

## TREE CITY USA BULLETIN

for the  
*Friends of Tree City USA*

Bulletin No. **2**  
James R. Fazio, Editor

Arizona State Land Department  
Urban & Community Forestry  
1616 West Adams  
Phoenix, AZ 85007  
[www.aztrees.org](http://www.aztrees.org)

# When a Storm Strikes

*It is a marvel that trees should live to become the oldest living things. Fastened in one place, their struggle is incessant and severe. From the instant a tree casts its tiny shadow upon the ground...it is in danger.*

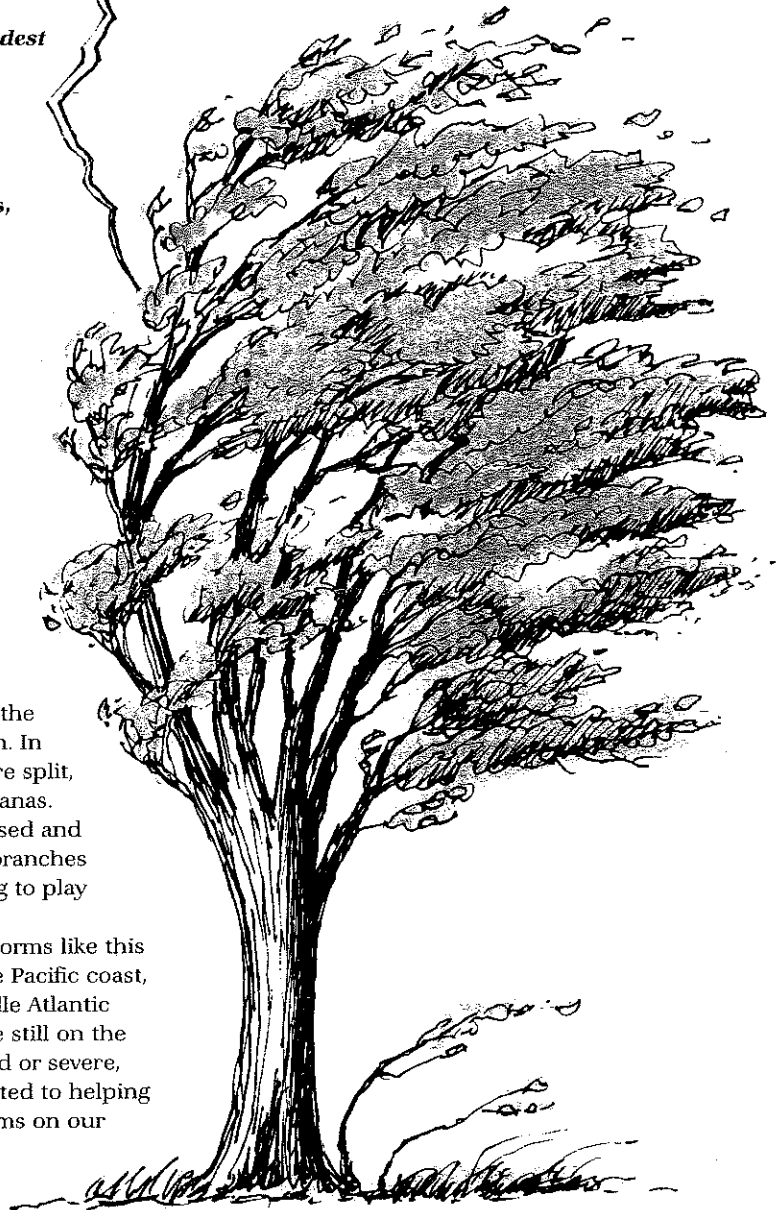
—Enos A. Mills, Naturalist c. 1910

Except for the incessant mistreatment by humans, never is danger to a tree greater than during the inevitable trial by storm. The pounding of rain or hail and the fury of wind test the strength of limbs, trunk and roots. The homeowner, helpless at the moment, can only watch and hope that the tree survives. Survival or loss — the key can be the care you give your tree *before* and *after* a storm. Knowing ahead of time what to do when a storm strikes can also prevent or minimize your financial loss.

It was one of those storms that was so close there was no pause between the flash of lightning and the deafening clash of thunder. No one on Linwood Avenue slept through this storm, and a light came on here and there to help ward off the fright of wind and rain beating noisily against bedroom windows.

In the morning, anxious residents looked out to survey the damage. In some yards, only a limb or two lay on the lawn. In others, familiar views were altered forever. Some trees were split, with half their crowns bent to the ground like peeled bananas. Here and there a whole tree lay prone with its roots exposed and limbs tangled amid gutters and wires. Out on the street, branches littered the sidewalks and children were already gathering to play on an old maple that lay like a fortress across the avenue.

In some areas, such as south central Florida, thunderstorms like this one stalk the countryside up to 100 days each year. On the Pacific coast, five in a year may be surprising. In the midwest and middle Atlantic states, ice storms — especially in autumn while leaves are still on the trees — add to the endless struggle. Frequent or rare, mild or severe, storms are an inevitable fact of life. This bulletin is dedicated to helping people who care about trees minimize the impact of storms on our community forests.

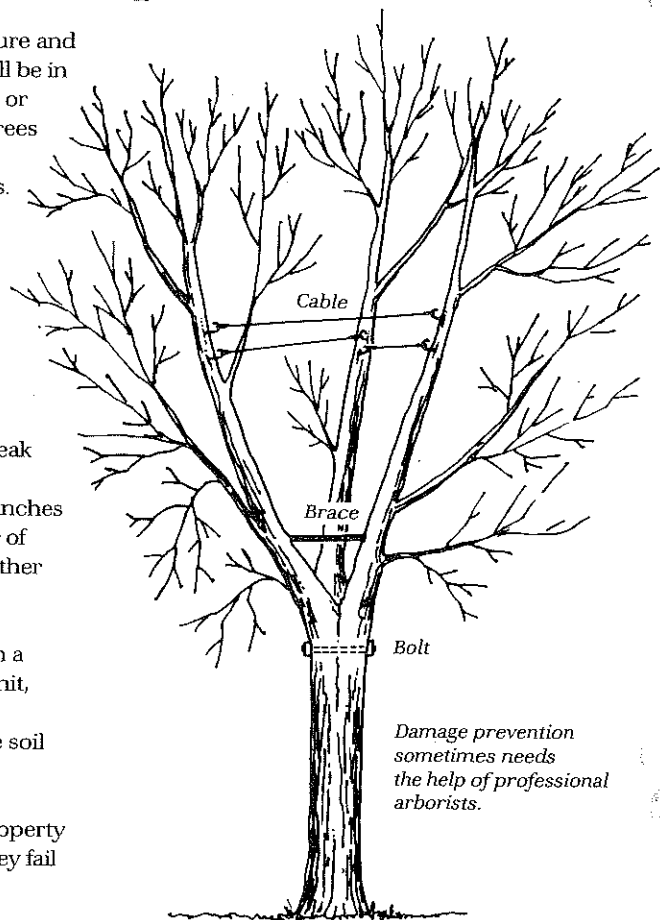


# An Ounce of Prevention...

The old ounce of prevention. Above all else, this is the best way to protect trees from storm damage. The keys to prevention are:

- ☑ Think ahead when planting trees. Visualize the young tree when it is mature and avoid planting it near wires, too close to a building, or in spots where it will be in danger of blowing over (such as on the edge of a bank). Planting in groups, or planting species with naturally deep root systems can also help prevent trees from being blown down.
- ☑ Avoid planting brittle species on sites where breakage will cause problems. Examples include:
  - Elms                      — Poplars
  - Willows                — Silver maple
  - Box elder
- ☑ Where early ice storms are common, avoid planting species that hold their leaves late into the fall.
- ☑ During sidewalk replacement or other excavation, avoid cutting roots, or keep root damage to a minimum.
- ☑ Beginning when they are young, prune trees to prevent development of weak form (See Bulletin No. 1).
- ☑ Annually prune dead or weakened limbs, and occasionally thin excess branches from the crown. The goal is to produce a well-shaped tree with the center of gravity squarely over the trunk and a crown that lets wind pass through rather than catching it like a sail.
- ☑ For particularly valuable trees, a professional arborist can strengthen tree crowns by installing flexible cabling, rigid bracing and/or a lip-bolt through a weak or split crotch. This will allow the tree to function more as a single unit, with major limbs supporting each other.
- ☑ Keep trees healthy and vigorous by watering, fertilizing, and protecting the soil from compaction.

Removal of hazardous trees is also part of prevention. Under the law, tree owners are required to recognize dangerous conditions and correct them. Property owners can be held liable for injuries or damage to the property of others if they fail to remove a tree that falls under reasonably foreseeable circumstances.



## Lightning Protection

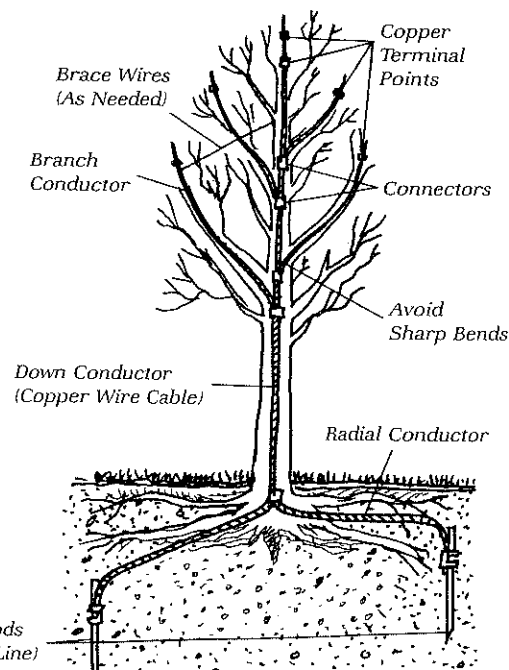
A lightning protection system is one way to protect mature trees that have high value. This might include a historic tree or one that occupies a particularly important place in your landscaping. Trees that are used by people for shelter in a storm should definitely be equipped with a protection system, and tall trees within 10 feet of a building are good candidates.

The protection system consists of copper or aluminum conductor wires that run from the top of the tree (and sometimes from major lateral branches) into the soil and end at ground rods driven 10 feet beneath the surface. Detailed installation instructions must be followed and careful annual inspections are necessary to make sure that all strands are intact. Extension of the treetop terminals is usually necessary every few years as the tree grows. Lightning control devices should be installed by professionals.

For details, write for:

**Lightning Protection Code**  
National Fire Protection Assoc.  
Batterymarch Park  
Quincy, MA 02269

**Lightning Protection Installation System Standard**  
National Arborist Assoc.  
P.O. Box 1094  
Arlington, VA 22201-1094



# The Morning After...

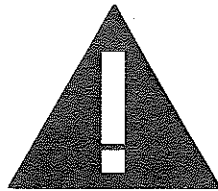
On Linwood Avenue there was considerable confusion after the storm. Neither the residents nor the city forestry department were well prepared for handling the damage. As a result, trees were removed that could have been saved, some were left weakened and became dangerous or had their life spans significantly shortened. With poor advice and the services of fly-by-night tree "experts," many residents lost money as well as the beauty and practical benefits of their shade trees. Here are some ways to be prepared for when a damaging storm strikes your street.

## 1. Assessing the Damage

The first step is to assess the situation and decide what needs to be done — and by whom. *Immediately notify police of any wires that are down on sidewalks or the street. Stay away, and keep other people away!* In case of tree damage on your property, notify the phone or electric company of any problems with wires — *and do not try to correct the situation yourself.*

If street trees are the responsibility of the municipality, report damage to the department that handles tree care. Check to see if they will remove the downed branches of privately owned trees if brought to curbside.

### DANGER SIGNS



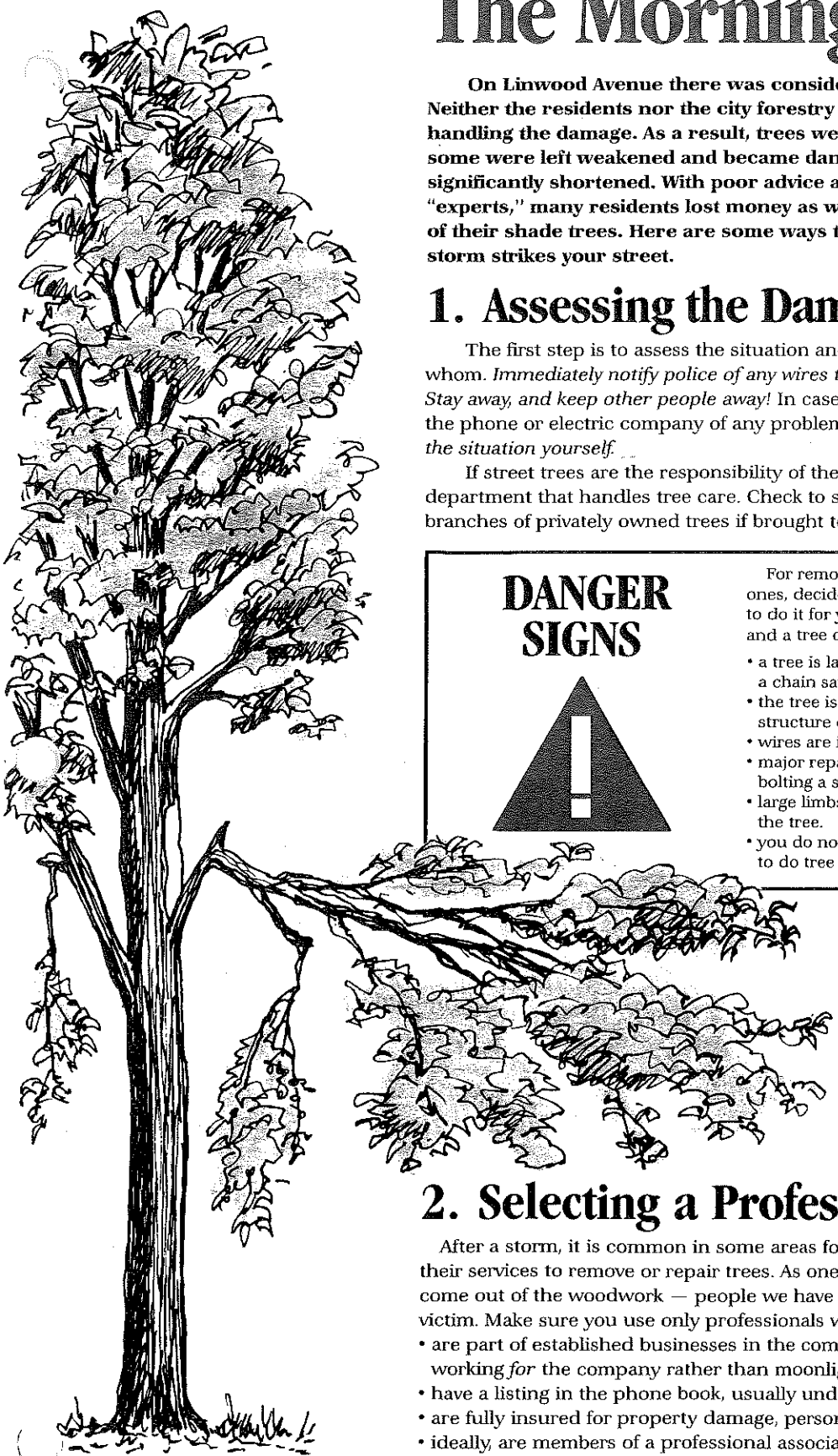
For removal of downed trees or repair of damaged ones, decide if you want to do the work or hire someone to do it for you. Tree work can be extremely dangerous and a tree care company should be used especially when:

- a tree is large and requires high climbing or the use of a chain saw.
- the tree is partially down (for example, leaning on a structure or entangled with another tree).
- wires are involved or structures are endangered.
- major repair of the tree is necessary, such as cabling or bolting a split fork.
- large limbs are split or broken but still attached to the tree.
- you do not have the proper tools, knowledge, or health to do tree work.

## 2. Selecting a Professional

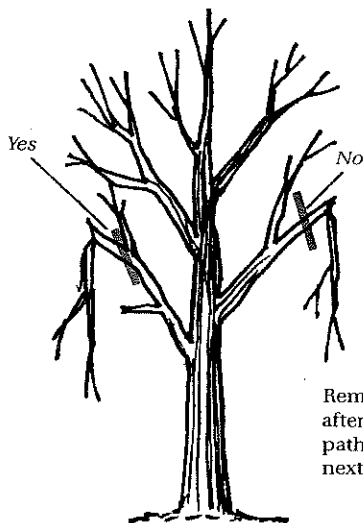
After a storm, it is common in some areas for people to show up at your door offering their services to remove or repair trees. As one urban forester warned, "They seem to come out of the woodwork — people we have never even heard of before." Do not be a victim. Make sure you use only professionals who:

- are part of established businesses in the community or nearby areas, and who are working for the company rather than moonlighting.
- have a listing in the phone book, usually under *Tree Service*.
- are fully insured for property damage, personal liability and worker compensation.
- ideally, are members of a professional association of arborists.



# Repairing the Damage

## How To Prune Storm-Damaged Trees



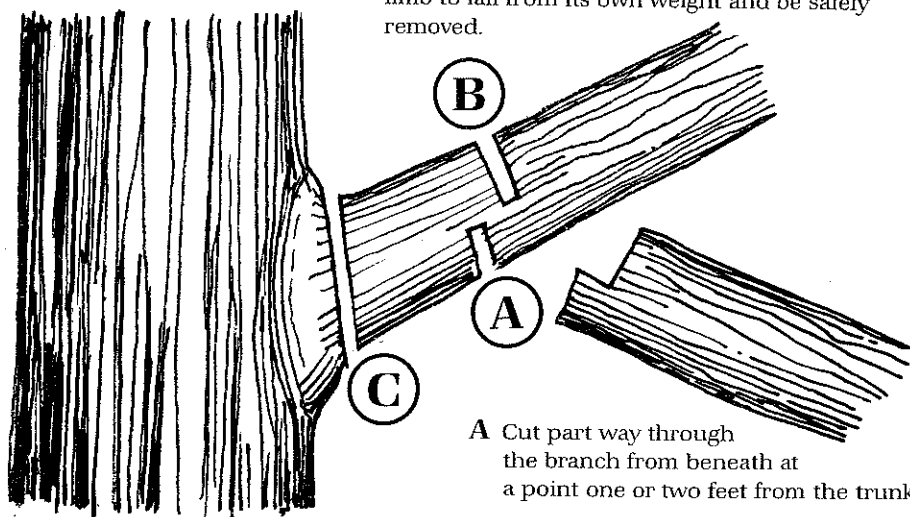
Cutting flush against a larger limb or the trunk was once believed to be the best way to prune. We now know that such a method is improper because it weakens a tree's natural defense against the invasion of disease organisms. The possibly harmful effects of pruning wounds can be minimized by making all cuts just to the outside of the raised areas at branch intersections. These features are called bark ridges (above) and branch collars (underneath).

Removing the jagged remains of broken limbs is the most common repair that homeowners can make after a storm. It is also an important task because, if done properly, it will minimize the risk of decay pathogens entering the tree. Following good pruning techniques, cut off limb stubs where they join the next largest branch or the trunk. Do not simply cut immediately below the break.

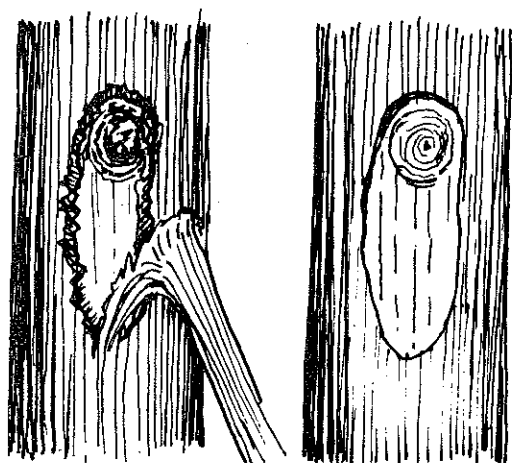
Because of its weight a large limb could tear loose during pruning, stripping bark and creating jagged edges that invite insects and disease. That won't happen if you follow these steps:

**C** Complete the job by making a final cut next to the trunk, just outside the branch collar, with the lower edge farther away from the trunk than at the top.

**B** Make a second cut on the top of the branch, at a distance of  $\frac{1}{3}$  to  $\frac{1}{2}$  the diameter of the limb from the first cut. This should allow the length of the limb to fall from its own weight and be safely removed.



**A** Cut part way through the branch from beneath at a point one or two feet from the trunk.



## How To Repair Torn Bark

Torn or stripped bark is the result of limbs being violently broken from the tree by wind or branches falling from above. To improve appearance and eliminate hiding places for insects, carefully use a chisel or sharp knife to smooth ragged edges of dead or dying bark. Remove the bark back to the point at which it is attached to the tree. Try not to expose any more cambium (inner bark). Shaping the tear into an ellipse has more aesthetic value than effect on wound closure, and if you do use this traditional method, round the ends to prevent dieback of the cambium at these points. Keep the wound as narrow as you can to hasten wound closing.

# When a Storm Strikes

Never is danger greater to a tree than during the inevitable trial by storm. The weight of ice or snow and the fury of wind test the strength of limbs, trunk, and roots. The homeowner, helpless at the moment, can only watch and hope that the tree survives. Survival or loss — the key can be the care you give your tree before and after a storm. Knowing ahead of time what to do when a storm strikes can also prevent or minimize your financial loss.

from the



**TREE CITY USA®  
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## The Morning After . . .

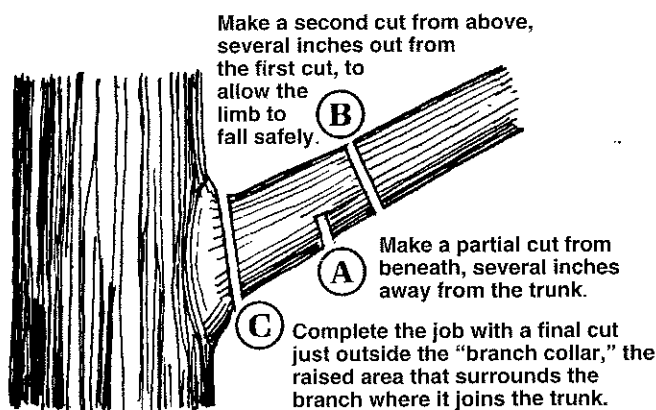
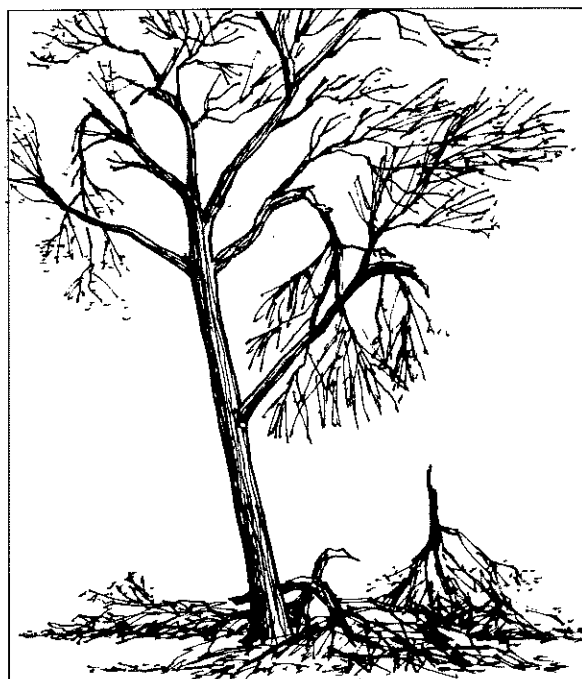
Although your trees may look mortally damaged after a storm, trees have an amazing ability to recover from damage. With proper pruning and care, all but the most severely damaged have a good chance to regain their original health and beauty. Here are some things to do following a major storm in your community:

### 1. Assess the Damage

Don't be too quick to declare a tree beyond hope. If damage is relatively slight, or if most of the tree's basic structure is still intact despite the loss of many smaller limbs, the tree stands a good chance of making it. On the other hand, if the trunk is split or if most of the tree's leafy crown is down, the tree may be beyond help.

### 2. Get Professional Help

If large limbs are hanging, if utility wires or structures are involved, or if high climbing is required, don't try to make repairs yourself. Secure the services of a certified arborist, a tree professional who can recommend needed repairs. They are generally listed in classified telephone directories under "Tree Service." Above all, don't hire just anybody who shows up on your doorstep with a chainsaw offering to remove or repair your trees. They are often interested in little more than removing your money.



## Tree First Aid After a Storm

1. **Take safety precautions.** Be on the alert for downed power lines and "widow makers," dangerous hanging branches ready to fall. And, unless you really know how to use one, leave chainsaw work to the professionals.
2. **Remove broken branches** that are still attached to the tree. Branches should be pruned at the point where they join larger ones, following the steps shown at left.
3. **Don't top your trees!** Never cut the main branches back to stubs. Ugly, weakly attached limbs will often grow back higher than the original branches and be more likely to break off in a future storm.

## An Ounce of Prevention

Follow these keys to preventing tree damage in future storms:

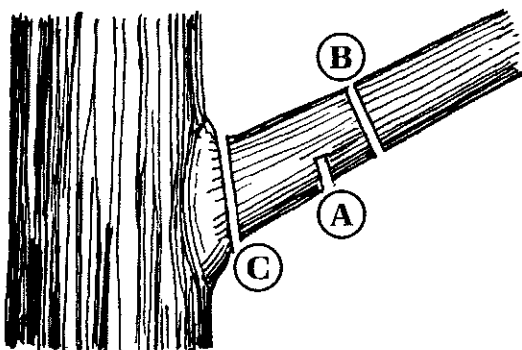
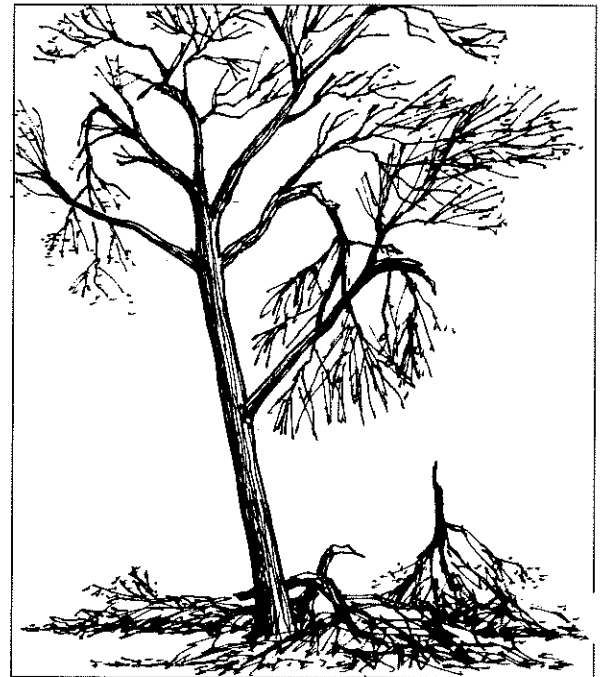
- ✓ Where early ice storms are a problem, avoid planting species that hold their leaves late into the fall.
- ✓ Keep trees healthy and vigorous by watering, fertilizing

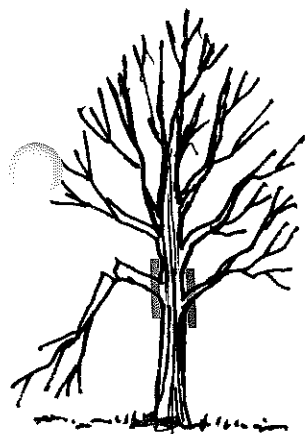
- ✓ Annually prune dead or weakened limbs, and occasionally thin excess branches from the crown. The goal is to produce a well-shaped tree with the center of gravity squarely over the trunk and a crown that lets wind pass through it rather than catching it like a sail.
- ✓ Avoid planting brittle species such as elms, willows, box elder, poplars or silver maple in locations where breakage can endanger life or property.

from the



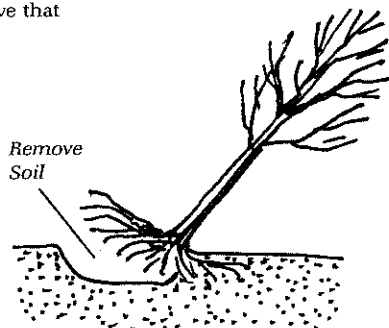
# TREE CITY USA<sup>®</sup> BULLETIN





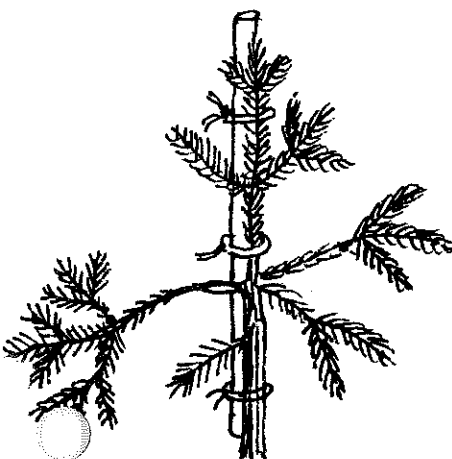
## Balance

For aesthetic reasons and sometimes to maintain a good center of gravity, look for limbs to remove that are opposite broken ones.



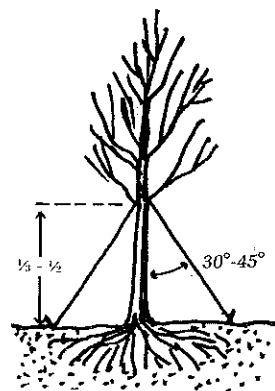
## Partially Uprooted Trees

Young or small trees (under 25 feet in height) that are partially blown over can often be saved. First, remove soil on the uprooted side so the root mass can fit into the hole. Straighten the tree with power equipment, winch or 'come-along', being careful not to break additional roots, and to protect the bark where the rope or cable is attached. With the tree upright, replace soil and anchor in place using 2-3 guy lines attached to a point  $\frac{1}{3}$  to  $\frac{1}{2}$  the height of the tree. Tamp and water well to remove air spaces around the replaced roots.

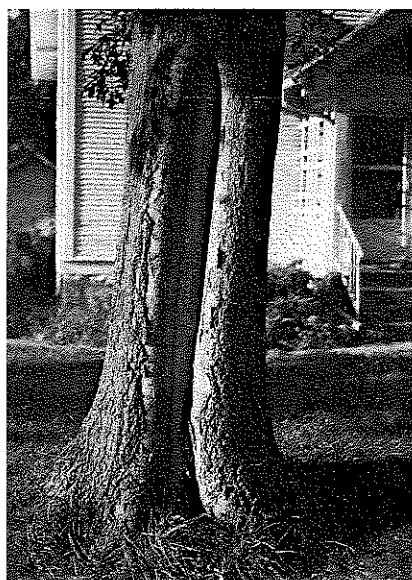
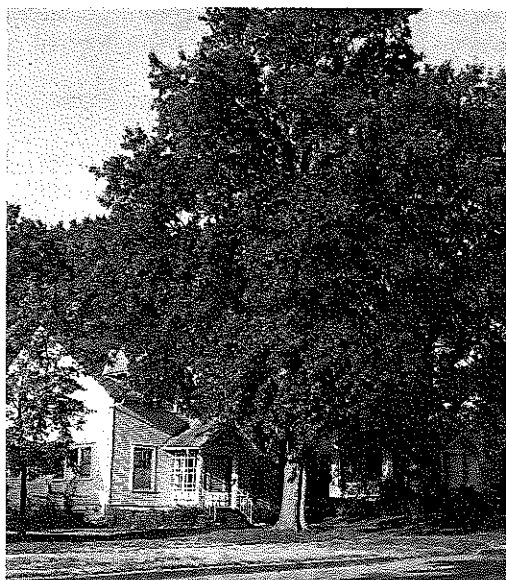


## Broken Conifers

Occasionally the top of a young conifer will be broken by falling trees or limbs. You can restore form to your tree by helping a branch in the top whorl become the new leader. Select the best, and perhaps longest, and carefully bend it upward. Tie it to a pole that is securely fastened to the trunk. Check every few months to make sure the ties are not cutting into the new leader, and remove the pole in 2-3 years.



## What About Lightning Damage?



Except for removing hazards, major work on a tree struck by lightning should be delayed 6-12 months. It sometimes takes mortality at least that long to occur, so major expenditures before then would be wasted. The tree can appear perfectly healthy until it suddenly succumbs, often due to a damaged root system.

The effects of lightning are highly variable, sometimes killing the tree almost instantly, and at other times causing no damage. First aid for the tree consists of pruning for safety, fertilizing (to stimulate root growth), and watering. When it appears the tree will survive, more careful pruning, wound repair and continued fertilization (with deep watering, if necessary) is recommended.

This tree was struck by lightning several years ago. It is healthy and the wound is healing. Another tree with a similar-appearing injury might have died.



# Storms: The Urban Forestry Response

When asked about the effects of a storm on an urban forestry department, a forester said wistfully, "In a matter of minutes we have gone from being caught up on our pruning to suddenly facing two years worth of work."

It is important that the community have an overall catastrophe plan in which the city forester plays an active role.

## Before

A municipality's best response to a storm is *before* one strikes. There are several procedures that can ease the burden of clean-up and even convert the negative effects of a storm into positive care for the community forest. Here are some methods that have worked successfully:

- Make arrangements in advance for assistance from contractors. Purchase orders or contracts for "as needed" storm services can prevent delays and misunderstandings during the emergency. Agreements can be made with contractors known to do quality work, and action plans can be discussed prior to the sometimes stressful conditions of storm clean-up. It is a good idea to insist that contractors carry at least \$500,000 of liability insurance and that employees are fully covered by workers compensation.
- Develop mutual aid agreements with nearby communities. Often one area is hit hard by a storm while others are left unscathed. Through a mutual aid agreement, a community that is missed by the storm provides workers and equipment to aid the stricken area and work under the direction of the local forester.

## After

After a storm, removal or repair of hazardous trees takes priority. Then, it is best to give all damaged trees a partial pruning, returning as work schedules allow for a more complete pruning. In all cases, crews should be reminded to work safely and to adhere to good pruning techniques rather than doing a poor job rapidly.

- Take advantage of "the teachable moment." Arborists often struggle to get the attention of the public to promote good tree practices, but find it difficult. When a storm strikes, trees suddenly enter the spotlight of news. The news media will be hungry not only for "hard news" about the storm and its effects on the community, but will also use *sidebars* — related vignettes or short features. Use this opportunity to educate citizens about tree physiology, proper pruning, how to select and work with a professional arborist, preventing future storm damage to trees, how to plant a new tree, avoiding planting large trees under power lines, and similar topics.
- Create good public relations out of a bad situation by clearly demonstrating your concern for the plight of local residents. Two good ways are to provide curbside pick-up service for downed branches (perhaps also providing phone numbers of volunteer groups who would help with yard clearing for handicapped or the elderly), and making chips available free for mulch. Chip trucks can place the piles at convenient locations like neighborhood parks. Publicize these and other emergency services through the mass media and telephone operators in your building. Also notify police dispatchers and others who are contacted by the public with inquiries.

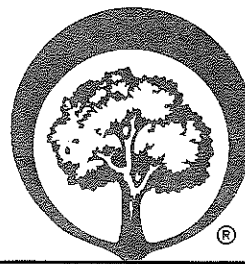


Randy Barger

## Preparing Your Trees

Storms can create a major impact on municipalities, which is one good reason for having a preventative tree maintenance program that includes:

- ☒ careful species selection for street and park plantings (for example, avoiding brittle species).
- ☒ rotations to prune all trees on a 3-5 year cycle (with attention to developing strong branch structure and thinning the crown).
- ☒ annual inspection to identify hazard trees, with removals as necessary.
- ☒ avoiding trenching near trees (this cuts important anchoring roots). Tunnel under the tree instead.



TREE CITY USA





Omaha World-Herald

## Working With the Media

A few principles will help you work successfully with the media to help assure accurate information and good public relations after a storm.

- ☑ Be honest and helpful. Don't try to avoid reporters. Answer their calls *promptly* so they can meet their deadlines and so they get the expert information they need. Say you "don't know" when necessary, but otherwise answer all questions or refer them to the proper person (with name and phone number) who can give the information. Go out of your way to be helpful to media personnel.
- ☑ Immediately develop a fact sheet. Place copies of it by your agency's phones and give them to all personnel who may be contacted by the media for interviews. Include in checklist format such things as estimations of damage, number of crew on the job, what equipment is being used and where it is working, emergency services available, dangers the public should know about, suggestions for homeowners, and other information deemed important. Update the information several times a day. A form for this purpose can be printed in advance.
- ☑ Have handouts ready. During the off-season, spend some time preparing a kit of information about the urban forest, Tree City USA, and short articles about tree care or emergency clean-up. Provide these to reporters after a storm. They may not use it the way

you wrote it, but most will appreciate it and use some part of it. It is a "win-win" situation because it makes the reporter's job easier, it gives information to the public during the teachable moment when people are interested and receptive to it, and it gives you the chance to get factual material to large numbers of people at little or no cost.

- ☑ In some communities it may be necessary to initiate the contact with the news media to offer your services in providing information about the storm. Be sure to contact and treat equally all newspapers, radio stations and television stations. Explain who you are and the kind of information you can provide.
- ☑ Keep a clipping file for use in annual reports and as one more way to describe the impact of your program to municipal officials. Also keep a list of reporters as you get acquainted with them. Later, contact them and suggest taking them along with you sometime during a regular work day to get a better look at the community's urban forestry program. Some nice feature articles throughout the year will go a long way toward creating a good public image as well as providing residents with the kind of tree care information that will help minimize damage from future storms.

# Other Sources of Information or Help

*Tree City USA Bulletin* will inform readers about helpful, up-to-date publications that provide more depth, serve as good models, or are readily available for community distribution. The editor welcomes sample copies to consider for inclusion in revised editions of this and other *Bulletins*.

## BOOKS

- *Public Relations and Communications for Natural Resource Managers*

James R. Fazio and Douglas L. Gilbert

Kendall/Hunt Publ. Co.  
P.O. Box 539  
Dubuque, IA 52004

or

Society of American Foresters  
5400 Grosvenor Lane  
Bethesda, MD 20814

399 pp., comprehensive reference to help foresters successfully communicate with their publics.

Includes principles, theory and specific techniques, including emergency information services. \$29.95; discount to members available through SAF.

A companion correspondence course for arborists, community foresters, and tree board members interested in learning the basics of public relations and media relations is available through The Arbor Day Institute. For a descriptive brochure and application form, contact the Institute at P.O. Box 81415, Lincoln, NE 68501-1415.

## LEAFLETS AND BOOKLETS

- *Tree Wound Response and Treatment*

Paul H. Wray and  
Laura E. Sweets  
Cooperative Extension Service  
Iowa State University  
Ames, Iowa 50011

4 pp., notebook format. Provides excellent explanation of new concepts of pruning, wound treatment, bracing and cavity treatment resulting from Dr. Shigo's work on decay in living trees. First copy free; then 25 cents. Inquire about quantity prices.

- *Storm Damaged Trees: Prevention & Treatments*

Kim D. Coder  
The University of Georgia  
Cooperative Extension Service  
Athens, GA 30332

16 pp. booklet with considerable "how-to" information and a list of southern trees ranked in order of their resistance to storm damage. First copy free; inquire about quantity.

- *Catalog of Books, Posters and Brochures*

Shigo and Trees, Associates  
4 Denbow Road  
Durham, NH 03824

A number of books and other publications about pruning and tree care are available from Dr. Alex Shigo, a leading authority in these subjects. Catalog leaflet and price list, free.

## VIDEOTAPE

- *Proper Tree Pruning*

Alabama Forestry Commission  
513 Madison Ave.  
Montgomery, AL 36130

A 20-minute video in 1/2" VHS format. It contains a wealth of information about pruning and is presented in an interesting way that would be valuable to all property owners and new tree department employees. Not available for loan, but copies will be provided free if you send a videocassette and self-addressed mailing label.

**To order additional Bulletin copies...** Friends of Tree City USA members may obtain a single copy of any *Tree City USA Bulletin* free of cost. Quantities of any issue are available at 25 for \$6.25 or 500 for \$100. To order, specify the issue number and quantity, and make your check payable to: The National Arbor Day Foundation, 100 Arbor Avenue, Nebraska City, NE 68410.

The Bulletins available are:

- No. 1 *How to Prune Young Shade Trees*
- No. 2 *When a Storm Strikes*

**To join the Friends of Tree City USA...** to receive a subscription to the *Tree City USA Bulletin*...and to become more involved in the urban forestry movement in your town and throughout America, send a \$10 dues-donation to Friends of Tree City USA, National Arbor Day Foundation, 100 Arbor Avenue, Nebraska City, NE 68410. Make your check payable to National Arbor Day Foundation.

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**TREE CITY USA**

The Tree City USA program is sponsored by The National Arbor Day Foundation in cooperation with the USDA Forest Service and National Association of State Foresters. To achieve the national recognition of being named as a Tree City USA, a town or city must meet four standards:

- Standard 1: A Tree Board or Department
- Standard 2: A City Tree Ordinance
- Standard 3: An Annual Community Forestry Program
- Standard 4: An Arbor Day Observance and Proclamation

Each winning community receives a Tree City USA flag, plaque, and community entrance signs. Towns and cities of every size can qualify. Tree City USA application forms are available from your state forester or The National Arbor Day Foundation.

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**Friends of Tree City USA**  
by



**The National  
Arbor Day Foundation**

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