Dave's Fire Creed

This is what I currently believe to be true about fire, based on 13 years of actively conducting and observing prescribed burns, 8 years of burn bossing in the city, lots of reviewing the scientific and popular literature, and lots of discussion with other professionals knowledgeable in the field. - David Borneman, NAP Burn Boss, September 20, 2001.

- For at least the last 5000 years, fire was historically, and naturally, a part of the southeastern Michigan landscape. Native Americans ("Indians") annually burned this landscape, usually in the fall. Not every square inch was burned every year, but fires were set every year and some areas certainly burned every year. This is the *ancient rhythm* (or historic "fire regime") of southeastern Michigan that created the human-shaped landscape first seen and described by the early European settlers.
- Many of our natural communities are not only fire-adapted, but fire-dependent in the sense that they are maintained by regular fire, and would be lost without it. This is especially true of native prairies, savannas, oak woodlands, fens, and sedge meadows.
- Without fire (and thus, without human involvement, since humans = fire in most of North American and some other parts of the world), these ecosystems would convert to something else. This conversion or succession is no more *natural* than the alternatives, but it is certainly less *historic* if we consider the ecosystems and species which made up our landscape for the past 5000 years. If we want to maintain the historic natural communities, we need to employ the historic natural processes, primarily fire, to do so.
- The goal of reinstating this fire regime is to maximize native biodiversity over time. The benefits are perhaps most direct for the plants, but they do, in turn, also benefit the native insects and other wildlife which depend on these native plant communities, and which evolved with them. (This evolution, of course, took much more than 5000 years, and these natural communities are also much older than that. They existed in more temperate climates during the ice age when Michigan was covered with glaciers.)
- In the short-term, fire can be detrimental, even devastating, for some organisms, especially insects and other arthropods. Historically, these organisms would have survived because of the patchiness and relative coolness of frequent fires, and because of the large size and general "intact-ness"of the native landscape.
- Today's landscape is much more fragmented, and much more degraded than it was historically. There may be populations of native, fire-sensitive organisms which exist in small "refugia" of unburned habitat. If, however, the habitat required by these organisms is part of a fire-dependent landscape, and this landscape is lost through fire exclusion, then the required habitat will also - eventually - be lost. In other words, that fire-sensitive organism may need fire to maintain its habitat.
- This is a tricky situation: If we exclude fire, the habitat is lost. If we burn it all too intensively, the population of the targeted organism may be devastated. What do we do?
- The solution would be to restore that frequent, patchy fire regime. I say frequent, because it is obvious that the more time that passes between burns, the more intense the fire (note the intensity of recent forest wildfires out West). Similarly, but to a lesser degree, a prairie or wetland or oak woodland which hasn't burned for a few years will burn more intensely and more completely than one burned recently. Thus, the best way to get patchy burns is to have frequent burns.
- I believe this is preferable to the other method of dividing habitats into smaller segments since it is often difficult to divide the actual, specific habitat of some species (e.g. the larval food plants of a rare butterfly). Logistically, it is also difficult to burn everything that needs burning is we do it all in tiny sub-units. Still, where practical and reasonable, dividing areas of similar habitat into smaller burn units makes sense.
- In those cases, where we have burn units 1, 2, and 3, all of a similar habitat, what should be our "burn regime" there? If we burn unit 1 in year 1, unit 2 in year 2, and unit 3 in year 3, we get a

nice 3-year rotation in which 2/3 of the site is unburned in any given year. But that also means that every fire burns with the intensity of 3 years-worth of fuel. So, more damage is probably done to the fire-sensitive organisms in each of those burns than would be done in cooler burns. That's not a problem if the organism has enough time to repopulate the burn unit from the unburned habitat, but for some insects 2 years will not be enough time.

- Thus, another strategy which makes sense in some circumstances is to just burn unit 1 (or 1 and 2) every year and to *never* burn unit 3. Theoretically, that should do great things for the native plant communities in the burned units, thus preparing the habitat for the fire-sensitive organisms hanging out in unit 3. The frequent, patchy fires should be tolerable for the fire-sensitive organisms, which should then start spreading from the unburned to the burned units.
- We employ both of these strategies in NAP.
- My greatest concern is with remnant populations of conservative fire-sensitive organisms, rather than with populations of very common, less conservative ones. These conservative species will mostly be found in high-quality, remnant sites.
- If you're only concerned with plants, annual burning is clearly better for "wildflower gardens" and maximizing seed production.
- It makes more sense to consider a fall and the following spring as being part of the same "burn year" than it does to look at a spring and fall during the same calendar year, since those are divided by a summer growing season. In other words, if you burn the same site in the spring and again in the fall you're actually burning in two different "burn years". But if you burned it in the fall of one calendar year and then the spring of the following calendar year, that would be twice during the same "burn year".
- Fall burns are typically more desirable than spring burns, primarily because they more closely mimic what was done historically. Oak woodlands burn much better in the fall than in the spring, after they've been compacted by a winter's worth of snow. However, fall is a less dependable time of year to get long periods of good burn conditions. If an area is targeted for a fall burn, but the conditions don't permit it, you can still burn it in the same burn year by burning it later in the winter, or in the following spring.

In the city, there are many other things to consider than just ecological factors:

- Tall standing prairie grasses are pretty in winter.
- Tall standing prairie grasses can block visibility for traffic or safety concerns.
- Fewer people use the trails and parks in colder weather.
- Fewer people have their windows open in colder weather.
- Birders don't like to have fires disrupt their early spring bird walks.
- People don't like to see droopy spring wildflowers.
- People don't like to look at blackened, burned landscapes for too long.

So, having said all that, here's the criteria I'm using to select fall burn sites:

- Wooded sites with nice spring wildflower displays that we're always racing to avoid in the spring (e.g. Hollywood, Dhu Varren, Sylvan, Fritz, Bird Hills, Furstenberg, Brown, etc...)
- But NOT sites where we're trying to time spring burns to control garlic mustard (Marshall? Cedar Bend?)
- Popular birding locations in spring migration (Dolph, Furstenberg)
- Prairie and savanna restorations that need a lot of help to overcome the invasives, and where we've already spent considerable effort (Furstenberg)
- Sites where there are visibility concerns (Huron Parkway median, Furstenberg parking lots)
- Sites with very flammable fuels (prairie grass, cattails...) or dry brush piles that we can probably burn even in too-humid conditions which are typical of late fall when other sites won't burn (e.g. Swift Run Drain, Foster RR, Gallup Wet Prairie, Furstenberg, parts of Barton, LSC prairie, etc...)
- And remember, if we have to choose between a high-quality "preserve" and another burn site, the preserve wins!