Fire – MFCSF Burn Plans

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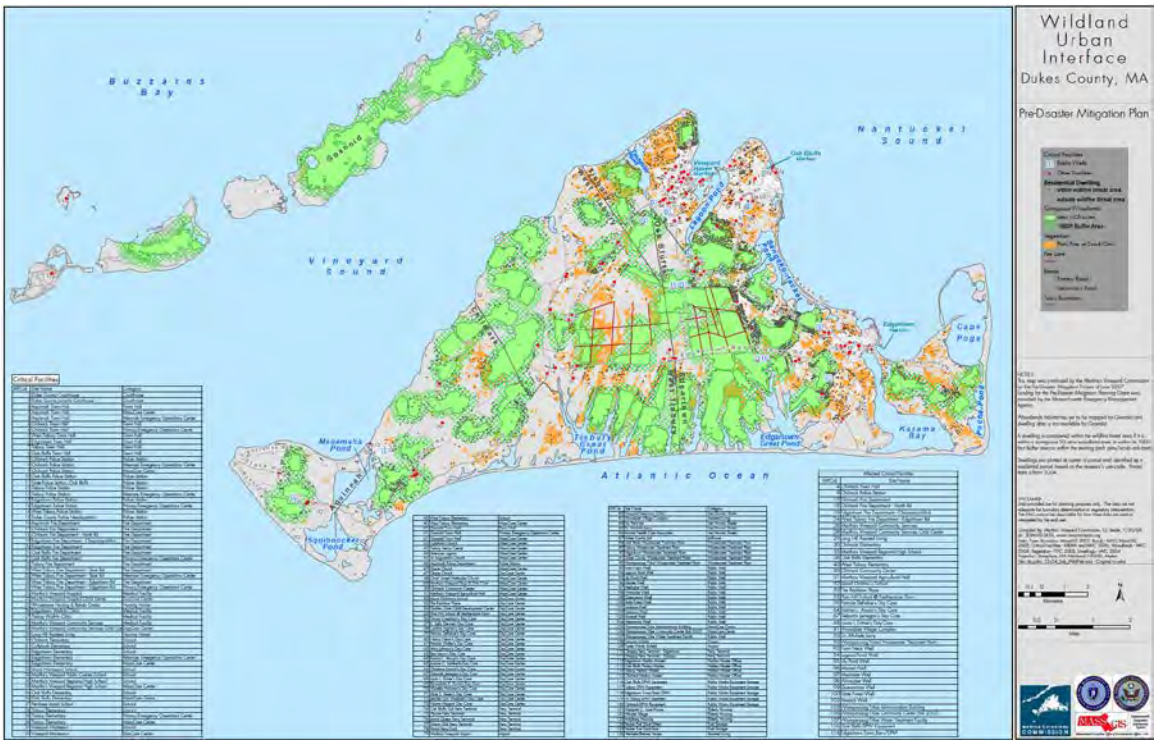

WAP Fuel Mgt on Great Plains 2005

Sandplain vegetation can be highly flammable, and under dry, windy conditions it can support extreme fire behavior. In addition to its flammability, high fuel loading contributes to fire hazard in barrens vegetation. Scrub Oak stands, in particular, are highly flammable and support high litter and shrub fuel loads (1-hr plus 10-hr fuels = 14.3 t/acre (32 mt/ha) and fuel depths of 4-5 ft (1.3-1.5 m). Pitch Pine and Oak Woodland stands support lower surface fuel loads (10.9 and 10.2 t/acre; 24 and 23 mt/ha, respectively) and fuel depths of only 1.6 and 1.9 ft (0.5 and 0.6 m). Scrub Oak and Pitch Pine stands can support canopy fires with extreme fire behavior, whereas Oak Woodlands are inherently less flammable. Most rare plant species on MFCSF occur in culturally maintained grasslands. Previous work suggests that Scrub Oak is most important for rare Lepidoptera species.

Treatments we evaluated reduced slash and shrub loads and heights in the first growing season after treatments. Scrub Oak plots showed the most pronounced change from pretreatment conditions (shrub heights were less than a quarter and loads were well under half their pretreatment values). Mowing in Pitch Pine and Scrub Oak reduced shrub loads to well under 50% of pretreatment values. Sheep will graze new woody shoots following mowing, effectively reducing shrub loads however the expense of this treatment (which is more than four times that of mowing) may be prohibitive. In mow/graze Scrub Oak plots post-treatment loads were <10% of pretreatment values. Effects of treatments in Oak Woodlands were less pronounced as they were more heterogeneously applied. Pile

burning and mowing are comparable in cost, and both effectively remove slash in thinned Pitch Pine stands. Creating lanes using alternative techniques can be comparable in cost to harrowing (although grazing is more expensive).
However, long-term maintenance costs may be more expensive in the Experimental Fuel Break (relative to the cost of mowing harrowed lanes).

The longevity of treatment effects is unclear. Fuel loads will probably take somewhat longer to recover in Scrub Oak plots. However, it may take less than five years without further treatments. Growing season treatments could deplete shrub root reserves and slow fuel load recovery. Patterson (unpublished data) found that five annual treatments virtually eliminated Huckleberry from Oak Woodlands on Cape Cod that are similar to those on MFCSF. Litter layer compaction may have a more lasting effect, especially in Scrub Oak and Pitch Pine mow plots where increases in litter load were greatest. Thinning of Pitch Pine stands increased the estimated wind speed at which crowning would occur from 21 to 62 mph, and this change will be long-lasting, especially where seedling recruitment is likely to be dominated by Oaks.

The unique coppice structure appears to be common in Oak-dominated stands at MFCSF. Areas burned in fires in the 1930's and 1940's have more coppice Oak stems than stands not burned in the early 20th century. Management to preserve Oak stools will require either cutting followed by prescribed burning or cutting of stems near their base, because most Oak stems are >2.5 inches (6 cm) dbh and will not be topkilled by burning alone.

Repeated mowing of existing fuelbreaks has facilitated the development of large populations of several rare plant species. Harrowing can provide immediate habitat for rare plants. Colonization by grassland species (both common and rare) of newly harrowed areas is improved by the availability of nearby seed sources.

Based on information currently available for the other 21 rare insect species reported for MFCSF, these fuel reduction techniques could also be used to maintain or enhance the habitat of other rare insects. Nearly all of the 22 rare species at MFCSF are specialists of Pitch Pine-Scrub Oak barrens in the Northeast; and thinning, mowing, grazing and burning are all techniques that could be used to retain the open characteristics of sandplains ecosystems. Treatments, however, must be applied across the landscape in a mosaic pattern with respect to both space and time, as each of the 22 species has different natural history requirements, and no one treatment would directly benefit every species at any given time of the year. All species are vulnerable to direct mortality from these treatments at some time during the year, so untreated patches should be left as refugia for recolonization post treatment.

Figure 6. Photos showing tools used in creating experimental fuel break: A) Brushhog (photo by J. Varkonda), B) sheep grazing in plot (photo by D. Brennan), C) fellerbuncher (photo by J. Varkonda), D) brush pile burning (photo by J. Carlson), E) prescribed burning in early spring around the outside of research plot (photo by G. Clarke).

Statewide Action Plan 2013 MA

Myles Standish Management

- **Fulfill management approaches for Reserves as directed by the Forest Futures Visioning Process (2010) and subsequent Management Guidelines (2012). From page 20 of the Guidelines "… some situations may call for ecological restoration and vegetation management. Situations where some management may be appropriate include the removal of invasive species or for the protection of existing rare species. Fire adapted Reserves in Southeastern Massachusetts may require active restoration and management to maintain habitat for rare species and reduce the risk of catastrophic wildfire that can threaten human health and safety."**