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FALSE IDENTITY: CONSERVATION BANKING
A Program Analysis

by Benjamin Miller



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Abstract:

Conservation banking is a complex, ostensibly “free market” approach for wildlife conservation. Conservation banking is similar to the cap-and-trade program and to wetland mitigation in that a business can purchase a “credit” from an owner of a conservation bank to offset costs from developing an area that is home to an organism on the endangered-species list. This paper examines whether conservation banking should be classified as a free-market approach. The analysis begins by examining the history and process of creating a conservation bank. Then the characteristics of conservation banking are analyzed using the general market supply-and-demand framework, the market-process theories of Hayek, Kirzner, and Mises, and the institutional analysis of Ostrom. Following the examination of the characteristics of conservation banking, this paper suggests a different classification for conservation banking and provides conservation alternatives that are closer to a free-market classification.

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I. Introduction

Conservation banking is a complex, ostensibly “free market” system for wildlife conservation. It is similar to wetland-mitigation and cap-and-trade programs in that a business can purchase a “credit” from an owner of a conservation bank to offset costs from developing an area that is home to an organism on the endangered-species list. However, beyond this buying and selling of credits, is conservation-banking really a free-market approach?

This paper examines conservation banking to determine if it should be classified as a free-market approach. First, I present the background and design of conservation banking. Then, I examine conservation banking using the general market supply-and-demand framework. This will occur in three sections; the first will focus on the demand side for conservation credits, the second will look at the emergence of the supply of credits, and the third section will examine conservation banking as a market process using the market-process theories of Ludwig von Mises, Friedrich Hayek, and Israel Kirzner. Then the paper will continue by discussing a better classification under which conservation banking should be placed. Finally, I will present different alternatives to conservation banking that range from changing the entire conservation system to making marginal changes to the current program’s credit-creation process, which would make it more similar to cap and trade.

II. Background on Conservation Banking

The history of federally legislated and regulated conservation efforts started in 1900 with the Lacey Act, which regulated commercial animal markets. Conservation legislation after the Lacey Act mostly focused on specific species such as gray whales and bald eagles. In 1966, the predecessor of the Endangered Species Act (ESA), the Endangered Species Preservation Act,

was enacted, beginning the listing of protected species. This act was amended in 1969 with the passing of the Endangered Species Conservation Act (ESCA), which added protection to species in danger of “worldwide extinction.” The Endangered Species Act of 1973 (ESA) extended protection to the endangered species’ habitats.

These acts and regulations emerged from a perceived market failure, such as when the social marginal costs exceed the social marginal benefits because of a negative externality. An externality is a benefit or a cost to a third party that is not captured by the market price. This then results in the market price reflecting only the private marginal cost and not the social marginal cost, leading to an equilibrium that is not optimal. This situation may arise if the market is attempting to provide a public good—which some believe includes conservation. A public good is a nonexcludable and nonrivalrous consumption good; this is a good or service which it is impossible to keep nonpaying individuals from enjoying. This distorts information to producers, which can lead to a nonoptimal equilibrium. If there is a market failure, the government can step in and provide the public good at or below the social marginal cost.

These acts, from the Lacey Act to the ESA, attempt to correct the perceived failure of the market system to provide enough species conservation. The Lacey Act was to prevent individuals who illegally hunted one state’s protected species from transporting the species across state lines, thereby evading the law.¹ Following the Lacey Act, each additional act expanded the scope of conservation efforts.

Conservation banking is a program that seeks to bridge the perceived gap between the private marginal cost and the social marginal costs. This program is derived from the Endangered

¹ Wisch, R. (2003). Overview of the Lacey Act (16 U.S.C. ss 3371–3378). Retrieved from <http://www.animallaw.info/articles/ovuslaceyact.htm>.

Species Act of 1973 (ESA). The ESA expanded the responsibilities of individuals and organizations that own and develop areas that have endangered species living within the property. The ESA provides for the conservation of the endangered species as well as the ecosystem upon which the endangered species depends. Section 7 of the ESA dictates that before development projects are carried out the land must be surveyed to estimate if any endangered species will be adversely affected by the proposed project.² Section 10 authorizes the Secretary of the Interior to issue permits to projects that submit a conservation plan and comply with the terms and conditions of the permit.³ According to the ESA, developers must now search for and estimate any negative impacts on endangered species as well as create and comply with a conservation-management plan that mitigates the loss of endangered species.

Mitigation is any reduction in the negative impact of development by improving the ecosystem toward the original state. It can be done on-site or off-site. However, according to Michael Bean, Rebecca L. Kihslinger, and Jessica Wilkinson from the Environmental Law Institute, the “traditional approaches to mitigation had often produced unsatisfactory results.” For example, traditional mitigation for small projects often yielded ‘postage-stamp’ mitigation sites at or very close to the project site.”⁴ Multiple “postage stamp” mitigation sites results in fragmentation; the species population becomes spread over small, scattered pockets of land that do not have self-sustaining ecosystems. In the long run, this hurts conservation efforts to protect and stabilize the population of the endangered species, due to the ecological and managerial inefficiencies of having multiple small locations.

² Fisheries and Wildlife Service (FWS). “Endangered Species Act Section 7.” Retrieved 6/12/2013 from <http://www.fws.gov/endangered/laws-policies/section-7.html>.

³ FWS. “Endangered Species Act Section 10.” Retrieved 6/12/2013 from <http://www.fws.gov/endangered/laws-policies/section-10.html>.

⁴ Bean, M., Kihslinger, R., and Wilkinson, J. (Feb. 2008). *Design of U.S. Habitat Banking Systems to Support the Conservation of Wildlife Habitat and At-Risk Species*. Washington, DC: The Environmental Law Institute. P. 6. Retrieved from http://www.elistore.org/reports_detail.asp?ID=11273.

Conservation banking is a complex program often characterized as a “market based” approach that meets the regulatory requirements of the ESA, has a benefit of minimizing fragmentation, and has an economic incentive for landowners to engage in conservation. Conservation banking started as a state-level initiative by California in 1995 for the purpose of encouraging conservation of both rare species and habitat. The Fish and Wildlife Service (FWS) defines a conservation bank as a

Parcel of land containing natural resource values that are conserved and managed in perpetuity, through a conservation easement held by an entity responsible for enforcing the terms of the easement, for specified listed species and used to offset impacts occurring elsewhere to the same resource values on non-bank lands.⁵

A conservation easement is a legal contract between the landowner and the easement holder in which the landowner releases certain development rights and agrees to restrictions on the property. By deciding to forgo the potential development value of their property and any future development projects on their property, landowners earn income through selling credits to different development projects. According to the FWS, “public agencies, land trusts, and other nonprofit conservation organizations are typical groups that States authorize to hold conservation easements.”⁶ It should also be noted that “any activities inconsistent with the purposes of the conservation bank are restricted” and that “perpetual conservation easements are binding on future owners.”⁷ These conditions are enforced by the court system; if any of the conditions are

⁵ Hogan, M. (May 3, 2003). “Guidance for the Establishment, Use, and Operation of Conservation Banks.” Memorandum. P. 3. Retrieved 6/28/2013 from http://www.fws.gov/endangered/esa-library/pdf/Conservation_Banking_Guidance.pdf.

⁶ FWS. “For Landowners—Conservation Banking—Frequently Asked Questions.” Endangered Species Program. Retrieved from <http://www.fws.gov/endangered/landowners/conservation-banking-faq.html>.

⁷ Ibid.

not upheld, that constitutes a breach of contract and allows the parties involved to pursue civil legal action.

Previous enforcement of the ESA employed command-and-control enforcement measures. One of the most prevalent of these measures was the use of regulations limiting land-use options (for example, timber harvesting, crop cultivation, and construction). The implementation of command-and-control regulatory measures led to results that were unintended and adverse to those that policymakers anticipated. One of the largest problems of implementing the ESA was that the command-and-control enforcement did not provide compensation to the landowners who had their property rights limited. This issue of compensating landowners for reducing their property rights has been heavily debated. Richard Epstein discusses previous Supreme Court cases that have discussed and set precedents for regulatory taking in his 1987 paper “Takings: Descent and Resurrection.”⁸ An unintended consequence of the command-and-control enforcement of the ESA was that landowners were often incentivized to manage “their land now in a way that almost assures that it will not be suitable for listed species. Others may even be going to the extreme of ‘shoot, shovel and shut up.’”⁹ In other words, they would proactively destroy the species or make their property uninhabitable for the species to avoid losses caused by the ESA.

⁸ Epstein, R. A. (1987). “Takings: Descent and Resurrection.” *Supreme Court Review* 1987: 1–45. doi:10.2307/3109586.

⁹ A popular example is the case of Ben Cone. Mr. Cone managed his property in a way beneficial to numerous species, including the endangered red-cockaded woodpecker. Mr. Cone normally harvested timber in a 50-acre block of his land every 5 to 10 years. This system made his property attractive to a variety of wildlife on a sustained basis. However, with the red-cockaded woodpecker on a portion of his property Mr. Cone lost the right to harvest timber on 1,560 acres of his land and faced large fines or imprisonment if he did harvest it. Due to this, Mr. Cone changed his management to begin clear-cutting 300–500 acres of non-red cockaded woodpecker habitat every year to prevent the woodpecker from taking over any more of his property. See Stroup, R. (1995). “The Endangered Species Act: Making Innocent Species the Enemy.” Property and Environment Research Center. Retrieved from <http://perc.org/articles/endangered-species-act-1>; and Stroup. (1997). “The Economics of Compensating Property Owners.” *Contemporary Economic Policy* 15, no. 4: p. 57. Retrieved from <http://onlinelibrary.wiley.com.mutex.gmu.edu/doi/10.1111/j.1465-7287.1997.tb00489.x/pdf>.

These landowners did not change their property-management styles because they disliked animals or the environment, but because of the perverse incentives created by the ESA. Richard Stroup, in his research on compensating property owners for regulatory taking, provides examples of individuals who support the ESA, like Environmental Defense Fund lawyer Michael Bean, who also recognize the need to change the incentives within the ESA.¹⁰ The conservation-banking program, through the use of incentives, attempts to convince landowners to view endangered species and their habitats as assets instead of liabilities. By utilizing conservation banking, landowners can now be compensated by developers through the purchase of credits, at an expected profit, for the conservation of endangered species and habitat on their land.

Conservation banking also provides benefits for parties that need to mitigate the loss of endangered species and habitat due to their development projects. Traditionally these parties were responsible for setting up and managing their own mitigation sites. This increased the cost placed on these parties, especially in terms of time and money, as they needed to learn how to create and run mitigation sites for the specific species being harmed. A conservation bank, however, utilizes economies of scale by providing larger habitat-conservation areas and requires only one management plan for the entire conservation area, instead of having multiple developers conserve multiple small areas of habitat that require their own management plans.

Through the conservation-banking program there is the additional benefit of specialization.

There are companies that focus on providing environmental land management and creating joint

¹⁰ Mr. Bean is a supporter of the Endangered Species Act, and is sometimes informally credited with authoring the ESA for Congress in his capacity as a counselor for the U.S. Department of the Interior, Fish and Wildlife. See Stroup 1997, pp. 57–58.

conservation-banking ventures with property owners.¹¹ These companies can be more efficient in creating and carrying out conservation-management plans due to their specialization and experience managing multiple conservation banks. As stated in the FWS conservation banking guide “the overall goal of any conservation bank should be to provide an economically effective process that provides options to landowners to offset the adverse effects of proposed projects to listed species.”¹² Together, economies of scale and specialization provide a lower-cost option for developers just by reducing the time and effort a developer has to invest in complying with the ESA. There are additional benefits and costs to conservation banking, such as the ecological stability of the area, which this paper will not examine.

However, despite the potential benefits to all parties involved, the numbers of conservation banks have not taken off like those of wetland-mitigation banks, a similar conservation program. Wetland-mitigation banks are used for comparison to conservation banking, because they run on similar concepts. (A wetland-mitigation bank provides credits to developers who harm areas that have wetland ecosystems.) The original expectation was that the number of conservation banks would be close to the number of wetland-mitigation banks, but in 2010 there were 798 active wetland- and stream-mitigation banks, while in March of 2011 there were only 90 active conservation banks.¹³ According to FWS, “the wetland mitigation banking policy was finalized in November of 1995,” the same year the FWS partnered with the California Department of Fish and Game (CDFG) to implement conservation banking.¹⁴ Though the financial crisis in 2008

¹¹ Companies like McCollum & Sweetwater create and market land through joint-venture agreements. <http://www.mccollum.com/mitigation/>. There are also companies like Wildlands, a habitat-development and land-management company that provides compensatory mitigation. <http://www.wildlandsinc.com/profile>.

¹² See Hogan 2003, p. 3.

¹³ Madsen, B., Carroll, N., Kandy, D., and Bennett, G. (2011). *Update: State of Biodiversity Markets*. Washington, DC: Forest Trends. Retrieved 6/28/2013 from http://www.forest-trends.org/publication_details.php?publicationID=2848.

¹⁴ *Ibid.*, p. 2.

may have slowed the growth of conservation banks, the crisis cannot explain the slow growth in the years prior to 2008.¹⁵

¹⁵ Fox, J. and Nino-Murcia, A. (2005). "Status of Species Conservation Banking in the United States." *Conservation Biology* 19, no. 4: 996-1007. Retrieved 6/28/2013 from ftp://ftp.odot.state.or.us/techserv/Geo-Environmental/Stormwater%20Team/Reference_Documents/Water%20Quality%20Trading/Fox%20Nino%20Murcia%202005%20ConBiol%2019%20996-1007.pdf.

Figure 1: States with Conservation Banks¹⁶

¹⁶ Retrieved 5/1/2014 from <http://www.fws.gov/endangered/landowners/conservation-banking.html>.

III. Creating a Conservation Bank

This section provides an overview of the steps involved in the creation of a conservation bank. The creation process for a conservation bank, while complex, provides useful information in examining the question of whether the conservation-banking program is truly a free-market system. There are multiple ways a bank can be created. The FWS guidance lists five ways:

- 1) Acquisition of existing habitat;
- 2) Protection of existing habitat through conservation easements;
- 3) Restoration or enhancements of disturbed habitat;
- 4) Creation of new habitat in some situations; and
- 5) Prescriptive management of habitats for specified biological characteristics.¹⁷

Conservation banks can be started by anyone: private individuals, for-profit organizations, not-for-profit organizations, and local, state, or tribal governments. A conservation bank creates its goals and benchmarks based on the species-recovery plan and conservation strategy produced by the FWS, regardless of how the bank is created and irrespective of the founding organization. It is important for the potential banker to take into consideration the conservation strategy for the target species, as the strategy provides the evaluation criteria for potential banks. As the FWS guidelines highlight, “two issues of paramount importance in evaluating any conservation bank are the siting of the bank and its management program.”¹⁸

¹⁷ See Hogan 2003, p. 2.

¹⁸ Ibid, p. 5.

The first step is selecting the site of the conservation bank. Land that is eligible to become a conservation bank can be on private, tribal, local, or state lands. The decision on where to place a conservation bank can have a large impact on society depending on the type of entity that sets up the conservation bank. For example, if a government organization is creating a conservation bank, the decision on where to locate the conservation bank must be weighed against any future developments of the locality or state.

The FWS evaluates the site of a proposed bank based on factors such as location, size, configuration, topographic features, habitat quality, existing and future land use around the bank, and the species' use of the area.¹⁹ For some lands there are also restrictions that prevent a proposed bank from being placed there or that limit the amount of credits the bank may be worth.²⁰

The surrounding area of the proposed bank is one of the more important variables in selecting the location. Activities in the surrounding area can have externality effects (positive or negative) on a conservation bank. Due to these effects, the FWS prefers that conservation banks be situated next to other areas that are currently protected as well.²¹ Positioning conservation banks next to other protected land helps to increase the effectiveness of conservation efforts. According to lawyers J.B. Ruhl, Alan Glen, and David Hartman, "FWS also believes that including buffer areas around the core bank habitat, even consisting of habitat not suitable for the target species, will improve the bank's conservation performance."²² While buffer zones provide the benefit of

¹⁹ Ibid.

²⁰ Ibid, p. 6.

²¹ Ibid, p. 4.

²² Ruhl, J. B., Glen, A., and Hartman, D. (2005). "A Practical Guide to Habitat Conservation Banking Law and Policy." *Natural Resources & Environment* 20, no. 1: 26–32. P. 29. Retrieved 6/28/2013 from <http://www.law.fsu.edu/faculty/profiles/ruhl/2005-HabitatBanking20NRESummer.pdf>.

allowing more separation between humans and the endangered species, there is the additional cost of providing the zone to consider.

Once the location of the bank is approved by the FWS, the owner of the land must prepare the conservation-bank agreement. According to the official guidance by the FWS,

This is the legal agreement between the bank owner and a regulatory agency such as the Service or other participating State and/or Federal agency that identifies the conditions and criteria under which the bank will be established and operated. The agreement contains information on the exact legal location of the bank and its service area, how credits will be established and managed, and how the bank will be funded, managed, and protected in perpetuity.²³

In other words, the conservation bank agreement is the contract between the owner of the land and the government. At a minimum, this contract should, according to the FWS, discuss the property, biological resources available, activities allowed and prohibited (this creates the conservation easement), the goals and objectives, management requirements, monitoring, and hierarchical structure of the conservation bank. The number of credits a bank can potentially sell is granted by the FWS and is conditional on the habitat, managerial accomplishments, and conservation goals agreed to by the FWS and the bank owner. Once the conservation-banking agreement is signed by both parties, the bank can begin to sell the available credits.

The overall process of creating a conservation bank seems simple, with only two steps. However, both steps are filled with many little steps that can be time and resource consuming. For example, during the process of finding a suitable area on which to place a conservation bank,

²³ See Hogan 2003, p. 15.

there are a number of questions regarding the quality of the habitat, presence of endangered species already occupying the land, condition of the surrounding area, etc., that must be addressed. These questions can be answered using an ecological survey. Because landowners rarely have the expertise to do these themselves, they often must hire trained biologists or other professionals to do it for them. In order to complete the survey, biologists must find, count, identify the particular habitat, and determine the correct protection measures for the relevant species. As a result, proper surveys are often complicated, time-consuming, and expensive.²⁴

One normally needs lawyers to negotiate the conservation-banking agreement, because there are multiple environmental regulations that must be taken into consideration on local, state, and federal levels. These negotiations for the agreement take additional time and money. It is hard to give a specific time frame for the entire process, as each bank's situation is unique and creation time varies. However, the average time to complete the process, as calculated from Fox and Nino-Murcia's survey of conservation banks, is 2.1 years (ranging from 8 months to 6 years; median 2 years).²⁵

Once a bank is created it is able to market and sell credits to developers who are approved by the FWS and located in the bank's service area. The service area is defined by the FWS as

the area outside the bank property within which the bank owner may sell credits. The Service determines service areas for conservation banks based on physical and ecological attributes such as watersheds, soil types, species recovery units, and/or species and

²⁴ Environmental Defense. (2000). *Progress on the Back Forty: An Analysis of Three Incentive-Based Approaches to Endangered Species Conservation on Private Land*. Retrieved 7/22/2013 from http://www.fws.gov/southeast/grants/pdf/150_BackForty.pdf.

²⁵ See Fox and Nino-Murcia, 2005.

population distributions. Banks with more than one type of credit may have different service areas designated for different credit types.²⁶

Developers are likely to purchase credits from a bank for many different reasons, which include the desire to no longer be responsible for the mitigation site, the fact that purchasing a credit is faster and less costly than setting up an on-site mitigation area, and the fact that the developer does not have to deal with regulatory agencies. The number of credits that a developer needs to purchase can vary, as one credit can represent different levels of development depending on the circumstances. According to the official guidance,

Mitigation ratios are used to establish the amount of credits that will need to be purchased. While use of ratios may be based initially on a general knowledge of the relationship between the amount of habitat remaining and what should be conserved to achieve the site-specific conservation strategy, every adverse impact will need to be evaluated individually. In some circumstances, the ratios can be based on qualitative factors such as scale of impact or quality of habitat. This allows different ratios to be applied to ensure mitigation proportionate to the impact.... Any mitigation ratio used, regardless of whether the ratio is greater than, less than, or equal to 1:1, must be based on sound biological rationale that is easily explained, readily understood, and consistently applied by the Service.²⁷

Once the necessary credits are purchased, they entitle their owner to develop his or her land without being liable for any incidental destruction of endangered species. It is up to the conservation bank to provide information on these factors to entice developers to purchase the

²⁶ FWS, "Frequently Asked Questions."

²⁷ See Hogan 2003, p. 11.

bank's credits. Selling credits completes the process of creating the conservation bank. The creation process shows the complexity of the conservation-banking program. It is an area that some previous studies on conservation banking have glossed over.

IV. Previous Literature

Most literature on conservation banking and similar programs has focused on their effectiveness in terms of conservation, the legal environment, or the overall status of the program. Current literature, when discussing the number of banks created, focuses on incentives and the creation of demand and supply, but does not discuss conservation banking from a market-process or public-choice lens.

In 2008, the Environmental Law Institute (ELI) published a policy study entitled "Design of U.S. Habitat Banking Systems to Support the Conservation of Wildlife Habitat and At-Risk Species."²⁸ The study covers conservation banking and wetland-mitigation banking, and focuses on the impact that policies and laws have on their implementation and operation. The ELI's policy analysis of habitat banking provides a general overview of conservation banking and the processes involved in the creation and operation of a conservation bank, but it does not provide economic insights into the programs. The ELI's policy recommendation is to expand conservation banking with additional regulations and laws.

There are also two relevant technical reports, one from the European Commission's Directorate-General for the Environment, and one from the Winston Churchill Memorial Trust of Australia.²⁹

²⁸ See Bean, Kihslinger, and Wilkinson, 2008.

²⁹ eftec, IEEP, et al. (2010). *The Use of Market-Based Instruments for Biodiversity Protection: The Case Of Habitat Banking*. Technical report. Retrieved 6/28/2013 from <http://ec.europa.eu/environment/enveco/index.htm>; Sheahan, M. (2001). *Credit for Conservation—A Report on Conservation and Mitigation Banking in the USA, and its*

These reports use the U.S. conservation-banking framework to assess whether similar programs will work in the European Union and Australia, respectively. They contain sections that discuss the potential supply and demand for credits in Europe and Australia. Included in these sections are discussions of how to use incentives to stimulate demand and how to enhance supply.

I use similar theories on the creation of the demand and supply for conservation credits in sections 5 and 6 of this paper. However, these technical reports use their respective countries to determine their estimates of demand and supply. The sections on demand and supply for this paper will be based on factors for the United States. Also, these technical reports do not include any analysis of the market process or the role of the entrepreneur within the conservation-banking sector; this further sets the following paper apart from these works.

Surveys of conservation banks are few and incomplete due to the lack of availability of information and the unwillingness of some bank owners to respond to surveys. Fox and Nino-Murcia published a survey in 2005 that “contacted agencies, nongovernmental organizations, and bank owners and compiled comprehensive accounts of the experiences of current banks.”³⁰

Additionally, Stratus Consulting conducted a survey in 2003 for the Northwest Fisheries Science Center that provides a catalog of banks and a few insights into credit transactions and the motivations for creating banks.³¹ While these surveys provide valuable information on the motivations of owners creating banks and even on how banks are operating, they do not provide important information such as the prices of credits or the number of transactions. At best, an average or range of credit prices is given, but these are too wide to be informative. For example,

Applicability to New South Wales. Winston Churchill Memorial Trust of Australia, Canberra. Retrieved 6/28/2013 from http://www.forest-trends.org/publication_details.php?publicationID=623.

³⁰ See Fox and Nino-Murcia (2005)

³¹ Stratus Consulting Inc. (Dec. 19, 2003). “A Nationwide Survey of Conservation Banks.” Prepared for the Northwest Fisheries Science Center. Retrieved 6/28/2013 from http://www.st.nmfs.noaa.gov/st5/abstracts/A_Nationwide_Survey_of_Conservation_Banks.htm.

the study by Stratus Consulting provides price-per-credit information on 22 conservation banks: the Agua Fria for-profit conservation bank ranges from \$7,500 to \$15,000; Fitzgerald Ranch, another for-profit, lists an average price per credit at \$65,000; and the Stillwater Plains for-profit bank does not list a price.³²

There are other papers that discuss the incentives provided by conservation banking. Nathan Paulich examines how the ESA's incentives created unintended consequences and then discusses how to improve the incentives of private landowners, citing conservation banking as one example.³³ Christopher Mills also examines the incentives in the ESA and then analyzes the incentives of conservation banking to see if its incentive-based method will live up to expectations.³⁴ Mills focuses on the implications of the currency (credits) used and the market structure (for buying and selling credits) as two obstacles conservation banking must overcome to succeed. According to Mills, the issue arises due to the tradeoff between currency adequacy and the robustness of the market.³⁵ These two articles focus primarily on the incentive mechanism. In general some of the main incentives include profit opportunity, tax incentives, lower cost mitigation, and conservation of endangered species. The next section of this paper discusses how the demand for conservation credits is influenced by different incentives and other variables.

³² Ibid., table 2.

³³ Paulich, N. (2010). "Increasing Private Conservation through Incentive Mechanisms." *Stanford Journal of Animal Law and Policy* 3: 108–158. Retrieved 6/28/2013 from <http://sjalp.stanford.edu/pdfs/Paulich.pdf>.

³⁴ Mills, C. (2004). "Incentives and the ESA: Can Conservation Banking Live Up to Potential?" *Duke Environmental Law & Policy Forum* 14, no. 2: 523–561. Retrieved 6/28/2013 from <http://scholarship.law.duke.edu/delpf/vol14/iss2/13>.

³⁵ Ibid., p. 541.

V. Demand Side

The underlying demand for credits is created through legislation and regulations. Legislation, in this case the ESA, creates the conditions under which a program like the conservation-banking credit system can be used and successful. If environmental policies and regulations change—for example, requiring new mitigation efforts or changing the number of projects that qualify for the use of credits—these changes can have a major impact on the demand for credits. For instance, the government could take a more strident conservation stance and require any project, no matter how small, like an addition to a house, to purchase credits to offset the effect of the addition. This change would shift the demand curve of conservation credits to the right, due to the influx of consumers needing to purchase credits in order to comply with the law.

Another factor that affects the demand for conservation bank credits is the level of development from both private entities and government-sanctioned projects. The more development that occurs, the more development projects must mitigate damage to endangered species and their habitats. According to Economics for the Environment Consultancy (Eftec) and the Institute for European Environmental Policy (IEEP), “major sources of demand for compensation credits within US habitat banking systems are housing and commercial development; transport projects, in particular because of road building; and environmental cleanups.”³⁶ This can be seen in the three states that have the most conservation banks: California, Florida, and Texas.³⁷ These are three states with large and growing populations.

Not all development projects are eligible to use conservation credits. According to the FWS “only projects that would otherwise be permitted and are suitable for off-site mitigation may use

³⁶ eftec, IEEP, et al., 2010, p. 185.

³⁷ See Madsen et al., 2011, p. 7.

conservation banks.”³⁸ This indicates that development projects must be preapproved and allows the FWS to control the number of projects that are allowed to use conservation banks to mitigate any loss. The preapproval process is intended to determine the most appropriate form of mitigation for individual projects. Some projects cannot use conservation-banking credits if the conservation bank does not have the correct species credit, unless the FWS determines the conservation bank is able to provide the necessary conservation values for the additional species.³⁹ This preapproval process can reduce the number of consumers of conservation credits in the market. This shifts the demand curve to the left, reducing the number of credits demanded, holding all else constant.

The preapproval process also adds additional transaction costs into the market for conservation-banking credits. The additional transaction cost includes the time to go through the preapproval process as well as any resources that are used to sway the decision of the FWS. As the costs for conservation banking increase, alternative conservation programs become relatively cheaper, which shifts the demand curve for credits to the left.

This preapproval process is one example of the inefficiency that emerges out of a program heavily controlled by a bureaucracy, which unintentionally results in the underutilization of the program. One model that discusses the tendency for a bureaucracy to produce inefficient processes is the Niskanen bureaucracy model. This model is based on two critical characteristics of bureaus: The first is that bureaucrats maximize the total budget of their bureau, subject to the constraint that the budget must be equal to or greater than the minimum total costs at the equilibrium output. The second is that bureaus exchange a specific output (or combination of

³⁸ See FWS, “Frequently Asked Questions.”

³⁹ Hogan 2003.

outputs) for a specific budget. Niskanen also lists several variables that may enter the bureaucrat's utility function, such as salary, perquisites of the office, public reputation, power, patronage, ease of managing the bureau, and ease of making changes.⁴⁰ Bureaus are incentivized to create and add additional processes that require their oversight or expertise, but these may not be the most efficient processes. The more processes and programs the bureau controls, the more the bureau can justify its existence and budget. A consequence of adding such inefficient processes is that it raises transaction costs, which make alternative programs relatively cheaper, which in turn shifts the demand curve for the bureaucratic process to the left.

VI. Supply Side

A major issue affecting the supply of conservation banking credits is the “availability of appropriate land.”⁴¹ The availability of appropriate land is influenced by two general factors. The first is the cost of the land and the second is the definition of appropriate land.

Land is one of the main inputs into a conservation bank. As the costs of inputs increase, the supply decreases. The market price of land for conservation banking includes more than the quality and location of the land parcel; there are additional costs internalized in the price. One additional internalized cost to consider is the opportunity cost of the land. As property-use options increase, the value of the next-best use of the land likely increases as well. If the value of the next-best use of the land increases, it increases the cost of using the property for conservation banking. The consideration of alternative uses is an important feature of conservation banking that gives the program a “free market” feel.

⁴⁰ Niskanen, W. (1968). “The Peculiar Economics of Bureaucracy.” *The American Economic Review* 58, no. 2, 293–305. Retrieved 6/28/2013 from <http://www.jstor.org/stable/1831817>.

⁴¹ See eftec, IEEP, et al., 2010.

There are two types of opportunity costs for a potential bank owner: (1) the type of agreement and (2) the nonconservation uses of the land. Conservation banking is not the only incentive-based agreement landowners can choose. Wilcove and Lee examine two additional programs: safe-harbor agreements and the landowner conservation-assistance program.⁴² Each agreement utilizes conservation easements on the land, but the agreements differ in their associated benefits and costs. For example, a safe-harbor agreement protects the landowner from additional regulatory burdens of restoring or improving habitat, but does not have any financial reward.⁴³ The landowner conservation-assistance program goes beyond a standard safe-harbor program by providing technical and financial assistance to the landowner, in addition to regulatory relief.⁴⁴

The second type of opportunity cost to take into consideration is the nonconservation activities and uses of the land. Even though in some instances conservation banks can allow additional activities (grazing, farming, hiking, etc.), these activities must be done in specific ways that do not harm the conservation efforts of the bank. Thus, converting land into a conservation bank typically limits the other commercial uses to which the land could be put.

Allowing different nonconservation activities can increase the managing and monitoring costs of the bank. These costs are additional inputs to conservation banking. The more resources and work needed to improve or create an environment that is suitable for an endangered species, the more costly credits are to produce. Eftc and the IEEP report that

The feasibility of restoration of different types of biodiversity is a key constraint on potential supply of credits. Biodiversity resources that take longer to restore are less

⁴² Wilcove, D. and Lee, J. (2004). "The Use of Market-Based Instruments for Biodiversity Protection—The Case of Habitat Banking." *Conservation Biology* 18, no. 3: 639–645. Retrieved 6/28/2013 from <http://www.aseanbiodiversity.info/abstract/51010430.pdf>.

⁴³ Ibid.

⁴⁴ Environmental Defense 2000.

suites to being supplied as credits into habitat banking in the form of credits based on restoration actions. This is because the long time-scales means they will take longer to demonstrate full biodiversity delivery, leading to increased monitoring and management costs during restoration activity.... This makes them a riskier investment for potential suppliers.⁴⁵

This factor, the cost of appropriate land, can affect the cost to produce credits in two ways: (1) the conservation banker may pay more for land that needs little improvement, and (2) the banker may purchase lower quality land and seek to improve it. With respect to the first way, a potential banker may prefer to purchase land that needs little improvement and has endangered species already on site. Such a conservation bank would be classified as a preservation bank, where the banker seeks to keep the site in its present state. According to the ELI, “most endangered species conservation banks established to date are ‘preservation banks.’”⁴⁶ These naturally ready bank sites require less startup capital and have a quicker return on the investment in the conservation bank. The quick return on the investment comes from the natural characteristics on site that theoretically will provide the bank with a large number of starting credits ready to sell without the banker investing resources into the improvement of the site. Competition over these sites will bid up the price, increasing the production cost of the credits.

If, on the other hand, the banker purchases lower quality land, seeking to improve it to create credits, the banker must take into account the resource costs as well as the opportunity costs of the resources used to improve the land. The banker must also consider the probability that the FWS will grant the bank enough credits to make the investment profitable. Depending on the

⁴⁵ See eftec, IEEP, et al., 2010, p. 191.

⁴⁶ See Bean, Kihlsinger, and Wilkinson 2008, p. 61.

extent of improvements, the costs of improving the land can increase the cost to produce credits. Increased production costs will shift the supply curve to the left.

The second factor that affects the availability of appropriate land is the definition of appropriate land. While banks, according to the official guidance, can be created in any area, federal and state governments have the ability to influence the placement and management of conservation banks.⁴⁷ According to the Wildlife Habitat Policy Research Program (WHPRP), “At most, through their [state and federal governments’] development of a crediting methodology and their ability to require certain management practices, they can hope to influence a banker’s selection of a bank site.”⁴⁸ One recommendation by the WHPRP is that states reward conservation banks with extra credits for placing the bank in a “high priority area.”⁴⁹ If the government followed this recommendation, the government would substitute market values for politically assessed values on potential bank sites. This presumes that the government can efficiently identify high priority areas. It also highlights the control the FWS has in determining and issuing credits to conservation banks. The control the FWS has can limit the supply of credits. If some areas can benefit from extra credits, then it is possible that the FWS has not supplied enough credits for conservation banks to be utilized to their full potential.

Furthermore, expectations for the future have a major role in the supply of conservation banks and credits. The first expectation is that the bank can generate enough credits to make it worth the effort of setting it up. The control that the FWS has over the number of credits creates uncertainty that may dissuade a potential banker from starting a conservation bank. The official

⁴⁷ Wildlife Habitat Policy Research Program (WHPRP). (2006). “1.D.: Design of U.S. Habitat Banking Systems.” WHPRP Final Report. P. 4. Retrieved 6/28/2013 from http://ncseonline.org/sites/default/files/1D_mbean_WHPRP_%20Final%20Report.pdf.

⁴⁸ Ibid., p. 5.

⁴⁹ Ibid., p. 6.

guidance by the FWS increases the uncertainty, because it provides limited information on how credits are calculated:

A number of biological criteria govern the “currency” for issuance of bank credits, including habitat quality and quantity, species covered, conservation benefits (including contribution to regional conservation efforts), property location and configuration, and available or prospective resource values.⁵⁰

There are also multiple ways to calculate the credits, which are outlined in the same section of the guidance. The method of calculating credits is negotiated during the creation of the conservation-banking agreement with the FWS.

Another variable that potential conservation bankers must take into consideration for the future is whether the FWS will accept enough development projects that require mitigation requirements. Having credits and no one to sell to will provide little incentive to a potential banker to create a conservation bank. Ruhl, Glen, and Hartman recognize that “potential bankers have to be convinced that the agency will approve future land use projects with mitigation conditions at a sufficient level to justify the up-front capital expenditure required to create the bank and obtain agency endorsement of its credits.”⁵¹ If potential bankers have an optimistic expectation of the future, then they will seek to increase the supply of conservation credits available to sell.

Through this brief examination of supply and demand, it appears that both are influenced heavily by government interventions rather than by the changes in individual actions that would be expected in a truly free-market system. The ease with which the government can influence supply and demand through legislative and regulatory changes can overshadow the natural

⁵⁰ See Hogan 2003, p. 9.

⁵¹ See Ruhl, Glen, and Hartman 2005, p. 4.

movement of the market process. The ability of the government to heavily influence this market is characteristic of a top-down, “taxis,” controlled order rather than the spontaneous, “cosmos,” order of a free market.⁵² The next section discusses in greater detail the characteristics and importance of taxis and cosmos orders.

VII. Market Process

In a free-market system, there is no set quota to meet, nor are there external agents to influence the allocation of resources. There is no central board of resource allocation that makes the decisions on which sector needs more resources. Instead, individuals purposefully acting to remove a felt discomfort within the institution of private property guide resources to their best use.⁵³ The market process is one of discovery; people may act with an intended goal in mind, but they live in a world of sheer ignorance.⁵⁴ Individuals make mistakes. These mistakes, caused by acting with incomplete knowledge, create profit opportunities that lead individuals to discover additional knowledge to take advantage of those opportunities. In Israel Kirzner’s theory of market process, the entrepreneur has the function of discovering additional knowledge to take advantage of these profit opportunities.⁵⁵ This entrepreneurial function advances the market toward an efficient outcome. Through repeated exchanges between individuals, market norms arise and best practices are adopted over time.

⁵² Hayek, F. A. (1968). *The Confusion of Language in Political Thought: With Some Suggestions for Remedying It*. Occasional Paper 20. London: Institute of Economic Affairs. Retrieved 6/28/2013 from <http://www.iea.org.uk/sites/default/files/publications/files/upldbook508.pdf>.

⁵³ Mises, L. (1998). *Human Action: A Treatise on Economics* (Scholar’s Ed.). Auburn, AL: The Ludwig von Mises Institute. Retrieved 6/28/2013 from <http://library.mises.org/books/Ludwig%20von%20Mises/Human%20Action.pdf>.

⁵⁴ Kirzner, I. (1997). “Entrepreneurial Discovery and the Competitive Market Process: An Austrian Approach.” *Journal of Economic Literature* 35, no. 1: 60–85. Retrieved 6/28/2013 from <http://econfaculty.gmu.edu/pboettke/summer/summer%20docs/kirzner1997.pdf>.

⁵⁵ Ibid.

The free-market process arises from what is termed a “cosmos” order. A cosmos order emerges from human interaction but not from human design; in other words it is formed spontaneously. The opposite of a cosmos order is a taxis order, in which the order is created purposefully by human design. Hayek, in “The Confusion of Language in Political Thought,” points out that one difference between the two orders is in their purpose.⁵⁶ A cosmos order does not have a purpose in the sense of a predefined outcome, whereas a taxis order does have a predefined goal or outcome. Hayek expounds on this idea:

A “cosmos” knowledge of the facts and purposes which will guide individual action will be those of the acting individuals, while in a “taxis” the knowledge and purposes of the organizer will determine the resulting order. The knowledge that can be utilized in such an organization will therefore always be more limited than in a spontaneous order where all the knowledge possessed by the elements can be taken into account in forming the order without this knowledge first being transmitted to a central organizer. And while the complexity of activities which can be ordered as a “taxis” is necessarily limited to what can be known to the organizer, there is no similar limit in a spontaneous order.⁵⁷

Programs like conservation banking have the explicit purpose of trying to balance the relationship between economic growth (development) and public welfare (environmental conservation). Having such an established goal places conservation banking within the taxis category.

⁵⁶ See Hayek 1968.

⁵⁷ Ibid., p. 13.

The reasoning behind why a taxis order is necessarily limited in the complexity of the activity it can handle is discussed in an earlier article by Hayek, “The Use of Knowledge in Society.”⁵⁸ Hayek explains that the question that society faces is not how to allocate scarce resources but rather the problem of how to determine the best use of those resources since the knowledge needed to make these decisions is dispersed among actors in the economy (known as the “knowledge problem”). With regards to this paper, the overall problem is, Are resources better used for development or conservation? Both choices have benefits and costs associated with investing resources into them. The solution to the problem must utilize the knowledge that is initially dispersed among all people. Policy decisions must then be made about how best to utilize this dispersed knowledge. Hayek points out that “the answer to this question is closely connected with that other question which arises here, that of who is to do the planning.”⁵⁹

Hayek notes that there tends to be two options: planning by the many (competition or cosmos) or planning by the few (central planning or taxis). The system that will be more efficient and effective “depends on whether we are more likely to succeed in putting at the disposal of a single central authority all the knowledge which ought to be used but which is initially dispersed among many different individuals, or in conveying to the individuals such additional knowledge as they need in order to enable them to fit their plans in with those of others.”⁶⁰

In the case of balancing the amount of development and conservation, the amount of knowledge that needs to be funneled to a central agency to make an efficient decision is inconceivably and impossibly large, because additional knowledge is constantly being discovered. On the other hand, a price system can convey the additional knowledge to individuals to enable them to fit

⁵⁸ Hayek, F. A. (1945). “The Use of Knowledge in Society.” *American Economic Review* 35, no. 4: 519–530. Retrieved 6/28/2013 from <http://www.jstor.org/stable/1809376>.

⁵⁹ *Ibid.*, p. 520.

⁶⁰ *Ibid.*, p. 521.

their plans in with those of others, allowing them to adjust with the discovery of new knowledge. Conservation banking incorporates characteristics of both systems. Under conservation banking, actors are allowed to make better use of the dispersed knowledge, by negotiating prices, than they were allowed under the original command-and-control approach of the ESA. However, the actors negotiate prices in a heavily centralized and regulated market that limits the movements that would occur in a more cosmos system.

Hayek's knowledge problem shows that a society is more likely to succeed in conveying additional information to individuals in cosmos than it is to provide all the knowledge needed to a central agency in taxis. Additionally, cosmos limits the amount of rent seeking that special-interest groups can engage in. Rent seeking is the activity of trying to obtain benefits for oneself through the political arena. Rent seekers typically pursue subsidies or tariffs for their goods or services, or special regulations that hamper their competitors.⁶¹ For example, the owners of conservation banks could petition the government for more strident environmental regulations, which would increase the demand for conservation credits. Additionally, bankers can try to persuade the government to change the standards of ecological variables that result in a bank being granted more credits. The number of credits is currently based on an equation that relies on multiple subjective ecological factors such as the quality of the land. By influencing the definition that the government uses as to what constitutes different levels of land quality, conservation bankers could either increase the number of credits their banks are worth or make it harder for new banks to be granted the same number of credits as existing banks. Individual conservation banks could petition to be granted extra credits because they are located in "high

⁶¹ Henderson, D. R. (2007). "Rent Seeking." *The Concise Encyclopedia of Economics*. Liberty Fund. Retrieved 7/24/2013 from <http://www.econlib.org/library/Enc/RentSeeking.html>.

risk” areas, or because the species they protect is special in some way and thus deserves special favor.

Hayek notes, however, that “Though such a ‘cosmos’ will serve all human purposes to some degree, it will not give anyone the power to determine whom it will favor more and less.”⁶² This is because a cosmos order uses competition and profits and losses to determine the best use of resources—unlike a taxis order, which “is necessarily designed for the achievement of particular ends or of a particular hierarchy of ends; and to the extent that the organizer can master the information about the available means, and effectively control their use, he may be able to make the arrangement correspond to his wishes in considerable detail.”⁶³ In the taxis order, there is no external impartial force that checks the central agency’s decision for efficiency or incentivizes the agency to engage in knowledge discovery. The concentration of power and influence over decision making in one place creates a perfect environment for rent seeking to thrive in.

The “FWS Official Guidance” reads as the instructions for a top-down taxis order instead of a spontaneous cosmos order. The top-down approach limits the entrepreneurial function and inhibits the market process by planning the market. One example of this top-down approach is the attempt to direct the placement of banks by artificially incentivizing areas that the government deems “high priority.”⁶⁴ Another example is the service-area designation of a bank. The service area, as noted above, “defines the area (e.g., recovery unit, watershed, county) in which the bank’s credits may be used to offset project impacts.”⁶⁵ If a project falls within the bank’s service area, with approval of the FWS the project can purchase credits from that bank.

⁶² See Hayek 1968, p. 13.

⁶³ Ibid.

⁶⁴ See Hogan 2003, pp. 8–9; and WHPRP 2006.

⁶⁵ See Hogan 2003, p. 8.

Although the reason for having a set service area is to keep the ecology of areas from radically changing, it forces banks to locate in areas that have higher competition over the land.

Free-market systems allow for free entry to and exit from the market. There are limits however, on who can participate in the conservation-banking market. First, service areas force bankers to site banks in areas that have potentially high demand for bank credits. This can exclude some potential bankers who have endangered species on their land but live in low-development areas. Not allowing such bankers to sell credits outside their service areas limits banks to only high-development areas.

Another way that the FWS limits market participation is that the projects must be approved to purchase bank credits.⁶⁶ This limits a number of potential purchasers of credits from entering into the market. In other words, there are artificial barriers of entry, which are not characteristics of a free market but of a planned economy. These artificial barriers limit the wealth the market can generate, which in this case is the conservation of endangered species. Adam Smith in *The Wealth of Nations* explains that the wealth of a nation is limited by the extent of the market.

When markets are small, there is no incentive for individuals to commit an extent of their time or effort to only one task, which reduces the amount of innovation and production (conservation) in the market.⁶⁷

Another free-market characteristic missing from conservation banking is secured property rights. The institution of private-property rights recognizes ownership of resources and incentivizes responsibility of the resources to the owner. Harold Demsetz describes property rights as instruments of society that derive their significance from the fact that they help a man form those

⁶⁶ Ibid.

⁶⁷ Smith, A. (2006). *An Inquiry into the Nature and Causes of the Wealth of Nations*. Gloucestershire, UK: Echo Library. p. 15.

expectations which he can reasonably hold in his dealing with others.⁶⁸ The owner of the property right, Demsetz explains, possesses the consent of other individuals to act in certain ways, provided that the actions taken are within the specified rights. Demsetz later describes the “primary function of property rights is that of guiding incentives to achieve a greater internalization of externalities.”⁶⁹ Demsetz’s thesis, based on the primary function of internalizing the benefits and costs of activities performed with the physical commodity or service, is that property rights emerge when the gains of internalization become larger than the costs of internalization.⁷⁰ This leads to the idea that the total value of a plot of land does not just come from the natural resources present but includes the bundle of rights attached to the land and resources. When property rights are insecure and susceptible to change, the ability of the owners of those rights to achieve a greater internalization of externalities is distorted.

Credits under conservation banking are a property right to engage in an activity that can be detrimental to endangered species or their habitat. Before the advent of any conservation legislation, a property owner had a bundle of rights that included rights such as selling pieces of the land, harvesting resources from the land, and engaging in activities potentially harmful to the species living on the land. With the 1966 Endangered Species Preservation Act, the right to engage in activities that cause potential harm to endangered species was taken out of the bundle of rights individuals had over the land they owned. With the start of the conservation-banking program, those who buy conservation credits are buying back the right to do potential harm to endangered species and their habitat.

⁶⁸ Demsetz, H. (1967). “Toward a Theory of Property Rights.” *The American Economic Review* 57, no. 2: 347–359.

⁶⁹ *Ibid*, p. 348.

⁷⁰ *Ibid*, p. 350.

However, credits are artificially created and defined property rights susceptible to change, much like copyrights and patents. Credits, and the rights that they entitle holders to, can be expanded or reduced by the FWS, without the bank owner putting more inputs or resources into the bank. This means the definition and details of a conservation credit can be changed with legislation; just as the duration time that a copyright or patent may be held by an individual can be changed with legislation.

However, there is a major difference between copyrights and patents and conservation-banking credits. When an individual receives a patent or copyright, they exchange money for government-provided legal protection over their intellectual property. The patent or copyright then represents the owner's legal right to prevent or to be compensated by others from/for the use of the intellectual property. A patent or copyright can be sold to another individual; when the transaction takes place, the original patent or copyright holder's legal right to prevent or to be compensated for their intellectual property is transferred to the buyer. The original holder no longer retains the rights of control or compensation for the intellectual property. However, conservation credits cannot be transferred after the initial purchase.

It is through multiple exchanges between individuals that market prices are created. Prices emerge from these exchanges as individuals work out an acceptable value that one person is willing to pay to receive ownership of a certain good or service and that another person is willing to take in exchange for giving up ownership of that good or service. Prices are important as, in the words of Hayek, a "mechanism for communicating information,"⁷¹ which allows for economic calculation to take place. In a free market, individuals use economic calculation to determine the best use of their resources.

⁷¹ Hayek 1945, p. 526.

Without market prices, entrepreneurs cannot use economic calculation because, as Mises puts it, “computation requires a common denominator to which all items entered are to be referable. The common denominator of economic calculation is money.”⁷² Without the guidance of the economic calculation, resources are not directed to their most efficient use. Because there is such a limited concept of ownership in conservation banking, the current process of buying and selling of credits could be considered a negotiated tax on developers and a subsidy for conservationists.

VIII. Classification

The FWS describes conservation banking as a free-market approach to the conservation of endangered species and their habitats. While conservation banking may have some market qualities, to classify it as a free-market approach is not appropriate. A free-market system is a spontaneous, cosmos order in which no one participant is its designer. Conservation banking resembles a top-down, taxis order, in which the government has tried to imagine how a market for conservation would look and then tried to recreate it. A free market is an ever-changing process, as entrepreneurs discover additional decentralized information and use economic calculation to find new profit opportunities. These opportunities direct scarce resources toward their most efficient uses.

While on the surface conservation banking takes the form of a free-market system—having supply, demand, and price negotiation between buyer and seller—the market process that characterizes a free market is clearly absent. Conservation banking would fit better under the classification of a highly centralized artificial market.

⁷² Ibid.

While the government does not subsidize conservation banks directly, conservation banking relies heavily on government involvement on both the supply and demand side of the market. The government has to approve the potential banks as well as the projects that can purchase bank credits. Regulatory levels can cause both supply and demand to rise or fall. Conservation bankers must have confidence that the government will allow future demand by allowing land development projects to use conservation credits.⁷³ With such a heavy reliance on the government, there is little incentive for conservation-banking entrepreneurs to engage in positive entrepreneurial discovery or value-creating processes. Instead, the focus of conservation bankers becomes rent seeking: activities like petitioning the government for stronger environmental regulations or seeking special favors for the location or species of the individual bank. This is not a value-creating process like the market system but a wealth-redistributing process.

IX. Alternative Approaches

Ideal Free-Market System

While conservation banking is not the free-market approach it was intended to be, this does not mean that a free-market approach does not exist. As Mises suggests, “The market is not a place, a thing, or a collective entity. The market is a process.”⁷⁴ A starting point for a free-market system in conservation would be to limit the top-down planning of markets by the government. The role of the government in a free-market conservation system should be to uphold private property, provide an unbiased rule of law, and maintain a stable currency. Within these institutions, repeated voluntary interactions will thrive. Individuals will act to correct a felt discomfort; this discomfort can be caused by a loss of an endangered species or poor

⁷³ See Ruhl, Glen, and Hartman 2005, p. 4.

⁷⁴ See Mises 1998, p. 257.

environmental health. Therefore individuals will act in a way to remove those discomforts. As a result of these repeated interactions, individuals will develop and discover the best methods to conserve species and improve the health of the environment. This decentralized approach allows for the innovation and adaptability necessary to deal with the dynamic nature of both the market and the environment.

There are numerous examples of the free-market process being used to conserve endangered species and the environment. Two groups in particular, the Exotic Wildlife Association (EWA) and the Texas Bison Association (TBA), utilize markets as a means of conservation. These groups do not hold a conservation easement or permanently limit the activities allowed on their property like a conservation bank does. This allows the purpose of the land to change depending on future conditions, unlike a conservation bank, which is set aside for conservation in perpetuity.

The EWA believes that conservation through commerce is the answer to preserving wildlife and suitable habitats.⁷⁵ It is EWA's mission, "to encourage and expand the conservation of indigenous and non-indigenous hoofstock animals, and to help [their] members develop and strengthen markets for their animals."⁷⁶ One primary way the EWA carries out its mission is to, "Protect the rights of private-property owners, including, but not limited to, the right to manage and control their own land."⁷⁷ This allows ranchers of exotic animals to develop herds of rare species using range management, wildlife husbandry, and hunting as management tools.

⁷⁵ Exotic Wildlife Association. "EWA History." Retrieved 6/28/2013 from <http://myewa.org/history.html>.

⁷⁶ Exotic Wildlife Association. "Learn More About EWA." Retrieved 6/28/2013 from <http://myewa.org/learnmore.html>.

⁷⁷ Ibid.

Individuals can pay to go see rare native and nonnative species on these exotic-animal ranches, and some even pay to hunt these species.⁷⁸

Markets are also utilized to preserve and promote bison. The TBA, “works to promote and preserve Texas bison through leadership, education, and building public awareness for the bison ranching and meat industry.”⁷⁹ By promoting the industry, the TBA also promotes the conservation of the bison and the prairie grassland ecosystem. More importantly, the TBA does not promote its interests through legislation or regulation that coerces or limits individual choices, but works instead through voluntary market transactions.

Although the EWA and TBA have been heavily criticized by many animal-rights groups because they use hunting and consumption as a conservation-management tool, these activities actually help in the conservation of the species. In the case of hunting, big-game hunters want to hunt these rare species and are willing to pay for the opportunity. The price that they are willing to pay is not small either; according to a *60 Minutes* report, prices for different rare species at one exotic ranch ranged from \$4,500 up to \$50,000.⁸⁰

For the bison-ranching and meat industry there are benefits to both the rancher and consumers. Bison are more gentle than cattle on the land and grasses, and they do not require the same antibiotics or growth hormones as cattle. This saves the rancher time and money, and the

⁷⁸ Office of External Affairs, U.S. Fish and Wildlife Service. “What Do Hunters Do for Conservation?” Retrieved 6/28/2013 from <http://www.fws.gov/hunting/whatdo.html>.

The FWS acknowledges the multiple conservation efforts of hunters. The sale of hunting licenses is a primary source of funding for most state conservation efforts, and local hunting clubs and organizations help protect future wildlife by setting aside thousands of acres for conservation.

⁷⁹ Texas Bison Association. “About TBA.” Retrieved 6/28/2013 from <http://www.texasbison.org/about-tba>.

⁸⁰ Logan, L. (Jan. 29, 2012). “Big Game Hunting” [Television series episode]. In M. McClellan (Producer), *60 Minutes*. New York, NY: CBS Interactive Inc. Retrieved 6/28/2013 from http://www.cbsnews.com/8301-18560_162-57368000/can-hunting-endangered-animals-save-the-species/?pageNum=3.

consumer receives meat that is of better quality.⁸¹ The draw of individuals to these industries is the profit opportunity available. Profit opportunities incentivize ranchers to cultivate exotic species on their ranches instead of cultivating common species. It is then in the rancher's best interest to protect and cultivate the species, because its survival and growth represent future profits to the rancher.

This would be the ideal free-market solution, to have secured property rights and voluntary interaction. There are other people who oppose the use of a purely free-market approach to conservation efforts for a variety of reasons, ranging from the inability of the market to account for the intrinsic value of the endangered species to a moral stance against the market placing a value on a life.⁸² Others would use the argument that the protection of endangered species can be considered a public good and the market does not provide the optimal amount of a public good.⁸³ These arguments have been made for many years, especially with reference toward common-pooled resources (CPR)—in this case the different species and habitats within an area.

Common-Pool Resource Institutional System

In dealing with common-pool resources, there are generally two primary solutions: the complete privatization of the common area or complete control by a central entity. However, Nobel Laureate Elinor Ostrom offers an alternative way of managing the common pool. The alternative is management through different institutional options, in which the individuals connected to the common resource can make a binding contract to commit themselves to a cooperative strategy

⁸¹ Texas Bison Association. "Bison Facts." Retrieved 6/28/2013 from <http://www.texasbison.org/bison-facts>.

⁸² Frisvold, George. (Oct. 25, 2010). "The Economics of Endangered Species." *Weekly Policy Commentary, Resources for the Future*. Retrieved 01/24/2014 from <http://www.rff.org/Publications/WPC/Pages/The-Economics-of-Endangered-Species.aspx>.

⁸³ *Ibid.*

that they themselves will work out.⁸⁴ In this management alternative, those closest to the common resource, not some far-off central authority, are in control of the management. The individuals involved also do not have to go through the process of trying to divide up and privatize the entire common resource. Ostrom describes this approach as a rich mixture of “private-like” and “public-like” institutions, defying classification in a simple dichotomy.⁸⁵

This is not a step-by-step solution to the management of common-pool resources. Ostrom is up-front about this:

Instead of there being a single solution to a single problem, I argue that many solutions exist to cope with many different problems. Instead of presuming that optimal institutional solutions can be designed easily and imposed at low cost by external authorities, I argue that “getting the institutions right” is a difficult, time-consuming, conflict-invoking process. It is a process that requires reliable information about time and place variables as well as a broad repertoire of culturally acceptable rules.⁸⁶

While the creation of institutions may be a difficult, time-consuming, and conflict-invoking process, it is theoretically, according to Ostrom, a more efficient approach than that of a purely centralized authority. This management alternative utilizes the knowledge of the individuals who have a great understanding of the resource and year after year have learned the resource’s patterns, including animal migration patterns, field productivity, and seasonal weather patterns over the resource area. This institutional approach solves the knowledge problem faced by a central authority.

⁸⁴ Ostrom, Elinor. (1990). *Governing the Commons: The Evolution of Institutions for Collective Action*. New York, NY: Cambridge University Press.

⁸⁵ Ibid.

⁸⁶ Ibid.

Individuals who use and benefit from the common resource design a contract that is then enforced by an external third-party arbitrator. The individuals that created the contract have the incentive to monitor the other users and report any breach of contract. This incentive to monitor also limits the principal-agent problem that the external arbitrator would have had from hiring monitors to watch for breaches.⁸⁷ Each common-pool resource system will thus look different based on the uniqueness of the individuals and the uniqueness of the resource. In Ostrom's research on these institutional structures, she notices eight principles that are visible in long-enduring common-pool resource institutions:

1. Clearly defined boundaries: Individuals or households who have rights to withdraw resource units from the CPR must be clearly defined, as must the boundaries of the CPR itself.
2. Congruence between appropriation and provision rules and local conditions: Appropriation rules restricting time, place, technology, and/or quantity of resource units are related to local conditions and to provision rules requiring labor, material, and/or money.
3. Collective-choice arrangements: Most individuals affected by the operational rules can participate in modifying the operational rules.
4. Monitoring: Monitors, who actively audit CPR conditions and appropriator behavior, are accountable to the appropriators or are the appropriators.
5. Graduated sanctions: Appropriators who violate operational rules are likely to be assessed graduated sanctions (depending on the seriousness and context of the offense) by other appropriators, by officials accountable to these appropriators, or by both.

⁸⁷ Ibid.

6. Conflict-resolution mechanisms: Appropriators and their officials have rapid access to low-cost local arenas to resolve conflicts among appropriators or between appropriators and officials.
7. Minimal recognition of rights to organize: The rights of appropriators to devise their own institutions are not challenged by external governmental authorities.
8. Nested enterprises: Appropriation, provision, monitoring, enforcement, conflict resolution, and governance activities are organized in multiple layers of nested enterprises.⁸⁸

The primary example of this institutional approach deals with the American bison, commonly known as the American buffalo. According to the Wildlife Conservation Society, two centuries ago there were between 30 and 60 million bison on the North American continent. However, in the late 19th century, sport hunting and mass slaughters of bison brought them to the brink of extinction.⁸⁹ While bison numbers are not back to the 30 to 60 million they were before settlers started moving west, bison have made a significant comeback. Groups like the American Prairie Reserve and the Wildlife Conservation Society have been the major drivers of returning the bison from the brink of extinction. While these organizations differ in their methods on how to preserve bison, the end result is that there are more bison today than there were in the mid- to late 19th century.

The American Prairie Reserve is a nonprofit conservation group in Montana that seeks to create and manage “the largest and newest prairie-based wildlife reserve in the lower 48 states,

⁸⁸ Ibid., table 3.1.

⁸⁹ Wildlife Conservation Society, “Bison.”

consisting of more than 3 million acres of both private and public lands.”⁹⁰ To achieve their goal, the American Prairie Reserve purchases private land that lies in between land owned by and protected by the FWS; U.S. Bureau of Land Management; the Montana Department of State Lands; and Montana Fish, Wildlife and Parks. This is to create protected corridors between the protected public lands for the species to migrate through. While APR has a focus on conserving and restoring bison on the reserve, multiple prairie species and the prairie ecosystem in general have been restored in the process as well.

This conservation and restoration of the natural prairie ecosystem has come through the collaboration of multiple entities sharing the same common pool of resources: the combined goal of 3 million acres of prairie-land ecosystem in Montana. The American Prairie Reserve collaborates with private individuals, federal government agencies, and Montana state government agencies in the actual management of their aggregated land. However, the American Prairie Reserve plans on keeping their land and, “cooperatively managing the habitat with these agencies,” because it is thought that it, “will create a unique system of accountability and checks and balances.”⁹¹ While this is not a purely institutional approach, it is a step toward a common-pool resource institutional approach and can easily evolve over time into an institutional system that better fulfills the eight principles listed by Elinor Ostrom.⁹²

⁹⁰ American Prairie Reserve. “Frequently Asked Questions.” Retrieved 6/28/2013 from <http://www.americanprairie.org/aboutapf/faqs/>.

⁹¹ Ibid.

⁹² For examples of CPR institutional approaches see Ostrom 1990, chapter 3: “Analyzing Long-Enduring, Self-Organized, and Self-Governed CPRs.” Also see Boudreaux, Karol. (2007). “Community-Based Natural Resource Management and Poverty Alleviation in Namibia: A Case Study.” Mercatus Policy Comment no. 10. Arlington, VA: Mercatus Center at George Mason University. Retrieved 4/1/2013 from [http://mercatus.org/uploadedFiles/Mercatus/Publications/Community-Based Natural Resource Management.pdf](http://mercatus.org/uploadedFiles/Mercatus/Publications/Community-Based%20Natural%20Resource%20Management.pdf).

Changes to the Current Program

Another alternative is to make a few changes to the existing conservation-banking program to allow for more innovation and to remove some opportunities for rent seeking. Conservation banking is a complicated system in its present state. While some might expect the program to need to be complicated because of the complex nature of conservation and all the variables that play a part in an ecosystem that encourages the restoration of a species, the regulatory system could be simplified. With the simplification of the program and reduction of the opportunities for rent seeking (for example, by changing the complex, subjective equation used to determine the number of credits allocated to a conservation bank), conservation banking could bring more landowners into the program, which in turn would meet the goal of increasing the conservation of endangered species.

The conservation-banking system is similar to the cap-and-trade program in that both programs provide incentives for the private sector to engage in environmentally friendly practices through a new profit opportunity: the selling of credits. However, the cap-and-trade program is instituted in a different manner than conservation banking. In cap and trade, a base level is set to determine the maximum level of emissions all entities will be allowed to emit. It is then up to the entity to create its own credits by finding innovative ways to reduce its emissions below its maximum level. For each unit of emissions below the maximum level, an entity then has surplus units that it can sell to other entities emitting more than their maximum level. Over time, the government can reduce the baseline to lower the aggregate level of emissions. While the cap-and-trade program is not perfect, its approach decentralizes the decision of where and how to reduce emissions; conservation banking could benefit by adapting more of this approach. In cap-and-trade, decentralization utilizes individual knowledge (reducing the inefficiencies caused by the

knowledge problem), and the program creates a credit that when sold transfers an actual property right.⁹³

The primary change to the conservation program should be to the process of creation of credits. Currently, credit creation is officially tied to the conservation agreement and a complex equation that takes into account variables such as the number of acres, quality of land, activities on the surrounding land, and the species on the land. As discussed earlier, this method creates many opportunities for rent seeking, and it is prone to inefficiencies. The conservation agreement should act more as a registration or business license for running a conservation bank. It should not act as a final management plan that the FWS utilizes to tie the hands of the conservation bank's management. More importantly, it should not be used as the primary mechanism for determining the amount of credits available for the bank.

In replacement, a credit system that mirrors cap and trade should be used. For example, when a potential banker registers or files for a license to operate a conservation bank, a population survey of the endangered species could be taken on the proposed bank. The results can be the baseline for that bank. Then the number of credits the banker can sell is the number of the species above that baseline. As with cap-and-trade, the government could require that each year the baseline number be increased in order to achieve a sustainable population level. To monitor, the government could audit the conservation bank by having a third party resurvey the bank to determine if the population of the species has increased.

This method limits the rent-seeking opportunities that were inherent in the credit-creation process of the original conservation-banking program by fixing credit creation to an objective

⁹³ For an overview of the cap-and-trade program, see Tietenberg, T. H. (2006). *Emissions Trading: Principles and Practice* (2nd ed.). Washington, DC: Resources for the Future.

measure that can be easily checked. It also allows for increased innovation for the banker, because the banker has the incentive to find the best method of conservation for the particular species and environment on the bank. The banker would then take all the variables, which were originally used in the complex equation to determine the number of credits, into consideration. Changing the method of credit creation would simplify the program and create a system that is closer to a free market while maintaining consideration of all the variables for conservation that the original system tried to account for.

Using the population of the endangered species as the backing for credits provides some extra security for the bank owner. For example, currently if the value of the credit is zero (no demand), the owner is stuck with a piece of habitat that cannot be utilized for the next valuable activity, because it is protected in perpetuity even if there is no endangered species on that plot of land. However, if the credit is backed by the physical species (not their habitat) and the value of the credit (the right to harm that species) is zero, then the owner knows that he or she has a physical asset that he or she can sell. Theoretically, the owner could sell the actual animal that the credit represents to a zoo or environmentalist group.

Changing the credit system is not a cure-all approach. Christopher Mills also examined changing the credit system to be backed by the species. He points out that this would lead to a thin market because, to maintain equitability of transactions, trades would have to involve only members of the same species. To solve this issue, Mills suggests that all landowners survey their land prior to development to increase both supply and demand for conservation-bank credits as new

populations of endangered species are found. Mills acknowledges that this solution would be politically infeasible.⁹⁴

There are also other problems that changing the credit system will not solve. The ability to resell the credit is one issue. Credits are not resalable, as it would defeat the purpose of the credit and conservation banking. A developer is allowed to harm a species in one area because in a different area the species is being conserved. Allowing different developers to use the same credit would mean harming a species in multiple areas when it is only being conserved in one; in other words, this would be a net loss to the species. Changing the credit system to a more understandable and simpler one would, however, be a step in the right direction to a more efficient system.

X. Conclusion

Conservation banking is a complicated program that has good intentions and lofty goals of conserving and restoring endangered species. This approach was developed after the government attempted to use command-and-control regulatory policies, which failed to achieve the intended conservation goals. Conservation banking was an attempt to create a free-market solution. However, trying to force a specific market into existence is not efficient or effective. As Elinor Ostrom puts it, “‘getting the institutions right’ is a difficult, time-consuming, conflict-invoking process. It is a process that requires reliable information about time and place variables as well as a broad repertoire of culturally acceptable rules.”⁹⁵ Trying to create a free-market system for conservation credits from the top down resulted in a system that is an imposter. While on the outside the system looks like a free market, upon closer examination one can see that it is an

⁹⁴ See Mills 2004, pp. 550–560.

⁹⁵ See Ostrom 1990.

artificial market system where the successes of individuals rest with the favor they receive from the government.

While the conservation-banking approach is not a best or second-best solution, it is a step in the right direction when compared to a purely centralized approach. There are alternative approaches, however, that could accomplish the goals that conservation banking hoped to achieve in a more efficient manner. The first is the ideal free-market approach that utilizes secured property rights and voluntary interactions between individuals. However, this approach will have a difficult time being politically accepted on the grand scale. A second-best solution is allowing and facilitating the emergence of common-pool resource institutions, made famous by Elinor Ostrom. This approach utilizes local knowledge and voluntary individuals coming together to provide and care for resources from which everyone benefits. On the margin, slight changes to the existing conservation-banking program can be made that will work toward ending the centralized control and inefficiencies found in it at present. Changing how conservation-banking credits are created will move the conservation-banking program closer to an ideal solution for conservation of endangered species.

It is extremely important for future policy decisions that policymakers know what type of systems have previously been tried. Analyzing and understanding the true characteristics of a program should be a priority. Accepting a policy at face value can mislead any future policy decision. In the case of conservation policy, if conservation banking does not achieve the results that were expected, it would be easy to say that a free-market conservation policy does not work, when in reality a free-market policy has not been tried.

XI. References

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