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Editorial

Wildland–urban interface: Challenges and opportunities

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The wildland–urban interface (WUI), commonly described as the area where urban areas meet and interact with rural lands (Vince et al., 2005), includes the edges of large cities and small communities, areas where homes and other structures are intermixed with forests and other land uses, and islands of undeveloped lands within urban areas (Alavalapati, 2005; Monroe et al., 2003; SAF, 2004). The interface is particularly characterized by areas of urban sprawl where development pressures are pressed against public and private wildlands. Continuous transition of land-use, primarily from agriculture and forest uses to urban land uses, in the interface raises a myriad of socioeconomic and environmental concerns. A deeper understanding of these concerns is essential to formulate effective policy solutions.

While a household's dream of home ownership and the value placed on private property rights favor urban development (Garkovich, 2000), the moving interface associated with urbanization poses a series of challenges to both rural and urban communities. These include ecosystems fragmentation, increased exposure to invasive species, water and air pollution, wildfires, and loss of habitat for wildlife. These changes affect residents of rural and urban areas, natural resource managers, and business and environmental organizations. For example, management of forests for ecological goods and services such as forest products and clean water is affected by people occupying the forests. Many types of land ownerships in the interface bring in 'new neighbors' with a different set of values, lifestyles, and land ethics into the interface; and as a result, conflicts and tensions arise between these 'new' and 'existing' communities and cultures. The changes imparted as the WUI develops are not only significant but are very rapid, much faster than any other processes that impacted land use changes in recent history. For example, Alig et al. (2000) noted that as much as 14 million acres of non-industrial forests were lost to urban use between 1952 and 1997. Multiple jurisdictions and scales within a region, that are typical of a WUI, can further complicate efforts to manage and conserve natural resources. Thus, the rapid urban growth in wildland has significant and widespread social, cultural, economic, and environmental implications. Addressing the problems of the WUI to sustain ecologically viable and socio-economically feasible landscapes is a complex task for which neither easy nor perfect solutions exist (Alavalapati, 2005).

Planning and managing in a WUI thus invariably involves several disciplines that encompass the natural, socio-economic, and cultural dimensions of the issues,

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and requires active collaboration among a diverse group of professionals including planners, forest ecologists, economists, policymakers and others that influence the interface. With most clearing of wildlands is motivated by economic and social factors, the most important contributions of science to the resolution of interface issues may however lie in the economics and policy arena. There is a need for better understanding of the relationships among economics, public policy, land use change, and resulting effects on ecosystems. Economic rationality dictates that an individual changes land use as he/she realizes that more profit could be gained from a different type of land use—for example, from a residential development compared to a forest plantation. In this process, however, other public goods that are not traded in markets such as clean water and air, suffer. In addition to difficulties in quickly perceiving such losses, estimating the values of these services often complicate the development of appropriate remedial measures to address WUI.

Several policy tools to address land management, urban sprawl and land-use decisions have been developed in recent years. These include zoning, urban growth boundaries, land acquisition, and provision of conservation incentives. As problems on the interface intensify more and more ordinances and regulations are being developed and implemented. At the same time, innovative non-regulatory policies such as buying conservation easements and the use of environmental benefit payments are increasingly being discussed. There is currently, however, a shortage of research that systematically analyses the roles, strengths, and weaknesses of these public policies in managing WUI. Detailed analyses of short and long-term impacts of policy alternatives, considering both market and non-market values, are particularly valuable. More importantly, these analyses must reflect contemporary societal values and belief systems.

In March of 2004, we organized a workshop called Wildland–Urban Interface: Forum on Economics and Policy. The event took place in St. Augustine, Florida and was made up of selected experts on this topic. This special issue presents the outcome of this workshop. The volume contains 10 papers covering the social and physical changes arising from forestland conversion to more intensive developed uses. The authors have chosen a wide prism to examine the problems, given the breadth of the changes that occur.

In the first paper, Kline and Alig provide examples of forestland development and private forestry from Oregon. They analyze the impacts of growing human populations on forestland conversion to more intensive developed uses and the resulting changes in long-term timber production, wildlife habitat, outdoor recreation and open space. The results underscore the importance of assessing the potential effects of forestland development to formulating management and policy strategies that balance the multiple demands of society on land for development, resource production, and environmental protection. Previous research conducted in western Oregon has: (1) examined factors related to historical forestland development and projected future development; and (2) examined effects of forestland development on private forest management and investment activities. Kline and Alig meticulously review previous research efforts and combine their data and models to examine what projected forestland development might mean for private forestry in western Oregon over the next 50 years. The analysis draws together a broad body of recent research focused on western Oregon, to provide a context for discussing forestland development issues and their management and policy implications for the U.S. and abroad.

In the second paper, Zhang and Nagubadi use a modified multinomial logit approach to quantify the influence of urbanization on timberland use. They conduct the analysis by accounting for forest types in eight southern states in the U.S. between 1992 and 1997. They show that urbanization, economic returns, demographics, economic growth, and land quality explain the decline in timberland use in general. They conclude that these factors impact softwood, hardwood, and mixed forest-type timberland in different magnitudes, and treating all timberland as one category imposes undue restrictions on estimation models.

Cho and Newman examine patterns of rural land development and density using spatial econometric models with the application of a Geographical Information System (GIS). They observe the occurrence of spatially continuous expansions of development and high-density development in relatively remote rural areas. The results also reveal that closer distance to roads and cities, greater access to streams and rivers, and locations in higher elevations and flatter areas are highly valued in rural land development.