

Savanna and Woods Burns: A Photo Survey



The techniques for oak savanna and oak woodland burns are considerably different from those for prairie burns. Pleasant Valley Conservancy has been conducting burns in oak-dominated sites for more than 15 years. Both bur oak and white oak savanna burns have been done extensively. Oak woodland burns, with red oak predominantly, have also been done a number of times. Most of the burns have been photographed and the photos provide useful documentation. The series here was originally prepared for a field trip led for the Society for Ecological Restoration in October 2013. For the present web-based document, the resolution of the photos has been reduced so that fast downloading can be done.

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The Start of a Prescribed Burn in a Bur Oak Savanna



Start of prescribed burn, south slope savanna, March 23, 2010 (IMG_6045.jpg)

The burn is always started at top of the hill (or into the wind), just below the mowed and cleared fire break. There are two burn lines, moving in opposite directions. At the start, for each line two drip torches participate (4 drip torches in total). (Later in the burn several more drip torches may participate.) The lead drip torch on each line lights near the fire break. At least two “waters” accompany this drip torch, monitoring the fire and preventing fire “creep” across the firebreak. Once the initial blackline has been created, a second (following) drip torch widens the fire break, starting to light downhill and farther back. (The fire line and operator of this second drip torch can be seen in the above photo.) The fire line of the second drip torch burns quickly uphill (headfire) until it reaches the blackline, when it goes out. The goal is to have a wide blackline at the start of the burn unit. The fire created by the second drip torch also burns downhill (as a backfire). A “water” is not needed with the second drip torch.

Continuation of a Backburn in an Open Savanna



Depending on weather conditions and timing, the initial backburn can be allowed to burn through the whole burn unit. 30 March 2011. Documents>Farm>Canon SD1000 2011>IMG_8184.jpg



Backburn out of the savanna into the remnant prairie. The fuel is mostly Indian grass and little bluestem. Because of the heavy snows the previous winter, the grass lays flat, keeping the flame height low. 30 March 2011. Documents>Farm>Canon SD1000 2011>IMG_8186.jpg



A headfire can be used to speed up the final stages of the burn through the prairie remnant, once the upper slope has been blacked in. Even in the absence of wind, the uphill fire is equivalent to a headfire. 30 March 2011. Documents>Farm>Canon SD1000 2011>IMG_8190.jpg (left) and 8189 (below).



The Strip Headfire Technique Being Used to Speed up the Savanna Burn



Use of the strip headfire technique on a savanna burn.

The savanna burn can be considerably speeded up by using the strip headfire technique. In this case, three (or more) drip torches are operating in a staggered configuration. A wide blackline must be first created to protect the unburned areas above (outside) the burn unit. In effect, each strip begins as a headfire but quickly reaches the blackline above and goes out. The burn line at the lower end of each strip is a slower-moving backfire. 19 March 2009. Documents>Farm>Canon SD1000 2009>IMG_3720.jpg



The photo to the left shows a slow-moving backfire in a level white-oak savanna. This burn could be speeded up greatly by using the strip headfire technique. Once the initial blackline is created, other drip torches, in staggered formation, move in parallel to the blackline. Because the fuel is mainly oak leaves, high flame heights are not anticipated. 21 April 2008. Documents>Farm>Canon SD1000 2008. IMG_1887.jpg

Different Fire Patterns in a Bur Oak Savanna



This is the same burn unit shown on page 4, but with a different burn pattern. The wind was light and out of the north (from the top of the hill). A flanking fire moves faster than a backing fire, but requires more monitoring. 7 April 2005. c:\oldrv\farm\spring 2005 downloads 001.jpg



Backing fire moving downhill through a bur oak savanna. Because the fuel is predominantly oak leaves, flame height is low. Although the fire may take an hour to move through the unit, only minimal personnel are needed to monitor this burn until the fire line reaches the end of the unit. 4 April 2009. Documents>Farm>Canon SD1000 2009> IMG_3872.jpg

Technique for Lighting the Initial Savanna Fire Line: I.



Because the fuel is less flashy, savanna fire lines need to be lighted differently than those of prairies. A single “drop” of flame is generally not enough. As the pattern here shows, lines of fire perpendicular to the burn line are also dropped, and these lines quickly coalesce to make a wider blackline (see II). 8 November 2004. Documents>Farm>Brock photos> kathie lighting 011.jpg

Technique for Lighting the Initial Savanna Fire Line: II.



Continuation of the fire line started in I. The blackline is getting wider. Although not shown, several “waters” are standing nearby in case there is any “creep” of fire across the firebreak. Because the fire is moving uphill, its movement resembles that of a headfire, but because of the light winds, the fire line is moving slowly. 8 November 2004. Documents>Farm>Brock photos>kathie lighting 012.jpg

Continuation of the Fire Line: III.



Extending the burn through a zone of large, open-grown white oaks. Before this line was started, a wide blackline was created at a wide firebreak at the top of the hill. 5 April 2011. Documents>Farm>Canon SD1000 2011>IMG_8296.jpg

The Fire Line Moving Through an Open Woods



*If the weather is favorable and the fuel moisture content low, a slow-moving fire line will often gradually cover the whole burn unit. If time is not available, interior lighting (stripping) can be done.
14 April 2008 Documents>Farm>Canon SD1000 2008>IMG_1809.jpg [East end of Toby's near Unit 13]*