



Drone Use Assists in Wildfire Prevention at Great Dismal Swamp, Virginia

The National Cohesive Wildland Fire Management Strategy is a national collaborative effort to bring a broad cross-section of stakeholders together to address wildland fire management challenges. The Strategy directs wildland fire planning activities and has three primary goals: restore and maintain landscapes, develop Fire-Adapted Communities, and improve wildfire response.

Activity	Impact
Population adjacent to swamp	1.5 million
# feet groundwater level lowered since 1985	15
# acres burned in the South One Fire in 2008	4,884
Cost of South One Fire	\$10 million
# acres burned in Lateral West Fire	6,500
# acres of fire-resilient longleaf pine buffer planted around refuge	500

The 112,000 acre Great Dismal Swamp National Wildlife Refuge near Suffolk, Virginia has a long history of large and dangerous wildfires. One and a half million people live adjacent to the swamp, making the Refuge boundary a significant Wildland Urban Interface (WUI). For this reason, wildfire management and smoke concerns are a major issue at the Refuge.

Fires originating in Great Dismal Swamp often coincide with lightning, hurricanes, and forest harvest, but land use change also plays a role. Depending on drought conditions, the swamp's thick organic soils fuel fires when dry and impede firefighting efforts when wet. Nearby agricultural and residential development, combined with climate change, have resulted in a 15 foot drop in ground water levels since 1985 and longer drought cycles during the fire season. Droughts can lead to a prolonged fire season with more intense fires and severe fire effects. The South One Fire in 2008 burned 4,884 acres in four months and was the longest and most expensive

(\$10 million) fire in recorded Virginia history. It was then followed by the 2011 Lateral West wildfire, which burned 6,500 acres in four months.

Great Dismal Swamp lies in the Virginia Coastal Plain and has a nearly flat topography. Large areas of the swamp are inaccessible to vehicles. For this reason, aerial methods (plane or helicopter) have been used to detect wildfires. Although they have assisted in fire prevention, they are expensive.

The National Aeronautics and Space Administration (NASA) Langley Research Center Small Unmanned Aerial Vehicle Laboratory, located 20 miles north of the refuge, has frequently dealt with smoke issues from Great Dismal wildfires. To assist in early fire detection and prevention, NASA developed an interagency agreement with the Refuge and an additional agreement with the Federal Aviation Administration (FAA) to build and operate several inexpensive drones, or unmanned aerial vehicle (UAV), for use at the Refuge.

Success stories highlight regional wildland fire accomplishments that support implementation of the National Cohesive Wildland Fire Management Strategy in the Southeast. The stories demonstrate how the Southeast is improving its "fire resiliency" through technology, education and outreach, forest management, collaboration, and more. Success stories also serve as a model for other communities to follow.

UAVs are operated by NASA personnel while Great Dismal Swamp staff advise and monitor the operation.

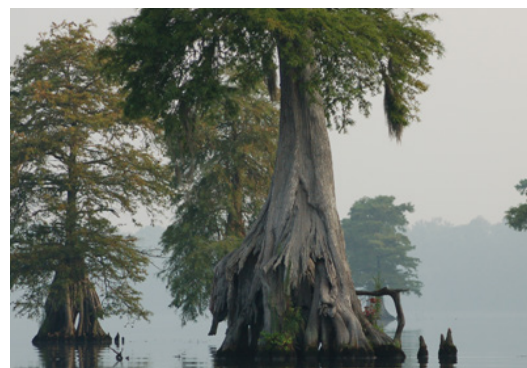
UAVs are equipped with both infrared imagery and color video cameras to detect smoke and heat from potential fires, delivering this data in real time to swamp fire personnel. Since the Fall of 2014, the UAVs are in the testing and development phase with great potential for future use, such as options for either manual or auto-programmed fire-detection flights. Though refuge policy bans public use of UAVs over the swamp, park management is permitted to use them on a case by case basis for fire prevention.



Fire at Great Dismal Swamp National Wildlife Refuge. Credit: US Fish and Wildlife Service



UAV testing day at Great Dismal Swamp NIWR. Credit: NASA & US Fish and Wildlife Service



Lake Drummond at Great Dismal Swamp National Wildlife Refuge. Credit: US Fish and Wildlife Service

Additional Information:

Great Dismal Swamp: http://www.fws.gov/refuge/great_dismal_swamp/

National Aeronautics and Space Administration (NASA) Langley Research Center Small Unmanned Aerial Vehicle Laboratory: <http://nari.arc.nasa.gov/logan>

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