

Winter '99

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## Storms Over Minnesota

### Seven Months of Severe Weather and Catastrophic Tree Damage

*"You could see in Mork's eyes what she saw when she looked down her once-perfect street: twisted, splintered stalks and stumps protruding into the clear blue canopy of a gorgeous Minnesota sky. "What everybody is mourning is the trees," she said with a sigh."*

(From an article in the St. Paul Pioneer Press, June 2, 1998, p. 1C, by Rick Shefchik)

Every year, somewhere in Minnesota, tornadoes and/or straight-line winds violently destroy homes and trees. 1998 was different, however, bringing intensity and destruction unparalleled in history. From St. Peter to St. Paul, few have witnessed the destructive force the winds of 1998 inflicted on our trees. And the frequency! For weeks, just as we were finishing clean-up operations from one storm, another would hit. Depending on where you lived, two to six destructive storms assaulted your home and urban forest in 1998.

It wasn't just the loss of trees. Virtually every public service was affected in communities that suffered the devastating winds. Uprooted and fallen trees interrupted utility service for days or weeks. Curbs and sidewalks were damaged or destroyed. Streets and recreational areas were damaged or closed, which affected several annual recreational events in the Twin Cities.

Economically, we paid dearly for the damage done to our trees, and continue to pay. Community forestry budgets were stretched or exhausted. Homeowners are still reeling from



GARY JOHNSON

**One-third of all trees lost were growing in boulevards.**

costs they had to bear for tree removal and repair. And in many instances, the costs for replanting have only started to accumulate. According to a survey conducted by the Minnesota Department of Natural Resources, almost 128,000 trees were lost or severely damaged during these storms . . . and this data represents about 55% of the communities surveyed! Several of the larger, hard-hit communities have yet to complete their damage surveys.

Piles of wood chips dominated many community landscapes throughout 1998. Minneapolis alone documented the production of **at least 82,700 cubic yards of wood chips from the 128,600 cubic yards of brush left in the wake of the storms!** To put it in perspective: that's enough mulch to cover 154 acres, four inches deep!

And it's not over. We can only speculate

*Storms Over Minnesota continued on p. 2*

*The Minnesota Shade Tree Advisory Committee's mission is to advance Minnesota's commitment to the health, care and future of all community forests.*

## Y2K—New Millennium— World's End— Silver Anniversary

Most of these are already on people's minds, with little that each of us can individually do about them. The last one is something we should grasp with "gusto" and celebrate thoroughly. To celebrate is "to observe with ceremonies of *respect, festivity* or *rejoicing*." [The American Heritage Dictionary - 2nd College Edition; my emphasis.]

MnSTAC will complete its 25th year on October 2, 1999. We need to respect the group of officials already meeting prior to that date 25 years ago planning for the Dutch Elm Disease disaster. They formed the nucleus of the expanded "committee" after that date. Certainly we owe more than respect to our not-retiring chairman of many years, Don Willeke. He arrived on that day to energize and propel the group into action. I know because I was there. His influence and tenacity were important in gaining the "Minnesota Miracle"—millions of dollars for DED management and replanting. He spent some years on the national scene exhorting and guiding urban and community forestry policy. Yes, we need to respect and acclaim him for the renaissance he has brought to urban and community forestry.

There is an ad hoc task force meeting to plan a proper celebration—perhaps a "festivity"—for this important year. If you have suggestions please forward them to me and I will pass them on. Whatever is planned is likely to be "treemendous."

Lastly, we can rejoice:

- that many individuals have been willing to spend uncountable hours in the advancement of Urban and Community Forestry
- that we are the respected voice in the state for Urban and Community Forestry
- that we are the oldest tree council in the U.S. (California makes this claim but derives from an expanded regional group, not a continuous statewide group.)

—Glen Shirley

*MnSTAC President Shirley lives in a "rurban" area (southern Dakota County). He is Bloomington's City Forester and an ISA Certified Arborist.*



Above: Dense trees with shallow roots were the most common victims of windthrow.

### Storms from p. 1

about the long-term damage to trees left standing that suffered broken or torn limbs, or the thousands of trees riddled with hail. Oaks that were damaged and wounded during the May storms may be particularly vulnerable to oak wilt infections, depending on their proximity to infection centers. Decay, initiated by ripped limbs, severe pruning wounds and hail lesions will most certainly weaken many of the surviving trees and leave them more vulnerable to future storm damage. Since the presence of decay was one of the more common preexisting conditions found in storm-damaged trees, this is a very real concern. Just how vulnerable is our remaining urban forest?

On the bright side, if there is one, these storms provided us with a living laboratory of tree vulnerability, storm patterns and accompanying damage, as well as success stories of communities that logically and effectively recovered from the catastrophes. The data collected by the University of Minnesota, the Department of Natural Resources, and various community forestry programs such as the Minneapolis Park and Recreation Board has been assembled and combined to reveal some disturbing, but preventable patterns in storm damage to trees. If we collectively heed the weakness signals our trees are giving us and dedicate the time and budget dollars that a proactive management plan requires, future storms will be far less catastrophic to our urban forests and budgets.

### The Fury of the Storm's Paths: DNR Community Survey Data

The Minnesota Department of Natural Resources (DNR) Division of Forestry conducted (and continues to conduct) a state-wide community survey of storm-related damage to public and private urban forests, dating from straight line winds of July, 1997 and through the tornadoes and wind storms of 1998. With 55% of the surveyed communities reporting, the information provided to date is eye-opening.

Communities in 20 counties, several in the metropolitan area, have documented more than 117,000 public and

private trees lost to storms, in addition to nearly 50,000 severely damaged. With many of the hardest hit communities reporting in this survey, the losses are staggering.

The economic value of the lost and damaged trees is difficult to objectively calculate, but the costs that these communities have incurred due to debris clean-up represents cold, hard, cash invested. To date, with 55% of the communities reporting, clean-up costs far exceed \$11,000,000! That doesn't include replanting, or the lost value to a community's character, or additional heating and cooling costs associated with lost canopies and wind-breaks. That's only what it has cost so far for these communities to clean up and haul off the debris generated by the storms.

Fortunately the Federal Emergency Management Agency (FEMA) has covered a portion of clean-up costs, to the tune of nearly \$8,000,000. But keep in mind that Federal dollars are not "pennies from heaven." They are everyone's tax dollars at work. To put this into even more of a perspective, many homeowners paid private arborists to prune, remove and haul debris from their property, dollars that are not included in these statistics.

## Coping with Brush and Chips: One Community's Data

Minneapolis Park and Recreation Board (MPRB) correctly forecasted the need for careful record keeping when the storms began, anticipating the need for FEMA assistance. And although Minneapolis was one of the hardest hit communities in the metropolitan area, the data that they collected may prove to be very useful to other communities planning for future storm disasters.

MPRB conservatively estimated that 7000 public and private trees were lost during the storms of May and June. These trees generated more than 128,000 cubic yards of brush that needed to be hauled off and disposed of. In lieu of burning or burying this debris, MPRB chose to grind the debris and produce wood chips. Those 128,000 cubic yards of debris produced approximately 70,000 cubic yards of chips, most of which were used to create a stockpile measuring 150 feet square by 35 feet high! This data translates to the average tree generating about 18 cubic yards of debris or 12 cubic yards of wood chips!

And it's still not over! MPRB continues to haul away the stockpiled wood chips. Trucking costs for removal of wood chips had totaled in excess of \$218,350 by December. To put that into perspective, the truck-

ing costs alone could have purchased 1,100 two-inch-caliper trees.

## Predictable and Preventable Damage: Results from the University of Minnesota Surveys

The information collected by the DNR and MPRB provided a larger picture of the extent of the tree loss and wood debris generated. The University of Minnesota, Department of Forest Resources also conducted extensive damage survey information. The University's research involved the examination of individual trees that were damaged or lost. Were there any weaknesses in the trees or site conditions that may have encouraged catastrophic damage or losses? Or, were these storms just so severe that everything in or near their paths fell victim to their power?

The damage survey form developed by MNSTAC's Tree Emergency Response Committee was used by University faculty and students and Tree Care Advisors to collect this detailed information from as many accessible areas as possible after the storms struck and before clean-up was completed. Approximately 600 individual trees were examined, and the results from the data compiled suggest that the damage was due to more than just forceful winds.

*The most common type of damage was total tree failure; that is, the entire tree was uprooted or broken off at ground line. Almost 57% of the trees examined were total failures. The second most common category was canopy damage—broken branches, ripped branches, split-out leaders—which accounted for more than 27% of all records.*

*The two most common preexisting conditions for all trees suffering any type of damage were presence of decay (13.3%) and stem girdling roots, associated with deep planting conditions (10.1%). And contrary to many popular articles written recently, the two most commonly damaged tree size categories were those in the 10-15 inch d.b.h. (diameter at breast height; that is, stem diameter measured 4.5 feet above ground) range and those over 25 inches, both about 23% of all trees lost or damaged. Trees in the 6-10 inch d.b.h. range ranked third at 17%. So, it was hardly a situation of "ancient, 250-year-old giants" reaching a timely end.*

As interesting as the general information is, detailed analysis provides more specific and useful statistics . . . even to the point of dispelling some common myths! In the "Total Failure" category, Colorado spruce



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**Right: 73% of the green ash that suffered canopy damage failed at included-bark unions.**

# Meet the Pros

Minnesota is richly blessed with high-quality tree care professionals. These pros are out there every day, working with individuals, volunteers and a host of organizations to protect, manage and enhance our community forests.

An invaluable asset to Minnesota communities is the way the state's diverse tree care professionals openly collaborate, cooperate and share to bring the best in knowledge and service to urban forests everywhere. Through the representative sample of forestry professionals featured here, we get a glimpse of the support and expertise that is here for our citizens and their trees.

## University Researchers

### Harold Pellett

Harold has been with the University of Minnesota for more than 32 years as a Professor of Horticulture. More recently, he has also served as the Executive Director of the Landscape Plant Development Center. During his tenure, Harold has been involved with research that includes cold hardiness, establishment and cultural practices for shade trees and the development of plant materials specifically suited for



Minnesota. Some of the plant releases Harold has been responsible for include the Light series of Azaleas, Northwood and Autumn Spire red maples, Cardinal dogwood and Emerald Triumph viburnum.

Harold has worked closely with educators and professionals in urban forestry for many years. He is a frequent speaker at short courses and conferences and a prolific author of journal and extension publications on plant materials, cold hardiness and environmental stresses that affect tree health.



## University Educators

### Mike Zins

Probably no other name is associated more with urban forestry in

Minnesota than Mike Zins. There's hardly a person in the profession that has not taken a course or attended a seminar or read an extension publication that Mike has given or authored. Mike was also largely responsible for the beginning of the Master Gardener

program in Minnesota. He continues to help coordinate it and participate in the training sessions.

Mike is the person many other professionals turn to for advice on plant identification and selection, care in the landscape and wry humor. His office at the Minnesota Landscape Arboretum is a virtual museum of urban forestry artifacts. He also authors the Minnesota Society of Arboriculture's quarterly journal, *Arborescence*, and is a frequent speaker at professional and community horticulture seminars, short courses and conferences.

## City Foresters

### Gregg Hove

Gregg has been the Supervisor of Forestry for the City of Eagan for more than five years. During that relatively short period, he has seen the population explode and the demand for urban forestry and tree care information follow the same suit. Gregg and his Tree Inspector, assistant forester, seasonal intern and summer crews of forestry technicians and horticulturists are not only responsible for maintaining the health of Eagan's urban forest, but also must maintain a close relationship with their constituents. In addition to answering homeowner questions regarding tree



health over the phone, they make approximately 500 home site visits each year.

Gregg devotes much of his time to

Eagan's tree preservation ordinance and works closely with builders and developers. His department provides information and ideas to the public via diverse media: through printed publications on plant selection, planting and maintenance made available at City Hall, a regular forestry section of the quarterly City Hall newspaper and "idea" gardens planted throughout the park system.

## Retail Nursery Growers/Garden Centers

### Forrest Sargent

Sargent's Landscape Nursery and Garden Center now has two locations in Rochester. Owner Forrest Sargent grew up in a nursery family and has been with the company for 31 years. Forrest's face is familiar to many in south-east Minnesota, especially those attending professional conferences and seminars. Some of the urban forestry workshops held in the area have even ended up in one of his nursery fields for tours and hands-on experiences.

Forrest's retail centers act as traditional sources of



information on tree selection and care for clients and the gen-

eral public. They answer many questions over the phone or provide fee-based visits to properties for private consultations. They also offer non-traditional information when they invite Master Gardeners and Tree Care Advisors to answer gardening and landscape questions for the public during special occasions at the garden centers. The garden centers are good sources for extension publications and retail books on tree and landscape care.

## County Extension Educators

### Doug Courneya

Doug has been the Extension Horticulturist at the Olmsted County Extension Office in Rochester for seven years. Although horticulture is rather broad and general, 65% of the horticultural

calls and visits his office receive relate to tree care and urban forestry. A direct link between the University, the Extension Service and the public, Doug spends much of his time answering homeowner phone calls or e-mail requests. The county office is also a source of extension publications and other information for the general public.

The Master Gardener coordinator for his area, Doug has been involved with training and guiding Tree Care Advisors in the Rochester area for more than four years. He has also worked with the University to conduct field research projects in urban forest health.



## Community Forestry Volunteers

### Bonnie Lawrence

Staple a sign on a tree in St. Paul, and you'll have Bonnie to contend with! Bonnie has been one of the more politically active volunteers in urban forestry. She was part of the faction (including the St. Paul Neighborhood Energy Consortium, the Environmental Committee from Miriam Park and Friends of the Park) that encouraged the City of St. Paul to enforce their 40-year-old anti-stapling ordinance.

Bonnie began her volunteerism by initiating a large scale planting project at Central High School that developed into an



Arbor Day Celebration in 1992. Since then, she has played a very active role in receiving a Geo grant for planting trees along Summit Avenue, the Blooming Boulevard projects in St. Paul and the I-94 planting project with Mn/DOT in St. Paul, which was the first, inner-city Mn/DOT planting partnership. She attends numerous conferences and reads anything she can get her hands on that relates to trees. She has also been a Tree Care Advisor for four years.

## Tree Inspectors

### Gary Martin

Gary has served the City of Alexandria for 24 years as the Supervisor of Parks and City Forester, and as a Tree Inspector for 16 years. His office, including five Tree Inspectors, assists the residents of Alexandria by diagnosing tree problems, recommending the best species for Alexandria, answering questions over the phone, site visits, notifying homeowners of the need for hazard tree removals and providing



assistance for any tree question or problem.

Alexandria has been a Tree City U.S.A. for five years, with an annual budget of approximately \$17,000 for tree replanting and care. The city maintains an active Dutch elm disease control program and a hazard tree management program. Gary keeps himself and his employees technically up to date by attending conferences, short courses, workshops and reading Department of Agriculture and Extension publications on forest health.

Meet the Pros continued on p. 6

## Community Forestry Consultants

### Katie Himanga

Katie is a consulting forester and owner of Heartwood Forestry in Lake City. She is a graduate of the College of Forestry, University of Minnesota, specializing in forest management, ecosystems and silviculture.



Katie started her company in 1990 and offers a range of services that includes community forest management planning, tree care training, technical assistance and project management for cities, organizations and utility companies.

In addition to meeting common needs such as inventories, inspection, appraisal, pruning and removal, Katie creates street and park tree layouts and helps communities develop tree policies and ordinances. She is a leading Minnesota advocate for proactive planning to reduce storm damages to urban forests.

A gifted writer with a wide range of forestry-related expertise, Katie has been a regular contributor to the Advocate. She is co-author of *Planning for Replanting* on page 7 of this issue.

## Community Forestry Non-Profits

### Kirk Brown

Kirk Brown is president of Tree Trust, a nationally recognized private non-profit. Tree Trust, formed in 1976, is dedicated to providing education and employment experiences that develop individual responsibility and environmental stewardship. Under Brown's direction Tree Trust has developed community outreach programs that link grassroots groups, communities and schools to private and public partners, education, technical assis-



tance, resources, and funding. Through these efforts community leaders are recognizing the social, economic and environmental values that trees provide. Individuals are being empowered to become good stewards of the land.

Kirk's leadership in urban and community forestry supports community development at the grassroots level and provides a forum for people to work together on practical "hands-on" activities that result in quality plantings, long term maintenance and community pride.

## Certified Arborists

### Jeff Jepson

Jeff is the owner/operator of Beaver Tree Service in Longville, which employs three in addition to himself. His arboriculture career began with the using of a chainsaw in constructing log homes. Noting his proficiency with the tool, customers began requesting his services in removal of trees. Jeff adapted his rock-climbing background and began to learn his new trade. After his first exposure to other tree climbers at the MSA fall conference in Duluth in 1990, he immersed himself in seminars, workshops and self study. He took first place in the 1994 and 1995 Minnesota Climber's Championship and is today



known as an innovator in the trees. He became a ISA Certified Arborist in 1996, and his company now offers services in hazard tree evaluations, removals, pruning, cabling and consulting.

Jeff sees strong philosophical aspects in his work. He often draws parallels between humans and trees, with both requiring preventive maintenance and both having predictable failure patterns. It is common to find Jeff enjoying a cup of coffee and stimulating conversation with his clients.

Jeff is the author of *The Tree Climber's Companion*, a practical step-by-step field reference guide. It is available through the International Society of Arborists, and has sold nearly 8,000 copies.

## DNR Foresters

### Greg Johnson

As the DNR area forester in New Ulm, Greg covers 12 counties in southwestern Minnesota. In this role, he delivers state assistance for urban and community forestry activities and MnReleaf. His advice and technical assistance to communities ranges from calls on individual sick trees to establishing a tree board; from developing ordinances to designing planting projects and training staff.

Greg says it is impor-

tant to structure his assistance to fit whatever the community needs. He works with mayors, parks department or public works department staff, city administrators and others he can identify as prime movers in the community. His role is to help a community develop greater in-house capacity to manage their trees and to identify specific needs that can be handled by private contractors and consultants. As Greg puts it, "Once they have established a firm foundation, good things begin to happen."

# Planning for Replanting

by Katie Himanga and Paul Walvatne

Communities hit hard by last spring and summer storms lost a tremendous number of trees. Replanting efforts started in April and continued through the fall planting season. The big push, however, comes this spring when thousands of nursery trees will find new homes in these communities. These “new kids on the block” help ease the pain and emotional loss of our green infrastructure. The big question is “Have we taken the time to plan this new forest?” With wisdom gained from past mistakes, we can re-establish an urban forest that is diverse, sustainable and visually pleasing.

Good planning for replanting the trees on our boulevards, in our parks and at our residences pays off now and in the future in the form of healthier trees and reduced maintenance costs. Good planning starts with an inventory of the existing situation. It proceeds to goal setting and prioritizing actions. The result is a successful project.

## Inventory

Take an inventory to find out what you have and, more importantly, what you need. Before you choose replacement tree species:

- Determine the number of **available spaces** for planting trees. Make sure the inventory considers *overhead wires*, etc. For example, there are 500 spaces but 150 of them are under powerlines. This greatly impacts the species selected for replanting.
- Evaluate the diversity of your urban forest by determining the **species and size distribution** of remaining trees under your jurisdiction. Calculate the **percentage of each tree species**.
- Take **soil samples** of typical planting sites and have them tested for texture (also called gradation) to determine sand, silt and clay content, along with pH,



organic content, phosphorous and potassium.

## Goal Setting

Develop written goals for what you want your community forest to be. Your goals become a roadmap to guide your planting decisions, now and in the future. If one of your goals is to create a forest that withstands insect and disease pests and climatic extremes, plant a diverse mix of tree species.

- A good rule is to have no more than 10% of the population in one species.
- To further diversify, plant common trees (grown from seed) or several different cultivars of each species (e.g. ‘Prairie Dome’ and ‘Prairie Spire’ ash are both cultivars of green ash). For design purposes, you may choose to stick to one species or cultivar of tree per block.

The example in the Goal Setting table on the next page is based on the tree species planting mix for streets and one park in a small city in the southeast corner of Minnesota. The community conducted a tree inventory and goal setting process in 1994. Since then, several tree planting projects were implemented that are consistent with these goals. Note that the number of hackberry trees in the community exceeds the desired goal, yet on the advice of the community forester, the community decided to plant more hackberry trees. Results of the inventory showed that virtually all the existing hackberry were grand old trees in poor condition. Since 1994, risk management and storms felled dozens of them.

Planning continued on p. 8

Clip and Save



Planning for Replanting



## Matching Tree Species to Site

Nary a tree conference goes by without hearing this old cliché. Do we practice it?

- What is the texture of the soil? Does it drain well? Is it compacted?
- Are there overhead lines?
- Can the trees tolerate full sun exposure on the east side of a forty-foot ribbon of asphalt with salt spray to boot?

Experience, good reference books and other resources along with healthy common sense help in the planning process. Good resources for matching trees to the site include:

■ *Recommended Trees*—A series authored by Gary Johnson et al., and published by the University of Minnesota.

Fact sheets are available for the Southeast (including metro), Southwest, Northern Tallgrass Prairie (Red River Valley) and Northwest and Central ecological regions. A fact sheet for the North Central region is available in May, 1999. They are available for \$3.00 each from your county extension office.

■ *Trees & Shrubs For Minnesota Landscapes & Roadsides*—A Minnesota Department of Transportation Expert System for Selecting Trees & Shrubs.

Available on CD, this may be purchased through the Minnesota DNR for \$20.00. Call 651/772-7926 for more information. An updated version, containing information on over 650 woody and herbaceous plants, will be available in early 1999.

■ *Native Trees, Shrubs and Vines for Urban and Rural America*—Authored in 1988 by Gary Hightshoe and published by Van Nostrand Reinhold.

This book contains a tremendous amount of information for planning for replanting.

■ **Local Nurseries**

These folks have good knowledge on trees that grow in your area. They may be familiar with trees native to the area, but not commonly planted by landscapers. Nurseries can purchase and care for your stock prior to planting.

### Goal Setting Example

Genera	Species	Existing Trees (#)	Existing Trees (%)	Desired Trees (%)	Desired Trees (#)	Goal (#)	Example Project (#)
Maple	red	0	0%	2%	22	22	5
	sugar	22	3%	10%	112	90	20
	Norway	111	16%	0%	0	-111	0
	Freeman	9	1%	3%	34	25	5
Buckeye	Ohio	1	0%	1%	11	10	0
Birch	river	9	1%	3%	34	25	10
Hickory	shagbark	0	0%	1%	11	11	0
Hackberry	hackberry	103	15%	5%	56	-47	10
Ash	white	2	0%	3%	34	32	10
	black	0	0%	2%	22	22	5
	green	77	11%	8%	90	13	10
Ginkgo	ginkgo	1	0%	2%	22	21	5
Honeylocust		31	4%	10%	112	81	20
Coffeetree	Kentucky	5	1%	2%	22	17	5
Walnut	black	7	1%	2%	22	15	0
Magnolia		1	0%	1%	11	10	0
Ironwood	ironwood	0	0%	3%	34	34	5
Cherry	black	2	0%	1%	11	9	0
Oak	white	0	0%	3%	34	34	10
	bicolor	0	0%	2%	22	22	10
	n. pin	0	0%	2%	22	22	0
	bur	1	0%	5%	56	55	10
	red	25	4%	3%	34	9	5
Linden	American	31	4%	7%	79	48	20
	Redmond	0	0%	3%	34	34	5
	littleleaf	6	1%	2%	22	16	5
Elm		27	4%	3%	34	7	5
Crabapple		20	3%	3%	34	14	5
Tree lilac	Japanese	13	2%	3%	34	21	10
Other small stature		24	3%	3%	34	10	0
Spruce		25	4%	0%	0	-25	0
Cedar		13	2%	0%	0	-13	0
Pine		6	1%	1%	11	5	0
Larch		1	0%	1%	11	10	0
Undesired		116	17%	0%	0	-116	0
Vacant planting sites		434					
<b>TOTAL TREES</b>		<b>689</b>	<b>100%</b>	<b>100%</b>	<b>1123</b>	<b>434</b>	<b>195</b>
<b>TREES + SPACES</b>		<b>1123</b>					

## Some Good Species

We are partial to using native trees as a first choice when they meet your needs. We also use plenty of introduced and adapted trees on our projects. If you need help in knowing what is native or not, Mn/DOT's CD-Rom Expert System, the U of M Recommended Trees series and Hightshoe's book make the distinctions. Good native trees include:

- American linden (basswood)
- Ash—black, green and white
- Hackberry
- Ironwood
- Maple—sugar and red



- Oak—bur, bicolor (swamp white), white, northern red and northern pin
- River birch
- Conifers—northern white cedar, white spruce, red and white pine, American larch

Just because these trees are native does not mean they will grow in any situation. Some, like sugar maple and white oak, require moist, well-drained soils and a fairly low soil pH. Others, like green ash and bur oak, tolerate a wide range of soil and pH conditions.

A whole host of introduced trees (both non-native and native cultivars) have been produced to fit certain niches in our environment. Many will do a great job, however please do not use invasive introduced plants where they can invade into adjacent natural areas.

## Sizes

Bigger is not always better. In fact, smaller stock usually outperforms larger stock in the long run. For many areas, six- to eight-foot tall bareroot stock is a great choice. On some city streets or intensively used park areas, however, larger specimens such as 2-inch or 2.5-inch diameter balled and burlapped (B&B) stock may be necessary to hold up to snow plowing or vandalism. This size B&B stock generally grows well and will usually outperform larger caliper stock. The table gives general cost comparisons for commonly used sizes.

Sizes selected have a big impact on determining the number of trees to be planted. With smaller stock you can plant many more trees. Also, smaller sizes are easier for volunteers to plant and they usually require less maintenance.

## Bare Root, Balled and Burlapped or Container Stock

We recommend using a combination that reflects “getting the most bang for your buck.” Consider your labor force for planting and the establishment characteristics of the species being planted. Some trees should be planted in the spring if bareroot; others require a “sweating process” if planted bareroot; still others are difficult to establish in either planting season. With some species it’s best to plant container-grown specimens. The table at right provides information on a few species of trees.

## Hardy Stock

The best planning is all for naught if you plant trees that cannot handle the harsh realities of Minnesota winters. Ask your tree supplier for the origin of seed or root stock (provenance) used to

produce the trees you plan to purchase.

Some trees handle the move to

Minnesota just fine. Others

get all cracked

up (literally) during our winters. In reality, you will have to settle for some trees of mysterious origin. By being an informed consumer, you increase the odds of planting hardy stock.

### Comparing Cost to Size

Size	Wholesale Cost (\$)*	Planted/Guaranteed Cost (\$)
1" Cal. Bareroot	\$ 25	\$ 100
1" Cal. Container	50	150
2" Cal B&B	110	250
4" Cal B&B	250 +	600 +

\* Costs will vary in accordance with species, quantities and location.

## Planning: Not Just After the Storm

Storm-damaged community forests demand our instant attention and create high visibility that captures public awareness. Planning is critical and immediate.

Good regular planning for the urban forest, however, is an every-season, every year benefit to the green infrastructure of our communities. Proactive, thoughtful planning is an enormous value to every community that wants to make changes to improve its urban forests. And in the end, isn't that all of us?

*Paul Walvatne is Forestry Unit Supervisor, MN/DOT Office of Environmental Services. Katie Himanga is a consulting forester and owner of Heartwood Forestry in Lake City, MN.*

### Root Type Recommendations: Deciduous Trees

Category	Tree Genera or Species	Recommended Root Type		
		Bareroot	B&B	Container
Not Particular	Ash, sugar maple, honeylocust, & many others	✓	✓	✓
Avoid Fall Planting	Birch, crabapple, hackberry, hawthorn, honeylocust, ironwood, linden, maple, mountain ash, oak, poplar, and willow		✓	✓
Require Sweating	Birch, hackberry, oaks, hawthorn, ironwood		✓	✓

# Branching Out: Community Tree Sales

Community tree sales can be a great way to involve the public in improving urban forests.

Here are three success stories. Each of the individuals named in this article is open to phone calls if you are planning a tree sale and want to ask questions.



## Burnsville

Burnsville's annual community tree sale is a dozen years old and continues to be a popular attraction for the public. The sale is Saturday only, the last weekend in April. City Forestry Supervisor Dave Grommesch says customers arrive early, getting in line with lawn chairs and sleeping bags by 6 o'clock in the morning. When the sale opens at 8:00, there may be 100 people waiting. They know it's first come, first served. By noon, all 500 trees will be sold out.

The tree sale is advertised and open only to Burnsville residents. Two trees may be purchased per residence. There are generally 10-12 different varieties including maples, ashes, locusts, birches, lindens and oaks. Stock is bare root material six to eight feet tall, and up to about 1-1/4" diameter. Prices range from \$20-\$35. The sale is staffed with city forestry staff and park employees along with volunteers and local tree service companies.

Dave believes the annual tree sale is a valuable way to generate public interest in trees and to improve Burnsville's urban forest. It's especially helpful in getting trees back into the community after storms and in newly-developed areas. City ordinances require two trees per new housing site; homeowners want to

add more trees to their lots at reasonable prices. Many people come back year after year to buy trees.

### Dave Grommesch of Burnsville offers these suggestions to communities considering tree sales:

- Jump in slowly. Don't order a ton of trees until you know how your community will respond. You can build your numbers each year.
- Stay away from selling evergreens. They look good, but don't survive as well.
- Limit your sale to trees (vs a range of plants) for ease in managing the event.
- Recruit plenty of help.
- Have professionals on site to answer questions.
- Provide written planting and maintenance information with each purchase.



For more information: Dave Grommesch, Forestry Supervisor, City of Burnsville, 612/895-4508

## Sherburne County

Sherburne County's annual community tree sale got its start in 1992 as a way to help reforest the county following losses to oak wilt and other causes. It's a popular and successful event. The sale takes place annually on a Saturday morning the first or second weekend in April.

Buyers must be Sherburne County residents or taxpayers. As is true in Burnsville, customers line up early. People start arriving with folding

chairs and coffee at the Orrock Town Hall at 5:30 in the morning. By the time the sale opens at 8:00, the rural side road at the site is backed up for a long distance. Still, the line moves quickly. About 20 volunteers serve customers in drive-through lines. Customers complete an order sheet, pay for and get purchases loaded without leaving their vehicles. By about 11:00, the trees are often sold out.

Because community forest goals include developing diversity,

planting native trees and matching species to sites, the kinds and the number of trees available per homeowner may vary from year to year. The trees are all shade or fruit varieties, however. Maples, linden varieties, hackberries and green ash are often included. A limit of six trees per homeowner (i.e. two each of three varieties) is normal. All are bare root stock, with four-to-seven foot trees selling at about \$9.00 each. About 2,000 trees are ordered each year.

For more information: Lynnsey Mostad, Sherburne County Tree Board, Big Lake, 612/263-8522.

## City of Ramsey

The City of Ramsey's annual tree and plant sale is quite different than those of Burnsville and Sherburne County. It is a part of Green Environmental Expo, a festive kick-off to spring

### Some tips for success from Sherburne County:

- Have lots of volunteer help.
- Advertise in local newspapers and other sources 2-3 weeks in advance.
- Provide take-home packets of planting, maintenance and community forest information.
- Work for win-win situations with local nurseries. Limit your sales so you're not creating significant competition with them. Order stock from them if possible.
- Choose hardy species (good site matching) and native trees for better growing success.



held the Saturday following Arbor Day each year. This popular community-wide event drew over 1,000 people last year in a city of about 16,000 residents. Everything is open to the public and residents of neighboring communities join Ramsey citizens for the festivities.

The Expo has multiple purposes: bringing the community together, building awareness and educating about the environment, and economic development. Events and activities include crafts, a pet clinic, a recycling day, information booths featuring businesses and non-profit organizations and of course tree planting. The school has been leading up to the day with students involved in Earth Day and Arbor Day activities.

The tree and plant sale takes place at the Ramsey Elementary School, which is a partner in sponsoring the event.

Local vendors are invited to set up booths; they determine the mix of products they wish to sell. They typically include conifer and shade trees, fruit trees and shrubs. A local nut tree grower offers his wares. Customers can buy potted or bare root stock and the vendors offer planting and care information as well as special discount prices on selected items. (They also generally donate one or two trees for the tree planting ceremony.) Sales are brisk, there are no purchasing limits and all the stock is often sold out.

Bruce Bacon, Ramsey Environmental Specialist and Tree Inspector, is a key player in the Expo, but likes the collaboration of school and community in planning and sponsoring the festivities. Bruce has volunteers distribute DNR seedlings and is available himself to answer tree-related questions during the day. He believes the economic development component of the Expo brings the interest and good will of business people into the event in ways that have long-reaching benefits.

For more information: Bruce Bacon, City of Ramsey, 612/427-1410

**Bruce Bacon offers these tips for success:**

- Focus on local green businesses to get everyone working together on a green or sustainable agenda for public events like this.
- Look at your event not just as a festival day, but as an economic initiative.
- Spotlight local non-profit organizations and the resources they bring to the community.
- Link into a variety of media resources...cable TV, local paper, city newsletters, organization newsletters, electronic bulletin boards.
- Develop partnerships.. A school brings in students, parents and teachers. Vendors can handle all of the nursery stock issues. City government can bring community resources.



## Storms from p. 3



Above: Decay was present in over 13% of all tree failures.

ranked number one, ahead of the ubiquitous green ash, littleleaf linden, and far, far outranking the humble silver maple. In the “Canopy Damage” category, green ash ranked number one, but only slightly ahead of white/bur oak. And finally, in the “Stem Failure” category (trees that failed between the ground line and first set of branches), hackberries dominated the list.

Seventy-three percent (73%) of the green ash that suffered stem failure and/or canopy damage had included bark and decay as preexisting conditions. Seventy-three percent (73%) of the littleleaf lindens that suffered total failure were planted too deep, had stem compression from girdling roots and broke at the point of stem compression. And, 82% of the Colorado spruce that suffered *any* category of damage had NO preexisting conditions for failure.

For all trees that failed totally, 17.8% were planted too deep and had stem compression from girdling roots and failed at the compression point. For all trees that failed totally and were located outside of the storms' centers, 30.1% were planted too deep and had stem compression from girdling roots.

For all trees that suffered canopy damage, 78% of the trees had included bark, codominant leaders, decay or some combination of these three factors!

Finally, for those lost boulevard trees, the majority were 6-10 inches in d.b.h. (28.6%) and over 25 inches (25.7%). Littleleaf lindens were the most common 6-10 inch d.b.h. tree to suffer total failure, and 50% of those failed due to girdling roots causing stem compression (also, all were planted too deep). Greater than 25% of all trees that were lost in the boulevards had stem compression from girdling roots and were

Storms continued on p. 12



GARY JOHNSON

Above: 18% of the trees that blew over were planted too deep and broke at compression points from stem girdling roots.

## Storms from p. 11

planted too deep. Green ash was the most common species over 25 inches that suffered total failure.

## Concluding Recommendations:

■ **Know Your Resource.** Those communities that received FEMA assistance needed inventories to document their losses. Conduct a basic inventory (species, size, location) as a minimum before catastrophes happen and update the inventory periodically (at least every year). Routine monitoring could help prevent the majority of catastrophic losses. Focus on the most common, preexisting conditions: decay, included bark, codominant leaders and stem girdling roots. Identifying and treating/removing hazard trees is a top priority for any tree management program.

■ **Budget for Care and Clean-up.** Don't count on outside funding for every catastrophe. Budget adequately for emergency response tactics, such as renting a tub grinder or contracting with tree care companies. And don't plant more trees than you can reasonably maintain on a five-year cycle.

■ **Plan.** Plan for space for trees to grow above and below the ground. If you want towering trees, provide reasonably large planting spaces. Plant smaller trees in narrow (less than 10 feet wide) boulevards. Work with utility companies and public works departments to lessen the damage to root systems during street and utility installation projects. Plan for emergencies by cooperating with neighboring communities, lining up staging areas for equipment and brush, contracting with licensed tree services for emergency tree clearance, and establishing responsibility flowcharts for emergency situations. Be sure your town's emergency response plan includes provisions for handling tree debris.

■ **Best Planting Practices.** Buy only quality nursery stock: straight stems, single leaders, no included

bark in branch attachments, no wounds and roots that are at the top of the soil ball, not buried several inches deep. Plant at the correct depth: roots should be at the soil surface and topdressed with two-four inches of organic mulch. Prepare the planting site: loosen the soil if it's compacted to an area of at least 25 square feet. Seventy-five to ninety square feet is even better on very compacted soil. Never let the plants become water-stressed (too little or too much).

■ **Best Maintenance Practices.** Monitor for structural integrity. Remove codominant leaders and branches with included bark when they are small (less than 4 inches in diameter). Remove branches or trees with columns of decay present if there are targets in the area. Mulch around your trees (but don't pile up the mulch against the stems) to hold soil moisture and keep mowers and string trimmers at bay. Publicly reprimand anyone who staples, nails, performs flush cuts or tops trees. All of these practices promote decay and increase the likelihood of failure.

■ **Replant with Logic.** Don't plant the trees that you can get . . . plant what you can maintain. Avoid planting trees with high degrees of wind resistance (e.g., Colorado spruce, littleleaf linden, Norway maple) in areas that are traditionally windy, exposed or have restricted root spaces. Use smaller maturing trees in narrow (less than 10 feet wide) boulevards (e.g., crabapples, Japanese tree lilac, hawthorns), or obtain "green easements" into more expansive, private property (front lawns). 🌿

By Gary R. Johnson, University of Minnesota Forest Resources Dept.; Jim Hermann, Minneapolis Park and Recreation Board; Ken Holman and Don Mueller, Minnesota Department of Natural Resources, Forestry Division.

Damage was due to more than just forceful winds.

Right: The arboretum at St. Peter's Gustavus Adolphus College was one of many areas suffering total destruction from the March '98 tornado.



GORDON HERBST

# Arbor Day Celebrations

**P**urely American in origin, Arbor Day grew out of the need of settlers on the Great Plains to have trees. They had the soil and climatic resources to grow trees, but the landscape was practically treeless.

Arbor Day was conceived in Nebraska by J. Sterling Morton, then a member of the state's Board of Agriculture. His resolution to the Nebraska State Board of Agriculture proposed April 10, 1872 as Arbor Day, a day "especially set apart and consecrated for tree planting." Part of the resolution offered a \$100 award to the county that properly planted the most trees and a farm library worth \$25 to an individual who did the same.

Shortly after Nebraska's observance, other states passed legislation to observe Arbor Day each year with appropriate ceremonies. Minnesota was the fourth state to do so, in 1876.

The concept of a national Arbor Day came from Edward H. Scanlon, Commissioner of Shade Trees for Cleveland, OH, in 1939. He believed a simultaneous observance of Arbor Day throughout the nation would increase public awareness and participation in the event. His energetic work resulted in the passage of laws in 30 states to observe Arbor Day on the last Friday in April. The Minnesota Legislature passed such a law in 1959. Arbor Day in Minnesota has now been extended into Arbor Month. To better suit our spring planting season, Minnesota's Arbor Month is May.

Arbor Day or Arbor Month tree planting ceremonies continue to be an excellent way to come together in the community and focus attention on trees. Schools sometimes take the lead; other times community forestry divisions, park and recreation departments or local organizations organize ceremonies. At the state level, Minnesota's Arbor Month Partnership provides materials to schools and communities to enhance local education and ceremonies.

Arbor Day observances can be extensive or simple, but typical elements include:

- Identify a group or individual to take the lead—to organize details, involve the community at large and advertise events. Try to make it "every citizen's day." Having a school take the lead is ideal.

- Involve local tree professionals, agricultural extension representatives, agency representatives or nursery people. They can educate as well as help select appropriate trees species for the area and for specific planting sites. They can advise about sources for healthy nursery stock, proper planting techniques and ongoing maintenance.

- At the ceremony itself, include brief welcomes from school or civic officials, a brief history of Arbor Day, perhaps poems or messages by students, a statement about the value of trees to our world.

- Tree planting: Prepare the planting site in advance; have an action plan for ongoing maintenance. Have many (or all) guests file by and deposit a small soil sample into the hole to symbolically include everyone in the process. Stress care and commitment to the tree(s) in the months and years to come.

## Regional Arbor Day Ceremonies

Are you interested in hosting a regional Arbor Day celebration? Call Doree Maser, Minnesota Department of Agriculture, at 651-296-1348 for information and an application form. Six regional sites are selected. If yours is one of them, your community could receive \$300 toward the cost of Arbor Day trees, a plaque and a speaker for your ceremony. You might even get Spunky the Squirrel costumes to add a mascot or two to your ceremonies!



## About MnSTAC

The Minnesota Shade Tree Advisory Committee (MnSTAC) was established in 1974 by a group of concerned citizens to address the health and well being of community forests. MnSTAC provides a forum where people forge a collective vision for the future of Minnesota's community forests and:

- advocates for public and private community forestry interests
- unites for the exchange and dissemination of ideas and information
- serves as the State Urban Forest Council to advise the State Forester on the implementation of state and federally-funded programs.

MnSTAC is recognized throughout Minnesota and the country for its expertise, advice, coordination and support for community trees. It is an organization of diverse individuals who represent a broad spectrum of tree-related interests. It fosters and supports local community tree programs across the state so healthy community forests are fully integrated into community development, infrastructure, education and management.

The MnSTAC resources listed here encourage your calls, questions and sharing of ideas.

### MnSTAC BOARD OF DIRECTORS

President: Glen Shirley, City of Bloomington — 612/948-8760 (Fax: 612/948-8770)

Vice President: Kirk Brown, Twin Cities Tree Trust—612/920-3239

Dan Gullickson, MN Dept. of Transportation — 651/779-5084

Katie Himanga, Heartwood Forestry —651/345-4976

Ken Holman, DNR Forestry —651/772-7565

Gary Johnson, U of M Forest Resources —612/625-3765

Mike Max, EnvironMentor Systems, Inc. —612/753-5505

Dwight Robinson, MN Dept. of Agriculture —651/296-8578

Mark Stennes, Top Notch Treecare —612/922-3239

### MnSTAC COMMITTEES AND TASK FORCES

#### Arbor Month Partnership

Chair: Don Mueller, DNR Forestry —651/772-6148

#### Constitution and Election

Chair: Ken Simons, Ramsey County Parks —651/748-2500

#### Education and Research

Chair: Gary Johnson, U of M Forest Resources—612/625-3765

#### Forest Health

Chair: Steve Kunde, Kunde Company —651/484-0114

#### Legislative

Chair: Mark Schnobrich, City of Hutchinson —320/234-4459

#### Outreach

Co-Chairs:

Peter Bedker, Treescapes —612/682-9562

Mike Max, EnvironMentor Systems, Inc. —612/753-5505

#### Planning

Chair: Dave DeVoto, Stacy, MN —612/462-3347

#### Publicity and Awards

Chair: Terri Goodfellow-Heyer, MN State Horticultural Society—651/643-3601

#### Scholarship

Chair: Ralph Sievert, Mpls. Park and Rec. Board—612/370-4900

#### Tree Emergency Response

Chair: Katie Himanga, Heartwood Forestry —651/345-4976

#### Tree Preservation Task Force

Chair: Paul Buck, City of Plymouth —612/509-5944

#### Wood Utilization Task Force

Co-Chairs:

Mike Zins, U of M Arboretum —612/443-2460 Ext. 247

Jim Hermann, Mpls. Park and Rec. Board —612/370-4900

## Regional Shade Tree Advisory Committees

To add more voices to the forum and encourage networking more easily at the local level, three regional MnSTAC units are in place.

### Southeast STAC

Southeast STAC represents communities in the eleven counties that are part of the Hiawatha Valley Resource Conservation and Development Area. For information, contact:

**Chair: Henry Sorensen**

**Asst. Pub. Service Director, City of Red Wing 651/385-3674**

**Sec./Treas.: Katie Himanga**

**Heartwood Forestry, Lake City 651/345-4976**

### Southeast Events:

#### *Southeast Minnesota Tree City Awards Luncheon:*

Friday, April 9, 1999, Willow Creek Golf Course, Rochester. Contact: Don Mueller, DNR, 651/772-6148; Henry Sorensen, City of Red Wing, 651/385-3674; or Katie Himanga, Heartwood Forestry, 651/345-4976

#### *Nursery Tour:*

Date TBA (early March). Contact: Henry Sorensen or Katie Himanga. This is an opportunity to learn about the nursery business. Visit three growers including Bachman's and Bailey's.

### Headwaters-Agassiz STAC

HASTAC, the Headwaters-Agassiz Shade Tree Advisory Committee, was formed about a year ago as a regional branch of MnSTAC. The NW Regional Development Commission is the fiscal agent. For information, contact:

**Chair: John Johnson**

**City Forester, City of Thief River Falls 218/681-1835**

**Sec./Treas.: Jeff Edmonds**

**DNR Forestry, Bemidji 218/755-2891**

### West Central STAC

West Central STAC started in 1997 to help communities in the northwest region share ideas, information and local success stories in managing community trees. For information, contact:

**Chair: Bob Fogel**

**Director of Parks, City of Moorhead 218/299-5340**

**Sec./Treas.: Dave Johnson**

**DNR Forestry, Detroit Lakes 218/847-1596**

### Events and Conferences

#### Jan-Mar—National Arbor Day Foundation Conferences

- Wood Waste Utilization National Conference, Nebraska City, NE. Mar 2-3.
- Building with Trees National Conference, Nebraska City, NE. Mar 29-31.

For all contact NADF 402/474-5655.

Feb 27—**Minnesota Greening Conference**, No. Hennepin Technical College. Contact MSHS 651/643-3601.

March 2—**New and Controversial Research on Using Mulches**, U of MN, St. Paul campus. Sponsored by Student Society of Arboriculture. Contact Gary Johnson 612/625-3765.

March 5-6—**Keeping Nature in Your Community: Using Ecosystem Approaches in Community Projects**, Duluth. Contact Mark Wever 612/920-9326 or Fax 612/920-4558.

March 9-10—Repeat of **Keeping Nature in Your Community** Workshop as above, but in Rochester.

March 25—**Northwest Urban Forestry Conference**, U of MN, Crookston. Contact Phil Baird, 218/281-8130.

March 30-31—**Shade Tree Short Course**, Bethel College, St. Paul. For a detailed brochure, contact Tracey Benson, 651/624-3708 or 1-800/367-5363.

Apr 1—**Tree City USA and MnSTAC Awards Luncheon**, Majestic Oaks Golf Course. Contact Don Mueller, MN DNR, 651/772-6148.

May 1-5—**4th International Symposium on Urban Wildlife**, Tucson, AZ. Contact Bill Shaw 520/621-7265.

June 6-9—**Balancing Working Lands and Development National Conference**, Philadelphia, PA. Contact Cindy Delaney 802/655-7215.

Aug 5-8—**Midwest Environmental Education Conference**, Stillwater, MN. Watch for details.

Aug 31-Sep 5—**9th National Urban Forestry Conference**, Seattle, WA. Info <http://www.amfor.org/>

### New Tree Inspector Workshops

April 8—Rochester Community and Technical College, Rochester. Call 507/280-3113.

April 9—Southwest Experiment Station, Lamberton. Call 507-752-7372.

April 10—U of MN St. Paul Campus, St. Paul. Call 612/624-3708.

April 13—Alexandria Technical College, Alexandria. Call 320-762-4405.

### Opportunities

*Citizen Monitoring for Asian Long Horned Beetle (ALHB)* Draft write-up available. Contact Teri Heyer 651/649-5238 to review copy.

Through June, 1999: MnReleaf Forest Health grants available. Contact DNR Region Office or 612/772-7925.



### New Publications

*Atlas of Minnesota's Native Trees and Large Shrubs 1998 Report*. MN Department of Natural Resources. Contact MN DNR 651/772-7925.

*Things to Consider to Repair or Replace Storm-Damaged Yard Trees 1998*. MN Recovery Forestry Task Force. Contact MN DNR Forestry at 651/772-7925.

*Landscape Design and Selected Species for Residential Sites* (5 brochures), 1998.

- Evergreen Shaded Garden Landscape Design
- Native Shade Garden Landscape Design
- Prairie Garden Landscape Design
- Suburban Garden Landscape Design
- Wet Meadow Garden Landscape Design

Contact MN DNR Forestry 612/772-7925.

*National Tree Trust 1997 Annual Report. 1998*. Contact National Tree Trust 202/628-8733.

Potpourri continued on p. 16

## Dear Tree Advocate,

We want to hear from you! What are your thoughts about the *Advocate* newsletter?

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What would you like to see articles on?

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Please check if appropriate:

- I want more information about joining the Minnesota Shade Tree Advisory Committee (MnSTAC).
- I do not wish to receive the *Minnesota Shade Tree Advocate*. Please remove me from your mailing list.

Mail to: Jan Hoppe  
Minnesota Shade Tree Advocate  
115 Green Hall, 1530 Cleveland Ave. N.  
St. Paul, MN 55108

Name/Organization

Address

Phone Number

## Minnesota Shade Tree Advocate

A quarterly newsletter published by the Minnesota Shade Tree Advisory Committee.

Managing Editorial Group: MnSTAC Education Committee; Gary R. Johnson, Chair

Editor-in-Chief: Jan Hoppe

Design: Jim Kiehne

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Address inquiries to:

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Minnesota Shade Tree Advocate  
115 Green Hall  
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St. Paul, MN 55108



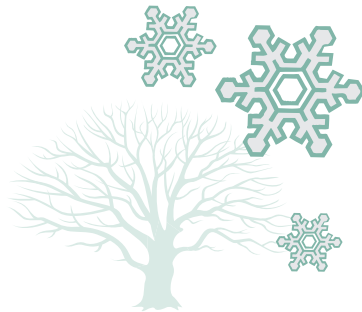
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## Internet

—Homepages etc.

- **International Society of Arboriculture**  
<http://www.ag.uiuc.edu/-isa>
- **Minnesota Department of Agriculture**  
<http://www.mda.state.mn.us>
- **Minnesota Department of Natural Resources**  
<http://www.dnr.state.mn.us>
- **MnSTAC Homepage**  
<http://willow.ncfes.umn.edu/mnstac/mnstac.htm>
- **National Arbor Day Foundation**  
<http://www.arborday.org>
- **Tree Trust**  
<http://willow.ncfes.umn.edu/treetrust/trust2.htm>
- **U of MN Environmental Events Calendar**  
<http://www.umn.edu/cura/env496.htm>
- **Urban Forestry: A Bibliography, 1996 version**  
<http://minerva.forestry.umn.edu/urb/>



## “Keeping Nature in Your Community” – Using Ecosystem Approaches in Community Projects

The Minnesota Department of Natural Resources in cooperation with Tree Trust and support from the Minnesota Legislature is sponsoring workshops for local officials, city planners, zoning officials, developers, builders, lakeshore associations, technical advisors, environmental consultants and interested citizens who are developing a community-based project. The workshop will assist groups working on projects such as a comprehensive natural resource or open space plan, a watershed management initiative, a natural area/riparian protection and/or restoration project or a sustainable communities initiative.

As a participant you will receive two full days (8:00 a.m.–4:30 p.m.) of hands-on training from local and national experts on a four-step process to plan and implement natural resource-based projects. The workshop will also include information on Minnesota’s natural communities, use of the Natural Heritage Information System and key information on ecosystems. Registration is \$130 and includes all meals and resource materials. A limited number of \$100 Scholarships are available to citizen volunteers. Registration for scholarship recipients is \$30. Space is limited to 50 people per workshop. To register contact Mark Wever at Tree Trust by phone: 612/920-9326, fax: 612/920-4558 or e-mail: [treetrust@willow.ncfes.umn.edu](mailto:treetrust@willow.ncfes.umn.edu).

### Upcoming Workshop Locations

- March 5-6, Duluth
- March 9-10, Rochester

Minnesota Shade Tree Advocate  
115 Green Hall  
1530 Cleveland Ave. N.  
St. Paul, MN 55108

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