BIODIVERSITY AND THE CHALLENGE OF SAVING THE ORDINARY

HOLLY DOREMUS*

TABLE OF CONTENTS

I. INTRODUCTION

Historically, efforts to protect nature in the United States have focused on the places and things we recognize as special. That should not surprise us—there are sound psychological and institutional explanations for our focus on the unique or extraordinary. We are not likely to wholly reject that focus, nor should we. Efforts to protect spe-

---

* Professor of Law and Chancellor's Fellow, University of California, Davis. For earlier thoughts on a similar topic, see Holly Doremus, *The Special Importance of Ordinary Places*, 23 ENVIRONS ENVTL. L. & POL'Y J. 3 (2000). I am grateful to Gordon Anthon, Joel Dobris, Mark Sagoff, Michael Scott and Madhavi Sunder for helpful comments on a draft of this Essay.

cial places and things have produced positive results ranging from our national park system to the Endangered Species Act (ESA).[1]

But the limitations of that strategy are increasingly apparent. To put it bluntly, the strategy of the special is not likely to prove effective at meeting what we describe as our current goals. The protection of our biotic resources provides a striking example of this disjunction. Both scientists and policymakers today tout the goal of protecting biodiversity, understood to encompass the range of biotic resources. Ecologists and conservation biologists wholeheartedly endorse biodiversity protection.[2] It is enshrined as a goal for the Forest Service, through the National Forest Management Act and that Act's implementing regulations.[3] Other federal agencies, although lacking statutory mandates to conserve biodiversity, have nevertheless enthusiastically adopted that goal. The Fish and Wildlife Service, for example, has instituted an "ecosystem approach" to maximize biodiversity conservation under the ESA,[4] and the Council on Environmental Quality has issued guidelines for using the National Environmental Policy Act to conserve biodiversity.[5] The protection of biodiversity has even been enshrined as a goal of international law, through the adoption of the Convention on Biological Diversity.[6] Of course, as a society we are still arguing vociferously about how much biodiversity to protect, what costs we are willing to bear in the name of biodiversity, and how to divide those costs. My point is only that we seem, at least on the sur-

1. *See* 16 U.S.C. §§ 1531-1544 (2000).

2. *See, e.g.*, Shahid Naeem et al., *Biodiversity and Ecosystem Functioning: Maintaining Natural Life Support Processes*, ISSUES IN ECOLOGY No. 4 Fall 1999, *available at* http://esa.sdsc.org/issues4.pdf (last visited Feb. 26, 2002); Reed F. Noss, *Some Principles of Conservation Biology, As They Apply to Environmental Law*, 69 CHI.-KENT L. REV. 893, 895 (1994).

3. *See* 16 U.S.C. § 1604(g)(3)(B) (1988) (stating that forest planning regulations shall "provide for diversity of plant and animal communities . . . ."); 36 C.F.R. § 219.20 (1994) (stating that plans shall consider and provide for ecosystem and species diversity).

4. *See* U.S. FISH & WILDLIFE SERV., AN ECOSYSTEM APPROACH TO FISH AND WILDLIFE CONSERVATION: AN APPROACH TO MORE EFFECTIVELY CONSERVE THE NATION'S BIODIVERSITY (1994).

5. COUNCIL ON ENVTL QUALITY, INCORPORATING BIODIVERSITY CONSIDERATIONS INTO ENVIRONMENTAL IMPACT ANALYSIS UNDER THE NATIONAL ENVIRONMENTAL POLICY ACT (1993).

6. *See* Article I, Convention on Biological Diversity, United Nations Conference on Environment and Development, June 5, 1992, S. TREATY DOC. No. 103-20, *reprinted in* 31 I.L.M. 818 (establishing as objectives the conservation of biological diversity, as well as its sustainable use and equitable sharing of the benefits of its use). The United States has not ratified the Convention, not because it does not accept the goal of biodiversity protection, but because of concerns about the Convention's impact on the biotechnology industry. *See* David Eugene Bell, *The 1992 Convention on Biological Diversity: The Continuing Significance of U.S. Objections at the Earth Summit*, 26 GEO. WASH. J. INT'L L. & ECON. 479, 508 (1992).

face, to have a strong consensus at the policymaking level that biodiversity protection is an important goal.

Unfortunately, our dominant strategy for achieving that goal remains one developed in another era for different purposes. As we did in the earliest days of conscious nature protection, we continue to concentrate on setting aside special places and protecting dwindling special resources against exhaustion. Given today's conditions, that strategy is not likely to achieve our current goal of protecting a wide range of biotic resources over a long period of time. If we are to succeed in protecting biodiversity, we must find ways to focus the law and the public on ordinary nature rather than merely the obviously special or unique aspects of nature. As a first step along that path, this Essay undertakes to explain: why the focus on the special is not sufficient to protect biodiversity; why saving the special nevertheless remains our dominant strategy; and, how we might begin to move, and in some areas have already begun to move, toward saving the ordinary.

II. CONCENTRATING ON SPECIAL PLACES AND SPECIAL THINGS

A quick tour through the law of nature protection in the United States should suffice to demonstrate two things: first, that we have so far concentrated our efforts on saving special places and things; and second, that for the most part, only extraordinarily appealing places, and rapidly disappearing things, have achieved special status.

The first halting attempt at legal intervention to protect natural resources in the colonies took the form of restrictions on timber cutting, imposed to save the best wood for naval use.[7] The desire to protect special material resources grew stronger through the nineteenth century as the continent's natural bounty, once seemingly inexhaustible, dwindled noticeably. By the turn of the century, this desire was strong enough to produce national legislation. In 1891, Congress authorized the President to designate forest reserves, withdrawing them from settlement in order to protect water supplies and ensure a continuous supply of timber.[8]

In the latter part of the nineteenth century, with the frontier closing and the imprint of human settlement obvious from sea to sea, Americans began to see nature not just as a material resource, but also, at least in a few special places, as an esthetic wonder. We began to set aside some of our most visually striking landscapes as national

7. *See* ALFRED RUNTE, PUBLIC LANDS, PUBLIC HERITAGE: THE NATIONAL FOREST IDEA 12-13 (1991).

8. Forest Reserve Acts of 1891, ch. 561, 26 Stat. 1095 (repealed 1976).

parks, beginning with Yosemite and Yellowstone.[9] Esthetic concern soon spread from special places to special things. Early in the twentieth century, bird watchers mobilized support for protection of avian species against overhunting for food and feathers. The combination of esthetic and material concerns proved politically powerful, producing the Lacey Act,[10] which Congress designed to reinforce state hunting restrictions. Later, similar concerns led to the Migratory Bird Treaty and its implementing Act,[11] providing for federal regulation where mobility made protection by individual states difficult. When the Migratory Bird Treaty Act proved insufficient to protect one particularly special migratory bird, the nation's symbol, Congress enacted the Bald Eagle Protection Act.[12]

The modern era of environmental regulation brought a slew of additional federal nature protection statutes. Nearly all of the regulations focused on highly charismatic or imminently threatened places or things. The Wilderness Act,[13] for example, applies to a small number of locations that are special because they are less obviously affected by civilization than most. The Marine Mammal Protection Act[14] shields a particularly charismatic group of animals. The ESA,[15] the flagship biodiversity statute, covers all animal and plant species, but only when they have become special by declining nearly to the point of extinction.

Our brief tour highlights two other points we will return to later. First, our understanding of what is special does change with time, although frequently more slowly than effective intervention demands. Rarity increases our ability to see specialness, so that resources that are dwindling fast or have nearly disappeared may suddenly come to seem special. Section 404 of the Clean Water Act[16] illustrates this point. Section 404 limits the destruction of wetlands, which we once regarded as among the least special of natural areas, but which we came to see as special and worthy of protection as they disappeared. The second point is that, although we have not done it much, we are capable of extending law more broadly. The National Environmental

9. *See* Yosemite Act, ch. 184, 13 Stat. 325 (1864); Act of March 1, 1872, ch. 24, 17 Stat. 32 (1872).

10. Ch. 553, 31 Stat. 187 (May 25, 1900) (codified as amended at 16 U.S.C. § 3372 (1988)).

11. Ch. 128, 40 Stat. 755 (1918) (codified as amended at 16 U.S.C. §§ 703-711 (1994)).

12. Act of June 8, 1940, ch. 278, 54 Stat. 250 (1940) (codified as amended at 16 U.S.C. §§ 668-668(d) (1988)).

13. 16 U.S.C. §§ 1131-1136 (2000).

14. 16 U.S.C. §§ 1361-1421(h) (2000).

15. 16 U.S.C. §§ 1531-1544 (2000).

16. 33 U.S.C. § 1344 (2000).

Policy Act (NEPA),[17] which takes a very general approach, applying to all federal actions significantly affecting any part of the environment, demonstrates that law is not inevitably tied to a strategy of the special. Nonetheless, that strategy continues to dominate our nature protection policy.

III. WHY A STRATEGY LIMITED TO THE SPECIAL IS NOT ENOUGH TO SAVE BIODIVERSITY

The biodiversity problem vividly illustrates the shortcomings of the focus on the special. Although saving the special will always be an important component of nature protection, that strategy alone cannot solve the current biodiversity problem. Saving biodiversity is by definition a general goal, not readily amenable to any special focus. Carlos Davidson's description of nature as a tapestry, out of which human activity is pulling thread after thread,[18] helps demonstrate the distinction. A focus on the special implies that identifying and protecting a small number of key threads will achieve our goals. But the goal of biodiversity protection is nothing less than preservation of the entire tapestry in a form that allows its designs to be viewed and enjoyed. The loss of every thread diminishes the picture, but no thread is so special that its removal will cause the entire picture to disappear. Protecting the tapestry is a very different task than protecting the best, the most striking, or the most important individual threads or parts of the overall picture. We simply cannot save the whole by identifying and saving the most special parts. We must either find a way to see the entire tapestry as special or we must seek a different strategy for protecting it.

A. Conventional Criticisms of Current Strategies for Biodiversity Protection

We have recognized for some time that our current strategies for nature protection are not well suited to saving biodiversity. We have not yet acknowledged, however, that the root problem is our focus on the special. Instead, critics have focused on the way we identify the special elements of nature on which our strategies concentrate. Two frequently repeated criticisms of the ESA illustrate this point. The first is that biodiversity protection could be accomplished more efficiently and effectively if we emphasized the protection of ecosystems,

17. 42 U.S.C. §§ 4321-4370(f) (2000).

18. *See* Carlos Davidson, *Economic Growth and the Environment: Alternatives to the Limits Paradigm*, 50 BIOSCIENCE 433 (2000).

biodiversity hot spots, or more carefully selected focal species.[19] The second is that we delay taking protective action until it is nearly, and perhaps entirely, too late.[20]

Both of these criticisms are correct as far as they go. Protection of individual endangered species through the ESA is not effectively protecting the range of biodiversity. At first, this may seem surprising. The ESA, which is framed as a safety net for all plant and wildlife species, should in theory be capable of protecting biodiversity which, after all, equates at least roughly to the sum of all species. Indeed, the ESA should be a very sensible mechanism for biodiversity protection, covering all plant and animal species but concentrating our efforts on those in most dire need of our immediate attention. In reality, however, as the critics point out, only the most extraordinarily special species, and only those special in a very particular way, are actually helped by the ESA. Only those species with significant public appeal or tenacious human advocates are able to run the gauntlet of the ESA's listing process.[21] Of those species that do make it to listing, a handful of the most charismatic, not necessarily the most threatened or ecologically critical, receive the bulk of the resources put into species recovery.[22]

By interpreting specialness differently, perhaps we could use individual species more effectively as surrogates for biodiversity. It has been suggested that by setting our species protection priorities carefully, concentrating on indicator, keystone, and umbrella species, we

---

19. *See, e.g.*, John Harte, *Land Use, Biodiversity, and Ecosystem Integrity: The Challenge of Preserving Earth's Life Support System*, 27 ECOLOGY L.Q. 929 (2001); Bradley C. Karkkainen, *Biodiversity and Land*, 83 CORNELL L. REV. 1 (1997); J.B. Ruhl, *Biodiversity Conservation and the Ever-expanding Web of Federal Laws Regulating Nonfederal Lands: Time for Something Completely Different?*, 66 U. COLO. L. REV. 555 (1995); Jason M. Patlis, *Biodiversity, Ecosystems, and Species: Where Does the Endangered Species Act Fit In?*, 8 TUL. ENVTL. L.J. 33 (1994); Lindell L. Marsh, *Conservation Planning Under the Endangered Species Act: A New Paradigm for Conserving Biological Diversity*, 8 TUL. ENVTL. L.J. 97 (1994); Julie B. Bloch, *Preserving Biological Diversity in the United States: The Case for Moving to an Ecosystems Approach to Protect the Nation's Biological Wealth*, 10 PACE ENVTL. L. REV. 175 (1992); Holly Doremus, *Patching the Ark: Improving Legal Protection of Biological Diversity*, 18 ECOLOGY L.Q. 265 (1991).

20. *See, e.g.*, Doremus, *supra* note 19; David S. Wilcove et al., *What Exactly Is an Endangered Species? An Analysis of the U.S. Endangered Species List: 1985-1991*, 7 CONSERVATION BIOLOGY 87 (1993); John Charles Kunich, *The Fallacy of Deathbed Conservation Under the Endangered Species Act*, 24 ENVTL. L. 501 (1994); Andrea Easter-Pilcher, *Implementing the Endangered Species Act: Assessing the Listing of Species as Endangered or Threatened*, 46 BIOSCIENCE 355 (1996).

21. *See* Amy Whritenour Ando, *Waiting to Be Protected Under the Endangered Species Act: The Political Economy of Regulatory Delay*, 42 J.L. & ECON. 29 (1999).

22. *See* Andrew Metrick & Martin L. Weitzman, *Patterns of Behavior in Endangered Species Preservation*, 72 LAND ECON. 1 (1996); Harvey Doerksen et al., *Policy Goals for Endangered Species Recovery*, 11 SOC'Y & NAT. RESOURCES 365, 366 (1998).

might wind up protecting far more than the relatively small number of species that become listed.[23] Indicator species are supposed to reflect the health of the larger ecosystem, so that by ensuring their health we ensure that of the ecosystem. Keystone species are thought to be especially important contributors to community structure, so saving them should keep the community intact. Umbrella species are those that require extremely large ranges; their protection, it is hoped, will guarantee that of many smaller-range species. Alternatively, critics suggest that we should shift our focus to protecting key ecosystems, or "hotspots"—locations that harbor unusually high levels of biodiversity.[24]

Delay is also a very real problem. The ESA protects only species that are currently in danger of extinction, or likely to become so in the foreseeable future.[25] Political pressures and funding shortfalls exacerbate the statute's focus on species in danger; species typically do not reach the ESA's protected list until their populations have fallen to dangerously low levels.[26] Unfortunately, bringing species back from the perilous brink of extinction may be impossible. The downfall of the passenger pigeon, which once filled the skies of the eastern United States, traveling in flocks of literally billions,[27] is a case in point. By the 1850s the passenger pigeon had already disappeared from many locations, but large flocks still remained around the Great Lakes. In the last twenty years of the nineteenth century, however, their population plummeted from more than fifty million, a number thought too large to justify concern, to only a scattered handful. The reason, apparently, is that the pigeons relied on their sheer numbers to overwhelm the capacity of predators to consume them. They built only flimsy nests, and could not defend their eggs or young against foxes, hawks, and other predators. So long as they could gather in huge aggregations, the inevitable losses from the edges of the colony were balanced by robust production of new birds in the centers. But once hunting had destroyed the large flocks, leaving only scattered small

23. *See, e.g.*, Doremus, *supra* note 19, at 306-08.

24. *See, e.g.*, A.P. Dobson et al., *Geographic Distribution of Endangered Species in the United States*, 275 SCI. 650 (1997); John Charles Kunich, *Preserving the Womb of the Unknown Species with Hotspots Legislation*, 52 HASTINGS L.J. 1149 (2001).

25. *See* 16 U.S.C. § 1532(6) (1973) (defining "endangered"); *id.* § 1532(20) (defining "threatened").

26. *See* David S. Wilcove et al., *supra* note 20, at 87.

27. *See* CHRISTOPHER COKINOS, HOPE IS THE THING WITH FEATHERS: A PERSONAL CHRONICLE OF VANISHED BIRDS 197 (2000) (recounting one estimate from the early 1800s that placed a flock of passenger pigeons at an astonishing 2.2 billion birds). "The Passenger Pigeon was the most abundant land bird on the planet." *Id.* at 198.

colonies, the birds were quickly wiped out by predation.[28] The passenger pigeon could only have been saved, apparently, by maintaining vast flocks. Once the populations dwindled sufficiently to generate concern, the species was not biologically sustainable.

Other species can recover from low numbers, but recovery is often difficult, costly, and slow. The California condor, unlike the passenger pigeon, was never a prolific breeder. One estimate puts the population of condors in 1890 at about 600 individuals.[29] By the 1980s there were only twenty-six condors in the world, and just six of those lived outside captivity. Over the objections of the National Audubon Society, the Fish and Wildlife Service captured the last wild birds lest they die without producing progeny.[30] By 1992, at the very beginning of the reintroduction program, more than $25 million had been spent on California condor recovery.[31] Today, that number stands close to $35 million.[32] The efforts made on the condor's behalf have been effective; the world condor population is now almost 200, with fifty-six of those flying in the wild.[33] That is a dramatic improvement, but still a precariously small number of condors. And although captive breeding of condors now seems routine, their survival in the wild is far from assured. No condors have successfully reproduced in the wild since the reintroduction program began. The California condor would surely be on a more secure footing today, with far less spent on its protection, if its decline had been recognized and arrested while more reproducing birds remained in the wild. Controlling anthropogenic threats to species is rarely easy, but it is not as difficult as teaching animals reared in captivity to live in the wild.

The conventional solution to the problem of delay is the same as that to the priority problem: change our view of what is special. Critics argue that we should intervene earlier by interpreting the ESA more strictly, creating new laws to protect species before they become

---

28. *See* DAVID S. WILCOVE, THE CONDOR'S SHADOW: THE LOSS AND RECOVERY OF WILDLIFE IN AMERICA 27-30 (1999); D.E. Blockstein & H.B. Tordoff, *Gone Forever: A Contemporary Look at the Extinction of the Passenger Pigeon*, 39 AMERICAN BIRDS 845 (1985).

29. *See* Joanna Behrens & John Brooks, *Wind In Their Wings: The Condor Recovery Program*, ENDANGERED SPECIES BULL., May/June 2000, at 8 ("It is estimated that 600 condors existed in the wild in 1890.").

30. *See* Nat'l Audubon Soc'y v. Hester, 801 F.2d 405 (D.C. Cir. 1986).

31. *See* BRIAN MILLER ET AL., PRAIRIE NIGHT: BLACK-FOOTED FERRETS AND THE RECOVERY OF ENDANGERED SPECIES 102 (1996).

32. E-mail from Lois Grunwald, U.S. Fish & Wildlife Service, Ventura, CA, to Holly Doremus (Aug. 23, 2001) (on file with author).

33. Matt Surman, *Condor Hatched in Wild is Killed*, L.A. TIMES, June 28, 2001, at B1.

endangered, or protecting representative ecosystems before those systems become rare enough to endanger the species they harbor.[34]

B. The Fundamental Problem of Focusing on the Special

Although the conventional criticisms of the ESA highlight important shortcomings, they fail to identify the root cause of those shortcomings. The fundamental problem is not the choice of special focal points; it is the strategy of the special itself.

1. Leveraging the Special to Protect the General Has Not Been Effective

Conservation advocates have deliberately chosen the strategy of the special for its political appeal. Threats to special places and special things attract attention and can motivate people to action.[35] Even those who seek much more than protection of individual charismatic species have concentrated on that strategy, expecting, or at least hoping, that the political appeal of the most special places and species could be leveraged to achieve the larger goal of biodiversity protection. Our experience so far under the ESA, though, counsels to the contrary. Protection of the special has not proven an effective strategy for saving the ordinary.

Indeed, it may not be possible to use special locations or species as effective surrogates for larger systems. Ecologists have found it difficult to define the keystone concept or identify species that fit it,[36] and umbrella species now appear far less useful than we once thought. The grizzly bear, for example, seemingly an ideal umbrella species because of its large home range, turns out to be a remarkably poor surrogate for freshwater fish in Montana.[37] Protective zones set up for the grizzly bear may actually harm the fish by channeling human activities toward essential fish habitat. This phenomenon may be a general one. Using two regional and one national biodiversity data-

---

34. *See, e.g.*, Doremus, *supra* note 19, at 316-17; Daniel J. Rohlf, *Six Biological Reasons Why the Endangered Species Act Doesn't Work—And What to Do About It*, 5 CONSERVATION BIOLOGY 273 (1991); J. Michael Scott et al., *Species Richness: A Geographical Approach to Protecting Future Biodiversity*, 37 BIOSCIENCE 782 (1987).

35. *See* Holly Doremus, *The Special Importance of Ordinary Places*, 23 ENVIRONS ENVTL. L. & POL'Y J. 3, 4 (2000).

36. *See* Natasha B. Kotliar, *Application of the New Keystone-Species Concept to Prairie Dogs: How Well Does It Work?*, 14 CONSERVATION BIOLOGY 1715 (2000); Daniel Simberloff, *Flagships, Umbrellas, and Keystones: Is Single-Species Management Passé in the Landscape Era?*, 83 BIOLOGICAL CONSERVATION 247 (1998); L. Scott Mills et al., *The Keystone-Species Concept in Ecology and Conservation*, 43 BIOSCIENCE 219 (1993).

37. *See* Bernice Wuethrich, *When Protecting One Species Hurts Another*, 289 SCI. 383 (2000).

bases, Andelman and Fagan tested fourteen different surrogate schemes and concluded that none of them would protect biodiversity more effectively than randomly chosen focal species.[38]

2. The Psychology of the Special Limits Our Efforts

Even if it were possible to leverage conservation of the right set of individual species or the right collection of reserves to protect biodiversity, by adopting the strategy of the special we almost ensure that we will not choose our protected set to achieve that particular goal. Our experience to date validates this claim. We have shown little or no inclination to set our species protection priorities with a view toward biodiversity protection. When we demand that entities qualify for protection by being sufficiently special, we should not be surprised that the most charismatic or symbolically appealing species end up first in line. For species to be chosen on the basis of their ability to stand in for biodiversity protection, we would need to convince the public that biodiversity itself is special.

That is difficult to do because biodiversity is so abstract, and so ordinary. Human beings simply are not wired to care about, or even to notice, the ordinary. We cannot attend to everything that competes for our attention. We have therefore developed a variety of filtering mechanisms to help us focus effectively on some things by more or less shutting out others. One thing we are inclined to filter out is the general background. We notice problems only when they are highlighted by a focal point that differentiates them from the background. The ordinary, which constitutes the background itself, provides a poor focal point. It is therefore much easier to convince people to take action to save whales, wolves, or other specific, eye and imagination-catching creatures, than it is to persuade them that they must act to save nature as a whole, or biodiversity, which is nearly the same thing.

So long as we remain focused on the special, we are also unlikely to intervene to protect nature or its components before they become rare. Another filter we typically rely on is ordinariness in the sense of being common or abundant. "Special" equates strongly with limited or rare. It will always be an uphill battle to convince the public that species or ecosystems are special before they become severely reduced.

38. Sandy J. Andelman & William F. Fagan, *Umbrellas and Flagships: Efficient Conservation Surrogates or Expensive Mistakes?*, 97 PROCEEDINGS OF THE NAT'L ACAD. OF SCI. 5954 (2000). Others have expressed caution while maintaining that focal species nonetheless have a role in conservation. *See, e.g.*, Mark A. Zacharias & John C. Roff, *Use of Focal Species in Marine Conservation and Management: A Review and Critique*, 11 AQUATIC CONSERVATION 59 (2000).

We tend both to discount the value of abundant resources and to assume they will always be there. As Joni Mitchell sings, "we don't know what we've got 'til it's gone."[39] Americans did not consider bison special or worthy of concern when vast herds of them covered the plains. No one (other than hunters) gave the passenger pigeon a second thought when it was the most abundant bird on the continent. Both became special only when they went, seemingly overnight, from common to nearly unknown. The same could be said of wetlands. We did not begin to protect them until most of the wetland acreage in the continental United States had been drained, filled, or otherwise converted. Although our understanding of what is special does change, it often does so only in response to the disappearance of resources. Our inability to see resources as special while they are still abundant means that the strategy of the special will almost inevitably leave protection so late that it will be at best costly and at worst impossible.

Changing our focus to some other level, such as ecosystems or biodiversity hotspots, will not free us from the psychology of the special. We would still be faced with demands that we explain why particular ecosystems or locations are special and that we identify the most special examples as our highest priorities. There is no reason to suppose that esthetic, emotional, or symbolic appeal unrelated to biodiversity protection would play less of a role in those choices than it currently does in setting species conservation priorities. Nor is it obvious that switching our focus from disappearing species to dwindling ecosystems would motivate earlier intervention.

3. The Strategy of the Special Sets Nature Apart

The strategy of the special predisposes us, perhaps even unconsciously, to focus our efforts on government-owned lands in particular and on setting aside nature reserves in general. It almost inevitably leads us to see nature as something apart from our daily lives. That, in turn, is likely to doom our efforts to save a broad range of nature.

The strategy of the special sends us to the public lands because those lands, and only those lands, are already special in our cultural understanding. Unlike privately-owned lands, public lands are supposed to be dedicated to some vision of the public good. Moreover, much of what remains in federal ownership has that status because we understood it to be too special to give away, even in the era of nearly unfettered public land disposal. The public rangelands managed by the Bureau of Land Management are only the accidental remnants of our national land disposal spree, and probably most of us

39. JONI MITCHELL, *Big Yellow Taxi*, *on* LADIES OF THE CANYON (Warner Bros. 1970).

do not think of those lands as special. But the national forests, national parks, and national wildlife refuges were all deliberately set aside for public purposes, prominently including conservation. Most of these conservation lands have special, iconic status in public perception. As a society, we readily agree that parks and wildlife refuges should be dedicated to conservation, and we are coming to that view with our national forests.[40] We are far less likely to make that leap with respect to "ordinary," privately-owned lands.

As we well know by now, however, even in their entirety the public lands are not sufficient to protect our biodiversity. Although they constitute nearly one-third of the nation's total land area, the public lands are far from evenly distributed. They are heavily concentrated in the western half of the United States, and include disproportionate amounts of particular types of landscapes, chiefly those with little potential for agriculture or timber production. Not surprisingly, the distribution of biodiversity does not closely correspond with that of the protected public lands. According to a recent report, nature reserves, defined as areas permanently protected against conversion of land cover, are predominantly located at mid-to-high elevations and on the least productive soils.[41] Our current reserve network is unlikely to protect the range of biodiversity; much of the biota typical of low elevations and productive soils may be left entirely out of our reserves.[42] Even if we limited our goal to protecting species presently listed as endangered or threatened, and considered all the public lands, not just those already reserved for nature, we would be far from success. More than ninety percent of listed species occur on private lands, and roughly two-thirds depend on private lands for at least sixty percent of their habitat.[43]

The importance of private lands for biodiversity protection poses a challenge for biodiversity advocates because our background assumption is that private lands are not particularly special. We seem culturally ingrained to assume that landowners are entitled to control their lands in most respects, including the extent of accommodation they choose to make for nature. Of course some landowners choose to dedicate their land to nature protection, and even seek out and ac-

---

40. *See generally* Jan G. Laitos & Thomas A. Carr, *The Transformation on Public Lands*, 26 ECOLOGY L.Q. 140 (1999).

41. *See* J. Michael Scott et al., *Nature Reserves: Do They Capture the Full Range of America's Biological Diversity?*, 11 ECOLOGICAL APPLICATIONS 999, 1003 (2001).

42. *Id.* at 1005.

43. U.S. GEN. ACCOUNTING OFFICE, ENDANGERED SPECIES ACT: INFORMATION ON SPECIES PROTECTION ON NONFEDERAL LANDS 4 (1995); Craig Groves et al., *Owning Up to Our Responsibilities: Who Owns Lands Important for Biodiversity*, *in* PRECIOUS HERITAGE: THE STATUS OF BIODIVERSITY IN THE UNITED STATES 275 (B. Stein et al. eds., 2000).

quire lands for the express purpose of biodiversity protection. The Nature Conservancy and The Trust for Public Land are prominent examples. In addition, the government can and does purchase land for conservation. One strategy for biodiversity protection that has recently received a great deal of attention depends upon such public and private acquisitions to create a reserve system concentrated on "biodiversity hotspots," areas that harbor unusually large numbers of species or of declining species.[44] Identifying lands important to biodiversity conservation, and transferring them to owners who care about biodiversity and will manage the land accordingly, surely must be part of any biodiversity protection strategy. But while creating reserves in biodiversity hotspots is important, that strategy cannot, by itself, come close to solving the biodiversity problem.

There are three reasons why the reserve strategy, which rests on setting aside special places to protect special things, inevitably falls short. First, land boundaries are inherently permeable to nature. While we can purchase, designate, and manage reserves, we cannot, as a practical matter, wall nature into those reserves. As long as nature can escape its designated reserves, it can cause problems for people in the vicinity. Resolving or squelching the objections of reserve neighbors must therefore be a part of any biodiversity strategy. Consider, for example, the reintroductions of red wolves to the coastal southeast and gray wolves to the northern Rocky Mountains. In both cases, wolves were released only on public lands. In the southeast, five years after the last release, it was estimated that forty-one of the seventy-five wild red wolves in the area inhabited private land.[45] The Yellowstone wolves have also dispersed; about sixty of the total of 180 wolves in the Yellowstone ecosystem are now found outside the park.[46] Because the park is nearly surrounded by national forest lands, most of these wolves have remained on federal land, although there are at least two reports of wolves denning on private land.[47] But even on federal land the Yellowstone wolves can stray into the path of private rights, because private ranchers lease substantial portions of the surrounding national forests for livestock grazing. Encounters between wolves and livestock have been far less common than ranchers feared, but they have not been unknown. Wolves have killed livestock, horses,

---

44. *See, e.g.*, Dobson et al., *supra* note 24, at 550; Amy Ando et al., *Species Distributions, Land Values, and Efficient Conservation*, 279 SCI. 2126 (1998).

45. *See* Gibbs v. Babbitt, 214 F.3d 483, 488 (4th Cir. 2000).

46. *See* ROCKY MOUNTAIN WOLF RECOVERY 2000 ANNUAL REPORT, *available at* http://www.r6.fws.gov/wolf/annualrpt00/2000REPORT.pdf (last visited Aug. 17, 2001).

47. *See* Ralph Maughan, *History and Current Status of the Yellowstone Wolf Restoration*, *at* http://www.forwolves.org/ralph/wpages/yell-o.htm (last visited Oct. 8, 2001).

and pets on both grazing allotments and private lands in the Yellowstone area.[48]

To avoid these sorts of conflicts, we have developed some remarkable technological methods for confining nature to our designated reserves. Radio-collared animals can be tracked, and if they stray outside their approved zones they can (at least in theory) be retrieved. The most extreme example to date of technological confinement comes from the red wolf reintroduction. Prior to reintroduction, each of the red wolves was fitted with a radio-controlled "capture collar" capable of tranquilizing the wolf in response to a radio signal, which could be sent if the wolf was found to be straying outside its approved territory.[49] But clever as we are, we cannot yet easily and completely control nature. It hardly seems practical, for example, to control the wanderings of condors with capture collars, since they would plummet out of the sky if tranquilized in flight. While many terrestrial animals destined for reintroduction can be collared, it would be far more difficult to track and collar the offspring of reintroduced animals or the natural inhabitants of a reserve.

Furthermore, if we could achieve complete control by confining biodiversity to designated refuges, I believe we would have undermined rather than achieved our goal. We would essentially have created zoos, giving up the wildness of nature and the ability of species to pursue their own evolutionary destiny.[50] Surely that is better than losing nature altogether, but it probably would not, and surely should not, satisfy very many biodiversity advocates. It would be just a step removed from keeping only vials of frozen DNA—an approach to biodiversity protection that is sufficiently ludicrous to need no refutation.[51] What biodiversity advocates really want to save is nature, not just genes or even species. We want species functioning in the wild, interacting with one another, outside our control, albeit not free from our influence. No strategy dependent upon confinement can ever give us that.

---

48. *See* ROCKY MOUNTAIN WOLF RECOVERY 2000 ANNUAL REPORT, *supra* note 46, at 10-11, 16-18, tbls.2 & 3.

49. *See* Determination of Experimental Population Status for an Introduced Population of Red Wolves in North Carolina and Tennessee, 56 Fed. Reg. 56,325 (Nov. 4, 1991); Determination of Experimental Population Status for an Introduced Population of Red Wolves in North Carolina, 51 Fed. Reg. 41,790 (Nov. 19, 1986).

50. *See* Holly Doremus, *Restoring Endangered Species: The Importance of Being Wild*, 23 HARV. ENVTL. L. REV. 1 (1999) (providing an extended discussion of the importance of protecting nature in the wild, rather than in confinement).

51. Returning to the tapestry analogy, that would be like removing a few threads of each color, carefully placing them in bottles of preservatives, and tossing the tapestry away.

The second problem with a refuge strategy is also related to the permeability of refuge boundaries. Just as refuges generally will not keep nature in, they will not keep many human impacts out. Merely setting aside a refuge, even if we were to prohibit all human entry, would not assure the survival of the refuge's biotic resources. We must also control threats from human activities occurring at a considerable distance from the refuge. There are many examples of outside threats to refuges; global warming provides the most vivid illustration. Designation of areas as nature refuges does not change their susceptibility to changes in temperature or rainfall regimes related to global atmospheric composition. Many species that survived past climate changes did so by dispersing to new locations with suitable climates. But dispersal will be very difficult for species restricted to limited reserves, surrounded by inhospitable developed areas.[52] Refuges designed on the assumption of impermeability may become deathtraps rather than lifeboats if environmental conditions change.

The third problem is that focusing on the special complicates the task of assembling an adequate network of reserves. When the problem is framed as choosing special areas or special things to protect, it is natural to demand that proponents prioritize, identifying the most special places or things to be saved, and less special ones that can be done without. The choices are presented even more sharply when they must be backed with substantial amounts of public money, or when they pose substantial opportunity costs. Setting priorities is inevitable, but doing so on the basis of specialness can easily become counterproductive for biodiversity protection. Species are obviously special, as the common origin of the word implies. They fit our intuitive notions of natural kinds. Moreover, many of them are intrinsically appealing, providing the sorts of visual images and emotional attractions that evoke our sympathies. Certain places, including highly unique landscapes and places with strong symbolic associations, are also obviously special. But biodiversity, as a whole, is hard to see that way. The notion is too abstract to provide the same appeal. It doesn't make a good poster or soundbite; it doesn't get anyone's blood racing. When we start with the mindset of the special, we are likely to end up battling over assigning priorities to highly charismatic species, preventing oil drilling in the Alaska National Wildlife Refuge, spending billions of dollars restoring the Florida Everglades or keeping Lake Tahoe a sparkling blue. Those fights are joined largely on the basis of esthetic appeal and symbolic power, not on the basis of the impact on

52. *See, e.g.*, Robert L. Peters & Joan D. S. Darling, *The Greenhouse Effect and Nature Reserves*, 35 BIOSCIENCE 707 (1985); Craig L. Shafer, *National Park and Reserve Planning to Protect Biodiversity*, 44 LANDSCAPE & URB. PLAN. 123, 139-40 (1999).

biodiversity. Whether they are won or lost, they dissipate both funds and political energy, distracting the attention of the public and policymakers alike while other areas, habitats, or species, just as important to the overall goal of biodiversity protection, slip away unnoticed.

4. Ordinary Nature Cannot Be Protected as a Thing Apart

The most fundamental problem with a biodiversity strategy focused on the special, the unique, or the extraordinary is that it inevitably defines the objects of our concern as something sharply apart from our everyday experiences and our ordinary world. It allows, even encourages us to put nature out of sight and out of mind except during those rare moments when we specifically choose to seek it out. In that frame of mind, we are inclined to assume that we are entitled to be free of any annoyance from the natural world. That can make it hard to build support for the protection of species prone to irritate us, a category that includes almost all species, with the possible exception of our livestock and pets. Even frogs make nighttime noises that can interfere with our sleep, and birds, attractive as they may be to look at, tend to leave a mess on our roofs, cars, and patio furniture.[53]

To keep those messy, unpleasant species away from our neat lives, we are drawn to ever greater separation through a strategy of nature zoning, dividing the world into human and natural sectors, with very little overlap. Here again, gray and red wolves provide examples. The Fish and Wildlife Service has proposed to remove the gray wolf from the list of endangered and threatened species in much of the United States, including the far southwest, southern plains, and entire eastern United States south of the Great Lakes.[54] The proposal rests not on the return of wolf populations in those areas to robust levels, but rather on the fact that no wolves are currently found there. The Service has decided that recovery of the wolf in these areas is neither likely nor desirable. Essentially, the Service is proposing to zone wild wolves out of these portions of their historic range. The Service explains that it "will not actively prevent natural wolf recolonization"[55] in these areas, but of course delisting would leave states

53. For examples of some of the conflicts that arise between human interests and even such benign aspects of nature as frogs and birds, see Holly Doremus, *The Rhetoric and Reality of Nature Protection: Toward a New Discourse*, 57 WASH. & LEE L. REV. 11, 59-61 (2000).

54. Proposal to Reclassify and Remove the Gray Wolf from the List of Endangered and Threatened Wildlife in Portions of the Conterminous United States; Proposal to Establish Three Special Regulations for Threatened Gray Wolves, 65 Fed. Reg. 43,450 (July 13, 2000).

55. *Id.* at 43,474.

and private landowners free to limit the spread of wolves by killing any that stray outside the zone of protection.

Leaving, as it does, large areas around current wild gray wolf populations to accommodate any spread, the delisting proposal seems to present little threat at the moment. But this type of "species zoning"[56] is pernicious. The red wolf experience shows the costs it can bring. If the inclusionary area is not large enough, the species will not be able to persist. An attempt to reintroduce red wolves to Great Smoky Mountains National Park was terminated because the park provided insufficient suitable habitat.[57] Unless wolves are permitted to roam onto surrounding private lands, the same appears to be true of the Alligator River reintroduction area.[58]

Moreover, zones designated for nature sometimes prove unappealing, for reasons we may neither foresee nor understand, to the very creatures they are intended to protect. The saga of the sea otter illustrates this problem. Sea otters were reintroduced to Southern California under legislation requiring the Fish and Wildlife Service to establish a translocation zone to which otters would be transported, with an intervening "management zone" between the translocation area and the naturally dispersing population. The management zone, established to mollify urchin and abalone fishermen who see otters as competitors, was intended to remain otter-free; the Service was directed to "use all feasible non-lethal means" to remove otters who strayed into this zone.[59] The otters never did establish a self-sustaining population within the official translocation zone. Several years after the relocation attempt, however, some 150 otters swam, of their own volition, into the supposedly otter-free management zone. Dismayed fishermen sued to force the Service to remove the encroaching otters. The Service found itself pinched uncomfortably between demands that it enforce the compromise memorialized in the translocation statute, and the fears that the wayward otters might not survive forced relocation. That possibility was made all the more troubling by the fact that the sea otter population off the coast of California was experiencing a significant overall decline.

---

56. I have borrowed this term from Fred Cheever. *See* Federico Cheever, *From Population Segregation to Species Zoning: The Evolution of Reintroduction Law Under Section 10(J) of the Endangered Species Act*, 1 WYO. L. REV. 287 (2001).

57. *See* Notice of Termination of the Red Wolf Reintroduction Project in the Great Smoky Mountains National Park, 63 Fed. Reg. 54,151, 54,152 (1998).

58. *See* U.S. FISH & WILDLIFE SERV., RED WOLF REINTRODUCTION: ALLIGATOR RIVER NATIONAL WILDLIFE REFUGE, http://bluegoose.arw.r9.fws.gov/mammals/RedWolf Data.html (last visited Aug. 22, 2001) ("The reintroduction area, which encompasses about 250,000 acres (111,750 hectares), probably cannot support thirty red wolves for an extended period of time.").

59. *See* Pub. L. No. 99-625, § 1(b)(4), 100 Stat. 3500-01 (1986).

The fishermen recently withdrew their lawsuit in order to allow the Service more time to reconsider the entire otter conservation program,[60] but the controversy remains. It demonstrates a fundamental resistance to redrawing "nature zoning" lines once they have been established. The same resistance is likely to arise in other situations. Once the government raises expectations of freedom from interference with nature by drawing those kinds of lines, those expectations will inevitably make it difficult to modify the boundaries.

In addition to these immediate shortcomings, the strategy of segregating protected nature from human taint, and humans from the impacts of nature, is likely to limit the strength of our commitment to nature protection in the future. This is a serious limitation for biodiversity protection, which is only meaningful if we can manage it over periods of time that are very long by our ordinary policy standards. We need to think not only about how we can act quickly to forestall immediate threats, but also about how we can sustain our protective efforts over hundreds of years or more.

Because the strategy of the special encourages us to rely on a system of zoning that separates nature reserves from areas available for human use, it exacerbates the separation of modern Americans from contact with nature. This separation cannot help but undermine our protective instincts over time. People who do not have easy opportunities to experience the beauty and joy of nature in their daily lives will not come to love nature. Distant nature reserves are poor substitutes for local nature in this respect; people who do not already feel the emotional pull of nature are unlikely to seek out those reserves. In turn, a society lacking strong emotional connections to nature will have no reason to tolerate its irritations, petty and less so. Moreover, the human tendency to exaggerate unfamiliar risks[61] may exacerbate the lack of patience for nature of those who have not lived with it. The bottom line is that the more completely we isolate our daily lives from nature, the more tenuous our commitment to protecting nature is likely to become.

IV. THE SIREN SONG OF THE SPECIAL

If the strategy of the special probably cannot save biodiversity, and certainly is not the most efficient or effective path to that end, then why do we continue to pursue it? One easy explanation is that,

---

60. *See* Kenneth R. Weiss, *Truce Halts Legal Fight Over Otters' Territory*, L.A. TIMES, July 31, 2001, at B8; Michael J. Corn, *Pact With Fishing Industry Lets Otters Roam Coast*, SAN DIEGO UNION-TRIBUNE, Aug. 1, 2001, at A3.

61. *See, e.g.*, CASS R. SUNSTEIN, FREE MARKETS AND SOCIAL JUSTICE 131-37 (1997); Frank B. Cross, *The Public Role in Risk Control*, 24 ENVTL. L. 887, 924 (1994).

notwithstanding our rhetoric, as a society we have not truly embraced the goal of biodiversity protection. There is some force to this argument; biodiversity does not seem to have achieved political salience with the general public.[62] The lack of interest in biodiversity, at the grandest level, shows in our current policies. We do not, for example, offer legal protection to microbes,[63] although they harbor a tremendous proportion of the earth's genetic diversity.[64]

But that only moves the question back a step. Why has biodiversity not become a more politically powerful issue given the strong core of commentators and advocates who have been pushing it for many years? That advocacy work has certainly not gone unheeded, either at the scientific or at the policymaking level.[65] There has been (and indeed remains) a group of articulate advocates committed to the cause of biodiversity protection. These advocates have sufficiently convinced policymakers at the national level and within many states of the importance of this goal, leading to many formal statements of support. But we seem no closer to a true biodiversity strategy, choosing instead to remain focused on special threads rather than the full tapestry.

Another easy answer is that we simply have not recognized the disjunction between the means of the special and the end of biodiversity protection. Although we are aware that our current nature protection efforts are not well geared to the protection of biodiversity, for the most part we continue to cast around for a better way of identifying what is special, rather than questioning the fundamental assumptions of that strategy. That is surely true, as I have endeavored to explain. But there is more to it than that. We have a difficult time recognizing the strategy of the special as the source of the shortcomings of our policy because that strategy comes so naturally to us. Recognizing that the strategy of the special will not get us to our professed goal will help motivate us to change, but we should not expect change to be easy.

There are two important reasons why we are drawn to the strategy of the special. One has to do with human psychology, the other

---

62. Oliver Houck reports, for example, that a 1993 poll by Defenders of Wildlife showed biodiversity dead last among a wide range of environmental issues in terms of public awareness. Oliver A. Houck, *Preface: Coming to Grips with Biodiversity*, 8 TUL. ENVTL. L.J. 1, 3 (1994).

63. "Species" under the ESA are limited to "fish or wildlife or plants," terms that would appear to exclude microbes. 16 U.S.C. § 1532(16) (1994). Given the furor over listing insects and similarly lowly creatures, it is impossible to imagine the Fish and Wildlife Service seeking authority to protect single-celled, prokaryotic organisms.

64. *See* Robert F. Service, *Microbiologists Explore Life's Rich, Hidden Kingdoms*, 275 SCIENCE 1740 (1997); Norman R. Pace, *A Molecular View of Microbial Diversity and the Biosphere*, 276 SCI. 734 (1997).

65. *See supra* text accompanying notes 2-6.

with institutions in general and the institution of the law in particular. We will have to overcome or find a path around both psychological and institutional barriers in order to broaden our focus to the full tapestry.

A. The Psychological Appeal of the Special

As pointed out earlier, human beings are not capable of attending to everything. The special attracts our attention far more readily than the ordinary. We need focal points. Esthetic appeal, symbolism, and rarity all provide such focal points. Specialness helps to attract attention, which makes it an important political tool. Conservation advocates have marshaled support for nature protection by putting charismatic species such as the bald eagle in the forefront of their campaigns.

Our tendency toward optimism and procrastination also pushes toward the special. Even when we become aware of problems, we tend to put off action until we are at a crisis point, particularly if responding is costly. For example, although we can see that the Social Security trust fund will not have sufficient funds to meet its obligations in the future, we remain reluctant to intervene by increasing taxes or decreasing outlays so long as the crisis remains in the future. That is not just because we are greedy and seek to maximize our present wealth at the expense of the future. Most of us, if pressed, recognize an obligation to future generations.[66] And even when a crisis is many years away, we may be able to see that we ourselves stand to gain if the crisis can be staved off. The main impediment to early action is that we are incurable optimists. As Buzz Thompson puts it, in the face of threats to our comfortable status quo, we "engage in tremendous wishful thinking."[67] We are prone to believe that problems are not as serious as they appear, that they will resolve themselves without our help, or that the future will reveal an easy fix.[68] If we can find any uncertainty in the available data about the severity or consequences of a problem, we tend to interpret that uncertainty in ways that serve our own interests,[69] such as denying that the problem requires a quick or

66. In polls, concern for future generations resonates as a strong reason for protecting the environment. *See, e.g.*, WILLETT KEMPTON ET AL., ENVIRONMENTAL VALUES IN AMERICAN CULTURE 96, 101 (1995).

67. Barton H. Thompson, Jr., *Tragically Difficult: The Obstacles to Governing the Commons*, 30 ENVTL. L. 241, 258 (2000).

68. *See, e.g.*, Neil D. Weinstein, *Unrealistic Optimism About Future Life Events*, 39 J. PERSONALITY & SOC. PSYCHOL. 806 (1980), and sources cited therein.

69. *See* Thompson, *supra* note 67, at 258-59; Russell B. Korobkin & Thomas S. Ulen, *Law and Behavioral Science: Removing the Rationality Assumption from Law and Economics*, 88 CAL. L. REV. 1051, 1093 (2000).

decisive response. Therefore, it is not surprising that a crisis, real or perceived, is often necessary to move us to action.

In the biodiversity context, the rose-colored glasses we habitually wear encourage us to put off protective measures until species are nearly gone, or fading so fast that we cannot ignore the problem. Early, broad intervention goes against our psychological grain. We are far more inclined to act when shown that appealing species are nearly gone. The combination of special appeal and special rarity carries motivating power that a general exhortation to protect biodiversity does not.

We also tend to underestimate both the value of, and the extent of threats to, ordinary nature, while at the same time we are inclined to overestimate the importance of the human activities that protecting nature limits. Our vision, individually and collectively, is a self-centered one. We see ourselves, and by extension other persons, as special, and we exaggerate any harm we personally suffer at the hands of nature or of regulators acting to protect nature. Thus farmers in the Klamath Basin, virtually denied irrigation water in 2001 so that the water might benefit the endangered coho salmon, Lost River sucker, and shortnosed sucker, can claim with all sincerity that the government is putting fish above human beings.[70] What they are really saying is that the economic viability of their farming operations and their associated towns should take precedence over the threat of extinction of the fish species. If the Fish and Wildlife Service is correct in its jeopardy opinion (which has been questioned by a blue-ribbon panel), that is the choice we face.[71] None of the farmers seriously contend that they will die if denied irrigation water, much less that the human species will be put at risk of extinction. But they see themselves as a distinct group of people, and they view the potential extinction of their livelihoods and lifestyles as at least as serious as the potential loss of the fish. Those claims have some resonance with the

70. *See* Deborah Schoch, *Dreams Dry Up in Klamath Basin*, L.A. TIMES, July 23, 2001, at A1 (quoting one farmer as saying, "They've taken a fish and put it over you and me."); *see also* Douglas Jehl, *Cries of 'Save the Suckerfish' Rile Farmers' Political Allies*, N.Y. TIMES, June 20, 2001, at A1 (quoting farmers as accusing environmentalists of using the ESA to achieve "rural cleansing," and complaining that human needs are being ignored).

71. The Endangered Species Act prohibits federal actions, such as the release of this irrigation water from federal reservoirs, which are likely to jeopardize the continued existence of listed species. 16 U.S.C. § 1536(a)(2) (2000). Irrigation was sharply curtailed in the Klamath Basin because the Fish and Wildlife Service determined that allowing lake levels and river flows to fall below minimum levels would violate that provision. A committee appointed by the National Research Council has questioned the scientific basis for the minimum water levels specified by the Service. *See* NAT'L RESEARCH COUNCIL, INTERIM REPORT FROM THE COMMITTEE ON ENDANGERED AND THREATENED FISHES IN THE KLAMATH RIVER BASIN (2002).

public because people find it easier to identify with human hurt and human specialness than with potential harm to uncharismatic species like the Lost River and shortnosed suckers. Not surprisingly, conservation advocates faced with such conflicts respond by touting human needs coincident with conservation,[72] while casting about for more charismatic aspects of nature to bolster the appeal of their arguments. Only the most special of places or things can politically counter appealing human claims.

B. The Institutional Appeal of the Special

Institutional concerns also send us toward the strategy of the special. While we are always biased by our optimism against costly intervention before a crisis, that bias applies with extra force where the action required is a formal change in statutory or regulatory law. That sort of legal change requires concerted collective action; large numbers of people must see a problem, agree that it needs quick action, and commit their time and resources to providing that action. As a result, revisions to legislation, and even to regulations, depend strongly upon images that catch the public imagination, such as special places or things, and upon the presence or at least perception of a crisis affecting those special resources.[73]

The law's resistance to change is even more pronounced when regulation is sought in an area where unrestricted individual choice has been (or is perceived to have been) the norm. Despite an underappreciated history of substantial regulation,[74] real property has somehow become an iconic symbol of individual liberty in America. Landowners assume that they are or should be free to use their land in virtually any way they please, so long as other people are not directly injured by that use. Because that assumption is widespread and politically powerful, the effort to impose the kinds of regulatory controls on land use that are essential to biodiversity protection faces particularly formidable institutional barriers. That kind of change to

---

72. *See* Schoch, *supra* note 70.

73. For discussion of the role of crises in shaping our current biodiversity policy see generally, Shannon Petersen, *Bison to Blue Whales: Protecting Endangered Species Before the Endangered Species Act of 1973*, 22 ENVIRONS ENVTL. L. & POL'Y J. 71, 100-02 (1999); Douglas P. Wheeler, *The Ecosystem Approach: New Departures for Land and Water, Keynote Address*, 24 ECOLOGY L.Q. 623, 625-26 (1997). The same dynamic operates in other areas of environmental law. *See, e.g.*, David H. Getches, *The Metamorphosis of Western Water Policy: Have Federal Laws and Local Decisions Eclipsed the States' Role?*, 20 STAN. ENVTL. L.J. 3, 6 (2001); James L. Huffman, *The Past and Future of Environmental Law*, 30 ENVTL. L. 23, 30 (2000).

74. *See* John F. Hart, *Land Use Law in the Early Republic and the Original Meaning of the Takings Clause*, 94 NW. U. L. REV. 1099 (2000).

the legal status quo must be supported by an appealing focal point, something special enough to rally the needed political support.

The law also needs focal points for effective implementation. By concentrating on the special, the ESA provides the necessary focus, protecting "species" that are "threatened" or "endangered." Although the boundaries of those statutory terms are necessarily fuzzy, we can define them with enough specificity to allow regulators, the regulated, and advocates on both sides to understand in general terms what is included and what is not. The agency knows roughly the breadth and limits of its authority, citizen suits can force it to act if it obviously shirks its duties, and the regulated community has some assurance that it will not be subjected to arbitrary regulation. There is, as Oliver Houck puts it, "law to apply."[75]

However, if we move away from the focal points of the ESA to protection of ecosystems or biodiversity, then we risk sinking in a quagmire of ambiguity. We struggle to define ecosystems and biodiversity, or thresholds of unacceptable harm to either, with sufficient precision to constrain a reluctant or overzealous agency. We encounter similar difficulties if we stick with species but seek to intervene before their populations are drastically depleted, or if we choose locations as our focus but try to move beyond the designation of a handful of special locations as nature reserves. The problem seems an insurmountable one. If we seek to protect the ordinary, how will we draw lines between the permissible and the impermissible? How do we decide which threads of the tapestry can be sacrificed? Limiting our focus to special places or species on the verge of extinction allows us to avoid, or at least postpone, the most difficult boundary-setting questions. We can impose a flat prohibition on interference with those special resources. If we broaden our focus, we must decide precisely how much impact on nature to allow. Addressing that choice under intense political pressure in the course of individual decisions understandably worries conservation proponents.

Given the psychological and institutional barriers to direct protection of ordinary nature, it is not surprising that biodiversity advocates have emphasized the protection of special places and things, despite the apparent limitations of that strategy. While it is not perfect, it at least achieves some results. Second best is better than nothing, and seems particularly enticing to advocates who are convinced there is no time to lose.

---

75. Oliver A. Houck, *On the Law of Biodiversity and Ecosystem Management*, 81 MINN. L. REV. 869, 871 (1997).

V. STRATEGIES FOR SAVING THE ORDINARY

In order to move beyond the necessarily limited strategy of the special, we need a two-pronged approach. First, we need to find institutional focal points other than spectacular locations and charismatic species. Second, in order to provide political purchase for those efforts, we need to build stronger emotional connections to ordinary nature.

A. Finding Suitable Focal Points for Law

The first step is the easier one. Although the law needs focal points, those focal points need not be the places or things we are protecting. We have experience with other focal points in environmental regulation; NEPA, which provides some protection to the ordinary aspects of nature by choosing as its focal point particular actions, is one example. NEPA's focal point, actions with a federal nexus, is too limited to protect biodiversity on its own, but we need not find that alarming. Instead of trying to craft a single "magic bullet" biodiversity law, we might be better off with a patchwork of federal, state, and local law focusing on things, places, and activities that affect biodiversity. We might well find that the sum of those disparate parts is greater protection than we could hope to get from any one law.

Our portfolio of biodiversity protection should include regulation that proscribes, limits, or establishes prerequisites to those activities that predictably pose a threat to biodiversity. Institutionally, that goal is largely achievable, although it is not trivial. The major threats to biodiversity in the United States today, habitat degradation and the spread of exotic species,[76] are connected to a wide variety of activities, some of which are more amenable to regulation than others. Habitat degradation, for example, results from: air and water pollution; water diversion and storage; residential, commercial and industrial construction; extractive industries such as mining, silviculture, and agriculture; and recreation, among other activities. Regulating all of those activities seems like a tall order, but in fact many of them already are subject to some kind of federal, state, or local regulation. The trick with respect to those activities is to ensure that biodiversity considerations are adequately factored into existing regulatory schemes. That is a political problem, not an institutional one. We can take biodiversity into account if we are sufficiently motivated to do so.

We can also, if we care enough, limit many of the currently unregulated activities that threaten biodiversity. Many of them may not be suitable for regulation at the federal level. Grading, discing, deep

76. *See* David S. Wilcove et al., *Quantifying Threats to Imperiled Species in the United States*, 48 BIOSCIENCE 607 (1998).

ripping, and other earthmoving activities, for example, occur so frequently, at so many different locations and with such disparate consequences, that a federal regulatory program would be both politically and administratively impractical. But state and local governments can identify and regulate earthmoving activities that, in their particular context, pose serious threats to biodiversity. Some communities have already done so. San Jose, California, for example, recently enacted an ordinance to limit the practice of discing for weed control on lands that may harbor the burrowing owl, a species that is not yet listed under either the state or federal Endangered Species Act.[77]

Broad geographic regions can also provide useful focal points for the law. Again we have some experience with this sort of strategy; the Coastal Zone Management Act[78] has successfully encouraged coastal states to adopt broad coastal planning through the provision of federal funds and the promise of greater control over federal actions in the coastal zone.[79] Biodiversity might benefit from a similar approach. Several years ago, J.B. Ruhl proposed a federal "Biological Resources Zone Management Act," loosely modeled on the Coastal Zone Management Act, under which states would nominate biological resource zones for management through plans they would prepare and submit for federal approval.[80] Professor Ruhl's proposal has much to recommend it, including roles for state and local, as well as federal, authorities and a broad planning framework. Its primary shortcoming is that it would retain the focus on the special, applying only to areas nominated for special treatment because they are "unique, sensitive, or threatened."[81] Protecting biodiversity means keeping nature ordinary, and for that we need planning efforts that cover most of the landscape, not just isolated hotspots.

Local land use regulation, which has developed institutions for long-range area-wide planning applicable to a wide range of activities, has an important role to play in our biodiversity protection efforts, as Dan Tarlock explained as early as 1993.[82] However, because of the

---

77. SAN JOSE, CAL. ORDINANCE 26,419 (effective June 19, 2001).

78. 16 U.S.C. §§ 1451-1465 (Supp. V 1999).

79. Twenty-eight of thirty coastal states, representing more than ninety-nine percent of the nation's shorelines, have federally approved coastal zone management programs. *See* OFFICE OF OCEAN AND COASTAL RES. MGMT., NAT'L OCEAN SERV., NAT'L OCEANIC AND ATMOSPHERIC ADMIN., COASTAL ZONE MANAGEMENT PROGRAM, http://www.ocrm.nos. noaa.gov/czm/national.html (revised Oct. 21, 2001).

80. J.B. Ruhl, *Biodiversity Conservation and the Ever-Expanding Web of Federal Laws Regulating Nonfederal Lands: Time for Something Completely Different?*, 66 U. COLO. L. REV. 555, 662 (1995).

81. *Id.* at 663.

82. *See* A. Dan Tarlock, *Local Government Protection of Biodiversity: What Is Its Niche?*, 60 U. CHI. L. REV. 555 (1993).

need for coordination and a broader vision, balkanized local regulation is not likely to be effective. Multi-jurisdictional regional plans are needed. Habitat conservation plans (HCPs) under the Endangered Species Act,[83] which are evolving in many areas into something akin to a collaborative local/federal land use planning process, can sometimes fulfill that role. HCPs crossing county boundaries, however, have proven difficult to hold together, and most still tend to focus on a small number of listed species. Something like California's Natural Communities Conservation Planning Act (NCCP Act),[84] which aims more specifically to protect biodiversity and was developed with multi-jurisdictional plans in mind, might be a better model. The NCCP Act currently suffers from a lack of enforceable conservation standards,[85] but efforts are under way to significantly improve it.[86] Like HCPs and Ruhl's proposed Biological Resource Zones, though, the NCCP Act was never intended to apply to the entire landscape,[87] and Natural Community Conservation Planning remains an entirely voluntary activity.

In addition to regulations applicable to specific activities that pose special threats to biodiversity, effective biodiversity policy probably requires implementation of a large-scale planning approach applicable to all or nearly all lands. Our planning efforts should be devoted to protecting biodiversity, or as I would prefer to say, protecting nature, broadly, not just in limited locations. States that exercise significant control over local land-use planning might require that all local jurisdictions ensure that a "fair share" of the landscape is compatible with nature, by analogy to the current requirement in some states that every local jurisdiction supply a fair share of the region's needs for affordable housing.[88] Perhaps the federal government could en-

83. The ESA permits the Fish and Wildlife Service or National Marine Fisheries Service to issue permits authorizing the "incidental take" of listed species if the applicant submits a habitat conservation plan showing, among other things, that the permitted taking will not jeopardize the species' continued existence. *See* 16 U.S.C. § 1539(a)(2) (2000).

84. CAL. FISH & GAME CODE §§ 2800-2840 (West 1991).

85. *See* DANIEL POLLAK, THE FUTURE OF HABITAT CONSERVATION? THE NCCP EXPERIENCE IN CALIFORNIA 68 (California Research Bureau, Part 2, 2001), *available at* http://www.library.ca.gov/crb/01/09/01-009.pdf (last visited Oct. 11, 2001)).

86. A bill that would have imposed substantive conservation requirements drew broad support in the 2001 legislative session, although it ultimately was not enacted. *See* S.B. 107 (2001), *available at* http://www.legweb.com/bills/2001-2002/sen/sb_0101-0150/sb_107_bill_20010914_amended_asm.pdf (last visited Oct. 12, 2001).

87. Indeed, so far the program has only been applied to one area, the coastal sage scrub ecosystem of Southern California.

88. For descriptions of the range of "fair share" and similar legislation requiring that local municipalities attend to regional housing needs, see generally Florence Wagman Roisman, *Opening the Suburbs to Racial Integration: Lessons for the 21st Century*, 23 W. NEW ENG. L. REV. 65 (2001); Sam Stonefield, *Affordable Housing in Suburbia: The Importance But Limited Power and Effectiveness of the State Override Tool*, 22 W. NEW

courage and fund regional planning through a landscape-wide version of the Coastal Zone Management Act, although resistance to federal land use controls makes that something of a political long-shot.[89]

B. Building Political Support Through Love of Local Nature

The law we need to protect biodiversity is evolutionary in its individual parts, but revolutionary as a whole. We need to strengthen and redirect existing laws and create new ones at the federal, state, and local level, to construct a patchwork that, taken as whole, will protect our biotic resources. In order to make that happen, we need to follow the second strategic prong, convincing people to care. This is undoubtedly the more difficult part of our task, but it is critical to success. Measures to protect biodiversity will necessarily constrain human activities. We are capable of self-restraint, but it does not come easily to us. Effective biodiversity protection will require a political community sufficiently motivated to overcome the barriers to self-restraint.

So far, biodiversity advocates have relied primarily on self-interest to provide that motivation. They have focused on the material goods and ecological services nature provides, and emphasized the possibility that loss of species or ecosystems could bring the entire natural world crashing down.[90] The problem with that strategy, of course, is that it does not go far enough to save much biodiversity. Many species are ecologically redundant and of no apparent material use to human beings. The self-interest approach is a variant on the strategy of the special, reduced to saving only those special elements of nature that provide sufficient benefits to people to justify their protection. It is a variant particularly ill-suited to the biodiversity problem. Legitimizing actions based entirely on self-interest is not likely ever to encourage the development of an ethic of self-restraint. Self-restraint implies limits that come from within. Self-interest, though,

---

ENG. L. REV. 323 (2001); John M. Payne, *Fairly Sharing Affordable Housing Obligations: The* Mount Laurel *Matrix*, 22 W. NEW ENG. L. REV. 365 (2001).

89. In the 1970s, at the height of the environmental movement's political power, Congress considered but ultimately rejected national land use legislation. *See* Holly Doremus, *Patching the Ark: Improving Legal Protection of Biological Diversity*, 18 ECOLOGY L.Q. 265, 288-89 (1991). The political power of local land use control is so strong that many of the federal environmental statutes explicitly cede the primary land use planning role to state or local governments. *See* William W. Buzbee, *Urban Sprawl, Federalism, and the Problem of Institutional Complexity*, 68 FORDHAM L. REV. 57 (1999).

90. *See, e.g.*, Holly Doremus, *The Rhetoric and Reality of Nature Protection: Toward a New Discourse*, 57 WASH. & LEE L. REV. 11, 19-23 (2000) (collecting examples of the discourse of the "ecological horror story").

looks entirely to externally-imposed limits, denying the legitimacy of setting limits for ourselves.

If we are to save the full tapestry, we must turn from appeals to material self-interest to emotional connections. In my view, "biodiversity" is too abstract a concept to be useful in building the political support we need. I would substitute "nature" as our rallying point. Biodiversity is a dry, abstract concept that requires complex explanation. It cannot be shown in a photograph or captured in a sound-bite. Nature, by contrast, is something that people can see, hear, feel and love. With education we can notice nature, even though it is in many ways only the background to our lives. Nature, unlike biodiversity, can inspire the passion needed to support a revolution.

We must not only nurture love of nature, we must do so at a local level. I mean that in two senses. First, we will need to ensure that people in communities across the landscape feel emotionally connected to nature. Many of the actions that threaten biodiversity are local, and many of the decisions about nature protection must inevitably be made at the local level. If those decisions are to protect biodiversity, concern for nature must be planted and nurtured, not just in a few places, but across the country.

Second, people must care about local nature. A general, broad-brush love of nature can inspire us to save striking locations and charismatic species. But to save biodiversity, to keep the tapestry whole, we must protect many far less distinctive places and creatures. To motivate that, we must inspire people to appreciate the value of the species that are ordinary to their location but that, taken together, make their location distinctive. In other words, we must help people see what is special about the ordinary nature that surrounds them, and motivate them to keep "their" nature a part of their ordinary lives.

Genuine affection for and personal commitments to nature can help us surmount the psychological barriers to acting before a serious crisis materializes. We are less likely to ignore risks to things we care about than to other things. Moreover, love of nature can make regulation both less adversarial and less crucial. Those who love nature will be more willing to voluntarily curtail their impacts on nature than those with no such feeling.

Love of nature can be nurtured in a variety of ways, and we should use them all. Educational institutions, from public schools to universities, museums, and science academies have a role to play. So too do spectacular and uniquely unspoiled examples of nature, such as our national parks and wilderness areas. But perhaps the most important source of emotional connections to ordinary, unspectacular nature is consistent local exposure to it, preferably in the company of a

knowledgeable and informative guide. People will not come to love nature unless they know it. In order to facilitate that knowledge, we should keep nature as widely distributed, and as widely accessible, as possible. That means maintaining and restoring nature, in whatever small measures we can manage, in and around our population centers, especially in the inner cities and other areas where the population lacks the resources to pursue nature at a distance. Although those places may not seem as special as large wild areas or nature reserves, they have a truly unique role to play in the preservation of nature.

One of the most challenging aspects of moving away from the focus on the special will be the need to set appropriate limits and boundaries. Saving a few places inviolate or avoiding the absolute of extinction are targets we can widely agree on. But how will we decide how much ordinary nature we should save, how it should be distributed, and who should bear the costs, economic and other, of keeping it around? Those are very difficult decisions. Moving our institutional focus from special entities to large regions or specific activities allows us to reach those decisions, but it does not make them easy. They are all the more challenging because the boundaries will be extraordinarily difficult to determine in advance; we will probably have to face those choices repeatedly in the course of individual decisions.

Local affection for local nature may be the only hope we have that those decisions will be made with sensitivity to biodiversity. People who see the nature around them as a special gift that adds value to their daily lives will make some sacrifices and accept some limitations to keep it around. People who see nature as properly confined to distant reserves will not, and the reserves will be squeezed ever smaller under the pressure of a human population disinclined to accept limits on its behavior.

VI. CONCLUSION

The biodiversity problem sharply highlights the challenge of saving the ordinary. We are naturally drawn to the strategy of the special, but that strategy does not work to protect biodiversity, which is the entire tapestry of nature. In order to save biodiversity, we must find institutional focal points other than special places and special creatures. That is not trivial, but it can be done with some creativity. We can use human activities and geographic regions, for example, as focal points for law. The tougher challenge is building the political support to limit human actions, saving some room on the planet for nature. That requires the development and maintenance of emotional connections to ordinary nature.

Only strong, enduring, and widespread emotional ties to nature can ensure the persistence of any regulatory regime for nature protection. Only those ties will allow delegation of decisions to the local level without fear that biodiversity will be heedlessly sacrificed. Only those ties will bring support for much-needed restoration efforts. Only those ties will guarantee the personal and societal commitment required to control the significant threats to biodiversity that never will be amenable to regulatory solutions, such as the spread of exotic species.

Because we need widespread emotional connections to nature, enduring across generations, to effectively preserve biodiversity, we should be particularly wary of placing too much emphasis on the strategy of the special, even in the short term. That strategy does little to build the emotional connections we need. While we need not, and should not, forego our special solicitousness for our special landscapes and unique species, long-term protection of biodiversity requires that we also focus our attention on the ordinary.