

# Changing the Land

Study Units

[Iowa's Wildlife Habitats; People and Wildlife](#)

## Supplemental Information

Habitat fragmentation occurs when large tracts of habitat are broken into smaller pieces by housing developments, roads, agriculture, and other factors, often referred to collectively as **land use**. It increases the amount of edge in a habitat. Edge is beneficial to some animals (e.g., ring-necked pheasants, rabbits), but is detrimental to others. Land use information is tracked by the Natural Resources Conservation Service (NRCS) as part of the Soil and Water Resources Conservation Act. You can use an [interactive viewer to see reports about land use](#) or a [2012 Iowa Land Use Report](#) based on National Resources Inventory. This inventory also shows change in land use over that last several decades. The change from pre-settlement time to now (from predominantly prairie to agriculture) meant wildlife species needing large areas of continuous habitat were most negatively affected. Other species are now much more numerous – raccoons, opossum, house mouse, and coyotes.

Currently, land use is shifting from agriculture to urban environments in several areas of the country. This affects wildlife too. Urban areas may be less suitable for some wildlife species, such as some migrant songbirds that are more susceptible to cowbird parasitism, feral cat predation, or collisions with windows and tower guide wires. All can impact survival of individual birds, and long-term population trends for these species.

In areas where land use changes are occurring rapidly, the impacts on some animal species can be devastating.

## Teaching Suggestions

Before starting the activity, read *Flute's Journey* (see the **Additional Materials** section). This book describes a year in the life of a wood thrush. It will help students better understand all the habitat factors necessary for the survival of this species.

Students also can read the [Wood Thrush Fact Sheet](#) and analyze the graphs on the [Bird Species Sensitivity to Habitat Fragmentation](#) page for the number of acres needed to attract a wood thrush. For example, a 100-acre block of woodland has a 70 percent chance of containing a wood thrush, a 10-acre block has a 10 percent chance. Students should determine which other species would be lost as habitat is fragmented into smaller and smaller blocks. The wood thrush can be used as an “indicator species” to determine habitat quality.

The [Natural Resources Conservation Service \(NRCS\) National Resources Inventory](#) has maps showing land use comparisons over time. These maps do not show actual land cover, but give summary statistics on various aspects of land use. NRCS also has statistics on [Land Use and Land Cover Estimates for the United States](#). Another good source for maps is the [Iowa Geographic Image Map Server](#), an on-line source for geographic maps depicting a variety of land uses, etc.



Have students investigate what is happening to wood thrush migration and wintering habitat. Has it also been fragmented? Is this as critical a problem when the thrush is not trying to nest?

Organize an event for [International Migratory Bird Day \(IMBD\)](#). This annual event is held early in May as migratory birds return to the Midwest to nest.

### Evaluation

See the activity

### Student Materials

- Wood Thrush Fact Sheet
- Bird Species Sensitivity to Habitat Fragmentation

### Teacher Aids

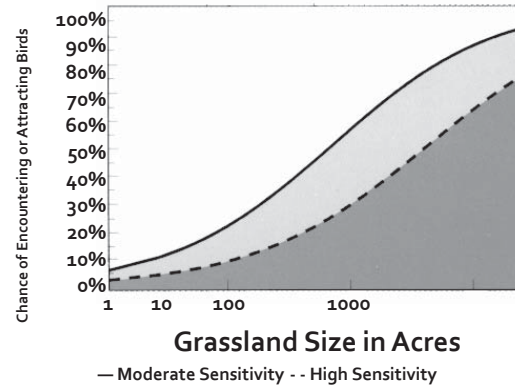
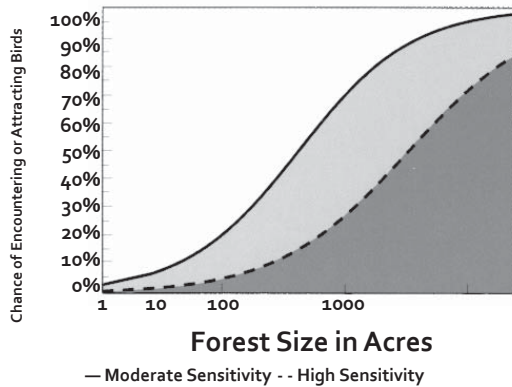
None

### Additional Materials

- [U.S. Fish and Wildlife Service–Migratory Bird Data Center](#)
- [Iowa Geographic Image Map Server](#) – digital aerial photos, relief maps, topographic maps, and land cover maps from satellite imagery
- [American Bird Conservancy](#) – updates on conservation efforts for neotropical migratory birds; includes information on specific species, educational project ideas, materials on issues of concern
- [American Association of Geographers](#) – request form for a free resource kit with maps and educational materials about geography, GIS technology, and sustainable development
- [National Resources Inventory](#) maps, data, and summaries on land cover, land use, soil erosion, prime farmland soils, wetlands, habitat diversity, selected conservation practices, and other natural resource information
- [America's Private Land: A Geography of Hope](#) under "Teachers and Students" - contains facts and figures on the status of the nation's natural resources and a plan for stewardship in the 21st century.
- Cherry, L. 1997. *Flute's Journey: The Life of a Wood Thrush*. A Gulliver Green Book Harcourt Brace and Company.
- George, J.C. 2001. *Frightful's Mountain*. Penguin Putnam Books for Young Readers.
- Iowa Ornithologists' Union. 1998. *Solve the Crime: Save the Song of Spring! Neotropical Migratory Birds and Their Midwestern Connections Middle School Activity Guide*.



## Forest and Grassland Bird Species Sensitivity to Habitat Fragmentation



Species with a high sensitivity are those birds least tolerant of habitat fragmentation. Moderate species show an intermediate response to habitat fragmentation, and low species are those species most tolerant to fragmentation.

### Forest Birds<sup>a</sup>

#### High Sensitivity

broad-winged hawk  
pileated woodpecker  
least flycatcher  
yellow-throated vireo  
black-and-white warbler  
worm-eating warbler  
cerulean warbler  
ovenbird  
mourning warbler  
hooded warbler  
American redstart  
brown creeper  
veery

#### Medium Sensitivity

yellow-billed cuckoo  
black-billed cuckoo  
hairy woodpecker  
acadian flycatcher  
scarlet tanager  
summer tanager  
red-eyed vireo  
Northern parula  
yellow-throated warbler  
Louisiana waterthrush  
Kentucky warbler  
white-breasted nuthatch  
tufted titmouse  
blue-gray gnatcatcher  
wood thrush

#### Low Sensitivity

downy woodpecker  
red-headed woodpecker  
red-bellied woodpecker  
great crested flycatcher  
Eastern wood-pewee  
blue jay  
brown-headed cowbird  
Northern oriole  
common grackle  
rufous-sided towhee  
Northern cardinal  
rose-breasted grosbeak  
indigo bunting  
gray catbird  
Carolina wren  
house wren  
black-capped chickadee  
Carolina chickadee  
American robin

### Grassland Birds<sup>b</sup>

#### High Sensitivity

Northern harrier  
upland sandpiper  
greater prairie chicken  
bobolink  
savannah sparrow  
Henslow's sparrow

#### Medium Sensitivity

Eastern meadowlark  
Western meadowlark  
grasshopper sparrow  
sedge wren

#### Low Sensitivity

Northern bob-white  
red-winged blackbird  
American goldfinch  
vesper sparrow  
field sparrow  
song sparrow  
dickcissel  
common yellow-throat

**a** data compiled primarily from studies of forest fragments in Illinois, Missouri, and Wisconsin with supplemental data from Maryland, Massachusetts, and the Mid-Atlantic States.

**b** Data compiled from studies of grassland fragments in Illinois and Missouri.

From: J.R. Herkert, R.E. Szafofi, V.M. Kleen, and J.E. Schwegman. 1993. Habitat Establishment, Enhancement and Management for Forest and Grassland Birds in Illinois. Division of Natural Heritage Illinois Department of Conservation. Natural Heritage Technical Publication #1

## FACT SHEET: WOOD THRUSH

**Latin Name:** Hylocichla mustelina

**Spanish Name:** Zorzalito Maculado

**Nesting Area:** Southeastern Canada and eastern U.S. from Minnesota south to eastern Texas and east to the Atlantic Ocean. Found mostly in deciduous woodlands with tall trees and a dense shrub layer, especially in damp forests or near streams.



*T.H. Kent*

**Wintering Area:** Eastern Mexico and throughout Central America and in the northwestern edge of South America. Found in the understory of lowland tropical rainforests and in cloud forests and gallery forests up to 5,600 feet.

### Vital Statistics:

- 8" (20 cm)
- Song: Flute-like ee-o-lay. Call is a quick pip-pip-pip-pip.
- Smaller than a robin. Brown back and tail with a rusty-colored head. Throat and underparts white with dark brown spots.
- Eats mostly insects especially during the breeding season. During migration and on its wintering grounds it eats fruit including berries and grapes.
- Forages mostly on the ground under forest shrubs.
- In courtship, the female fluffs its feathers and raises its tail.
- Nest is an open cup made of weeds, leaves, and grass mixed with mud and lined with soft rootlets. The nest is usually placed 10-15 feet up in a deciduous tree, often near water.
- Eggs: 3-4, greenish-blue and unmarked. Often has two broods each year.
- Did you know: Wood thrushes have two sets of vocal chords which allow them to sing such beautiful songs?
- Area sensitive (frequency of occurrence or nest success greater with increasing habitat size).
- Wood thrush numbers are declining seriously due to habitat fragmentation and cowbird parasitism.

