

# Transportation and Biodiversity



*Transportation investments, services and incentives should meet our travel needs, promote economic prosperity and environmental justice, preserve and protect open space, scenic resources and agricultural land, protect and enhance the integrity of natural resource systems and wild places and improve air and water quality. Such efforts can promote resource efficiency and energy conservation, while reducing reliance on foreign oil and offering solutions to climate change.*

**-New Transportation Charter**

Transportation and the sprawling development it encourages has been recognized as a primary cause of habitat loss and a subsequent decline in biodiversity. Through roadkill, transportation is also directly responsible for animal deaths.

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## **More Highways Mean More Roadkill**

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More than 8 million lane miles of roadway crisscross the U.S., consuming about 17,375 square miles of land – an area about the size of Maryland and Delaware combined. While this extensive road network has led to unprecedented mobility for the U.S. population, it is a remarkably efficient “death-trap” for wildlife.

According to the Defenders of Wildlife, more than 1 million animals are killed on the nation’s roadways every day. Road kill is the number one way that humans kill wildlife in the United States, and has helped push several species, such as the grizzly bear and Florida panther, closer to extinction. Florida’s highways, such as the notorious “Slaughter Alley” (County Road 846), now pose the greatest single threat to the endangered Florida panther’s survival. Between 1979 and 1997, 42 percent of Florida panther deaths were attributed to roadkill.

Other threatened and endangered species particularly at risk because of wildlife-vehicle collisions include the ocelot, Florida black bear, Canada lynx, Key deer, grizzly bear, desert tortoise, San Joaquin kit fox, and the Houston toad.

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## **Road Networks Create Habitat Fragmentation and Degradation**

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Roadkill is essentially a symptom of an even greater problem for biodiversity, habitat fragmentation. The spider web-like network of roadways covering the U.S. has relentlessly fragmented much of the remaining wildlife habitat into small patches. The effect is devastating to populations of wide-ranging animals which need large areas of continuous habitat to survive. An adult male mountain lion may occupy a territory covering a range as large as 300 square miles. Young animals may be so confined by habitat fragmentation that they are unable to establish their own territories. Finally, because habitat

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fragmentation may limit breeding options, genetic integrity of populations can become severely degraded by in-breeding.

Fragmented habitat is also degraded habitat. Fragmentation creates "edges" around intact habitat which have different microclimates (i.e., more sunshine and wind, lower humidity, and different patterns of rainfall, snowfall and snowmelt) which supports different species. Songbirds have been found to be especially vulnerable to edge effects as invasive edge species such as cowbirds take-over their nests. Some patches become so fragmented that they contain virtually no interior habitat. The British Columbia Ministry of Forests has found that forest patches ¼ of a mile wide contain little, if any interior habitat.

Roads can more directly degrade habitat by serving as a conduit for exotic plants, pests, pathogens, and pollutants. Aquatic habitats are especially susceptible to pollution from roads, as most of the heavy metals, pesticides, petrochemicals, and debris that end up on roads eventually find their way into streams, rivers, lakes, estuaries or oceans.

Perhaps most importantly, roads degrade habitat by opening up land to new development. Between 1954 and 1997, the amount of urban land area in the U.S. nearly quadrupled; from 1992 to 1997, the rate of development almost doubled – more land was developed during this period than in the ten-year period that preceded it. According to recent studies, habitat destruction is the main factor threatening 80 percent or more of the species listed under the federal Endangered Species Act; more than 95 percent of listed species are endangered to some extent by habitat loss or alteration.

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### ***Climate Change***

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Our auto-oriented transportation system is further threatening biodiversity by altering the earth's atmosphere. According to the Intergovernmental Panel on Climate Change (IPCC), the 1990s were the hottest decade of the 20th century, and probably the last 1,000 years. The IPCC further predicts that the earth's average temperature will increase by as much as 10° F during the next century. The changing climate may pose the greatest risk to biodiversity in the coming century. A study of outstanding natural areas by the World Wildlife Fund found that climate change will lead to mass migrations of those species that are fast enough to keep up with the rapidly changing climate. The report further finds that because so many species won't be able to move to new areas fast enough, as many as one-fifth of the world's most biologically-rich areas could suffer "catastrophic" losses of species.

Carbon dioxide (CO<sub>2</sub>) is the largest contributor to climate change and the transportation sector is one of the largest sources of CO<sub>2</sub>. Cars and light trucks emit 20 percent of the nation's CO<sub>2</sub> pollution. Each gallon of gasoline burned pumps 28 pounds of CO<sub>2</sub> into the atmosphere – 19 from the tailpipe and nine pounds from upstream refining, transporting and refueling. The U.S. transportation sector as a whole is responsible for about 32 percent of U.S. CO<sub>2</sub> emissions, and almost nine percent of the world's total CO<sub>2</sub> emissions.