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FACT SHEET

Cost and Compromise: Determining the Public's Willingness to Pay for Values Received from Forests

All forest management decisions carry a cost. Preserving forests to protect salmon spawning streams, spotted owl habitat, or recreation areas can reduce jobs as well as the availability of wood for home construction. Reductions in timber income and taxes can also drag down the economies of rural, timber-dependent communities. Yet cutting timber can adversely impact some wildlife habitat, increase erosion and stream sediment and reduce recreation opportunities. Balancing these competing benefits and costs is difficult.

Public's Preferences for Forest Management

Researchers have developed a survey technique that may make balancing tradeoffs easier. The survey measures people's willingness to pay for different types of forest management. In essence, the tradeoffs they are willing to support. Survey results can also help determine if and how rural communities should be compensated for the costs of preserving forests.

The costs of managing forests to enhance environmental goals have led to conflict in Washington State, as well as inequities between those who benefit from and those who pay for environmental protection. This new survey technique provides a way to address these inequities, to come to solutions that benefit all groups.

In 1997, UW forestry researchers surveyed more than 1,000 Washington residents from throughout the state—a group that included loggers and environmentalists as well as many citizens who rarely use forest lands. Some survey results split along urban and rural lines. City dwellers were more likely to value the aesthetics of a forest, such as the ability to hike without passing through clearcuts. However, both urban and rural residents were willing to pay substantial amounts to maintain biodiversity. This term characterizes a forest's diversity and its ability to support wildlife such as deer and salmon, which can be hunted and fished, as well as protected species such as the spotted owl and marbled murrelet. In addition, both urban and rural residents valued job protection almost equally.

When UW researchers combined the survey results with a cost analysis of existing and proposed management plans; they found that rural residents pay substantially more than urban residents for benefits both groups enjoy. In other words, rural residents can pay heavily for the costs of preserving wildlife habitat and recreational opportunities valued more highly by urban residents. For some management options, the difference in benefits or costs between groups is about fourfold, an inequity that has contributed to major conflicts.

Results from this survey and similar surveys can be used to set compensation levels in the form of incentives to rural communities for the costs of producing forest amenities desired by urban communities. Compensation could include the replacement of lost timber tax income for rural schools and counties. It could also include incentives to private timber owners to defer cutting and change their logging practices and management techniques in order to support more wildlife habitat.

SURVEY QUESTIONS AND ASSUMPTIONS

The UW survey used a technique called Experimental Choice Analysis (ECA), to measure a public's willingness to pay for hypothetical projects or activities that are difficult to quantify, such as pleasing views or the opportunity to fish, hunt, or hike. A similar approach was used to estimate damages caused by the Exxon Valdez oil spill in Prince William Sound, Alaska.

ECA requires that survey respondents choose among several forest management alternatives with varying costs and benefits. To help respondents make these decisions, the survey first asked respondents how they used or

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benefited from forests. Then respondents studied photographs of various types of forests, from scrub to old growth and different mixtures of both, and decided which they liked best and thought were most beneficial. These forest conditions were linked to a biodiversity scale.

The top of the biodiversity scale—100 points—was set at pre-European forest conditions including large areas of old growth. The survey's characterization of old growth included great diversity in the age and variety of trees and the forest understory, the vegetation under and around the dominant trees. A forest rated at 100 % would represent conditions which researchers believe existed hundreds of years ago. The forest would have areas with saplings as well as ancient trees, small open patches of berries and deciduous trees, and large stretches of towering evergreens. Young commercial forests, or timber plantations, have a biodiversity rating of about 50. Each age and type of forest provides a different habitat for birds, fish, and other wildlife.

It takes about two centuries for an open area created by natural disturbance (i.e., fire, wind or disease) or a clearcut harvest to grow into a forest with a biodiversity rating approaching 100 %. Increasing biodiversity to this level has costs, primarily in the form of losses in timber harvests, jobs, and tax revenues. The greater the increase in biodiversity, the greater the cost. For example, increasing biodiversity from 50 % to 70 % is quicker and cheaper than increasing it to 80 %. Survey respondents were required to choose their preferred management strategy among a wide range of cases, some with low costs and some with high costs.

The survey also included some basic information about Washington forestlands. Western Washington has about 12 million acres of forest. A third of this land, about 4 million acres, is set aside as reserves for wildlife habitat and other uses and is not being logged. Total timber harvests in Washington have declined about 30 % since the late 1980s, to just over 4 billion board feet per year. Before 1992, when harvests levels were at about 5 to 6 billion board feet, the forest sector supported about 240,000 jobs in Western Washington with about half of the jobs estimated to be in rural areas.

DETAILED SURVEY RESULTS

Urban residents were willing to pay more to restore biodiversity than rural residents (figure 1). Urban residents were willing to pay an additional $450 per household per year to restore biodiversity to a level of about 75 %, a rough compromise between the level of biodiversity in existing commercial forests (estimated at just over 56 %) and that common before non-native settlers began large-scale logging (about 100 %). To achieve a biodiversity level of 75 %, rural residents were willing to pay only about $225.

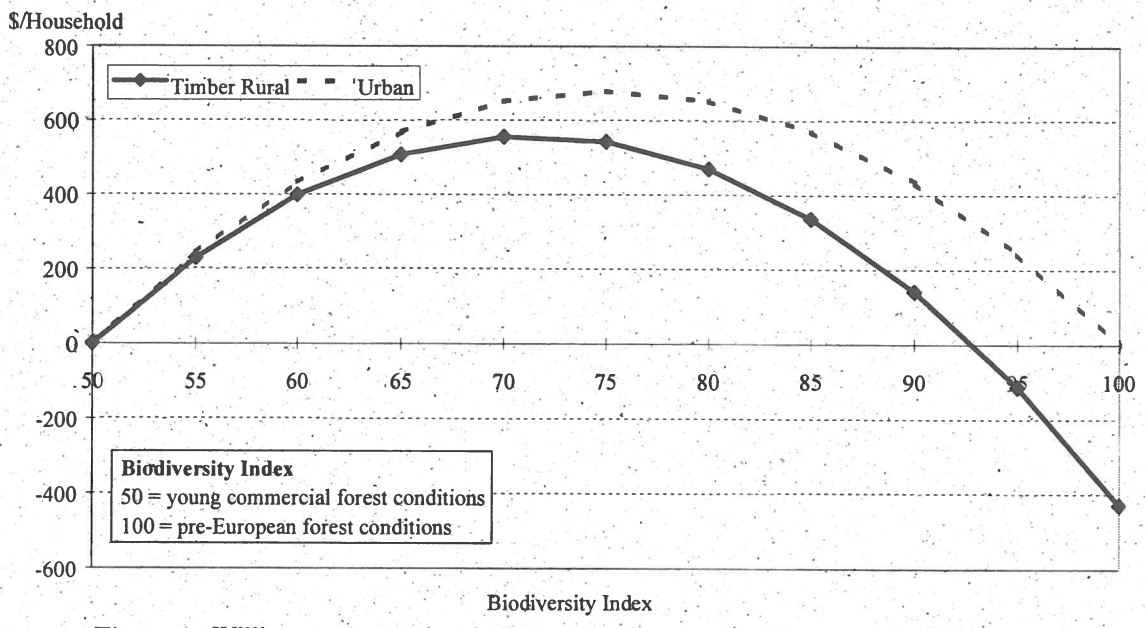

Figure 1. Willingness to pay for biodiversity.

The difference in preferences between rural and urban households was most evident in the findings regarding aesthetics (current aesthetics levels on unreserved forests are approximately 22 %). Timber-rural residents were willing to pay about $250 to restore 60 % of the forests to these older stands, while urban residents were willing to pay just under $900, almost four times more for the same result (figure 2).

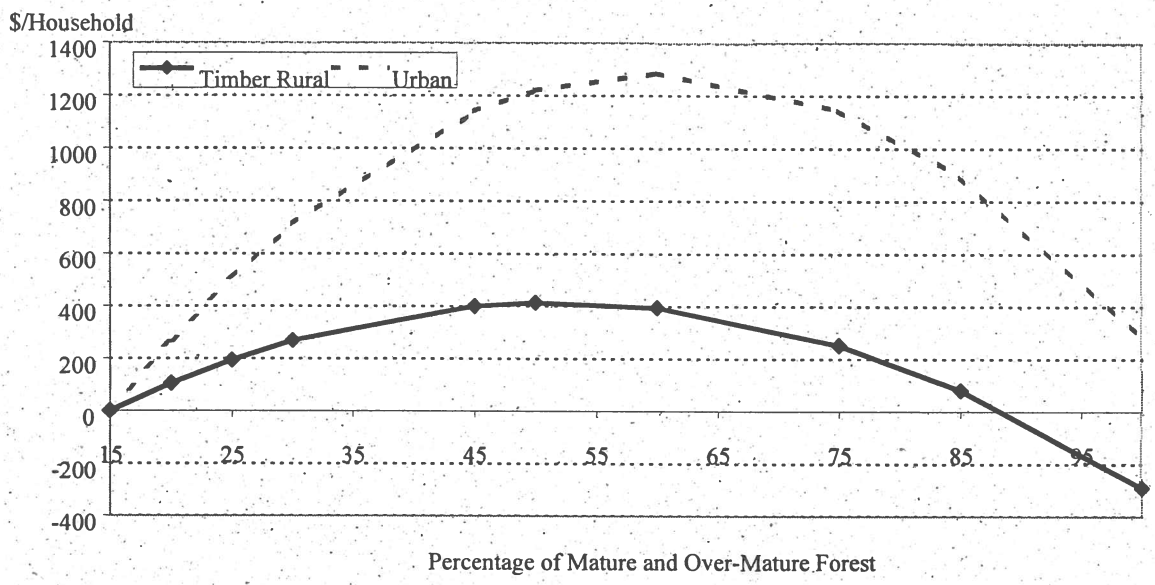

Figure 2. Willingness to pay for aesthetics.

Managing forests to increase biodiversity or aesthetics is likely to reduce jobs in rural areas, which at least partially offsets the value of environmental benefits. Both rural and urban residents were similar in their willingness to accept reduced jobs to gain other benefits. For $200 per household per year in other benefits, such as aesthetics and biodiversity, each group would accept a loss of 5,000 jobs, up to a level of about $1,000 in benefits for 25,000 jobs lost (figure 3). After that, survey respondents valued each job less and less.

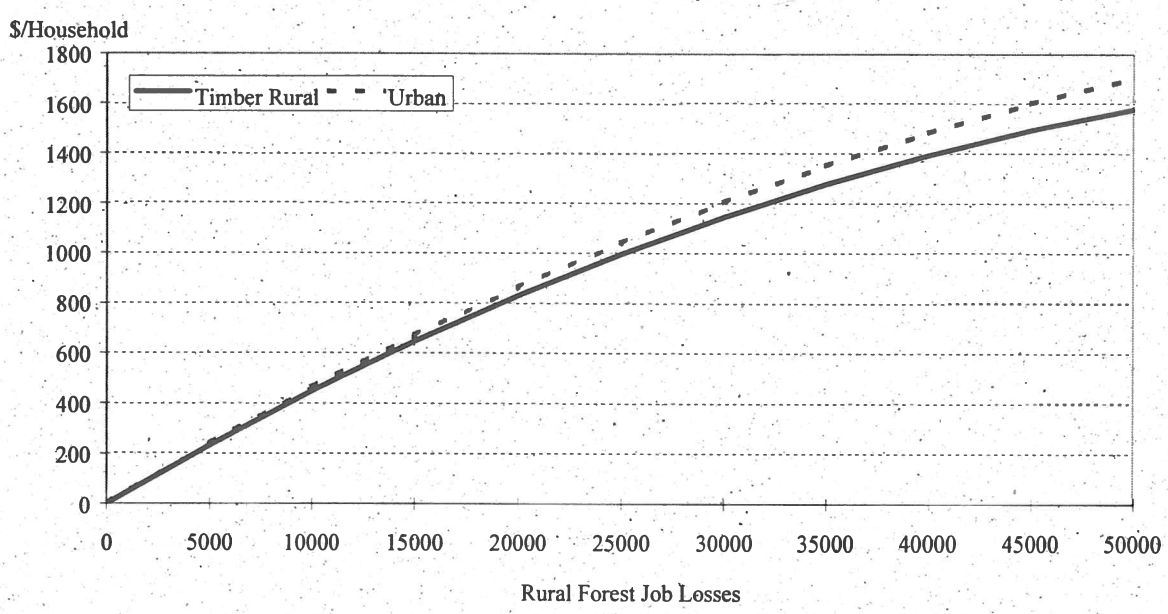

Figure 3. Willingness to accept rural job losses.

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ANALYSIS AND OVERALL CONCLUSIONS

Overall, survey respondents preferred forest management strategies designed for multiple uses. This approach uses thinning, selective cutting and retention of snags and debris to increase levels of biodiversity. Historically, forests became diverse through a lengthy natural process of disturbances and aging. When natural disturbances such as fire, windstorms and diseases killed standing trees, new dense forests grew quickly in the disturbed areas. Eventually, some trees would die and fall, allowing for a more diverse forest with understory vegetation. On a natural time scale, this process takes many years. Alternative management mimics this process by thinning forests to create room for understory vegetation. The result is a forest that acquires diversity more quickly than it would naturally.

There are several economic benefits to this type of management. The thinned trees can be sold and the remaining, less crowded trees grow more quickly, producing higher quality wood. In addition, alternative management is labor-intensive, which creates or preserves jobs. Therefore, forests under alternative management can produce wildlife habitat and intangible recreational values as well as timber income. However, there are immediate financial costs. Alternative management is more expensive than conventional harvesting and it defers some timber harvest and financial profit. Since the costs are large, alternative management is rarely used by forest managers in Washington State even though the benefits to others are also increased.

An analysis of survey results shows that alternative management can have substantial and real benefits for the state's residents. The analysis shows that the state public's valuation of forests could be increased over existing and proposed practices by $1-2 billion per year by motivating more alternative management practices.

This number is arrived at by selecting management alternatives that provide the highest total value to the public as measured by the survey. The total value includes the value for increasing biodiversity and aesthetics less the value lost from lower employment and higher costs accumulated all across the state's residents.

When environmental benefits come with practices that are less adverse to community jobs, state and local taxes, and the cost to owners, the total utility value to each household can be increased significantly.

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