



Teton Interagency Fire Fire Ecology Annual Report Calendar Year 2014

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A. Summary

The Teton Interagency Fire Ecology Program has been in place for 15 years. It serves Grand Teton National Park and its satellite units (Bighorn Canyon NRA, Fossil Butte NM, and Fort Laramie NHP). It also serves three zones (6 Ranger Districts) of the Bridger-Teton National Forest. The primary responsibilities are fire effects monitoring and planning for fuels treatments, as well as support for operational fire.

Table 1. Fire Ecology Staffing 2014

Ecologist and Monitors	Starting Date	Ending Date	# of Pay Periods	READ Qual? (Yes or No)	Training and Development
Diane Abendroth Fire Ecologist	1/1/13	12/31/13	26	YES	FIRB Completed S-270 5 Fire Operational Periods
Ron Steffens Fire Monitor	5/21/12	8/24/12	5.5	NO	S-203 31 Fire Operational Periods
Katie Walsh Lead Fire Effects Monitor (ZION)	5/23/14	8/28/14	7	YES	1 ICT5 Training Assignment 6 Fire Operational Periods
Alex Spannuth Assistant Lead Fire Effects Monitor	5/12/14	12/7/14	13.5	NO	Lead Fire Effects Detail in Sept. 3 consecutive Teton Module fire assignments 1 Helitack detail Worked on FALB taskbook Completed S-390, S-270 33 Fire Operational Periods
Molly Wright Fire Effects Monitor	5/27/14	9/30/14	10	NO	1 off park detail as crewmember on E3 Led FX crew in plot work and data entry Completed S-270 19 Fire Operational Periods
Joe Vaughn Pathways Student Fire effects Monitor	5/27/13	9/30/13	10	NO	1 Teton Module assignment 1 off park detail on E3 as crewmember Worked on FEMO, and FFT1 taskbooks Completed S-270 29 Fire Operational Periods
Ashley LeDesma SCA NPS Academy Intern	5/27/14	10/16/14	13.5	NO	NPS Intern, accomplished all monitoring and fire assignments above expectation. 2 Teton Crew assignments Completed S-290, S-131, L-280 Worked on FEMO taskbook 19 Fire Operational Shifts 30 day emergency hire as FX Crewmember

B. Fire Effects Crew:

The 2014 Fire Effects Crew had a challenging task presented to them at the beginning of the field season. The previous Lead, Assistant Lead, and one of two Crew Members left to explore new life avenues leaving Joe Vaughn as the only returning crewmember. With the immense help of Joe's competence, patience and teaching abilities, Katie Walsh's experience and amazing leadership skills detailed in from Zion National Park, great direction and advice from Diane Abendroth and plenty of hard work, the Fire Effects Crew pulled off another successful season. They not only accurately collected all of the required data, but accomplished and assisted in accomplishing a myriad of goals within the Teton Interagency Fire program.



From left to right: Alex Spannuth, Katie Walsh, Molly Wright, Ashley LeDesma, Joe Vaughn

This year the Fire Effects team made important improvements by implementing new protocols and adding a number of quantitative and photographic plots. They managed to complete new training and organize shapefiles for better GPS use in the field. This year they also assisted with numerous suppression, fire monitoring, and RX fire operations and detailed into Teton Helitack, Teton Fire Module, Engine 3, and the Teton Type II Crew. All the while, they crew maintained a high degree of professionalism, safety, and enthusiasm.

Each Crew Member experienced a variety of wildland fire assignments with local and out of Park/Forest incidents. Joe Vaughn and Alex Spannuth participated in three short details with the Teton Fire Module leading to many great opportunities to participate in the practices of monitoring and fire suppression in the Caribou-Targhee National Forest, North Kaibab National Forest and Three Sisters Wilderness / Deschutes National Forest. All of these were backcountry assignments, reinforcing training while teaching new skills in backcountry logistics, operations and self-sufficiency. Fire Effects NPS intern and first year firefighter Ashley LeDesma jumped on the opportunity to go on two Teton Crew assignments and assist in any fire operation she could. She excelled given the steep learning curve and worked on FALA and FEMO taskbooks. Molly Wright, our most senior Crew Member was very enthusiastic, participating every backfill opportunity presented, assisting Teton Helitack and boosting Engine 3, along with Joe Vaughn, on an assignment to the large Happy Camp Complex. Local fire assignments included suppression operations on the Antelope fire and Cottonwood II burn unit, and FEMO operations on the Rinniker RX.

Before and after the height of the 2014 fire season Fire Effects employees collected data from many locations within 28 project or fire units (up 3 from last year due to monitoring schedules and plot installations). The majority of the Fire Effects 2014 work load (46%) was spent assisting unplanned and planned fire operations, while the next largest denomination of time (33%) was spent in the field collecting quantitative, qualitative and photographic data pertaining to future, current and previous fires (Figure 1).

Table 2. Fire Effects Plot Workload (2014) and Total Plots Installed

Park/Forest	Monitoring Unit	Plot Type	Pre-Burn/ MX 2014	Immed. Post 2014	Post (1-20 yrs) 2014	Total 2014
Grand Teton National Park	1999 Alder Fire	Photopoints			8	8
	1994 Row Fire	Sage Cover Photo Points			30 1	30 1
	Airport Road Sage Strips	Photopoints			2	2
	Signal Mountain Summit Road MX	Stand Exams Chip Depth Transects Photo Points	10 2	10		10 10 2
	Colter Bay Marina MX	Stand Exams Photo Points			10 2	10 2
	String Lake MX	Photo Points		2		2
	Highlands MX	Photo Points	2			2
	2009 Bearpaw Bay Fire	Photo Points			5	5
	Phelps Moraine RX	Photopoints Weed Survey			2 1	2 1
	Matilda RX	Aspen Circles Photopoints	30 1			30 1
Bighorn Canyon NRA	N/A – No projects monitored in 2014					0
Fossil Butte NM	N/A – No projects monitored in 2014					0
North Zone Bridger-Teton NF	Beaver Mountain Rx	Weed Survey Photopoints			1 1	1 1
	Lower Palmer Rx	Photo Points	2			2
	Lava Creek Rx	Shrub Line Intercept Photo Points Weed Survey			30 3 1	30 3 1
	Dry Quad Rx	Browns Transects Photo Points		8	2	8 2
	Northeast Quad RX	Photo Points		2		2
	Lower Gros Ventre RX Phase II	Photopoints			10	10
West Zone Bridger-Teton NF	Bradley Mountain Rx	Aspen Circles Photo Points			30 4	30 4
	Wiener Creek Rx	Aspen Circles	30			30
East Zone Bridger-Teton NF	Chicken Creek Rx	Aspen Circles Ground Cover Transects Photo Points			60 40 5	60 40 5
	Marsh Creek Rx	Photopoints			3	3
	Lake Rim Rx	Photopoints			4	4
	Fontenelle Fire	Aspen Circles Photopoints			90 3	90 3
	Fremont Ridge RX	FMH Brush Transects			6	6
	Cottonwood II RX	Photopoints	2	2	1	5
	Kendall Fire	Photo Points			4	4
						TOTAL: 654

Table 3. Fire Effects Crew 2014 Accomplishments/Focus Areas

Category	Percent Time	Notes
FMH plots	1%	6 FMH Brush plots in YR15 Fremont Ridge RX
NPS plots	13%	Aspen circles, brown's lines, stand exams, shrub intercepts, photopoints. Scheduled reads and new installs.
USFS plots	21%	Aspen circles, brown's lines, stand exams, shrub intercepts, photopoints. Scheduled reads and new installs.
Wildfire assignments	22%	3 T2IA handcrew assignments, 4 Wildland Fire Module (WFM) assignments, 2 engine assignments, 2 in park FX crew support fires.
Prescribed fire implementation	4.5%	1 spring burn (Cottonwood II), 1 fall burn (Rinniker) completed and 1 Rx prep (Matilda).
Module Support	16%	Fuels reduction projects, backfill/step up staffing (E3, Module, Helitack), SAR, wildlife, Signal Mtn dogpile, Matilda weed spray, Dive Team, trails rock project, interp. -excludes weekend/lieu day staffing
Data entry	7.5%	FFI, FVS, Excel
Data analysis	0.5%	FFI, FVS, Excel
Supervision, Administration	5.5%	Timekeeping, travel, conferences/presentations/meetings, evaluations, gear/vehicle maintenance and upkeep
Training, Teaching	10%	S-270, S-290, S-390, fire operations, misc. NPS training

Table 4. 2014 Management Objectives and Monitoring Results

All results shown are 80% confidence intervals of the mean if they are in **bold**. All results shown in the following table are from analysis conducted in 2014.

Park/Forest	Monitoring Unit	Management Objective	Monitoring Results	Objective Achieved?
Grand Teton National Park	1999 Alder Fire – Year 15 Post	Track long term fire effects at a variety of severity levels using photopoints	Photopoints show levels of tree survival and regeneration	YES
	1994 Row Fire Sagebrush – 20 Years Post	Measure the recovery of sagebrush post fire	• Sage cover is 10.1% in Year 20. Control sage cover is 29-32% • Sagebrush average height has recovered, at 60.9 cm in year 20, vs. 64-70cm in control areas.	YES
	Airport Road Sage Strips Year 5 Post	Document the condition of the 2009 linear fuels treatment	Photopoints show fuels reduction benefits are still maintained. Invasive weeds are being treated.	YES
	Signal Mountain Summit Road Mechanical Thinning and Chipping Pre Thinning Post Chipping	• reduce average visual obscurity to less than 20% post treatment below 2 meters. • Reduce density in trees 3" DBH or less to less than 200 trees/ac using stand exams. • Reduce 1,000 hour fuels to less than 12 tons/ac based on Brown's transects. • Remove snags which could impact the road or communications site.	• Seedling trees are 6127 trees per acre • Pole Trees are 618 trees per acre • Visual obscurity averages over 35% pre treatment • Live overstory tree density is 259 trees per acre with 55 snags per acre (average 12x12' spacing) • 1000 hour fuel loading is 61.5 +/- 18.7 tons per acre	Pre Treatment data only

	Colter Bay Marina Mechanical - Post Treatment	Dead and down woody fuel reduction Reduce poles and seedlings roughly 50% Reduce average visual obscurity to less than 20% post treatment below 2 meters. Remove snags to <1 per acre	Woody fuels reduced to 10.2 tons per acre Poles reduced from 600 per acre to 70 per acre. Seedlings reduced from 23,090 to 2320 per acre. Average snag density reduced but not to desired levels Visual obscurity less than 20%	YES YES NO YES
	String lake Picnic Area Mechanical Thinning	• Reduce dead and down fuel loading • Remove all ladder fuels (limb trees, remove conifer regeneration) • Increase tree spacing	Photopoints show a much more open understory that still looks shaded and aesthetically natural	YES
	Highlands Mechanical Pre Treatment	• Reduce dead and down fuel loading • Remove all ladder fuels (limb trees, remove conifer regeneration) • Increase tree spacing	Pre treatment photopoints capture the arrangement of trees close to buildings in this housing area	Pre treatment data only
	Bearpaw Bay Fire Year 5 Post Fire	Track long term fire effects at a variety of severity levels using photopoints	Photopoints show levels of tree survival and regeneration	YES
	Phelps Moraine RX Year 3 Post Burn	• Detect the distribution of noxious weeds in the treatment units before and after the burn.	Weed survey conducted in 2014, spraying conducted in collaboration with SRM.	YES
	Matilda RX Pre Burn	• Attain at least 1000 aspen suckers per acre over 10' in height by 15 years post treatment	• Total pre burn aspen sucker density was 1745.5 per acre • Browse level was 7%	Pre Data Only
Park/Forest	Monitoring Unit	Management Objective	Monitoring Results	Objective Achieved?
North Zone Bridger-Teton NF	Beaver Mountain Prescribed Burn – Sagebrush Portion – Year 2 Post	• Blacken between 40% and 80% of the sagebrush within in the burn unit, in a mosaic pattern. • Detect and treat noxious weeds or cheatgrass along the road portion of the burn.	• Photos show sagebrush area is dominated by grasses and forbs. • Weed surveys showed similar levels to pre burn, with some cheatgrass detected.	YES
	Lower Palmer RX Pre Burn	Blacken between 40% and 80% of the sagebrush Achieve >40% conifer mortality in sagebrush openings	• Burn mosaic objective seems to have been met but no mapping was possible • Photos show burned sage areas dominated by herbaceous plants and many small conifers were killed.	YES
	Lava Creek Rx Immediate Post / Year 1 Post	Reduce live sagebrush cover to less than 5%	Sagebrush cover reduced to <1%	YES
	Deer Creek Mechanical	Reduce dead and down	• Pole trees reduces from 400 to 160	

	Thinning Post Treatment	fuel loading to 5- 7 tons per acre Remove all ladder fuels to an average CBH of 10ft. Increase tree spacing to 15x15 (194 trees/acre)	trees per acre. • Seedling trees had low density, and were not significantly reduced • Woody Fuels reduced to 7.6 tons per acre • Overstory trees reduced to 72 per acre (25 x 25 ft.) • Post treatment canopy base height was only 8 feet	YES NO CLOSE YES NO
	Dry Quad RX Year 1 Post Burn	Create a down woody fuel bed with an average depth between 12-36 inches in mechanically treated stands post treatment (pre burn).	• Fuel bed was 7.3 and 5.6 inches, not as deep as desired • Wood fuels not significantly decreased in stand E • Burn mosaic not mapped	NO NO ?
	Northeast Quad RX Immediate Post Burn	Aspen objectives for future monitoring Burn mosaic objective of > 80% black	• Pre data only for aspen • Burn Mosaic showed 54% blackened	NO
	Lower Gros Ventre Phase II Prescribed Burn	Track fire effects with photopoints	• Photos show strong aspen regeneration in formerly conifer-dominated stands	YES
Park/Forest	Monitoring Unit	Management Objective	Monitoring Results	Objective Achieved?
West Zone Bridger-Teton NF	Bradley Mountain RX Year 5 Post Burn	Attain 10 foot tall aspen sucker density of at least 1000 stems per acre at or before 15 years post burn.	• Aspen sucker density was 2276 per acre in Year 5 Post Burn. • Dominant height class was 3-6 ft. • Average browse rate was 33% on terminal leaders • Photopoints show bitterbrush and sagebrush returning to open slopes.	YES
	Wiener Creek RX Pre Treatment	Promote aspen forest by burning 75% of a mixed conifer-aspen forest Attain 1000 stems per acre of aspen suckers over 10' tall fifteen years post burn.	Aspen suckers currently 1826/acre and 2726/acre in tow representative stands. Browse levels are 17% and 34% in terminal aspen leaders. Conifer density is 707/acre and 472/acre, compared to aspen overstory density of 39/acre and 33/acre.	Pre treatment only
Park/Forest	Monitoring Unit	Management Objective	Monitoring Results	Objective Achieved?
East Zone Bridger-Teton NF	Chicken Creek RX Year 5 Post Burn	Treat 30-50% of burnable sagebrush Attain >1000 aspen suckers per acre >10' fifteen years post burn Regain ground cover of less than 20% bare ground 5 years post fire	Mosaic mapping not available Aspen stand 1 had 6500 suckers per acre, stand 2 had 5679 stems per acre. Browse level was 2% in stand 2, and 8.4% in stand 1. 37% % bare ground in Stand 1, and 33% bare ground in stand 2 five years post burn	N/A YES YES NO
	Marsh Creek RX	Treat sagebrush in a particular mosaic pattern Increase species richness Attain >1000 aspen suckers per acre >10' fifteen years post burn Regain ground cover of less than 20% bare ground 5 years post fire	Mosaic mapping not available Aspen stands were not monitored Ground cover was not monitored Photopoints indicate herbaceous plants dominate in burned areas but some sagebrush his returning	Yes ? ? YES

	Lake Rim RX	Treat sagebrush in a particular mosaic pattern Increase species richness Attain >1000 aspen suckers per acre >10' fifteen years post burn Regain ground cover of less than 20% bare ground 5 years post fire	Mosaic mapping not available Aspen stands were not monitored Ground cover was not monitored Photopoints indicate herbaceous plants dominate in burned areas but some sagebrush his returning Cheatgrass observed while photopoints were retaken	Yes ? ? YES
	2012 Fontenelle Fire – Year 2 Post	Attain >1000 aspen suckers per acre >10' fifteen years post burn Track browse levels on aspen suckers (less than 30% desired) Regain ground cover of less than 20% bare ground 5 years post fire	Aspen sucker density was 10,333, 9683, 11,613, and 12,500 per acre in four stands Browse rates were 7%, 22%, 19%, and 18% Bare ground cover in year 2 in the four stands was 48%, 39%, 32%, 21%	YES YES YES and NO
	Fremont Ridge RX Year 15 Post Burn	Detect at least a 200% increase in bitterbrush density three years post burn. Detect a 50-80% reduction of sagebrush cover post burn. Increase grass and forb production by 100% two years post burn and 250% 5 years post burn.	Bitterbrush density only 25% of pre burn levels Bitterbrush cover less than 1% 15 years post burn (pre burn was 24%) Sage cover only 1.5% 15 years post burn. Pre burn was 21% No significant difference in overall herbaceous plant cover Wheatgrass cover has increased and Idaho fescue has decreased. Needlegrass cover also increased. Bare ground cover 32% in year 15 post	NO YES ? YES NO
	Cottonwood II Prescribed Burns - Post	Attain >1000 aspen suckers per acre >10' fifteen years post burn Regain ground cover of less than 20% bare ground 5 years post fire	Photopoints only in 2014. Aspen stands were well blackened.	?
	2013 Kendall Fire – Year 2 Post	Measure fuel reduction and track fire recovery	62% reduction in surface fuel loading	YES

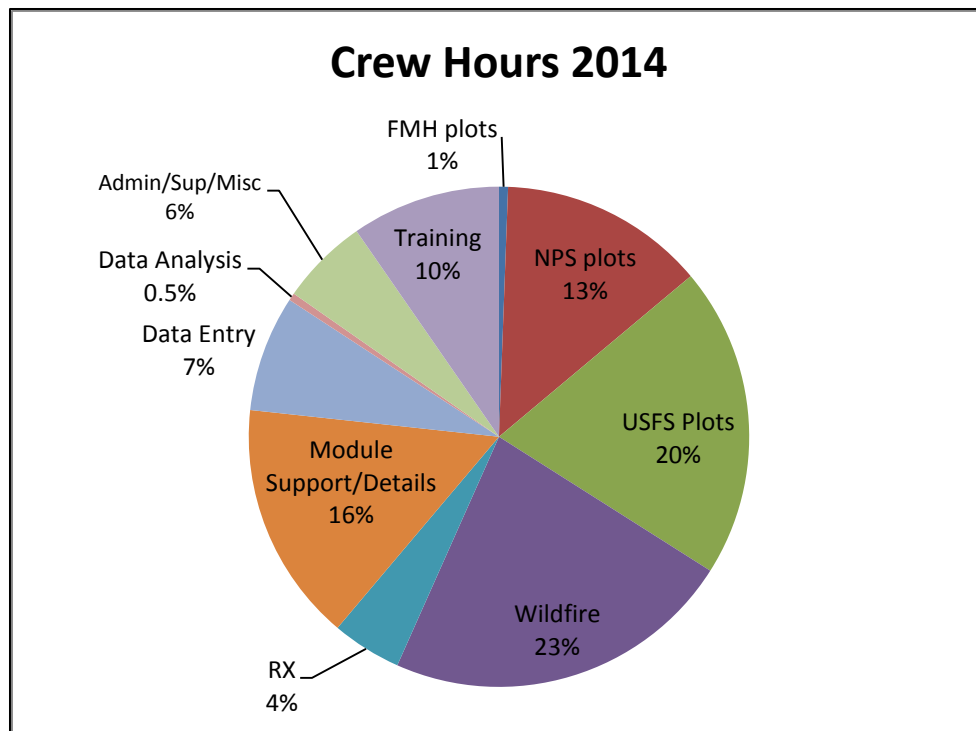


Figure 1. 2014 Fire Effects Crew hours breakdown

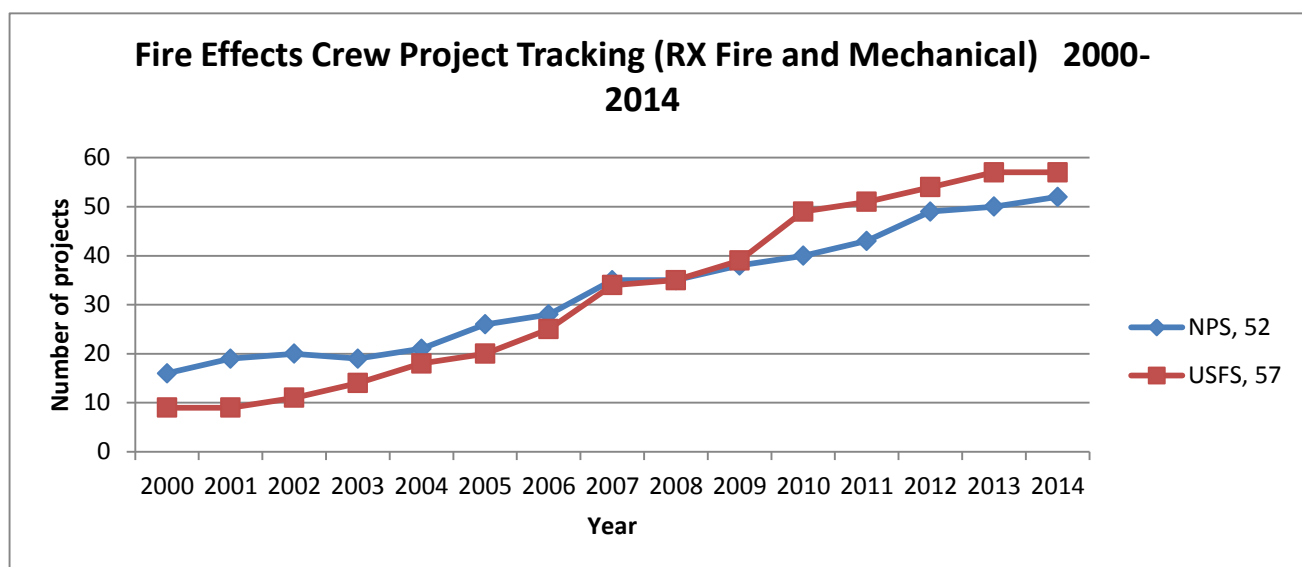


Figure 2. Interagency fire effects project tracking 2000-2014

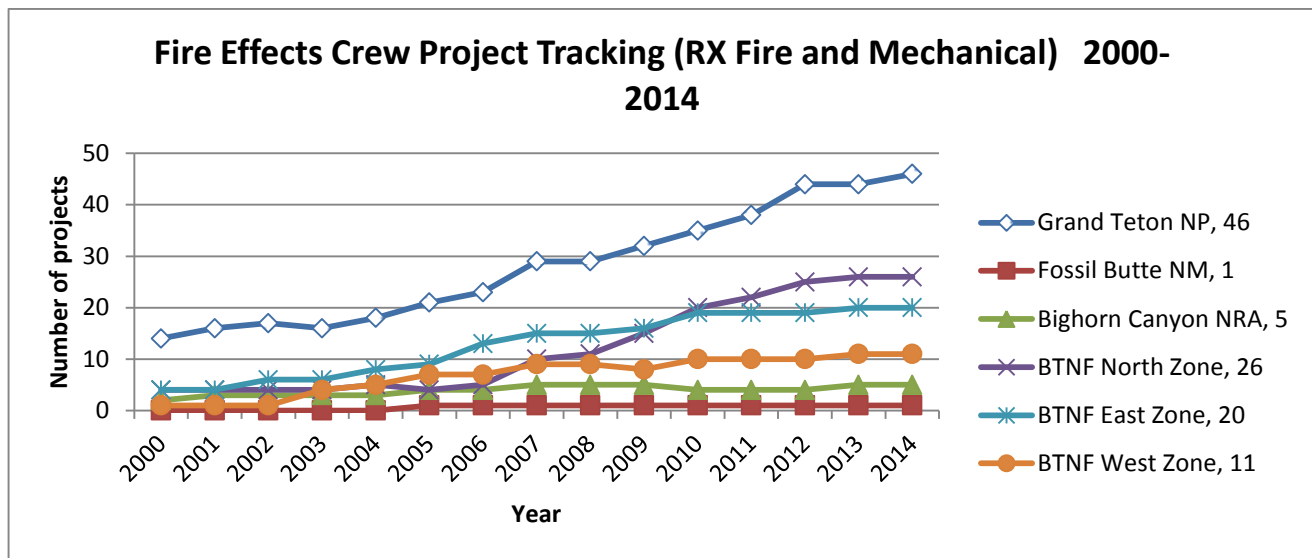


Figure 3. Fire Effects project tracking by unit 2000-2014

Future Direction for Fire Effects:

- Continue to pursue needed career Assistant Lead Monitor
- improve weed mapping protocols to enhance accuracy
- Implement field tested .shp files into GRTE/BTNF computer database
- Improve photographic monitoring consistency (board size, camera quality, pixel/frame size)
- Maintain if not improve communication with other agencies and modules
- provide internship for NPS/ SCA diverse student
- Improve training with Teton Fire Module in fireline and immediate post burn monitoring protocols for managed fire monitoring. This greatly increases the volume of quality fire effects data created in a season.
- Continue to provide trained, skilled and enthusiastic firefighters to assist in Park and Forest operations
- Participate in and provide high quality fire and fire effects education/training
- Collaborate with YELL or GRCA?
- Electronic data collection?
- Create best Fire Effects program in the world!

C. Seasonal Fuels and Fire Danger Intelligence

Seasonal Fuels Monitor Ron Steffens worked only 5 and ½ pay periods in 2014. He continued the data collection for fuel moistures that he has managed for over two decades. He also provided Teton Interagency Fire with seasonal outlooks over the course of the summer. This year Ron also updated the tetonfires.com website and developed a mobile version of the website.

In May, Ron travelled to Missoula to help with media relations and videotaping at the large Fire Conference. He is a board member of the IAWF, and served on the conference steering committee.

Ron did a 21-day fire assignment to Washington and Oregon in August, and managed two lightning-caused fires in Grand Teton national Park in June and July.



Ron Steffens showing off his mini drip torch at the Colter Bay Log Cabin Project

Future Direction for Fuels Monitoring:

- Synthesize 21 years of fuels monitoring data
- Continue to develop fuels information on tetonfires.com website
- Promote the interagency fire program internationally
- Train new FOBS, LTAN, and SOPL candidates within the Teton Interagency Fire organization.

D. Fire Ecology

This year the Fire Ecology program focused on a few new areas. These included fire history research, grant writing, GIS mapping, and articulating measurable objectives for unplanned fires for WFDSS use. Diane Abendroth also worked with the Fuel Specialist Andy Hall to build consensus with GRTE wildlife and vegetation managers about priorities for prescribed fire in the park. During the winter of 2014 Diane participated in teaching RX510 Applied Fire Effects. It was a slow fire season, so Diane was able to assist the Fire Effects Crew with training and field operations.

In spring, several annual Fire Effects Analysis and Interpretation meetings were held to share monitoring results with local fire managers, vegetation specialists, and wildlife biologists.



Diane Abendroth setting up smoke monitoring equipment for the Rinniker RX Burn.

Table 5. Planning - 2014

Park	Does Park have written DFCs? (yes or no)	Date Park-level Monitoring Plan completed (or revised)	Total # of Project- or Community-level Monitoring Plans (not just 2014)	Assisted with how many BAER plans in 2014?
Grand Teton National Park	Yes - vague	2010	45	0
Fossil Butte NM	no	2004	1	0
Bighorn Canyon NRA	no	2012	5	0
Bridger-Teton NF – N Zone	Yes – 1990 vintage	2006	26	0
Bridger-Teton NF – W Zone	Yes – 1990 vintage	2006	11	0
Bridger-Teton NF – E Zone	Yes – 1990 vintage	2006	20	0

Table 6. Monitoring – 2014

Park	% 2014 Data Entered	% 2014 Data Quality Checked	# Prescribed Fires Monitored*	# Non-fire Fuels Treatments Monitored*	# Wildfires Monitored*	# BAER Treatments Monitored*
Grand Teton National Park	100%	100%	2	5	3	0
Fossil Butte NM	N/A	N/A	0	0	0	0
Bighorn Canyon NRA	N/A	N/A	0	0	0	0
Bridger-Teton NF – N Zone	100%	100%	6	1	0	0
Bridger-Teton NF – W Zone	100%	100%	2	0	0	0
Bridger-Teton NF – E Zone	100%	100%	5	0	2	0

* Number of treatment units with treatment effects monitoring conducted. Include pre-burn and post-burn monitoring but not burn-day monitoring.

Table 7. Communicating Results - 2014

Park	# of Project Monitoring Reports completed in 2014	# of Annual meeting(s) with FS/Park staff	# of Formal presentations of results	Do you use Minitab?*
Grand Teton National Park	8	2	1	No
Bighorn Canyon NRA	1	0	0	No
Fossil Butte NM	0	0	0	No
Bridger-Teton NF – N Zone	9	1	1	No
Bridger-Teton NF – W Zone	5	1	1	No
Bridger-Teton NF – E Zone	3	1	1	No

* This information will help to assess Minitab multi-user license needs.

Table 8. Research - 2014

Park	Are research needs identified in FMP or Monitoring Plan? (yes or no)	# of Proposals Submitted in 2014	# of Proposals Funded in 2014	# of Research Projects Supported in 2014*	Additional Comments
Grand Teton NP	yes	4	2	2	• Fire History Study proposed • Turner et al study proposed • Social science and WUI in the Tetons study proposed • Lidar Fuels Study Proposed, data collected
Bighorn Canyon NRA	no	0	0	0	
Fossil Butte NM	no	0	0	0	
Bridger-Teton National Forest	no	1	1	1	• Fire History Study proposed • Turner et al study proposed • Social science and WUI in the Tetons study proposed

*Number of funded research projects, new or ongoing, supported by the fire ecology program including logistical info or support, staffing, etc.

Reserve Fund Research:

In 2014 Grand Teton National Park was funded for a cooperative research project to study the distribution of past fires using an 1870's survey map compared with present day stand data. The cooperators were Kevin Krasnow from the Teton Research Institute and Jason Sibold from Colorado State University. The final report is in preparation at this time.

Table 9. Fire Ecologist 2014 Accomplishments/Focus Areas

Category	Percent Time	Accomplishments and/or areas of activities
Planning	10%	Teton to Snake Fuels Project EA and ID Team GTRE Fire Management Working Group GRTE prescribed fire planning task group
Presentations	15%	GRTE Annual Fire Effects Report meeting North Zone BTNF Annual Fire Effects Report results presentation East Zone BTNF Annual Fire Effects Report results presentation West Zone BTNF Annual Fire Effects Report results presentation Monitoring Unit Lecture to RX510 Fire Management presentation to the Northern Rockies Resource Conservation Network Beetles and Fire presentations at annual safety refresher Article for RX Effects about importance of fire ecology
NPS Meetings/ task groups	5%	GRTE Wilderness Committee VRP Supervisors Group
Interagency work	(50%)	Technical Transfer Hiring panel for Fire Mod leader ID Teams Fire Effects Monitoring Network of Fire Science Champions Region 6 Climate Change Adaptation workshop
Wildfire assignments	10%	FFT1, FIRBt, RXB3 (few operational days),
Prescribed fire projects	2%	1 burn on BTNF, 1 burn on GRTE, 3 pile burning projects
Non-fire fuels projects	1%	2 operational days
Research	10%	Grant proposals Past fires study with Krasnow, Sibold Lidar fuels mapping project
Data collection	10%	Work with Fire Effects Crew, collect live fuel moistures bi-monthly with Steffens
Data entry	1%	Assist with fire effects data entry
Data analysis	10%	Approximately 80% of projects, fuel moistures with Steffens
Supervision/Admin	5%	Hiring, detail administration, supervised 2 STF, 2 seasonal
Training	5%	S270, aviation training online
Travel out-of-park for plot or project work	5%	Bridger-Teton monitoring work
Miscellaneous	10%	RX510 Cadre , RCN network group

Future Direction for Fire Ecology:

- Co-author WUI / Social Science paper with RCN group
- Clarify roles and expectations for weed monitoring. Establish appropriate protocols.
- Synthesize 12 years of aspen data for presentation in June

- Utilize Burn Severity Atlas data to develop objectives for future managed fires
- Develop future RX burn project proposal for GRTE
- Fire History Research with Krasnow and Sibold
- Develop measurable objectives for the resource benefits of managed fires, to be used in WFDSS Spatial documentation
- Contribute to NAFRI training courses – RX510 and S495
- Foster coordination between fire managers and researchers in the Greater Yellowstone Area.