

# THE WILDLIFE SOCIETY

## FACT SHEET

## Wildlife Habitat Fragmentation



Edge Effect: When the habitat of the **black-capped vireo** (*Vireo atricapilla*) is fragmented, this avian species is exposed to the danger of brood parasitism on the habitat's edge by the **brown-headed cowbird** (*Molothrus alter*).<sup>17</sup> This photo shows a black-capped vireo feeding a cowbird chick (Credit: Gil Eckrich).

### Habitat Fragmentation

A large expanse of habitat transformed into a number of smaller patches of smaller total area, isolated from each other by a matrix of habitats unlike the original.<sup>16</sup>

Fragmentation can have a severe impact on wildlife. Reductions in habitat may lead to increased competition among species and more limited resources.

Natural habitat is quickly disappearing across the North American landscape, largely due to habitat fragmentation. Fragmentation occurs when connected natural areas are disjointed by habitat removal, converted to urban or agricultural land, or physical barriers such as fences and roadways are constructed. Habitat fragmentation bisects the landscape and leaves smaller, more isolated land for wildlife, causing local and population level changes to native flora and fauna. Fragmentation can shift habitat use and provide opportunity for invasions of non-native species.<sup>1,2</sup>

### EFFECTS OF FRAGMENTATION ON WILDLIFE

#### *Patch-Size Effects*

Fragmentation can negatively impact large-bodied or wide-ranging species that depend on large areas of favorable habitat to survive by reducing landscape patch-size and increasing movement barriers.<sup>3</sup>

#### *Edge Effects*

Fragmentation increases the amount of "edge" in a landscape, which can negatively impact wildlife by causing changes in abiotic (increased sunlight and higher wind speeds) and biotic (increased risk of predation and brood parasitism, invasion of non-native species) conditions, making the habitat unsuitable for some native species.<sup>4</sup>

#### *Isolation Effects*

Isolation of habitats can negatively impact species that require access to multiple small habitat patches to survive by reducing their access to resources. Increased isolation of habitats can lead to inbreeding, which can cause genetic abnormalities and weaknesses.<sup>5</sup>

### CAUSES OF FRAGMENTATION

#### *Agriculture and Livestock Management*

Large tracts of land are increasingly at risk of conversion from natural ecosystems to agriculture fields as global human population increases and the demand for food rises.<sup>6</sup> The impacts of fragmentation can be reduced by the development of buffer zones around fragmented habitats in order to protect those natural habitats from agricultural disturbances on neighboring land.

#### *Development and Sprawl*

Approximately 33% of houses in the United States are built in undisturbed natural habitat.<sup>7</sup> Roads linking newly constructed residential and commercial developments cut across the landscape creating barriers through wildlife home ranges.<sup>8</sup> Corridors and "stepping stone" habitat patches can decrease the impacts of sprawl-caused fragmentation on wildlife by allowing for their movement across the landscape.

## Roadways and Railways

Highways, roads, and other travel corridors can destroy and fragment habitats by creating barriers to wildlife dispersal.<sup>9,10</sup> Impacts can be countered by providing wildlife crossings and corridors that allow wildlife to travel between existing viable habitats. Wildlife crossings are vegetated bridges or tunnels that allow safe passage across roads.<sup>11</sup>

## Oil & Gas Exploration

Road development, noise pollution, air quality degradation, waterway pollution, land conversion, and habitat loss caused by oil and gas exploration can fragment habitat and have landscape level impacts on wildlife.<sup>12</sup> The greater sage-grouse (*Centrocercus urophasianus*) is one species that will be impacted by fragmentation, with an expected 7-19% population decline from future oil and gas development.<sup>4</sup> Energy companies can work with local government agencies to create Wildlife Mitigation Plans (WMPs) to lessen their impact on surrounding habitat.<sup>13</sup>



A recent study showed that wildlife crossings along the Trans-Canada Highway has helped maintain genetically healthy populations of bears living on either side of the highway, like the one pictured above from Lake Louise to Banff, Banff National Park, AB, Canada<sup>18</sup> (Credit: Adam Fagen).

## PREVENTION AND MITIGATION OF FRAGMENTATION

A variety of tools can be used to preserve or recover fragmented land, to ensure it is suitable wildlife habitat:<sup>14</sup>

- **Wildlife corridors:** A connection of at least two significant habitat areas by natural habitat.<sup>15</sup>
- **Land acquisition:** Local, state, federal, and private entities purchasing land for habitat preservation.
- **Conservation easements:** An agreement between private landowners and government agencies to prevent or limit commercial or residential development of critical habitats.
- **Restoration:** Converting once developed land to a natural state.
- **Mitigation:** Developers create or preserve lands of similar quality and size to that which they impact.
- **Zoning:** Adding wildlife and habitat conservation considerations to local development plans.
- **Buffer zones:** Areas around viable habitat that reduce the edge effect and protect the interior habitat from disturbances on nearby lands.



Border fences have a disastrous effect on wildlife migrations and can limit access to vital resources. The collared peccaries, the only wild, native, pig-like animal in the U.S., pictured above serve as one example (Credit: Matt Clark, Defenders of Wildlife).

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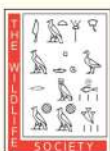
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