

### **1. Identify Your Site Objectives and Requirements**

**Ecological Characteristics and Resource Needs** generally justify

the investment in the burn. Start by recognizing the landscape disturbance pattern, identifying goals for species and structure patterns, and incorporating other objectives (fuel reduction, invasives control) as specified.



**Common Sense Control & Safety Requirements** are your social compact with the burn crew and the public at large. Evaluate potential impacts to residents and transportation corridors. Will these factors limit the wind direction or burn duration?



"Good Neighbor" Constraints ensure that burning will be supported in the community. Identify values at risk in and around the burn to plan for their protection. Document competing uses and avoid conflicts with them.



### **Season of the Burn**

Though fires have burned these landscapes under many conditions, desired fire effects, as suggested by the table to the right, may dictate a dormant or growing season burn.

### **Frequency and Timing**

Ecosystems needing restoration may require frequent burns. Each species of interest will have a characteristic reproductive phenology that may limit timing of the burn. Review fire's role in the "Fire Effects Information System," fs.fed.us/database/feis

**Management Interest** Other factors, such as rare and endangered species protections or invasives control, may dictate modified prescriptions. Fuel hazard reduction and other use conflicts may not be related to the ecological factors above.

	April-May	July-Aug	Sept
Grasses and sedges			
Warm season	1	Ļ	${\Leftrightarrow}$
Cool season	Ļ	1	Î
Forbs			
Early-flowering forbs	Ļ	1	Î
Mid-flowering forbs	Ļ	<b>î</b> ?	Î
Late-flowering forbs	1	Ļ	<b>1</b> ?
Legumes (Fabaceae)	1	<b>1</b> ?	<b>1</b> ?

**2. Frame Your Prescription** 

Howe 1994, 1995; Coppedge et al. 1998; Sparks et al. 1998; Copeland et al. 2002

Fire Effects Information System (FEIS)-now spatially searchable

FEIS synthesizes research about more than 1,200 plants (including invasives), animals, and lichens in the United States–biology, ecology, & relationship to fire. "Regular" home at www.fs.fed.us/database/feis Test the new user interface at <u>feis-crs.org/beta</u>



Contact: fmi@fs.fed.us



assasauga Rattlesnake

# **SELECTING YOUR BURN DAY TO MEET SITE OBJECTIVES AND MANAGEMENT REQUIREMENTS**



8.6 9.3

MINIMUM

MAXIMUM

10

12

70

92 7.3

OTHER LIMITS

ISI

FL

BUI



A review of past wildfires and prescribed burns provides insight as the prescription is

• Learn about the seasonal trends for overall fire activity (graph to left) and identify which ecosystems burned under those conditions to suggest what is possible. Examine the local climatology to determine whether the window occurs frequently enough for sufficient opportunities to burn. • Assess Burn severity to identify the changes that directly result from the fire. Tree and shrub mortality and duff reduction, among others effects, are a basis for evaluating the prescription and burn day conditions. Monitor individual burns in ongoing programs to compare the prescription limits and burn day conditions (table to left). Identify possible issues in the go-no go

### **Fuelbed Flammability**



### Michigan Wildfire Occurrence Summer Fires 1981-1995



parameters that can characterize the effect of cumulative rainfall deficits and excessive evapotranspiration on living grasses, forbs, and shrub fuels as well as the duff and litter fuels beneath them. As shown in the graph above, summer fire occurrence in Michigan correlates well with **Buildup Index** (BUI), a code that is calculated each day.

The prescription table to the left provides a fairly • The season of the burn (Summer) and the fuels of interest, S1-pine slash & C3-mature pine here. • An acceptable range of current temperature/ humidity/rainfall effects using FFMC (87-92). Acceptable fire spread potential, characterized by integrating FFMC and Windspeed and identifying the limits for ISI. Note ISI limits of 4 to 10 here. BUI to evaluating potential burn severity and fire effects. Note the maximum limit of 70 in this case.

# 4. Select Your Burn Day

### **Leverage the Weather Forecast**

### **Great Lakes Fire /Fuels** http://glffc.utah.edu



Prescription parameters aid in selecting the day, the time period, and the ignition methods for the burn. They need to be forecasted for the days and periods being considered. Forecasts for FFMC, Windspeed (Wspd), ISI, and BUI are available and updated 4 times each day. Example forecasts for 5/24 and 5/25 shown in blue

Station	Date	Temp ↓	RH	Wspd	Рср	FFMC	DMC	DC	ISI	BUI	FWI	DSR	FDR(Pine)
HIGH BRIDGE	2012/5/25 2012/5/24 2012/5/23	71 77 70	45 41 39	11 16 14	0.17 0 0	76 89.8 89.2	38 50 45	190 191 184	2 15.2 11.9	50 60 56	6 32 27	1 13 9	Moderate Very High Very High
REXTON	2012/5/25	68	54	11	0	88.7	60	198	8.7	68	24	7	Very High
	2012/5/24	81	38	11	0	90.5	58	192	11.3	66	28	10	Very High
	2012/5/23	71	44	10	0	88.4	53	185	7.7	62	20	6	High
<u>SENEY</u>	2012/5/25	75	34	10	0.03	90	75	235	9.6	83	28	10	Very High
	2012/5/24	78	39	26	0	90.3	71	228	36.8	80	65	44	Very High
	2012/5/23	72	37	16	0	90.2	66	221	16.3	76	38	17	Very High
RACO	2012/5/25	71	40	13	0	91.2	56	207	14.7	67	33	14	Very High
	2012/5/24	82	30	15	0	92.3	52	200	20	63	40	19	Extreme
	2012/5/23	74	32	13	0	90.2	47	193	12.7	58	28	10	Very High
SPINCICH LAKE	2012/5/25 2012/5/24 2012/5/23	75 79 74	35 36 37	6 15 6	0 0 0	91.7 91.7 91.7	67 63 58	200 193 186	8.9 18.6 8.9	73 69 65	25 40 24	8 18 7	Very High Very High Very High

## 5. The Go/No Go Decision: A Continuous Process

### Assess onsite weather and fuels by comparing local forecast and burn prescription before igniting any fuels to establish the "Go" prospect.

Conduct a test burn to calibrate fire behavior with prescription predictions and confirm a "Go" decision.



**Observe fire behavior, anticipate** changes and compare with prescription to validate the "Go" decision and adjust ignition as needed.







# **Robert Ziel** Lake States **Fire Science Consortium** (ziel.4@osu.edu)

**NWS Fire Weather** 



**Continue monitoring onsite** weather and track weather forecasts throughout ignition process to validate your decisions