Wildland-Urban Interface: Key Issues

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Introduction

The South is one of the most rapidly growing regions of the United States. The region is projected to gain an additional 43 million people between 2000 and 2030, an increase of 43 percent (U.S. Census Bureau 2005). This trend is driven by migration, both from other U.S. regions and from abroad, and by natural increase. According to the U.S. Census Bureau (2006), of the 100 fastest-growing counties between April 1, 2000 to July 1, 2005, 65 were located in the South, 18 in the Midwest, 16 in the West, and just one in the Northeast. Georgia leads the nation with 18 of the fastest-growing counties, and both Texas and Florida are close behind with 13 each. A result of this influx of new residents is an expansion of urban areas into forests and other natural areas, creating areas referred to as the wildland-urban interface (WUI). Additional information about interface definitions and perspectives can be found in the fact sheet, *Wildland-Urban Interface*: Varied Perspectives (www.interfacesouth.org/fact_sheets/Varied_Perspectives.pdf).

The urbanization of the rural landscape has resulted in challenges for protecting not only natural resources but also homes and people. Urbanization has wrought some dramatic changes in natural resource management practices, such as the way forest fires are fought. Increased human influences on southern forests strain the abilities of many natural resource professionals, who now work within a complex array of social, economic, and political issues in the interface. As the ownership and geographic continuity of interface forests become more fragmented, managing them with traditional strategies becomes a challenge. The changing landscape brings new opportunities for natural resource professionals as well as for residents as more people seek out the amenities that nature can provide.

Newcomers to the interface bring new cultural values, attitudes, lifestyles, and perceptions about how forestlands should be used and managed. The newcomers

This is a joint product of InterfaceSouth of the Centers for Urban and Interface Forestry, Southern Research Station, U.S. Forest Service and the University of Florida, Institute of Food and Agricultural Sciences (IFAS). Published March 2009.

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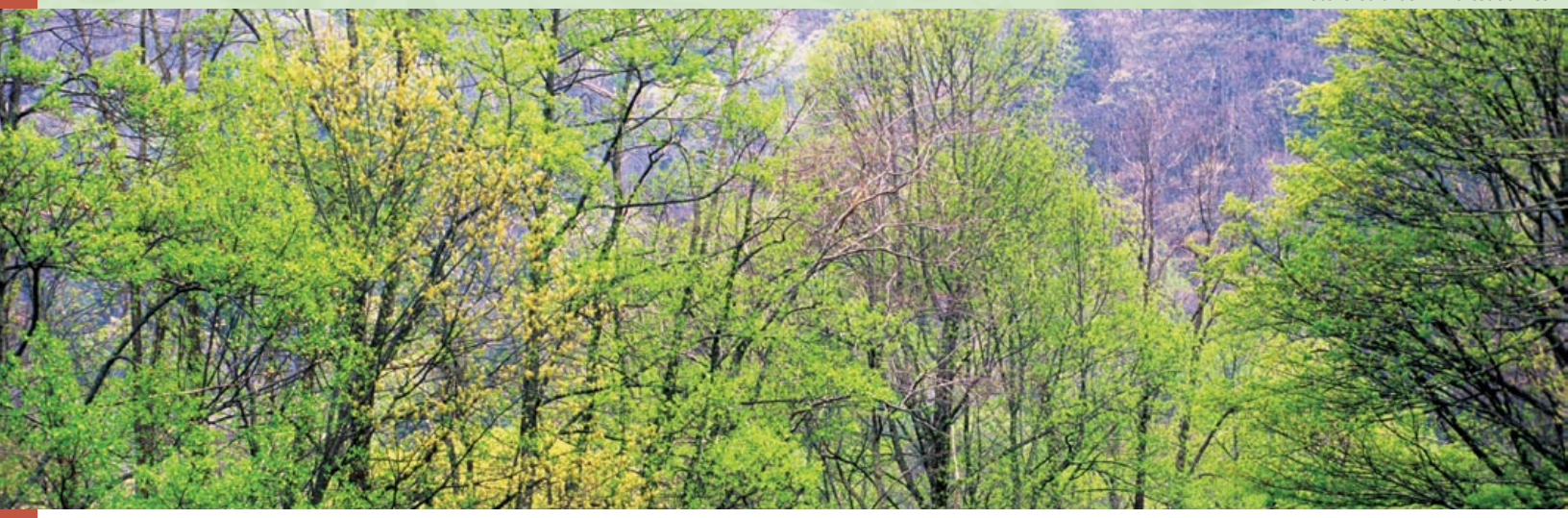

Forests are increasingly valued more for the services they provide, such as clean water, beauty and inspiration, than for the direct economic benefits than can be derived from them.

may see the forest as more valuable for recreation and visual amenities, as compared to longtime residents who may depend on forest products for their livelihoods. However, increasing population density in interface forests generates urban-like congestion and decreases open green space, degrading the very qualities (e.g. aesthetics and privacy) that attract people to the interface and, perhaps, encouraging migrations to yet more remote areas. Working and living in WUI areas requires an understanding of these and other interface issues and opportunities.

Key WUI Issues

Interface issues of most concern vary from state to state, but some key issues are consistent across the South. This was demonstrated in a series of focus groups conducted by the U.S. Forest Service in 2000 (Monroe, Bowers, and Hermansen 2003). Key issues gleaned from those focus groups and other related sources are described below.

Demographic Changes

People are living longer, migrating from one region of the United States to another and immigrating from abroad. These trends are making the United States much more diverse as a country than at any other time in its history. This diversity influences how forests will be used. Statistics reveal the following:

- In 2030, nearly one in five U.S. residents is expected to be 65 and older. This age group is projected to increase to 88.5 million in 2050, more than doubling the number in 2008 (38.7 million) (U.S. Census 2008).
- Minorities, now roughly one-third of the U.S. population, are expected to become the majority in 2042, with the nation projected to be 54 percent minority in 2050. By 2023, minorities will comprise more than half of all children (U.S. Census 2008).

Diverse Public Attitudes and Perceptions

As our population ages and becomes more ethnically and culturally diverse, public attitudes and values toward natural resources may shift. One such change is that forest ecosystems are increasingly valued for the services they provide, such as clean water, beauty, and inspiration, rather than for the direct economic benefits that can be derived from them. Public attitudes affect natural resources by influencing how they will be used and managed.

Newcomers and longtime residents may have different opinions about the value of natural resources and a different set of objectives for managing land in the interface, though this is not always the case. Newcomers to the interface tend be more educated, wealthy, and politically connected and hence are a force that can make a lasting effect on how resources are to be managed (Hull and Stewart 2002). Strong and varied attitudes about private property rights—whether the rights of individuals should take precedence over community well-being—also influence the management of natural

resources. Natural resource professionals must have the skills to communicate with the diverse constituency in the interface.

Economic and Taxation Issues

Increases in employment opportunities have contributed to the unprecedented growth in cities both large and small. As cities grow, the interface often becomes a more attractive place to develop due to lower property taxes and the natural setting that many people prefer. But as more people move to the interface, land values and property taxes rise, forcing some large landowners to subdivide or move. Increased development changes the rural environment that earlier residents sought, motivating some to seek home sites in even more remote locations. Heirs to lands in the interface sometimes must sell or subdivide inherited land in order to pay estate taxes. There is an urgent need to quantify the monetary values of natural resources and estimate the cost of degrading resources, as well as the actual costs of growth and development, so that natural resource professionals can help policy makers see the value of natural resources.

Land-Use Planning and Policy

A lack of vision and little or no planning and regional coordination for comprehensive growth management have created some of the most challenging interface problems across the South. Current land-use policies are difficult to implement across federal, state, and local jurisdictions, which often overlap. As a result, various levels of government make land-use decisions independently of, and often in conflict with, each other. Additionally, in many southern states the local governments have limited authority to plan and control development. Oversight and management of development projects in the wildland urban interface are often lacking. Frequently, zoning and land-use plans are not enforced or waivers are routinely granted. In contrast, urbanization frequently brings increased regulation of forest and land management practices (Monroe, Bowers, and Hermansen 2003).

Photo Credit: Larry Korhnak

Interface areas are often attractive to develop due to lower property taxes and the natural setting that many people prefer.

Photo Credit: Larry Korhnak

Natural resource professionals can help articulate the natural resource consequences of various land-use options.

Land-Use Change

Largely due to the previously described demographic changes, economic and taxation issues, and land-use policies, the South is undergoing dramatic land-use change. The South is forecasted to lose 12 million forest acres (8 percent) to developed uses between 1992 and 2020 and an additional 19 million forest acres between 2020 and 2040 (Wear 2002). Additionally, forests are being fragmented into smaller patches that are surrounded by nonforest land uses including residential developments. Based on the current trends of urbanization across the South, it is likely that forested habitats will continue to be permanently altered and the amount of available wildlife habitat will decrease in some areas.

Changes to Ecosystems

As forest ecosystems are fragmented and total forest area is lost, changes in air quality, water quantity and quality, wildlife habitat, species composition, biodiversity, and soil quality occur. These changes significantly affect forest health and modify the goods and services provided by forest ecosystems (Zipperer 2002). Fragmentation and urbanization can also result in the introduction of non-native, invasive species, including plants, animals, and pathogens, to native ecosystems. Some of these invasives have caused great harm (this harmful group is between 4 and 19 percent of introduced exotic species). Dutch elm disease, for example, devastated the American elm population as it spread across most of the country in the 1900s (Graham 2002).

Risks from Increased Human Influences

With each change to human and natural systems, the risk of catastrophic events increases. Natural disturbance regimes like fires, floods, and winds change with urbanization, sometimes in catastrophic ways. The frequency, severity, and the types of disturbances seen in an area are altered with urbanization. For example, the suppression of wildfire to protect people and their property has threatened the existence of fire-dependent communities and species and has led to much larger and more severe wildfires (called large-scale wildfires). We now understand that the numerous large-scale wildfires in many parts of the country during the past decade are a result of years of fire suppression. Fire-dependent ecosystems need periodic fires to regenerate some species, maintain ecological integrity and biological diversity, and reduce fuel buildup. Fire suppression has allowed fuel loads to reach undesirable, dangerous levels, resulting in uncontrollable fires that can damage ecosystems and threaten human communities. Similar effects result from controlling floods and other natural events (Zipperer 2002).

Increased development in the interface also represents a risk to quality of life and human health. Frequent contact with nature and respite from urban stressors are undeniable benefits of living in the wildland-urban interface, but urbanizing natural landscapes brings the pollution, crime, and stress we associate with cities to interface areas. Furthermore, interface areas tend to have sprawling developments that result in increased commute times and fewer opportunities for walking. This can lead to less opportunity for physical activity and less time to spend with family and friends, which can potentially also lead to increased susceptibility to depression and other mental illnesses (Frumkin and Jackson 2004). Finding an acceptable balance between these costs and benefits of living in the interface is an ongoing challenge.

Lack of Public Education about Natural Resource Issues

The contributions of natural resources to our health and well-being are often not well understood or appreciated by the public (Monroe, Bowers, and Hermansen 2003).

Photo Credits: Larry Korhnak

Human influences indirectly alter forest ecosystems by modifying factors such as water quality and wildlife habitat.

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Residents, landowners, and policy makers need science-based information to make good decisions and follow appropriate practices.

Policy makers must better understand the consequences policy decisions have for natural resources and ecological systems, and the public needs a better understanding about the correlation between human activities and effects on the environment. Schoolchildren need more and improved education about natural resources and the functions of ecosystems. Putting science-based information into the hands of those who need it, such as new residents, landowners, policy makers, and others, can help ensure that policymakers take natural resource issues into account when making decisions.

Challenges of Managing Natural Resources

All of the aforementioned issues affect how resources can be managed in the WUI. Managers of public lands lying close to cities face many challenges (Dwyer et al. 2000). Adjacent owners and developments create new pressures on the interface and new responsibilities for its natural resource professionals. Some of these include:

- greater recreational use of the forest;
- increased foot traffic;
- concerns over landscape views, trash, fire, invasive plants, and animals;
- illegal and inappropriate activities;
- a higher degree of visibility to a greater population; and
- more complex planning and decision making.

The task of managing non-industrial private forest (NIPF) lands in the interface involves a set of issues different from those involved in the management of public lands. Surveys of landowner objectives increasingly find that preserving and appreciating the natural aspects of the land (e.g. aesthetic value and wildlife habitat) rank higher than managing and harvesting timber (Wear and Greis 2002). These issues are of critical importance since 50 percent of the NIPF owners in the United States are in the South, and 48 percent of the NIPF acreage in the United States is in the South. Some NIPF issues (Hubbard and Hoge 2005; Hull, Visser, and Ashton 2006) include:

- Small parcels cannot be managed in the same ways as larger ones. Cross-boundary and small-scale harvesting techniques that are less capital-intensive are needed, as are techniques for enhancing small lots for environmental services and benefits.

- NIPF lands are subject to local conservation codes, growth management regulations, and policies; state or local forest practice regulations; and tree preservation ordinances—all of which can affect the task of managing lands in the interface.

- Landowners in the interface who are interested in growing and marketing traditional forest products like pulpwood and sawtimber often face limited markets and few companies that will harvest for these goods. Those who might be interested in leasing their lands for hunting and recreational purposes are also finding it difficult to operate with favorable economic returns in the interface.

- NIPF owners in the interface are often unsure how to find the information and technical assistance they need to manage their property, or they may be unaware that these resources exist.

Photo Credit: US Fish & Wildlife Service

Smoke concerns are a major issue in the wildland-urban interface.

Some specific management challenges relate to fire, recreation, and wildlife. The influx of newcomers into the interface makes it harder to use prescribed burns and other fuel reduction treatments. People may oppose the use of prescribed burning because the resultant smoke causes health and traffic concerns. The risk of wildfire damage to human life and property increases with more development in forested areas. Because wildland and structural fires behave very differently, suppression of interface fires is more difficult. Crews must be trained in both wildland and structural firefighting techniques.

Recreation planners face the challenge of providing high-quality experiences while sustaining the quality of natural resources on an ever-shrinking land base. Conserving, managing, and restoring wildlife habitat in the interface is a major challenge. Wildlife managers must be able to address both consumptive and nonconsumptive uses of wildlife (e.g., hunting and bird-watching). Additionally, the ability to communicate effectively is a necessary skill for working with any resource management issue in the interface.

Interconnections

All of these issues, and others not mentioned here, are interconnected. No single issue can be addressed in isolation. For example, the task of managing fire in the interface is intricately connected to a variety of factors, such as demographic changes, land-use planning and policy issues, and risks from increased human influences. Increases in human population in the interface have greatly complicated wildland fire managment. Scattered homes in the interface are difficult to protect because of the large area involved, and some homes may have limited access to emergency vehicles due to winding, narrow roads not built for heavy equipment. In some areas, planning for increased growth is inadequate, and the people who are selling new homes or building schools may not have even considered fire services. During fire suppression, the demand for water, access, equipment, and firefighters may overwhelm the available system. Furthermore, new residents who are unaware of the benefits of prescribed fire may oppose its use because they are concerned about smoke. The elderly are particularly at risk of medical complications from the particulate matter in smoke. More people, more kinds of people, and more people with different needs in the interface help shape the strategies used to manage fire.

Another example of a complex, interconnected interface issue is forest fragmentation and urbanization. As forests are divided into smaller pieces, ecosystem structure, function, composition, and processes change. Additionally, as forest tract size decreases, the number of owners increases, and forest management preferences become more diverse. These changes set the stage for new challenges to natural resource professionals and for new and innovative approaches to forest resource management in the interface.

Summary

Many interconnected issues affect natural resource professionals' ability to work effectively in the changing environment of the wildland-urban interface. Unique opportunities, too, abound. Natural resource professionals can play an important role in educating the public, policymakers, planners, and others about the importance of maintaining the ecosystem goods and services that are critical for our health and well-being. To meet this challenge we must be aware of the changes brought about by urbanization and we must understand the diverse interface issues and their interconnections.

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