The Resource

A Publication of the City of North Augusta
Stormwater Management Department

The Root of the Problem

Many of us have noticed trees that were once were vibrant mysteriously become bare over time and eventually die. As we consider the potential causes, rarely do we think about the irrigation system or the new pool we installed a few years ago.

Overlooking the extreme sensitivity of tree root systems is the number one mistake made when building or performing other land disturbing activities near or around trees. And although it may take years for a tree to die, even minor work over its roots can cause enough damage to kill the tree.

Tree root systems are extensive, often extending from the trunk to a distance more than twice the height of the tree. The root structure of the tree further determines its sensitivity to nearby disruptions. Root structures vary from tree to tree with tap roots extending deep below ground and heart and flat roots forming closer to the soil surface. For most trees, up to 95% of the root system is located in the top three feet of soil, with more than half of those roots located in the first foot of soil. Tree specialists, known as arborists, call this area the Protected Root Zone. The PRZ should be protected from damage to prevent future disease or death to trees.

When planning construction and other land disturbing activities in the PRZ, it is important to consider the following:

- What type of tree is it?
- What is the root structure?
- How tolerant is the species to root cutting, soil compaction and flooding?

Activities to avoid in the PRZ:

- Soil compaction from heavy equipment or stockpiled materials. Compacted soil causes rainwater to run off the site instead of being absorbed for the tree and closes vital spaces for oxygen in the root zone.
- Grade changes. Adding more soil can prevent shallow feeder roots from getting nutrients. Taking away soil at the surface may remove nutrient rich topsoil or destroy feeder roots entirely.
- Cutting through roots where possible. Root cuttings can kill a tree over time and can also cause destabilization, increasing the tree's risk of falling. Trenching methods exist to avoid cutting roots.

Image: Paul Wray, Iowa State University Forestry Extension

Trees with tap roots: *hickory, walnut, butternut, white oak, hornbeam*

Trees with heart roots: *red oak, honey locust, basswood, sycamore, pine*

Trees with flat roots: *birch, fir, spruce, sugar maple, cottonwood, silver maple, hackberry*

Trees, shrubs and vegetation provide habitat for birds and animals, stabilize the soil and help to prevent polluted runoff from entering our watershed. Consulting a local arborist or performing a little research can help determine how to protect trees and their sensitive root systems. To find out more about protecting trees, click on the stormwater icon at *www.northaugusta.net*.

And the Winner is…
North Augusta's Greeneway Trail

North Augusta's Greeneway Trail design was recently honored by the South Carolina Department of Natural Resources with its 2005 Stewardship Development Award for thoughtful stewardship of the environment

The award was created to recognize outstanding development projects that demonstrate efforts to preserve wildlife habitat, protect water quality, promote historical, archeological and cultural protection, re-use or revitalize existing sites and involve the community in their efforts.

The Greeneway was one of only two projects that met the stringent requirements to receive the award this year. The second recipient was Palmetto Bluff, a residential development in Beaufort County.

According to Freddy Vang, deputy director of SCDNR's Land, Water and

See Greeneway Trail on page 2

Sweet but Deadly

Each year, antifreeze poisoning is estimated to kill or injure as many as 4,000 children and between 10,000 and 90,000 animals.

Antifreeze poisoning can cause renal or cardiovascular failure, brain damage and even death. For a small child, just a few of ounces of this toxic substance can be a lethal dose. Three to four tablespoons can kill a medium dog while a cat only needs to consume one to two teaspoons. For an animal, even licking a paw that has stepped in antifreeze can cause illness or death.

There are two stages of antifreeze poisoning. The first stage is exhibited by a drunken appearance (staggering, lack of coordination, disorientation and vomiting). Stage 1 usually starts within 30 minutes of ingestion and can last for several hours. The victim will then appear to recover, however, this is actually the beginning of the second stage. In Stage 2, the liver tries to metabolize the ethylene glycol, the primary ingredient in antifreeze. Within 12 to 36 hours, the kidneys stop functioning and the victim may slip into a coma. Recognizing the first phase of poisoning and getting your loved one or pet immediate medical attention is critical to recovery.

Antifreeze is used primarily, as its name implies, to prevent liquid from freezing. Antifreeze can leak from cars due to broken lines, overheating engines or when flushing or filling radiators. Surprisingly, antifreeze is also found in snow globes which can contain up to two percent of the solution.

The Environmental Protection Agency states that since waste antifreeze contains high levels of lead, cadmium and chromium, it is potentially a hazardous waste that should be disposed of properly.

- Antifreeze should never be dumped on the ground or in storm drains, ditches, septic systems or sanitary sewers.
- Spills of antifreeze should be cleaned up immediately. If antifreeze is spilled, clean the area by flushing with water or absorb the spill with cat litter or rags and then bag these items securely in a waste receptacle for proper disposal.
- Antifreeze on the ground at gas stations should be brought to the attention of the owner for immediate cleanup.
- Never leave antifreeze out in the open unattended.
- Do not store antifreeze in containers other than those in which they were purchased and never leave open containers unattended.

Another way to help keep children, animals and the environment safe is by using a less-toxic antifreeze made with propylene glycol. For more information visit*www.epa.gov/epaoswer/nonhw/muncpl/antifree.htm*.

How do I properly dispose of or recycle antifreeze?

Many auto repair shops will accept antifreeze for recycling and/or proper disposal. Antifreeze is also accepted at Stormwater Management Department Household Hazardous Waste Collection event.

Household Hazardous Waste Collection Event Scheduled

A collection event has been scheduled for Saturday, May 20 from 10:00 a.m. - 1:00 p.m. at the Crossroads Market (Kroger) Shopping Center. In addition to antifreeze, this is an excellent opportunity for residents to dispose of fertilizers, herbicides, pesticides, paint, and similar materials.

Greeneway Trail

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Conservation Division, "The projects were chosen because they exhibited thoughtful stewardship of the environment through careful planning and construction."

The award was accepted on behalf of the city by J. Robert Brooks, Director of North Augusta's Department of Parks, Recreation & Leisure Services, and Tanya Strickland of the Stormwater Management Department.

For information on the program and past Stewardship Development Award recipients, click on the Stormwater Management icon at *www.northaugusta.net* for a link or visit the SCDNR Rivers, Watersheds & Stewardship website at *www.dnr.sc.gov/water/envaff/river/index.htm*.

Photo: Bill Bengtson, The Star

SCDNR's Richard Scharf presents the 2005 Stewardship Development Award to J. Robert Brooks, North Augusta's Director of Parks, Recreation and Leisure Services.

Working for Wildlife

South Carolina's New Comprehensive Wildlife Conservation Strategy

South Carolinians now have a Comprehensive Wildlife Conservation Strategy to ensure that the state's natural heritage remains intact for future generations. The new strategy is geared toward the conservation of all sensitive wildlife and habitats in South Carolina.

Photo: Recreation.gov.

Red Cockaded Woodpecker

The strategy was developed by the South Carolina Department of Natural Resources with assistance and input from numerous state and local agencies and organizations, private landowners and the general public. Participants reviewed previous management activities and how they affected the broader communities of wildlife. For example, one endangered South Carolina resident, the Red-Cockaded Woodpecker, needs prescribed burning to survive. The researchers looked at how that burning may affect other populations in the same forest and developed a new strategy that considers them as well.

The strategy identifies and includes recommendations for managing all sensitive species - birds, mammals, reptiles, amphibians, fish, invertebrates and insects - within specific habitats. You can access all of the recommendations for each of them in the strategy. All organizations or interested individuals can join in the task of working to protect fish, wildlife, and their habitats, for current and future generations. The new strategy provides one comprehensive document for everyone to work from. As information and research continues, the document will be updated to reflect needed changes.

The strategy was produced in response to a congressional mandate to all states to create Wildlife Conservation Strategies to address the entire diversity of wildlife and habitats in the United States. Together, the plans create, for the first time ever, a nationwide vision for wildlife conservation.

For a closer look at South Carolina's strategy, click on the stormwater icon at *www.northaugusta.net* or visit the SCDNR website at *www.dnr.state.sc.us/wcp*.

Some simple steps you can take to benefit wildlife and their habitats:

- Leave old palm fronds and Spanish moss on trees. They are used as roosts by Northern yellow bats. These bats can consume thousands of mosquitoes each night.
- Plant native vegetation to provide food and cover for a variety of native wildlife species.
- Keep vegetative buffers around streams, rivers and ponds. The buffers help filter harmful contaminants from stormwater runoff and provide shade to keep water temperatures optimal for fish and prevent erosion.
- Minimize the use of fertilizers, pesticides and herbicides.
- Keep non-native species of plants and animals out of the environment. They can significantly harm our native species and their habitats.
- Don't litter. Animals can become trapped or eat litter, resulting in injury or death.

Source: South Carolina Wildlife, September - October, 2005

Be a Wildlife Conservation Partner

Create a Backyard Wildlife Habitat

Once a yard has food, water, cover, and places to raise young. wildlife will thrive.

- ***Food*** – provide plants with fruits, nuts, seeds, flowers and feeders
- ***Water*** – provide fresh water with birdbaths, wetland gardens or bowls
- ***Cover*** – add trees and shrubs
- ***Places to raise young*** – add nest boxes, vines on fencing and nearby feeders

Visit www.scwf.org for more ideas you can use to create your own backyard habitat.

North Augusta and USC Aiken Team Up to Learn More About Water Quality

This past fall, the City of North Augusta and the University of South Carolina Aiken (USCA) jointly funded a study to evaluate the effectiveness of wetlands to filter contaminants from stormwater. Erin Jones, a biology student at the University, recently completed an internship with North Augusta's Stormwater Management Department to assist with the study. The collaboration provided an opportunity for Erin to gain experience with common local environmental issues and assessment.

Erin sampled water from streams located in the Waterworks Basin of our watershed (*The Resource*, Summer 2005). Samples were collected before, during and after rain events upstream, downstream and at the wetlands located at The River Golf Club. Michelle Harmon, Ph.D., Assistant Professor of Biology at USCA, will work with Erin to analyze the water samples for metal and nutrient concentrations.

The results of the study will be published in a future issue of *The Resource*. In addition to serving as an excellent learning experience for Erin, the study will help identify stormwater problems upstream of the wetlands and allow the Stormwater Management Department to respond with solutions designed to correct them.

The Stormwater Management Department and USC Aiken would like to extend their thanks to The River Golf Club for allowing access to the study area.

Species Profile
Chinese Climbing Fern

The Chinese Climbing Fern, *Lygodium japonicum*, has been located in North Augusta in several areas. The fern is a non-native, highly invasive plant that is one of two *Lygodium* species devastating forested areas in Florida where it grows like Kudzu, covering everything in its path. The plant was introduced in the United States as an ornamental in the 1900s.

The fern is known to grow in floodplains, swamps, marshes, secondary woods, pinelands and disturbed sites. It may grow year round in shady moist habitats. While our colder winter climate may limit the spread of the fern in South Carolina, the Stormwater Management Department is interested in identifying existing Chinese Climbing Fern populations in North Augusta. One population of the lovely, but highly invasive, fern has been located in the trees by the foot bridge located behind the Community Center in Maude Edenfield Park.

If you spot this fern in your yard, neighborhood or anywhere in the North Augusta area, please email *stormwater@northaugusta.net* or call 803-441-4246. Be sure to describe the location as well as a general idea of how large an area is affected. Controlling non-native and invasive plant and animal populations helps keep South Carolina's native plants and animals healthy and thriving. To learn more about this invasive fern, please visit the stormwater icon at *www.northaugusta.net*.

For additional information contact:

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