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Problem of Unraveling: Biodiversity and Private Property in Land

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THE PROBLEM OF UNRAVELING: BIODIVERSITY AND PRIVATE PROPERTY IN LAND

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> Let's start by imagining a fine Persian carpet and a hunting knife. The carpet is twelve feet by eighteen, say. That gives us 216 square feet of continuous woven material . . . . We set about cutting the carpet into thirty-six equal pieces, each one a rectangle, two feet by three . . . . When we're finished cutting, we measure the individual pieces, total them up—and find that, lo, there's still nearly 216 square feet of recognizably carpetlike stuff. But what does it amount to? Have we got thirty-six nice Persian throw rugs? No. All we're left with is three dozen ragged fragments, each one worthless and commencing to come apart.
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> Now take the same logic outdoors and it begins to explain why the tiger, *Panthera tigris*, has disappeared from the island of Bali. It casts light on the fact that the red fox, *Vulpes vulpes*, is missing from Bryce Canyon National Park. It suggests why . . . myriad other creatures are mysteriously absent from myriad other sites. An ecosystem is a tapestry of species and relationships. Chop away a section, isolate that section, and there arises the problem of unraveling.
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> . . . . Thomas E. Lovejoy, a tropical ecologist at the Smithsonian Institution, has . . . coin[ed] his own term. Lovejoy's term is *ecosystem decay*.
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> His metaphor is more scientific in tone than mine of the sliced-apart Persian carpet. What he means is that an ecosystem—under certain specifiable conditions—loses diversity the way a mass of uranium sheds neutrons. Plink, plink, plink, extinctions occur, steadily but without any evident cause. Species disappear. Whole categories of plants and animals vanish.[1]

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* Margaret Wilson Schimke Distinguished Professor of Law, University of Idaho. This Essay draws on ideas discussed in Dale D. Goble & Eric T. Freyfogle, Wildlife Law (2002).

1. DAVID QUAMMEN, THE SONG OF THE DODO 11-12 (1996).

Quammen's metaphor is an apt introduction to the problem of island biogeography, the loss of biodiversity, and this symposium.

Island biogeography is one of the fundamental generalizations of biology: as the area of an island decreases, so does the number of species. An island, in other words, is not simply a smaller but equally diverse place: it is both smaller *and* less diverse. This fact was first noted during the age of exploration as ships' scientists such as Charles Darwin collected the flora and fauna of Pacific islands. But biologists have come to understand that it also applies to islands of habitat surrounded by seas of suburbs. Isolated blocks of old growth forest, for example, are not just smaller in size; they are also less diverse, losing their species like uranium sheds its neutrons. As habitats increasingly become islands, we face an accelerating loss of biodiversity.

Biodiversity is often confused with the number of species in an area: the more species, the greater the diversity. But biodiversity is not simply a question of numbers. Although numbers are important on a global scale, quality is more important than quantity at local scales. Checkerboarded tracts of old growth and clearcuts, for example, may have a larger number of species at the local level as cowbirds and starlings move into the area but actually contribute to decreasing biodiversity as sensitive, old-growth species such as spotted owls are lost. Species richness thus is only part of the story. Biologists recognize at least three types of biodiversity: *genetic diversity*, the variations in each individual's genes that allow species to evolve and hence adapt to changing conditions; *species diversity*, the variation in the number, type, and distribution of species within ecosystems; and *ecosystem diversity*, the variation in habitats and communities. Preserving biodiversity requires the preservation of all three.

Being part of this diversity, we cannot live apart from it: our species is dependent on functioning ecosystems. Biodiversity thus is a utilitarian imperative. Not only are most of the "products" that we market ultimately derived from biodiversity, but it also provides a range of services from purifying water to fertilizing soil to pollinating crops that are essential to our economy. But utility—selfishness, in a less polite term—is only part of the tale. As Aldo Leopold commented, "[t]he last word in ignorance is the man who says of an animal or plant: 'What good is it.'"[2] Since the loss of biodiversity appears to be irreversible—extinction *is* forever—biodiversity is also a moral imperative. We have an ethical obligation not to impoverish the earth.

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2. ALDO LEOPOLD, *Conservation*, *in* ROUND RIVER 145, 146 (Luna B. Leopold ed., 1953).

But impoverishing is what we have been doing. As Mike Scott demonstrates in his essay, economic growth often transforms ecosystems in ways that reduce biodiversity. Using only the broadest measures, Scott demonstrates that much of the continent's biodiversity is at risk.

How then to preserve the diversity that is left?

Historically, the response to declining populations has been to impose taking restrictions and establish refuges. Setting aside breeding grounds and wintering areas once seemed sufficient. But as our knowledge of the complex interdependencies of life has increased, the limitations of refuges has become apparent; managing to preserve plants and animals has increasingly been made a management objective for the public lands—National Parks and wilderness areas have become, at least in part, biodiversity preserves and the National Forest Service has been directed to "provide for the diversity of plant and animal communities"[3] in managing the National Forests.

But the lesson of Quammen's Persian carpet is that islands lose diversity—and the public lands are also islands and thus are insufficient to the task of preserving the continent's full range of biodiversity. In his essay, Scott demonstrates that the public lands are not representative of the diversity that must be preserved—they are largely rocks and snow; the lands with the greatest number of at-risk species are lower elevation lands predominantly in private ownership. Thus, not only are the public lands unrepresentative, they are also simply too few and too far between. Bob Keiter amplifies the point with concrete examples, and Holly Doremus extends the critique: the very focus on preserving "special" things, she argues, is itself a cause of our continuing problems. We need to save the ordinary.

Doremus, Keiter, and Scott define the problem: we are losing biodiversity because our current approach—establishing reserves and refuges—only creates islands and hence is inherently flawed. To be successful, biodiversity must be preserved on private as well as public lands. Hence this symposium.

Although the authors suggest a variety of approaches, they generally agree that the current course is problematic, that changes are needed.

Buzz Thompson's essay serves as a broad introduction to recurrent themes in the remaining essays. He offers an overview of the variety of instruments that the federal government uses to preserve biodiversity.[4] Thompson begins with a discussion of the strengths and

3. 16 U.S.C. § 1604(g)(3)(B) (2000).

4. *Cf.* Lee P. Breckenridge, *Reweaving the Landscape: Institutional Challenges of Ecosystem Management for Lands in Private Ownership*, 19 VT. L. REV. 363 (1995);

weaknesses of the three general approaches: land-use regulation, direct investment, and leveraging private efforts. He concludes that biodiversity protection requires some mix of all three—but that there are several improvements that could be made.

J.B. Ruhl favors a regulatory approach, placing his faith in "ecosystem management"—the marriage of the idea that the environment "operates in a state of highly complicated organized disorder" with the optimistic belief that we can manage this flux with sufficient computing power. His essay is a call to battle from a radical, utopian middle. He might be accused of slighting problems with our previous attempts at managing complexity[5]—but such is, of course, the purpose of manifestos.

Holly Doremus also advocates regulation. It is, she argues, a political rather than an institutional problem that we face. To that end she proposes a refocused mix of regulation by different jurisdictions under large-scale umbrellas like the Endangered Species Act's Habitat Conservation Plans and California's Natural Communities Conservation Planning Act.[6] Doremus would shift regulatory attention away from special species and habitats, however, and refocus it on "nature" more broadly conceived. In conjunction with this shift in focus, she would argue that we must address the moral component by seeking to foster caring about nature—not just in the abstract or the special, but in its local ordinariness.

Michael Bean is less sanguine about regulation—at least the type of regulation found in the Endangered Species Act. He argues that the Act's prohibitions produce a perverse incentive that leads landowners to modify habitat to avoid the risk that a listed species may take up residence on the land. Since we need such lands to recover listed species, it is insufficient simply to prohibit harmful activities. Landowners must be given incentives to undertake the activities that will make their land hospitable for wildlife. Bean advocates the use of safe harbor agreements as one such incentive.

Ruhl's faith in management is matched by Jim Huffman's faith in the market. Despite his faith, however, Huffman suggests that

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Neil Gunningham & Mike D. Young, *Toward Optimal Environmental Policy: The Case of Biodiversity Conservation*, 24 ECOLOGY L.Q. 243 (1997).

5. *E.g.*, DAVID EHRENFELD, *The Conservation Dilemma*, *in* THE ARROGANCE OF HUMANISM 175 (1978); William H. Rodgers, Jr., *The Myth of the Win-Win: Misdiagnosis in the Business of Reassembling Nature*, 42 ARIZ. L. REV. 297 (2000).

6. *See* A. Dan Tarlock, *Local Government Protection of Biodiversity: What Is Its Niche?*, 60 U. CHI. L. REV. 555 (1993); A. Dan Tarlock, *Federalism Without Preemption: A Case Study in Bioregionalism*, 27 PAC. L.J. 1629 (1996).

markets have a relatively limited role:[7] the market's best prospects for preserving biodiversity, he concludes, are likely to be small scale activities such as acquiring interests in real property by organizations such as The Nature Conservancy—an example of the approach that Thompson calls "leveraging private efforts." Perhaps the limited role that Huffman envisions for the market reflects his cautiously skeptical view of the importance of preserving biodiversity—a view that he equates with Malthusian doomsayers.

Fred Cheever amplifies Huffman's analysis by providing a more nuanced examination both of the natures of property and regulation and of their interaction. He offers a detailed examination of how conservation easements can be used to protect wildlife habitat as part of an extended discussion of the roles that both property and regulation can play in preserving biodiversity. Cheever's analysis is in turn augmented by Nancy McLaughlin's discussion of the role of the Internal Revenue Code. The Code helps to overcome one of the problems that Cheever notes: conservation easements cost money. The Code helps to reduce the cost by permitting the donor of an easement to take tax deductions. As McLaughlin demonstrates, changes to the Tax Code have created significant incentives for private parties to transfer interests in land to conservation land trusts.

Bob Keiter addresses a significant problem throughout much of the West: the intermixture of federal, state, and private lands that resembles Quammen's chopped-up carpet. The problems with this land ownership pattern are compounded by the fact that much of the most ecologically sensitive land is privately owned. Keiter explores a range of possibilities for integrating the management of public and private lands, discussing federal acquisition of sensitive lands through purchases and exchanges, regional ecosystem management, and a variety of collaborative management experiments such as watershed councils. On balance, Keiter seems modestly optimistic that the complex legal and political challenges the land ownership pattern creates can be used to promote biodiversity.

Sandy Zellmer and Scott Johnson examine one of the most ecologically destructive land uses, agriculture. As they note, the near-mythic status of the family farm has served to insulate agriculture from regulation to a degree unknown to other industries. Nonetheless, they conclude that farms can serve vital roles in preserving biodiversity. The difficulty, as they note, is determining which farms are "worthy" of the investment of public resources.

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7. Others have argued for a larger role for markets. *See, e.g.*, Robert K. Davis, *A New Paradigm in Wildlife Conservation: Using Markets to Produce Big Game Hunting*, *in* WILDLIFE IN THE MARKETPLACE 109 (Terry L. Anderson & Peter J. Hill eds., 2002).

Finally, Ted Koch reports from the field on his experience in putting together conservation agreements on private lands. His observations offer a real-world supplement to theory, a perspective that enriches the symposium. What Koch—and the other essayists—make clear is that there is no magic bullet.

Voluntary preservation should be rewarded and encouraged; we need to develop incentives that reduce the gap between public and private values. The powerful incentives that markets provide should be harnessed whenever possible, while recognizing that much of biodiversity has no immediate economic value. Regulatory systems should be employed to provide the stick that makes the carrots attractive—while recognizing that the stick is often insufficiently flexible to preserve highly local ecosystems.

More fundamentally, however, we need to accept that we are part of a larger ethical community. As Aldo Leopold put it,

> [i]f the land mechanism as a whole is good, then every part is good, whether we understand it or not. If the biota, in the course of aeons, has built something we like but do not understand, then who but a fool would discard seemingly useless parts? To keep every cog and wheel is the first precaution of intelligent tinkering.[8]

8. ALDO LEOPOLD, *supra* note 2, at 146-47.