



# Living on the Edge – The Wildland/Urban Interface

**TREE CITY USA®  
BULLETIN**

No. **63**

Editor: Dr. James R. Fazio • \$3.00

*With light breezes in the treetops or a relaxing vista of chaparral, scrub oak, or palmetto, life can be good where nature meets the city. While this is truly a place close to nature, it is not quite rural and not urban. When people choose to live there, it presents important issues for both landowners and resource managers.*

The wildland/urban interface is a geographic space but not one as clearly delineated as the shore of a lake or the edge of a park. In fact, it has been well described as the wildland/urban intermix. It is residential areas mixed with woodlands and farmlands. In such areas, there are homes, workshops, and garages where only wildlife roamed, agriculture thrived, or trees covered the land.

Some cities and counties are choosing to prevent the growth of city footprints on the land, working within already developed areas to make the cities greener, more desirable places to live in and to work. No matter what, it is important to assure that those who do live at the edge can do so safely and without undue harm to the land and the sustainable services it can provide.

In this bulletin, we briefly summarize some of the key issues and suggest ways to bring safety and harmony to the interface. Despite jurisdictional problems and the need to move beyond traditional roles, urban foresters and tree boards can — and should — play an important role in the education and political decisions necessary to bring about positive change.



Residences at the edge of the city present a challenge to landowners and public officials, including urban foresters. Forethought and cooperation are needed for safety and environmental protection.



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# Living With Fire

*Each year hundreds of homes in the wildland/urban interface are destroyed by fire and lives are tragically lost. An essential first step to harmonious living is to recognize that fire has always been a natural part of the wild environment. With the arrival of human habitation, it requires carefully planned efforts to live there safely.*

## GUIDING POLICIES

Freedom to do what one wants with one's land runs strong in the blood of Americans. But public safety and the good of society sometimes has to take precedence. Planning at the interface is one of those times. Much grief and environmental destruction could be prevented by these measures:

- Land-use planning and zoning ahead of development is a powerful, proactive tool. Areas off limits to development might include steep slopes — a major contributor to fire danger — as well as geologically unstable soils that cause mud slides after fires. In addition, environmentally sensitive areas such as wetlands can be protected and prime farmland preserved.
- Conversely, cluster development can be encouraged to accommodate housing while preserving larger blocks of forest land and open space.
- Allowing development only after infrastructure is in place directs growth and helps assure safety and quality. This provides fire hydrants and accessibility for emergency vehicles by avoiding the helter-skelter placement of often-inadequate roads and bridges.

At the same time, it can preserve the natural character of the land by providing water and sewer lines, thereby reducing the need for large house lots to accommodate wells and septic fields.

## FIRE-RESISTANT BUILDINGS AND LANDSCAPING

People who choose to live in fire-prone areas have the main responsibility for safeguarding their lives and property. In some areas, firefighters make note of those houses that do not meet their standards for “defense” and will concentrate their efforts on houses that do. Building design and materials are one factor; landscaping is the other. See a companion to this bulletin, *Tree City USA Bulletin No. 41*, and page 8 for more information.

Using landscaping principles to protect houses does not mean that the property needs to be barren or ugly. Because of the importance of trees and vegetation for energy savings, stormwater management, air quality and other services, efforts should be made to incorporate vegetation into the fire-resistant design. Lists of appropriate plants are available from most state foresters and extension offices. Here are some general suggestions adapted from publications by Utah State University extension forester Michael Kuhns:



## TREES

- Near the house, select hardwoods (maples, buckeyes, hickories, catalpa, hackberry, honeylocust, oaks, etc.) instead of conifers.
- Crowns should be at least 10 feet from structures.
- Prune limbs up to 8–15 feet above the ground.
- Rake up fallen leaves.
- At least 30–70 feet from the house, orchards are appropriate; forest trees are generally safe if 200 feet from the house, thinned and pruned.



## HERBACEOUS PERENNIALS

- Separate flower beds with walkways, walls, or mowed grass.
- Select succulent plants, ideally low-growing species.
- Keep watered and weed out dead material regularly.
- Best not to plant directly next to the house.

## KEEP THE FOREST HEALTHY

A major cause of catastrophic wildfires is when forests are made vulnerable by insect attacks, diseases, and/or overcrowding. Forest health is enhanced by:

- Professional management by foresters.
- Thinning and logging (which is sometimes prohibited by well-intended ordinances).
- Removal of invasive understory plants.
- In some cases, carefully controlled prescribed fires.



### GROUND COVERS

- Low-growing, spreading, and succulent ground covers are very effective firewise plants.
- Maintain through watering, trimming, and removing dead material.



### GRASSES

- Select low-growing grasses suitable for your area.
- Keep watered and mowed.
- Consider grasses such as buffalograss that require the least water.
- Grass is especially appropriate near buildings.



### AVOID

- Conifers, including junipers, pines, spruces, and others commonly used against the foundation of houses.
- Any other resinous tree or smaller plants, especially near the house.
- Dense plantings of any shrub.
- Stacking firewood within 30–100 feet from the house.



Pruned limbs in forest areas away from the house can either be cut to lie close to the ground and decompose, or piled and covered for burning during wet weather.

## Do I Still Believe in Landscaping for Fire Prevention?

*This story was written by Ron Mahoney,  
who at the time of this incident was an extension forester at the University of Idaho.  
Ron taught and practiced the principles of living safely in the wildland/urban interface.  
Used with permission of the University of Idaho.*

**O**n July 30, 2003, our Moscow Mountain home, shop, and 5-acre forest property burned to the ground in a human-caused wildfire that covered 200 acres and consumed four other homes.

It was 98 F that day, with about 5 percent humidity and a 10 mph wind when the fire started. We had done many of the things we advise in our popular publication, *Protecting and Landscaping Homes in the Wildland/urban interface*. We had a large area of gravel and well-tended grass around the home, a circular turn-around that could accommodate large trucks and fire engines, and had thinned and maintained most of our timbered 5 acres.

Since the fire, I have been asked many times if I still believed in these practices. My answer is an absolute YES. Here is why.

It gave us a chance. Initially, the fire approached our property burning into the wind. We were able to stop and hold it at the line along the lawn and gravel areas, using only a garden hose. Likely, the fire would have stopped on its own at those boundaries, as there was no additional fuel for over 100 feet and the light winds were blowing the heat back into the fire. At this point, a rural fire truck was also on site and the driver told me he would come back because he had adequate space to turn around and quickly escape if necessary. Our efforts had helped slow down the fire and gave firefighters a chance to save other homes and properties.

When the fire stopped at the edge of our defensible space, we thought we were safe. Then, just as the fire truck ran out of water, we heard a roar. The fire had jumped the road below us, and now came charging up the slope, this time with the wind.



Sometimes even the best of practices will not be enough to thwart the powers of nature at the wildland/urban interface.

Trees, including some large pines pruned up to 30 feet, were exploding into flame 80 feet or so in front of the rapidly advancing fire. The heat was so intense that the fire ignited our buildings without any flame reaching them first. As this happened, I could see the fire-retardant tanker planes and helicopters with large bags of water suspended below approaching on the horizon.

We were defensible, but the conditions that day didn't give the defenders enough time to save our home.

However, our open spaces, thinned and pruned trees, and ability to halt the fire on its initial front, may have helped save our neighbor's home. I also believe that it gave the superb group of firefighters the small edge they needed to stop the fire at only 200 acres. We all feared it would consume all of Moscow Mountain and perhaps thousands of additional acres east of our area.

Under less severe conditions, I believe the fire hazard reduction measures we took would have saved our home. Under the conditions that day, the potential fire damage was only thwarted by the well-trained and equipped firefighters from local and state agencies, private forest industry, and logging companies that responded with incredible courage and skill.

# Reducing Human Impacts

*The spread of residences into the once-rural countryside creates risks. Some, like wildfire and animal problems, accrue to the residents. Others are more general and impact nearby communities or society at large.*

## HYDROLOGICAL SERVICES

Forested watersheds supply some 66 percent of our water supplies. Forests also prevent soil erosion and prevent flooding. Water is a precious community resource, but its protection and management, especially with the mixed ownerships at the interface, is challenging at best. Larry V. Korhnak and Susan W. Vince of the University of Florida suggest several ways to mitigate interface development and maintain water quantity and quality. Through planning that involves all stakeholders in an entire watershed, they suggest assessing the area's water resources and developing policies for its protection. Such policies include:

- Protecting wetlands, including small tributary streams and the adjoining vegetation (riparian buffers) that are essential for moderating water temperature and preventing pollution.
- Minimizing impervious surfaces. This can be done through zoning that clusters housing, and by such techniques as shortening driveways and using gravel or pavers instead of asphalt and concrete.

- Educating residents to minimize the use of pesticides and fertilizers.
- Reducing rapid rainwater runoff by using street-side swales, landscaped detention ponds, and rain gardens at residences.



Retaining water onsite can retard runoff from rainstorms, slow advancing wildfires, provide a source of water for firefighters, and help wildlife.



## AIR QUALITY

Development at the wildland/urban interface affects our air in two ways. First, more cars commuting greater distances add pollutants to the air. Second, fewer trees mean less carbon sequestered, less oxygen produced, and less filtration of air borne particles. The latter was quantified in northern New England in a study conducted by University of New Hampshire scientists. They found that development in the interface has already reduced forest carbon sequestration by 4 percent

for the region and nearly 10 percent at the county level. They predict that by 2030, the figure will rise to 40 percent. The point they wished to make was that development in the interface is not carbon neutral and that this should be taken into consideration in policy decisions. At the ground level, it once again points out the need to plant trees and maintain as much canopy as can be done safely.

# Communities Take Protective Actions

*Many communities are being proactive in planning for growth at the interface. The creation of parks, setting aside protected areas and the use of conservation easements are helping to reduce the impacts.*

## FAYETTEVILLE, ARKANSAS

In 2003 this community with a population of 73,500 became alarmed about threats to the nearby natural areas that had previously been taken for granted. Rumors of land sales led to the creation of the Fayetteville Natural Heritage Association. Their first action, in cooperation with the City of Fayetteville, was to raise \$300,000 in private funds toward the \$1.3 million sale price of a forested tract known as Mount Sequoyah Woods.

According to the association, “The communitywide effort to ‘Save Mount Sequoyah Woods’ brought the issue of undeveloped natural space to the attention of both private citizens and the business community within Fayetteville, most notably, real estate developers. As a result of our efforts, (we) became recognized as an effective advocate for healthy green infrastructure, while not being perceived as anti-development.”



The Fayetteville Natural Heritage Association is an example of what a group of citizens can do to help manage growth at the interface of natural areas and the spread of urban development. Here, members of the Association receive an award from the League of Women Voters.

The Association has gone on to champion the purchase of other forested land and wetlands of high public importance. It has also utilized conservation easements to help build its reputation in the community “for both conservation and common sense” resulting in tremendous citizen support.

As the association grew, it received a matching grant from the Arkansas Forestry Commission’s Urban

Forestry Program and the U.S. Forest Service to systematize and prioritize its selection of land parcels targeted for protective action. The steps were:

1. With help from the University of Arkansas and a number of other organizations, a Geographic Information System (GIS) was used to rank parcels of property.
2. Using the GIS and its various map overlays, the search was on for parcels over 5 acres with more than 50 percent not developed, and a high degree of plant and animal diversity.
3. A Science Advisory Council, along with public input, further looked at factors such as habitat connectivity, topographic diversity, rarity of forest cover, and water bodies present.
4. The highly ranked sites were then visited to determine accuracy and potential for recreational use.
5. Acquisition or easements were then pursued on two sites considered most important for conservation. Work continues on opportunities to conserve other highly ranked sites.

## CONSERVATION EASEMENTS AS A TOOL FOR MANAGING GROWTH

A conservation easement has been defined as an encumbrance — sometimes including a transfer of usage rights — which creates a legally enforceable land preservation agreement between a landowner and a government agency (municipality, county, state, federal) or a qualified land protection organization, often called a land trust, for the purposes of conservation. It restricts real estate development, commercial and industrial uses, and certain other activities on a property to a mutually agreed upon level. The property remains the private property of the landowner.

This voluntary action is often a win-win for the landowner and the community. It is a flexible instrument that can be used to perpetuate just about any desirable current use or visual attribute while at the same time not removing the land entirely from the local tax base. Landowners that donate a qualifying conservation easement to a government entity or qualified land protection organization may be eligible for a federal income tax deduction equal to the value of their donation. The value is determined by an appraiser who calculates the difference between fair market value of the property before and after the easement takes effect. Depending on state legislation, there may also be additional tax benefits.

## BOULDER, COLORADO

The city of Boulder is one of the most progressive communities in the country when it comes to protecting the agricultural and wildlands that surround it. Work on these issues falls to the city's Open Space & Mountain Parks Department. Its mission statement tells the story:

*The Open Space and Mountain Parks Department preserves and protects the natural environment and land resources that characterize Boulder. We foster appreciation and use that sustain the natural values of the land for current and future generations.*

To date, over 45,000 acres of land have been preserved and protected. Boulder was the first city in the country to pass a sales tax of  $\frac{4}{10}$  of a cent to be used for the acquisition and management of open space lands. Voters have subsequently approved additional sales taxes to support the program. Private donations and development dedications have supplemented the tax. Conservation easements are used as well as land purchases.



Boulder's charter for its Open Space and Mountain Parks Department lists the "preservation of agricultural uses and land suitable for agricultural production" along with "preservation of water resources in the natural or traditional state" as among the purposes of its creation. Other purposes include "limiting urban sprawl and disciplining growth," preservation of water resources, wildlife habitats, and aesthetics — all as a contribution to "the quality of life of the community."

## TREE CITY USA GROWTH AWARD

There are numerous city or tree board activities related to the wildland/urban interface that can help your community receive a Growth Award. Some eligible activities include but are not limited to:

- Publicity or communitywide tree events
- Continuing education for forestry managers and tree board members
- Publications or local awards program
- New project or organization
- Land-use planning coordination
- Wildland fire prevention coordination
- Citizen training program
- Ecosystem service analysis
- Standards and specifications
- Improved ordinance
- Park, open space
- Emergency plan



# Firewise Communities

The Firewise Communities Program is built on the premise that brush, grass, or forest fires do not have to be disasters. The genesis of this program was in 1985-1986 when it became apparent that wildland/urban fires were not confined to the chaparral hills of California. When 1,400 homes burned down that year, with 600 of them in Florida, it became clear that destruction in the interface is a national problem.

To address the issue, the National Fire Protection Association partnered with the U.S. Forest Service, the U.S. Department of the Interior, and the National Association of State Foresters. Conferences and an investigation of fire-resistant plants and home building materials led to coining the term "Firewise." This became the framework for teaching residents about wildfire and how they can put smart practices into play around their homes to reduce the risk of destruction during wildfires.

In 2002, the educational efforts expanded to include a Firewise Communities/USA® Recognition Program. Today there are more than 1,400 Firewise sites throughout the U.S. that have met the standards by planning, organizing, and conducting activities each year that make a difference in their wildfire safety. Specifically, to become a Firewise Community, the city or county must:

- Obtain a wildfire risk assessment from the state forester's office or a fire department.
- Form a board or committee and create an action plan based on the assessment.
- Conduct an outreach program every year.
- Develop an action plan.
- Invest a minimum of \$24.14 per dwelling unit in local Firewise actions.

## FOR MORE INFORMATION ...

Please visit [arborday.org/bulletins](http://arborday.org/bulletins) and click on Bulletin 63 for instant links to Firewise and more information about the topics briefly covered in this issue.

PHOTOS COURTESY OF: NFPA/Firewise Communities Program (page 1), James R. Fazio (page 3, lower right; page 5, top), Ron Mahoney (page 4), Fayetteville Natural Heritage Association (page 6), Ann G. Duncan (page 7, upper right)

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