Kentucky Natural Resources Conservation Service

Supporting Woodland Owners in a Changing Climate

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Climate change and carbon sequestration are terms used regularly these days. Eastern hardwood forests have been identified as one of the best forest types to sequester, or store, carbon in the United States. Carbon sequestration is the ability of living plants to absorb carbon dioxide from the atmosphere during photosynthesis, and then store the carbon in their biomass such as leaves, trunks, and roots. Once this carbon is stored in the plant, it is "locked up" during the plant's life and sequestered. The lush and productive forests of Kentucky, covering approximately one half of the state, are at an advantage to help in the fight against climate change and can sequester massive amounts of carbon, much more so than the large amounts they already do. Many common forestry practices, supported by the Natural Resources Conservation Service or NRCS, promote good forest stewardship and can also drastically increase the potential for Kentucky's forests to store more carbon. Healthy forests with an abundance of long-lived trees can provide an economic, wildlife, water quality, and carbon-sequestration benefit.

The first step in working with NRCS to improve and conserve forests for any landowner's goal is to work with one of our partners or consulting foresters to write an NRCS-approved forest management plan. Currently, partners who can provide this service include the Kentucky Division of Forestry, the National Wild Turkey Federation, and the Ruffed Grouse Society. Consulting foresters who are certified by NRCS as a technical service provider can also write forest management plans. Getting a plan written by a technical service provider

is an NRCS practice that can be cost-share eligible through the Environmental Quality Incentives Program, or EQIP. Working with one of the many great Kentucky forestry experts will set the groundwork for conservation projects in your forest.

The most common practice that NRCS supports to modify forest composition to increase carbon sequestration is the forest stand improvement practice. By utilizing forest stand improvement to remove less desirable and shorter-lived tree species and promoting more long-lived and economically viable species, carbon sequestration can be enhanced greatly. By leaving removed trees to decay naturally in the forest, carbon can be added back into the soil and stored in the downed material. Leaving trees to decay on the forest floor and leaving snags standing in the forest also increases the quality of the forest as wildlife habitat for many cavity dwelling birds and mammals. After doing a forest stand improvement project, the longer-lived tree species can then sequester more carbon from the atmosphere. When given room to grow and thrive, their ability to store carbon is increased. Finally, if the trees are eventually harvested, species that will be used for durable building materials, furniture, and many other uses will continue to store the sequestered carbon for generations to come, long after the life of the living tree is over.

This tree was treated with hack and squirt method to improve the forest stand.

Another practice NRCS supports is tree and shrub establishment. By planting trees on open land that was previously forested or promoting natural regeneration on land that can grow larger long-lived trees, carbon stored per acre is drastically increased. Planting and enhancing previously disturbed lands that were cleared for pasture or cropland, the active restoration of wetlands, and even planting trees on abandoned mine lands that currently do not support trees are all opportunities to increase the amount and quality of forestland in Kentucky. Working with a forester who will be able to suggest trees that are adapted to your land and sourcing tree seedlings or prescribing the steps on how to get natural regeneration of long-lived species, is a critical first step to getting a jump start on the next generation of healthy forests.

Depending on management objectives, felled trees may be left to naturally decay or used for firewood.

All photos courtesy: NRCS

Riparian forests along streams and rivers can be the best forest sites within a watershed. By paying special attention to these areas utilizing the riparian forest buffer practice, carbon sequestration can be increased above any other forest type. In areas where the riparian zone has been cleared or modified, planting trees along the stream edge is a way to both restore the function of the stream system and increase carbon sequestration. Riparian forests also improve water quality by filtering pollutants and decreasing water temperature. Wildlife habitat for many aquatic and terrestrial species is created or enhanced as well. Riparian areas are often subject to invasion by non-native invasive brush and tree species. By treating these areas and removing the invasive species utilizing the brush management practice, the health and function of the riparian forest is improved.

NRCS supports many other practices that can be used in your woodlands to increase the health, growth, composition, and sustainability. If you are interested in working with NRCS and would like more information on how to get started, please take some time to visit your local NRCS Service Center and speak with one of our great conservationists about the steps you can take to start your forest conservation journey. Perhaps you already have a forest management plan and would like more information about how to do more conservation work in your forest. An NRCS conservationist will be able to help you with many programs, such as EQIP, that are available now. Together we can continue to improve Kentucky's forests that provide clean air, water, wildlife habitat, and sequester carbon, giving us a chance in our fight against climate change.