



United States Department of Agriculture

**Forest Service**

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# Hoosier NF Highlights

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## Working Together Across Boundaries to Restore Oak Communities



By Gary Dinkel, Ecosystems Program Manager

The one million dollar Joint Chiefs' Landscape Restoration Partnership awarded this spring is a partnership between the U. S. Forest Service and USDA Natural Resource Conservation Service to improve forest ecosystems where public and private lands meet. The *Hoosier Hills and Highlands Oak Community Restoration Partnership* also includes other state, federal and non-government organizations.

The partnership vision is to restore lands across large landscapes regardless of ownership, reduce wildfire threat to communities and landowners, protect water quality, and supply and improve habitat for at-risk species. The project area includes 18 counties in south-central Indiana.

This region contains the largest contiguous blocks of forest in Indiana, and one of the most heavily forested and biologically diverse forest ecosystems in the Midwest. It provides habitat for bat species hard hit by white nose syndrome, rare cave dwelling species, and birds whose populations are declining. The area's watersheds provide drinking water to local communities. Private ownership predominates, though 12 percent of the project area is managed by federal and state agencies.

Southern Indiana's forests were traditionally dominated by oak. Throughout the Midwest, oak-hickory forests are maturing, and in many places shifting to different forest types. These shifts result from significant reductions or even failures in oak regeneration. With no oak regeneration in the understory, as maturing oaks and hickories die or are harvested, they are replaced by other species such as sugar maples, beech or tulip poplar. With this shift, understory plant diversity is reduced, and areas of quality wildlife habitat decline.

Oaks generally need direct sunlight, are drought tolerant and grow at rates equal to or slower than their competitors. Oak seedlings require some sunlight to survive under an oak canopy. If the understory is filled with shade tolerant species, there won't be enough light for oak seedlings to survive. As a result, the more tolerant competitors like sugar maple and beech end up replacing the oak when the dominant trees die or are harvested. Historically the shade tolerant species that compete with oak were removed by fire, drought or other disturbances.

In order to maintain oak, oak seedlings need to be present before the oak over-story is harvested. Advanced oak regeneration is dependent on having adequate acorn crops and the necessary light conditions in the understory for seedlings to develop. Removal of competing trees in the mid-story of a stand is necessary to get the light intensity that oak seedlings need.

Oak seedlings develop a substantial root system before growing in height. This makes them more competitive on dry sites or during drought conditions and more fire tolerant. However it increases the time needed to get good advanced regeneration.

Once oak seedlings reach a height of three feet they have a better chance of surviving and competing with other tree species when the over-story is removed. Since oak is shade intolerant, the regeneration will do best under full sunlight.

Oak is important as a component of diverse forest ecosystems in Indiana. Oak provides habitat for game and non-game species. It provides food for over 90 species of wildlife. Acorns are an energy-rich food supply. Over 269 species of insects use oak; these insects provide food for birds and reptiles. Vernal pools with oak leaf litter provide a habitat with more balance in nutrients than other tree leaf litter. Oak is also important for all the products derived from its wood.

The Hoosier National Forest (HNF), Indiana Department of Natural Resources (IDNR), and the Department of Defense (DOD) manage public lands and the USDA Natural Resources Conservation Service (NRCS), Soil and Water Conservation Districts (SWCD), The Nature Conservancy (TNC) and other organizations are focusing efforts on private lands, all in an effort to promote oak community regeneration in this region. The *Hoosier Hills and Highlands Oak Community Restoration Partnership* will consolidate the individual efforts of these entities into one focused landscape-scale partnership.

This partnership will:

- Coordinate public-land restoration projects as demonstration sites for to improve oak regeneration and non-native invasive plant treatments;
- Promote conservation and restoration practices on private lands;

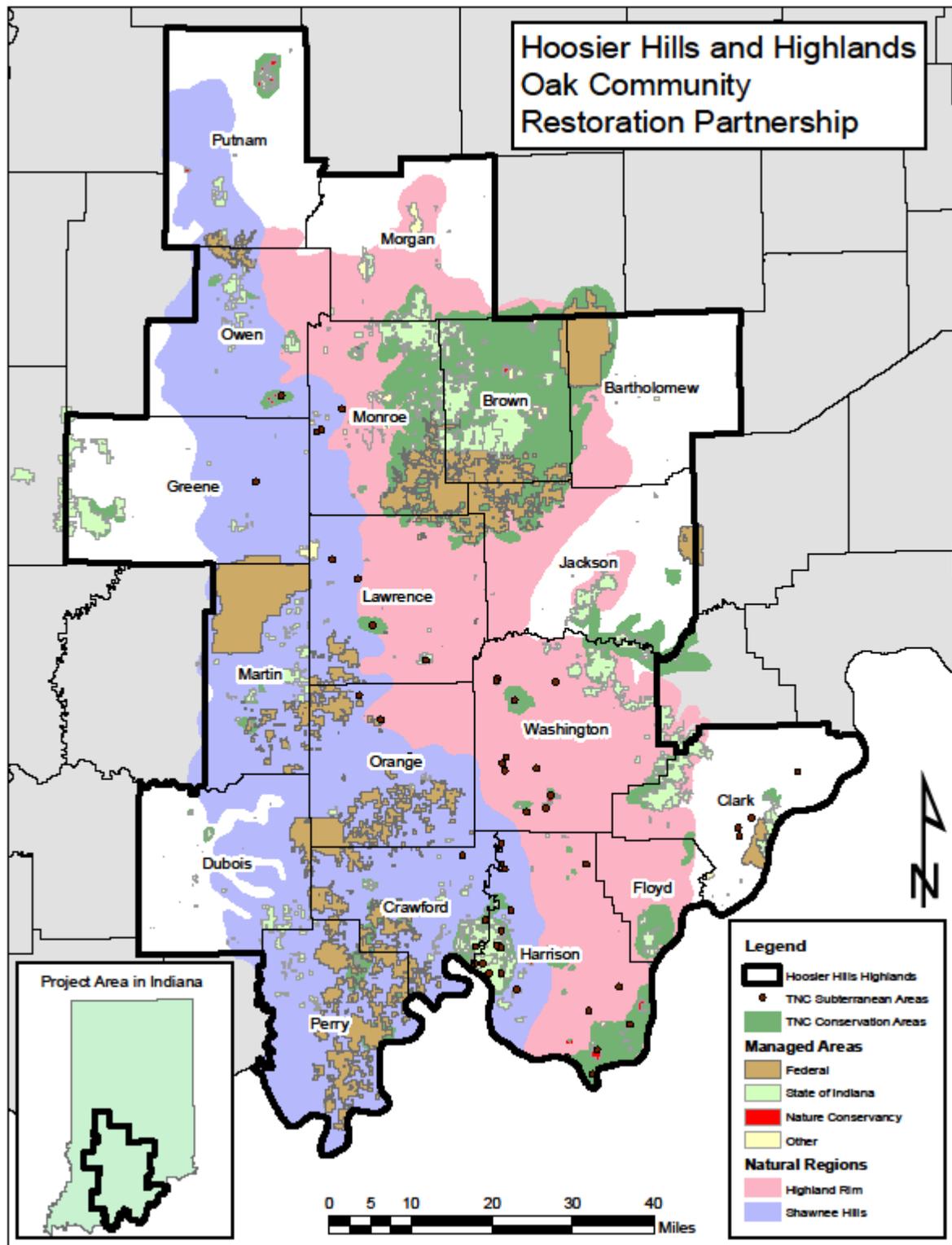
- Ensure consistent education and outreach on viable solutions; and
- Enable efficient implementation of preferred practices.

As part of this partnership, the Hoosier National Forest received funding for:

- Treating non-native invasive species where they threaten diverse rare plant communities or impede forest regeneration
- Treating stands to promote oak regeneration ahead of harvest
- Providing areas to demonstrate practices that promote oak regeneration.

The USDA Natural Resource Conservation Service received funding to increase the Environmental Quality Incentives Program (EQIP) program in the 18 county area for practices that promote the goals of this partnership.

For more information on the Forest Service portion of the partnership contact Gary Dinkel at 812-547-9237 or [gdinkel@fs.fed.us](mailto:gdinkel@fs.fed.us).



Map of project area.



This stand was cut to reduce the shade to the forest floor to increase light and encourage more oak regeneration. Photo by Brian Lockhart, USFS.



Oak seedling in pine stand. Photo by Brian Lockhart, USFS.



A mature mixed hardwood stand with an understory dominated by shade-tolerant species. Oak seedlings present, but noncompetitive, a prescribed fire is needed to release the oak. Photo by Patrick Brose, Clemson University.