Chapter 3 – From Great Ideas to Costly Habits

Today, BT is the most common selection method used by government agencies and large non-profit organizations, and cost is either ignored or not included in a way that follows the principles of strategic conservation. Numerous studies (e.g. Ando et al., 1998; Azzaino et al. 2002**;** Kline, 2006; Messer, 2006; Naidoo et al. 2006; Polasky et al., 2001; Wilson et al. 2006; Wu et al., 2001; Duke et al., 2013; Babcock et al., 1996) have found that conservation efforts in a variety of contexts would have achieved significantly better results if they had used strategic conservation approaches instead of BT, and we are aware of no study that has demonstrated that focusing solely on the benefits of a project and ignoring its cost is the most effective way to maximize the overall conservation benefit of a program. Newburn et al. (2005) pointed out that only 13% of the papers published in *Conservation Biology*, *Biological Conservation*, and *Landscape and Urban Planning* between 1999 and 2003 referred to the economic cost of conserving habitat as a component of selection.

The failure of conservation and environmental organizations to adopt strategic conservation methods is ironic given the large body of scientific evidence that they are superior to rank-based methods that ignore costs. Environmental work is, by nature, a scientific endeavor, and these organizations routinely look to the most recent scientific studies for guidance when conserving species, managing agricultural land, or remediating pollution. Furthermore, they often promote their work as adhering to the best science available. But when they step away from measuring the physical characteristics of the environment and internally decide how to allocate financial resources, scientific evidence does not play a role even though their decisions now involve choosing a few high-quality projects from a large number of projects that are close substitutes in terms of environmental benefit but vary substantially in cost. Whether acquiring land for conservation or buying some fine Bordeaux, they often get much less than they could. Numerous studies

have shown that even minimal conditions for efficiency are rarely met (Ribaudo, 1986; Ferraro, 2003; Messer and Allen, 2010; Duke et al., 2013), and Babcock et al. (1997) pointed out two decades ago that conservation organizations could achieve significant efficiency gains through a greater provision of benefits, reduced costs, or both by incorporating benefit/cost efficiencies in their selection methods.

Economists also have long advocated for the monetization of benefits (put in terms of willingness to pay (WTP) estimates), especially since the cost of the land is ultimately measured in dollars. One reason these benefits should be measured in dollar terms is that traditional conservation benefit measures such as the environmental benefit index used by CRP often do not do a good job capturing the value of the ecosystem services provided as measured by the people paying for the programs (the public) (Smith, 2006).

How conservation programs arrived at this strategy

How did conservation arrive at this sorry state of affairs? As we discuss in greater detail later in this book, an important principal of strategic conservation is development of scientifically sound benefit criteria that can then be combined with accurate cost estimates to identify cost-effective conservation projects. One of the earliest advocates for measuring the benefits of parcels of land and incorporating those benefits as a criterion when evaluating public decision-making was Frederick Law Olmsted, a well-known landscape architect and leading figure in the national park movement. In 1853, Olmsted traveled through Texas on horseback for five months, and his travels influenced his professional practice of designing parks. In a subsequent talk before the Prospect Park Scientific Association, Olmsted recalled his trip and how each day he studied the landscape in search of the "ideal camping spot" (Olmsted, 1868). He developed his observations into six benefit criteria that, he asserted, pioneers later used to select areas for settlements:

1. Near good, clean water for drinking and bathing.
2. Near good pasture for their cattle.

3. Fire wood at a convenient distance.
4. Seclusion for greater safety from ruffians.
5. Like to have game near at hand.
6. We made it a point to secure as much beauty as possible from our tent door.

Olmsted further suggested that development of this type of benefit criteria would be helpful in evaluating lands proposed for public parks. Olmsted's impact on the park movement was substantial and his use of benefit criteria illustrates the appeal, focus, and application of a strategic selection process during the early years of park planning as a direct forerunner to BT approaches used today.

Federal and State mandates for benefits

Another factor in the rise of benefit criteria was the desire to develop a transparent selection process that could ensure the trust of stakeholders and the public and prevent corruption. Many state agencies and conservation organizations adopted benefit criteria to demonstrate that their land acquisition decisions were based on objective merit rather than political motives. Interest in using benefit criteria to bolster public support and confidence can be seen in the land trust community's recent efforts to address greater public scrutiny of their use of conservation easements. Many trusts are measuring their compliance with public-benefit requirements for federal tax deductions by placing a stronger emphasis on their use of benefit criteria in the decision-making process and the value that provides in terms of conservation (Amundsen, 2004). The land conservation community has been subjected in recent years to public investigations and stinging criticism asserting that the programs were used in the past to pass taxpayer money to wealthy landowners in the name of conservation for easements on parcels that actually provided little environmental benefit.

Some states have used benefit criteria to balance the regional or social equity of their distributions of funds to rural and urban areas in an effort to increase the credibility of state land-acquisition programs

with public and state legislative bodies (Fooks and Messer, 2013). State (and federal) conservation managers need effective decision-support tools so they can separate worthy projects that provide numerous resource benefits from projects that provide little benefit. Furthermore, the significant federal funds provided to state agencies frequently come with benefit-criteria approaches attached. By using similar benefit criteria, states improve their chances of competing successfully for those federal funds.

In general, use of benefit criteria has largely fulfilled the mission of keeping the public's trust, preventing open corruption, targeting high-quality parcels, and improving conservation managers' ability to evaluate projects and meet their federal mandates. However, questions about the inefficiency of these benefit-criteria approaches are growing, and there is keen interest in alternatives that can measure both costs and benefits to efficiently use public funds to achieve conservation objectives.

Case Study: The problems of too much politics in environmental decisions.

A primary challenge facing conservation programs is the opportunity via politics for powerful individuals to profit in the name of the being good environmental stewards. An example of this occurred recently, in Kent's home state of Delaware.

Delaware has long been home to one of the most successful and cost-effective agricultural preservation programs in the United States. Since its inception in 1996, 20 percent of available farm land in Delaware's most populated county has been protected through the state's voluntary Delaware Agricultural Lands Protection (DALP) program (Cherry, 2016). The process of selection traditionally involved deals in which farm owners voluntarily sold their development rights to the county at a discounted rate in exchange for being allowed to continue to live and farm the land for a profit. Through this system of discounting and competitive bidding, the DALP program was able to purchase development rights for an average of $2,159 per acre (Messer 2014). Individuals working in the program proudly boasted at national meetings that Delaware had protected more agricultural land *per capita* than any other state (keep in mind, Delaware is the second smallest state in the country).

However, DALP's history of cost-effective conservation came under direct attack several years ago when politicians sought to direct the program's public funds to pay to protect land owned by two politically power farmers, on who was the public service commissioner and the other who was the former president of the Farm Bureau in the county). Instead of seeking the traditional discount from them, the politicians tried to quietly arrange to purchase their development rights for approximately 240 acres at an appraised value of $6.6 million, which equated to an average cost of $27,272 per acre, more than ten times the traditional cost to conserve agricultural land in the state.

At the center of the controversy was the County Executive, who had a history of questionable political actions, including being indicted on charges of racketeering, mail fraud, and wire fraud. During the investigation of the land deal, a string of 120 emails between the County Executive and the landowners showed actions that were against the conservation programs policies.

A number of farmers expressed concern, noting that if the deal went through, "the future of farm land preservation in New Castle County and the state [would be] at risk" (Cherry, 2016). In particular, people were worried that this taxpayer-funded deal would reduce political support for the program. In September 2016, the effort to obtain development rights from these landowners was finally abandoned.

Obviously, many Delaware residents were relieved that a bad deal had been avoided, but the political damage to the once model program was significant. The DALP program has received no state funding in the preceding five years because the public was no longer confident that its funds would be spent in a fair, effective, and efficient manner.

Use of benefit measurements in prioritizing project selection

Once the concept of benefit criteria had been developed, the next question was how to use that information to inform selection processes, and at that point, the conservation community made a catastrophic and costly error. What developed throughout the conservation community was BT, a selection process that focused almost entirely on the benefits of a project and largely ignored the project's cost. It seems that the hope, in those days, was that additional money could be raised or would become available in the future, allowing additional projects on the list to be accepted later.

Programs that aim to conserve farm land have long used rank-based selection processes for evaluating applications by farmers to sell development rights. For instance, at the federal level, the USDA Natural Resources Conservation Service (NRCS) began advocating use of a rank-based approach in 1981 with a criteria system for evaluating parcels for overall agricultural quality and site-based factors in Orange County, New York (American Farmland Trust, 2006). Shortly thereafter, NRCS launched a 12-county, 6-state pilot study of what would become known as the Land Evaluation and Site Assessment (LESA) model (Pease and Coughlin, 1996). By evaluating both land attributes such as soil quality and other factors linked to the ability of the parcel to support farming (such as zoning or distance to a grain elevator or other

market), NRCS aimed to obtain a more-complete understanding of each parcel's relative worth, but it did not include the proposed cost of acquiring a projects' development rights in the rating system. Use of the LESA ranking system by state and county offices of NRCS subsequently influenced programs run by states and counties, which adopted LESA-type criteria as a strategy by which to stretch their budgets by submitting projects they were unable to fund to federal agencies without having to conduct a new analysis.

You can see the roots of this tendency to ignore cost in Olmsted's original calculation of an area's potential as a good settlement. What mattered most, according to his criteria, was benefits: clean water for drinking and bathing, pasture for cattle, firewood, safety, and beauty. In his time, of course, there were no significant land costs to consider. The elements of economic cost for Olmsted were the distances required to reach the sites, and those costs were implicitly incorporated as a measure of the benefits, an approach we discuss in greater detail shortly. The conservation selection processes built on these foundations failed to recognize that public decision-makers had a duty to seek the best investments for taxpayer money, which requires careful evaluation relative costs and benefits.

Wine problem revisited (with a hammer)

There is another significant player in how conservation funding approaches evolved. As previously mentioned, a key question in evaluating a resource has been whether it was considered irreplaceable. In a report to the U.S. Army's Compatible Use Program (Allen and Messer, 2009), we used the following story to illustrate the challenges that arise when something viewed as irreplaceable faces imminent destruction.

> *Imagine you are the curator of a museum in California built near the San Andreas fault. While you are working late at night by yourself, an earthquake begins. Your museum contains many rare, valuable, and fragile pieces of art but does not have insurance against earthquake damage. As the earthquake begins, you must decide which museum pieces you will attempt to save given your limited time. Would your board of directors and public patrons prefer that you save the one exceptionally famous painting located on the fifth floor or the dozens of rare vases and historical treasures located in rooms on the first floor near the museum entrance?*

If the rare vases and historic treasures on the first floor are reasonable substitutes for the famous painting upstairs, ignoring the relative costs and saving the painting lead to a highly inefficient outcome. However, if the painting is the Mona Lisa, saving it and nothing else could be the best choice in this difficult situation.

Conservation professionals routinely face the same difficult choice: which piece of habitat or farm land should we save, knowing that the others could be irreparably destroyed? In other words, should conservation efforts focus solely on the benefits of the projects (the quality of the art treasures) and ignore the costs of preserving them (time and effort needed rush the treasures out of the building)?

To answer that question, let's go back to the bottles of Bordeaux, and this time, we are bringing a hammer.

Recall that 70% of the conservation professionals who participated in the experiment chose four bottles of $25 Bordeaux over one $100 bottle. We wanted to see what would happen if the resources—our bottles of wine—were at imminent risk of being destroyed. So for some of the groups of conservation professionals, we added a twist to the set-up. When displaying the bottles of wine and providing information about their ages, Wine Advocate ratings, and prices, Kent held up a hammer and informed them that any wines that were not selected would be smashed with the hammer. He assured them that his threat was serious and that the bottles would be destroyed immediately after the experiment—plus, they could come out and watch him destroy the bottles!

[Image 2.1 Broken bottle of wine]

As individuals involved in conservation of some pretty great places ourselves, we were not particularly surprised by the results: when faced with the threat that an exceptional wine could be destroyed, many more participants (47% compared to 30% in the other experiment) chose to preserve the $100 Bordeaux, a 58% increase. The experiment provided clear evidence that threat of destruction increased the likelihood that the one highly-rated, expensive bottle of wine would be protected, leading to the destruction of multiple slightly-lower-quality wines.

The results of the experiments poignantly illustrate how an emotional and/or moral sense of responsibility for a resource that could be destroyed affects people's decision-making, causing them to lose

sight of the fact that a $100 bottle of wine is not truly unique or irreplaceable. Certainly, wine and environmental resources such as open space differ in many respects. But when potential destruction of a single bottle of nice wine can shift people's priorities, imagine how conservationists might respond to potentially giving up an expensive 477-acre swath of something like the Everglades for even 4,770 acres of valuable but less iconic marsh lands. Conservation efforts often involve situations in which a resource is threatened with imminent destruction so adoption of the principles of strategic conservation is understandably met with some resistance.

Why conservation organizations remain "stuck" on BT

After emphasizing the ability of strategic conservation approaches at conferences and meetings for more than a decade, we were disappointed with the results. Audience members, all involved in conservation and environmental work in some capacity, had nodded their heads in agreement during the presentations and complimented our work afterwards but had rarely adopted strategic conservation. And the mathematics behind the tools discussed in this book have been available for nearly two decades. Why had they failed to catch on despite the enormous benefits they provide? This was a perplexing question and likely had a complicated answer.

Certainly part of the lack of change is associated with human and bureaucratic inertia. For people in general and organizations in particular, it is just easier to keep doing what they have always done. Lack of familiarity can also breed contempt, or at least suspicion. How could they unequivocally determine whether the new tools were actually better? Would their constituents understand the tools and resulting selection processes?

Another impediment was the focus of most economic studies of conservation efficiency, which were written for other economists. The mathematical models underlying strategic conservation are standard fare for economists but fail to convey useful information to conservationists whose expertise is in the

biological and physical sciences rather than in math or economics. Of course, it is important to mathematically test the models and persuade economists of their power and abilities, but that work has already been done. Now, the challenge is to convey the models' proven success to the people whose programs and efforts will directly benefit from them. The information presented and the method of its presentation matter.

Another barrier is challenges associated with putting a price on the environment. Some ecologists find it difficult or even reject the idea outright. Odling-Smee (2005), for example, noted beliefs that efforts to monetize the environment and nature violated "ethical and spiritual dimensions of conservation." Others have found that economic and mathematical approaches fail to capture the complex relationships between nature and human behavior (Arponen et al., 2010; Gowdy et al., 2010), a longstanding critique of many economic approaches, including measurements of ecosystem services and benefit-cost analyses.

Some realities of conservationists' own economies may be involved as well. Funds and staffing for many conservation groups and programs in the United States were cut after the economic crisis in 2008, leading to bare-bones staffs and budgets. Those agencies and programs have had to concentrate on survival and have not been able to develop or adopt new approaches and technologies.

Identifying the key factors behind failure to adopt strategic conservation

Despite an already long list of contributors, we were not convinced that we had the whole story so we conducted additional research to better understand the views and preferences of conservation professionals. In one of the studies, which was conducted in the mid-Atlantic United States (Messer et al., 2016a), we found that agricultural preservationists there overwhelmingly favored cost-effective selection processes. A second study to see if those results would be replicated used an international sample of conservation professionals in agricultural preservation context and found that 91% of the respondents believed that cost-effective conservation was a good idea (Grand et al., *forthcoming*). But . . . none of the

participants in either of the studies viewed cost-effectiveness as their primary goal. Instead, participants in the mid-Atlantic U.S. study rated the fairness and transparency of the process as most important and cost-effectiveness and ease of administration as relatively unimportant. Likewise for the international conservationists, as shown in Figure 3.1, those respondents also rated fairness to applicants (an average score of 4.2 out of 5.0) and transparency (an average score of 4.1 and described in the survey as the ease of explaining the process to various interest groups) as the most important criteria. The cost-effectiveness of the process ranked lowest (average score of 3.9).

[Figure 3.1]

In this research, when we explored the issue of fairness further, we found that one challenge to adoption of cost-effective techniques such as BLP was a perception that those approaches were not as fair as their current selection techniques. Simpler techniques such as cost-effectiveness analysis (discussed in greater detail in Chapter 8) were also viewed less favorably than their current selection processes. These responses indicated that concerns about perceived fairness were an important barrier. Though the vast majority of the participants in the surveys indicated that cost-effectiveness was a virtue in conservation programs, they did not consider it to be nearly as important as other program criteria and worried that only low-cost projects would be selected, especially when all of the projects considered delivered similar benefits.

Participants in the surveys had similar views regarding the transparency of various selection methods. Their ratings indicated that, on average, they viewed BLP as 33% less transparent and cost-effectiveness analysis as 16% less transparent than their current selection methods.

Clearly, both fairness and transparency were significant concerns. We also presented several questions designed to evaluate the degree of difficulty of challenges they faced when adopting cost-effective conservation. We were surprised to find that the biggest obstacle to adopting cost-effective conservation was the lack of an incentive since program administrators tended to view it as a low priority.

Their lack of previous experience with the programming and selection tools was rated as the least challenging of the obstacles presented.

Fortunately, there was some encouraging news, as shown in Figure 3.2. The conservation professionals who responded to the surveys expressed greater willingness to adopt cost-effective techniques if they had easy access to the optimization software and to training. Among the agricultural preservations, willingness to adopt jumped 10% when they were offered access to the software and another 16% when they were offered both the software and training. Thus, making the software and training readily available, combined with an increased sense of urgency within the programs, could potentially accelerate adoption of cost-effective conservation by those groups.

[Figure 3.2]

Setting a higher standard for conservation

If we are finally to realize our goal of making cost-effective strategic conservation a reality, we must develop practical tools and a culture within conservation organizations that prioritizes efficient use of funds and a willingness to try new approaches. To be honest, such a change in culture is likely to be the most difficult obstacle to overcome and could require public pressure from taxpayers, the media, and policymakers to allocate those millions of public dollars as effectively as possible. We constantly encourage government agencies and nonprofit organizations to embrace a "test-learn-adapt" model that carefully evaluates the effects of changes to a program and that encourages *and rewards* individuals in an organization who are willing to try new things and learn from the successes and the failures of those efforts. As we discuss later, this type of evidence-based policy is critical when following the principles of strategic conservation.