# *When The Forest Becomes A Community*

A Forester's Handbook for the Wildland/Urban Interface
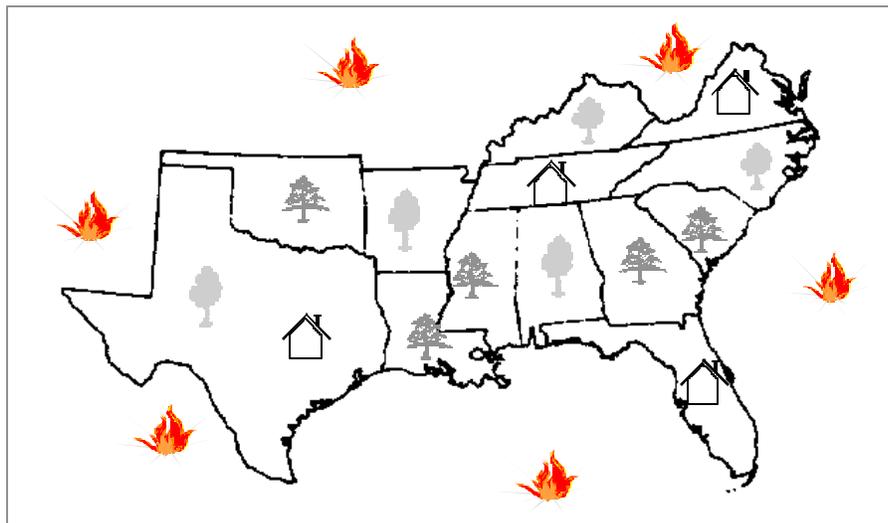
Southern Group of State Foresters

Southern Forest/Urban Interface Council Members

ALABAMA

Forestry Commission
513 Madison Avenue
Mongomery, AL 36130
(334) 240-9304; FAX 240-9390

ARKANSAS

Forestry Commission
3821 West Roosevelt Road
Little Rock, AR 72204-6396
(501) 296-1940; FAX 296-1949

FLORIDA

Division of Forestry
3125 Conner Boulevard
Tallahassee, FL 32399-1650
(904) 488-4274; FAX 488-0863
Homepage: http://thunder.met.
fsu.edu/forestry

GEORGIA

Forestry Commission
P.O. Box 819
Macon, GA 31298-4599
(912) 751-3480; FAX 751-3465
Homepage: http://www.state.
ga.us/GFC

KENTUCKY

Division of Forestry
627 Comanche Trail
Frankford, KY 40601
(502) 564-4496; FAX 564-6553

LOUISIANA

Office of Forestry
P.O. Box 1628
Baton Rouge, LA 70821
(504) 925-4500; FAX 922-1356
Homepage:http://Idaf.state.la.us/
forestry/forestry.htm

MISSISSIPPI

Forestry Commission
Suite 300, 301 Building
Jackson, MS 39201
(601) 359-1386; FAX 359-1349
Homepage: http://www.mfc.state.ms.us

May 1998

NORTH CAROLINA

Division of Forest Resources
P.O. Box 29581
Raleigh, NC 27626-0581
(919) 733-2162; FAX 715-4350
Homepage: http://www.ehnr.state.
nc.us/EANR/DFR

OKLAHOMA

Department of Agriculture
Forestry Services
2800 North Lincoln Boulevard
Oklamhoma City, OK 73105
(405) 521-3864; FAX 522-4583
Homepage:http://www.oklaosf.state.
ok.us/~okag/forhome.html

SOUTH CAROLINA

Forestry Commission
P.O. Box 21707
Columbia, SC 29221
(803) 896-8800; FAX 798-8097
Homepage: http://www.state.sc.
us/forest

TENNESSEE

Department of Agriculture
Division of Forestry
P.O. Box 40627
Melrose Station
Nashville, TN 37204
(615) 360-0722; FAX 360-0756

TEXAS

Forest Service
College Station, TX 77843-2136
(409) 845-2601; FAX 845-5764
Homepage: http://agcomwww.tamu.
edu/agcom/news/tfshome/tfs.html

VIRGINIA

Department of Forestry

P.O. Box 3758
Charlottesville, VA 22903
(804) 977-6555; FAX 977-7749
Homepage: http://www.state.va.
us/~dof/dof.htm

USDA FOREST SERVICE

Region 8 Office
1720 Peachtree Road, NW
Atlanta, GA 30367-9102
(404)347-4243; FAX 347-3270

Table of Contents

Purpose

State forestry agencies are responsible for providing many forestry related services in *forest/urban interface* areas. Services include fire management, urban forestry assistance, forest management, insect and disease advice, and assistance with the aftermath of natural disasters.

This handbook was written by members of the Southern Forest/Urban Interface Council and other contributors to provide State forestry personnel with ideas about the importance of the interface, and ways to deal with some of the problems that may arise.

Introduction

The *wildland/urban interface* is a term that came into existence in the late 1980's to describe the area where the city environment meets the rural environment. No one definition of the wildland/urban interface (or forest/urban interface) has been universally accepted. A few definitions include:

A zone where man made improvements intermix with the wildland fuels.
(S 205, Fire Operations in the Urban Interface)

An area where improved property and wildland fuels meet at a well defined boundary.
(National Fire Protection Association (NFPA) 299, Standard for Protection of Life and Property from Wildfire, 1997 edition)

"...three types of interface. The <u>classic</u> interface occurs when city boundaries and suburbs press against wildland vegetation as in the subdivision on the outskirts of town. The <u>mixed</u> interface is where homes and other structures are intermixed with wildland vegetation similar to the conifer forests growing throughout mountain communities. The <u>occluded</u> interface is when islands of wildland vegetation occur inside a metropolitan area like undeveloped pockets of wildland preserved within a large developed urban area."
(Charles W. Philpot, U.S. Forest Service)

The general zone where significant penetration of people has occurred or is occurring but where there remains significant acreage of forest.
(Land Use and Forest Resources in a Changing Environment, The Urban/Forest Interface: Summary Observations and Research Needs, Marion Clawson, pp.199)

Any area where potentially dangerous combustible wildland fuels are found adjacent to combustible homes and other structures.
(Fire Protection in the Wildland/Urban Interface: Everyone's Responsibility, National Wildland/Urban Interface Fire Protection Program, pp.3)

No matter what definition of the *forest/urban interface* is used, they all refer to a geographical area where two diverse systems - forest and urban - meet and interact, giving rise to conflicts concerning management of natural resources.

The **stresses** of today's high pressure work environment, the degradation of urban areas, better transportation systems, and the development of new technologies, such as computer commuting, are causing many people to move into rural areas. When they move, the new residents bring with them expectations of receiving the same level of public services they had in the city.

They may also bring **misconceptions** and a lack of understanding about the forest resource they are moving into. These two perceptions can lead to problems for the natural resource manager. As people with little or no exposure to resource management move into forested areas, conflicts arise over the use of traditional forestry techniques such as prescribed burning and timber harvesting.

It is critical that foresters develop **new approaches** to solving land use and forest management problems created in the forest/urban interface. Programs must be designed to help citizens understand forestry issues and form proper and informed opinions. However, information must be provided to the public in an honest and unbiased manner. Education to one group may be propaganda to another.

Conflicts in interface areas frequently arise at property boundaries. These disputes often reflect the interaction of people, forest landowners and users, with increasingly dissimilar values and expectations. For the forest resource manager, these interactions promise to be a continuing source of opportunity. State Foresters are resolved to provide the leadership and develop partnerships to provide appropriate management practices and protection services wherever interface issues are found.

> It is important to remember that life in the country is different from life in the city. County governments are not able to provide the same level of service that city governments provide.

Incorporating Planning

in the Forest/Urban Interface
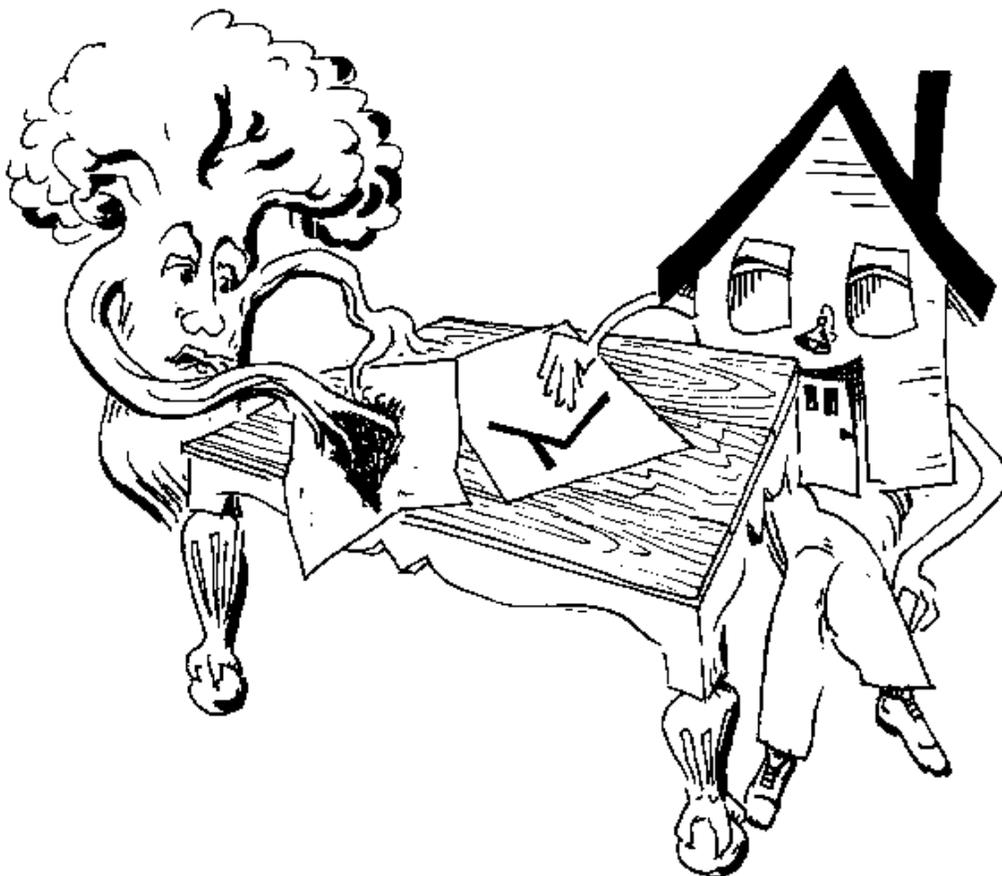
The first requirement to ensure that planners understand the vital need to incorporate interface issues into the planning process is **to be present at the table when the plans are being developed.**

Recently a planning official told a group of southern foresters, "We simply aren't aware of every issue and do not have the background and expertise to deal with some issues." The planning official, from a rapidly growing area experiencing a bewildering array of interface problems, further explained that very few planners would invite foresters to a planning session, "but most planners would be glad to have you there for a better understanding of the issues."

Demeanor of the forester in this strained environment should **NOT** be one of overbearing expertise, but that of a caring and knowledgeable natural resource expert willing to listen and share. To sustain such a channel of communication, it is essential

Foresters must be at the table when plans are being formed.

that the forester become well aquainted with city and planning officials, and offer assistance with resource data and specific recommendations. As these interactive relationships continue, emphasize the importance of maintaining contact with foresters and forestry interests. Always project the image that you, as a forester, represent the collective interests of all people involved.

> Foresters should be a part of any interface planning team or committee.

The spectrum of people you will be working with will be varied and at times potentially volatile. So it is necessary that you have the knowledge and negotiating skills to sell yourself as a competent professional focused on collective interests. Professional appearances is very important, so always dress professionally.

Other professionals that you can expect to encounter and should work closely with include: wildlife officials, land developers, water quality experts, soil scientists, county extension agents, local natural resource regulators, fire officials, home builder associations, neighborhood coalitions, garden clubs, civic clubs, environmental preservation groups, real estate associations, and representatives from the various media. Often these individuals will have strong interests as well.

Again, the important thing is to maintain your presence at the forest/urban interface planning table as a knowledgeable professional who assumes leadership when the opportunity is available.

BECOMING INVOLVED

The following list of suggestions represent ways that foresters can become involved in the county planning process:

- ⬧ Send a letter to each county director of planning offering your services. Express interest in becoming a part of the planning process. Send a copy of the letter to the county administrator.

- ⬧ Get on any mailing lists dealing with committee meeting agendas.

- ⬧ Get to know the county planning commission members and their backgrounds. Find out who feels strongly about certain forestry related issues.

- ⬧ Offer to present a brief slide or video program to the county planning commission on forestry considerations for county planning. While a program tailored to specific counties would be preferable, a good generic program for the state may be far more realistic. The program can also be used for regional planning district commissions or similar groups.

- ⬧ Find out when the next **Comprehensive Plan** review will be, and if the county has a committee that deals with the rural, agricultural, forestry and forest/urban interface aspects of the comprehensive plan. Try to become a part of this committee or suggest the development of one. As a minimum, provide input on the value of the forest resource during the review process.

- After becoming involved, the forester should set up **tours** for the planning commission members and county officials to explain the complexities of the forest/urban interface.

- Foresters should continually identify issues to take a position on and present them during the county review process.

- Encourage county governments to establish a county **Technical Review Team**, to meet and review site plans and subdivision plans in the preliminary stages of a project. During these "design" meetings, various agencies will be able to comment on the project and advise developers of the requirements of their agencies as well as schedules for submission and approval. The goal is to get agencies involved up front. This will improve communications, let developers and builders know what is needed and expected, reduce problems and save time.

Fire Management
in the Forest/Urban Interface

INTRODUCTION

There are many things to consider when dealing with wild or prescribed fire in the *forest/urban interface*. There is a vast diversity of lifestyles and personal conceptions of what is acceptable. The people in the interface range from those who were the original rural residents, accustomed to the presence of fire in their environment, to those who have recently moved from urban areas and have no concept of the hazards and benefits of fire behavior, and would prefer to have a fire and smoke-free environment. The clash of these two cultures can sometimes be quite volatile.

Many new residents build expensive homes and bring with them a "back to nature" philosophy that harbors a desire to leave their property and all of the property around them as undisturbed as possible. This philosophy often leads to insufficient access

roads and hazardous fuel conditions very near structures. The new residents also may have the misconception that all issues can and should be resolved with ordinances or by levying new taxes. The long-time residents generally maintain older ideals and may resent the influx of these city dwellers.

It is our duty as land managers to adopt an operational role in the forest/urban interface that includes wildland firefighting, hazardous fuels reduction, cooperative fire prevention and education, and technical assistance.

FIRE PROTECTION

Fire Prevention

Fire prevention by the most recent definition is "All the activities concerned with minimizing the incidence of fires". To effectively reduce the two main causes of fire ignitions in the South, arson and debris burning, everyone will need to participate in the prevention process. Opportunities abound to address other interface issues including urban forestry and forest management through prevention contacts and partnerships with other agencies and organizations.

Forest Fires by Causes in the South, Five-year Average, 1991-95

Successful fire prevention programs in the interface may include the following:

- ◆ Develop **partnerships** among fire services, community groups, local officials, forest industry, developers, and the insurance industry.

  - Organize **advisory groups** or planning teams within the partnerships to develop and guide woodland home fire protection programs. No single agency can solve this problem.

  - Select a coordinator for woodland home fire protection programs.

- ◆ Recommend and stress the importance of firewise construction, firewise landscaping, and alternative disposal of vegetative debris, such as wildlife brush piles and chipping. Homeowners associations can purchase neighborhood chippers to reduce brush and debris around homes.

- ◆ Provide **education programs** for adults and children that will have a positive effect in reducing interface ignitions. As new residents with children move into
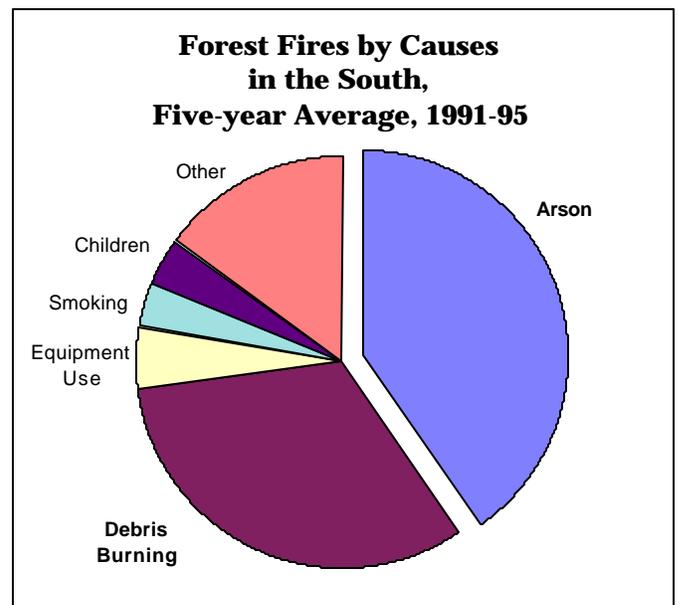
the interface, state forestry agencies need to maintain strong educational programs aimed at keeping children-caused fires at low levels.

- **Tools for successful awareness programs include:**

  - Prepare materials that can be direct mailed to high risk areas, hung on doors or passed out at programs or events.

  - School and community programs.

  - Landowner workshops in larger developments, such as spring and fall clean-up days.

  - Personal contacts and presentations.

  - Media contacts and news coverage.

  - Fire prevention hazard inspections and fire safety checklists for individual homes.

  - Forest fire danger and prevention signs, featuring woodland home fire prevention messages.

  - Special events or conferences.

- A positive, proactive **law enforcement program** including:

  - The consistent enforcement of fire laws.

  - A permit system.

  - Hazard inspections.

  - Warning tickets.

  - Community watch groups in arson areas.

Legal

Voluntary compliance to fire prevention measures has in many cases proven not to be successful or unsuccessful.

The most desirable alternative to many fire problems associated with the interface is voluntary compliance to fire prevention measures. In many cases this has proven not to be successful or to be unsuccessful, therefore, some legal measures should be considered:

- Ordinances/building codes.

  - A model fire code for the forest/urban interface is available from the International Fire Code Institute, 5360 Workman Mill Road, Whittier, CA 90601-2298.

- Burning bans in high risk areas.

- Permit systems.

- Fire protection/mutual aid agreements.

  - *"Developing a Cooperative Approach to Wildfire Protection"* is a publication and companion video developed by the National Wildland/Urban Interface Advisory Group. It is available from the National Interagency Fire Center (see address on next page).

Pre-suppression

Pre-suppression is all activities taken prior to an emergency that will reduce property loss.

- Homeowners and protection agencies share the responsibility for reducing the threat of wildfire. Homeowners should be made aware of this responsibility.

- Work with **insurance companies** to develop short courses for insurance industry continuing education programs. Insurance companies should also be encouraged to start education programs for employees and clients about forest fire risk to woodland homes and offer rate reductions for those homeowners who comply with established fire protection and safety standards.

- In woodland developments, fire agencies need to understand the potential for homes to ignite from forest fires. A **Hazard Assessment** or **Risk Analysis** will help to determine this and help communities when planning for fire safety measures involving structures and surrounding lands.

  - The National Fire Protection Association (NFPA) has a *"Standard for Protection of Life and Property from Wildfire (NFPA 299)"* that will help you develop a numerical risk rating. It is available from NFPA, P.O. Box 9101, Quincy, MA 02269-9101.

  - A *"Wildland/Urban Interface Fire Hazard Methodology"* handbook was developed by the National Wildfire Coordinating Group's Wildland/Urban Interface Advisory Group. It is available from the National Interagency Fire Center.

- **Forest Fire Response Plans** for woodland communities identify the ~~anticipated problems and appropriate responses for fighting a fire in or near~~ the

> A risk analysis will help determine the potential for an interface fire to occur.

> A number of wildfire prevention publications and videos are available for fire protection agencies and organizations from:
> National Interagency Fire Center
> Great Basin Supply Center
> 3833 S. Development Avenue
> Boise, Idaho 83705
> Mail or Fax your order for a Publications
> Catalog (NFES #3362) Fax-(208) 387-5573/5548

Firewise Subdivision Design

Firewise subdivision design can spell the difference between disaster and success in dealing with interface fires. County governments should be encouraged to provide adequate access and roads by using state road specifications, and developers should work closely with fire agencies to design firesafe communities.

Firesafe Community Recommendations:

- Build at least two **entrances** to the development.

- Provide a **traveled way** of not less than 24 feet wide, providing for simultaneous access for emergency vehicles and the evacuation of residents. Improved gravel **shoulders** shall be a minimum of four feet wide on each side. Construct road **curves** with at least a 100 foot radius. Avoid road **grades** of more than 12 percent.

- Make **cul-de-sacs** large enough (at least a 50 foot radius) to allow large vehicles to turn around without having to back up. Make "Hammerhead T's" at least 40 feet long.

- Minimize the number of **dead end streets**. If a street must dead end, it should be well signed and have adequate room for vehicles to turn around at the end. Looped road networks are preferred with unobstructed traffic circulation.

- Construct **driveways** wide enough and straight enough to accommodate emergency vehicles.

  - 12 foot traffic lanes with a 15 foot vertical clearance of tree branches.

  - Provide turnouts every 400 feet, or at the midpoint if it is between 150 and 800 feet in length. Can emergency vehicles turn around once they reach the house?

- Clearly mark all **addresses**.

- Construct **bridges** at least as wide as the road and capable of handling at least 20,000 pounds per vehicle axle. Build bridges of non-combustible materials.

- Make a minimum spacing between buildings of 60 feet with a 30 foot property line setback. This will allow room to maintain a minimum safety zone around each home.

Clearly mark all addresses.

Standardize all hydrant connections.

- Install a reliable water source, preferably hydrants on at least 6 inch lines. Dry hydrants or fill pipes are acceptable if pressurized hydrants are not available. **Standardize** all hydrant connections.

- Place electric power underground if possible. Keep overhead power lines trimmed free of intruding vegetation.

- Leave green spaces or natural barriers intact. Large developments need safety zones.

Firewise Home Design

Firewise home design can significantly increase the chances a home will survive a forest fire. The design should include a safe location for the house and the use of less combustible building materials.

Firewise home designs include:

> Build with fire resistant materials.

- Building on the most level portion of the land, set back at least 30 feet from the edge of a ridge for a single story house.

- Using fire resistant **roof** materials.

  - The number one cause of home losses in wildland areas is from untreated wood shake shingles on roofs.

  - Wooden roofs are highly vulnerable to **firebrands** or embers that can travel by wind a mile or more ahead of a forest fire. Even non-flammable roofs need to be checked for gaps that can allow firebrand to collect on wood subroofing.

  - **Roof sprinklers** are not always the answer because water pressure may be low or the electricity needed to pump water may fail.

  - Keep roofs, roof valleys, and gutters clean of flammable material such as leaves and pine straw. Place and maintain spark arresters (screens) on chimneys.

- **Walls** clad with fire resistant materials.

  - Materials, such as stucco, masonry (stone, brick or block), metal, and log, stand up better under heat and exposure. Vinyl can melt, exposing inner wall components to heat and embers. Wood is generally assumed to be highly flammable, and not the best option.

  - The edges of flammable wall material will ignite before flat surfaces. Trim materials are usually the first to catch fire.

- **Windows** made of fire resistant material. Windows broken during a fire can offer a direct path for flames into the structure.

- **Single pane** windows can break very easily from the heat of a fire.

- **Double and multiple pane** windows offer only slightly better protection.

- **Tempered glass** is the best choice. There is a significant difference in the amount of heat it will withstand compared to single pane glass. Tempered glass is expensive, so use it for the largest and most vulnerable picture windows. Sliding glass doors are required to be made from tempered glass.

- Minimize the number and size of windows on any side of the house that is most likely to be exposed to a forest fire. The use of several smaller (two foot wide or less) individually framed windows placed together is more resistance to breakage than one large non-tempered picture window. Windows should not face flammable trees or shrubs that are closer than 30 feet.

- Non-flammable shutters for windows and skylights can also help.

- Fire resistive **vents and soffits**:

  - Cover exterior attic and underfloor vents with wire mesh no larger than 1/8 inch to prevent firebrands and sparks from entering the house. All roof joist openings should also be fireblocked.

  - Undereave soffit vents should be closer to the roof line, rather than the wall, to prevent heat or flames from becoming entrapped.

  - Eaves should be boxed or designed with minimal overhang.

    - Enclosing or boxing an eave, or making it a soffit, reduces the surface area and opening available to a fire. Boxing an eave with appropriate materials also slows a fire's entrance into the attic and sub-floor areas adjacent to the eaves and overhangs.

- Fire resistive **decks, porches and fences**.

  - Consider terraces instead of elevated decks, or use less flammable material for decks. Screen or box in decks and porches whenever possible to keep out sparks and flames.

  - Examine your yard for areas where leaves collect. Those are the same places the wind will carry burning embers.

  - Wooden fences attached to homes can act as fuses or fuel bridges that lead a fire to the home. If a fence must be attached to the house, construct it with less flammable materials.

Exterior additions to homes should be constructed of fire resistive materials.

The arrangement spacing and density of vegetation can be more crucial than what is planted.

Firewise Landscape Design and Maintenance

A home in a woodland setting is surrounded by flammable vegetation. Firewise landscaping can help create a defensible space or safety zone around a home. This not only helps keep fire from approaching a home, but it provides a safe space for firefighters to work.

The goal is to "break the chain" of fuel between homes and natural vegetation, eliminating things that can catch fire and carry themit to the house. Remember that proper landscaping is important, but the type of building materials used for the house is still the most important element of survival.

Firewise Landscape Recommendations:

- There are no fire-proof plants, but some are more fire resistant than others.

- Choose plants and trees with:

    - A high moisture content.

    - A low oil or resin content.

    - Minimal litter and accumulated debris.

    - Limited foliage and few dead branches.

    - A lower overall height.

    - An open, loose branching habit.

    - Easy maintenance and pruning.

    - Drought resistance.

- Location of plants and trees in a yard should be carefully planned. The arrangement, spacing and density can be more crucial than what is planted.

    - Proper **maintenance** is also vital to remove excess debris and help plants retain their fire resistive properties. Pruning and shaping can increase a plant's fire resistance. Lack of maintenance can make it more flammable.

- Reduce the amount of material that a fire can use as fuel for a distance of at least 30 feet around the home (75 feet if in a pine forest). As the slope of the lot increases, additional clearance of up to 100 feet may be necessary. Steep slopes can be terraced to slow down forest fires.

    - Remove highly flammable species, such as juniper, cedar and pines.

> **Remove highly flammable species**

> **Keep vegetation from making a fire ladder.**

• Have nothing flammable next to the house. The most critical area is the zone within 5 feet. Keep this clean and clear of trees, brush, tall grass and other burnables.

• Maintain a well-kept lawn. Use raised beds, rock gardens, stone walkways, walls and patios to create visual interest while maintaining a fuel break.

• Occasional trees and shrubs should be kept small and be at least 10 feet from the house. Space trees 10 to 15 feet between tree crowns and prune 10 to 15 feet up from the ground.

• Avoid fire ladders where fire can climb from the ground into tree branches. Do this by pruning trees, spacing tall trees away from medium-sized trees, and by using ground covers and small plants under tall trees.

• Stack firewood at least 15 feet from the home.

• Remove limbs overhanging chimneys and the roof.

♦ Keep flammable liquids stored away from the home in out-buildings.

♦ Burn trash in a safe trash burner (if trash burning is allowed).

♦ Conduct woodland home hazard inspections. Use information from the inspections to teach homeowners how to improve fire safety around their homes.

Additional forest fire protection information is available from:

♦ **Firewise Homepage at http://www.firewise.org** - The web site is sponsored by the National Wildland/Urban Interface Fire Protection Program.

♦ Firewise landscaping demonstration projects have been planted in some states, giving homeowners and fire officials a chance to see an appropriately designed safety zone. Lists of suggested plants and trees can also be made available for homeowners.

Detection and Communication

To rapidly detect a fire and to provide the proper fire agency with the location of the fire, are two keys to the successful control of any wildfire. This is very essential in interface areas because of lives and property at risk.

Since most fires are reported by the general public, neighborhood watch groups, local constables, police, or local fire personnel on routine patrol, the following should be considered:

♦ Have one place to report fires.

[sidebar: Rapid Fire Detection and Location are Key to Successful Control]

- Train emergency operators to obtain enough information to determine the exact location and size of the fire, the type of equipment necessary for suppressing the fire, which agency should respond to the fire, and the number of homes threatened.

- Establish mutual aid agreements which specify the dispatch authority (chain of command) for each agency's resources.

- Establish and use radio systems that allow various agencies to communicate with each other.

Suppression Activities

The operational activities for the forest/urban interface can be divided into three parts:

- The Incident Command System (ICS).

- Cross training.

- Strategy and tactics.

Prescribed fire can be a useful tool for training and fuel reduction.

The Incident Command System is an orderly, easy to use system which allows the building of a command structure small enough or large enough to handle any size incident. Forest/urban interface firefighter training is necessary for both structural and forest firefighters. Strategy and tactics courses can be used to cross train firefighters. Cooperating fire protection agencies should become familiar with each others suppression equipment and tactics for safety and efficiency.

Firefighters in the forest/urban interface should:

- Think safety first.

- Use tactics that meet the particular fire situation.

- Use tactics that are aimed at a successful initial attack.

- Look at the big picture, beyond just the first few houses.

Cross Train Firefighters

- Adjust tactics to meet changing fire situations. Fires can change suddenly from mostly wildland, to mostly structural, to a combination of both.

- Use tactics which take into account the presence of civilians in the area and the potential need for evacuation.

- Combine standard tactics with environmentally and aesthetically sensitive suppression methods.

- Use natural barriers or pre-constructed firebreaks wherever possible.

Prescribed Fire

Prescribed fire is a useful means of reducing the accumulation of hazardous fuels in forested areas adjacent to homes. Removing fuels by mechanical or hand labor is the safest method of disposal. The use of prescribed burning is an alternative to mechanical or hand labor, but smoke and escaped fires must be considered when fuels are reduced using this method.

Permanent firebreaks should be wide enough to allow access by wildland fire suppression apparatus and they should be maintained. Local fire departments should have the location of these firebreaks on their maps.

Due to the close proximity of homes occupied by residents who may have no concept of fire behavior, citizens living in interface areas must be educated about the beneficial uses of fire.

Prescribed Fire Types Recommendations:

- Use a prescribed fire as a tool for training firefighters and an opportunity for educating local residents.

- Explain to residents how prescribed fires are used as a tool to reduce the fuel hazard near woodland homes before forest fires occur.

- Make local residents aware that smoke and ash from a prescribed fire may make the area unsightly for a month or so every two to three years, but the reduction in fuel will provide protection from a wildfire.

- Identify and assess the risks involved prior to any prescribed burn.

- Develop, adhere to, and share with adjacent homeowners a detailed burn plan if the prescribed burning program is to remain credible.

- Use natural barriers wherever possible.

- Use environmentally sensitive methods when firebreak construction is necessary.

- To limit smoke problems, make sure the burn is complete before the evening inversion takes place. Proper smoke management is essential in the interface.

- Notify local fire departments and/or 911 dispatchers of plans to conduct a prescribed burn in an interface area.

- Ensure that adequate suppression resources are staged to not only meet management needs, but to also provide "peace of mind" for local residents.

- Be absolutely sure the prescribed burn is controlled before leaving the area.

- Use other techniques to reduce fuel where fire cannot be used, including: bush-hogging, mowing, chipping, pre-commercial thinning in young pine stands,

commercial thinning in marketable pine stands, and grazing animals such as goats.

Smoke Management

Prescribed fires produce varying quantities of smoke, an elusive by-product which can be a major concern. Therefore smoke management must be considered in every prescribed burn plan. Awareness of smoke production, meteorological conditions and transport characteristics will enable you to refine existing smoke management prescriptions. Three basic objectives of smoke management are to identify and avoid smoke sensitive areas, to reduce emissions, and to disperse and dilute smoke before it reaches smoke sensitive areas.

Public relations are also an essential part of prescribed burning. Fire managers should feel obligated to minimize effects on nearby residents and be prepared to "sell" his or her job to the general public. Attitude, experience, and attention to appearance are all very important to creating a positive public image.

Insects and Diseases

in the Forest/Urban Interface

INTRODUCTION

Management of pests in the *forest/urban interface* is a challenge to land managers because of tree problems associated with development activities and the wide range in values between urban and rural trees. Generally, trees in the interface are more valuable than trees in the rural forest, and the high cost of treating individual trees is more easily justified.

In addition to problems caused by forest pests, trees in the interface are affected by the activities of people. Prevention, through careful planning, management, and maintenance, is the most practical and effective way of protecting trees against pest problems in the interface.

Microorganisms, insects and predisposing stress factors are the three major influences to consider. Important groups of microbes include fungi, viruses, bacteria and phytoplasmas. Bark beetles, borers, defoliators, and scales are the most damaging insect groups. Soil compaction, grade changes, and injuries are the greatest sources of predisposing stress.

PREVENTING PESTS

Following are guidelines for preventing or mitigating the effects of pest organisms:

- Plan development to protect specimen trees and remove trees at risk.

- Promote diversity of tree species, sizes, and ages.

- Plant only trees that are appropriate for the site.

- Choose species and varieties that are resistant to pest problems.

- Maintain plenty of space for each tree. Remove some if necessary.

- Maintain tree vigor through appropriate mulching, fertilizing and watering.

- Water high value vegetation during severe drought.

- Remove fallen trees and diseased leaves and branches.

- Protect trees against disturbance and injury.

The most common stress factors that cause initial decline are drought, storm damage, construction injury to roots and stems, misuse of chemicals by people, and attacks by certain kinds of pests. Once a tree is weakened by disturbance or other unfavorable conditions, pests can become established more easily and cause the tree to decline further. Healthy trees tend to resist pests and recover from disturbance more quickly.

PREVENTING TREE STRESS

Following are guidelines for preventing or mitigating the effects of stress on trees:

- Plan site developments to minimize soil compaction and grade change near residual trees.

- Aerate compacted soils.

- Maintain about three inches of mulch for at least a three foot radius around trees, particularly where soil compaction or dry conditions are likely.

- Leave the forest floor undisturbed where possible, while still maintaining a firesafe zone around the home.

- Avoid changes in soil drainage patterns.

- Direct construction activities and excavation away from trees to be retained, or remove trees where significant damage will be unavoidable.

- Remove unnecessary objects and debris that provide shelter for pests in yards.

- Avoid misapplication of insecticides, herbicides, fertilizers, and other chemicals. Read the entire label before applying.

- Use pest-free, high quality planting stock and proper planting practices.

- Avoid mechanical injuries to trees from lawnmowers, string trimmers, and other equipment.

- Remove diseased plants and other sources of pest organisms.

> Healthy trees tend to resist pests.

- Maintain tree vigor through appropriate fertilization and watering.

- Search for pest organisms or disease symptoms frequently and treat them before they cause damage.

PUBLIC EDUCATION

It is important to keep people in the interface informed about the potential impact of pests and of ways to minimize this impact. There are many ways to communicate with interface residents, landowners, agencies, and organizations including:

- Public meetings.

- Media coverage.

- Informational booths at malls, fairs and expos.

- Insect hotlines (designated phone lines).

- Electronically posted information.

- Developing technical advisory committees and volunteer programs, such as Master Gardeners and Tree Stewards.

- Publication and distribution of leaflets and brochures.

- Direct mailings.

- Demonstration and training programs.

- The declaration of a "Tree Emergency".

- On-site visits by trained, unbiased professionals.

- Homeowner associations and civic organizations.

- High school clubs.

- Community college, vocational, and continuing education courses.

> Keep the public informed about the potential impact of pests.

Natural Disasters
in the Forest/Urban Interface

INTRODUCTION

Every year floods, ice storms, hurricanes, torna-does, and wind cause a tremendous amount of damage to trees in the *forest/urban interface*. Without proper care before and after these disasters, trees can pose a danger to lives and property. Many tree-related problems can be reduced or eliminated through proper planning and care. Communities and homeowners need to have a plan detailing proper tree care before a disaster strikes, and a recovery plan to restore trees after a disaster occurs.

PLANNING

A community natural disaster mitigation plan for trees would include:

- Tree care before the disaster.

- Repairing and saving damaged trees.

- Proper disaster response and cleanup.

- Regulations for vegetative debris pick-up and disposal for private pro-perty.

- Replanting and recovery of trees.

- A community urban forestry master plan for tree planting and care of the community's trees.

DISASTER TEAMS

Develop a disaster team to manage activities and make all decisions. The team should include representatives from:

- Utility companies and police, fire, and public works departments.

- ⬧ The news media.

- ⬧ Private arboriculture firms and nurseries.

- ⬧ State forestry departments.

- ⬧ The weather service.

Be sure to coordinate the natural disaster mitigation plan for trees with disaster recovery plans made by other agencies. The plan should be updated annually. It is important that training is provided to everyone involved so each person knows their role when a disaster occurs.

PUBLIC EDUCATION

It is also important to have information available to the general public before and after a disaster occurs. This can be in the form of videos, handouts, and/or public service announcements.

**Public education topics may include:**

- ⬧ How to prune or repair damaged trees.

- ⬧ How to identify trees worth saving.

- ⬧ How to hire a professional arborist.

- ⬧ How to select quality nursery stock.

- ⬧ How to determine fair vendor prices.

- ⬧ Proper debris disposal.

- ⬧ Safety when clearing debris.

- ⬧ Chain saw safety.

- ⬧ How to hire a forestry consultant.

- ⬧ Tree salvage operations after a disaster.

- ⬧ The benefits of trees and the advantages of a safe and healthy urban forest.

> Make information available before and after a disaster occurs.

This is just an overview of what can and should be done before and after disasters. For good detailed information dealing with natural disasters, please consult "Storms Over the Urban Forest". It is available from: USDA Forest Service, Northeastern Area, 1992 Folwell Avenue, St. Paul, MN 55108, (612) 649-5243.

Forest Management

in the Forest/Urban Interface
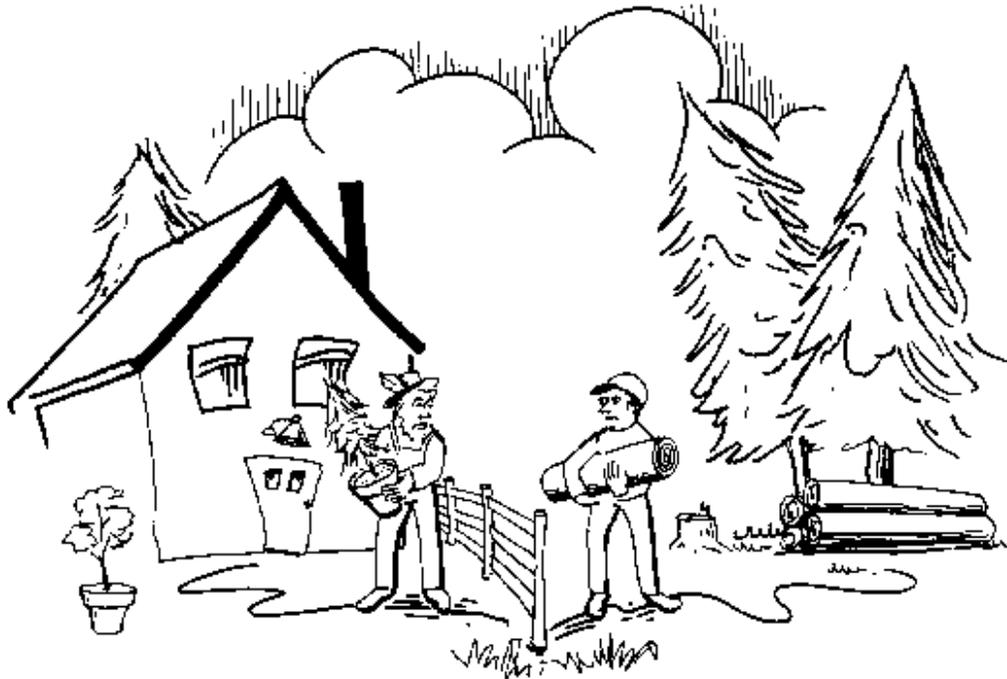
INTRODUCTION

Forest/urban interface areas pose new problems and challenges for foresters and forest land owners in managing the forest resource. The Southern Forest Based Economic Council estimates that 92 percent of the ownership units are less than 100 acres, and as small as 24 acres in some states. The overall average size of a Southern private forest ownership is only 38 acres.

Problems and issues that may be encountered in the interface include:

- Fragmented tracts of land under different forest management. Landowners that are neither farmers nor forest industry have increased by nearly 50 percent in the south. Many of the five million private owners of forestland in the South have smaller holdings than in the past.

- Close proximity of homeowners with differing opinions towards forest management.

- Forested tracts at the urban fringe are usually in transition to residential and commercial real estate.

> The average size of a southern private forest ownership is 38 acres.

- **Taxes** on agricultural and forest lands in interface areas are often assessed on the basis of development or market value rather than present use, which encourages development of the land for uses other than forestry.

- Local **ordinances**, such as buffer requirements and mandatory burning bans, may increase the difficulty and costs of forest management. Some states have "Right to Practice Forestry" laws to restrict county governments from passing ordinances to prevent forestry.

- Harvest **restrictions** <u>may</u> result in timber values lower than timber in rural areas.

- Timber markets may be limited. Need to be more creative with marketing operations.

- The size of treatment areas is generally much smaller than in rural areas.

- The visual impacts of forest management may be unacceptable to local governments and residents.

- Smaller tracts cost forestry agencies more to service than larger tracts in rural areas.

- The use of prescribed burning and broadcast application of herbicides are often eliminated as management tools due to the proximity of homes and other sensitive areas.

- Mud on roads, dust, smoke, noise, and site disturbances may be unacceptable to residents in the interface.

- The need for protection from timber theft, off-road vehicles, trash dumping, and other trespass is often greater in interface areas.

- Unscrupulous timber buyers can be a problem for landowners who are not familiar with timber marketing practices and procedures.

> **Complications and impediments to forest management in the interface may seem insurmountable.**

Although the complications and impediments to forest management in the interface may seem insurmountable, increased contact with the public presents new opportunities for the forestry community to fairly solve conflicts involving forest management before they occur.

Every opportunity should be taken to discuss forestry issues, enhance public understanding and knowledge about forest management, the forestry profession, and improve the management of forest resources in interface areas. Improved communication with environmental groups and participation in land use planning is also necessary to enhance understanding of forestry and interface issues. Even though most landowners in the interface may not be interested in plantation style, intensive forestry, many are interested in managing for multiple benefits and practicing sound stewardship of their forest lands.

Since a growing number of people and a considerable amount of forest land in the South are situated in interface areas, state forestry agencies must be prepared to furnish more creative forest management assistance to landowners in interface areas.

Foresters should identify and establish positive relationships with planning agencies, conservation groups, decision makers, and opinion leaders. Foresters should also become familiar with local ordinances and regulations that affect timber harvesting, water and air quality protection, threatened and endangered species, public hunting and fishing, and garbage and hazardous waste disposal. When possible, foresters should take advantage of opportunities to improve their awareness and understanding of conditions, problems, issues, laws, and processes unique to interface areas. Foresters should also be prepared to act as subject matter experts with local planning and zoning commissions and be involved in the development of regulations.

It is important that foresters enjoy a positive working relationship with, and possess a good knowledge about the mission and role of other natural resource agencies that also serve the interface area, as well as with forest industry representatives and private consultants. Organization of multi-resource management teams may be helpful.

Foresters must be familiar with information concerning the forest resource, including factors that affect forest management in interface areas.

These factors may include the following:

- Planned or potential **use** of forested areas for residential and commercial development.

- Local officials' and opinion leaders **attitudes** toward forestry issues.

- Landowners reasons for owning their lands.

- Landowners interest in non-timber values of land.

- The **condition** of forest health in the interface area.

- Specific forest pests that threaten forest health.

- Volumes, species, stocking, and quality of timber.

- Current markets for timber grown in interface areas.

- The availability of service vendors in the interface area.

- Sources of planting stock and other materials needed by landowners.

- Reforestation cost-share and tax incentive programs.

- Suitable harvesting methods.

- Coordination of forestry activities with local agencies and organizations.

- Educational opportunities for landowners and the general public.

The following sections are partial checklists of items that should be considered by foresters when working with landowners and planning forest resource management in interface areas.

SILVICULTURE

While forest management in the interface may involve some modifications to existing practices and techniques, it probably will not bring about many totally new practices. What will be different will be the need to communicate the linkages between goals and practices to all parties involved. Since the interface is more populated, there are more stakeholders in every resource management decision. To reduce conflict, the forest manager will need to become skilled in salesmanship and communications.

General Considerations

> A forester should plan and guide management operations.

- A forester should make sound management plans and guide management operations.
- Work with county officials to promote silvicultural exemptions from local ordinances in agriculturally zoned areas.
- Coordinate forest management activities with local agencies and organizations.
- Advise landowners about tax incentive laws designed to maintain forests or open space.
- Identify landowner objectives for forest management.
- Identify and mark property boundaries.
- Develop appropriate timber harvesting guidelines for interface areas.
- Assess forest health.
- Identify special resources management needs (archaeological, historical, geological, cultural).
- Identify sensitive aesthetic features.
- Manage noise sources.
- Exclude livestock from forested areas.
- Determine wildfire protection needs and plan for those needs.
- Control exotic species which could escape into the wild and become a nuisance or wildfire hazard.
- Protect water quality through use of best management practices (BMP's).
- Restore and protect wetland areas where possible.

Silvicultural Systems

Silvicultural systems will need to be adapted to manage resources at a smaller scale. Systems that are practical, desirable and economically efficient in rural forests may not produce desirable results in the interface. Silvicultural systems that are too labor intensive for rural forests may be more practical for interface areas. Also, silvicultural systems for the interface will be more aesthetically focused and less affected by economies of scale.

- Develop alternative silvicultural systems that will accomodate landowner objectives.

- Assess the suitability of even-age versus uneven-age forest management systems.

- Determine an appropriate and manageable stand size.

- Identify conflicts and compatibility of timber harvesting with recreational use of land in the interface.

- Manage forests for tree and wildlife species diversity.

- Determine the need for natural or artificial regeneration.

- Assess the ability of interface forests to produce high quality forest products on small (5-10 acre) tracts. Promote this idea to appropriate landowners.

> **Always use Best Management Practices.**

Artificial Regeneration

Regeneration options in the interface will naturally be impacted by soil and site conditions, just as they are in rural forests. However, there is one significant difference. Interface property owners are more concerned about temporary aesthetic conditions than rural forest owners. This concern will result in some unique challenges for artificial regeneration. Neat and orderly plantations in rural areas may suggest production or plantation management to an interface landowner. To compound matters, after-planting treatments may also need to be adapted to conform to landowner and community aesthetic standards.

Interface regeneration options:

- Match tree species to site.

- Recommend genetically improved planting stock.

- Recommend compatible mixes of tree species.

- Plan regeneration to benefit wildlife, both game and non-game species.

- Determine appropriate and acceptable methods of mechanical and chemical site preparation.

- Prescribe best management practices for mechanical and chemical site preparation.

- Determine the need for tree shelters and animal repellents.

- Determine the availability of seedlings of desirable native species.

- Recommend post-planting cultural practices, including weed control and fertilization.

Intermediate Stand Management Practices

Intermediate stand management practices are more likely to be readily accepted by interface landowners. Few modifications will be needed for thinnings, limited vine control and chemical use. The intermediate practice most likely to need modification is prescribed fire. In addition to concerns about escaped fire, smoke management and air quality are very real and serious concerns in the interface.

- Determine the need for pre-commercial/commercial thinnings or timber stand improvements. Consider non-traditional reasons for applying forest management practices to achieve specific results. For example, thinnings are done in some areas to reduce fire risk prior to development.

Protect visual quality in interface areas.

- Determine the need for timber stand improvement (cull tree removal, crop tree crown release) measures.

- Determine the need for herbicide use.

- Recommend fuel wood utilization as a timber stand improvement practice.

- Apply landscape management principles to protect visual quality in interface areas.

- Determine the need for hardwood control in pine stands, depending on the long-term management strategies.

- Determine the need for pruning.

- Determine the need for vine control, especially in hardwoods.

- Plan prescribed burning operations and manage smoke in sensitive areas.

Timber Harvesting

Timber harvesting has the most potential of all forest management activities to meet opposition and resistance in interface areas. While harvesting remains a necessary and needed part of forest management, greater attention will need to be paid to managing the aesthetics and off-site impacts of the harvest. The potential for property rights disputes is greatly enhanced in these areas. Further, smaller harvest volumes and non-traditional market schemes <u>may</u> result in lower prices than for rural sales.

Timber harvesting recommendations:

- Pre-plan harvesting operations.

- Identify and mark harvest area boundary lines.

- To avoid or mitigate complaints, inform adjacent landowners of planned forestry activities.

- Develop cooperative management and marketing ventures among landowners in the interface. Educate homeowner and subdivision groups in timber marketing procedures.

- Assess forest pest occurrence and plan forest practices to reduce pest occurrence. Forest health concerns usually provide an acceptable rationale for harvesting timber in interface areas.

- Salvage timber promptly following natural disasters and pest outbreaks.

- Identify appropriate forest regeneration systems.

- Identify long-range timing of intermediate and final harvests.

- Plan harvests for multi-products.

- Determine minimum operable volumes.

- Prescribe, use, and enforce BMP's to protect water quality.

- Locate, lay out, and designate forest roads, log landings, major skid trails, stream crossings, and stream side management zones.

- Survey for and provide protection for special resources (historical, archaeological, geological, and threatened and endangered species).

- Use loggers who have received BMP training and certification.

- Use special harvesting equipment and procedures, such as planks, mats, and portable bridges to minimize site disturbance. Support the development of equipment to meet new needs.

- Encourage forest industry to support loggers who can specialize in small areas and operate on small tracts, using smaller equipment such as forwarders and pre-haulers.

- Develop incentives for the very best loggers.

- Develop logging guidelines for interface areas.

- Keep hard surface roads free from mud and debris.

- Protect residual trees from logging damage.

- Protect property improvements.

> Rehabilitate.
>
> Stabilize.
>
> Regenerate.

- Determine the locations of power and telephone lines, pipelines, roads, and other infrastructure facilities and protect them.

- Reduce dust and excessively loud logging noise.

- Monitor logging operations.

- Dispose of slash to reduce forest fire hazard and visual impacts. Chipping and firewood cutting can be done to eliminate some logging debris.

- Rehabilitate and stabilize areas disturbed by logging operations. Restore visual disturbances.

- Plan for stand regeneration before harvesting. Have a plan up front.

Watershed Management

Special provisions will be needed to protect water quality in the interface. Small variances in Best Management Practices (BMP) use, that would be acceptable in less sensitive rural areas, can become critical issues in the interface. Side issues such as mud that is tracked onto paved county roads and streets can become significant safety hazards for interface residents. The higher number of people present in the interface results in more opportunities for conflicts over water quality.

Watershed management recommendations:

- Determine watershed management objectives.

- Coordinate watershed management activities with local agencies and organizations.

- Properly dispose of garbage and waste. Prevent petroleum product spills.

- Coordinate monitoring operations with loggers.

> **Establish and maintain visual buffers.**

- Locate, lay out, and designate roads, log landings, major skid trails, stream crossings, and stream side management zones.

- Suspend logging operations during wet weather.

- Encourage landowners to monitor BMP's during logging operations prior to harvesting.

- Rehabilitate and stabilize disturbed areas promptly.

- Keep downed trees and logging debris out of streams and other water sources.

- Manage beaver ponds.

Aesthetics and Visual Quality

Most resource management conflicts in the interface will occur when traditional forest management activities impact aesthetics or visual resources. Temporary visual impacts

are much less acceptable in the interface. Many other issues may actually be surrogates for these visual impacts.

To avoid resource management complete:

- Coordinate management activities with local agencies and organizations and adjoining landowners.

- Provide forestry input when local ordinances are being developed.

- Plan and maintain visual quality.

- Mitigate dust, mud, and noise during logging operations.

- Train loggers to be sensitive to landowners' concerns for aesthetics.

- Assess the proximity and view of management activities from other properties, developments, and highways.

- Consider using alternative silvicultural and cultural practices.

- Consider the aesthetics of stand size and configuration. Design is important.

- Determine and establish visual buffers.

- Modify harvesting and site preparation operations to provide better visual quality.

- Avoid unnecessary damage to roads, residual trees, understory vegetation, recreation trails, vistas, and other resources.

- Protect unique areas, unique features, and special resources.

- Insure safe access to public roads.

- Locate roads, log landings, and skid trails to minimize visual impact.

- Rehabilitate and stabilize disturbed areas promptly.

- Dispose of trash properly and cleanup every site.

- Protect flowering trees and plants which provide autumn color or spring flowers.

> Plan for wildlife.

Wildlife Management

Wildlife management opportunities will be more limited for some species of wildlife than in less fragmented rural areas. However, wildlife habitat enhancement is a common goal of many interface landowners. Species that are tolerant of people and prefer edge communities should do well, while others may struggle. Also, undesirable or non-target species are usually attracted to an improved habitat.

Interface wildlife management recommendations:

- Identify the species of wildlife the landowner wants to feature.

- Create age and class diversity in timber stands.

- Use native species.

- Provide forage and browse.

- Provide hard and soft mast.

- Leave and protect den trees.

- Leave and protect vine patches.

- Leave and protect perch trees.

- Construct and install artificial nests whenever possible or practical.

- Create permanent wildlife openings and annual food plots.

- Create wildlife corridors and water sources.

- Protect and manage threatened and endangered species.

- Plant and protect trees and shrubs for wildlife food.

- Protect, restore, and manage wetlands habitat.

- Manage beaver ponds.

- Identify wildlife habitat needs for game and non-game species.

- Control destructive or excessively large wildlife populations.

Living with Wildlife
in the Forest/Urban Interface

INTRODUCTION

When people build homes in the forest they interact with more than trees. Homeowners need to realize that the site of their "dream home" was once the territory of a host of animals that don't recognize property deeds or no trespassing signs. The opportunity to view and interact with wildlife is often one reason people move to the woods, and many individuals take steps to make their property more attractive to wildlife. However, problems may arise when people don't understand animal behavior, or the homeowner's interests conflict with the lifestyles of a particular species.
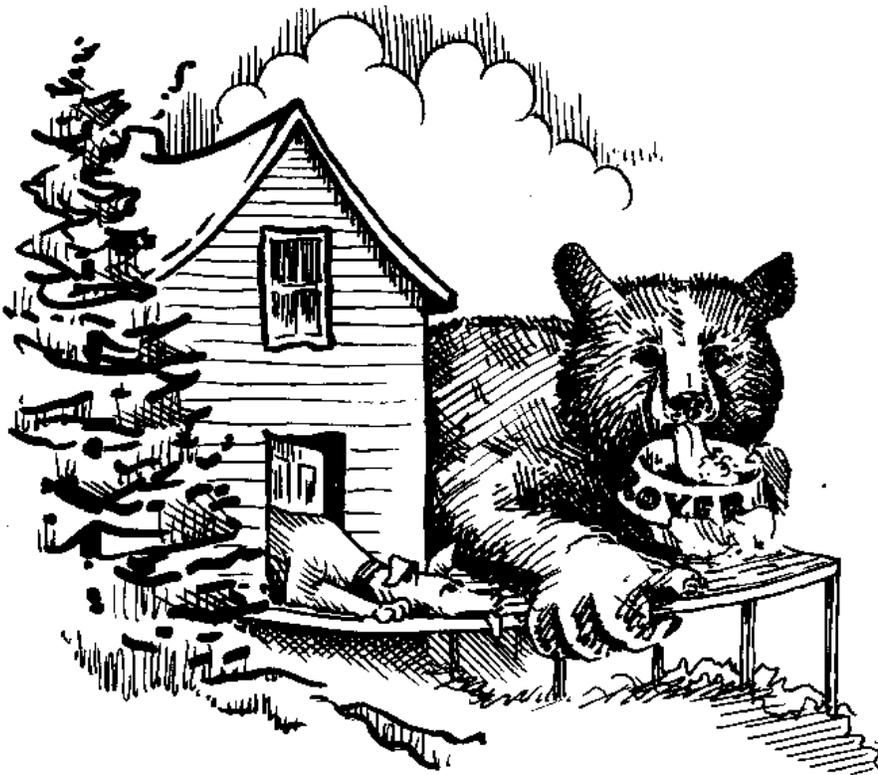
ANIMAL DAMAGE

Is The Problem Real?

Often a situation involving wildlife is a problem only because the homeowner perceives it as one. Educational programs which explain the behavior and beneficial aspects of wildlife may convince people that they can tolerate the damage in return for the benefits of having a particular species on their property. Consult local wildlife officials or county extension agents for information on specific problems.

CULTURAL TECHNIQUES

The best time to minimize damage is before it starts. Once animals have developed a pattern of use, it can be difficult to change. The following suggestions may be incorporated into local ordinances or homeowners association regulations:

- Remove food sources that may attract unwanted animals. Be sure that garbage and pet and livestock foods are securely stored. Use sturdy metal or tough plastic garbage cans with tight lids. Secure cans so they can't be knocked over. Don't leave bowls of pet food outside overnight.

- Remove cover that may attract unwanted animals. A forest fire safety zone also helps prevent animal damage.

  - Removal of trash, brush piles, and thick vegetation around the home greatly reduces its appeal to undesirable animals such as rodents and skunks.

  - Trim vegetation to prevent it from covering foundation walls. Allow two feet between the vegetation and the building.

  - Wooden shingles and siding, which increase the risk from forest fire, are highly susceptible to damage from woodpeckers as well as various gnawing rodents such as groundhogs.

- Exclude animals from areas such as gardens by using wire or electric fencing. Extend the fence 1-1/2 feet underground or bend it outward at ground level for 18 inches to keep out digging animals such as groundhogs.

- Beaver damage to trees may be prevented by wrapping the bottom part of the tree in hardware cloth.

- Rodents and snakes can be denied access to homes by sealing openings in foundations and points where plumbing and wiring enter the building by using 1/4 inch mesh, wire screen on vents.

Wildlife lives in the interface too!

- Before screening or blocking exterior accesses, ensure that all animals, especially the young, have left. Do a visual check with a flashlight.

- Fill in holes around the foundation.

- Trim tree limbs away from the roof to deter access onto the building. Install a chimney cap.

- Screening vents and structural openings with wire screen can also help prevent sparks and firebrands from entering during a forest fire.

REMOVING THE ANIMAL

If necessary, the animal causing a problem may have to be removed or destroyed. Before this step is taken, the local game warden should be consulted to see if any restrictions apply. Wildlife agencies and county extension agents can offer advice on the trapping and removal of nuisance animals, and local trappers can often be hired to perform this task. However, live trapping and relocation are only a temporary solution to wildlife problems. Unless preventative measures are taken, other animals may move back in.

WILDLIFE AND PETS

Pets should be confined, if possible, in woodland communities. Free roaming dogs and cats can be very destructive to wildlife, especially in the spring and early summer when many animals are nesting or rearing young. In addition, the higher probability of contact between wild animals and pets means a greater risk from disease, such as rabies. All dogs and cats should be vaccinated for rabies and given booster shots as required.

ATTRACTING WILDLIFE

Landscaping for Wildlife

The selection and placement of trees, shrubs, and ground covers used in landscaping can play a major role in encouraging the use of property by wildlife. Excellent information is available through the National Wildlife Federation's Backyard Wildlife Habitat Program.

Feeding

The creation of artificial feeding sites is a good way to attract wildlife to a particular area. The most common example of this is the use of bird feeders. Information on

> While animals, such as geese, raccoon and deer will respond to feeding, be aware of the potential damage it can cause.

types of feeders, feed mixes and placement is available through the Audubon Society, local bird clubs, wildlife agencies and local libraries.

While larger animals, such as raccoon, deer and bear, will respond to artificial feeding, landowners should be aware of the potential for damage created by this practice. After finishing a meal offered by the homeowner, these large animals may proceed to devour or destroy other items that are not on the menu.

Urban and Community Forestry

in the Forest/Urban Interface

When people move to forested areas, their very presence changes those areas. They are no longer the wildlands that they once were. A woodland development is filled with trees that have a tremendous psychological, aesthetic and environmental value to home-owners. Trees in these "urban" forests provide shade, privacy, a home for wildlife, and scenic beauty. Urban forests also require care to maintain their health, and to maintain a fire-safe environment.
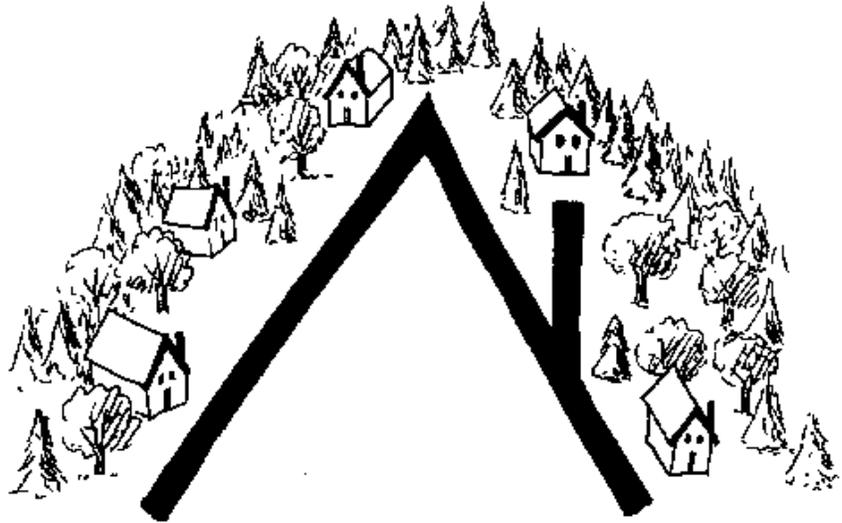
CHANGING LAND USE - CHANGING VALUES

What do people value most when they move to the woods? We know that trees and forests are the most important part of this lifestyle. Therefore, woodland residents usually act to protect the forested character of their communities, often coming in conflict with traditional uses of the land. Different groups of people expect different things from the forest based on their background and their experience, or lack of experience, in the natural world. At times they cannot see how their actions permanently change the environment they want to preserve.

Southern forests are changing as greater demands are made of them. As our values and expectations change, more diverse issues will impact the smaller and more fragmented forests of the future.

COMMUNITY PLANNING

Everyone has to work together to preserve trees and anticipate tree problems in growing areas. Woodland developments can affect soil and water quality, soil erosion, land available for wildlife populations, demands on recreation areas, the availability of forest products, forest fire occurrence and natural scenic beauty. Sensitivity to the conservation of natural resources should be a major component of any community planning, especially in the forest/urban interface, balancing what we want with the limits to the resource. This applies not only to expanding rural communities, but also to highly developed areas that are seeing a restoration of forests and trees.

Community planning may involve actions, such as giving county planners advice and ideas, or establishing a public participation process. Foresters should take a leading role in determining a vision for the community forest and help to resolve conflicts for land use.

> **Think about how rural areas may change in the future. Rural forestry practices may conflict with urban expansion.**

Foresters must also keep in mind how rural areas may change in the future. For example, in rapidly growing areas, some kinds of reforestation may have to be thought out. If you know an area planted in pine will probably become a development in ten years, are you adding to the fire problems of the future? Sometimes rural forestry practices come in conflict with urban expansion, and these concerns must be pointed out to landowners.

Opportunities and strategies for planning can include:

- Planning for proper tree planting and maintenance before urban growth starts.

- Identifying sensitive lands before development starts. Work with conservation groups such as The Nature Conservancy.

- Developing conservation easements. Work with local outdoor foundations and urban forestry councils.

  - An open space or conservation easement is a legal agreement between a landowner and a public body or conservation group. The parties agree to protect the open space and natural resource values of the land. The easement is recorded with the land in the local court house.

  - Easements allow land to remain in the private sector and on the tax rolls. Open space easements preserve farm land, forest land, natural areas and recreational areas by restricting intensive uses, such as developing and mining, which would alter the conservation values of the land.

- Transfer of property development rights.

- Zoning bonuses.

- Conversion of land uses.

- Providing tax incentives for land in forest and agricultural uses.

- Developing and using GIS/GPS technology.

- Adopting tree and green space ordinances.

  - Be aware of covenants that limit tree removal in fire-prone woodland developments and resorts. This should be presented as a problem to the homeowner's association and solutions should be given.

- Developing educational programs dealing with tree preservation and protection.

LANDSCAPE PLANNING

- Proper planning before development can help maximize the benefits that existing and future trees can provide to a site. Avoid retaining existing trees that may become hazard trees after the development is complete.

- Planting the right tree in the right place can prevent future conflicts between trees and people.

  - Lists of appropriate species for planting near powerlines are available from most electrical companies.

  - Less flammable and smaller species should be planted near the homes in forest fire risk areas.

- Proper planting techniques can help insure survival and growth of new trees.

- Proper care and maintenance such as mulching, watering, pruning and fertilization can promote good health of newly planted and existing trees.

  - Tree pruning attitudes in rural areas can be hard to change, especially after severe storm damage. People tend to top all of their trees so they won't fall on their houses, which causes a weaker and more diseased tree in the long run.

  - Information about tree care, species selection, and certified arborists is available from the International Society of Arboriculture, P.O. Box 908, Urbana, IL 61801, or The National Arbor Day Foundation, 100 Arbor Avenue, Nebraska City, NE 68410, (217) 355-9411.

TREE CARE

Selecting and Planting Trees

Woodland homeowners have two choices when selecting yard trees and plants. They can work with the plants and trees native to the site, using the patterns found in nature, or they can introduce new ones. Most homeowners do both. When choosing new species, homeowners should consider hardiness zones, planting site quality, fire resistance if within 30 feet of the house and the benefits to wildlife.

Other things to consider are:

- Pick the right tree for the right **purpose**. What is the trees purpose?

    - If for shade, the tree should be large and sturdy.

    - For aesthetics, the tree should feature a graceful form and showy foliage or flowers.

    - For wildlife, berry-producing shrubs may be best.

- Avoid fast-growing, weak-wooded species, such as lombardy poplar or silver maple.

- Pick the right tree for the available **space**.

    - Avoid planting large trees in confined or limited space.

    - Avoid planting trees too close to buildings, other trees, septic drain fields, sidewalks, driveways, or where future views will be obstructed.

- Pick the right tree for the environmental **conditions**.

- Plant at the right time. Early fall is usually best.

- Plant the tree properly.

    - Dig a hole large enough to accommodate all of the roots. Be sure to remove all circling roots.

    - Use natural soil to fill the planting hole.

    - Use no more than two inches of mulch to establish a "tree well" around the newly planted tree.

Tree Health

Environmental stress is the main cause of most tree health problems. Too much or too little water, light, nutrients or optimum temperatures can cause stress. A host of insects and diseases also threaten forest trees every year. Trees are also very susceptible to mechanical damage during home construction, and their survival depends on careful

planning. Trees that are structurally weakened may pose a threat to people and property.

Trees with the following symptoms may be hazard trees:

- Dead or dying branches.

- Old wounds and obvious signs of decay.

- Yellowing, reddening, or thinning foliage.

- Shortened height growth or a sudden large crop of seed.

- Signs of root damage.

> Tree topping is not tree pruning!

Pruning

Regular pruning of trees and shrubs is an important part of woodland home landscape maintenance. Trees are pruned to control growth, to enhance tree appearance, to open a view, and to remove branches that pose a safety hazard to people or property. Pruning may also invigorate trees by removing weak, dead or damaged wood that can harbor insects or disease. Proper pruning also improves a home's forest fire safety zone by reducing the amount of flammable vegetation and by breaking the chain of fuels in a yard. "Fire ladders" where fires can climb from the ground into tree branches, can be eliminated by pruning trees 10 to 15 feet up from the ground.

Some things to remember are:

- Tree topping is not pruning.

- Make pruning cuts at intersections not in mid-branch.

- Make your cut at the branch collar.

- Use proper pruning tools.

- For large limbs, make cuts in three stages to prevent tearing the bark.

- Prune at the right time.

- Remove the right amount of branches. Don't over prune.

NATURAL AREAS AND GREENWAYS

Leaving areas in natural tree cover can provide:

- Better aesthetic qualities.
- Recreational areas.
- Wildlife habitat.
- Emergency evacuation routes.

RIPARIAN AREAS

Riparian areas are forests adjacent to streams, rivers, bays and lakes. They serve as a transition or buffer zone between the land and water environments, playing a key role in defining water quality.

Restoring them is a major concern in urban areas. The goal in interface areas is to identify riparian areas at risk and maintain them, preventing their eventual degradation. Foresters should recommend that at least 35 feet of forest buffer be left on each side of streams as recommended by the Natural Resource Conservation Service standard.

Leaving riparian areas can:

- Stabilize stream banks and systems.
- Provide shade and lower stream temperatures. Elevated temperatures reduce the amount of oxygen in the stream, adversely affecting biological communities.
- Provide wildlife food, cover, and thermal protection, corridors for migration, linkages for other forest systems, and in some cases a unique or critical wildlife habitat. Over half of all birds and animal species depend on riparian areas for some part of their life cycle.
- Provide streamside trees that are essential to the aquatic food web. Most aquatic insects like mayflies, on which fish and other species depend on to live, rely primarily on leaf detritus as food.
- Reduce or slow down storm water runoff and flooding. Proper placement of trees can reduce storm water runoff by allowing water to soak into soils and holding soil in place.
- Protect water quality by trapping, filtering and transforming upland sources of pollution such as sediments, nutrients and chemicals.
- Provide some of the same benefits of greenways.

- Think forest! Not just planted trees with a lawn underneath. A riparian area needs the forest floor litter layer to function. A natural roughness slows down the velocity of the water, and an uneven forest floor provides multiple small settling basins for water and sediments.