

Grand Teton National Park

2005 Fire Effects Annual Report



Summary

The Teton Interagency Fire Effects crew completed its seventh season in 2005. Diane Abendroth, permanent lead fire effects monitor, oversaw three seasonal crew members, Nancy Bockino, Dave Scott, and Kate Cueno, all of whom had worked for Teton Interagency Fire in the past. Steve Fugate, who has worked in Grand Teton National Park for the past several summers on the vegetation and fuels mapping projects, joined the crew for a month at the end of the field season. In late August, Diane, Nancy, and Dave left to pursue higher education, with Kate remaining until December to finish post burn data collection, analysis and reports. The fire effects crew was again fortunate in 2005 to receive field assistance from both volunteers and Wyoming Game & Fish Department personnel. Lydia Dixon, a returning Forest Service volunteer was joined by a National Park Service volunteer, Bernard Fournier. Jared Rogerson, Eric Maichak and Jill Miller of WG&F provided input and assistance on several monitoring projects.

In 2005, the fire effects crew installed 28 new monitoring plots and 27 photopoints. Five previous plots were reread, and 6 photopoints were re-taken. Monitoring work took place in Grand Teton National Park (39 plots and photopoints), Fossil Butte National Monument (11 plots and photopoints), Bighorn Canyon National Recreation Area (9 plots), and Bridger-Teton National Forest (15 plots and photopoints). Additionally, photopoints were installed on one wildfire use fire on the BTNF. A total of 20 plots were burned in 2005, including 4 in Grand Teton, 4 in Fossil Butte, 3 in Bighorn Canyon, and 9 on the Bridger-Teton Forest.

Two crew members (Dave and Kate) joined the Teton Interagency Type II hand crew for a two-week suppression assignment on the Dammeron Complex near Cedar City, UT. Additionally, one fire effects crew member (Kate) served as FEMO trainee on three area prescribed burns in September, including the 11,000 acre Fossil Butte - BLM, Rock Creek burn. This allowed Kate to make progress on a FEMO taskbook.

The fire effects crew continues to utilize the alternative vegetation monitoring techniques implemented in 2004 aimed at effectiveness monitoring. A customized monitoring plan is written for all prescribed burn and mechanical fuels projects on both the Bridger-Teton National Forest and Grand Teton National Park, directly addressing each project's particular measurable objectives. This project-level versus programmatic approach is designed to give fire managers prompt and easily interpreted results that reflect the success of individual projects. Statistically significant data must be collected for each project, necessitating a new approach to plot prioritization and design. In 2005, very few traditional FMH plots were installed, instead new data collection techniques provided for a relatively quick method of obtaining large sample sizes targeted to specific project objectives. For example, common stand exam protocols have been adapted for use in monitoring forest thinning, allowing the use of Forest Vegetation Simulator (FVS) models to evaluate differences in crown fire risk. Project specific monitoring methods continue to be refined, but a set of useful protocols is taking shape.

Each year, the monitoring results for Teton Interagency Fire projects are presented at a Fire Effects Symposium. This event is designed to bring together local and regional fire managers, vegetation managers, researchers, and non-government organizations to share fire ecology information and discuss adaptive management. In 2005, the fire effects symposium focused on fire effects of exotic species, fuels treatments, and sagebrush fire regimes.

In 2004, Grand Teton National Park completed its comprehensive vegetation mapping project started in 2002. As part of this project, data has been collected to generate a comprehensive fuels map for Grand Teton National Park in cooperation with the Natural Resources Ecology Laboratory at Colorado State University. Fire Effects personnel once again assisted with data collection for this project in 2005. The final fuels map will be completed in 2007.

The Grand Teton National Park Fire Effects plot database was converted from FMH software to a new Access-based program called the Fire Effects Assessment Tool (FEAT). FEAT is currently in development by Spatial Dynamics, Inc. of Boise, Idaho. When the final version of the software is completed, the database will be compatible with the new monitoring methods as well as FMH methods.

Management Objectives and Monitoring Results 2005, outlined by project

Grand Teton National Park

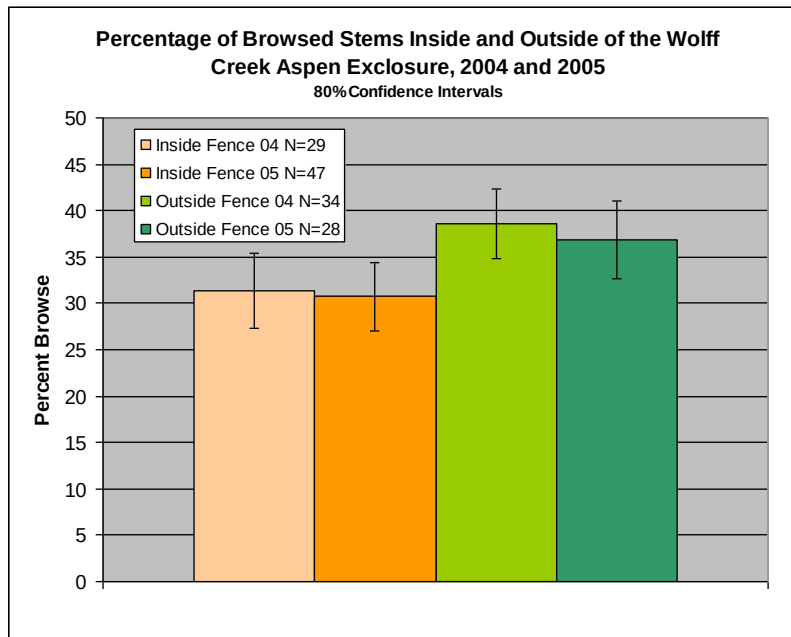
Wolf Ridge Aspen Exclosure

The Fire Effects Crew completed plot work for monitoring the Wolff Ridge prescribed burn exclosure fence in May 2005. Participants included personnel from GTNP Resource Management and WY Game & Fish to assist the fire effects crew.

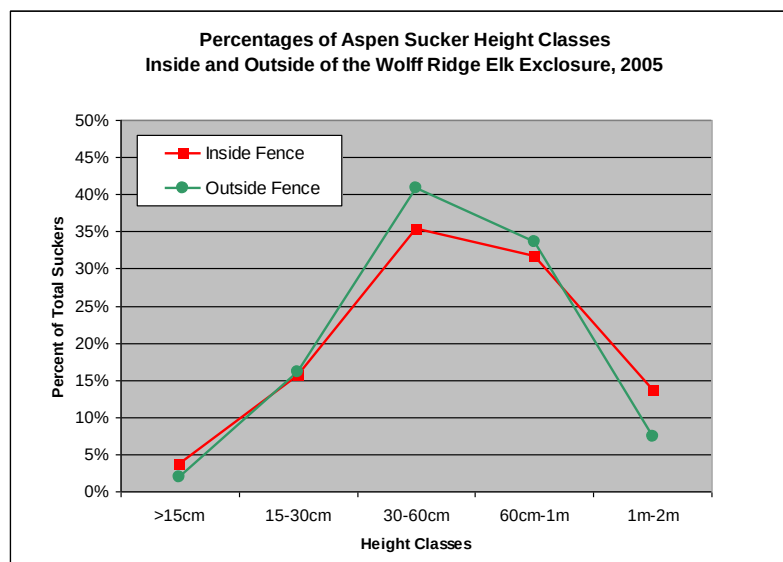
Non-permanent 1/100th acre circular plots were used inside and outside of the fence to count live aspen sprouts by height classes and browse status. Three meters is considered by wildlife biologists to be tall enough to escape winter browsing by ungulates. Sprouts were considered browsed if the dominant leader had been removed since the previous growing season. Minimum plot calculations for an 80% confidence level were conducted in the field to determine how many circular plots to conduct.

Inside the fence there were an average of 6350 aspen suckers per acre (+/- 1040, 80% C.I.). In the non-fenced control area, the mean sucker density was 9200 (+/- 1500, 80% C.I.). This difference in sucker density may be unrelated to the elk exclosure fence.

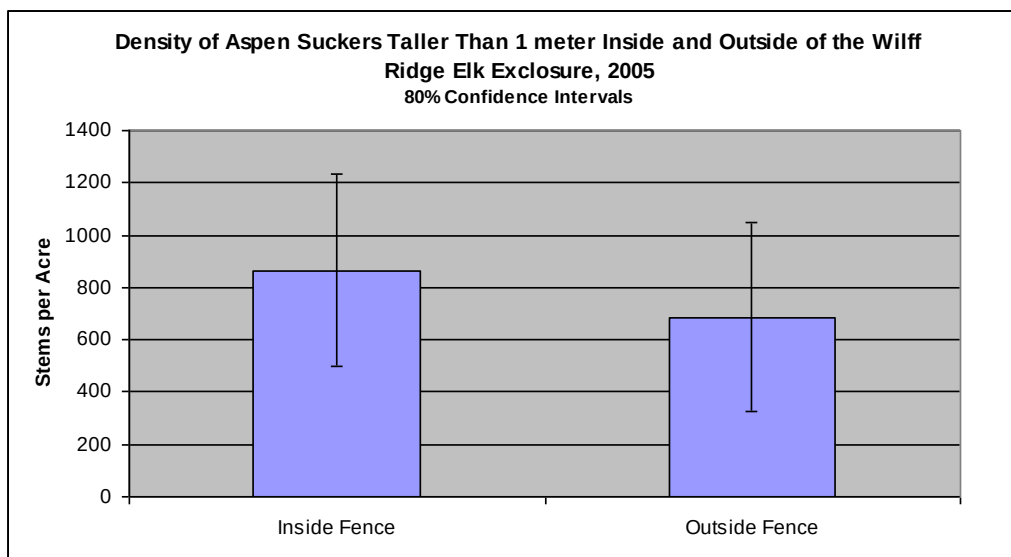
The difference between browsing levels inside and outside of the fence is not statistically significant. However, the mean percent browsing inside was 31% and outside was 37%. These figures are very similar to 2004, which were 31% inside and 39% outside. See figure below.



Field data collectors noticed that outside the fence there were many suckers in the 30-60 centimeter height class and smaller. Inside the fence the suckers taller than 1 meter seemed to be more numerous. The data show this as a trend also. The following figure gives percent breakdowns of sucker height classes inside and outside the fence.



The density of suckers taller than one meter inside the fence was 864, and outside was 685. These figures are based on small sample sizes, however, and do not show a significant difference.



This data was collected after the second winter of the exclosure fence and the third growing season for the burned aspen population.

Enyon Ridge

The Enyon Ridge fuels project will be implemented in 2006 and 2007. It is located along the park boundary to the east of the BTNF Diamond L prescribed burn, which was completed in the fall of 2005. The 800 acre unit is comprised of sagebrush, aspen, and conifer (Douglas fir and blue spruce). A portion of the sagebrush and aspen in the unit was burned in 1997, with mixed results due to livestock grazing which occurred due to damaged fences. Cattle from the adjacent forest service allotment had removed fine fuels, which limited the fire effects in aspen stands, where the animals congregated. The objectives of the Enyon Ridge project are specified separately for aspen and conifer vegetation. In aspen areas, prescribed fire will be used to kill 50-80% of mature aspen trees and over 85% of conifers. Aspen regeneration of over 1000 stems per acre over 10 feet in height ten years post burn are targeted. In conifer stands pre-treatment with mechanical felling will prepare some of the stands for burning, particularly near remnant aspen clones. Objectives call for areas with "low," moderate," and "severe" effects in terms of tree mortality in order to simulate a diverse wildland fire severity scenario under prescription conditions.

The Enyon Ridge monitoring plan calls for non-permanent circular aspen plots to measure overstory aspen, live conifers, aspen suckers, and aspen browse. In the conifer stands, variable radius stand exam plots, and brown's transects were used to collect pre data about tree density, crown mass, and down woody fuels. This will be done again after thinning and before the burn, and then post-burn.

Pre-treatment stand and fuels data were analyzed using the Forest Vegetation Simulator and the Fire and Fuels Extension. Fuels data show that the blue spruce community in Stand 1 has heavy loading, however the Douglas fir stands (2 and 3) have sparse fuels and the FVS model suggests that fire behavior will be moderate, even during severe fire weather.

Enyon Ridge Stand 1 Fuel loading summary: Tons per acre

Fuel Model	66% FM 10, 34% FM 12
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Enyon Ridge Stand 1 Fire Behavior Summary According to Weather Indices:

	Moderate 75 th %	High 90 th %	Severe 97 th %
Surface Flame	3.6	5	5.7

Litter	1.97
Duff	1.2
1 hour	.16
10 hour	1.12
100 hour	3.25
1000 hour	31
Canopy base Height, ft	4
Canopy Bulk Density kg/m3	.083

Length, ft			
Fire Type	Passive Crown Fire	Passive Crown Fire	Passive Crown Fire
Probability of Torching	96%	97%	97%
Torching Index, mph	6.1	2.8	2.8
Crowning Index, mph	36.2	26.8	26.5
Potential mortality, % of BA	39%	91%	98%
Potential Smoke tons per acre <2.5	.26	.32	.34

Enyon Ridge Stand 2 Fuel loading summary: Tons per acre

Fuel Model	78% FM 8, 22% FM 10
Litter	1.23
Duff	.2
1 hour	.15
10 hour	1.04
100 hour	0
1000 hour	10.3
Canopy base Height, ft	9
Canopy Bulk Density kg/m3	.164

Enyon Ridge Stand 2 Fire Behavior Summary According to Weather Indices:

	Moderate 75 th %	High 90 th %	Severe 97 th %
Surface Flame Length, ft	1.4	2	2.3
Fire Type	Surface Fire	Surface Fire	Surface Fire
Probability of Torching	1%	16%	25%
Torching Index, mph	129.5	97.7	98.5
Crowning Index, mph	22.2	16.4	16.1
Potential mortality, % of BA	18%	18%	18%
Potential Smoke tons per acre <2.5	.11	.12	.12

Enyon Ridge Stand 3 Fuel loading summary: Tons per acre

Fuel Model	100% FM 8
Litter	.95
Duff	1.2
1 hour	.17
10 hour	.81
100 hour	.54
1000 hour	10.6
Canopy base Height, ft	15
Canopy Bulk Density kg/m3	.085

Enyon Ridge Stand 3 Fire Behavior Summary According to Weather Indices:

	Moderate 75 th %	High 90 th %	Severe 97 th %
Surface Flame Length, ft	.6	.9	1
Fire Type	Surface Fire	Surface Fire	Surface Fire
Probability of Torching	0%	0%	0%
Torching Index, mph	433.3	341.4	348
Crowning Index, mph	35.8	26.7	26.2
Potential mortality, % of BA	10%	10%	10%

% of BA			
Potential Smoke tons per acre <2.5	.11	.11	.11

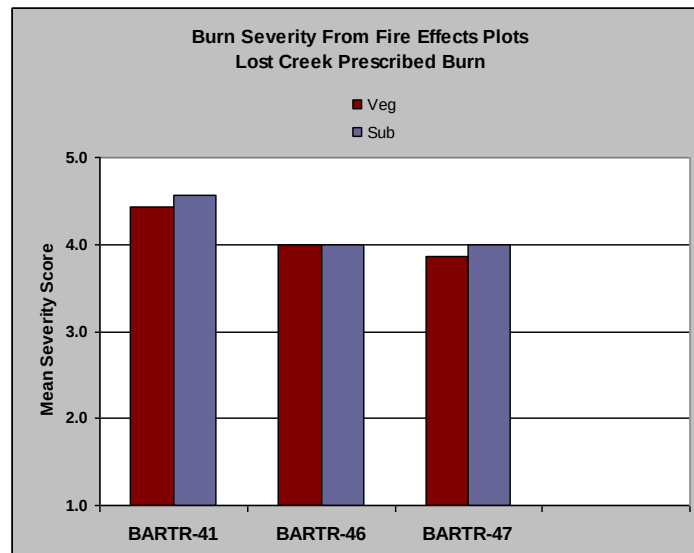
Enyon Ridge: aspen circles pre-treatment data summary		
<u>Aspen suckers</u> (0-6 ft height):	Total sucker stems/acre (80% C.I.)	1425 +/- 285
	% suckers browsed	66%
	% suckers < 3 ft.	60%
	% aspen suckers 3-6 ft.	40%
<u>Overstory:</u>	Live aspen stems/acre (> 6"dbh)	38 +/- 13
	Dead aspen stems/acre (> 6"dbh)	
	Live conifer stems/acre	250 +/- 42

Lost Creek

The Lost Creek prescribed burn is a 123 acre fuels reduction project in sagebrush steppe community. Plots installed are permanent FMH style shrub transects (BARTR), non-permanent "shrub circles" to provide statistically significant data regarding shrub density, and 1/10th acre vegetation, percent cover plots to document existing plant species and track whether fire causes an increase or decrease in plant cover.

Pre-burn FMH data will be analyzed using FEAT. *Artemisia tridentata* var. *vaseyana* density was found to be 4760 +/- 345 stems/ac (with 80% C.I.), and the control area density was just slightly greater. Vegetation cover plots report that within the area of the burn unit are non-native grass species, which will be monitored for change in percent cover after fire.

The Lost Creek prescribed burn was completed in fall 2005 and immediate post-burn severity data was collected.



Post-burn fire effects data will be collected in 2006 (yr01).

Beaver Creek NPS Housing

The NPS Housing project is a 16 acre prescribed burn which will be conducted to maintain a portion of a mechanical thinning treatment that was originally done in 1989-1993. More than 20 years later, the unit is blanketed with pine and fir regeneration which is just beginning to function as a ladder fuel layer. The objectives of this burn are to kill 60-80% of the seedlings and 10-30% of the poles, and maintain overstory tree spacing at 12 feet. Fuels objectives call for less than 10 tons per acre of downed woody material.

Pre-treatment monitoring included variable radius stand exam plots, fixed radius pole and seedling plots, Brown's transects, photopoints, and sightability measurements. Sightability is used as an index of ladder fuels. This method is currently experimental, however it may become an important component of future fuels treatment monitoring.

At this time, the mean seedling density at Beaver Creek has become 33,400 trees per acre. The mean pole density (for trees over 4.5 ft.) is 2,320 trees per acre. With the ladder fuels resulting from this regeneration, the risk of crown fire has increased. Using FVS modeling with the Fire and Fuels extension, the following fuels and potential fire data were derived from stand exams and Brown's transects:

Beaver Creek NPS Housing Fuel loading summary: Tons per acre

Fuel Model	99% FM 10, 1% FM 8
Litter	.79
Duff	8.6
1 hour	.13
10 hour	.58
100 hour	.78
1000 hour	26.9
Canopy base Height, ft	3
Canopy Bulk Density kg/m3	.112

Beaver Creek NPS Housing Photopoint



Beaver Creek NPS Housing Fire Behavior Summary According to Weather Indices:

	Moderate 75th %	High 90th %	Severe 97th %
Surface Flame Length, ft	3.2	4.8	5.8
Fire Type	Passive Crown Fire	Passive Crown Fire	Passive Crown Fire
Probability of Torching	100%	100%	100%
Torching Index, mph	4.9	2.1	2
Crowning Index, mph	29.3	21.7	21.3
Potential mortality, % of BA	55%	99%	99%
Potential Smoke tons per acre <2.5	.28	.31	.31

Jenny Lake and Lizard Creek Campgrounds - Mechanical Thinning

The Grand Teton Fire Effects program began developing monitoring methods for mechanical treatments this year. Jenny Lake and Lizard Creek Campgrounds were the first projects initiated using the new protocols. These projects are in mixed conifer vegetation located in the wildland urban interface. Thinning with chain saws and pile-burning will be used to meet objectives of 12-foot tree spacing, removal of all seedlings over 1 inch, and less than 10 tons per acre of downed woody fuels.

Monitoring with variable radius stand exam plots will allow calculation of crown mass, torching index, and crowning index. Ultimately this information will be used to continue to develop customized, site-specific, and fire behavior-based mechanical thinning objectives.

Pre-treatment monitoring included variable radius overstory tree plots, fixed radius pole and seedling plots, sightability plots, Brown's transects and permanent photopoints.

Stand Exams and Brown's transects provided the following fuels and potential fire information:

Jenny Lake Campground Pre-Treatment Fuel loading summary: Tons per acre

Fuel Model	68% FM 10, 32% FM 8
Litter	1.33
Duff	1.7
1 hour	.98
10 hour	.54
100 hour	1.66
1000 hour	22.5

Lizard Creek Campground Pre-Treatment Fuel loading summary: Tons per acre

Fuel Model	16% FM 10, 84% FM 8
Litter	1.25
Duff	1.2
1 hour	.09
10 hour	.51
100 hour	.22
1000 hour	15.6

Canopy base Height, ft	4
Canopy Bulk Density kg/m3	.095

Canopy base Height, ft	3
Canopy Bulk Density kg/m3	.125

Jenny Lake Campground Pre-Treatment Fire Behavior Summary According to Weather Indices:

	Moderate 75 th %	High 90 th %	Severe 97 th %
Surface Flame Length, ft	2.4	3.6	4.2
Fire Type	Surface Fire	Passive Crown Fire	Passive Crown Fire
Probability of Torching	100%	100%	100%
Torching Index, mph	16.3	10.6	10.5
Crowning Index, mph	32.9	24.4	24.0
Potential mortality, % of BA	64%	75%	99%
Potential Smoke tons per acre <2.5	.19	.21	.25

Lizard Creek Campground Pre-Treatment Fire Behavior Summary According to Weather Indices:

	Moderate 75 th %	High 90 th %	Severe 97 th %
Surface Flame Length, ft	1.3	2.0	2.3
Total Flame Length, ft	1	2	2
Fire Type	Surface Fire	Surface Fire	Surface Fire
Probability of Torching	100%	100%	100%
Torching Index, mph	39.1	29.4	29.7
Crowning Index, mph	27.1	20.1	19.7
Potential mortality, % of BA	62%	63%	64%
Potential Smoke tons per acre <2.5	.12	.12	.13

Signal Mountain West Prescribed Burn

The Signal Mountain West prescribed burn has been planned since 1999. The project is intended to reduce hazard fuels in conifer forest between the Teton Park Road and the Signal Mountain Road. Originally four FMH plots were installed; two in lodgepole pine and two in Douglas fir. In 2003, these were re-read, and two additional lodgepole plots were added. FMH minimum plot calculations showed that these plots do not provide statistically valid samples for seedling and pole density, which are important to assess the project's success. In 2005, the fire effects crew collected variable radius stand exam plot data in lodgepole and Douglas fir portions of the unit to boost the statistical value of the sampling and allow for potential fire behavior analysis with FVS. They also collected pole and seedling density to 80% confidence with fixed-radius plots.

Stand exam and fuels data was analyzed using the Forest Vegetation Simulator and the Fire and Fuels extension.

**Signal Mountain West
Lodgepole Pine Fuel loading
summary: Tons per acre**

Fuel Model	64% FM 10, 36% FM 2
Litter	.81
Duff	.7
1 hour	.25
10 hour	.23
100 hour	.19
1000 hour	21.45
Canopy base Height, ft	6
Canopy Bulk Density kg/m3	.059

**Signal Mountain West Lodgepole Pine Fuel Fire
Behavior Summary According to Weather
Indices:**

	Moderate 75 th %	High 90 th %	Severe 97 th %
Surface Flame Length, ft	3.5	5.3	6.5
Fire Type	Surface Fire	Surface Fire	Passive Crown Fire
Probability of Torching	94%	100%	100%
Torching Index, mph	9.7	6.3	6.3
Crowning Index, mph	46.1	34.3	33.7
Potential mortality, % of BA	63%	78%	99%
Potential Smoke tons per acre <2.5	.18	.2	.22

**Signal Mountain West
Douglas Fir Fuel loading
summary: Tons per acre**

Fuel Model	100% FM 8
Litter	1.08
Duff	.5
1 hour	.25
10 hour	.23
100 hour	.86
1000 hour	7.2
Canopy base Height, ft	3
Canopy Bulk Density kg/m3	.079

**Signal Mountain West Douglas Fir Fire Behavior
Summary According to Weather Indices:**

	Moderate 75 th %	High 90 th %	Severe 97 th %
Surface Flame Length, ft	.8	1	1.1
Fire Type	Surface Fire	Surface Fire	Surface Fire
Probability of Torching	10%	10%	11%
Torching Index, mph	80.3	62.5	63.9
Crowning Index, mph	37	27.3	26.8
Potential mortality, % of BA	37%	37%	37%
Potential Smoke tons per acre <2.5	.07	.07	.07

The Signal Mountain West prescribed burn is planned for the fall of 2006.

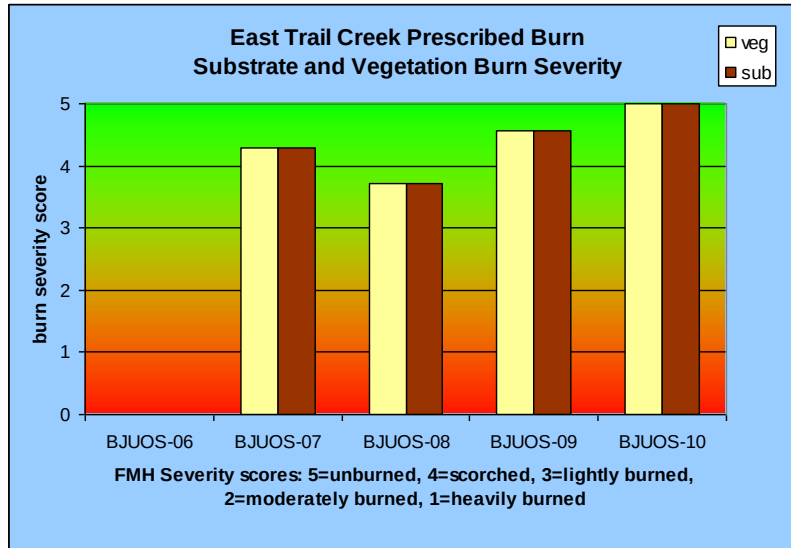
Bighorn Canyon Recreation Area

East Trail Creek Prescribed Burn and State Line Mechanical Treatment

Two treatment projects were implemented at the Bighorn Canyon Recreation Area this year. The projects encompass adjacent areas of decadent Utah juniper

important for bighorn sheep habitat. Plots for both treatment types are permanent FMH style shrub transects (BJUOS). In addition, sightability readings and bighorn sheep pellet counts were conducted on the plots by BICA wildlife staff. All data will continue to be collected jointly by the Teton Interagency Fire Effects crew and the BICA wildlife biologists. Because Bighorn Canyon contends with numerous invasive weeds, there will be a comparison between prescribed burn and mechanical treatments as to the implications for long-term weed increase or decrease.

The East Trail Creek prescribed burn was conducted fall 2005. Immediate post-burn, burn severity data was collected:



State Line Mechanical Treatment is scheduled for 2006. Pre-treatment data will be analyzed with FEAT. Post-treatment data will be collected in 2006 and beyond, according to the FMH data collection schedule.

Fossil Butte National Monument

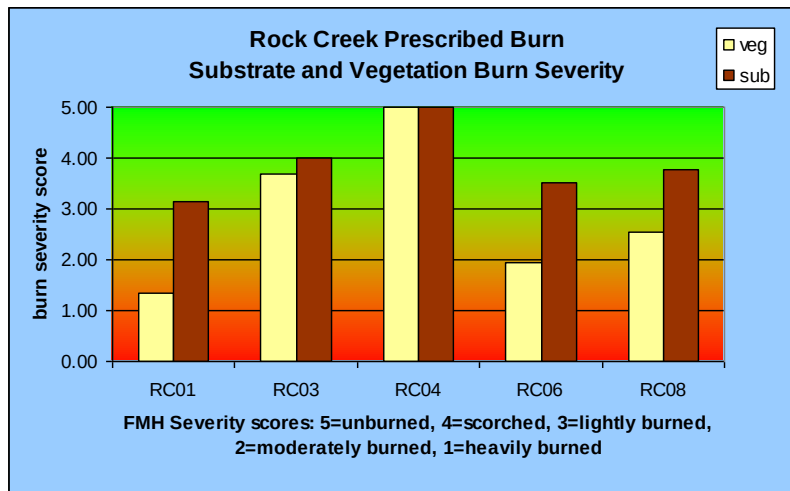
Rock Creek Prescribed Burn

The 11,000 acre Rock Creek prescribed burn, encompassing adjacent BLM and National Monument lands, was conducted in fall 2005. The interagency burn area vegetation is comprised of several sagebrush communities and conifer and aspen stands. Monitoring plots were targeted on National Monument land and thus exclusively in sagebrush communities: sage/bitterbrush, basin big sage, and conifer encroached sage/mountain shrub communities. Upon request and interest by all parties, identical plots were placed on nearby BLM land. Plots are traditional FMH style, BARTR plots with two additional 30m transects from the origin to collect additional shrub data. Consequently, each plot has three shrub density belts and three shrub intercept lines, and will be more likely to provide statistically significant data regarding shrub density and cover.

The prescribed burn appears to have successfully burned several decadent aspen stands, an important vegetation community in Wyoming due to the gradual disappearance of healthy, regenerating stands. Although no pre-burn monitoring of aspen was conducted, increased interest and positive interagency interaction with the

BLM responsible for the burn, provides an opportunity to use the Rock Creek burn as an example of a successful prescribed burn of aspen stands. If there is a useful way to do so, the Fire Effects crew may consider conducting post-burn monitoring of aspen on the burn.

Pre-burn data, collected in 2005, will be analyzed using FEAT. In addition to one-year post-burn data collection in the 2006 field season, burn severity satellite images will be collected one-year post on this sizable prescribed burn. Immediate post-burn, burn severity was collected on all plots:



Bridger-Teton National Forest

Fremont Ridge

The Fremont Ridge prescribed burn was implemented in the fall of 1999 and spring of 2000. The unit is located near Fremont Lake in Pinedale, on critical elk winter range. The vegetation is sagebrush-grassland with a considerable component of antelope bitterbrush, which is an important plant for ungulate forage. The objectives of the burn were to reduce sagebrush cover, increase grasses and forbs, and regenerate bitterbrush.

Six FMH brush plots were installed pre-burn at Fremont Ridge. Four of these burned. They were re-read immediately post burn, and one, two, and five growing seasons later. Five year post-burn re-reads have been entered into the FEAT program for analysis.

Fremont Ridge, plot 3, pre-burn



Fremont Ridge, plot 3, immediate post-burn



Fremont Ridge, plot 3, 2 years post-burn



Fremont Ridge, plot 3, 5 years post-burn



Fremont II

The Fremont II prescribed burn was completed in fall 2005. The area is comprised of sage shrubland and mixed-conifer/aspen vegetation communities. Burn objectives include: reduce fuel loading in burned conifer stands to less than 15 tons/acre, decrease conifer density in specific aspen clones by 50%, while increasing aspen suckering from 100-200 stems/acre to $\geq 5,000$ stems/acre three years post-burn, and burn 30-50% of sagebrush/grass communities with greater than 15% canopy cover while recovering greater than 80% groundcover by five years post-burn in both sagebrush/grass and aspen communities within the project area.

Monitoring methods implemented include photopoints, nonpermanent aspen circles, and BFH plots (Wyoming Game & Fish macroplots: 25m x 25m plot with five random 25m transects on which to conduct both point intercept vegetation and groundcover sampling, and 1m shrub belts). Aspen circle data is collected until 80% confidence is reached and provides information about aspen density and height. BFH plots yield 500 data points each for vegetation and ground cover sampling. Unfortunately, those areas of intense aspen sampling, i.e. aspen circles, did not burn. An immediate post-burn assessment implied that sagebrush community vegetation monitoring should yield future results with subsequent post-burn monitoring at years 01, 03, 05, and 10, but that no quantitative aspen data will be obtained. Photopoints and a few BFH plots will provide qualitative information regarding aspen objectives.

**Burned sagebrush community, Fremont II
Prescribed Burn.**



Little Hornet

The little Hornet project was a prescribed burn in a logged conifer forest with a considerable aspen component. The objectives of the burn were to remove downed woody fuels (slash) and stimulate aspen regeneration. The burn was planned to treat slash units as well as adjacent forest. Six modified FMH forest plots were installed. Modification included three aspen regeneration belts per plot, and overstory trees were not tagged.

In the fall of 2004, the project was completed. Only two plots, those in the slash units, were burned. Data from these two plots will be entered into the FEAT program.

Little Hornet Plot 4 – Pre burn



Little Hornet Plot 4 – 1 year post-burn



Weiner Creek

The Weiner Creek Aspen Project is a combined fire and mechanical treatment project with objectives directed at priority aspen stands and sagebrush communities within the project area. Treatment of aspen stands are intended to incur 50-80% mortality of large diameter (>5.9 in.) aspen trees and ≥85% mortality of conifers within the stand. At 15 years post-burn, an aspen density of 1,000 stems/acre is targeted. Monitoring of aspen browse, as a component of the aspen circles data collection method, will continue so that corrective action can be taken should browse levels reach >30% browse of the main, terminal leader. Sagebrush objectives define the creation of a burned/unburned mosaic in each sagebrush stand by attaining 90% mortality in 40-60% of each burnable stand. Long-term sagebrush objectives include a distribution of age classes in mountain big sagebrush communities in the area, with ≤20% bare ground cover and ≥20 species of forbs within five years post-burn.

In the 2005 field season, pre-burn aspen data was collected with 80% confidence. Nonpermanent aspen circles were completed giving pre-burn results regarding aspen density, height, and browse, and conifer density. Treatment of Weiner Creek, slated for fall 2005, has been postponed due to a categorical exclusion appeal.

Weiner Creek 2005 pre-burn data summary.

Stand	Total aspen sucker stems per acre (80% C.I.)	% aspen suckers browsed	% aspen suckers < 3 ft.	% aspen suckers 3-6 ft.	Live aspen stems per acre (>6" dbh)	Live conifer stems per acre
Weiner 1 (control)	1137 +/- 245	7%	57%	43%	243	1117
Weiner 2 (treated)	1415 +/- 269	10%	86%	14%	163	549
Weiner 3 (treated)	2766 +/- 391	9%	74%	26%	175	118

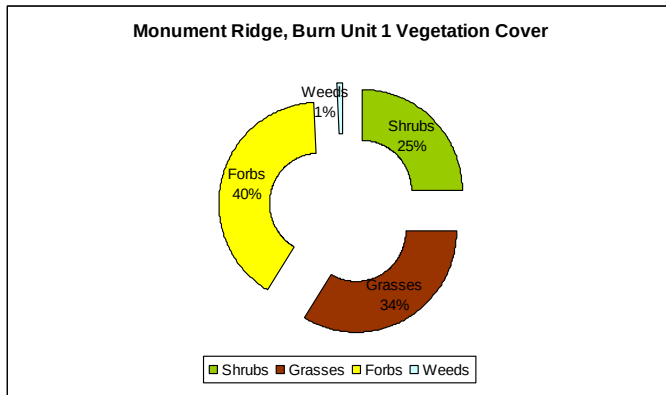
Monument Ridge

Pre-burn monitoring of Monument Ridge, burn unit 1, was completed in August, 2005. Monitoring protocols were implemented to meet the objectives outlined in the BTNF monitoring plan regarding sagebrush mortality, ground cover recovery, and vegetation composition and cover. Four permanent photopoints were installed in representative areas of the unit. At each photopoint, vegetation composition and cover plots were completed. Species present were listed and percent cover for each estimated in order to monitor the objective that states: *Attain a diverse array of native successional plant species in burned areas*. A total of 45 species were documented at the four plots. See the vegetation cover figure below.

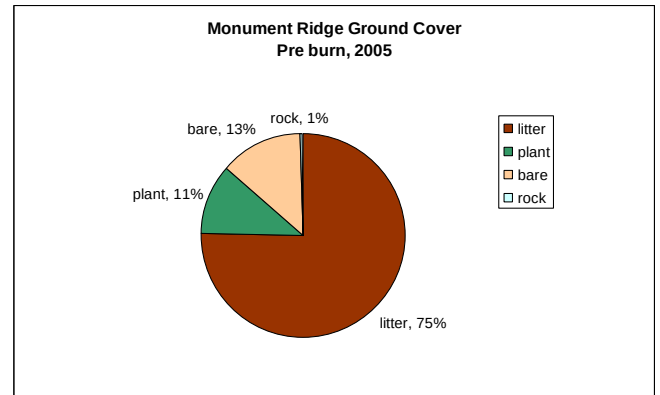
Data collected at nonpermanent plots included a measurement of ground cover, addressing the objective: *Attain 60% ground cover in sage/ grass communities after the second growing season post-burn and 80% ground cover after the fifth growing season post-burn*. See the ground cover figure below. Non-permanent "ARTR circles" were

also completed to determine the density of sagebrush in the burn unit. Sagebrush was sampled according to species, *Artemisia tridentata* var. *vaseyana* (ARTRV) or *Artemisia cana* (ARCA), and live or dead status. The species of dead sagebrush was not noted. Only those results pertaining to ARTRV are of statistical significance. ARTR circles monitoring pertains to the objective: *Burn sagebrush at a severity sufficient to kill 80% of the burned sage plants*. See the table below. Monument Ridge, burn unit 1 is scheduled for treatment in 2006. Post-burn monitoring will continue following burning, as will pre-burn monitoring on the additional burn units of Monument Ridge (a total of six) as they are scheduled.

Percent vegetation cover by stratum. Note: total percent cover does not sum to 100%, due to the averaging of four sites.



Percentage ground cover by substrate.



Sagebrush density, including live status and species composition. Live sagebrush includes both ARTRV and ARCA.

Live sagebrush stems per acre (+/- 80% C.I.)	7035 +/- 587
% of live sagebrush as ARCA	15%
% dead sagebrush	7%

Ham's Fork

The Ham's Fork, Unit 1, willow prescribed burn was completed in fall, 2005. Immediate post-burn fire effects monitoring found that the monitoring plots were not burned. Consequently, no post-burn data collection of unit 1 will be conducted. The willow portion of the prescribed burn was not successful (FEMO estimated only 10% of the willow community was burned), but because a mixed-conifer/aspen pocket within the unit burned quite well, Ham's Fork, burn unit 2, may be expanded to include the adjacent conifer-encroached aspen stands, see the photo below. Pre-burn willow monitoring of burn unit 2 has been completed, but if the burn area is expanded, the fire effects crew will do additional pre-burn conifer and aspen monitoring in accordance with burn objectives.

Pre-burn fire effects monitoring of Ham's Fork willows, burn unit 1.



Landscape view of Ham's Fork, burn unit 1. Note the conifer-encroached aspen stand that may be included in future monitoring.



Alpine Fuels

BTNF personnel and the Teton Interagency Fire Effects crew, with help from Wyoming Game & Fish and Bridger-Teton NF personnel, completed pre burn monitoring of Alpine Fuels in June of 2005. The Alpine Fuels project is a combined mechanical thinning and prescribed burn treatment slated for summer of 2006. Monitoring is comprised of two portions: aspen monitoring and Douglas fir monitoring. Aspen monitoring was accomplished with non-permanent "aspen circles". Aspen circles provide statistically significant data on aspen stems per acre, including aspen height classes and browse, as well as a tally of overstory conifer stems per acre.

Alpine Fuels, aspen portion data summary – 2005 pre-treatment	
Total aspen sucker stems per acre (80% C.I.)	482 +/- 122
% aspen suckers browsed	42%
% aspen suckers < 3 ft.	29%
% aspen suckers 3-6 ft.	71%
Overstory: live aspen stems per acre (> 6" dbh)	74 +/- 29
Overstory: live conifer stems per acre (≥ 10 cm ht.)	250 +/- 42

Aspen circles data are utilized toward the monitoring objectives concerned with overstory aspen mortality and aspen regeneration. Post treatment monitoring will be completed immediately post thin and 2 and 15 years post burn.

Douglas fir monitoring was conducted with non-permanent, variable radius stand exam plots. Stand exams provide information as to the density and live status of overstory, pole, and seedling trees, as well as fuel loading and ladder fuels. Data is utilized toward the monitoring objectives regarding the thinning prescription and down woody fuel loading. The Bridger-Teton National Forest will use FVS to analyze the Douglas-fir portion of the Alpine Fuels project. Post treatment monitoring will be completed post thin and 15 years post burn.

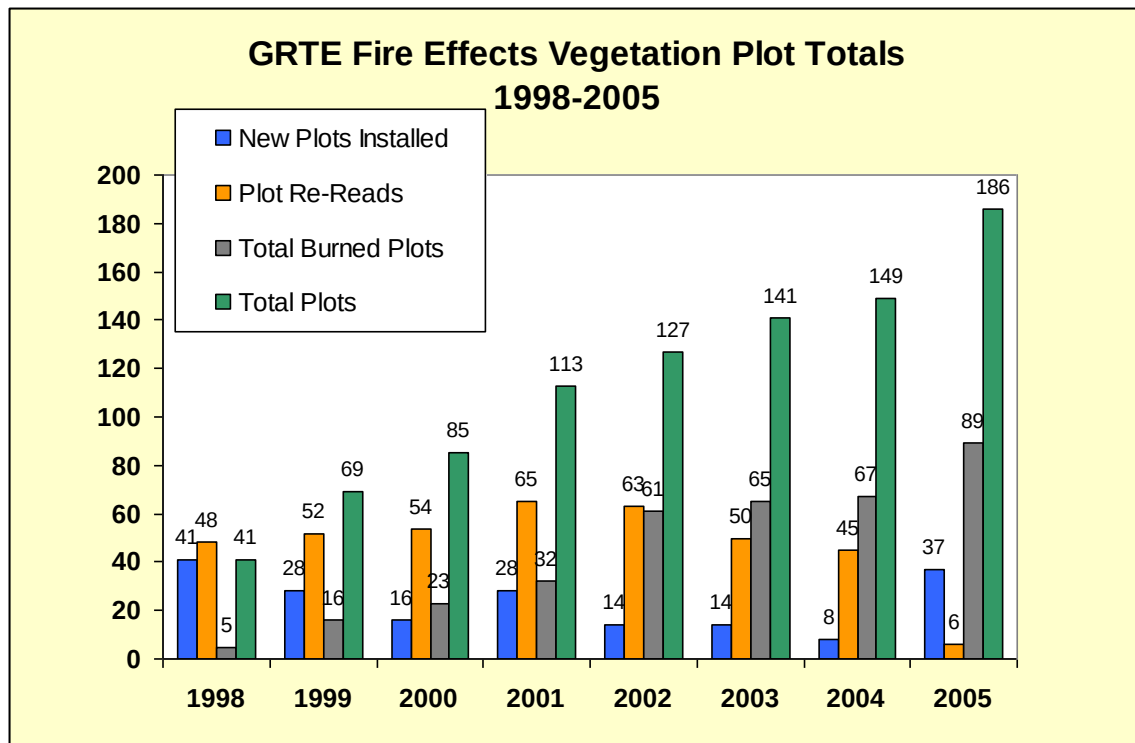
Fire Effects Plot Workload 2005

Fire Effects Plot Workload 2005

plot/project name	plot location	plots installed	plot rereads	plots burned
<i>FMH / BFH plots:</i>				
Blacktail - BARTR plots	GRTE		2	
Lost Creek – BARTR plots	GRTE	2		4
Rock Creek – BARTR plots	FOBU	8		4
Fremont 2	BTNF			4
Little Hornet	BTNF		2	2
BICA - East Trail Creek	BICA	5		3
<i>non-permanent / "circles":</i>	<i>(*each set of data is counted as one plot)</i>			
Blacktail/Row - ARTR circles	GRTE	2		2
Wolff Ridge - POTR circles	GRTE		1	
Signal West - circles	GRTE	2		
Beaver Creek/ NPS Housing	GRTE		1	
Enyon Ridge	GRTE	4		
Wiener Creek	BTNF	3		
Monument Ridge, Burn Unit 1	BTNF	5		
Diamond L / JIHI	BTNF			3
<i>mechanical monitoring:</i>				
Jenny Lake Campground	GRTE	1		
Lizard Creek Campground	GRTE	1		
BICA - State Line	BICA	4		
totals:		37	6	22
<i>photopoints:</i>				
Jenny Lake Campground	GRTE	2		
Lizard Creek Campground	GRTE	2		
Bar B-C	GRTE	3		
Beaver Creek North	GRTE	4		
Signal West	GRTE	2		
Wolff Ridge - POTR circles	GRTE		2	
Jackson Lake Lodge	GRTE		3	

Enyon Ridge	GRTE	5		
Rock Creek	FOBU	3		
Fremont 2	BTNF		1	1
Weiner Creek	BTNF	4		
Ham's Ridge WFU	BTNF	2		2
totals:		27	6	3

Current and Past Fire Effects Plot Workload, 1998-2005

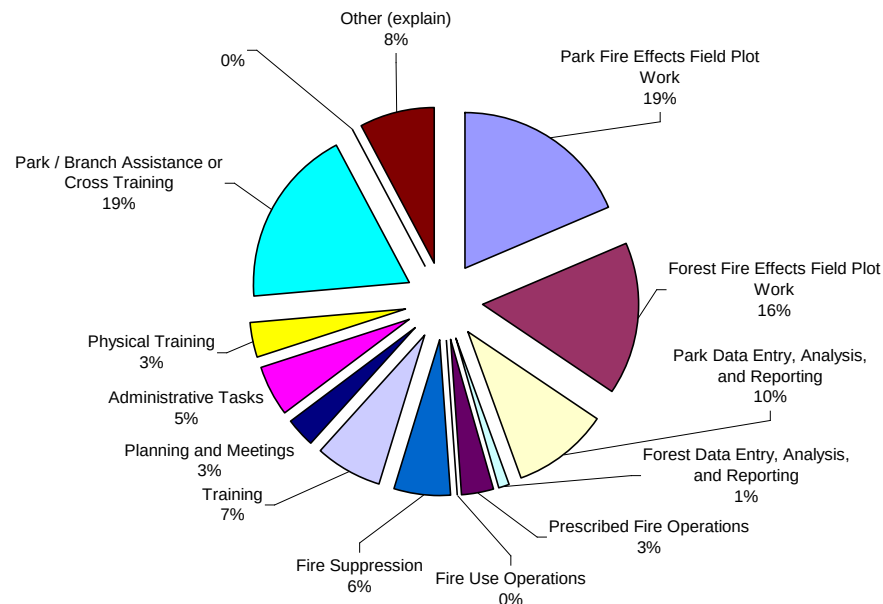


Fire Ecology Staffing 2005

Monitor	Starting Date	Ending Date	# of Pay Periods	Training and Development
Diane Abendroth, Lead Monitor, GS-7 FTE	1/1/05	12/31/05	26	
Nancy Bockino, Crew Lead, GS-6 seasonal	4/11/05	8/25/05	10	RX-340, L-280
Kate Cueno, Crew Member, GS-5 seasonal	5/31/05	12/2/05	13.5	FEMO taskbook initiated
Dave Scott, Crew Member, GS-5 seasonal	4/11/05	8/25/05	10	
Steve Fugate, Crew Member, GS-5 seasonal	8/22/05	9/30/05	3	New FFT2

Lydia Dixon, Forest Service volunteer				
Bernard Fournier, Park Service volunteer				

Fire Effects Crew Summer Season Accomplishments (May – Sept)



Fire Ecologist Accomplishments

Grand Teton National Park does not have a fire ecologist position; however there are related accomplishments to report for 2005. With the revision of the Fire Management Plan, Diane Abendroth worked with Fire and Science & Resource Management personnel to develop fire management vegetation descriptions, ecological information, and desired future conditions. She also participated in several other aspects of the FMP revision including public meetings, editing, and alternative development.

The GTRE fire effects program works closely with the Bridger-Teton National Forest fire program to conduct monitoring, coordinate and develop treatment objectives, analyze data and report results. The BTNF no longer has a Fire Ecologist on Staff, so Diane fills in whenever appropriate and feasible to help forest personnel with fuels project planning. Both the park and forest fire effects monitoring programs have developed new strategies for project level monitoring, mechanical treatments monitoring, and wildland fire use monitoring. Diane has been involved in developing these methodologies, coordinating their implementation, and writing associated manuals.

The following table summarizes many of the “fire ecologist accomplishments” for this year.

Category	Percent Time	Accomplishments/Focus Areas
Planning	5	• Fire Management Plan • Individual Project planning and development: Enyon Ridge, Alpine Fuels, Star Valley Fuels, Mech. monitoring • BTNF fire effects monitoring plan, etc.
NPS Meetings, Task Groups, ID teams	3	• Many planning meetings with FMO Staff • Star Valley Fuels ID Team
Interagency Work	25	• BTNF fire effects monitoring plan • LANDFIRE • Wyoming Game & Fish Dept. projects • All fire days • Fire Effects Symposium
Data Entry	5	• FVS data entry for fuel transects and stand exam data • FEAT data entry • Vegetation and fuels mapping photos database
Research	5	• Fire Severity Atlas and fuels/vegetation response
Fire Assignments	0	• None this year
Data Analysis	10	• NPS fire effects data • BTNF fire effects data
Data Conversion	2	• FEAT data mainly postponed
Supervisory/Admin	30	• Hired, supervised, and led field crew and volunteers
Training	10	• Firefighter training • FVS training • Statistics • Shrub and grassland ecology • Forest Scale and Stewardship • FRCC • Etc.
Misc.	5	• Fuels and vegetation mapping coordination

