

Natural Resource Conservation and Biodiversity Protection



INTRODUCTION

In the early 20th Century, the biggest threats to wildlife were over-hunting and over-fishing. Mankind is still the biggest threat to wildlife, but the primary reason today is destruction of critical habitat by development. One-third of all species in the United States are at serious risk. In fast-growing states like Florida, Texas, and California, the threats to native ecosystems have been rated extreme. These problems have been exacerbated by global warming and climate change, which are putting additional stress on wildlife. Fortunately, and often because of the value of wildlife to their local economies, local governments across the U.S. are taking action to preserve wildlife habitat and biodiversity.

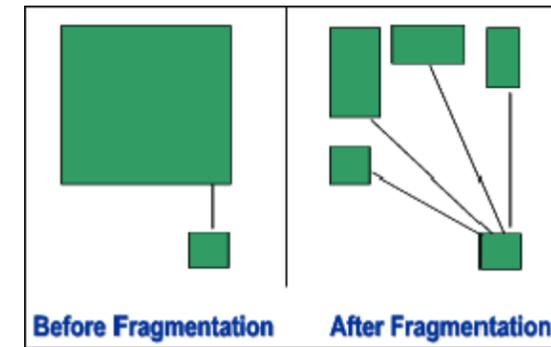
IMPLICATIONS OF NOT ADDRESSING THE ISSUE

Environmental guru Lester Brown, in his sobering book *Plan B*, warns that if action is not taken quickly and decisively, mankind will witness the sixth major species extinction event in history. According to Brown, the first five were caused by natural disasters and climate change. This one will be the first caused exclusively by humans, because it will result mainly from habitat destruction. The resulting loss will be immeasurable not only in economic terms, but also in terms of man's quality of life and the character of our communities. As noted biologist Edward O. Wilson has observed, "Surely the rest of life matters."

GOALS FOR WILDLIFE HABITAT AND BIODIVERSITY PROTECTION

Land use and zoning regulations can play an important role in helping to protect wildlife habitat in a number of ways. These are incorporated into the primary goals for wildlife habitat and biodiversity protection.

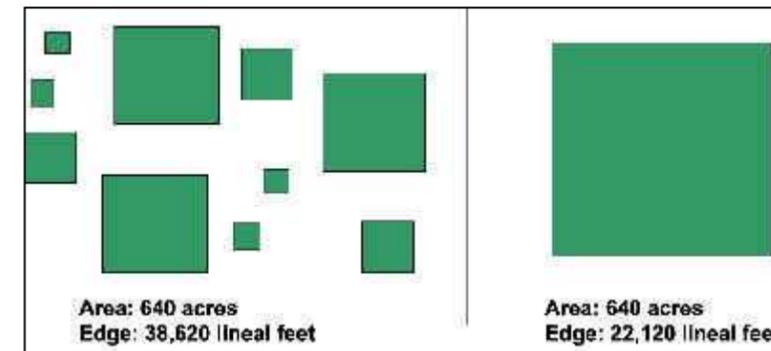
- Remove regulatory obstacles to wildlife habitat and biodiversity protection
- Establish incentives to protect wildlife habitat
- Establish standards that accomplish the following:
 - Protect large contiguous blocks of wildlife habitat and open space and prevent fragmentation by development.
 - Preserve critical environmental areas such as wetlands, forests, and riparian corridors from encroachment by development
 - Conserve water thus reducing pressure to divert and dam rivers and streams, the most significant habitat in many ecosystems
 - Remove exotic species, particularly plants, from development sites and prohibit their introduction
 - Reduce greenhouse gas emissions and thus reduce climate change and pressure on existing habitats and species (See chapter on climate change for tools.)



The increased distance between habitat patches makes it less likely wildlife will be able to travel between patches.

Source:

USDA Natural Resources Conservation Service - Watershed Science Institute



The fragmented landscape on the left in this illustration has 60% more edge than the unfragmented landscape on the right. When habitat patches are fragmented, the linear feet of edge increase favoring species that prefer edge habitat and often increasing predation and parasitism that need core habitat species

Source: USDA Natural Resources Conservation Service - Watershed Science Institute



NATURAL RESOURCE CONSERVATION AND BIODIVERSITY PROTECTION

KEY STATISTICS:

Note to reader: citations forthcoming

- One-third of the best-known species of plants and animals are at risk and more than 200 species of U.S. fauna and flora are already extinct.
- 27 ecosystem types have declined 98% or more since the European settlement of this country. Prairies, sagebrush steppes, and oak savannas are just a few that have been almost entirely wiped out.
- Significant declines have been documented for almost 30% of North American bird species—most due to factors such as loss of wetlands and native grasslands as well as poor land use decisions.
- In 2001, U.S. residents spent about \$108 billion on wildlife watching.
- A study of 17 conservation areas acquired under Florida’s Conservation and Recreation Lands, Preservation 2000, and Florida Forever program estimated their economic impact at \$128 million in retail sales, 1,200 jobs, \$21.7 million in wages, and \$7.2 million in state sales tax.
- Almost 50% of mainland U.S. residents participated in nature-based activities on their last vacation.
- A study in California in the 1990s calculated that wetlands provided up to \$22.9 billion in value annually including water supply, water quality, recreation, and fishing-related jobs.
- According to the U.S. Fish and Wildlife Service, in 2006 nearly 60 million anglers generated over \$45 billion in retail sales and created employment for 1 million people. Fishing is one of the most popular outdoor activities of lower-income citizens.
- A national bipartisan poll conducted in 2004 revealed that 65% of American voters would support modest tax increases to pay for programs to protect wildlife habitat, water quality, and neighborhood parks. Latino voters weighed in with 77% support. An earlier similar survey by the National Assn. of Realtors found that more than 80% of voters support preserving farmland, natural areas, stream corridors and historic areas under pressure for development.



WILDLIFE HABITAT AND BIODIVERSITY PROTECTION

		ACHIEVEMENT LEVELS			References/Commentary	Code Examples/Citations
		Bronze (Good)	Silver (Better)	Gold (Best)		
 <p>Rocky Mountain Arsenal National Wildlife Refuge</p>	<p>Remove Obstacles</p>	<ul style="list-style-type: none"> ▪ Allow cluster/conservation subdivisions in urban/rural transition areas ▪ Identify preferential development sites; rezone to allow development by-right ▪ To reduce sprawl and protect open space, allow mixed-use development districts that allow denser development by-right ▪ To avoid fragmentation of wildlife habitat, remove subdivision requirements for individual lot access drives and allow shared driveways 	<ul style="list-style-type: none"> ▪ Reduce sprawl and encourage infill development by adopting tailored standards for parking, open space, and storm water management (see Climate Change chapter) ▪ Repeal small-lot (< 1unit/20 acres) residential or agricultural zone districts in sensitive rural habitat areas ▪ To facilitate clustering on small lots in a conservation subdivision, allow community septic systems 	<ul style="list-style-type: none"> ▪ Restrict septic systems in rural areas with significant wildlife habitat ▪ Adopt true rural zoning (1 unit/80 acres+) in sensitive wildlife habitat areas ▪ Ban planned unit developments in rural jurisdictions in vicinity of sensitive natural areas ▪ Require developers to provide adequate funding to undertake wildlife habitat impact analysis for large projects 	<ul style="list-style-type: none"> ▪ See Randall Arendt's <i>Conservation Design For Subdivisions</i> (1996) and <i>Rural By Design</i> (1994). Chicago: American Planning Association. ▪ Illustrative conservation designs by Foth and Van Dyke. Available online. Retrieved December 22, 2009 ▪ Wells, Barbara (2002). <i>Smart Growth At The Frontier</i>. Northeast-Midwest Institute. Available online. Retrieved December 22, 2009 ▪ Daniels, Tom (1999). <i>What to Do About Rural Sprawl?</i> (1999). Paper Presented at The American Planning Association Conference, Seattle, WA April 28, 1999. Available online. Retrieved December 22, 2009 ▪ Duerksen, Chris and Snyder, Cara (2005). <i>Nature-Friendly Communities</i>. Washington: 	<ul style="list-style-type: none"> ▪ For general agricultural zoning references see the Municipal Research and Services Center of Washington. Available online. Retrieved December 22, 2009. ▪ University of Wisconsin Extension provides the basic elements of a conservation subdivision ordinance. Available online. Retrieved December 22, 2009. ▪ Summary ordinance requirements for conservation subdivisions in selected Wisconsin communities. Available online. Retrieved December 22, 2009 ▪ For a description of PUDs with a pro/con scorecard, see the Center for Land Use Education, <i>Planned Unit Development</i> (2005). Available online. Retrieved December 22, 2009

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					<p>Island Press. See case studies of Baltimore County, MD, and Dane County (Madison), WI, for effective growth management on the urban/exurban interface.</p> <ul style="list-style-type: none"> ▪ Barnes and Adams, <i>A Guide to Urban Habitat Conservation Planning</i>, offers a good summary of issues to consider for urban wildlife habitat plans and ordinances. Available online. Retrieved December 22, 2009 . 	
 <p>After being on the verge of extinction in 1967, the American bald eagle has officially been taken off the endangered species list today.</p>	<p>Create Incentives</p>	<ul style="list-style-type: none"> ▪ Offer density bonuses for provision of large blocks of contiguous open space ▪ Grant extra credit against subdivision and PUD open space requirements for active wildlife management ▪ Grant additional open space credit for removal of exotic vegetation 	<ul style="list-style-type: none"> ▪ Adopt a development rights transfer program to provide incentive for open space preservation ▪ Identify and map critical habitat sites where development is discouraged 	<ul style="list-style-type: none"> ▪ Adopt a purchase of development rights (PDR) program and support with a significant or dedicated funding source (e.g., sales tax earmark) 	<ul style="list-style-type: none"> ▪ Pruetz, Rick (2003). <i>Beyond Takings and Givings</i>. Arje Press. Considered the leading publication on transferable development rights strategies and ordinances. Available online. Retrieved December 22, 2009 . ▪ Skoloda, Jennifer (2002), <i>Wildlife Habitat In A Comprehensive Plan</i>. Center for Land Use Education. Summary of how to integrate wildlife habitat considerations in a local comprehensive plan. Available online. Retrieved December 22, 2009 . ▪ For excellent overviews of PDR programs, see <i>Purchase of Development Rights: Conserving Western Lands, Preserving Western Livelihoods</i> (2002). Western Governors' Assn. Available online. Retrieved December 22, 2009 . 	<ul style="list-style-type: none"> ▪ Suffolk County, NY, <i>Farmland development rights in Suffolk County, New York/Suffolk County, NY</i>. A description of one of the nation's first PDR programs. Available online. Retrieved December 22, 2009 .
 <p>Bird house in an area protected by a conservation easement. Cherokee Ranch, Douglas County, CO</p>						

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 <p>Pronghorn Antelope Migration Preservation. Source: Wildlife Conservation Society</p>  <p>Polar Bear. Recently listed as a threatened species due to global warming.</p> 	<p>Enact Standards</p>	<ul style="list-style-type: none"> Require a significant minimum percent open space set aside requirement in all subdivisions (e.g., 75% in rural areas). Require wildlife habitat to be protected as part of any open space set aside Adopt tree and vegetation protection ordinances Adopt wildlife-friendly fencing standards Require use of native plants in landscaping plans Adopt fiscal impact analysis requirements for large developments 	<ul style="list-style-type: none"> Limit the size of planned unit developments in rural zone districts or prohibit entirely Adopt true large-lot agricultural zoning (e.g., 1 unit/80 acres) Adopt water-conserving landscaping standards Require the use of conservation subdivisions in urban/rural transition areas with large minimum open space requirement Adopt development setbacks (e.g., 100 feet) from all sensitive natural areas (wetlands, riparian areas, critical wildlife areas) Require removal of exotic vegetation on development sites Adopt open space impact fees Ban domestic pets in developments near sensitive wildlife habitat 	<ul style="list-style-type: none"> Require new development to offset any loss of critical habitat by requiring purchasing conservation rights or lands elsewhere Create urban services boundary to restrict development outside of designated growth areas Adapt comprehensive wildlife protection regulations (See references to Summit County, CO, and Teton County, WY) 	<ul style="list-style-type: none"> <i>Conservation Thresholds for Land-Use Planners</i> (2003). Environmental Law Institute. A review and synthesis of the basic conservation standards rely on in reviewing development proposals. Available online. Retrieved December 22, 2009 . Nolon John (2003). <i>Open Ground: Effective Local Strategies for Protecting Natural Resources</i>. Washington: Island Press. Provides a comprehensive look at local land preservation strategies, tools and information. Available online. Retrieved December 22, 2009 . <i>Development and Dollars: An Introduction To Fiscal Impact Analysis in Land Use Planning</i>. Natural Resources Defense Council. Available online. Retrieved December 22, 2009 . Duerksen, et al, <i>Habitat Protection Planning: Where The Wild Things Are</i>. PAS Report 470/471. American Planning Assn. (1997). Available online. Retrieved December 22, 2009 . Duerksen, Chris and Snyder, Cara (2005). <i>Nature-Friendly Communities</i>. Washington: Island Press.) See case studies Teton County, WY, and Sanibel, FL , for progressive habitat protection ordinances For a discussion of tree conservation ordinances, see <i>Model Tree Protection Ordinance</i>. Scenic America. Available online. Retrieved December 22, 2009 . 	<ul style="list-style-type: none"> Mark Bobrowski and Andrew Teitz, Model Land Use Ordinance to Protect Natural Resources, Available online. Retrieved December 22, 2009 . <i>Florida Wildlife-Friendly Toolbox</i> is an on-line resource containing sample plans and ordinances relating to conservation of wildlife habitat. Available online. Retrieved December 22, 2009 . Summit County, Colorado, Wildlife Habitat Overlay District. Available online. Retrieved December 22, 2009 . Salt Lake City Riparian Habitat Protection Ordinance (urban habitat protection). Available online. Retrieved December 22, 2009 . City of Tucson, AZ, water conservation ordinances. Available online. Retrieved December 22, 2009 . Natural, Scenic, Agricultural and Tourism Resources Protection. <i>Teton County, (Wyoming). Land Development Regulations, (Article III)</i>. . Available online. Retrieved December 22, 2009 . Progressive habitat protection ordinances addressing environmental performance standards, interior wetlands conservation district, beach and sand dune system. <i>Sanibel (Florida) Code (Articles XIII, IX, VII)</i>. Available online. Retrieved December 22, 2009 .
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Sustainable Community Development Code

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					<ul style="list-style-type: none">▪ <i>Strategies for Managing the Effects of Climate Change on Wildlife and Ecosystems. The Heinz Center. Available online. Retrieved December 22, 2009 .</i>▪ McElfish, James (2004). <i>Nature-Friendly Ordinances</i> Environmental Law Institute.	
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STRATEGIC SUCCESS FACTORS

Regulatory tools must be grounded in solid comprehensive policy planning and accompanied by competent administration and supportive programs.

PLANNING POLICY

- Identify high-priority resource protection areas in local plans and undertake specific area plans to protect.
- Coordinate local government capital improvement plans to avoid extending infrastructure into or near critical wildlife habitat

PROGRAMS & ADMINISTRATION

- Counties provide financial assistance for their towns to plan/revitalize local business districts—helps reduce rural commercial sprawl.
- Coordinate parks and open space planning with wildlife habitat protection. Identify key habitats to acquire and protect
- Add resource biologist/planner to staff to provide thorough review of wildlife impacts of projects.
- Provide funds for local land trusts to assist in open space protection