can take advantage of numerous side trips. Significant among these are Camellia Forest Nursery, University of North Carolina Botanical Garden and Duke Gardens.

We are also in the planning stages for a round-table discussion on growing conifers in the South that would start Saturday evening. Current planning is to have three university professors from each of the major geographic regions (mountains, plateau and coastal) to share their perspective. This should have application and be of interest to anyone in the U.S. who is interested in learning more about conifer culture.

Following dinner you will have the opportunity after seeing and talking plants all day to purchase some really cool stuff at the auction. Dr. Lasseigne has graciously agreed to serve as auctioneer.

So, go get your pen and mark your calendars. We will be updating you with further details and you can also check the website.

*Tom Cox and Flo Chaffin
Regional meeting co-chairs*



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Unusual foundation plantings aren't the only surprise visitors find in Gerald Kral's garden in Rochester, New York. Read about his collection on page 38, then decide whether you can afford to miss the Northeast Region meeting this fall.

Below: Peter Jones first germinated conifer seeds from his own garden, then he took part in the Conifer Society Seed Exchange and expanded his backyard experiments to other species. Shown here are a compact *Chamaecyparis obtusa* (left) and young fir and hemlock seedlings. Read more on page 12.



Courtesy of Dean Linderman



A trio of *Chamaecyparis nootkatensis* 'Green Arrow' point the way through this section of Dean and Linda Linderman's expansive garden in Leesburg, Virginia.