



# The Economic Benefits of Wilderness: Focus on Property Value Enhancement

## Key Points

- Designated wilderness areas on public lands generate a range of economic benefits for individuals, communities, and the nation — among them, the attraction and retention of residents and businesses and the protection of watersheds, recreational opportunities, and scenic vistas.
- A new study shows that wilderness also generates enhanced property values, which translate into financial benefits for residents of communities close to wilderness areas.
- While the positive impact of wilderness on land values is significant, the effect on property tax bills should be negligible. The costs of public services tend to be lower in areas where

conservation lands exist, and tax rates should be lower as a result.

- At the same time, enhanced property values could be used to produce revenue for statewide programs to assist local conservation, economic, and community development efforts.

## Introduction

Designated wilderness areas on national forests and other federal public lands permanently protect spectacular scenic vistas, high-quality drinking water supplies, cold-water fisheries, the capacity of the land for carbon storage, vital habitat for wildlife, a wide variety of backcountry recreation opportunities, and many other values that are of benefit to society and the environment.

Some of these values have economic dimensions, including the enhancement that wilderness brings to nearby property values as reflected in land prices. A number of studies document this enhancement value near urban greenways, in historical districts, and along urban boundaries.<sup>1</sup>

In this Science & Policy Brief, The Wilderness Society reviews several of the economic benefits of wilderness. We also report the findings of a new study of enhancement value in rural areas. The study focused on communities near existing and proposed wilderness areas on the Green Mountain National Forest in Vermont.

## Important Economic Benefits of Wilderness

The economic benefits of wilderness range from the tangible and immediate, like higher property values near protected areas, to the esoteric and distant such



New growth in Breadloaf Wilderness, Green Mountain National Forest.

SPENCER PHILLIPS

<sup>1</sup> See Faushold and Lillieholm (1999) for a literature review.

▼  
**Research shows that people and businesses locate where the quality of life is considered good, based in part on a clean, natural environment and high-quality recreational opportunities.**  
 ▲

as the value of preserving the carbon storage capacity of forests to lessen the impacts of global climate change and the value of preserving species for the use and enjoyment of future generations. Some of the benefits are reflected in markets and can be quantified as prices. Others are not traded in formal markets, but that does not mean they have no value.

The following categories of economic value are among the benefits of wilderness that economists can express in monetary terms. These should be considered in public discussions about conservation of the nation's natural heritage.

**Regional economic diversification.**

Economic research documents that people and businesses locate where the quality of life is considered good, based in part on a clean, natural environment and high-quality recreational opportunities. Retirees and "footloose" businesses, in particularly, bring dollars and opportunities to areas with high-quality amenities.

- In a survey of 11 fast-growing counties across the country, Rudzitis and Johansen (1991) found that 45 percent of long-time residents and 60 percent of recent migrants to counties containing designated wilderness areas on federal lands indicate wilderness is an important reason for living in those counties.
- Rasker (1994) found that entrepreneurs cite quality-of-life factors over business-climate factors (cheap labor, low taxes, lax environmental standards) as reasons for locating and keeping their

businesses near protected public lands. (See also Power 1996 and Florida 2000).

- Lewis and Plantinga (2001) found that conservation lands in the northern forest region stretching from Maine to Minnesota are associated with higher net migration that, in turn, engenders growth in employment. People seek (or stay in) areas with wild-land amenities, and jobs follow people.
- Based on their research, Freudenburg and Gramling (1994) state: "...it needs to be recognized as a serious empirical possibility that the future economic hope for resource-dependent communities of...the United States could have less to do with the consumption of natural resources than with their preservation."

**Property enhancement.** Protected land can enhance the value of nearby private property. In the region surrounding the Green Mountain National Forest in Vermont, land values are higher in towns (or townships<sup>2</sup>) that contain wilderness, while land prices decrease with distance from a wilderness boundary (Phillips 2004; details below).

**Lower public service costs.** Open space typically generates local tax revenue in excess of the costs of the public services that such land requires. Cows and moose, it is said, don't ride school buses.

- Recent studies in Maine and the Adirondacks conclude that towns with more open space have lower tax rates (Ad Hoc Associates

<sup>2</sup> In Vermont, as in much of the Northeast, "town" describes a political or jurisdictional boundary encompassing, on average, about 23,000 acres of developed and undeveloped land. It does not mean simply the more densely developed or populated part of the area, which in the Northeast is called a village or hamlet. In other regions, an analogous piece of the landscape would be called a township or sometimes a borough. We use the term "town" in describing this research because it is appropriate to the region from which the data are drawn and to which the findings most directly pertain.

1997) and that the amount of protected land does not affect individuals' tax bills (Ad Hoc Associates 1996).<sup>3</sup> (See also American Farmland Trust 1992, Commonwealth Research Group 1995, Tibbetts 1998, Lerner and Poole 1999).

### Payments In Lieu of Taxes (PILT).

The federal government makes PILT payments to counties to compensate for the tax-free status of federal lands in the counties. The payments are the same for all federal lands regardless of the purposes for which they are managed. Therefore, wilderness designations do not diminish the amount of PILT payments.

**Ecosystem services.** Ecosystem services include air and water filtration, climate regulation, maintenance of biodiversity, scenic beauty, and other benefits that nature provides free of charge. Where they are not available, people must provide them.

- Water filtration is one example. The U.S. Forest Service estimates that 60 million Americans — more than one-fifth of the nation's population — get their water from sources with headwaters on national forests, which supply 6 percent of runoff east of the Mississippi River and 33 percent in the West. At a minimum, this water is worth \$3.7 billion annually (Sedell et al. 2000).
- Carbon sequestration is another example. Mature, fully stocked forests sequester carbon to help slow the process of global warming. Carbon credits are already

being exchanged for prices ranging from \$1 to \$20 per ton around the world, or \$300 to \$600 per acre (Walls 1999).

- Costanza et al. (1998) estimate the value of all ecosystem services on temperate forests like Vermont's at \$122 per acre per year. Less than a tenth of this sum stems from the production of raw material such as timber, while about a third is from all direct use values, including recreation.
- In a more recent study focused on wilderness areas in the lower 48 states, Loomis and Richardson (2001) estimate the value of federally designated wilderness areas for carbon storage, climate regulation, and waste treatment (filtering of air and water) services at between \$2.0 billion and \$3.4 billion per year.

**Passive use.** Option value (what it's worth to preserve the option of future use), bequest value (what it's worth to protect a resource unimpaired for future generations), and existence value (the value that people place on preserving a resource even if they have no expectation of using it in the future) collectively comprise passive use values. Loomis and Richardson (2000) estimate the passive use value of wilderness in the eastern United States at about \$4 per acre per year.

**Recreation.** Loomis and Richardson (2001) estimate that the value of eastern



PHOTO COURTESY OF FOREST WATCH

High-quality waters like this pool in the proposed Romance Mountain wilderness area (Green Mountain National Forest) are one of the many economic and ecological benefits of protected wilderness

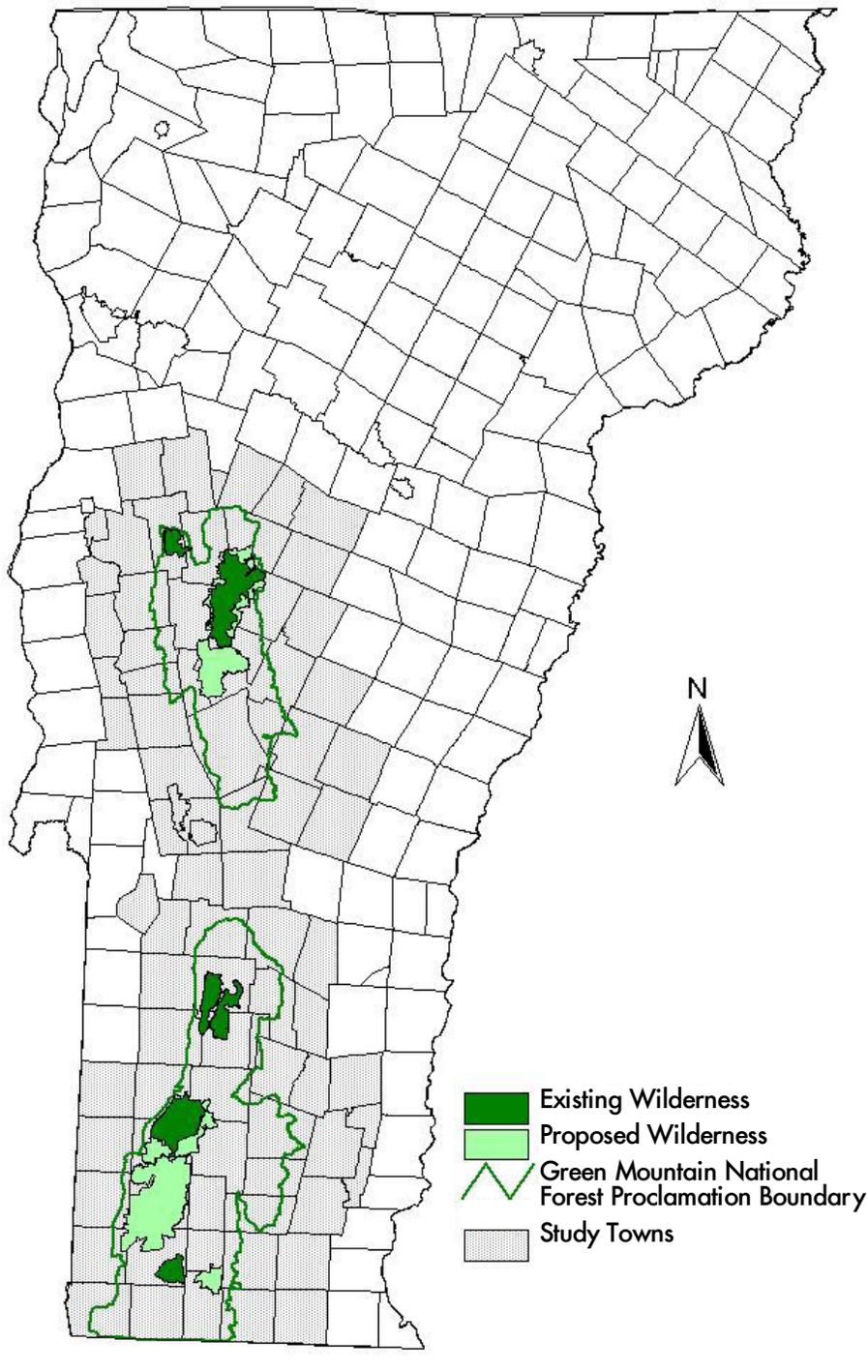
<sup>3</sup> This factor might be less pronounced in cases where public land is being considered for wilderness designation because that land is already not available for commercial or residential development. Wilderness areas, however, may afford greater watershed protection than areas in which roads are constructed and where other industrial activities can disturb soils, remove vegetation that slows runoff, and otherwise disrupt natural water purification processes. In such cases, downstream municipalities would find that wilderness areas help keep down the costs to manage storm water and treat drinking water.

wilderness to visitors is about \$44 per acre each year and that these visitors generate an additional \$44 per acre per year in spending in nearby communities. That spending translates into support for

one job for every 550 acres of wilderness. A National Sporting Goods Association survey estimates that participation in wilderness camping and hiking by nearby residents alone totaled 630,000 visitor days of backpacking and 460,000 visitor days of hiking in 1998, an increase of 158 percent over 1990.

**Science.** Aldo Leopold (1949) wrote that wilderness supplies a “base datum of normality, a picture of how healthy land maintains itself as an organism.” Wilderness is the control by which scientists can judge the impacts of management on other parts of the landscape. Using the production of new scientific information as a proxy for this value, Loomis and Richardson (2001) estimate that research conducted in or based on wilderness areas contributes some \$5 million to the U.S. economy each year.

**FIGURE 1.**  
**Study Area in the Green Mountain National Forest, Vermont**



### **New Study Shows Benefits to Property Owners near Wilderness in Vermont**

A growing body of research on the values summarized above, as well as others, continues to contribute new and vital information to the discussion over the many benefits of protected wilderness. The Wilderness Society recently conducted an econometric study that focuses on one of those benefits — enhanced property values — on lands surrounding the Green Mountain National Forest in Vermont (Phillips 2004). The study demonstrates that: (1) residential property in towns closer to wilderness areas is worth more than that in towns farther away and (2) the presence of wilderness areas in a town boosts property values in that town.<sup>4</sup>

**The link between wilderness and property values.** Among the many factors that determine a property's mar-

<sup>4</sup> This result takes into account other factors that influence land prices. Therefore, one can say that *other things being equal*, people are willing to pay more for residential property when that property is closer to designated wilderness.

ket price is its location — how close it is to good schools, to markets for goods produced on the property, to its owners' places of work. As documented in studies of urban and suburban areas, a property's value is also affected by its proximity to protected lands such as parks and greenways.

To determine whether protected areas generate enhancement value in rural areas, this study of the Green Mountain National Forest used a "hedonic" price model<sup>5</sup> that allows one to break down the price of a piece of property into the market values of the attributes of the property, including its location, that appeal (or not) to the buyer. The study examined residential properties in 82 towns in or near the Green Mountain National Forest. The attributes of the properties and their location included parcel size, the presence of a number of different kinds of buildings, and, of particular interest, the property's proximity to designated wilderness on the Green Mountain National Forest.

The model was applied in an analysis of more than 12,000 land transactions in 82 towns across southern and central Vermont. All transactions from 1987 to 2002 that involved land for residential use in towns within 14 kilometers of the Green Mountain National Forest's proclamation boundary were considered (Figure 1).

The model showed that a property's proximity to wilderness is clearly associated with higher prices for land throughout the study area. Significantly:

- The per-acre price of residential land in towns that have some

wilderness acreage is almost 19 percent higher than in towns that contain no wilderness.

- A 1.0-percent increase in the proportion of a town that has designated wilderness is associated with a nearly equal (0.8-percent) increase in land prices.
- The per-acre price of residential land falls by approximately 0.33 percent for each additional kilometer (just over six-tenths of a mile) in distance from the nearest wilderness boundary.

#### **Applying the link to the Green Mountain wilderness proposal.**

In 2001, the Vermont Wilderness Association, a coalition of conservation organizations, proposed 78,870 acres for wilderness designation on the Green Mountain National Forest. Most of the



PHOTO COURTESY OF FOREST WATCH

land — 59,293 acres — was proposed for three new wilderness areas, while the rest was proposed as extensions of two wilderness areas designated in 1975 and 1984 (Figure 1).

Scenic vistas characterize the proposed Glastenbury Mountain wilderness area (Green Mountain National Forest).

▼  
Free of charge,  
nature provides  
many important  
ecological services  
that benefit people  
and the  
environment.  
▲

<sup>5</sup> Such models get their name from the idea that people value a good — say, land or a car — for the aspects of the good that give them pleasure. Hedonic models allow researchers to identify, for example, how much of the value of land has to do with the view it offers and how much of the value of a car has to do with its color or whether it has four-wheel drive.

▼  
**A study of property transactions in Vermont demonstrates that residential lands increase in value the closer they are to protected wilderness areas on the Green Mountain National Forest.**  
 ▲

If this proposal is adopted, 8 additional towns in the study area will contain wilderness for the first time, and 11 towns will gain more wilderness acreage. The proposal would also bring a wilderness boundary closer to 57 towns.<sup>6</sup>

To estimate the impact on land prices from changes in wilderness boundaries, the Green Mountain study results were applied to land transactions for the years 2001 and 2002. This allowed a comparison of actual sale prices for residential properties with estimates of what those prices would have been if new wilderness areas had been designated before 2001. The difference between actual and estimated prices represents both the enhancement value of wilderness designations and a windfall for current property owners.

The findings show that, depending on how proximity to wilderness is measured, the proposed wilderness designations would add an estimated \$1.1 million to \$2.2 million per year to the value of residential property sold in the study area.

Towns that currently have no wilderness within their borders, but would gain some wilderness acreage, would see land values rise by an average of \$4,000 per acre, with a total realized enhancement of \$2.2 million per year. Average residential land values in towns that would gain wilderness acreage (including those towns that currently have no wilderness acreage) would rise by an average \$1,217 per acre, for a total enhancement value of \$1.3 million per year. Towns that would become closer to a wilderness boundary would experience a land value enhancement of \$250 per acre, or \$1.1 million per year.<sup>7</sup>

Designation of new wilderness acreage could result in even higher enhancement value because the model used in the Green Mountain study and its estimates does not account for the possibility that new wilderness acreage could attract new residents and associated economic development.

### **What to make of the windfall?**

Our findings have implications for those who are considering the new wilderness designations and who are engaged in community and economic development planning in areas that have or would gain wilderness.

First, the results debunk the notion that land protection, including wilderness designation, harms property values (see, for example, Goodson 2002). Rather, the impact of wilderness designation on nearby property values should be counted among the economic benefits of wilderness.

Second, residents of towns that will gain wilderness acreage or become closer to wilderness areas might be concerned that the enhancement value of wilderness will be reflected in the assessed value of their properties, possibly leading to higher property tax bills. This potential effect can be controlled, if not completely offset, by several factors.

- As noted before, the costs of providing local public services tend to be lower in communities with conserved land.
- Whatever level of public services a town chooses to provide, the goal is typically to balance the budget so that revenues match expenditures. Since revenue equals property value times the tax rate, an

<sup>6</sup> Four towns — Glastenbury, Somerset, Stratton and Woodford — that will either gain wilderness acreage or become closer to wilderness boundaries had no land transactions on which to base an estimate of the impact of new wilderness areas. Those towns were not included in the impact estimates.

<sup>7</sup> These estimates reflect the enhanced value that would be realized through the sale of residential property. They do not include the added value of properties that are not sold; that is, “paper gains” in the value of residential properties.

increase in property value, accompanied by a decrease in the tax rate, would keep revenue flat. Therefore, any increase in assessed property value associated with wilderness could be balanced by a reduction in the town property tax rate, leaving individual property tax bills unchanged. This study found that Vermont towns with higher property values indeed have lower town tax rates.

It is commonly assumed that lower property tax rates make communities more attractive for economic development, including residential property development. Factors that lower the property tax rate could therefore have a secondary, positive impact on local economic development. The primary impact would occur as wilderness helps retain and attract diverse businesses and residents (Rudzitis and Johanson 1991, Rasker 1994, Power 1996).

- The state could choose to capture some of the wilderness-related increase in land value to address

### Key Findings:

- Designated wilderness on federal lands enhances nearby property values.
- Higher property values are associated with lower town tax rates in Vermont
- Wilderness-enhanced property values would generate revenues for local community development.

local community concerns and economic development objectives. Under current Vermont law, for example, a portion of the windfall will be collected in property transfer taxes paid by new buyers. In a conservative estimate, the additional transfer tax revenue associated with the proposed wilderness areas would total between \$12,000 and \$26,000 per year.<sup>8</sup> This added revenue could be used to help finance community land-use and economic development planning in towns with or near wilderness. This revenue could also be allocated to programs designed to reduce housing costs and statewide property tax liability for town residents.

<sup>8</sup> This estimate is conservative in that it does not include land transfer tax revenue associated with existing designated wilderness on the Green Mountain National Forest. The sale of properties near those areas already provides funds for Vermont's Housing and Conservation Trust Fund and other state programs.

**Works Cited**

- Ad Hoc Associates. 1996. Property Taxes, Growth, and Land Conservation in the Adirondacks. The Adirondack Council, Elizabethtown, NY.
- Ad Hoc Associates. 1997. Open Land, Development, Land Conservation and Property Taxes in Maine's Organized Municipalities. Maine Coast Heritage Trust, Brunswick, ME.
- American Farmland Trust. 1992. Does Farmland Protection Pay? Northampton, MA.
- Commonwealth Research Group, Inc. 1995. Cost of Community Services in Southern New England. Southern New England Forest Consortium, Chepachet, RI.
- Costanza, R., et al. 1998. The value of the world's ecosystem services. *Ecological Economics* 25: 3-15.
- Duffy-Deno, K.T. 1998. The effect of federal wilderness on county growth in the intermountain western United States. *Journal of Regional Science* 38(1): 109-136.
- Fausold, C.F., and R.J. Lillieholm. 1999. The economic value of open space: A review and synthesis. *Environmental Management* 23(3): 307-320.
- Florida, R. 2000. Competing in the Age of Talent: Environment, Amenities, and the New Economy. Report prepared for the R. K. Mellon Foundation, Heinz Endowments, and Sustainable Pittsburgh. Carnegie Mellon University, Pittsburgh, PA.
- Freudenburg, W.R., and R. Gramling. 1994. Natural resources and rural poverty: A closer look. *Society and Natural Resources* Vol. 7.
- Goodson, JW. 2002. The problem with parks. *Range* Available at <<http://www.rangemagazine.com>>
- Leopold, A. 1949. Wilderness. In: A Sand County Almanac. Oxford University Press, Oxford, UK.
- Lerner, S., and W. Poole. 1999. The Economic Benefits of Parks and Open Space: How Land Conservation Helps Communities Grow Smart and Protect the Bottom Line. The Trust for Public Land, Washington, DC.
- Lewis, D., and A.J. Plantinga. 2001. Public Conservation Land and Economic Growth in the Northern Forest Region. Misc. Publication 748. Maine Agricultural and Forest Experiment Station, Orono, ME.
- Loomis, J.B., and R. Richardson. 2000. Economic Values of Protecting Roadless Areas in the United States. Washington, DC: The Wilderness Society, June, 34 pp.
- Loomis, J.B., and R. Richardson. 2001. Economic values of the U.S. Wilderness System: Research evidence to date and questions for the future. *International Journal of Wilderness* 7(1): 31-34.
- Phillips, S. 2004. Windfalls for Wilderness: Land Protection and Land Value in the Green Mountains. Ph.D. Dissertation. Virginia Polytechnic Institute and State University, Blacksburg, VA.
- Power, T.M. 1996. Lost Landscapes and Failed Economies: The Search for a Value of Place. Island Press, Covelo, CA.
- Rasker, R. 1994. A new look at old vistas: The economic role of environmental quality in western public lands. *University of Colorado Law Review* 65: 369-99.
- Rudzitis, G., and H. Johansen. 1991. How important is wilderness? Results from a United States survey. *Environmental Management* 15(2): 227-233.
- Schmit, L., and R. Rasker. 1996. Federal Lands Payment Programs in the Columbia River Basin. The Wilderness Society, Washington, DC.
- Sedell, J., et al. 2000. Water and the Forest Service. FS-660. USDA Forest Service, Washington, DC.
- Tibbetts, J. 1998. Open Space Conservation: Investing in Your Community's Economic Health. Lincoln Institute of Land Policy, Cambridge, MA.
- Walls, J. 1999. Carbon sequestration: Making sustainable forestry pay. *Practitioner: Newsletter of the National Network of Forest Practitioners* 13: 6-7.