Planning for Endangered Species: On the Possibilities of Sharing a Small Planet

Timothy Beatley

Increasingly in the United States, the preservation of endangered species and biological diversity conflicts with the mounting pressures of urban growth and development. Here, Timothy Beatley presents several arguments on the importance of species protection. He discusses the case of the endangered fringe-toed lizard of the Coachella Valley, California to illustrate the practical problems of habitat conservation that arise from competing land-use interests. Beatley asserts that planners can play a vital role in directing strategies to protect crucial habitats.

Species Protection as an Urban Planning Problem

Forty years ago, in his now famous *A Sand County Almanac* (1949), Aldo Leopold talked of the need to embrace a new and different ethical posture towards the natural environment. Human beings must move from the position of conquerors of the environment to one of being "plain citizens" of it. To Leopold, we are but equal members of a complex and interconnected network of life. It is time to resuscitate his vision in light of the tremendous environmental damages being inflicted on our planet, and on the other inhabitants of it. It is precisely those "other" inhabitants that I wish to focus on here.

It is my contention that as planners, we must squarely face up to our obligations to protect other species from the wholesale destruction we would otherwise subject them to. Moreover, this is increasingly within the practical policy domain of urban planning, in that many contemporary species conflicts revolve around disputes between land development and protection of species habitat. A number of specific development-species conflicts are employed as examples below. I will suggest that as "plain citizens," we have a strong moral obligation to reevaluate the ways in which our urban settlements grow and develop. Planners must lead the charge.

There is an unfortunate tendency on the part of many, perhaps most, Americans to view the problem of species loss primarily as a problem occurring somewhere else. People are most readily able to conjure up images of the black rhino or mountain gorilla when they think about endangered species; species that are obviously not indigenous to the United States. Even American-based campaigns seem to focus primarily on these popularly recognizable endangered species. It is interesting that the recent joint venture of Wendy's restaurants and the World Wildlife Fund (selling stuffed animals, with a percentage of the profits going to World Wildlife Fund projects) placed attention on species such as the snow leopard and the panda, rather than the Florida panther, black-footed ferret, or other American endangered species. The unfortunate fact is that dramatic species loss is an American problem, not simply a problem relegated to distant tropical rainforests essentially beyond our control. It is clearly a problem in our own backyards. There are some five hundred plant and animal species in the United States that are listed as endangered or threatened under the federal Endangered Species Act (ESA), and several thousand additional species listed as candidates, many of which will soon be listed as endangered or threatened.[1] Thus, the number of endangered species in the United States has been dramatically on the rise.

Increasingly in this country, the preservation of endangered species and biological diversity is bumping directly up against pressures for urban growth and development. The examples of development/species conflicts are numerous. A recent proposal to build a shopping center in Austin, Texas threatens the survival of five cave-dwelling invertebrates found nowhere else in the world (a spider, two types of beetles, a pseudo-scorpion and a cave-adapted daddy longlegs). New housing projects in western Riverside County, California, threaten the habitat of the endangered Stephens' kangaroo rat. Second home development on Big Pine Key, Florida, threatens the existence of the dwindling population of the key deer, which, among other things, has fallen victim to road-kills as a result of the dramatic increases in automobile traffic accompanying new development. Endangered sea turtles all along the Atlantic and Gulf coasts have difficulty nesting because of

the explosive shoreline development and the bright lights typically associated with it. The least Bell's vireo, a western songbird, is threatened in the San Diego area as a result of development in, and destruction of, its riparian habitats. A recent study by the Center for Plant Conservation indicates that urban development is threatening hundreds of native American plants (Shabecoff, 1988). Neither planning theory nor practice have adequately taken this issue into consideration.

American planners have the opportunity, and indeed the responsibility, to provide strong and positive leadership in the area of species protection. Indeed, their leadership could set standards for protecting and conserving species worldwide. By global standards, the United States is a prosperous and wealthy nation and, in theory, ought to be able to effectively protect from extinction those species within its control. The United States carries an important responsibility as an international model for conservation as well as economic prosperity. It is difficult for leaders in developing nations to effectively argue for the importance of protecting endangered species when many such U.S. efforts appear to be marginal and undervalued. In this country, the conflict is usually not one of deciding between providing basic food and housing and protecting species and their habitat. Rather, the conflicts are more often between species and the provision of luxury second home housing, or the exploitation of natural resources and habitat where substantial alternatives exist.

The U.S. examples that have been offered, however, may be of the wrong sort. Several recent examples of resolutions to development-species conflicts are discussed below; particular emphasis is placed upon one case that has been recently offered as a successful model. I will question this model, highlight the basic obstacles to species protection illustrated by this example, and offer suggestions for a new vision. Before doing so, however, it is helpful to briefly explore the rationales typically offered for protecting species.

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The Importance of Protecting Species

There are many selfish reasons for protecting endangered plant and animal species. It is estimated that the total number of species in the world number from five to thirty-million (of this there is even considerable uncertainty; see Wilson, 1988). Each represents a tremendous biological storehouse, the loss of which may deprive us of substantial medical, scientific, and commercial benefits. We are now in the position of losing many species we have yet to even fully catalog or understand. A large portion of commercial pharmaceutical products are derived directly from wild plants and animals, and potential scientific and medical benefits are tremendous. (see Meyers, 1979). Protecting

species diversity may also hold out the potential of discovering new disease-resistant crops, or crops better adjusted to changing climatic conditions (e.g., the Buffalo gourd). For instance, a plant native to Central Africa (kenaf) is currently thought to be a much cheaper and less environmentally harmful source of pulp and paper fibers than trees (see Brody, 1988).

Endangered and threatened species are also important indicators of how healthy and sustainable our planet really is. The loss of the least Bell's vireo, or other songbirds, may hold little direct impact to most people, yet may be indicative of the occurrence of broader environmental degradation and a harbinger of more severe environmental calamities to come. Biologists Paul and Anne Ehrlich use the vivid analogy of rivets popping out of the wing of an airplane to describe species extinction (see Ehrlich and Ehrlich, 1981). With each popped rivet (loss of a species), the structural integrity of the airplane (earth) is further undermined, until reaching a point where the plane will no longer fly.

Moreover, we simply do not understand the intricate ways in which the loss of a single species will affect other species and, in turn, human beings. A basic and undeniable environmental axiom is that everything is connected to everything else. While there is considerable truth to this line of argument, it is often difficult, at least in the short run, to discern any dramatic impacts of species extinction. It may take many years to detect the ripple effects to humans of the loss of, say, the spotted owl in the west and northwest United States. It often appears easier to argue that the loss of the habitat, rather than the species, may be of greatest consequence (e.g., advocating the preservation of Brazilian rainforests because they impact global climate and oxygen levels, rather than because they serve as habitat for, say, the endangered golden-lion tamarin).

There are also fairly convincing arguments that endangered species and their habitats provide or could provide substantial recreational and aesthetic benefits for humans. This is undoubtedly true, as is apparent to anyone who has witnessed the flight of a peregrine falcon or the fishing behavior of a grizzly bear. Even those species less "cuddly" in their appearance hold substantial recreational and visual benefits. The behavior and life processes of invertebrates would offer to many a "fascination value," to use the Ehrlichs' terms (see Ehrlich and Ehrlich, 1981). One can envision a time in which people might refocus their curiosity and sense of intrigue away from dime store novels and steamy television shows and toward the many other forms of life inhabiting our planet.

A somewhat more compelling, though still anthropocentric (i.e., human-centered) line of argument, lies in the fundamental importance of other creatures in a deeper emotional sense. It seems that as a species we must value the existence and qualities of other forms of life--one needs only to casually look at the names we give to automobiles and other product lines; the images we use in advertising and business affairs; and the animal symbols we employ to represent important societal and governmental institutions. What strikes me is the understated importance of "otherness"; that is, the knowledge that we are not alone on the planet, but rather part of a larger constellation of life forms. The quality of my life is enhanced significantly by the knowledge that such creatures as the desert tortoise exist, even if I have few direct opportunities to see the species in the wild. Whether we admit it or not, the loss of each species diminishes our lives in important ways. The prospect of an increasingly empty planet in terms of the number and diversity of species is a depressing one. Species extinction represents innumerable lost opportunities for human enrichment. In an 1855 letter to Franklin Pierce, chief Sealth of the Duwamish tribe of Washington State stated the point nicely: "If all the beasts were gone, men would die of great loneliness of spirit" (Nobokov, 1978, p. 109).

While these arguments are convincing in their own right, there seems to be an even more fundamental issue here. These contentions, while containing considerable validity, are unnecessarily anthropocentric and utilitarian in their focus. Need one justify allowing a species to exist simply because it holds some instrumental value or benefit to humans? This attitude, I believe, epitomizes our arrogance as a species (what some have called "speciesism") and fails to perceive the intrinsic value of other forms of life. I agree with David Erhenfield's "Noah Principle," which holds that species have a basic right to exist: "they should be conserved because they exist and because this existence is itself but the present expression of a continued historical process of immense antiquity and majesty. Long-standing existence in nature is deemed to carry with it the unimpeachable right to continued existence" (1978, pp. 207-208).

Other environmental ethicists have sought to refine and expand this basic notion. Paul Taylor's theory of "Respect for Nature," for example, is one of the more philosophically sophisticated (see Taylor, 1986). His ethic of respect for other forms of life is grounded on a "biocentric outlook," consisting of several key beliefs, among them: that humans are but members of the "Earth's community of life"; that human and non-human species are "integrated elements in a system of interdependence"; that all organisms are "teleological centers of life," with each representing a "unique individual pursuing its own good in its own way"; and that humans "are not inherently superior to other living things" (Taylor, 1986, pp. 99-100). These beliefs, Taylor argues, lead to an ethic of respect for other forms of life, not because they hold value or benefit for humans, but because they have inherent worth and a good of their own.[2]

What emerges is a view of man as a "co-inhabitor" of earth: a "plain citizen," to again use Leopold's terms. This, in turn, suggests a new and different attitude towards other

species and a solemn duty to minimize, to the extent possible, man's species-threatening impacts. Such a view is not an easy one for planners and policymakers to implement, as the case examples and discussion below will indicate.

The Realities of Species Protection

As compelling as arguments to protect endangered species might be in the abstract, the realities of such protective programs in the field suggest a number of practical and political difficulties. Conflicts between species conservation and urban development typically involve different community factions with different perspectives on what constitutes fair and reasonable results. Even when there is agreement about the need to protect an endangered species, there is often considerable disagreement about how it should be done. If planners are to be effective at promoting species conservation, they should be ready and able to foresee these practical obstacles and to respond to them.

To illustrate these practical realities, it will be useful to focus attention on a specific development-species conflict and its eventual resolution. I obtained substantial insight into the case through interviews with key participants in this dispute.[3]

The recent conflict upon which I will focus, which occurred in Coachella Valley, California, illustrates many of the points I wish to make. Coachella Valley, located about one hundred miles east of Los Angeles, is home to nine rapidly-growing cities, including Palm Springs. It is also home to the Coachella Valley fringe-toed lizard, placed on the federal endangered species list in 1980 after tremendous reductions in its habitat and range (See U.S. Fish and Wildlife Service, 1985). Its habitat formerly extended throughout the Valley, but in recent years it has had to compete for limited land area with booming country club and resort development. The lizard represents the quintessential example of evolutionary adaptation. It lives in blowsand habitat and has developed distinctive morphological features in response. The most notable features are the fringe toes--a row of elongated scales on the edge of the toe which provides extra traction and allows the lizard to "skate" along the sand (and under it) at high speeds. Other blowsand adaptations include a wedged-shaped snout which facilitates diving into the sand; fringed eyelids; a loose flap of skin which covers the lizard's ear while diving in the sand; and the ability to partially close its nostrils, also to prevent the entrance of sand.

In 1983, the conflict between the preservation of the lizard and development pressures came to a head when local environmentalists objected to the proposed Palm Valley Country Club--a project that was to consume more than four hundred acres of habitat. To opponents, the project was clearly illegal under the federal Endangered Species Act (ESA), which prohibits the killing or harming of a listed species. For their part, the developers seemed poised for a protracted legal and political battle, even threatening to seek changes to ESA should the U.S. Fish and Wildlife Service attempt to shut down development in the Valley. It was agreed that a Habitat Conservation Plan (HCP) should be prepared. Under the 1982 amendments to ESA, the U.S. Fish and Wildlife Service can issue an "incidental take" (Section 10(a)) permit when it can be shown that through the implementation of an HCP a species' chances of survival and recovery will not be diminished. The plan was prepared by a steering committee consisting of representatives of the major groups involved,

The endangered fringe-toed lizard of the Coachella Valley is threatened by the reduction in its blowsand habitat due to development pressures.

including the ten local jurisdictions (nine cities and Riverside County), the development and environmental communities, U.S. Fish and Wildlife Service (FWS), California Department of Fish and Game, and the Bureau of Land Management. The group was chaired by the Nature Conservancy and much of the technical work was done by consultants (see Coachella Valley Steering Committee, 1985).

The solution proposed by the plan, and ultimately implemented, was to establish three separate fringe-toed lizard preserves, the largest comprising an area of approximately thirteen thousand acres. The Nature Conservancy acted as the project coordinator and land acquisition agent. The total cost of establishing the preserves was approximately $25 million, to be obtained from a variety of sources, including some $7 million from developer mitigation fees. All developers of land lying within a designated mitigation zone (the historic range of the lizard) are required to pay a fee of $600 per acre, until $7 million is accumulated, after which the mitigation fee will drop to $100 per acre. As Table 1 indicates, large sums have also come from the Federal Bureau of Land Management in the form of land swaps, and from the federal Land and Water Conservation Fund. As these funds have become available, the Nature Conservancy has repaid itself for its initial acquisition costs.

Table 1. Projected Funding Sources for Coachella Valley Fringe-Toed Lizard Preserves (In Millions)

Funding Source	Amount
Federal Land and Water Conservation Funds	$10.0
BLM land exchange (cash value)	5.0
State Wildlife Conservation Board	1.0
Nature Conservancy	2.0
Developer Mitigation Fees.	7.0
Total	$25.0

Source: Coachella Valley Fringe-Toed Lizard Habitat Conservation Plan, June 1985

While the FWS has approved the HCP, and has issued a Section 10(a) incidental take permit, there is anything but universal consensus that the lizard's long term survival is assured. To most, even in the environmental community, this is a calculated risk, but a better outcome than one generated through confrontation. From the developers' perspective, the FWS permit has opened up the remaining areas of the valley for development and relieved any need to be concerned about the lizard's fate in areas outside of the preserve boundaries. All told, the preserves manage to protect approximately 7800 acres of the lizard's occupiable habitat. This constitutes only about ten percent of the habitat remaining at the time the plan was prepared, and about sixteen percent of the amount of unshielded natural blowsand habitat. On the one hand, the Coachella case illustrates the considerable merits of compromise over confrontation. On the other hand, one invariably wonders whether it is the lizard who is ultimately the loser under an arrangement which deprives it of some ninety percent of its existing habitat.

The Problem of Cost

The Coachella Valley case illustrates many of the obstacles that planners will face when attempting to minimize the "footprint" of man. An initial and obvious obstacle to the strategy undertaken in the Coachella case is the cost factor. An acquisition cost of $25 million was no small sum and led many to wonder whether the preservation of a lizard was really worth the expense. To many, such a sum seemed a wasteful use of limited societal resources. Indeed, the attorney representing the development community in the Coachella case speculated in an interview that perhaps this money would be better spent helping needy families in Los Angeles barrios. This attitude is, I believe, a fairly common one. If we attempt to assess our obligations to other forms of life in terms of the conventional economic metric, I suspect the endangered species will lose out more often than not.

Restoration activity in the Coachella Valley Reserve

Even for those who would see $25 million as a reasonable societal investment, there is considerable disagreement about how these funds should be derived. In the case of Coachella Valley, developers were required to pay a mitigation fee of $600 per acre, which will eventually supply $7 million of the final $25 million cost of the preserves. Thus, they pay less than one third of the cost of protecting a species which their actions are threatening in the first place.

To the development community, this contribution seems high. Since ESA is a federal law, in their minds it is entirely fair to ask that the broader public be required to pay for all or the lion's share of the cost of such preserves. To many others, myself included, the fees seem rather low, particularly when compared to mitigation requirements found in other environmental areas. Developers wishing to develop and fill wetlands, for instance, will typically be required to create or restore at least one acre of wetlands for every acre lost (often the compensation ratio is much higher). In the Coachella Valley case, land sells for in excess of $4,000 to $5,000 per acre. Thus, a $600 per acre fee would perhaps buy one-tenth of an acre of replacement habitat. This is not a very good bargain, especially in light of the speculative development profits to be had by developers and landowners of taking care of the "lizard problem."

Such fees are often criticized because of their impact on the price of new housing. This argument is spurious at best in the Coachella Valley case, given the types of housing and development being constructed. The issue has been raised in another development-species confrontation currently heating up in western Riverside County, California, where new housing construction is rapidly encroaching on the habitat of the endangered Stephens' kangaroo rat. Here, new development is being asked to pay an emergency mitigation fee of $1950 per acre (the HCP has not yet been prepared) and the affordable housing spectre is more legitimately raised. The price effects of such fees must be kept in perspective, however. Even in western Riverside County, about 60 miles from Los Angeles, the median home value is already around $110,000.

The Problem of Conflicting Rights

In very fundamental ways, development/species disputes like the Coachella Valley case are conflicts between rights--the rights of species to exist and flourish versus the property rights of landowners and developers. This is perhaps the single most difficult obstacle for planners to overcome in protecting endangered species. This is consequently the area in which concerned planners and policymakers must direct much of their intellectual and political energies in the near future. While a system of private property rights in land holds many benefits and seems essential in a market economy, it is also evident that such rights are badly in need of redefinition. Should a property owner, land developer, or a lumber company have such complete rights of control and use that their activities are permitted to jeopardize the existence of one or more species? Our ethic of respecting the rights of other species suggests to me that when private property rights and species existence rights conflict, the latter must prevail. Indeed, this seems the original intent of the federal Endangered Species Act.

There are at least two theoretical and legal tacts that could be taken to modify private property in land to better take account of species protection. One approach is to view serious impacts to an endangered species as equivalent to the creation of a public harm. This theory has been used in the past as a defense against the unconstitutional taking challenge (i.e., that regulation is so onerous that it amounts to governmental expropriation without just compensation). Just as a landowner may have no right to use and profit from his land where, say, substantial air or water

This date palm plantation is representative of agricultural activity that has resulted in the loss of habitat in the Coachella Valley.

pollutants are created, so also does the landowner not have an automatic right to use the land where it jeopardizes the existence of an endangered species. A second, related approach might be to extend the Public Trust doctrine, which asserts that certain natural resources (navigable waters, beaches, and shorelines) are so essential to the public that private parties cannot usurp or close off their use (see Hunter, 1988). Endangered species could be legitimately and convincingly viewed as the objects of public trust. Both of these lines of reasoning have an anthropocentric bent, of course. If it ever does, it may be many years before our legal system will acknowledge the very right of the species, irrespective of human rights and interests (e.g., see Stone, 1974, 1987).

The dynamic and changing nature of the endangered species problem certainly also creates perceived inequities from the perspective of a landowner or developer. Is it fair to severely restrict the use of a landowner's property of land after discovering for the first time the existence of an endangered species in that particular area? Or, is it fair that one day a species is not endangered, and the next it becomes listed, with the landowner's or developer's permitted uses of the land severely changed in that one day's time?

While the plight of the landowner or developer may be cause for some sympathy, land development is by definition a risky enterprise. Changes in our understanding of endangered species should be considered as yet another element in this risk equation, and certainly not grounds for special treatment or compensation. If a landowner's property is substantially devalued because of a decision to locate a highway or some other major public or private facility in a different, less favorable location, that landowner does not usually expect, nor do we offer, compensation or special treatment. The same principle should apply when it is discovered that a property owner's land contains the habitat of an endangered species. (For a contrary view see Carlton, 1986.)

This does not mean, of course, that planners providing for endangered species protection should be insensitive to the expectations and financial investments of developers and landowners. The planning process currently underway for the Stephens' kangaroo rat may be an example of such sensitivity. Through the preparation of an interim habitat conservation plan (not yet approved by the FWS), large areas of the county have been identified in which few rats are likely to be found, where development will be allowed to proceed while the full HCP is being prepared (i.e., a section 10(a) permit will be issued for these areas). Development will not be allowed to proceed, on the other hand, in designated study areas, where the vast majority of kangaroo rat habitat is found (that is, unless developers obtain 10(a) permits individually). This "separating out" of major habitat study areas from minor, mostly non-habitat areas may prevent the county from coming to a development standstill. While some very small amount of habitat may be lost outside of the study areas (perhaps five percent), this approach seems a reasonable way to allow development to proceed.

Also, the local financial and political realities may be such that some degree of development is necessary to fund the species recovery and protection program (e.g., in the case of the Coachella preserves, providing monies to put up fences, to police habitat areas, to establish species monitoring programs, etc.). Of course, many of these recovery activities would not be necessary in the first place without the severe encroachment of people and development.

The Problem of Scientific Uncertainty

There is a tendency among those of us who are not scientists to place substantial faith in the abilities of science and scientists to answer those questions necessary for making public policy. In the endangered species area, there are serious and perennial problems associated with the lack of scientific data and knowledge.

Among other things, our knowledge of what actions are necessary to preserve a species, for instance the size of preserves and the habitat acreage that should be set aside, is quite limited. In the case of Coachella Valley, although an effort was made to poll a number of biological experts about what the minimum preserve acreage should be, scientific understanding remains imperfect. Lizard populations have been shown to rise and fall dramatically from year to year, and while there are certain theories that might explain this phenomenon, no one is entirely certain of the cause. Moreover, while the protection of a species requires careful and protracted scientific study in order to understand its mating and foraging behavior, this process clashes dramatically with the short timeframe of landowners and developers wishing to utilize their land (and local officials desirous of expanding their jurisdiction's tax base and economic activity).

While the lack of full and accurate scientific knowledge presents a major problem to effective planning for species protection, it suggests certain strategies. One strategy, of course, is to ensure that the best biological studies possible in the short term have been prepared, and that all prevailing scientific opinion and expertise is tapped. Moreover, the pressure of landowners and developers to move ahead with their projects should not be allowed to obstruct certain basic studies (e.g., trapping and other studies designed to gauge the size and location of species, studies to understand patterns of blowsand movement, etc.). Any effective HCP must also incorporate provisions for the long term analysis and monitoring of the species, and the setting aside of

necessary funds for these activities. Finally, given these inherent scientific uncertainties, it only makes sense to err on the side of caution and conservatism when developing a habitat conservation plan or other protective strategies. Retaining much larger undisturbed areas of habitat may be more appropriate for species of which much less is understood about its life cycle or habitat needs, for example.

The Problem of "Inequality" Among Species

When endangered species and urban development conflict, questions are immediately raised about how important the particular creature in jeopardy is to the public, relative to other species. A successful effort to protect a species requires at least tacit consent on the part of the public, and often genuine public concern about its plight. Several factors can serve to undermine the sense of concern felt and expressed both by public officials and the community at-large. Certain endangered species are put at a marked disadvantage because they are not "cute," "cuddly," or otherwise visually attractive or appealing to the public. This explains why people express a disproportionately high level of concern and affection for bears, but not bats, lions but not lizards, tigers but not tiger salamanders. The bias seems particularly evident in favor of large terrestrial mammals, especially those which are in some way anthropomorphic. The Coachella case illustrates this point, in that it was (and is) extremely difficult to get citizens and public officials very excited about a lizard. Advocates of the lizard preserves found it was often more effective to argue in favor of more parks and open space, rather than in terms of the need to protect the lizard itself. This problem is even more evident in the recent case of the Stephen's kangaroo rat--a creature for which people have developed considerable disdain.

Stephen Kellert of Yale has conducted extensive surveys of public attitudes about such wildlife issues. Not surprisingly, he found that people consistently attach a much greater importance on preserving and protecting the larger, more attractive animal species. Of substantially less importance are unattractive, even repugnant, species like snakes and insects. Kellert gave respondents a list of different animal and plant species and asked them which they would favor protecting if it resulted in higher energy costs. While 89 percent favored protecting the bald eagle, only 43 percent favored protecting the Eastern Indigo snake and an even smaller 34 percent favored protecting the Kauai wolf spider[4] (see Kellert, 1979). The psychological importance attributed to, or connected with, certain species in turn translates into a willingness to make greater sacrifices (monetary and otherwise) in order to preserve and protect them. These kinds of biases are troubling, of course, because the attractiveness or "cuddle-ability" of a species does not necessarily correlate to its ecological importance. And, more fundamental yet, no species should have to rely on its visual attractiveness to humans as a measure of its worth or right to exist.

Another aspect of this inequality issue has to do with how distinctive a threatened species is as compared with other similar species. Is a "sub-species" of lesser value and lesser priority in preservation efforts than a true species? This issue has clearly come into play in several of the local endangered species conflicts under study. In the Coachella Valley case, some argued that saving the Coachella Valley fringe-toed lizard was not as pressing or of great importance because there were two other very similar sub-species indigenous to the U.S. (the Mojave and Colorado Desert fringe-toed lizards). The casual observer would have difficulty distinguishing between the three. As another example, while the County of Santa Cruz has an endangered species ordinance which imposes special development standards in salamander habitat areas, these efforts to save the Santa Cruz long-toed salamander could be criticized because the animal is but one of five subspecies of long-toed salamander (others include the western, central, eastern and southern long-toed salamanders).

Attempting to "value" a species according to its relative distinctiveness or "uniqueness" is folly for several reasons. First, at any given point in time, the scientific community disagrees about the extent to which species are similar or dissimilar. More importantly, though, species evolve in many ways, and for many reasons we simply do not sufficiently understand. Two subspecies with only minor differences in coloring and morphology may be distinctive in many ways beyond our comprehension.

In this article, I have focused entirely on endangered species to the neglect of other non-endangered species that may also be negatively impacted by urban growth and development. This in itself raises another question of equality. Species extinction eliminates forever a chain of life that has evolved and developed over millions of years. The preservation of a species, then, must necessarily take precedence over any single organism. To ensure the long term survival and recovery of the least Bell's vireo, for example, it may be necessary to harm or kill the non-endangered brown-headed cowbird, a major habitat competitor. On the other hand, the concept of a shared planet would seem to require that when our urban areas expand and when we permit the development of land, other forms of life, particularly sentient life, should not be unnecessarily harmed. A recent case in Colorado illustrates this point. In July of 1988, an exterminator, using aluminum phosphate, destroyed an 150-member prairie dog colony in Boulder, Colorado (see Zales, 1988). The exterminator had been hired by a developer who was about to break ground on a new commercial complex. The destruction of the colony was unnecessary, in that it could have been relocated, and indeed was actually slated to be relocated. Such unnecessary violence seems contrary to an ethic of respect for other forms of life.

The Vision of a Shared Planet

Perhaps the most disturbing aspect of the Coachella Valley case is the sheer extent of the resulting habitat loss. Is it not the epitome of human arrogance to destroy some ninety percent of a species' habitat in the name of additional resort housing and country club amenities--hardly things that could be considered human "essentials?" This loss is also disturbing in light of the history and intentions of the federal Endangered Species Act. The Secretary of the Interior is permitted to issue an incidental take permit only when it is found that the taking "will not appreciably reduce the likelihood of the survival and recovery of the species in the wild" (see Section 10(c)(2)(B)). It is difficult to imagine how such a drastic reduction of habitat would not reduce the chances of survival, and certainly of recovery. While it is not inconceivable that if ESA were aggressively enforced the political powers that be might seek to modify or severely gut it, I think it unlikely. Although in recent years the ESA has been gaining in political strength, planners continue to have a responsibility to push for its strident and aggressive enforcement.

More generally, planners and policymakers have responsibilities to consider the impacts that the projects they review, and the land use and other plans they prepare, will have on endangered species. The ethic of a shared planet requires it. Not only must direct impacts be considered, such as the obvious destruction of critical habitat, but more indirect effects as well. For instance, in Big Pine Key, Florida, road-kills of the endangered key deer will continue to multiply as development in the far northern end of the island is allowed to proceed, increasing traffic levels along Key Deer Boulevard. As another example, the desert tortoise is threatened by the introduction of power lines into the desert. These lines provide nesting areas for ravens, which in turn prey on young desert tortoise. Planners must find ways to minimize the impacts and interference of humans on endangered species, however they might result. We must be aware of and manage these indirect effects of urbanization and must be particularly sensitive to steer clear of those habitat areas especially rich in biodiversity.

But if we are serious as a society about sharing our small planet and an ethic of respect for other species, the long term implications are even more profound. They suggest a substantial rethinking of our lifestyles and our consumption patterns. For planners, there are fundamental changes implied in the types of human settlement patterns and strategies that are appropriate and permissible. Perhaps the most basic change is the rejection of unnecessary land consumption. Sharing the planet implies a responsibility to minimize our "footprint" and a responsibility not to squander the limited common habitat. Among the specific land use and planning policies that seem required by such an ethic include: higher urban and suburban densities and more compact and contiguous development patterns; the redirection of growth back into existing urban centers and the revitalization of declining areas; infilling and utilizing already degraded and committed lands for new developments before encroaching on environmentally-sensitive habitat areas; and restricting the extent to which second homes and other less-essential forms of development are subsidized or permitted at all.

The vision of a shared planet may also call for other changes in lifestyle that extend beyond simply the amount of land we directly consume for development. For example, a number of contemporary threats to species in this country involve water projects (e.g., dams, reservoirs, diversion systems, etc.). The vision of a shared planet may necessitate sharply curtailing the extent to which we wastefully consume a scarce resource such as water--particularly in the West.[5] The same could be said about energy consumption, the consequences of which can severely and irreparably damage the habitat of endangered and non-endangered species (e.g., the destruction of a riparian ecosystem as a result of a hydro-electric project; the creation of acid deposition as a result of coal-burning power plants; and the tremendous damage done by the recent Alaskan oil spill). Human-induced global warming due to excessive carbon dioxide emissions is a particularly serious threat in that many species will be unable to adapt to new climatic conditions largely as a result of human settlement patterns.[6] There are many ways in which being a "plain citizen" may require rethinking basic lifestyle and consumption patterns. And, perhaps most fundamentally, the notion of sharing the planet will require serious efforts on a global scale to control population growth. Such strategies as higher densities, urban infilling, and energy conservation can do only so much to reduce the human impact when the quantity of people, activities, and resource demands are expanding at exponential rates.

At the very least, we must, as a species, enter a period of reflection about our position here on Earth and the responsibilities we have to its other inhabitants, as well as to our own descendants. Planners are in the unique position to initiate and lead the discussion and provide practical insight into how the vision of a shared planet can be translated into actions, laws, and policies.

Timothy Beatley is an Assistant Professor in the Department of Urban and Environmental Planning at the University of Virginia. He received a Ph.D. in the Department of City and Regional Planning from the University of North Carolina in 1986.

Notes

1. There are approximately 1500 animals and 2500 plants currently classified as candidate species.
2. Taylor goes on to construct a fairly detailed set of ethical standards for treating other life forms, which he argues follows directly from the attitude of respect. These include four basic rules of conduct (the Rule of Nonmaleficience, the Rule of Noninterference, the Rule of Fidelity, and the Rule of Restitutive Justice) and five priority principles for deciding conflicts between human and non-human interests (the principle of self-defense, the principle of proportionality, the principle of minimum wrong, the principle of distributive justice and the principle of restitutive justice).
3. The observations in this article also draw from interviews conducted with key participants in three other Habitat Conservation Planning processes: the North Key Largo, Florida HCP (involving the American Crocodile, the Schaus swallowtail butterfly, the Key Largo woodrat and the Key Largo cottonmouse); the San Diego least Bell's vireo HCP; and the Riverside County Stephens' kangaroo rat HCP. For a general overview of several of these HCP experiences, see Webster, 1987.
4. The phrasing of the response categories was actually: "A bird, such as the Bald Eagle"; "A snake, such as the Eastern Indigo Snake"; and "A spider, such as the Kauai wolf spider."
5. It may also suggest that we rethink the extent to which we allow current national development patterns to continue. Does it make sense to continue to allow explosive population growth in arid areas like Southern California which necessitate environmentally (and financially) costly water diversion projects? Should we seek ways to direct growth at a national scale to those areas which have the greatest natural carrying capacities and where the human species can be accommodated with the fewest impacts?
6. The global warming problem does suggest certain conservation strategies such as protecting large contiguous blocks of habitat and ensuring that movement corridors are preserved. See Harris and Gallagher, 1989, for instance.

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