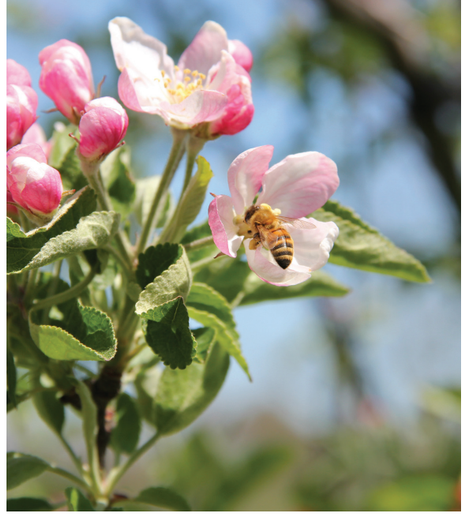


Helping People Help the Land

NRCS provides America's farmers and ranchers with financial and technical assistance to voluntarily put conservation on the ground, not only helping the environment but agricultural operations, too.

www.in.nrcs.usda.gov

NIACS
Northern Institute of Applied Climate Science

The Northern Institute of Applied Climate Science (NIACS) has been designed as a collaborative effort among the Forest Service, universities, conservation organizations, and forest industry to provide information on managing forests for climate change adaptation and enhanced carbon sequestration.

www.niacs.org

April 2020

USDA
United States Department of Agriculture

CLIMATE CHANGE & WILDLIFE: YOUR LAND, YOUR PLAN

INDIANA

Many landowners enjoy the opportunity to experience wildlife on their property. As a landowner, you may have noticed impacts of recent trends in our changing climate on your land[1,3,4] and the wildlife there. Keeping your land suitable for wildlife can be challenged by loss of food or habitat, land fragmentation, and invasive species. The USDA's Northern Forests Climate Hub and Northern Institute of Applied Climate Science have identified tools and approaches[2] to help landowners adapt to climate change and achieve wildlife goals on your property. Indiana NRCS has conservation programs that can help you with technical and financial assistance. Below are some examples of how NRCS programs can help you prepare for climate change impacts and steward your land resources for better wildlife management.

HOW IS CLIMATE CHANGE IMPACTING MY LAND?

For a full description of climate change impacts on your land, visit the Climate Explorer Tool at: https://adaptationworkbook.org/explore-impacts.

TEMPERATURE INCREASES

Temperatures in Indiana have risen 1.2° F since 1895, and are projected to increase by 6-10° F by late century. The frost-free season has already increased by 9 days, a trend which is expected to accelerate. This may result in habitat distribution shifts; wildlife species that rely on vulnerable or rare habitats may be at greater risk. Changes in the timing and availability of food sources, as well as shifts in breeding and migration dates, are also expected as the climate continues to change.

PRECIPITATION CHANGES

Average annual precipitation in Indiana has increased by 5.6 inches; winters and springs are projected to be much wetter by mid-century. By late century, summer precipitation is projected to decline by nearly 8%. Extreme rainfall events are becoming more common, and are expected to continue to intensify throughout the century. Precipitation changes can have significant impacts on soil moisture, duration of vernal pools, flooding frequencies, etc. These things can affect nesting success of waterfowl and amphibians, food sources, and availability of water sources late in the season.

DEER HABITAT

Browsing pressure from white-tailed deer is already negatively impacting tree regeneration in some areas, and may also promote growth of certain invasive species. These impacts may make it more difficult to maintain diverse, functioning forests on our landscape. High levels of deer herbivory are expected to continue in to the future; studies in other regions have shown warmer winters benefit the deer population by reducing energy requirements and increasing access to forage. However, it is also possible that increased disease outbreaks may negatively impact deer in the future.

WHAT CAN I DO?

NRCS has programs that can provide the technical and financial assistance to help you achieve your goals and objectives and implement climate change adaptation on your property.

ENVIRONMENTAL QUALITY INCENTIVES PROGRAM (EQIP)

Provides technical and financial help to landowners for conservation practices that protect soil and water quality.

CONSERVATION STEWARDSHIP PROGRAM (CSP)

Helps landowners maintain conservation stewardship and implement conservation practices. Benefits keep land management more sustainable and profitable and improve our natural resources.

WHERE DO I START?

Contact your local USDA Service Center to get started. Discussing your resource concerns with an NRCS conservation planner will help you:

- Identify your **GOALS** and **OBJECTIVES**,
- consider how climate change will affect your land, and
- select adaptation strategies and conservation practices to achieve your **GOALS**.

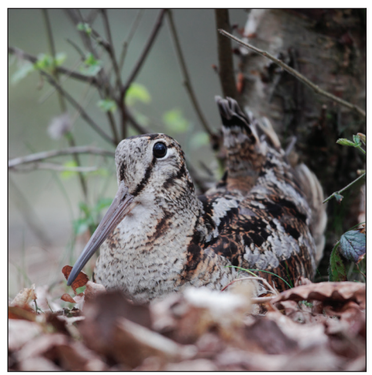
EXAMPLES:

OBJECTIVE: CREATE AND ENHANCE FOOD SOURCES

ADAPTATION APPROACHES: Enhance primary food sources for climate-sensitive species and create new sources of food, water, and cover in anticipation of future conditions.

CONSERVATION PRACTICES: Pollinator/Beneficial Insect Habitat, Wildlife Habitat Planting, Conservation Cover

Wildlife food sources on your land can be a resource concern identified during the conservation planning process. This can be addressed through practices that establish or enhance native plants on your property, protect threatened or endangered species, remove noxious or invasive species, and incorporate plant material that is of high quality and adapted for future climate change conditions. You can provide nectar for pollinators, hard and soft mast for songbirds and large birds of prey, and grazing for wildlife and livestock, especially during times when food is not available in portions of the landscape, such as during crop season or at the end of the growing season.



OBJECTIVE: PROVIDE NESTING SITES AND COVER

ADAPTATION APPROACHES: Manage for plant species diversity and complexity and manage and create suitable microhabitats and microclimates.

CONSERVATION PRACTICES: Tree/Shrub Establishment, Forest Stand Improvement, Hedgerow Planting

Providing sufficient vegetative cover for brood rearing, nesting, and thermal regulation can help sustain viable wildlife populations. This can involve protecting small areas of important plant species, planting or introducing new species better suited to climate change impacts*, and/or converting edges of cropland to tallgrass prairie. Harvesting trees to encourage regeneration and a diversity of age classes can provide important habitat for grouse and woodcocks. You can also schedule mowing, harvesting, weed control, and other management activities so as not to be detrimental to target wildlife species, and combine multiple practices (prescribed burning, riparian forest buffer, early successional habitat, etc.) in order to achieve your goals.

*To learn more about future tree habitat suitability, visit: https://forestadaptation.org/learn/resource-finder/indiana-climate-change-projections-heat-hardiness-zones-and-tree-species

OBJECTIVE: ESTABLISH CORRIDORS

ADAPTATION APPROACHES: Establish corridors and minimize barriers to movement to new suitable habitats and implement nonlethal behavioral control methods.

CONSERVATION PRACTICES: Wildlife Habitat Plantings, Field Border, Tree and Shrub Establishment, Riparian Herbaceous Cover, Riparian Forest Buffer

These strategies and practices provide passageways for wildlife to move from food/cover/water sources to other places as needed in their life cycles. This can include the establishment of adapted vegetation, or the modification or removal of barriers that restrict or impede the movement of organisms. The goal is to reduce habitat fragmentation by creating vegetative links across the landscape. Plant species may also be selected to serve additional functions, such as controlling erosion, improving water quality, and storing carbon.

OBJECTIVE: PROVIDE BENEFICIAL INFRASTRUCTURE

ADAPTATION APPROACHES: Increase reproduction and survival rates and reduce or limit barriers to wildlife movement across private land.

CONSERVATION PRACTICES: Structures for Wildlife, Fence

Investing in beneficial infrastructure can increase wildlife survival and utilization of the land. Edge-feathering creates a transition zone of dense woody/shrubby vegetation between fields and woodlands. This provides an important habitat component for escape cover and food sources, particularly for wildlife such as quail. Existing structures that pose a hazard to wildlife can be modified, such as adding markers to an existing fence, removing wire, or adding wildlife friendly wire at appropriate spacing to a fence. Wildlife-friendly fencing can provide connectivity for food resources, exclude livestock or wildlife from areas needing protection, and/or regulate domestic livestock access to areas while permitting wildlife movement.

OTHER RESOURCES AVAILABLE

Many wildlife conservation practices are available through the NRCS. Visit your local USDA Service Center or www.in.nrcs.usda.gov for more information. See our other brochures for adapting to climate change impacts on forestry, wetlands, and carbon management. Visit the Climate Change Response Framework website at: https://forestadaptation.org/focus/wildlife.

CITATIONS

1. Brandt, L. et al. 2014. Central Hardwoods ecosystem vulnerability assessment and synthesis: a report from the Central Hardwoods Climate Change Response Framework project. Gen. Tech. Rep. NRS-124. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 254 p. https://doi.org/10.2737/NRS-GTR-124

2. Swanston et al, 2016. Forest Adaptation Resources: climate change tools and approaches for land managers, 2nd edition. http://www.treesearch.fs.fed.us/pubs/52760.

3. Widhalm, M. et al., 2018. Indiana's Past & Future Climate: A Report from the Indiana Climate Change Impacts Assessment. Purdue Climate Change Research Center, Purdue University. West Lafayette, IN. https://purdue.ag/climatereport

4. Phillips, R.P. et al. 2018. Indiana's Future Forests: A Report from the Indiana Climate Change Impacts Assessment. Purdue Climate Change Research Center. West Lafayette, Indiana. DOI: 10.5703/1288284316652