All Wildland Fire Is Not Created Equal

Wildland fire has been part of the forests of eastern North America and western NC for thousands of years. They occur naturally from lightning strikes, and native americans used wildland fire as a tool to reduce severe fire and to maintain productive forests. These fires would generally have been frequent and very low in intensity. Here in western NC, any given area of forest would burn every 0-34 years and a wide array of fire adapted plants and ecological communities once covered much of eastern North America. The frequency of fires drastically changed following European colonization and widespread settlement, resulting in less widespread wildland fire. Early state and United States Forests Service (USFS) fire suppression policies further reduced fire. The large reduction in fire, paired with extensive logging in the late 19th and early 20th century, drastically changed the forest structure and composition.

Historically our forests in western NC would have had many more plants and ecosystems that tolerate or depend on wildland fire. There would have been more open areas with native grasses, and fire adapted species such as hickories and oaks. There are several threatened plant and ecological communities in western NC such as hill and river cane, table mountain pine, and mountain golden heather that depend on fire, and without fire will likely continue to decrease.

Without fire, fire-sensitive, shade tolerant, water-loving plants such as red maple, rhododendron, and tulip poplar outcompete fire dependent species such as oaks that need forest openings and sun for their seedlings. This triggers a positive feedback cycle, known as mysophication, in which the closed canopy forests continually improve the conditions for fire sensitive/water loving species and deteriorates the habitat for fire tolerant species. Because of this, ecological communities in western NC are currently undergoing rapid changes. Species diversity within forests are declining, and will decline further, as numerous fire adapted plants are replaced by a limited set of fire sensitive, shade tolerant species. The USFS states that: “As this process (mysophication) continues, the effort and cost required to restore fire-adapted ecosystems escalate rapidly.” Historically fire sensitive species would have lived along streams, and in shady coves with very moist soil, now these species often dominate on drier, well drained ridges, and even on steep south facing slopes.

Fire sensitive species generally use more water than fire tolerant species, particularly in the summer. This pulls more water out of the ground and lowers the water table. Less ground and soil water results in lower stream levels and also alters the water chemistry. A change in forest structure and diversity affects wildlife that depend on the nut crops from oaks and hickories and the habitats created by fire dependent plants and trees. A less diverse forest is a less resilient forest and is more susceptible to disease, pests, invasive pathogens and plants, drought, extensive heat, and other disturbances that can kill trees.

A controlled burn moving down a slope in western NC. - Notice the brown grass-like plants on the right of the photo. This is hill cane, *Arundinaria appalachiana,* a fire dependent woody bamboo species native to the NC mountains. Hill cane, and the animals that depend on their habitat are decreasing without fire. This area was previously burned recently and the hill cane is reestablishing on this slope.

Many years of wildland fire suppression has increased forest density, and allowed for woody debris (fuels) to build up. These factors, paired with increasing drought and temperatures means when uncontrolled wildland fires now occur, they are often much more severe than they historically would have been. The Yancey Co. NC Forest Service (NCFS) Ranger states: “Lack of consistent fire in the region has left our forest with dangerous fuel loadings that could contribute to extreme fire behavior. We witnessed this particularly in the Fall of 2016. The NC Forest Service can conduct hazard reduction burning at no charge. If interested, contact your local county NCFS ranger.” You can find your local ranger at NCforestservice.gov.

The NCFS and USFS now understand that wildland fire is important for forest health and these agencies take a different approach with wildland fire. This includes helping landowners understand wildland fire, assisting in improving the forest ecology, and reducing the threat of destructive wildland fire by offering controlled burns or other fuel reduction programs. Many local, state, national, and global foresters and organizations such as Blue Ridge RC&D, and the Nature Conservancy also use prescribed fire as a tool to maintain healthy forests, and to reduce the threat of dangerous wildfires.

This photo taken by the author shows a low intensity fire slowly backing down a hill through a red maple stand. This fire was part of an interagency controlled burn that removed plant debris, reducing the threat of severe fire. It also removed some of the small trees, and provided open space for fire dependent species and improved forest health and resilience.

Frank Blankenship, the NCFS Yancey Co. Ranger, at a controlled burn in western NC.

Blue Ridge RC&D is involved with a program called Firewise USA with the National Fire Protection Association (NFPA) and NCFS. Firewise USA is a voluntary program that provides a framework to help neighbors organize, create emergency plans, and take action to increase the ignition resistance of their homes, community, and land. If you are interested in learning more about Firewise USA you can reach out to Blue Ridge RC&D at hartselljonathan@gmail.com. There is information about the benefits and threats of wildland fire on the USFS website. Your local NCFS office can also be a good starting place to learn more about wildland fire.

Toe Talk is an article series supported by local watershed partners highlighting watershed and community news. The Toe-Cane Watershed Coordinator position is working to improve water quality and gain associated economic benefits in the watershed by providing education and technical resources and implementing on-the-ground projects. Please see our website for updates on projects, and helpful documents for addressing water related issues: http://www.blueridgercd.com/ or contact:

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