



by John Loomis

The Evolution of Economic Analysis of Public Land Management

The use of economics by the U.S. Forest Service (USFS) and Bureau of Land Management (BLM) has evolved over the years in response to changes in the laws governing the agencies and advances in economic valuation methods. Some of this change is also in response to many stakeholder groups that now recognize that environmental values have economic value, and thus want the agencies to incorporate such values into the agencies' analyses. The USFS was quicker to expand its analysis of economic values beyond market values than the BLM. By the time this essay was written (2019), these two agencies routinely recognize recreation use values but also other values of ecosystem services, including non-use values. In some cases these agencies monetize these values in their planning documents and Environmental Impact Statements (EISs). At a minimum, many of these agencies' planning documents and Environmental Assessments usually cite the literature documenting that a wide range of nonmarket values are associated with outputs not traded in markets (e.g., water quality, wildlife habitat, wilderness, etc.). The net result has been to slowly change the nature of many public land debates from "economy versus environment" or "owls versus people" into debates that center on the types of economic values that society wants a particular area of public land to produce. This essay provides a brief synopsis of the events and associated timeline for the evolution in economic values used by the USFS and BLM. This essay is written from the perspective of someone who witnessed these changes over his 40-year career, and in a few cases participated in events that contributed to these changes.

The 1960s: In the Beginning There Were Only Market Values and Economic Impacts

While the 1960s brought about the Multiple Use – Sustained Yield Act for the USFS, much of the emphasis was on market values of a subset of multiple uses, primarily timber. The BLM informally adopted the multiple-use paradigm as well. A later BLM director jokingly referred to the agency during this time period as the "Bureau of Livestock and Mining." In part, this was as an ode to the agency's heritage in the Grazing Service and General Land Office, and in part due to recognition that these were the dominant two outputs during the BLM's history. Not coincidentally, these were the primary two outputs with market values. Economic analysis not only focused on market values but also local economic impacts—how the particular timber sale or mine would increase jobs in nearby rural counties.



John Loomis, PhD, is a Professor at Colorado State University. He has published more than 200 journal articles and book chapters on valuation of nonmarket resources such as ecosystem services, recreation, wilderness, water quality, wetlands, rivers, forest fire management, and endangered species. He has taught courses on public land management at both University of California-Davis and Colorado State University. Prior to being a professor, Dr. Loomis was an economist with the U.S. Fish & Wildlife Service, and he started his career as an economist with the Bureau of Land Management.

U.S. Forest Service and Economic Valuation

1970-1980: The Need for Economic Values in Two Acts

The Resources Planning Act (RPA) of 1974 required the USFS to do a formal Assessment of all the natural resources on all lands in the United States every 10 years. Every five years the USFS was required to develop an RPA Program that laid out a set of alternative five-year national and regional plans for how the entire National Forest System could be managed. This was a “top down” view of how the national forests could be managed for producing alternative levels of multiple uses. The 1980 RPA Program attempted to value the quantities of multiple uses that could be produced with each of the alternative RPA Programs. The 1980 Program made an initial attempt to include values of recreation, hunting, and fishing based on the minimal valuation literature available in the 1970s. These initial RPA values became a reference point for future efforts to refine the RPA values.

The 1976 National Forest Management Act (NFMA) took a different approach to determining how national forests were to be managed. This “bottoms up” approach required each national forest to develop its own comprehensive plan on how it was to be managed for the next 15 years. The U.S. Forest Service decided to link the NFMA plans to the RPA Program by requiring that one alternative in the NFMA plans be the individual national forest’s “share” of the national RPA Program.

The implementation of the NFMA planning took a decidedly quantitative approach with the development of FORPLAN. This computer program was essentially a linear programming model. As with most linear programming models, it had an objective function that had dollar values of each output (here each multiple use). One of the many challenges that the USFS had to overcome was where to get these values. For timber there was, of course, timber stumpage prices from that national forest’s timber sales. For recreation, hunting, fishing, and wilderness, the RPA values seemed like good candidates as they were official and standardized values.

1981-1985: The Beginning of Recreation Use Valuation

To develop better RPA values for the 1985 RPA Program (and potentially for FORPLAN), the USFS Rocky Mountain Research Station in Colorado commissioned two young economists (myself, then with the U.S. Fish & Wildlife Service, and Cindy Sorg of the U.S. Forest Service) to assemble the now rapidly growing literature on the economic value of recreation, hunting, fishing, and wilderness. As is standard in economics, this recreation value was measured by visitors’ consumer surplus or willingness to pay over and above their travel cost. Our comprehensive assessment was peer reviewed, and appropriate revisions were made to arrive at a set of recreation values by broad categories of recreation activities and geographic regions. (This is an early example of what became known in 1992 as “benefit transfer.”) These initial values were sent up to the U.S. Forest Service’s headquarters in Washington, DC. The initial response from the Washington, DC, office was that the values of recreation were too high and to cut them in half. The Rocky Mountain Research Station project leader (George Peterson) supervising these two economists objected (including providing the authors’ written response to the Washington, DC, office’s concerns). At that point the Washington Office simply took matters into its own hands and cut the values themselves. Once this cutting of values became widely known, several state fish and game agencies decided to develop their own values for the USFS to use in its future RPA Programs and FORPLAN model. The most successful were the joint Idaho Fish and Game / USFS Rocky Mountain Research Station / U.S. Fish & Wildlife Service effort (led by myself and Cindy Sorg), and a Montana Fish, Wildlife and Parks effort with John Duffield at University of Montana and myself, then at University of California-Davis.

During this time period the USFS pioneered the regional economic model called IMPLAN for standardizing regional economic analysis of county income and jobs associated with its national forest plans. Thus, despite the nonmarket valuation efforts, the USFS economic analysis still relied heavily on economic impact analysis. As such, much of the 1980s public land debates over designation of roadless areas as “wilderness” was dominated by sound bites such as “economy versus the environment.” Later

controversies over protecting spotted owl critical habitat were framed as “spotted owls versus people.” But nonmarket values were beginning to make headway into changing these false dichotomies and recognizing that people had economic values for the environment, wilderness, and spotted owls.

1982-1991: Evolution of Economic Valuation of Wilderness

Recreation use values of wilderness were utilized in the RPA values beginning with the 1985 RPA Program. However, by this time economists were beginning to use the federally approved Contingent Valuation Method (CVM) to quantify the general public’s option, existence, and bequest values associated with protecting natural environments. “Option value” referred to the willingness to pay (WTP) to protect the opportunity to visit an area in the future. “Existence value” referred to the WTP to know that a natural environment such as wilderness existed even if no future use was anticipated. “Bequest value” referred to the WTP today to provide intact natural environments to future generations.

The first effort for wilderness appeared as a Colorado State University report of 1982 in which I was a coauthor, and was published in a journal in 1984 (see Suggested Reading, by Walsh et al. 1984). I incorporated the 1982 report on what was called at the time “preservation value” (now call “non-use” or “passive use” values) in a training course for federal government economists on nonmarket valuation. I recall the resistance to inclusion of these values by BLM and USFS economists to including these values in economic analysis at the time. However, by 1991 there was some semi-official recognition of these types of value in the first-ever conference “Economic Value of Wilderness” organized by the USFS, and a subsequent General Technical Report published in 1992.

A New Millennium for Economic Valuation Arrives

1999 to the Present: U.S. Forest Service Training Courses in Wildlife Economics

Another branch of the USFS interested in embracing nonmarket valuation was the wildlife biologists. This effort was led by Cindy Sorg-Swanson, who had done

her dissertation using CVM. She approached two economists—John Bergstrom (University of Georgia) and myself (now at Colorado State University)—along with Craig Shinn (a political scientist at Portland State University) about developing a two-week training course that became “Resource Policy, Values and Economics.” The training course has since been shortened to a week, and has been run every two years at one of the three universities ever since.

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Over the years the course participants have broadened beyond just wildlife biologists, and these participants have become internal USFS advocates of including a broad array of nonmarket values into the economic analysis of National Forest plan revisions and EISs. They have pushed the agency to broaden its economic analysis beyond its primary emphasis on IMPLAN regional economic models of local county income and employment. This new push from inside the agency—when combined with external push from external stakeholders who knew that nonmarket valuation methods could be applied to value fish and wildlife habitat, including water quality—helped accelerate the incorporation of nonmarket valuation in agency analyses. These broader economic analyses often gave district rangers and forest supervisors the economic information they needed to back up decisions to protect fish and wildlife habitat in the face of competing multiple uses. Much of this new nonmarket valuation occurred through the application of values drawn from existing nonmarket valuation literature rather than original data collection and

analyses. However, applying values from the existing literature was often the approach of other agencies such as the U.S. Environmental Protection Agency even though that agency had an entire staff of environmental economists. However, the advent of the USFS National Visitor Use and Monitoring (NVUM) data collected at each national forest every five years on a repeating cycle soon was generating sufficient data that national forest level economic analysis could potentially be undertaken.

Publication of the Primer on Nonmarket Valuation: 1st Edition (2003) and 2nd Edition (2017)

A highly visible endorsement of nonmarket valuation was led by the U.S. Forest Service's Rocky Mountain Research Station in the development of a *Primer on Nonmarket Valuation* (see Suggested Reading, below). This book was the culmination of more than a decade of leadership by George Peterson and his staff of economists. Two of the three editors of the book were USFS employees (Patricia Champ and Thomas Brown) in George Peterson's project. These two along with Kevin Boyle (University of Maine) assembled a team that included other USFS employees (e.g., Thomas Holmes of the Southern Research Station) and a host of academic researchers to produce the first comprehensive, practical guide for performing nearly all the main types of nonmarket valuation. This seemed to affirm that nonmarket valuation, even if done by applying the existing literature, could provide economically useful information.

Bureau of Land Management and Economic Valuation

BLM Nonmarket Valuation Pilot Studies

BLM was slower to include nonmarket values in its Resource Management Plans (RMPs) than the USFS. This slowness was despite the striking similarity of its 1976 "Organic Act" (Federal Land Policy and Management Act) to the USFS's National Forest Management Act of 1976. Officially, BLM did not formally recognize the need for nonmarket values until 2013 when it published Instruction Memorandum 2013-131.

However, a few BLM field offices were using nonmarket values prior to that date by adopting USFS RPA values in select RMPs. Roy Allen, the Wyoming

State Office economist, teamed with me to conduct a pilot demonstration project of an original nonmarket valuation survey as part of the Snake River RMP in Jackson Hole, WY, in 2000-2001. This effort involved both a CVM survey of the general public and on-site surveys to estimate a demand model of recreation use value. One of the outcomes of the survey was to show the alignment in rankings of RMP alternatives by respondents in Teton County, the State of Wyoming, and the rest of the United States. This information was incorporated into the BLM RMP.

As part of the Craig, Colorado, Little Snake River RMP, I conducted an on-site visitor survey with my students at Colorado State University in 2005 to estimate a recreation demand model to calculate recreation use values. These values were used in the BLM RMP. The CVM part of the survey was dropped at the repeated insistence of the oil/gas stakeholders.

The visibility of nonmarket valuation concepts and methods received a big boost when in 2004 BLM's National Training Center started its official training course entitled "Social and Economic Aspects of Planning." I presented a half day of this course on nonmarket valuation and how it could be used in EISs and RMPs. The course was repeated every year until it was taped at the 2007 course and uploaded on BLM's official training website.

Everybody Jumps on the Ecosystem Services Bandwagon

Gretchen Daily's 1997 book (see Suggested Reading) popularized the concept that ecosystems provide benefits to people. This was a valuable expository device, but in many ways the actual methods and mechanics of quantifying and valuing ecosystem services were really nothing new to environmental economists. Much of this ecosystem services analysis drew on methods that environmental economists had been using for two decades. Thus it was easy for nonmarket valuation economists to jump on this bandwagon. And what a bandwagon it was with the development of its own journal, *Ecosystem Services*. One of the most tangible benefits of the ecosystem services paradigm was to foster collaboration between ecologists and economists.

The ecosystem services framework also dovetailed with the semantics of the ecosystem management paradigm that USFS, U.S. Fish & Wildlife Service, and BLM were adopting for their National Forest Plan revisions, National Wildlife Refuge Comprehensive Conservation Plans, and Resource Management Plans, respectively.

What Has Been the Impact of Improvements in Economic Analysis on Public Lands Management?

The advances in economic valuation methods and the application of these methods have improved public lands management in several ways. First, these advances have made clear to both agency staff and leadership that there is more to economic analysis than just running IMPLAN software to calculate the local jobs and income generated by different public land management alternatives. While EISs will continue to provide such regional economic impact information, agency personnel and leadership now recognize that many more economic values are generated by public lands than just jobs. Second, the conduct of visitor surveys such as those now routinely conducted by the USFS on each national forest provided data to indicate that visitors from far outside the local areas were using the national forests, and thus should be treated as stakeholders. This broadening of the geographic reach of stakeholders was even more apparent when household surveys of an entire state or multi-state geographic region occurred. Third, economic valuation techniques have given managers desiring to protect water quality, wildlife habitat, nonmotorized recreation areas, and intact ecosystems the economic data to show the economic values of these nonmarket resources. These managers could then use that economic information to show that there were economic benefits being realized by environmental protection, not just from development. Finally, economic valuation information has helped move the agency and public away from unproductive and polarizing debates over “economy versus the environment,” “owls versus people,” and “fish versus people” false dichotomies to discussions in which we recognize the environment has economic value. This has often led to more productive stakeholder collaborations that search for innovative alternatives to provide the greatest values to the American public

who, after all, pay the bills for managing our public lands.

Suggested Reading

- Champ, P., K. Boyle, and T. Brown. 2003. *A Primer on Nonmarket Valuation*, 1st ed. Boston, MA: Kluwer Academic Publishers; 2nd ed. 2017. The Netherlands: Springer.
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- Walsh, R., J. Loomis, R. Gillman. 1984. Valuing Option, Existence and Bequest Demands for Wilderness. *Land Economics* 60(1): 14-29.