



## **National Park Service Northern Great Plains Fire Ecology Annual Report Calendar Year 2003**

### **Introduction**

The purpose of this report is to provide a summary of fire effects monitoring activities and results from the Northern Great Plains group of National Parks. Since the inception of the program in 1996, nearly 200 sampling plots have been installed and many of these have been measured multiple times. Results from post-treatment sampling have been presented to Park Managers at an annual Fire Management meeting in each park.

Sampling in the first few years of the program was based on the NPS Fire Monitoring Handbook but in the past 3 years, alternative sampling methods have been used to assess variables at a smaller scale and quicker time-frame than is available in FMH standards.

The primary program development in the past year has been the development of a computer analysis software program. The program is known as Fire Ecology Assessment Tool (FEAT) and is designed to provide more flexibility in analyzing data from fire monitoring activities. The Fire Ecologist, Cody Wienk, and Lead Fire Effects Monitor, Andy Thorstenson, have been involved in the Beta testing of this software. FEAT Version 2.0 is expected to be released in June 2004 as the primary fire ecology analysis software for the National Park Service and made available to other agencies.

Mechanical treatment of Wildland fuels has become a significant issue in park management and our monitoring has measured 1 project at Mount Rushmore and 1 project at Devils Tower. The results of those 2 projects were presented as a poster at the Association of Fire Ecology annual meeting in November 2003.

Discussions began with the Northern Great Plains Inventory and Monitoring Program regarding the opportunities for coordination between the Fire Ecology and I&M programs. Dan Licht, I&M coordinator, and Dr. Amy Symstad, USGS Research Scientist, have been the primary contacts on this collaboration. We may begin to implement field sampling in 2004 that will serve the needs of both the Fire Management and Inventory and Monitoring programs.

**Table 1. Fire Effects Plot Workload 2003**

Park	Monitoring Unit	Type of Plot (FMH, photo point, other – describe)	Pre-burn	Immed. Post	Postburn (1-20 yrs)	Total Plots in Mon Unit
<b>Badlands</b>	Western wheatgrass prairie	FMH grass plot	3	0	6	23
	Non-native grassland	FMH grass plot	2	3	13	5
	<i>Prunus</i> shrubland	FMH shrub plot	2	0	2	4
<b>Devils Tower</b>	Non-native grassland	FMH grass plot	0	0	1	5
	Ponderosa Pine fuel model 2	FMH Forest plot	0	0	5	8
	Ponderosa Pine fuel model 9	FMH Forest plot	0	0	4	4
	Ponderosa Pine	Rapid Assessment	0	0	10	10
<b>Fort Union</b>	Landscape	Photopoint	2	0	0	2
<b>Knife River</b>	Non-native grassland	Modified Daubenmire sample	0	9	9	9
	Mixed grass prairie	FMH grass plot	0	0	2	6
	Riparian forest	FMH Forest plot	0	0	3	5
<b>Mount Rushmore</b>	Ponderosa Pine	Rapid Assessment forest plot	0	0	20	20
	Landscape	Photopoint	1	0	4	5
<b>Scottsbluff</b>	Needlegrass/ sedge prairie	FMH grass plot	0	1	8	8
	Sideoats Grama grassland restoration	FMH grass plot	0	0	2	2
	Annual Brome grassland	FMH grass plot	0	0	2	2
	Snowberry shrubland	FMH shrub plot	0	1	3	3
	Rocky mountain Juniper draw	FMH Forest plot	0	0	2	2
<b>Theodore Roosevelt</b>	Non-native grassland	FMH grass plot	0	2	3	4
	Green Needlegrass prairie	FMH grass plot	0	0	5	6
	Silver sage shrubland	FMH shrub plot	0	0	2	4
	Riparian forest	FMH Forest plot	0	0	2	3
	Landscape	Photopoint	2	2	4	4
<b>Wind Cave</b>	Mixed grass prairie	FMH grass plot	0	0	4	7
	Western wheatgrass prairie	FMH grass plot	3	0	2	7
	Non-native grassland	FMH grass plot	1	0	2	5
	Ponderosa Pine fuel model 2	FMH Forest plot	5	0	2	9
	Ponderosa Pine fuel model 9	FMH Forest plot	1	0	0	3
	Ponderosa Pine	Rapid Assessment forest plot	4	0	0	4
	Landscape	Photopoint	3	0	3	6
<b>Total</b>			<b>29</b>	<b>18</b>	<b>125</b>	<b>185</b>

We worked in 26 Monitoring Units in 8 parks in 2003 measuring or photographing 172 plots. Note that not all monitoring units in our area had monitoring activities in during the past field season.

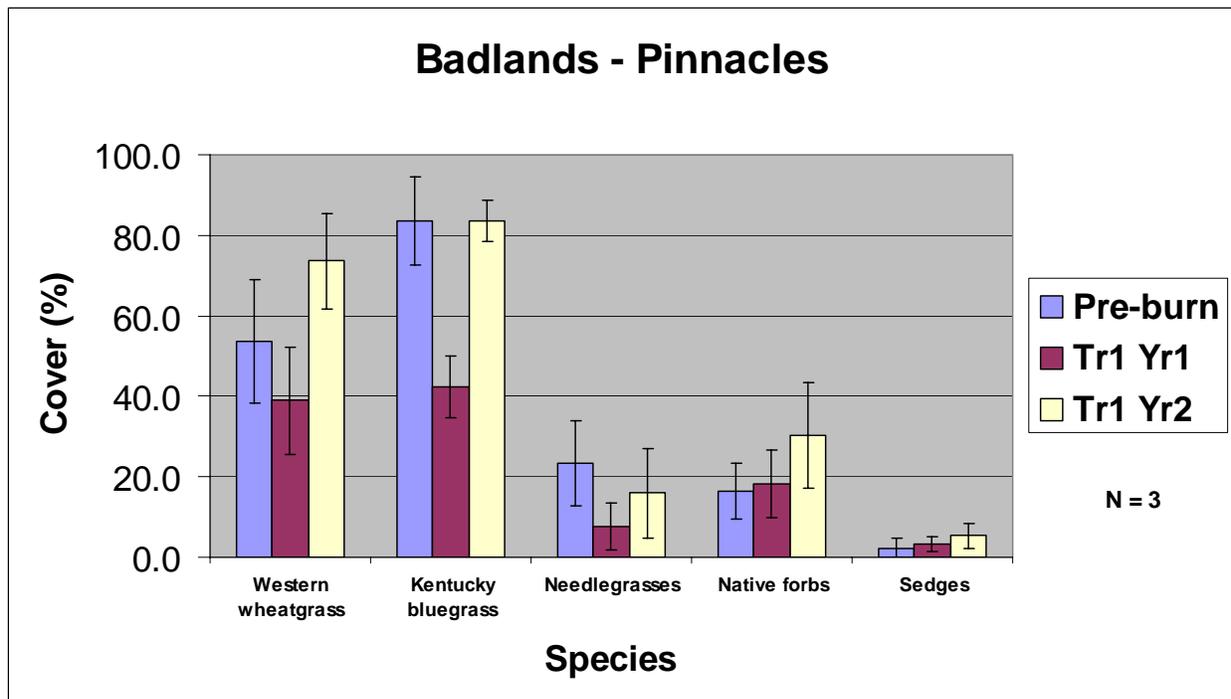
**Table 2. Fire Ecology Staffing2003**

Below is a synopsis of staffing and personnel development for 2003. Every staff member completed the annual fire refresher and attended additional training in the calendar year. Two individuals completed their Fire Effects Monitor (FEMO) taskbooks and one FEMO taskbook was issued but not completed. Two staff members attended the Association for Fire Ecology annual meeting to present a poster.

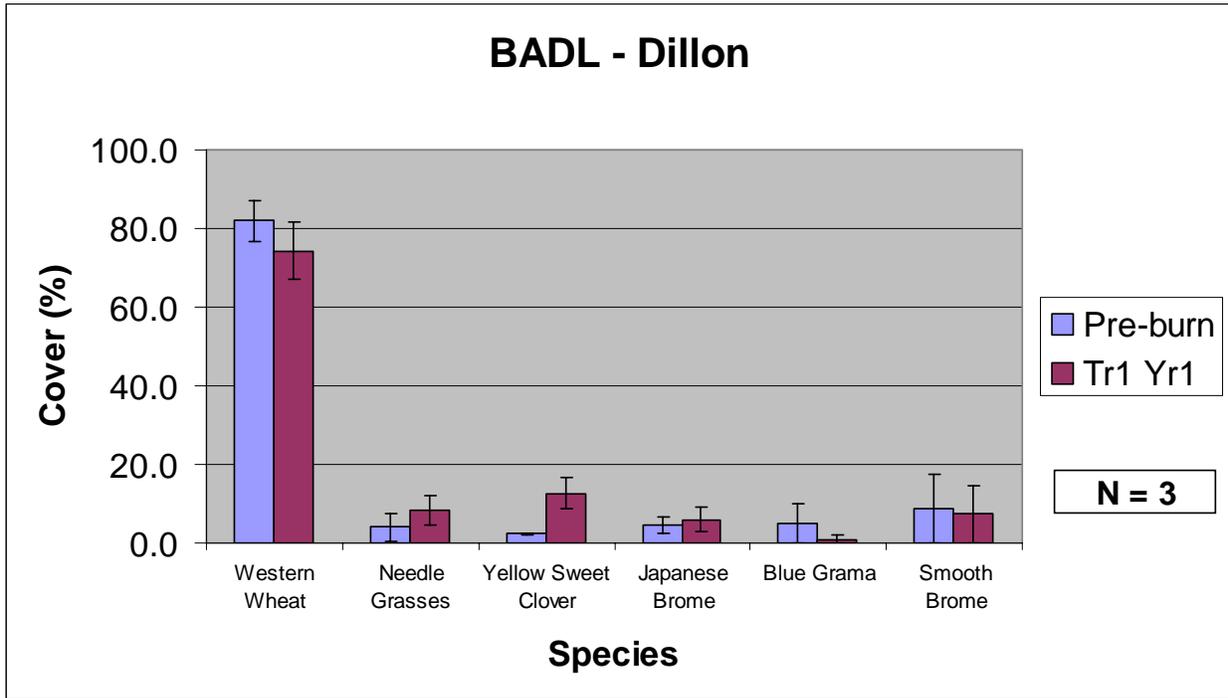
Monitor	Starting Date	Ending Date	# of Pay Periods	Training and Development
Cody Wienk-Ecologist	1/1/03	12/31/03	26	S-290, S-212, GIS Technical Specialist training, completed FEMO taskbook, AFE conference
Andy Thorstenson-Lead Monitor	4/6/03	12/31/03	22	S-200, ICT4 taskbook, Botany and Plant Taxonomy at Chadron State College
Kevin Rehman-Assistant Monitor	5/18/03	8/9/03	10	S-271, S-230, Rx-310, GIS Technical Specialist training, AFE conference
Jess Wilcox	4/21/03	7/24/03	9	Rx-80, S-290, completed FEMO taskbook
Bob Kobza	5/12/03	8/08/03	7	Rx-310
Martha Jakobek	5/12/03	8/08/03	7	Rx-80, S-290, Rx-310
Katie Johnson	5/19/03	11/14/03	13	Rx-80, S-290, FEMO taskbook issued, Rx-310

**Table 3. Management Objectives and Monitoring Results 2003**

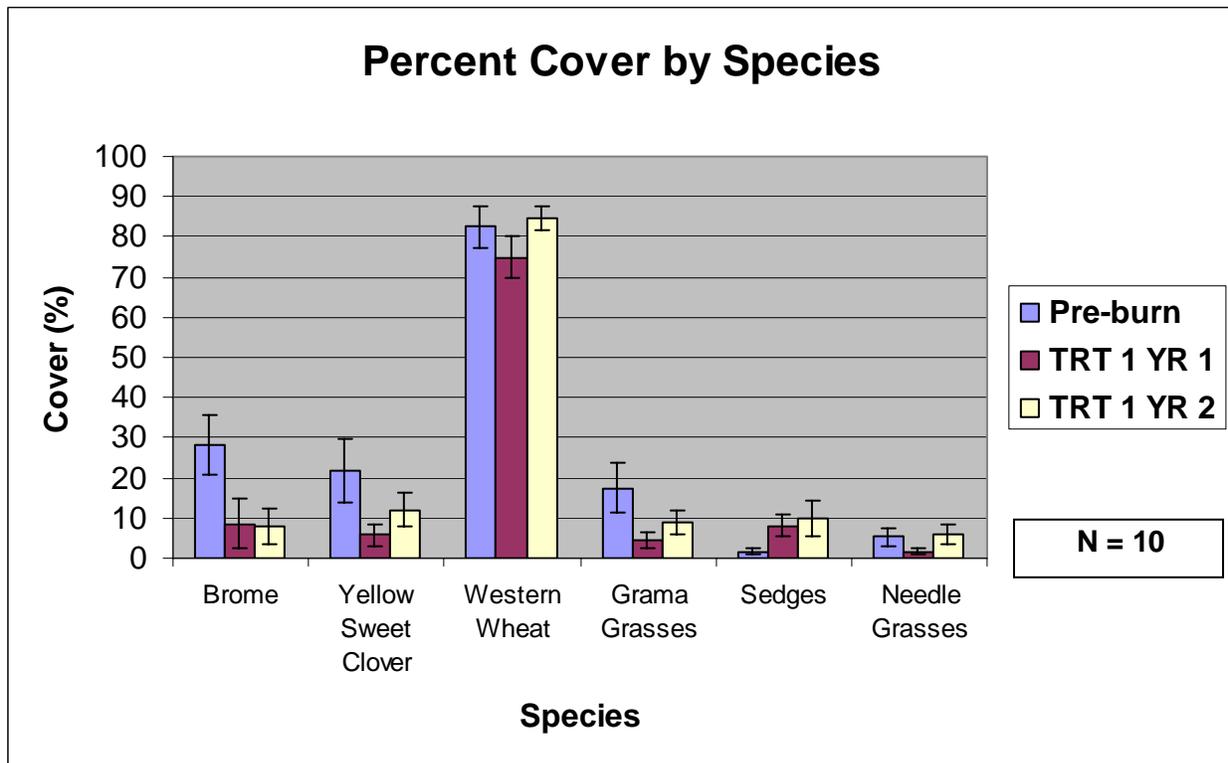
Badlands – Pinnacles burn unit, 3 Kentucky bluegrass plots, prescribed fire: May 2002, Figure includes the five dominant taxa.



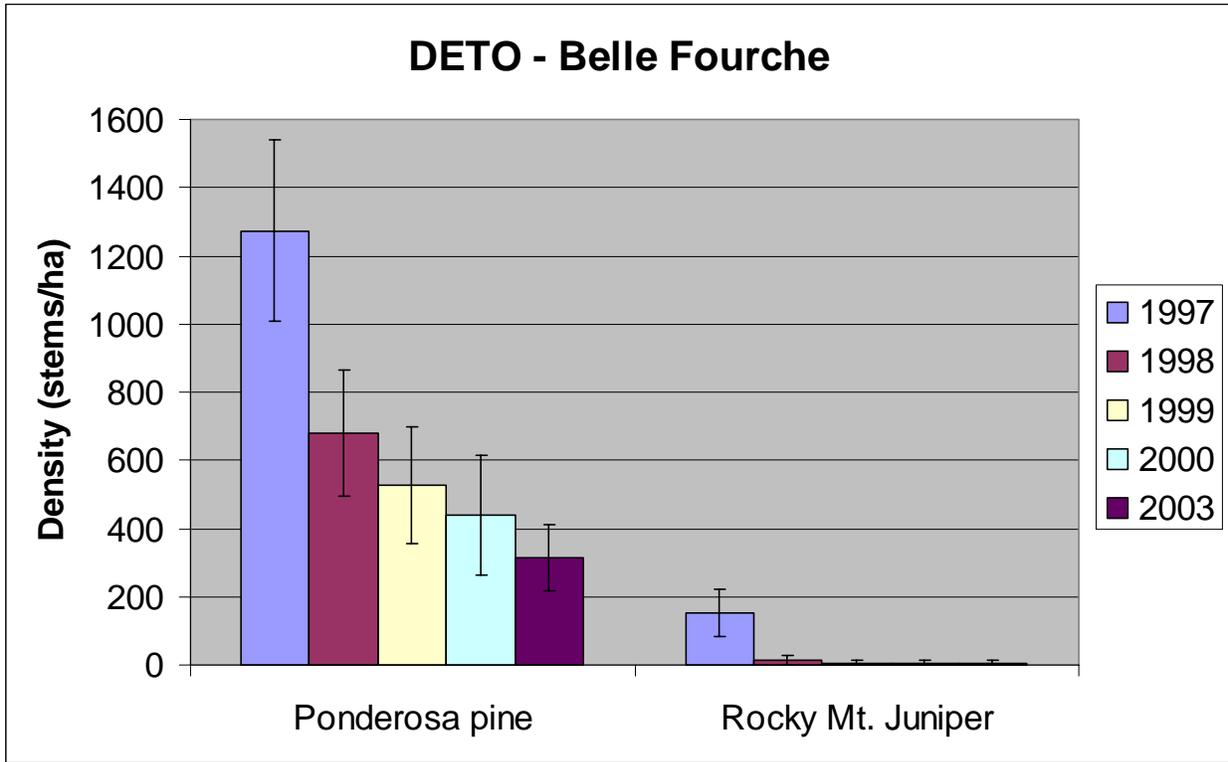
Badlands – Dillon burn unit, 3 western wheatgrass plots, prescribed fire: November 2002, Figure includes the six dominant taxa.



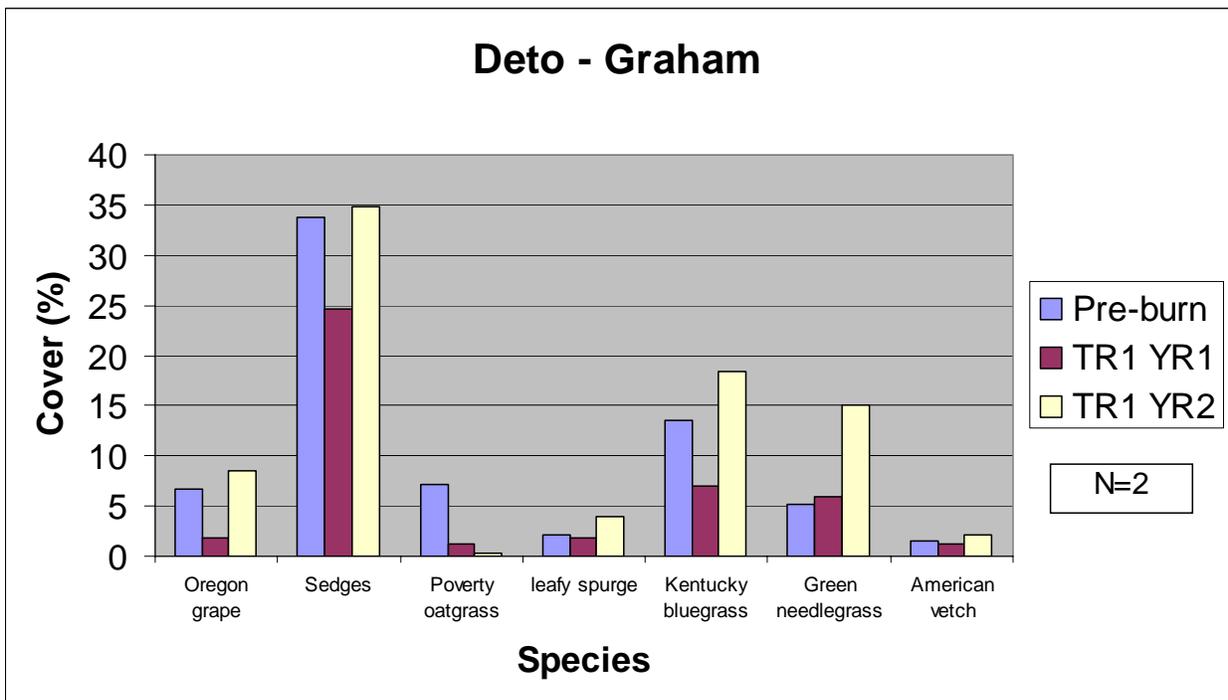
Badlands – western wheatgrass monitoring type, ten plots have reached 2-year post-burn status, figure includes the six dominant taxa.



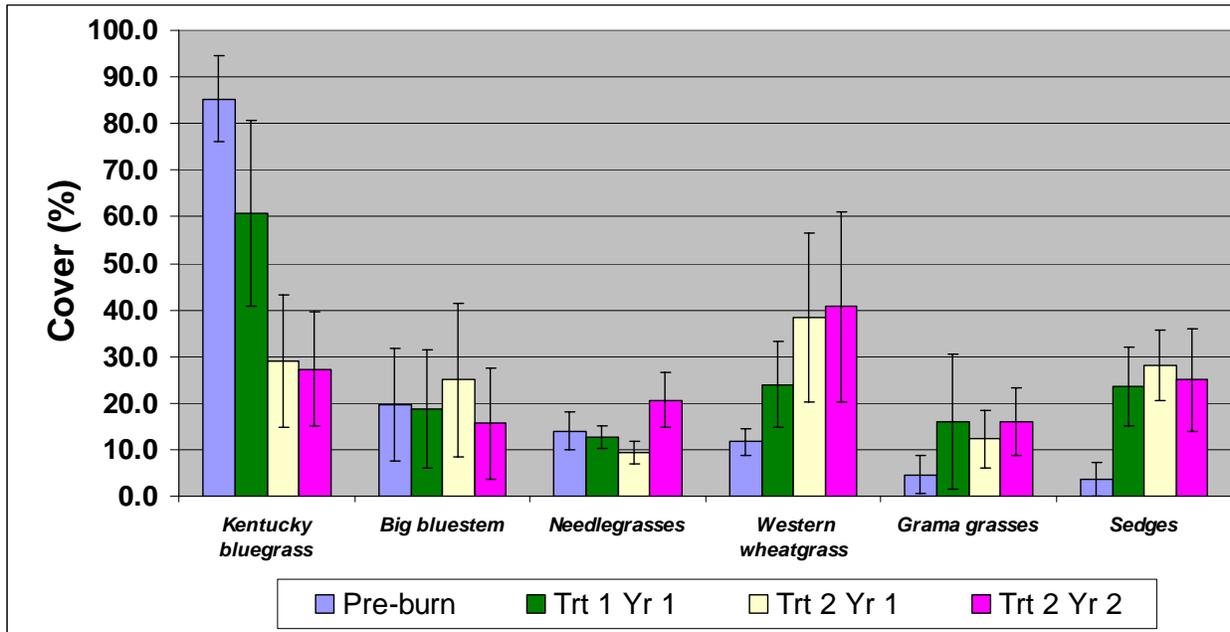
Devils Tower – Belle Fourche burn unit, 10 tree mortality plots, prescribed fire: April 1998



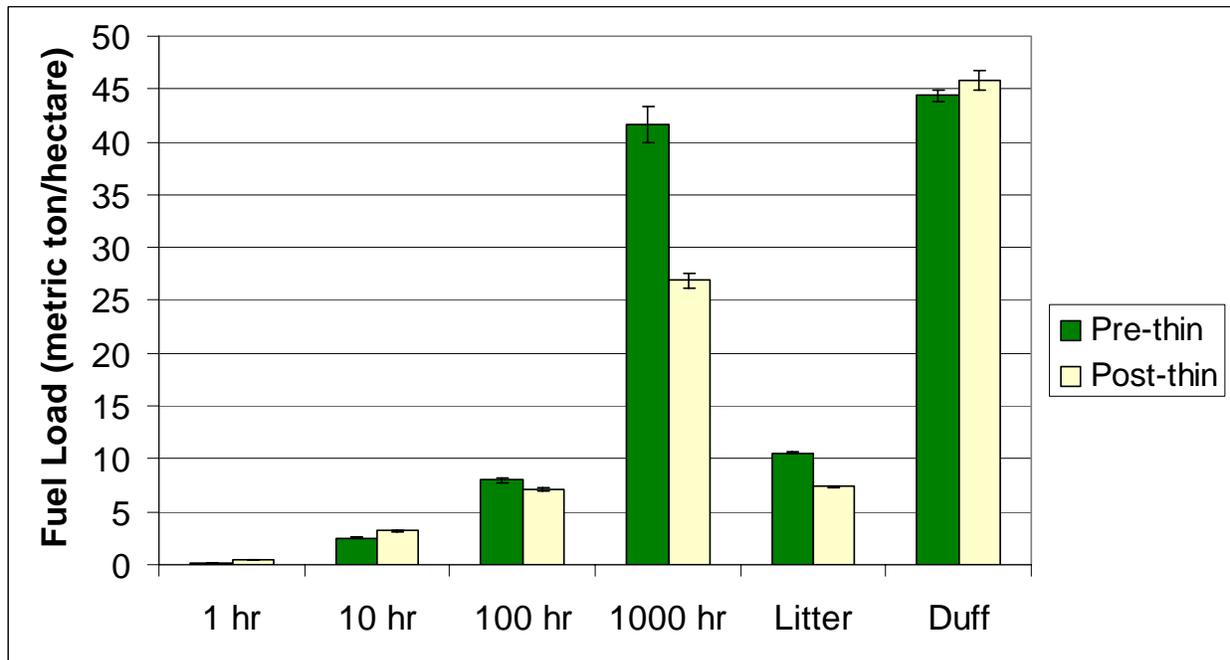
Devils Tower – Graham burn unit, two ponderosa pine plots, eight dominant taxa, prescribed fire: November 2001



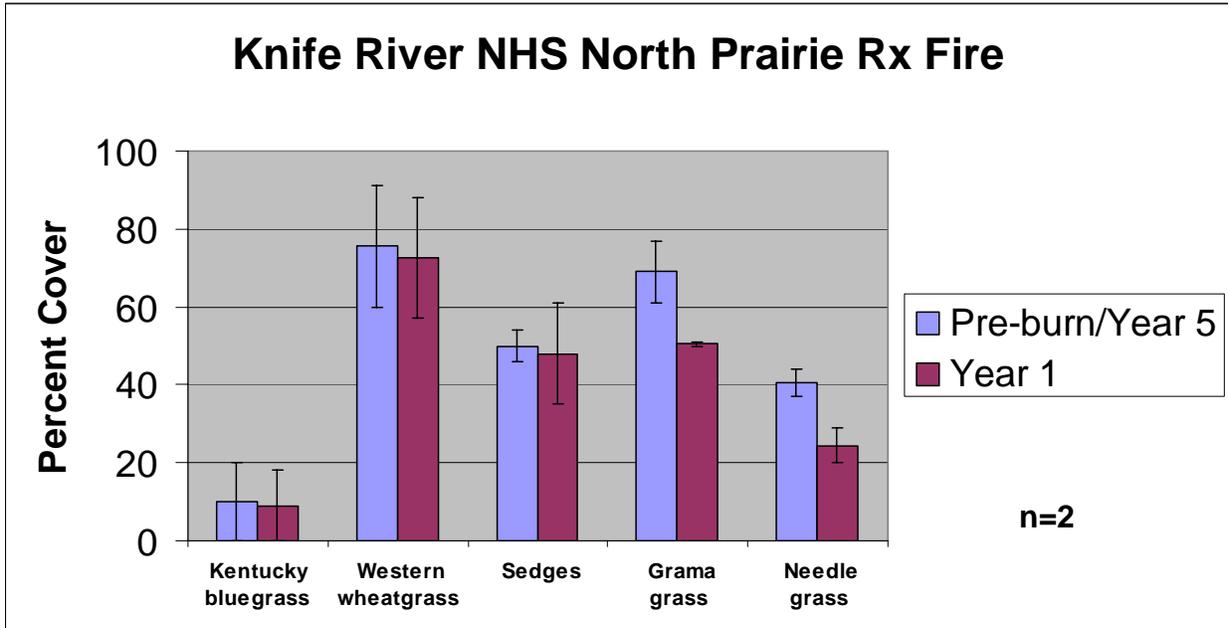
Devils Tower – Meadow burn unit, three Kentucky bluegrass plots, prescribed fires: 2 plots May 1999 & May 2000, 1 plot October 1999 & May 2002



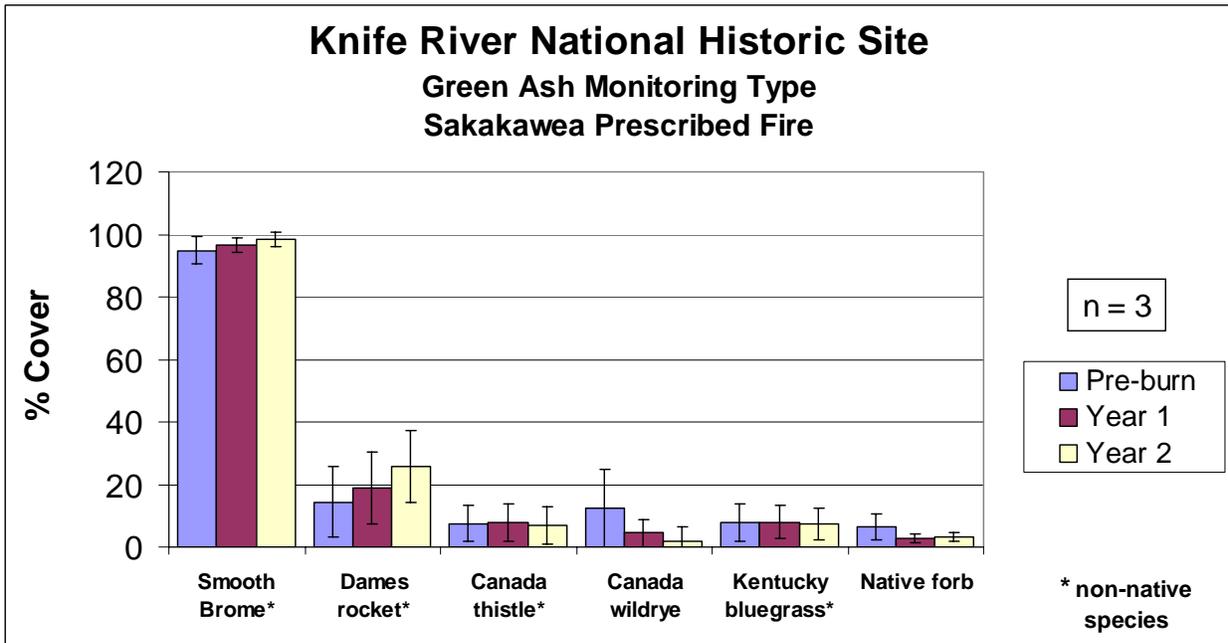
Devils Tower – Northside burn unit, five ponderosa pine plots, change in fuel load following mechanical thinning and burning of slash piles



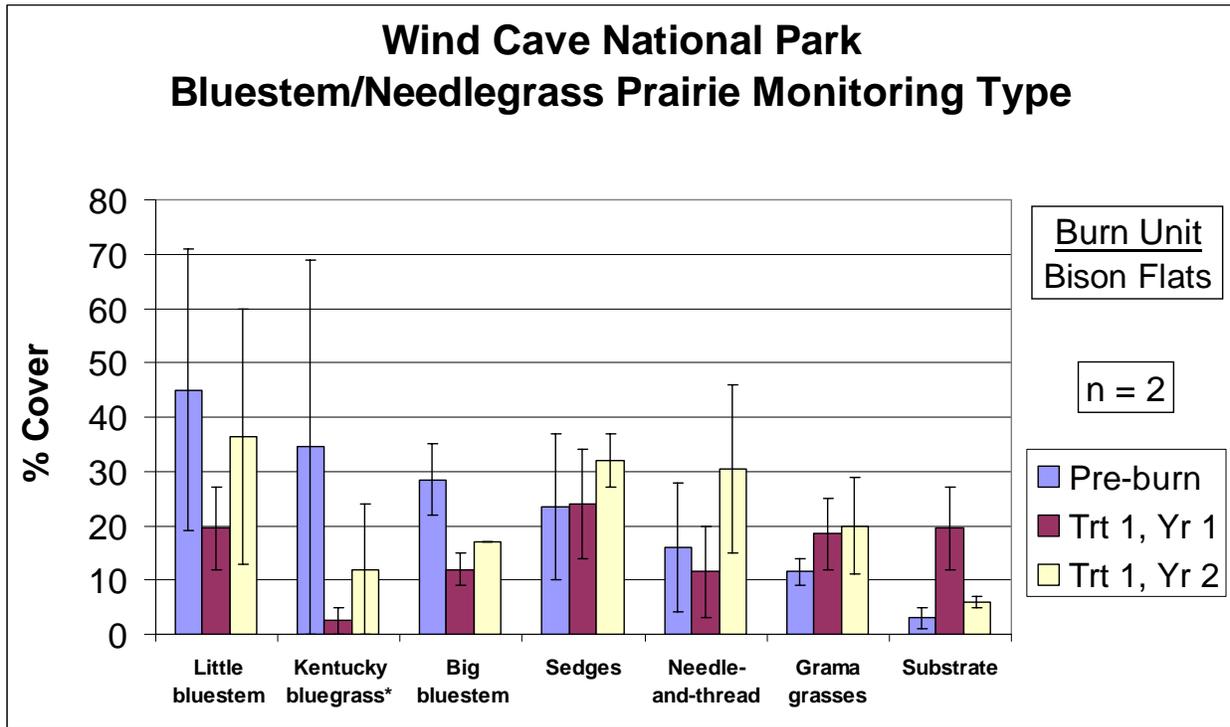
Knife River – North Prairie burn unit, two needlegrass/sedge plots, prescribed fires: October 1997 & September 2002



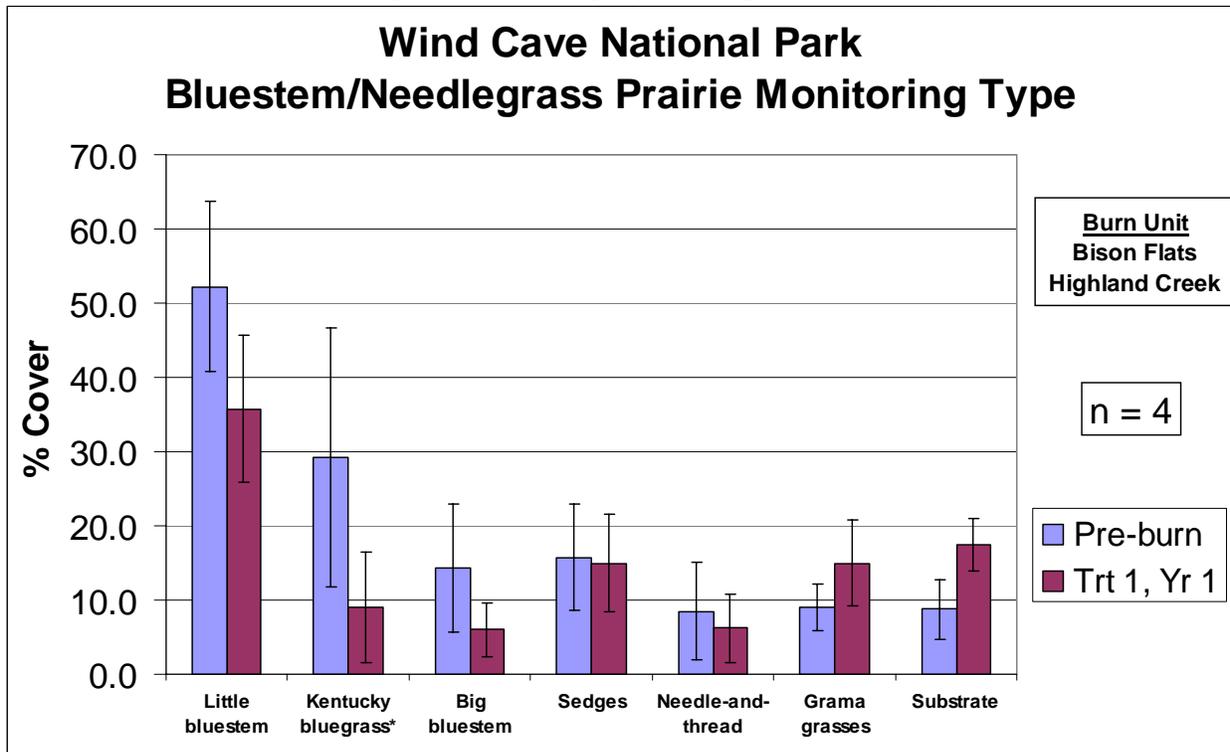
Knife River – Sakakawea burn unit, three green ash/boxelder plots, prescribed fire: October 2001



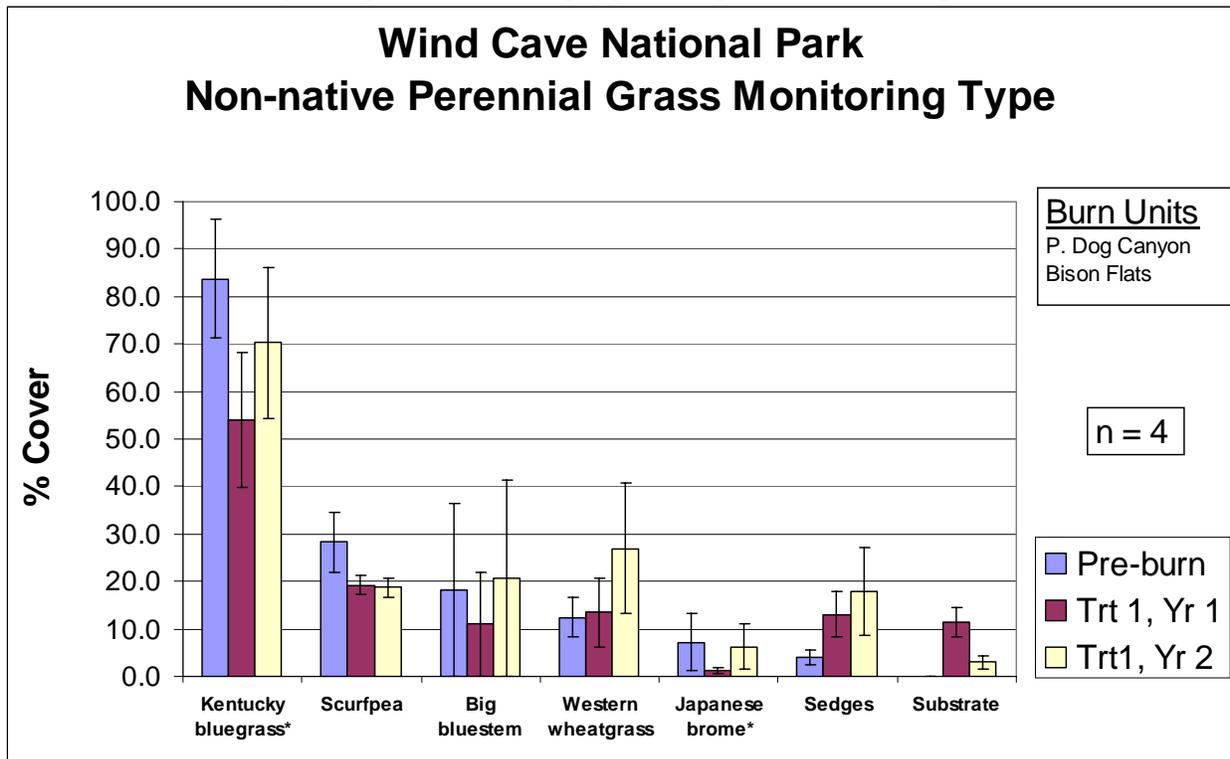
Wind Cave – Bison Flats burn unit, two little bluestem/green needlegrass plots, prescribed fire: October 2001



Wind Cave – Bluestem/needlegrass monitoring type, four plots at 1-year post burn status



Wind Cave – Kentucky bluegrass monitoring type, four plots at two-year post burn status



2003 NGP Fire Effects Monitoring Crew

