

INCENTIVES AND THE ESA. CAN CONSERVATION BANKING LIVE UP TO POTENTIAL?

CHRISTOPHER S. MILLS†

INTRODUCTION

The Endangered Species Act (“ESA”) began as command and control legislation that relied on the threat of severe civil and criminal sanctions to assure compliance with a categorical prohibition on the “taking” of members of endangered species. Beginning in 1983, however, Congress and the executive branch began using a different, incentive-based approach. First, by amending the ESA to include section 10, Congress created a way for landowners to continue development in habitats harboring endangered species: the landowners were permitted to incidentally take endangered species in exchange for the implementation of a Habitat Conservation Plan (“HCP”), which served to actively manage endangered species conservation for the species affected.¹ Second, the Clinton Administration created the No Surprises Policy, which provided assurance to landowners that once they obtained section 10 permits to incidentally take endangered species in exchange for creating a HCP, they would not be required to expend additional resources to respond to unforeseen circumstances that could arise and threaten the species managed in the HCP.² Part I of this Note examines the evolution of these incentive-based approaches and how they changed the incentive structure for landowners.

Part II of this Note examines a new incentive-based method of conserving endangered species—conservation banking. Conservation banking has enormous potential to radically improve endangered species conservation while drastically reducing the cost of doing so.

† The author wishes to thank Professor Jonathan Wiener and Douglas Wheeler for their guidance and advice for this paper, and Meryl Eschen who helped enormously with research and editing.

1. 16 U.S.C. §1539(a) (2000).

2. 63 Fed. Reg. 8859 (Feb. 23, 1998), *available at* <http://endangered.fws.gov/r/f980223.pdf>.

The Department of Interior, recognizing this potential, recently issued a *Guidance for the Establishment, Use, and Operation of Conservation Banks*.³ This Note analyzes the incentive structure created by conservation banks and its significance with respect to the advantages that conservation banks may provide. It then addresses whether conservation banking can live up to expectations through addressing the potential problems with conservation banks, including choosing an adequate currency and market structure. A solution to the problem of currency choice is proposed, followed by a discussion of the problem with market structure created by this solution.

PART I: INCENTIVES AND THE ESA

I. THE ENDANGERED SPECIES ACT OF 1973

The Endangered Species Act was enacted in 1973 for the purpose of conserving threatened and endangered species, as well as the ecosystems upon which they depend.⁴

The Act aimed to protect endangered species in two ways. First, in section 7 of the Act, Congress required all federal agencies to review their actions and carry out programs for the conservation of endangered and threatened species.⁵ Agencies now must consult with the U.S. Fish and Wildlife Service (“FWS”)⁶ to determine if any agency action is likely to “jeopardize” a threatened or endangered species.⁷ The agency must then revise its actions in order to avoid such jeopardy.⁸

3. Memorandum from Matt Hogan, Acting Director of the U.S. Fish and Wildlife Service, to the Regional Directors, Region 1-7, Manager, California Nevada Operations Office (May 3, 2003), available at <http://endangered.fws.gov/policies/conservation-banking.pdf>. Notice of availability at 68 Fed. Reg. 24753 (May 8, 2003).

4. 16 U.S.C. §1531(b) (2000). Determinations of endangerment are made pursuant to §4 of the Act. See 16 U.S.C. §1533 (2000).

5. 16 U.S.C. §1536 (2000).

6. Or National Marine Fisheries Service (NMFS) if the endangered species is marine.

7. 16 U.S.C. §1536(a)(2).

8. 16 U.S.C. §1536(a), (c). Originally the ESA flatly prohibited the taking of endangered species through federal projects. The U.S. Supreme Court so held in *TVA v. Hill*, 437 U.S. 153 (1978), when it enjoined the operation of the nearly complete Tellico Dam. In response, Congress passed the 1978 Amendments to the ESA, Endangered Species Act Amendments of 1978, Pub. L. No. 95-632, 92 Stat. 3751 (1978), that included a “procedure whereby federal agencies can receive exemptions from the requirements of the Act.” H.R. Rep. No. 1625, 95th Cong., 2d Sess. 4 (1978), reprinted in U.S.C.C.A.N. 9454. In 1982 Congress added § 7(b)(4) and § 7(o) to the ESA, which provided that the Secretary could authorize incidental taking of a species, and avoid §7(a)(2) liability. H.R. Rep. No. 567, 97th Cong., 2d Sess. 15, reprinted in 1982 U.S.C.C.A.N. 2807, 2826.

Second, in section 9 of the Act, Congress prohibited the “taking” of any listed animal species by any party, public *or private*.⁹ “Take” is defined broadly to mean to “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or to attempt to engage in any such conduct.”¹⁰ This expansive definition includes habitat modification, such as that which occurs when land is developed, because “harm” “may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering.”¹¹ Violators face the possibility of both civil¹² and criminal sanctions.¹³

Strangely, by the time Congress considered amending the ESA in 1982 to create an exception to section 9 liability, there had been relatively little outcry from private landowners about the imposition of section 9 liability “because there had been no conflicts between development and the section 9 prohibitions.”¹⁴ However, having experienced first-hand the power of the taking prohibition in the case of the Tellico Dam,¹⁵ Congress was receptive to the potential impact section 9 might have on private parties.¹⁶ In fact, Congress listened carefully when one party, a developer in San Mateo, California, that was worried about potential liability for a section 9 “take,” came forward to voice concerns and offer an innovative solution.

II. ADDING INCENTIVES TO THE ESA

A. *Background*

1. Habitat Conservation Plans

In 1982, a high profile development project worth between \$500 and \$750 million was pending on San Bruno Mountain in San Mateo

9. 16 U.S.C. §1538 (2000).

10. 16 U.S.C. §1532 (2000).

11. 50 C.F.R. 17.3 (2002).

12. 16 U.S.C. § 1540(a) (2000).

13. *Id.* § 1540(b).

14. Albert Gidari, *The Endangered Species Act: Impact of Section 9 of Private Landowners*, 24 ENVTL. L. 419, 475 (Spring 1994) (citing Endangered Species Act hearings on Endangered Species Act Reauthorization and Oversight Before the Subcomm. On Fisheries, 97th Cong. 2d Sess. 426-27 (1982) (prepared statement of Patrick A. Parenteau, Vice President for Conservation, Nat'l Wildlife Fed'n)).

15. *TVA v. Hill*, 437 U.S. 153 (1978).

16. H.R. Rep. No. 835, 97th Cong., 2d Sess. 29 (1982), reprinted in 1982 U.S.C.C.A.N. 2860, 2870.

County, California, and the development site included habitat supporting the endangered Mission Blue Butterfly.¹⁷ To avert termination of the project under section 9, the developers and the county, with the help of scientists and environmentalists, cooperatively devised a plan to conserve and manage habitat for the butterfly while still allowing the development project to continue.¹⁸

Using this new approach as a springboard, Congress acted to amend the ESA in 1983 by adding section 10, which provided an exception to the ESA's absolute prohibition on "taking" endangered species.¹⁹ Pursuant to section 10, landowners that wish to develop may obtain a permit to "take" members of an endangered species during the development process if such taking is "incidental to, and not the purpose of, the carrying out of an otherwise lawful activity."²⁰ In exchange for this Incidental Take Permit ("ITP"), the landowner must prepare a HCP designed to minimize and mitigate the impact of the permitted taking.²¹

However, few landowners were motivated to participate in the HCP program. Between 1983 and 1994 fewer than 20 HCPs were approved.²² Landowners were unenthusiastic because of the enormous cost of HCPs, regulatory uncertainty, and because there was no assurance that the landowner would not be required to undertake more mitigation in the future if the HCP did not work as planned.²³

2. The No Surprises Rule

Former Secretary of the Interior Bruce Babbitt issued the No Surprises policy in 1994.²⁴ This policy allowed the insertion of a provision in every HCP that if changes to the plan were necessary due to

17. Wayne King, *Builder Stumbles on Potential Foe – Butterflies*, N.Y. TIMES, February 6, 1982, Section 1, Page 1.

18. Gidari, *supra* note 14, at 479 (citing MICHAEL J. BEAN ET. AL., RECONCILING CONFLICTS UNDER THE ENDANGERED SPECIES ACT: THE HABITAT CONSERVATION PLANNING EXPERIENCE 7, 42 (1991)).

19. 16 U.S.C. §1539(a) (2000).

20. *Id.* §1539(a)(1)(b).

21. *Id.* §1539(a); 50 C.F.R. §17.3.

22. Environmental Defense, *Progress on the Back Forty, An Analysis of Three Incentive-based Approaches to Endangered Species Conservation on Private Land*, 17 (Jan. 2000), at http://www.environmentaldefense.org/documents/150_backforty.PDF.

23. *Id.* at 10-18; Eric Fisher, *Comment: Habitat Conservation Planning Under the Endangered Species Act: No Surprises & the Quest for Certainty*, 67 U. COLO. L. REV. 371, 881 (1996).

24. See *Endangered Species Habitat Conservation Planning Handbook (Draft)*, 59 Fed. Reg. 65782 (December 21, 1994) (first publishing No Surprises policy in draft form). The policy was then codified and issued as a final rule in 1998. 63 Fed. Reg. 8859 (Feb. 23, 1998), available at <http://endangered.fws.gov/r/f980223.pdf>.

unforeseen circumstances, the landowner would not be required to pay for the implementation of those changes.²⁵ Landowners apparently appreciated the added certainty that the No Surprises policy provided. In the years between 1985 and 1994, before the No Surprises policy was adopted, a total of thirty-nine HCPs were approved.²⁶ In 1995 alone, a total of 86 HCPs were approved,²⁷ and by the end of 1999, 274 plans had been approved.²⁸ The stimulus for HCP creation provided by the No Surprises policy is irrefutable. The wisdom of the policy is still debated, however, and recently the No Surprises Rule was remanded for further proceedings consistent with section 553 of the Administrative Procedures Act.²⁹

B. *Evaluating the New Incentive-Based Approaches*

1. Evaluating Section 10

The addition of section 10 represented a departure from the “stick” approach originally manifest in the ESA, in favor of a more progressive “carrot” approach. Rather than deterring actions that harm members of an endangered species through the threat of severe civil or criminal sanctions, Congress made an *exception* to the ESA with the intent of actually *increasing* endangered species conservation. Section 10 was intended to “. . . encourage creative partnerships between the public and private sectors, and among governmental agencies in the interest of species and habitat conservation.”³⁰ It sought to accomplish such creative partnerships by permitting the Secretary to authorize a take otherwise prohibited by section 9 if it is incidental to an otherwise lawful activity and the developer submits a conservation plan to minimize and mitigate the extent of the take.³¹ In order to provide sufficient incentives for private developers to make use of this provision, Congress intended for the secretary to make assurances that the section 10 permit would be in effect for the life of

25. *Id.* at 8860; see U.S. Fish and Wildlife and National Marine Fisheries Service, Habitat Conservation Plan (No Surprises) Assurances Final Rule, *available at* <http://endangered.fws.gov/hcp/nosurpr.htm> (last visited May 19, 2004).

26. Environmental Defense, *supra* note 22, 17 .

27. *Id.*

28. *Id.*

29. *Spirit of the Sage Council v. Norton*, 294 F. Supp. 2d 67 (D.D.C. 2003).

30. H.R. Rep. No. 835, 97th Cong., 2d Sess. 29 (1982), reprinted in 1982 U.S.C.C.A.N. 2860, 2872.

31. *Id.* at 2870.

the project, even if it spans 30 or more years.³² The rationale Congress apparently followed was simple—a carrot will work better than a stick. Landowners were often practicing the “shoot, shovel, and shut-up” method of avoiding liability by destroying endangered species and habitat on their land before the existence of such species and habitat were discovered by federal authorities.³³ Congress hoped to reduce this practice and assuage landowners’ section 9 fears through the HCP and No Surprises process. Was Congress’ rationale sound? A simple thought experiment involving role-playing will explain where incentives lie under section 10.

a. Incentives under Section 10

As a starting point consider that prior to section 10’s enactment the landowner whose development actions would take an endangered species had a choice between either refraining from developing or developing and hoping he did not get caught violating the Act.³⁴ A rational landowner would make his decision by weighing the economic gain possible through development minus the sanction that would result from violation of the Act, discounted by the probability of getting caught violating it, against his affinity for endangered species.

Suppose:

D is the economic gain from development;

S is the magnitude of the sanction incurred for violating the Act³⁵;

P is the probability of getting caught violating the Act;

A is the affinity the landowner has for endangered species.

The landowner’s thought process can be represented in the following equation:

If $D - (S \times P) > A$ then the landowner will “shoot, shovel, and shut-up”;

If $D - (S \times P) < A$ then the landowner will not develop.

Now consider how section 10 changes the equation.

32. *Id.* at 2872.

33. Albert C. Lin, Comment, *Participants’ Experiences with Habitat Conservation Plans and Suggestions for Streamlining the Process*, 23 *ECOLOGY L.Q.* 369, 382 (1996).

34. Jonathan Nash discusses the ways in which the ESA actually creates incentives to destroy habitat rather than preserve it. See Jonathan R. Nash, *Ecosystems and Endangered Species, Markets and Geography: A New Direction for Habitat Trading Programs*, (unpublished manuscript on file with author).

35. See Joshua G. Eagle & David R. Betters, *The Endangered Species Act and Economic Values: A Comparison of Fines and Contingent Valuation Studies*, 26 *ECOLOGICAL ECON.* 165 (1998) (arguing that the fines imposed by the ESA are too low to capture the marginal social damage incurred with each ‘taking’ of a threatened or endangered species).

First, suppose the landowner values endangered species, and would never dream of harming them. This landowner will have incentive to avoid any development on her land that could potentially harm an endangered species. She will not be interested in obtaining an ITP because she would not want to take an endangered species even incidentally. Hence, section 10 will have no effect on this landowner's incentives. She will not develop her land.

Second, suppose the landowner has a mild affinity for endangered species, but cares slightly more about the economic gain he can obtain from developing his land. The landowner will have incentive to develop even when doing so will harm an endangered species. The threat of sanctions for violating the ESA will also influence what this landowner wishes to do. Suppose:

D is the economic gain to be had through development;

S is the magnitude of the sanction that the landowner faces if caught violating the Act;

P is the probability of getting caught violating the Act;

A is the affinity for the endangered species;

and C is the cost of creating and maintaining an HCP.

The interplay of these various incentives can be represented by the following equations:

If $D - (S \times P) > (A + D - C)$ then the landowner will "shoot, shovel, and shut-up";

If $D - (S \times P) < (A + D - C)$ then the landowner will create an HCP.

Note how the equation has changed with the addition of section 10. There is an additional cost (C), that of the HCP, on the right side of the equation, but there is also a major additional benefit (D); the economic gain to be had by being able to develop despite the incidental impact to endangered species.

These equations also accurately describe the incentives and actions of a landowner who is ambivalent about endangered species but appreciates very much the economic benefits of development. In such an instance A will be zero but C will still be positive, leaving "D-C" on the right side of the equation. In such an instance the landowner will create an HCP if the economic gain from development minus the cost of an HCP outweighs the benefit of development minus the potential sanctions. Likewise, the incentives of a landowner that hates endangered species can be represented in these equations; in such an instance A would be negative.

One would reasonably expect some landowners who were initially scared away from developing by the sanctions imposed by the

ESA to apply for an ITP and create an HCP. One also would reasonably expect some landowners who decided to destroy the species and/or habitat, at the risk of getting caught, to apply for an ITP and create an HCP. In this respect, section 10 appears to be an improvement over the ESA as originally enacted in 1973.³⁶

b. HCP Performance

But what about the HCPs themselves? What are the incentives of the various parties when the terms of an HCP are being negotiated?

If the landowner values endangered species she will have incentive to create terms as beneficial to the endangered species as possible. If the landowner is ambivalent toward endangered species, or actively dislikes them, he has incentive to create terms as economically advantageous as possible, irrespective of the impact on such species.

The other party to the HCP negotiation, the FWS or NMFS representative, may have varied incentives as well. She may value endangered species, and demand terms in the HCP as beneficial for them as possible. She may not value the endangered species as much as the proposed land use and seek terms that, while consistent with her government mandate, are as beneficial to the landowner as possible. Resources play a big role in the negotiation as well. If it costs a great deal of money to ensure that the most beneficial terms for the species are in the HCP and that same amount of money could be used in another way to benefit endangered species more efficiently, the FWS representative who values endangered species may have incentive *not* to seek the terms most beneficial to the species.

In practice, HCPs have enjoyed a few notable successes and a number of abysmal failures. Critics have pointed out that studies show that most HCPs lack a basic scientific foundation.³⁷ In fact, fundamental biological information such as average life span and rates of change in population size was unknown for at least 80 percent of the HCP-protected species examined.³⁸ In addition, HCPs are reactive because they involve mitigation of the effects of development pro-

36. This, of course, does not mean that there could not have been any other changes that would have been *more* of an improvement.

37. Peter Kareiva et al., *Using Science In Habitat Conservation Plans*, National Center for Ecological Analysis and Synthesis, at <http://www.nceas.ucsb.edu/nceas-web/projects/97KAREI2/hcp-1999-01-14.pdf> (Jan 14, 1999).

38. Carol Kaesuk Yoon, *Many Habitat Conservation Plans Found to Lack Key Data*, N.Y. TIMES, Dec. 23, 1997, at F3.

jects, and not movement toward the recovery of the endangered species.³⁹

[T]he old adage that ‘an ounce of prevention is worth a pound of cure’ is applicable to species protection programs. . . . Preventative measures. . . are likely to be more cost-effective because they protect multiple species simultaneously. The odds are that the ESA will achieve greater success and better cost-effectiveness by improving its emphasis on proactive approaches. . . .⁴⁰

Hence, a preventative approach that focuses more on species recovery, rather than mitigation of new harms alone, would improve the efficacy of the ESA relative to section 10. Additionally, HCPs are extremely expensive, burdensome, and fraught with delay.⁴¹ Landowners also reported that, without the No Surprises Rule, HCPs entailed excessive uncertainty.⁴²

Nevertheless, HCPs represented a potential improvement over the strict taking prohibition because they required the engagement of private landowners in the conservation effort. This involvement of landowners cannot only increase the resources available for endangered species protection because landowners would be using some of their own private funds in the effort,⁴³ but their involvement can also make it easier to protect the large percentage of endangered species that inhabit private land.

2. Evaluating the No Surprises Rule

The No Surprises Rule was an answer to “. . . the absence of adequate incentives for non-Federal landowners to factor endangered species conservation into their day-to-day land management activities.”⁴⁴ It was a clearer articulation of the assurances that landowners expected to obtain through long-term section 10 permits.⁴⁵ The Services⁴⁶ felt that providing additional assurances would increase the use

39. See 16 U.S.C. §1539(a)(2)(B)(2) (2000) (describing that a permit recipient must act to minimize and mitigate the impact of his or her development).

40. Jason F. Shogren, et al., *Why Economics Matter for Endangered Species Protection and the ESA*, 13 CONSERVATION BIOLOGY 1257, 1259-60 (1999).

41. Environmental Defense, *supra* note 22, 10-18; see Lin, *supra* note 33, at 395-406.

42. Environmental Defense, *supra* note 22, 17-18.

43. Gardner M. Brown Jr. and Jason F. Shogren, *Economics of the Endangered Species Act*, 12 J. ECON. PERSP., Summer 1998, at 3.

44. Final Rule, 63 Fed. Reg. 8859, 8860 (Feb. 23, 1998).

45. *Id.*

46. The National Oceanic and Atmospheric Administration and National Marine Fisheries Service under the Department of Commerce, and the Fish and Wildlife Service under Department of the Interior jointly have responsibility for administering the ESA and for promulgating regulations pursuant to the statute.

of HCPs, which Congress in turn thought “could provide early protection for many unlisted species and, ideally, prevent subsequent declines and, in some cases, the need to list covered species.”⁴⁷ The No Surprises Rule dramatically increased the number of HCPs, but questions remain as to how effective it was in actually promoting conservation of endangered species.

a. Incentives under the No Surprises Rule

The No Surprises Rule was intended to provide landowners with further incentive to engage in the HCP process. It did so by reducing the cost of creating and maintaining an HCP (both financially and emotionally) because with regulatory certainty a landowner could comfortably make long-term investment and management decisions without the fear that such investments and decisions might prove futile. Recall that the incentives driving the landowners’ actions can be represented as follows:

D is the economic gain obtained through development;

S is the magnitude of the sanction that the landowner faces if caught violating the Act;

P is the probability of getting caught violating the Act;

A is the affinity for the endangered species;

and C is the cost of creating and maintaining an HCP.

The interplay of these various incentives can be represented by the following equations:

If $D - (S \times P) > (A + D - C)$ then the landowner will “shoot, shovel, and shut-up”;

If $D - (S \times P) < (A + D - C)$ then the landowner will create an HCP.

Consider these same equations under the No Surprises Rule. Suppose that:

N is the reduction in cost afforded by the No Surprises Rule. The equations will then be as follows:

If $D - (S \times P) > (A + D - [C - N])$ then the landowner will “shoot, shovel, and shut-up”;

If $D - (S \times P) < (A + D - [C - N])$ then the landowner will create an HCP.

With reduced costs, landowners do have a greater incentive to engage in the HCP process. But there are side-effects. With the addition of No Surprises assurances in all HCPs, a perverse result emerges. Landowners, not wanting their HCP management activities

47. 63 Fed. Reg. at 8860.

scrutinized, have no incentive to report unforeseen circumstances to the FWS.⁴⁸ Likewise, under the No Surprises Rule the FWS is unable to make the landowner pay for any necessary changes due to unforeseen circumstances.⁴⁹ The agency is unable to make changes itself, even if it is aware that changes are needed, as a result of chronic under-funding.⁵⁰ The FWS therefore has incentive to skirt monitoring obligations that would alert the Service (agency) to the need for changes. Even if the FWS were well intentioned and wanted to protect endangered species to the maximum extent possible, given its limited resources the agency might rationally chose to forgo addressing unforeseen circumstances in order to spend money on conservation of other, yet un-addressed endangered species.

b. No Surprises Rule Performance

Although the No Surprises Rule clearly led to a dramatic increase in HCPs,⁵¹ it was criticized by environmentalists as hindering endangered species recovery.⁵² In fact, Spirit of the Sage Council sued the services claiming not only that the No Surprises Rule (and the attendant Permit Revocation Rule⁵³) was promulgated in violation of the APA's section 553 notice and comment rulemaking requirement,

48. Unless the Fish and Wildlife Service discover some aspect of the landowners management activities that had not been undertaken precisely as outlined in the often complicated terms of the HCP.

49. 63 Fed. Reg. at 8860.

50. See Lin, *supra* note 33, at 381 (describing the FWS as understaffed and underfunded); see also Patrick Parenteau, *Rearranging the Deck Chairs: Endangered Species Act Reforms in an Era of Mass Extinction*, 22 WM. & MARY ENVTL. L. & POL'Y REV. 227, 264 (1998) (likewise describing the FWS as understaffed and underfunded).

51. Environmental Defense, *supra* note 22, at 17.

52. See, e.g., Spirit of the Sage Council, *The "No Surprises" Campaign*, at <http://www.sagecouncil.com/noSur1.html> (last visited May 19, 2004) (discussing the negative affect of the No Surprises Rule on endangered species).

53. The Permit Revocation Rule was promulgated in 1999, during the pendency of the No Surprises Rule litigation, and states that a Section 10 permit "may not be revoked . . . unless continuation of the permitted activity would be inconsistent with the criterion set forth in 16 U.S.C. § 1539(a)(2)(B)(iv)," and unless the "inconsistency has not been remedied [by the Services] in a timely fashion." *Spirit of the Sage Council v. Norton*, 294 F. Supp. 2d 67, 79 (D.D.C. 2003) (quoting 64 Fed. Reg. 32,712, 32,714).

(June. 17, 1999) (codified at 50 C.F.R. §§ 17.22(b), 17.32(b)). 16 U.S.C. § 1539(a)(2)(B)(iv) establishes as a condition for a permit that "the taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild." The Permit Revocation Rule therefore allows the Services to revoke a Section 10 permit if unforeseen circumstances arise and the Services are unable to pay to accommodate them. This led the plaintiff to quip that the No Surprises Rule has become the "Some Surprises Rule". The Permit Revocation Rule clearly does remove some of the certainty afforded by the No Surprises Rule – which was the reason for the Rule.

but also that it is contrary to the language and purpose of the ESA itself.⁵⁴ Under the No Surprises Rule, in the event that changes are necessary due to unforeseen circumstances, the Services' ability to make those changes will be "dependant on the availability of appropriated funds."⁵⁵ Spirit of the Sage Council argued that the federal government allocates more money for building a single mile of highway than it does to the annual budget for ESA enforcement.⁵⁶ This suggests that in the event of unforeseen circumstances, necessary funds may be unavailable if the federal government decided to devote its own resources to making changes the landowner would no longer be obligated to make under the No Surprises Rule.⁵⁷

The plaintiffs prevailed in *Spirit of the Sage* and was remanded the No Surprises Rule for further proceedings consistent with section 553 of the APA.⁵⁸ The judge did not reach the question of whether the No Surprises Rule is contrary to the ESA itself. However, he did hint at an answer when he failed to reach the merits of whether the No Surprises Rule was consistent with the ESA "because the government explicitly relies on the [Permit Revocation Rule] to bolster its contention that the No Surprises Rule is consistent with the requirements of the ESA"⁵⁹ If the Permit Revocation Rule, which reduces certainty, is necessary to prevent the No Surprises Rule from being contrary to the ESA, then the assurances of certainty that make the No Surprises Rule attractive to landowners may be precisely the feature that runs contrary to the ESA. One thing is certain: the status of the No Surprises Rule is in flux,⁶⁰ and even if it is reissued after proper APA notice and comment, it may be found contrary to the ESA. As a result, a new method of encouraging private landowner participation is needed.

54. See *Spirit of the Sage Council*, 294 F. Supp. 2d at 67.

55. 63 Fed. Reg. at 8864.

56. Plaintiffs' Memorandum in Support of Their Motion for Summary Judgment at 38, *Spirit of the Sage Council v. Babbitt*, No. 1:98CV01873(EGS) (D.D.C. filed May 15, 2002).

57. *Id.* (quoting 63 Fed. Reg. 8864).

58. *Spirit of the Sage Council*, 294 F. Supp. 2d at 92.

59. *Id.* at 85.

60. Strangely, the Services appear to be continuing to issue Section 10 permits with No Surprises Assurances, despite not having reconsidered it yet. See Memorandum from Steven Williams, Director of the U.S. Fish and Wildlife Service, to the Regional Directors, Region 1, 2, 3, 4, 5, 6, and 7, Manager, California/Nevada Operations Office (Jan. 28, 2004), available at <http://endangered.fws.gov/hcp/NoSurprises/memo1.pdf> (last visited May 19, 2004).

PART II: CONSERVATION BANKS

Generally, there are three different types of mitigation represented in HCPs,⁶¹ two of which will be discussed here. First, individual landowners may employ conservation measures on their own land that are intended to minimize and mitigate the extent of the incidental take.⁶² These mitigation measures may be undertaken either adjacent to the development, or “off-site.”

The second type of mitigation involves the establishment and management by third parties of off-site land parcels for mitigation efforts. The third party could be a local government, which would pay for mitigation efforts with assessments levied against the developers on whose behalf the off-site mitigation parcels are established.⁶³ Third parties might also be private citizens who establish “mitigation banks,”⁶⁴ also called “conservation banks.” Third parties then sell “credits” to developers representing the conservation value of the land making up a mitigation bank in order to offset the harm caused by development.⁶⁵ The credits are recognized by the appropriate regulatory authority as representing the mitigation necessary to justify issuing an ITP.⁶⁶ To have credits recognized, the third party that owns the conservation bank and sells the credits that the bank generates must have undertaken some action to enhance species health.⁶⁷ Typically this entails some sort of preservation, creation, restoration, or enhancement of habitat.⁶⁸

Conservation banks represent a new approach to endangered species management that has the potential to dramatically improve the plight of endangered species while radically reducing the cost of doing so. Recognizing this potential, the U.S. Department of the Interior recently released *Guidance for the Establishment, Use, and Op-*

61. See Micheal J. Bean & Lynn E. Dwyer, *Mitigation Banking as an Endangered Species Conservation Tool*, 30 ENVTL. L. REP. 10537, 10546 (July 2000) (describing three approaches taken in HCPs, one of which involves the participation of local governments, which will not be addressed in this paper).

62. *Id.*

63. *Id.* Mitigation efforts made by government agencies on behalf of developers will not be discussed in this paper primarily because the incentives normally present with mitigation projects owned by governments are different than the incentives present when mitigation projects are owned by private third parties. Private third parties have incentive to profit from selling credits. Governments have no such motive because they are not selling any credits.

64. *Id.*

65. *Id.*

66. *Id.*

67. As will be argued *infra*, mitigation banking need not be restricted solely to habitat.

68. *Id.*

eration of Conservation Banks to provide “a collaborative incentive-based approach to endangered species conservation, which if used in coordination with other tools available to the service, can aid in the recovery of species.”⁶⁹ But can conservation banks live up to their potential?

I. THE ADVANTAGES OF CONSERVATION BANKS

A. *Incentives under Conservation Banks*

The most fundamental reason why conservation banks have enormous potential is that their use turns the standard incentive scenario on its head. Initially, the presence of an endangered species represented a tremendous cost because it could halt development entirely. With the addition of section 10, the presence of an endangered species did not halt development but was still a tremendous cost *attendant to* development. With the addition of the No Surprises Rule, the presence of endangered species became a slightly lower cost attendant to development. With conservation banks, however, the presence of an endangered species “provides an opportunity to generate income from what may have previously been considered a liability.”⁷⁰

If one accepts the base assumption that a private landowner or developer is motivated primarily by the desire to make money, the first advantage of a conservation bank-centered approach becomes obvious. Normally, when the landowner is required to create an HCP in order to continue development, the HCP process will be viewed as a means to develop, and thereby make money. A prudent businessperson would seek to minimize the costs of all means of achieving development, including the HCP process. Hence, the developer has incentive to create the most inexpensive HCP possible. Land itself is very expensive, and therefore the developer has incentive to minimize the quantity of land set aside in an HCP. The only limit to how small and inexpensive a developer would want an HCP to be is what the FWS (or other Service) would be willing to approve. The No Surprises Rule also assures that no landowner will be required to allocate more land or spend more money for an HCP in the event of unforeseen circumstances. Landowners therefore have no incentive to include within their HCPs a margin of error beyond the minimum re-

69. Hogan, *supra* note 3.

70. Hogan, *supra* note 3, Guidance at 1.

quired by the FWS. The resulting small patchworks of habitat set aside for endangered species usually will fail to fulfill potential because a single large reserve is generally better, in terms of species recovery, than multiple small reserves.⁷¹

Of course, if the FWS simply required that HCPs be exhaustively comprehensive in order to be approved, this problem might not exist. The purpose of the HCP process, however, is to encourage landowners to participate in species conservation efforts,⁷² and to use some of their own resources in doing so. The No Surprises Rule was used to further foster private landowner participation,⁷³ but if the hurdles that must be surmounted to obtain an ITP are too great, landowners will have little incentive to participate.⁷⁴ Instead, they could turn to the “shoot, shovel, and shut up” approach.⁷⁵ The near total lack of landowner participation in the HCP process prior to the addition of the No Surprises Rule demonstrates this fact clearly.

The use of conservation banks, however, fundamentally changes the character of the foundational premise that landowners seek to make money, and therefore have incentive to save money at the expense of species protection. While the owner of a conservation bank still seeks to make money, the way the owner does so is by *ensuring the endangered species at issue thrives on the property*.⁷⁶ The more effective the species recovery on the property, the more a landowner can charge for the corresponding conservation bank credits. Recall that with HCPs, the incentives driving landowners can be represented as follows:

D is the economic gain to be had through development;

S is the magnitude of the sanction that the landowner faces if caught violating the Act;

P is the probability of getting caught violating the Act;

71. See Jared Diamond, *The Island Dilemma: Lessons of Modern Biogeographic Studies for the Design of Natural Reserves*, 7 *BIOLOGICAL CONSERVATION* 129-146 (1975).

72. FISH AND WILDLIFE SERVICE DIVISION OF ENDANGERED SPECIES & NATIONAL MARINE FISHERIES SERVICE OFFICE OF PROTECTED RESOURCES, *MAKING THE ESA WORK BETTER*, 7 (June 1997).

73. 63 Fed. Reg. 8860 (Feb 23, 1998).

74. James Salzman & J.B. Ruhl, *Apples for Oranges: The Role of Currencies in Environmental Trading Markets*, 31 *ENVTL. L. REP.* 11438, 11448 (Dec. 2001).

75. John Merrifield, *A Market Approach to Conserving Biodiversity*, 16 *ECOLOGICAL ECON.* 217, 217 (1996).

76. Supposing that the value of the credits, as determined by the FWS, takes this into account. This is unfortunately not always the case, since most existing conservation banks now involve the trade of habitat, as discussed *infra*.

A is the affinity for the endangered species;
and C is the cost of creating and maintaining an HCP.

The interplay of these various incentives can be represented by the following equations:

If $D-(S \times P) > (A+D-C)$ then the landowner will “shoot, shovel, and shut-up”;

If $D-(S \times P) < (A+D-C)$ then the landowner will create an HCP.

With conservation banks the equation stays the same except that C is the cost of purchasing conservation banking permits that allow incidental takes.

Hence, if $D-(S \times P) < (A+D-C)$ then the landowner will purchase conservation bank permits.

But here an additional equation comes into play. The landowner must also ask herself if development is really the most profitable option. If the landowner can turn her property into a conservation bank and make more money selling permits, she would be wise to forgo development.

Suppose, in addition to the terms above, that:

\$ is the money to be made converting the property into a conservation bank and selling credits; and

Z is the cost of operating the conservation bank.

If $D-C > A+(\$-Z)$ then the landowner will develop the land.

If $D-C < A+(\$-Z)$ then the landowner will turn the land into a conservation bank.

B. The Significance of the Incentives Presented by Conservation Banks

The different incentives present with conservation banks create interesting results. Unlike HCPs, conservation banks are designed to generate income through the protection of endangered and threatened species and the habitats on which they depend and are not seen as a means to circumvent a strict statutory obligation. Therefore, conservation banks are much more likely to protect endangered and threatened species than are HCPs. Furthermore, because the conservation bank owner stands to gain from endangered species health, he will have incentive to carefully monitor the status of the endangered species on his property, unlike the landowner and FWS in an HCP arrangement that includes No Surprises assurances.

Because conservation bank owners stand to benefit if endangered species on the property thrive, they have incentive to use the

best scientific data available when creating the plan to preserve species. For example, a single large reserve is generally better than several small ones.⁷⁷ This is exactly the basis on which conservation banking was founded. Conservation banks provide for the protection of several continuous tracts of “high-priority habitat,” with the condition that each section of the bank “must be large enough to be ecologically self-sustaining.”⁷⁸ HCPs with *on-site* mitigation, on the other hand, create a patchwork of small, isolated ecosystems. This is an ineffective way to protect species as “[i]solated mitigation projects that have little connection with their surrounding ecosystem often are more prone to failure than a mitigation project that is incorporated into a larger, ecosystem-based conservation bank or regional conservation plan.”⁷⁹ The incentives associated with conservation banking mean that basic ecological principles are more effectively incorporated into the design of conservation banks than they are into the design of HCPs that include on-site mitigation.

The numerous steps involved in designing an HCP that includes on-site mitigation are extremely time-consuming and expensive. On average, this process can cost anywhere from \$50,000 to \$100,000 per year.⁸⁰ Conservation banking, on the other hand, offers a “market-based approach [that] provides greater environmental protection at a lower cost.”⁸¹

The concept of conservation banking is based on the fundamental economic theory that things will be valued if they have value in the market place. HCPs in general do not create any sort of market value for the protection of listed species, as listed species are viewed essentially as a liability rather than an asset. As an example, many landowners used to partake in the “shoot, shovel, and shut up” practice to avoid detection of a listed species on their property and the resulting strict regulation and potential property devaluation.⁸² Conservation

77. Diamond, *supra* note 71, at 129.

78. Hogan, *supra* note 3, at 1; The Resources Agency of California, *Market Created for Habitat Improvements; “Conservation Banks” Integrate Environmental, Economic Goals*, The California Environmental Resources Evaluation System: A Catalogue of Conservation Banks in California, Apr. 7, 1995, at http://ceres.ca.gov/topic/conservation/april_press_release.html.

79. A Report of The California Resources Agency and the Department of Fish and Game, *A Catalogue of Conservation Banks in California: Innovative Tools for Natural Resource Management*, June 1996, at 8.

80. Karin P. Sheldon, *Habitat Conservation Planning: Addressing the Achilles Heel of the Endangered Species Act*, 6 N.Y.U. ENVTL. L.J. 279, 304 (1998).

81. The Resources Agency of California, *supra* note 78 (quoting James M. Strock).

82. Merrifield, *supra* note 75, at 217.

banking credits actually have the opposite effect; they make “protection of habitat an economic asset.”⁸³ The more endangered species present within a conservation bank, and the more the populations of these species thrive in that area, the more valuable the credits offered by that conservation bank will be.⁸⁴ This creates a strong incentive for conservation bank owners to turn their land into endangered species wildlife preserves and do everything within their power to ensure that endangered species thrive.

Conservation banking “allows landowners to recoup a higher value for their land, which would otherwise be constrained due to environmental considerations.”⁸⁵ As of 1996, thirty-nine conservation banks were either established or in the process of being established in the state of California, comprising a total land value of at least \$40 million.⁸⁶

C. *Additional Advantages of Conservation Banks*

Conservation banks provide further advantages over HCPs. As with tradable permits under the Clean Air Act, credits can be purchased by anyone. A non-profit organization wanting to protect a particular species could purchase several credits, resulting in the permanent protection of that species. The HCP process does not allow for this. Individuals who want to protect a listed species can do so only by putting pressure on the developer not to develop his or her land, typically through litigation. The conservation banking process, however, allows for non-developers to take a proactive approach to species protection without creating conflict between economic and environmental interests.

Conservation banks could be incorporated into large mutual fund-like conservation-backed portfolios for investment. These conservation bank “mutual funds,” which incorporate many different parcels possibly owned by many different owners, could hedge risks

83. A Report of the California Resources Agency and the Department of Fish and Game, *A Catalogue of Conservation Banks in California: Innovative Tools for Natural Resource Management*, June 1996, at 9.

84. Supposing that the value of the credits, as determined by the FWS, takes this into account. This is unfortunately not always the case, since most existing conservation banks now involve the trade of habitat, as discussed *infra*.

85. Karin P. Sheldon, *Habitat Conservation Planning: Addressing the Achilles Heel of the Endangered Species Act*, 6 N.Y.U. ENVTL. L.J. 279, 304 (1998).

86. A Report of The California Resources Agency and the Department of Fish and Game, *A Catalogue of Conservation Banks in California: Innovative Tools for Natural Resource Management*, June 1996, at 1.

across these parcels and create a sound investment for individuals who may have no interest in endangered species themselves.

Conservation banks are also compatible with other uses outside of species conservation. For example, the land used for a conservation bank could support recreational opportunities, and Native American reservation land could be used for conservation banks, providing a source of income for Native American residents. Environmental organizations can use donated funds to start conservation banks and then use the money generated from credit sales to fund other conservation efforts. Universities could also participate in conservation banking processes allowing them to test or refine habitat and ecosystem management techniques.

A final economic advantage to conservation banking is that it allows valuable habitat to be protected in perpetuity. When all the credits from a particular bank are sold, that property will be permanently managed as a wildlife reserve.⁸⁷ Most HCPs, however, contain contractual clauses allowing expiration within a specified number of years. Unless additional action is taken, the species protected in an HCP with such a provision will once again be put at risk.

II. POTENTIAL PROBLEMS WITH CONSERVATION BANKS

Despite conservation banks' enormous potential, there are a number of problems that conservation banking schemes must overcome. Many of these problems are unique to the conservation banking framework and, therefore, vary across different conservation bank structures. One major problem, however, is endemic to conservation banks in general: the inevitable tradeoff between currency adequacy and the robustness of the market.

A. Currency

James Salzman and J.B. Ruhl first address the currency used in environmental trading markets.⁸⁸ Some environmental trading schemes have been very successful. The SO₂ permit trading system, for example, has dramatically reduced SO₂ pollution.⁸⁹ The SO₂ per-

87. *Id.* at 8; Hogan, *supra* note 3, at 12.

88. Salzman & Ruhl, *supra* note 74, at 11439.

89. See Dallas Burtraw & Bryan Swift, *A New Standard of Performance: An Analysis of the Clear Air Act's Acid Rain Program*, 26 ELR 10411 (Aug. 1996) (demonstrating that the SO₂ trading program has resulted in over-compliance as evidenced by a SO₂ emissions in 1995 that were 40% less than what was permitted by law and that compliance costs were estimated to be up to 40% lower than what a similar reduction would have cost under a command and control

mit trading system uses a single common currency, however—tons of SO₂ emitted. Because two different tons of SO₂ have the same polluting potential, they are fungible, and can be traded easily with no corrective market mechanisms.⁹⁰

Environmental trading markets for wetland mitigation banks and habitat conservation banks are different. Ideally, one would want a common unit of exchange that captures all externalities involved. For example, when mitigating wetland development by buying credits for wetland restoration elsewhere, we want the trade to capture both the wetland water filtration capabilities and flood control capabilities. If the trading currency captures one capability but not the other, the missing feature is an externality that, having not been captured, leads to an inefficient and inequitable trade.

Salzman and Ruhl point out that most observers view the value of the environment anthropocentrically; that is the value of environmental protection stems from how it affects humans in a positive way.⁹¹ Because this is the case, “the ideal currency would likely be a measure of social value.”⁹² So far, so good, but a problem arises when one attempts to determine what the social value is for any particular environmental good. Of the myriad of environmental problems that society is attempting deal with, cancer risk is one for which we have the most information, yet an accurate quantification of cancer risk has proven illusive due to technological constraints.⁹³ Ecological risk is even more difficult to quantify.⁹⁴ So instead we use proxy measures to approximate the social value of preventing environmental harm.⁹⁵ The currency used in environmental trading markets is accurate only insofar as it serves as an effective proxy for the environmental values the market is trying to provide.⁹⁶

regime); see also Richard Schmalensee et al., *An Interim Evaluation of Sulfur Dioxide Emissions Trading*, 12 J. ECON. PERSP. 53, 64 (1998) (estimating that savings under the SO₂ permitting program totaled between \$225 and \$375 million annually).

90. Salzman & Ruhl, *supra* note 74, at 11439. Of course, tons of SO₂ emitted are only perfectly fungible to the extent that their reallocation does not create “hot spots” in which certain communities are subject to increasing SO₂ levels despite the overall decrease. Jonathan Remy Nash & Richard L. Revesz, *Markets and Geography: Designing Marketable Permit Schemes to Control Local and Regional Pollutants*, 28 ECOLOGY L.Q. 569-661 (2001).

91. *Id.* at 11443.

92. *Id.*

93. ENVTL. PROTECTION AGENCY, UNFINISHED BUSINESS, 98-99 (1987).

94. *Id.*

95. Salzman & Ruhl, *supra* note 74, at 11443-44.

96. *Id.* at 11443-44.

To assign units based on social value we must first have an idea of *what* social value endangered species protection provides. While it is easy to conceptualize the value of reducing particulate matter in terms of reductions in asthma, and it is even possible to conceptualize the value of wetlands for water filtration and flood control, it is much harder to understand the value of endangered species habitat because the loss of endangered species habitat may have little or no bearing on human health. One might reasonably presume this is even truer of endangered species themselves, rather than just their habitat, because habitat can at least provide ecosystem services such as water filtration or flood control. Certainly there are benefits to biodiversity preservation:

The costs and benefits [of biodiversity] include the following: the benefits of pharmaceutical and agricultural products derived from naturally occurring genetic resources; the aesthetic benefits; the “option value” in preserving stocks of biological resources for yet-undreamed-of future uses; the “existence value”; and the insurance value of diverse and healthy ecosystems as a prophylactic against, and reserve resource pool in the event of, catastrophic disturbances or “crashes” that could make human life immeasurably more difficult.⁹⁷

Unfortunately, all of these benefits are either speculative or extremely difficult to measure, which makes quantifying the value of biodiversity, and the ESA, virtually impossible. To make an environmental trading market for endangered species protection work, therefore, we must rely on proxies, most of which fail to capture externalities that nonetheless have social value.⁹⁸ For example, trading development of endangered species habitat for preservation of habitat elsewhere can fail to capture the value that the developed habitat had as part of a contiguous habitat system for the species, as part of a system in which other species interacted to the benefit of the endangered species, and as habitat that has reached a level of vegetative maturity suitable for the species.⁹⁹ We need a quantifiable proxy for social value that captures externalities. This has proved illusive, and instead we have simply arbitrarily concluded that protecting endangered species has social value (without determining how much social value), and the more the better. In so doing the equivalency of trades can be established by equating the amount of endangered species protection gained at the conservation bank and that lost at the develop-

97. Bradley C. Karkkainen, *Biodiversity and Land*, 83 CNLLR 1, 74 (1997).

98. Salzman & Ruhl, *supra* note 74, at 11448-49.

99. *Id.* at 11444 (chart 1).

ment site. How well the currency we choose serves as a proxy for the socially valuable endangered species protection depends on the fungibility of the units being traded.¹⁰⁰

There are many nonfungibilities¹⁰¹ in environmental trading markets, particularly in the case of wetland mitigation banks and habitat conservation banks, which makes the task of identifying an adequate currency for habitat conservation banking more difficult. Salzman and Ruhl identify three different types of nonfungibles that can arise: nonfungibles of space, of type, and of time.¹⁰² Nonfungibilities of space involve the geographical anomalies of a trade that make the trade inequitable. Salzman and Ruhl give the example of wetland ecosystem functions.¹⁰³ When a wetland developer buys credits at a wetland mitigation bank off-site, the newly created (or restored, or preserved) wetland will likely be in a geographical location where land is cheaper than the location that the developer seeks to develop (if this were not the case, it would not be economically advantageous to engage in the trade). The cheaper land is often in rural areas. This means that the ecosystem functions provided by wetlands, such as water filtration and flood control, have been moved from an area where they serve a large populace to an area where they serve a small one.¹⁰⁴ The trade of the urban wetland for the rural wetland proves to be inequitable, and hence the currency nonfungible.

Although Salzman and Ruhl argue the same is true for habitat conservation banks because, for example, “lost habitat may have been part of a contiguous habitat system for the species, whereas the preserved habitat may be isolated and thus of less overall value,”¹⁰⁵ there are no spatial nonfungibilities with endangered species. A comparison with the wetland mitigation bank trade above will make this clear. With wetland mitigation banking, the wetland preserved in the mitigation bank still provided the full range of ecosystem services, but the location of those ecosystem services has changed such that different (and often fewer) people can take advantage of them. This sort of nonfungibility of space does not occur with endangered species:

100. *Id.* at 11444-46.

101. The fungibility of any particular currency is usually a matter of degree, rather than simply being fungible or nonfungible. For simplicity's sake, however, this paper will treat fungibility as binary.

102. *Id.* at 11444.

103. *Id.* at 11444, chart 1.

104. *Id.*

105. *Id.*

[I]f the ESA's goal is to improve the survival prospects of a species sufficiently that it can be considered recovered, that goal is to some degree independent of where a species is found today. Although endangered species offer significant local benefits, the ESA is not principally concerned with those local benefits. Rather, its overriding concern is that a species be sufficiently secure in enough places that it is not likely to become endangered again in the foreseeable future. To meet this goal, it may be enough to ensure that species' survival in some, but not all, the localities where it now occurs.¹⁰⁶

The example of spatial nonfungibility that Salzman and Ruhl give for habitat conservation banks is actually far more analogous to the example they give in the wetland mitigation banking context for a nonfungibility of type. Nonfungibilities of type involve trades between two different items that, because of their different characteristics are not equitable. Salzman and Ruhl give the following example in the wetlands mitigation context: “[t]he destroyed wetlands may have had a higher capacity or service provision compared to the restored wetlands.”¹⁰⁷ When one wetland area is traded for another that does not provide the same quantity or quality of ecosystem service, there is a nonfungibility of type. This is why the example for habitat conservation banks that Salzman and Ruhl give as a nonfungibility of space is actually one of type: that meaning, if a parcel of habitat is part of a contiguous tract of habitat for a species, it may be better for species recovery than what it will be traded. Nonfungibilities of type are an important problem that habitat conservation banking programs must resolve.

The third nonfungibility is that of time. Wetlands mitigation permits often allow wetlands to be developed before the wetlands in the mitigation bank are fully capable of producing the same ecosystem functions that are lost in development.¹⁰⁸ The trade might be equitable in the future but not now. The same problem can occur with habitat conservation banks. “The lost habitat may have been of ideal vegetative maturity for the species, while the preserved habitat may require time to achieve that state.”¹⁰⁹ The currency for habitat conservation banks must be chosen with care to avoid such nonfungibilities of time.

106. Bean & Dwyer, *supra* note 61, at 10547.

107. Salzman & Ruhl, *supra* note 74, at 11444, chart 1.

108. *Id.*

109. *Id.*

1. Designing a Currency for Habitat Conservation Banks

Salzman and Ruhl classify currencies into three types. There are simple currencies, such as acres for wetland mitigation,¹¹⁰ universal currencies, such as money or risk,¹¹¹ and comprehensive currencies, which are designed to capture all attributes relevant to the trade but not necessarily reduce those attributes to a single metric.¹¹² For example, the Army Corps of Engineers would be using a comprehensive currency if, when approving a wetland mitigation bank trade, they examined water filtration, flood control characteristics, and all other relevant attributes of the two wetland parcels being traded in order to ensure that the trade was equitable.

Traditionally, simple currencies have been used not only in wetlands mitigation banking but also in habitat conservation banking.¹¹³ Simple currencies have the major advantage of keeping trades simple, reducing transaction costs, and ensuring that all parties understand the transaction that is taking place.¹¹⁴ If satisfied with the results of using the simple currency, the government can simply “stand back and act as referee,” which saves the resource expenditure of taking a more hands-on approach.¹¹⁵ As a result, simple currencies function well in environmental trading markets and therefore keep the market robust.¹¹⁶ This robustness comes at a cost, however. It “gives those who design markets an incentive to oversimplify environmental problems to make their market mechanisms more workable”¹¹⁷ thereby failing to capture all relevant externalities, and therefore fail to ensure equitable trades.¹¹⁸

Universal currencies reduce all attributes of the items being traded to a common metric, such as money or risk. Unlike simple currencies, however, universal currencies capture all externalities, and convert them to the money or risk metric.¹¹⁹ This currency has the

110. *Id.* at 11446.

111. *Id.* at 11446-48.

112. *Id.* at 11448-49. For a discussion of a proposed comprehensive currency in the habitat trading context see Jonathan R. Nash, *supra* note 34.

113. *Id.* at 11461-62.

114. *Id.* at 11446.

115. *Id.* at 11463.

116. William F. Pedersen, Jr., *The Limits of Market-Based Approaches to Environmental Protection*, 24 ELR 10173, 10175 (Apr. 1994).

117. *Id.*

118. See Salzman & Ruhl, *supra* note 74, at 11446 (discussing the inadequacy of the simple currency of tons which is used for the Volatile Organic Compound (VOC) trading market).

119. *Id.* at 11446-11447.

greatest potential because it allows the ease of using a simple currency, but captures all relevant attributes of a given trade, and in theory, allows trades of “different, perhaps incommensurable, commodities.”¹²⁰ Unfortunately, although a universal currency such as risk is possible in theory,¹²¹ our current ability to undertake risk analysis is not advanced enough to enable the use of risk (or money calculated as based on that risk) as a currency for markets trading in habitat conservation.¹²²

That leaves the use of a comprehensive currency. In theory, all externalities could be captured if the currency were designed to do so.¹²³ For example, if the FWS thoroughly examined all aspects of the habitat being traded and all ways in which a species could be affected by a trade, and then ensured through this analysis that the trade proposed was equitable, externalities would not be lost. The Conservation Banking Guidance suggests the use of such a comprehensive currency:

Credit values are based on a number of biological criteria and may vary by habitat types or management activities. When determining credit values, some of the biological criteria that may be considered include habitat quality, habitat quantity, species covered, conservation benefits, including contribution to regional conservation efforts, property location and configuration, and available or prospective resource values.¹²⁴

There is an extremely high information cost in designing such comprehensive currencies.¹²⁵ Aside from the mere cost of gathering and analyzing all the data necessary to fully evaluate the quality of habitat for an endangered species, our understanding of natural systems is so limited that major uncertainty cannot be avoided.¹²⁶ This uncertainty means that it is likely impossible, with current knowledge, to determine if a trade is equitable, even with unlimited resources.

120. *Id.* at 11447.

121. See JOHN D. GRAHAM & JONATHAN B. WEINER, CONFRONTING RISK TRADE OFFS, RISK VS. RISK: TRADE OFFS IN PROTECTING HEALTH AND THE ENVIRONMENT 30 (John D. Graham & Jonathan B. Wiener, eds., 1995) (discussing how with improved methods of risk analysis understanding risk tradeoffs between seemingly dissimilar risks may become easier in the future).

122. See Salzman & Ruhl, *supra* note 74, at 11447-48 (describing reasons why risk cannot be used satisfactorily as a currency in many environmental trading markets).

123. *Id.* at 11446-47.

124. Hogan, *supra* note 3, at 9.

125. Tom Tietenberg, *What Have We Learned?*, 5 ENVTL. & RES. ECON. 95 (1995).

126. Norm L. Christensen, et al., *The Scientific Basis for Ecosystem Management*, 6 ECOLOGICAL APPLICATIONS 665, 673 (1996).

Furthermore, increased information costs also raise transaction costs, which will reduce and potentially eliminate participation in any trading program.¹²⁷ As Salzman and Ruhl state, “[t]he government has an incentive not to make the currency too expensive to mint, or no one will use it and the trading program will expire of its own accord.”¹²⁸

B. Market Structure

If the ideal currency, one that captures all externalities and avoids nonfungibilities, cannot be found, the typical solution has been to structure the market to restrict trades to those that are equitable.¹²⁹ Nonfungibilities of space can be reduced by restricting the areas of exchange.¹³⁰ Nonfungibilities of type can be reduced by restricting exchanges to precisely the same commodity.¹³¹ Nonfungibilities of time can be reduced by restricting trades to narrow time periods.¹³² For example, the Department of the Interior’s Conservation Banking Guidance deals with nonfungibilities of type by restricting conservation banking credit sales to particular service areas.¹³³ Designing the structure of the market to artificially restrict transactions has undesirable consequences, however. First, restrictions may lead to undesired results when the artificially structured market interacts with outside markets.¹³⁴ Most important, if the market is constructed to impose significant restrictions, the market may become too thin to accommodate the trading volume and participants necessary to make the market viable.¹³⁵ The Guidance recognizes this, stating that “[t]he Service Area is an important component for the bank owner who will need to evaluate the marketability of their banks, that meaning the potential demand for their conservation credits.”¹³⁶ Unfortunately, the Guidance does not offer a solution.

127. Salzman & Ruhl, *supra* note 74, at 11448.

128. *Id.* at 11461.

129. *Id.* at 11449.

130. *Id.*

131. *Id.* at 11451.

132. *Id.*

133. Hogan, *supra* note 3, at 8-9. Note that, despite making use of geographical boundaries, with endangered species there are no nonfungibilities of space, as discussed *supra*. Hence the geographical restrictions prevent nonfungibilities of this type.

134. See Salzman & Ruhl, *supra* note 74, at 11451 (describing how the trading market may be structured to seek a particular conservation ratio between two types of habitat, but how real estate prices may dictate a different ratio, even under the rules imposed by the habitat trading market structure).

135. *Id.* at 11453.

136. Hogan, *supra* note 3, at 9.

This leads to a fundamental dilemma that must be overcome for all environmental trading markets to work, including those for habitat conservation banking. A robust market with a large trading volume would require little or no market restriction and a simple currency to allow for low transaction costs.¹³⁷ Simple currencies coupled with little market restriction, however, fail to capture all externalities and fail to avoid nonfungibilities.¹³⁸

This dilemma, for the time being, seems insurmountable in the context of habitat conservation banks. Due to the myriad of variables playing roles in habitat function, many of which we barely understand, the creation of an adequate currency has proved elusive. Further constraint of the market will only make it thinner—and perhaps nonexistent.¹³⁹ This potential for thinning of the market has serious consequences for endangered species conservation because once landowners stop participating, a net decrease in funds available for conservation will result and incentive will increase to employ the “shoot, shovel, and shut-up” method of avoiding liability.¹⁴⁰ Although a simple currency such as acres can be used in habitat conservation banking,¹⁴¹ it may be at the expense of species recovery. The potential of conservation banking would therefore go unrealized.

III. IN SEARCH OF A SOLUTION

A. *Why Habitat Conservation Banking?*

The astute reader may have at this point noticed something strange about the features of conservation banking in the context of endangered species protection. It appears that most conservation banks have been *habitat* conservation banks. Given that the ESA is primarily concerned with endangered species, and not habitat, this seems odd. Incidental Take Permits are not issued for destruction of species habitat, at least not directly.¹⁴² Rather, they allow an incidental take of members of an endangered species.¹⁴³ If a landowner seeks to develop habitat that is suitable for the northern spotted owl, for example, she may do so without obtaining an ITP if owls are not actu-

137. Salzman & Ruhl, *supra* note 74, at 11453.

138. *Id.*

139. *Id.* at 11448.

140. Merrifield, *supra* note 75, at 217.

141. Salzman & Ruhl, *supra* note 74, at 11461.

142. 16 U.S.C. § 1539(a)(1)(B) (2000).

143. *Id.*

ally residing on her property. It is only when a spotted owl is actually living on her property that an ITP is necessary to carry out development that may result in an “incidental take.”

This being the case, in a *habitat* conservation banking market sometimes individual members of an endangered species are traded for parcels of that species’ habitat. Since members of an endangered species and habitat suitable for that species are clearly not the same thing, and protection of one does not lead to the same level of recovery for the species as protection of the other, trades between them will inevitably be inequitable.

Why has habitat been used as a proxy for endangered species protection in the conservation banking market? The answer is probably because it can provide a very simple currency that allows the market to function if, as has been the case, the simplified currency exists in units such as acres. Certainly, there are legitimate advantages to using a habitat-based approach, even from an endangered species protection perspective. Since habitat is not protected under the ESA if it is not occupied by an endangered species, habitat conservation banks preserve resources that would not otherwise be protected.¹⁴⁴ This additional habitat might allow an endangered species to extend its range and recover in the future.¹⁴⁵ Furthermore, protection of animal habitat will also protect endangered plants that might share that habitat, which is advantageous since the ESA contains no prohibition on taking endangered plants.¹⁴⁶ These speculative advantages, however, hardly make up for the actual unmitigated loss of members of an endangered species.

B. *Finding a Currency that Serves as a Better Proxy for the Values Contained in the ESA*

Acreage proxies for the value of wetlands in wetland mitigation banks are inadequate because they fail to capture all of the ecosystem services that wetlands provide, particularly considering that these services may differ among different wetlands with the same acreage. Likewise, an acreage proxy for conservation banking need not, and should not, be used. While an acreage proxy is cheap, quick, and easy, it is not an accurate proxy for the values contained in the ESA. In fact, focusing on habitat at all fails to capture the values contained in

144. Bean & Dwyer, *supra* note 61, at 10547.

145. *Id.*

146. *Id.*

the ESA. Salzman and Ruhl state that “[i]f the currency does not accurately capture the value sought to be measured, e.g., the habitat service, the flood control service, the water filtration service, we have less reason to be confident in the equivalency of trades.”¹⁴⁷ The ESA, despite mention of ecosystem protection in its purpose, has not been interpreted to cover flood control or water filtration, except as they play an instrumental role in species survival. Rather, the ESA focuses solely on threatened and endangered species. As such, the only significant value under the ESA is endangered species health.¹⁴⁸ Unlike wetlands, which are valuable for many ecosystem functions that they provide, endangered species habitat is viewed under the ESA as valuable for one instrumental reason—to ensure the survival and recovery of threatened or endangered species.

That being the case, whatever currency is chosen as a proxy measure of value for conservation banking under the ESA must accurately represent the value of ensuring the survival and recovery of threatened or endangered species.¹⁴⁹ Since the value of importance for the ESA is species health, the ideal currency for conservation banking would be a metric of species health or, more accurately, the survival probability of the species for some given period of time.¹⁵⁰ If all the attributes of the health of the population of endangered species could be captured in one metric, and then compared to the health of a population of that same endangered species in a conservation bank, and equated, the trades would be fungible.

Unfortunately, using species survival probability is only possible in theory because “as a practical matter, our ability to quantify precisely current survival probabilities and the impacts of helpful or harmful actions is rudimentary to nonexistent.”¹⁵¹ The question then becomes whether another currency might be found that captures the value of the ESA in a workable, rather than theoretical, fashion.

1. A Potential Viable Currency

One unit of currency that might serve as an accurate proxy of the value of the ESA is actual members of a particular endangered spe-

147. Salzman & Ruhl, *supra* note 74, at 11438.

148. 16 U.S.C.A. § 1531(b) (2000). The ESA also values the ecosystems on which endangered species depend, presumably instrumentally.

149. Bean & Dwyer, *supra* note 61, at 10540. As discussed *supra*, it is difficult to accurately pinpoint what social value the ESA provides, so we use endangered species survival and recovery as a proxy. The currency chosen would therefore be a proxy of a proxy.

150. *Id.* at 10548.

151. *Id.*

cies. For example, if a development project were estimated to kill fifteen members of an endangered species, then an Incidental Take Permit could be issued to allow the incidental take of up to fifteen members of that species. In return, the land developer would be required to purchase credits in a conservation bank sufficient to contractually obligate the conservation bank owner to protect the health of fifteen members of the same endangered species on conservation bank land.¹⁵² The DOI's Conservation Banking Guidance hints at the possibility of using such a currency:

In theory, population viability analyses could be used to quantify the degree of impact on survival prospects. In practice, however, the information needed for rigorous population viability analyses is often unavailable. As a result, the units of currency may take the form of surrogates for the extent of impact on population viability, such as occupied acres or *nesting pairs beneficially or detrimentally affected*.¹⁵³

This currency has several unique advantages. First, it is fungible across space, type, and time. As mentioned above, the value of endangered species preservation does not depend on where that preservation occurs, so there is fungibility of space. If the market is designed to allow trades involving only the same species, there will be fungibility of type—obviously all members of the same species are of the same type. Fungibilities of time also exist because members of the species will be preserved at the same time that other members of that species are incidentally taken. If there were any inequality of trade under this scheme, it would be biased in favor of species recovery, as conservation bank owners would be obligated to manage for species' health while the developer would not.¹⁵⁴

Conservation bank owners would be obligated to manage for species health so that the permits they wished to sell would be recognized by the supervisory agency, and would be further obligated as part of the contract associated with the sale of the permit. The con-

152. In the alternative, the conservation bank owner would be responsible for *increasing* the size of the population of the endangered species living on his land by the amount that the population at the development site is reduced. The reader may fear that using such a currency will reduce conservation banks to zoos that, perhaps using methods such as cloning in a laboratory, artificially increase the number of endangered species. The ESA already prevents this. 16 U.S.C. § 1539(a)(2)(B)(iv) establishes as a condition for a permit that “the taking will not appreciably reduce the likelihood of the survival and recovery of the species in the *wild*.” (emphasis added).

153. Hogan, *supra* note 3, at 10.

154. The developer would not manage for species recovery if she did no development. If the landowner engaged in on site mitigation, she might have to manage for species recovery, though she would not be held accountable for ensuring that species recovery occurs.

conservation banking scheme could be constructed such that conservation bank owners would be required (1) to allow independent inspections of their land and management policies, and (2) to pay for *any* changes in management necessary to improve the health of the species population residing within the conservation bank boundaries. Due to the uncertainty inherent in species management, conservation bank owners would naturally be apprehensive about being responsible for necessary changes, just as landowners were prior to the No Surprises Rule. A viable way to alleviate this fear, however, might be to spread the risk through an insurance program that would pay for any unforeseeable changes.¹⁵⁵ Conservation bank owners could pay premiums to purchase such insurance, as in a more typical insurance plan, and the entire program could be subsidized in a manner similar to the federal crop insurance program.

Furthermore, this currency is very easy to understand and use. The number of individuals in a species involves only one variable, and is easy to equate. It is a simple currency that ensures fungibility. Just as two tons of SO₂ in one location can be traded for two tons of SO₂ in another,¹⁵⁶ the preservation of six members of a species in one location can be traded for a take of six members in another. While the tasks of estimating the number of members of a species that will be incidentally taken in the course of a development project and counting the number of a species present in a conservation bank is often not an easy process, it is one that now occurs in the HCP context.¹⁵⁷ Furthermore, it is far simpler than assessing all the factors necessary to create a comprehensive currency that would capture all externalities in a trade of habitat. The currency is so simple, in fact, that the government can simply “stand back and act as referee” and save the resource expenditure of taking a more hands-on approach.¹⁵⁸

Although taking fifteen members of a species at a development site in exchange for preserving the health of fifteen members of that same species in a conservation bank would lead initially to a net decrease in the number of that species (because the fifteen at the con-

155. Such an insurance program has already been proposed to replace the No Surprises Rule. *See, e.g.*, Meryl Eschen, A Market Based Alternative to Current Policy Under the Endangered Species Act: A No Surprises Insurance Program (2004) (unpublished masters project on file with the author) (describing the basis for a No Surprises Insurance program).

156. Supposing that the trade will not create a spacial nonfungibility through the creation of hot spots.

157. USFWS & NMFS, HABITAT CONSERVATION PLANNING HANDBOOK, November 1996, p. 3-10, and 3-14 through 3-15.

158. Salzman & Ruhl, *supra* note 74, at 11463.

ervation bank would presumably be protected by the ESA anyway), species survivability would still increase because decreasing the number of individual animals will not necessarily decrease the chances of survival for the species as a whole.¹⁵⁹ For example, “if none of the habitat of a declining species were initially under the sort of ownership that ensured the active management needed to perpetuate it,” that species might die out, but it might have a better chance at recovery if its population was actively managed by a conservation bank.¹⁶⁰

Seldom will the needs of a threatened or endangered species be met on a completely unmanaged piece of property. More commonly, an active management program—to control invasive exotic species, replicate natural disturbance regimes; prevent an area’s use by off-road vehicles, illegal garbage dumpers or others; and address myriad other threats—is essential to ensure that the potential conservation value of a particular property is realized and maintained.¹⁶¹

Once the credits are purchased at the conservation bank, those members of the endangered species are guaranteed protection in a habitat that is actively managed for their health.

Of course, if maintaining a “no net loss” of endangered species members is a concern, the currency can easily be altered to accommodate that principle. In this case, in exchange for an ITP allowing the incidental take of fifteen members of an endangered species, the developer would purchase credits sufficient to ensure the preservation of health of fifteen *more* members of that same species.

a. This Currency Thins the Market

Unfortunately, this type of currency is subject to significant market constraints. To maintain equitability of transactions, trades must involve only members of the same species. If endangered species X and endangered species Y were traded, the currency would fail to capture all relevant externalities and fail to serve as an accurate proxy for the social value offered in the ESA. If this currency were used, an ITP could only be obtained to allow development in an area in which an endangered species resides if in exchange for the ITP the landowner preserves the health of the same number of members of that very same species in another location (such as in a conservation bank). If no other locations are known to support populations of the

159. Bean & Dwyer, *supra* note 61, at 10540.

160. *Id.*

161. Hogan, *supra* note 3, at 6.

endangered species for which the landowner wishes to get an ITP, then the landowner is simply out of luck and cannot develop.¹⁶²

One might suggest that although the landowner will not be able to develop, he will at least have a resource which he can turn into a valuable conservation bank. This outcome presumes that demand will exist for the credits the potential conservation bank would sell. It is possible that no other developers need ITPs for that same species, a scenario that would make the conservation bank worthless. In the face of such uncertainty, landowners are not likely to be assuaged by the possibility of using their land for a conservation bank if development is prohibited. Because there is no certainty that sufficient demand will exist, it is equally unlikely that a supply will develop. Conservation bank transactions will occur only when a developer needs to incidentally take members of a species that are coincidentally being preserved on a conservation bank with credits to sell. As a result there will be a very thin, if not non-existent, market. To work, a conservation bank trading scheme will require an increase in both supply and demand.

b. Thickening the Market

A solution exists for enlarging the conservation bank market, even if trades are allowed only between members of the same endangered species affected: obtain information about the location and health of all threatened and endangered species before development begins, no matter the location. The ESA could be amended to include a provision whereby all landowners must obtain a federal development permit in order to develop their land whether they expect the presence of a listed species or not. In order to get the federal development permit, the landowner would be required to hire a certified environmental consulting firm¹⁶³ to survey the land for threatened and endangered species. Because as much as 90 percent of all endangered

162. It would be possible for a landowner to establish habitat for an endangered species, transplant members of that species (which itself would require a permit from the FWS), and manage the habitat until the species population were viable on the land, and then sell conservation bank credits. The time and resource investment necessary before any return can be seen would likely prove prohibitive for many landowners, however.

163. The environmental consulting firms doing such surveys could be subject to a certification and auditing program to help prevent the potential for corruption, which is high given that the landowners are paying for the survey, and would prefer that they survey report no listed species on their property.

species in this country are located on private land,¹⁶⁴ surveying all land prior to development could lead to the discovery of *many* previously unknown populations of endangered species.

When new populations of endangered species are found on private land, both supply and demand for conservation bank credits will increase. As developers discover endangered species on their land and the federal government is informed of the discovery, the developer will have a choice: buy credits from a conservation bank in exchange for an ITP or use the land to create a conservation bank.¹⁶⁵ If the developers choose to buy credits from a conservation bank, demand for those credits increases. If the developers see that other developers are demanding credits, some will also elect to use their land as a conservation bank, leading to an increase in supply. The market is now thickened, and hopefully will be able to operate despite the market constraints imposed.

This solution provides major additional advantages. First, requiring that *all* landowners have their land surveyed before development would nearly eradicate the “shoot, shovel, and shut-up” practice. The required survey, undertaken by an independent, certified, environmental consulting firm, would likely find evidence of such landowner tactics, after which landowners could be made to face civil or criminal sanctions. There is much less incentive to engage in such a practice when there is such a low likelihood of escaping the liability resulting from it.

Second, and perhaps more important, surveys could be expanded in scope to include useful information about the land being surveyed beyond just the presence and number of endangered species. Perhaps the largest obstacle to protecting the biodiversity of species is lack of information about where they are, how their populations interact with each other, how their populations interact with the environment in which they live, and how humans impact their survival. In fact “. . . gaps in information threaten to overwhelm policies designed to address ecological concerns and reduce the prospects for reconciling conservation needs with development pressures.”¹⁶⁶ Hence the current

164. Gardner M. Brown Jr. & Jason F. Shogren, *Economics of the Endangered Species Act*, 12 J. ECON. PERSP. 3 (1998), available at links.jstor.org/sici?sici=0895-3309%28199822%2912%3A3%3C3%3AEOTESA%E2.0.CO%3B2-Z.

165. Or, more likely, the landowner can sell the land, at a profit, to another organization who will manage the property as a conservation bank. It is also worth noting that the landowner has a third option, at least under the current ESA—create an on site HCP in exchange for the ITP. As discussed *supra*, due to the disadvantages of HCPs, this should be discouraged.

166. MARY GRAHAM, THE MORNING AFTER EARTH DAY 113 (1999).

policies, even if effective in theory, are unlikely to reach their full potential due simply to lack of information. The first broad study of HCPs found that critical information about changes in populations and their habitats was lacking for most species.¹⁶⁷ Mary Graham pointed out that “a National Research Council study in 1993 found that little biological information was used in government conservation decisions because the available information was not usually the sort that was helpful in decisions and because results were poorly communicated.”¹⁶⁸

If any future improvements to the ESA are to live up to potential, therefore, information about species and ecosystems is critical. The federal government lacks the resources to carry out such a comprehensive survey itself. Requiring landowners to have their own land surveyed as a condition of development would avoid this problem.

Additional information about privately owned land in the United States would also be useful in designing a comprehensive currency for conservation banking that would allow some of the market constraints necessary for the implementation of the scheme to be lifted. Furthermore, the information need not be limited in scope to that which is relevant for endangered species protection. It may also include information about ecological services, for example. The survey could ascertain the qualities of the land with respect to watershed characteristics, flood control, and water filtration. When combined with information about surrounding parcels of land, this information would aid in creating a comprehensive currency to reduce the problems associated with wetlands mitigation banking.

The information obtained from these surveys could be collected in a national information database.¹⁶⁹ This database would provide critical information for land developers and governments trying to understand the environmental impacts of their projects. At the beginning of the Clinton administration, there was an effort made to create such a database—the National Biological Service in the Department of the Interior. The intent of this service was to survey and build a database to build national knowledge about plants and animals and the ecosystems on which they depend.¹⁷⁰ Intense lobbying by property rights advocates resulted in the FWS losing most of its funding for the

167. Charles Mann and Mark Plummer, *Qualified Thumbs Up for Habitat Plan Science: Assessment of Habitat Conservation Plans*, SCIENCE, Dec. 19, 1997, at 2052.

168. MARY GRAHAM, THE MORNING AFTER EARTH DAY 114 (1999).

169. E.O. WILSON, THE DIVERSITY OF LIFE 312 (1992).

170. 58 Fed. Reg. 63,387 (1993).

project which was ultimately placed under the auspices of the U.S. Geological Survey, rendering it impotent.¹⁷¹ “As a result of such political decisions, the United States still had neither a national organizational home for ecological research nor a framework for making important information widely available.”¹⁷² The information obtained through the surveys proposed could be used to resurrect the National Biological Service, and allow it to reach its full potential.

2. Problems with this Solution

Of course, this solution is not without problems. First, one may argue that the federal government lacks the authority to require all landowners to pay to have a survey of their land conducted before undertaking development. After all, the Supreme Court held that land use regulation is a “quintessential state activity.”¹⁷³

This is not the case when land-use regulations affect endangered species. The only two cases to deal directly with the ESA’s ability to withstand a Commerce Clause challenge have both held the ESA valid.¹⁷⁴ The Court in *Gibbs v. Babbitt* said that “given the history of federal regulation over wildlife and related environmental concerns, it is hard to imagine how this anti-taking regulation trespasses impermissibly upon traditional state functions—either control over wildlife or local land use.”¹⁷⁵ The case law, therefore, suggests that land use affecting endangered species is a federal, and not a state, activity. This may be because such land use regulations “would call into question the historic power of the federal government to preserve scarce resources in one locality for the future benefit of all Americans.”¹⁷⁶

Even if this solution for market thinning were to fall to a Commerce Clause challenge, it could be implemented through federal spending power pursuant to Article I, Section 8 of the U.S. Constitu-

171. WILSON, *supra* note 169. The impotent orphan of this National Biological Service proposal is the National Biological Information Infrastructure (NBII), under the U.S. Geological Survey, which is meant to organize the meager biological information available into a centralized database. See National Biological Information Infrastructure, at www.nbi.gov (last visited May 19, 2004).

172. WILSON, *supra* note 169, at 114-15.

173. Fed. Energy Reg. Comm’n v. Mississippi, 456 U.S. 742, 768 n.30 (1982).

174. National Ass’n of Home Builders, 130 F.3d 1041 (D.C. Cir. 1997); *Gibbs v. Babbitt*, 214 F.3d 483, 492 (4th Cir. 2000) (holding that the taking of the red wolf is closely related to several interstate markets, and hence the application of the ESA withstands a Commerce Clause challenge).

175. *Gibbs*, 214 F.3d at 500.

176. *Id.* at 492.

tion. The federal government could award planning grants to the states for implementing this proposal, and withhold other funds available for infrastructure improvements if the states did not.

From 1970 to 1974, Senator Henry M. Jackson proposed a series of national land use bills, and in the same vein the Nixon Administration proposed the National Land Use Policy Act.¹⁷⁷ This legislation was approved by a great majority in the Senate, but the House of Representatives did not approve it.¹⁷⁸ One might think that because land use planning is a “quintessential state function” it seems clear that the national land-use legislation proposed by Senator Jackson would be doomed to fall to a Commerce Clause challenge. Instead, “[a]lthough recent United States Supreme Court decisions have chipped away at an automatic presumption of sweeping national authority, it is unlikely that national land-use planning as such would fall on the unconstitutional side of the line.”¹⁷⁹ The reason for this is that the national land-use legislation sought to require states to assume the responsibility for land use planning, particularly with regard to environmentally sensitive areas, but wanted the federal government to guide the structure of such programs.¹⁸⁰ In order to get the states’ compliance “[t]he federal government would have awarded planning grants and, under some later versions, imposed stiff sanctions for non-compliance, including cutoffs for federal highway and airport funds.”¹⁸¹ In the end, Congress rejected this legislation largely because it considered land-use planning to be a state and local rather than a national interest, “whether or not the contemplated federal role was constitutionally permissible.”¹⁸² Federal action of the sort proposed here may prove unpopular, but it is not unconstitutional.

The damning problem facing this solution to market thinning is precisely its unpopularity. In the end, it would likely prove politically unworkable. “It is long known that endangered species . . . have long served as political lightning rods for property rights groups.”¹⁸³ The National Biological Service required no action on the part of private

177. Jayne E. Daly, *A Glimpse of the Past—A Vision for the Future: Senator Henry M. Jackson and National Land Use Legislation*, 28 URB. L. 7 (1996).

178. *Id.* at 8.

179. Jerold S. Kayden, *National Land-Use Planning in America: Something Whose Time Has Never Come*, 3 WASH. U.J.L. & POL’Y 445, 45 (2000).

180. Bradley C. Karkkainen, *Biodiversity and Land*, 83 CORNELL L. R. 1, 73 (1997).

181. *Id.*

182. *Id.*

183. Salzman & Ruhl, *supra* note 74, at 11467.

landowners, but it was controversial from the start.¹⁸⁴ Congress voted to remove it from the auspices of the Department of Interior in 1996¹⁸⁵ after cutting its staff and budget the year before.

The proposal outlined here, however, would require private landowners to pay to have their land surveyed, which not only would restrict their ability to develop if endangered species were found, but would involve surveyors looking for evidence that the landowner broke the law by engaging in “shoot, shovel, and shut-up” activities. Because the landowners would have to pay for these services, the cost of development would surely increase. Privacy questions also exist because this proposal requires that past actions by the landowners on their own land be examined before new development can begin. This would likely offend private property advocates even more than the National Biological Service. Considering that the Bush Administration is currently looking to change key provisions of the ESA,¹⁸⁶ and that Congress may soon seek to dull the Act’s teeth through amendments, the prospect of the proposal outlined here becoming a reality is virtually non-existent.

CONCLUSION

Although the amendments to the ESA contained in section 10 were, with the addition of the No Surprises Rule, successful in encouraging landowner participation in endangered species conservation efforts, they may have done so at the expense of endangered species health and recovery. This inadequacy, coupled with the fact that the status of the No Surprises Rule is in serious jeopardy, suggests that a new approach is needed to engage private landowners in conservation efforts. The use of conservation banks is such an approach. For conservation banking schemes to be successful, however, they must employ a currency that is easy to use and that serves as an accurate proxy for the social value that the ESA seeks to capture. Conservation banking must also operate within a structure that does not thin

184. John R. Adair, *The Bioprospecting Question: Should the United States Charge Biotechnology Companies for the Commercial Use of Public Wild Genetic Resources*, 24 *ECOLOGY L. Q.* 131, 156 (1997).

185. H.R. CONF. REP. NO. 104-300 (1995).

186. *See, e.g.* Defenders of Wildlife, Center for Biological Diversity, and Endangered Species Coalition, Conservation in Action, *Safeguarding Citizen Rights under the Endangered Species Act*, at v (May 2001) available at <http://www.biologicaldiversity.org/swcbd/papers/ESAreport.pdf> (describing how the Bush Administration has asked Congress to attach a rider to the Department of Interior Appropriations Bill for 2002 that would restrict a citizen’s ability to petition the government to protect endangered species).

the market. Although the Guidance issued by the Department of Interior offers some glimpses of hope, it does not adequately address these problems. Changing the units of currency from that of habitat acres to that of individual members of endangered species can provide a simple, workable currency, but it does so by imposing significant market restrictions. Those restrictions can be overcome by increasing both the demand for, and supply of, conservation bank credits. This can be done by requiring *all* landowners to survey their land for endangered species before undertaking any development activity. Unfortunately, this requirement is politically impossible. Unless there is a significant shift in priorities such that the private property rights lobby is greatly weakened, conservation banking will be unlikely to achieve its full potential for promoting endangered species health and recovery. It appears that we may have the way, but lack the will.