

Economics, Department of

Economics Theses

University of Puget Sound

Year 2007

Conservation and Management of
Wildlands

Christopher Libecap
University of Puget Sound

This paper is posted at Sound Ideas.

<http://soundideas.pugetsound.edu/economics.theses/48>

Conservation and Management of Wildlands

Christopher Libecap
December 2007

Senior thesis submitted in partial fulfillment
of the requirements for a
Bachelor of Arts (or Science) degree in Economics
at the University of Puget Sound

Conservation and Management of Wildlands

Introduction and Problem Statement

In the last few decades there have been increasing global concerns about the environment. From the Kyoto Protocol, California's strict emission laws to environmentally friendly buildings and alternative fuel, people have begun to push towards a more eco-friendly lifestyle. Whether these reasons have stemmed from genuine concern or market trends, people have become more aware of their surrounding environment and are beginning to push to preserve nature and to be more sustainable. Unfortunately however the optimum level of conservation and management of wildlands will always be underproduced. This level is defined as the value of the quality the consumer expects to receive. In order to conserve and manage wildlands the government sector, private sector and nonprofit sector need to work together. Of the three sectors, nonprofit organizations are structured more efficiently than the others allowing them to overcome obstacles that for profit and government organizations face. This allows them to add additional aid in conservation and management. The thesis of this paper is to prove that nonprofits are the best equipped to deliver the services of managing and conserving wild lands for the public.

In economic terms nonprofit organizations and for profit organizations become involved with supplying the services of public goods when there is government failure. At this point, the government can not adequately provide the collective goods and services to the customers or society. Economically, this is easy enough to understand but when applying this definition to collective goods and services in a real life situation like wildlands, it is hard to grasp what government failure means. A major government

involvement with wildland conservation and management are most notably the United States National Parks. These installments however are seriously under funded.

Being government related, funding for national parks face heavy competition, like national defense, social security, health care, and education. The government's involvement to any one of these is restrained to respond only to the demand's of the majority, also known as the majoritarian constraint. If one were to look at the current events, the government is overwhelmed with huge issues that affect the majority of the United States citizens: Iraq, the retiring of the baby boomers, the health care issues of HMO's, and even the No Child Left Behind Policy. When comparing these issues with the issue of funding National Parks, it is obvious that government spending for the national parks of the United States would be diverted to more problematic issues the country faces.

That is not to say that these parks do not need funding, managing, or conserving. What this means is that faced with issues previously mentioned or even issues related to Katrina, the fires in California, and still 9/11, the government cannot effectively meet the demand for conserving and managing wildlands. That is where specialized nonprofit and for profit organizations enter, to fill that gap between the government involvement and the current societal demand for wildlands.

Review of the Literature

Many books and articles reviewed are not based on nonprofit organizations but are the reports of previous research done on different aspects of wildlands. This is important because it presents a three dimensional description of wildlands, which Cheever's article, "Not Quite Wilderness" helps to explain. Wildlands

are public lands that have minimal human development including both wilderness and roadless areas. Cheever explains the difference and most importantly the difficulty between managing wilderness and roadless areas. Federico Cheever from the University of Denver Sturm College of Law analyzed the policy and the tactical aspect of preserving roadless land. Cheever explains that the difference in perceived values such as timber benefits or aesthetic benefits of roadless areas has created a problem in developing a solution on how to manage such areas.

This article was designed to show how complicated an issue this has become by giving a detailed history of the controversy. The idea of wilderness land management had begun in the early 1920s, where the chore of managing the public lands was given to Congress who would designate wilderness areas. While roadless areas are not considered the same as wilderness they have the exact same natural qualities only without the protection of wilderness designation.

As the United States grew it became increasingly harder to designate more wilderness areas but became easier to release an area for multiple uses. Since roadless areas were not protected, and in some cases were not considered to have the values to be protected, the management of roadless areas had become complicated. The underlying question was who they belonged to: the government or the state. This has been an ongoing question that Cheever concludes has no easy conclusion at hand.

Researchers Loomis and Cabán show one way natural resources' values can be determined: contingent valuation. Contingent valuation is a survey based technique that evaluates non-market resources. It is used most commonly in environmental economics. This type of valuation uses utility based models that can be useful when interpreting

public goods. The reason for this is because public goods often times have a utility function that does not have a market price, such as enjoying a sunset.

Armadndo González-Cabán and John Loomis, studied the Puerto Ricans' willingness-to-pay "for preserving instream flows" from two major rivers; Río Mameyes and Río Fajardo. The reason for doing this contingent valuation was to compare the costs of "repairing water lines and in-home water conservation measures" to the cost of diverting water from the Río Mameyes and Río Fajardo for development use. This would allow the researchers to determine which of the two costs have higher net benefits.

Cabán and Loomis argued that maintaining and restoring the Río Mameyes and Río Fajardo would have higher "large market and non-market benefits" (p. 3) which would cancel out the cost of losing any commercial values of the water in the process. To prove this, the researchers developed a survey, patterned from a California fire contingent valuation method, to collect data on background information, opinions on "proposals, alternatives, visuals, willingness to pay questions and demographics" (*Measuring the Economic Benefit of Maintaining the Rio Mameyes in Puerto Rico* p. 3). Using the contingent valuation method, they were able to determine that by repairing water lines and replacing inefficient shower heads and toilets Puerto Rico would save ten times more water than they were planning to divert from the Río Mameyes and Río Fajardo.

Loomis goes on to research and analyze how if natural resources were managed efficiently this could overall increase the benefits of those resources as well as reduce mismanaging that can occur. In his book, "Integrated Public Lands Management: Principles and Applications to National Forests, Parks, Wildlife Refuges, and BLM Lands" (1993) Loomis uses "resource planning and analysis techniques/methods that

make it possible to determine how much of each resource to produce from a given type of public land” (p. 4) The idea is to describe the current state of public land management and how to efficiently evaluate natural resources.

Loomis defines management as an organization of natural resource uses which requires coordinating, controlling and scheduling the uses of natural resources. By managing natural resources researchers will know how to boost the growth of the natural resources. This can be complicated however, like understanding the interrelationships and influences one resource has over another. A simple example of management is, timing the grazing by livestock so it does not interfere with the grazing of big game animals.

Loomis goes on to describe different types of management, their principles and applications and how to apply economic efficiency analysis such as a benefit-cost analysis.

He does not however spend much time on the costs and difficulties of maintaining wildlands for the public. Armadndo González-Cabán addresses this issue in his research of “Wildland Fire Management Policy” (2007). A major dilemma to wilderness management is the social contract perceived by the public. One example is wilderness firefighting. Since fire protection has been subsidized the public is not aware of the true costs and, as Cabán believes, are less responsible in their decision (an effect of moral hazard) to build in potentially hazardous areas, while expecting protection regardless of the circumstances. He suggests a change “in the existing social contract and for the public to take responsibility for their decisions to live in high fire danger prone areas” (p. 13). The need for this change is due to the increase of wildland fire societal problems that have begun to cause a major economic impact.

Cabán concludes that as the “wildland-urban interface” (development into and around wilderness areas) increases, more wildland fire problems will arise and will increase fire management costs. In the last ten years combined, a one section of fire management by the government, direct fire suppression, has cost the United States 9.642 billion dollars and Cabán predicts that it will only get worse because of the social contract between the public and the forest service.

Managing and conserving wildlands is a fairly difficult task and often the hardest question to answer is: what is the optimal level of provision? Much research and time has been devoted on how to provide this level. Mancur Olson however researched and created a theory on group operation, group behavior, and the relationship between the group and the public good (1977). This information has helped explain how the structures of groups, like nonprofits organizations, operate. Olson developed “a logical or theoretical explanation of certain aspects of group and organizational behavior” (Olson *The Logic of Collective Action* p. 14) and a theory where in many cases smaller groups are more efficient than large groups.

Olson explains that when an organization or state is providing service for a public good “must also provide some non-collective goods in order to give potential members and incentive to join” (Olson *The Logic of Collective Action* p. 16). Another interesting aspect about groups Olson points out is that, organizations providing services for public goods cannot support themselves, “without providing some sanction or some attraction distinct from the public good itself” (Olson *The Logic of Collective Action* p. 17). This is because it will entice others to help cover the costs of maintaining the organization.

A final note by Olson is that organizations themselves have aspects of collective goods. Any common goal or group motive becomes a collective good within that organization because it can not be excludable.

While these are not based on the role of nonprofits, they bring up issues that nonprofits have to consider and structure themselves accordingly. For this reason, the structure involvement of nonprofit organizations in wild land conservation and management has been divided into four key sections:

- 1) Spreading awareness
- 2) Lobbying protective legislation
- 3) Research
- 4) Management of wildlands

Economic Theory

1) Spreading awareness

While every nonprofit organization spreads awareness one way or another, such as word of mouth or advertising, awareness is a fundamental factor that can have a big impact on the operations of a nonprofit. Spreading awareness has the effect of potentially attracting new members and reaching an outcome. It allows the nonprofit to present its mission and establish a network. In the book, *Spread the Word: How to promote nonprofit groups with a network of speakers*, author Terri Horvath presents four basic factors spreading awareness can accomplish.

- 1) It allows one to share results and procedures more easily
- 2) It can signal trust by presenting responsibilities

3) It encourages growth. Finding new members becomes easier if people know how the nonprofit organization operates.

4) A network can provide more options for a person to participate in.

In a lot of cases awareness for wild land management and conservation is spread by providing the public good of environmental quality in land management via experience such as The National Outdoor Leadership School (NOLS) or The Mountaineers. Groups like these are nonprofit groups that offer outdoor trips like backpacking and cross-country skiing while teaching people about the natural habitat and how to take care of it.

2) Lobbying protective legislation/monitor government agencies

Advocacy:

The idea behind advocacy is to identify and promote a cause, many times involving social welfare. Advocacy is very similar to spreading awareness but it goes further by pushing social change through lobbying and similar means. Another difference in spreading awareness and advocacy is that all nonprofits can spread awareness whereas 501(c)4 nonprofit organizations specialize in advocacy. These organizations are allowed to lobby for legislation.

Here an advocacy group lobbies for environmental legislation and uses the courts to monitor and pressure administrative agencies in order to help 501(c)3 organizations receive the benefits they need. The Natural Resources Defense Council is an excellent example of an advocacy group, as well the Sierra Club. The Natural Resources Defense Council, based in New York City devotes most of its effort lobbying against programs such as development of wildlands, urban sprawl, pollution and more. The NRDC

specializes in legal expertise to help their advocacy efforts and to provide help to other nonprofit organization, like grassroots nonprofits that do not have the skill or influence that the NRDC has.

3) Research

A key element in wildland management and conservation is research. Here there are nonprofits devoted solely to research. As nonprofits are limited by the effect of non-distribution, at times they can afford more risk and expense while researching than that of a for profit organization. Afterwards the research done by these nonprofit organizations can be used to help conserve and manage wildland more efficiently and cost effectively. They can address environmental problems and analyze current methods to see how well they work. This can prove very beneficial to nonprofits that specialize in land management and conservation, like The Nature Conservancy.

The nonprofit organization, Property and Environment Research Center has reviewed and researched previous as well as current methods performed in the United States and abroad. Some of their research has found that past government policy has actually worsened the current environment.¹ Abroad in the Zambezi Valley, PERC found that chili peppers can be a cheaper alternative to electric fences but just as effective against elephants eating a farmer's crops.²

4) Management of wild lands

With research, spreading awareness and advocacy, nonprofits specializing in the actual management of wildlands can apply this information to increase the amount of wildlands they preserve. The Nature Conservancy, which focuses on actual management

¹ Do Profits Promote Pollution www.perc.org/pdf/ps41.pdf

² PERC <http://www.perc.org/printer.php?id=758&url=perc.php?id>

of lands, uses what they call a “scientific approach to conservation” (www.nature.org). This works by selecting areas the organization defines as essential to preserving that ecosystem and then analyzing what is required to manage that land.

The Oregon Water Trust (OWT) is another nonprofit organization that works to restore surface water flow. They operate in a similar fashion as The Nature Conservancy’s approach. The OWT researches where a small increase or decrease in the amount of water has the largest effect on the surrounding ecological area. They work to conserve these first in order to increase the amount of water beneficial for the wild life and people.³

Results

Wildlands as Public goods:

Wildlands provide public and private goods. A public good is a good that is both non-rival and non excludable. Wildland is non-rivalrous, meaning that one person’s enjoyment can not take away from another’s enjoyment. The aesthetic value placed on viewing the Cascades or the Grand Canyon is non-rivalrous. Managing and conserving wild lands for nature, the public, and the future are all examples of providing public goods and the structure of nonprofits allow them to do it the best. Wildlands also have private goods. These are uses or values that have the potential to be excludable. An example could be guided backpacking trips, any number of national parks, where entry is restricted. A hidden excludable effect for some wildlands in national parks could be transportation cost. It may be too expensive for some people, who would otherwise want to go, to afford it.

³ Oregon Water Trust www.owt.org

Wildlands may be managed by nonprofits, for profits, and the government depending on how they are to be used. As a result wildlands can be provided as a public good. These public goods will be provided mostly by nonprofits because they are not excludable and cannot be traded in a market. This means that for profit organizations would not provide these public goods at the level desired by society. Since for profit companies would under provide these public goods, consumers would rely on nonprofits to provide them.

Wildlands also can provide a club good or collective good (non-rivalrous and excludable), such as guided backpacking trips or back country ski areas, where people who pay to use them enjoy them as a group. Those who do not pay do not get access. These goods can be provided by for profit organizations. They can restrict those who do not pay while providing the private goods to those who do pay; and can price to maximize profits.

Wildlands also can also be considered private goods (rivalrous and excludable). Ranchers use wild lands to graze their cattle. They fence the lands so that other livestock cannot enter them, and they deny access to others on the lands with “no trespassing” signs. They manage the lands in order to maximize the long run value of their ranch. While these have become private goods, they still have aspects of public goods within them. Well managed range land can provide habitat for wild life and can provide aesthetic values as people enjoy viewing rural settings. These services will be under provided just as above, because the rancher cannot exclude those who enjoy viewing the lands. He might be able to make the wild life habitat a private good by allowing those who pay the right to access the land to hunt or fish.

What this shows is that wild lands have multiple goods characteristics, which can explain the mixture of for profit and nonprofit management of them.

Market failure:

Market failure occurs when there is an inability to satisfy social demands in the market. The main reason for this is the inability to exclude users (non rivalrous and non excludable goods). This means that for a profit, market firms cannot sell the services. These public goods are then not sold in the market and we do not observe market prices for them. For profits will focus on private goods because they can exclude non buyers and the uses are rivalrous. They can earn revenue to cover costs and profits. This means that for profits will under provide valuable public goods and this is market failure.

To provide these public goods, other arrangements are necessary. Club goods or collective goods can be provided both by for profits and by government because they are excludable. Small club goods, like paid horseback rides on wildlands, can be provided privately. Larger club goods that cover larger areas, such as wildlands managed by the BLM, Bureau of Land Management, are best provided by the government. This could be because they may be too large to effectively exclude non buyers or there may be equity reasons for not wanting these lands held privately.

Pure public goods have to either be funded by nonprofits or by the government. The government may not provide enough of the public goods or large collective goods because tax revenues may be insufficient. This is where nonprofits can step in.

Weisbrod's conclusion: "the larger the quantity of collective good demanded that is under satisfied at the tax price scheme used by government, the larger the expected size of the voluntary sector, *ceteris paribus*." (Frumppkin, *On being Nonprofit* Pg. 66)

For collective goods, nonprofits develop because they are needed to serve as “extragovernmental providers of collective-consumption goods.” (Frumppkin, *On being Nonprofit* Pg. 66) Nonprofits do not sell the services they provide, but rely on voluntary donations. In the case of wildland conservation and management, they specialize in certain kinds of activities such as awareness, research, management, and advocacy to provide public or collective goods. This specialization may give them expertise and knowledge that government agencies do not have.

Public good to private good conversion

One solution to the problem of public goods is by attempting to convert them into private goods. This is one of the main strategies used by government and for profit organizations to control and manage public good production. The United States converts wilderness sectors designated by Congress into private land controlled by the National Park Service and the Bureau of Land Management. Only government organizations can do this at a large level. Public goods can be converted into private goods if the public (the people who will receive the public good) is small enough and there is a unanimous contract; this way a cost for producing or providing the public good can be determined. An example would be fishing licenses at a local fishing spot.

Since however wildlands are a fairly large public good it would be nearly impossible to set up a unanimous public contract. Instead unanimous contracts are formed by a “privileged minority.” Privileged minorities are subgroups of the public that set up their own unanimous contracts covering the cost of the public good as long as they receive enough benefit from the good. In this case, National parks, wildlife refuges and other designated wildlands appeal mainly to outdoor enthusiasts, but this solution is not

always very self sustaining. If the cost meets a high enough percentage of the benefit and the benefit is distributed among a large number of people, funding becomes a serious problem. This is the case with national parks in the United States. Many of them do not have the funding to adequately maintain the park. A nonprofit organization “National Park Conservation Association” reported that the National Parks in the U.S. suffer from a \$600 million shortfall.

This type of public to private conversion is not the only solution to provide public goods at a cost lower than the benefit. Other solutions (on the topic of wildlands) are to buy the land and then re-sell the land or its options. In October of 2007 The Nature Conservancy did exactly this. They purchased 161,000 acres of Adirondack wildlands from Finch, Pruyn & Company, a logging and paper mill company. The Nature Conservancy will eventually sell the land back to New York State and to private owners with a contract constricting any building on the land (*The New York Times* p. A2)⁴.

An organization can also combine two public goods; one with a positive cost and a positive value and the other good with a negative cost and a negative value. The combination of public goods in theory would have a zero or negative cost and a positive value. For example, roads are developed in wilderness designated areas to ultimately increase the benefits of the wildlands even though they have initial high costs.

Bundling is also a solution used to convert public goods into private goods. Bundling incorporates options that are specific to a certain public good to prevent the unanimous use of that public good. While bundling is more commonly applied in the technology market such as a bundle of programs that operate on a particular computer, it

⁴ The New York Times, *Irony in the Adirondacks* found in the **New York Report** pg. A20 by DePalms, Anthony. Monday October 29, 2007

can also be used to address the public good of wildlands. White water rafting down the Colorado River is an example that shows the application of bundling. In order to raft down the Colorado River one can only take trips by specific rafting companies. This insures the safety of river rafters as well as prevents river use by any average Joe with a floatable object.

In the end however any private production of public goods will be inefficient. The reason for this is the private producer will only receive a part of each additional value produced so they will only produce until the value they receive from each unit is equal to the cost. The amount produced will be lower than the efficient point (where the producer's marginal cost equals the consumer marginal value of the public good). The efficient point here is where the producer makes improvements in the quality that have higher values to the consumer than to the producer so the good will be under produced.

Conclusion

After doing the research for this subject I have come to the conclusion that conserving and managing wildlands will always be underprovided. The two main reasons for this is that the government, for profit and nonprofits organizations convert the public goods of wildlands into private goods to prevent free riding and to cover the costs they encounter. The other reason is the social contract created between the public and natural resources. As Caban showed in his research people are not fully aware of their actions so do not understand the consequences. In fact free riding might allow people to become aware and encourage a change in the social contract. While in many cases free riding can be problematic. If people see the consequences of their actions they may be compelled to change them potentially increasing the volunteer force and donations for

nonprofits. A problem with restricting free riding in the case of wildlands is, people wanting to conserve this good are willing to sacrifice a portion of it to prevent over use. In fact much of the awareness about the dangers conserving and managing wildlands face is done at these locations or to members of organizations involved. While this is effective to an extent, it is almost as if they are “preaching to the choir.”

After finishing this thesis, I believe my topic was too broad for me develop a very strong and effective argument to my topic statement. Originally I thought that conservation and management of all types of wildlands would follow similar methods. My initial goal and hope was to find a certain pattern that could be applied and benefit conservation and preservation in general. The difficulty I had increased as my research progressed. I tried to include as many factors I could to show how wildlands are managed and conserved and how nonprofits can help. Nonprofit participation in this field is not as clear as I have presented in this paper but I do believe by organizing them into four sections one can get a very good conceptual idea of how they operate and what is required for them operate. For future research I would like to focus more on nonprofit advocacy because I believe public awareness and involvement is the underlying problem that faces conservation and management of wildlands.

Bibliography:

Loomis, John. Integrated Public Lands Management. Second ed. New York: Columbia UP, 2002.

Horvath, Terri. Spread the Word: How to Promote Nonprofit Groups with a Network of Speakers. Indianapolis: Publishing Resources, 1995.

"Types of Advocacy Including Lobbying." W.K. Kellogg Foundation. W.K. Kellogg. 22 Oct. 2007
<<http://www.wkkf.org/Default.aspx?tabid=90&CID=280&ItemID=5000207&NID=5010207&LanguageID=0>>

Cowen, Tyler, "Public Goods and Externalities", The Concise Encyclopedia of Economics. Liberty Fund, Inc. Ed. David R. Henderson. Library of Economics and Liberty. 22 October 2007.
<<http://www.econlib.org/LIBRARY/Enc/PublicGoodsandExternalities.html>>.

Walter Block, "Public Goods and Externalities: The Case of Roads", The Journal of Libertarian Studies Vol. VII No. 1 (Spring 1983). The Fraser Institute, Vancouver. Spring 1983.
http://www.mises.org/journals/jls/7_1/7_1_1.pdf.

Frumppkin, Peter. On Being Nonprofit. Cambridge: Harvard UP, 2002. v-213.

Salamon, Lester M. America's Nonprofit Sector. Second ed. New York: The Foundation Center, 1999. vii-203.

Loomis, John B. "Integrated Public Lands Management: Principles and Applications to National Forests, Parks, Wildlife Refuges, and BLM Lands". New York: Columbia UP, 1993. ix-471.

Olson, Mancur. "The Logic of Collective Action: Public Goods and the Theory of Groups". Cambridge: Harvard UP, 1977. 1-179.

Loomis, John B., and Armando G. Caban. "'Measuring the Economic Benefit of Maintaining the Ecological Integrity of the Rio Mameyes in Puerto Rico.'" USDA Forest Service (1999). Data. University of Puget Sound.

Cheever, Federico. "'Not Quite Wilderness: the Development of Roadless Area Protection on Forest Service and BLM Land.'" University of Denver Sturm College of Law (2007).

Caban, Armando G. "'Wildland Fire Management Policy and Fire Management Economic Efficiency in the USDA Forest Service.'" Wildfire 2007 (2007).

The New York Times, *Irony in the Adirondacks* found in the **New York Report** pg. A20
by DePalms, Anthony. Monday October 29, 2007

The Oregon Water Trust www.owt.org

The Nature Conservancy www.nature.com

Property and Environment Research Center www.perc.org

The Natural Resources Defense Council www.nrdc.org

The Sierra Club www.sierraclub.org

The National Outdoor Leadership School www.nols.edu

The Mountaineers www.mountaineers.org