



North Pacific/ Columbia Basin Fire Ecology Annual Report Calendar Year 2012

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North Cascades National Park**

A. Summary

The North Pacific/ Columbia Basin (NPCB) fire ecology program had a varied and productive year. The fire effects monitoring crew completed a total of forty-three plot reads within North Cascades National Park (NOCA), John Day Fossil Beds National Monument (JODA), San Juan Island National Historic Park (SAJH) and Lake Roosevelt National Recreation Area (LARO), and worked on several other assignments. The fire ecologist participated in planning efforts, completed the majority of data processing of fire history research samples, and helped to conduct the 17-year Stehekin Fire and Fuels Peer Review.

The crew began the field season in LARO by completing seven immediate post-burn, and first year post-burn reads from late season pile burns in 2011. They installed and read three new FMH forest plots in the new Gifford Ferry burn unit. They also assisted for numerous days in prescribed burning operations in the Enterprise unit.

Next the crew travelled to SAJH where they conducted four immediate post-burn and first year post-burn reads.

Two SCA Fire Effects Monitoring interns were selected to assist the NPCB crew with FMH plot work at JODA, LARO, and NOCA during the 2012 field season. Unfortunately, one intern needed to unexpectedly cancel their internship shortly before arriving to NOCA. The remaining intern provided essential assistance in completing the crew's plot workload; as well as assisting in data entry and processing research samples for the fire ecologist.

In late June the NPCB crew travelled to JODA in central Oregon where they revisited eight plots in the Middle Mountain burn unit.

The NPCB crew dedicated July and early August to revisiting FMH plots at NOCA in the Stehekin valley. During three visits, the crew installed three new FMH forest plots in the McGregor burn unit, and reread eight FMH plots elsewhere in the valley.

In 2012 the NPCB crew had the fortunate opportunity to gain significant on-the-job training related to collateral duties. Crew members participated in 145 days of wildfire assignments and NPS Resource Management details between April and November. These ranged from helicopter crewmember, resource advisor, and GIS specialist assignments in Colorado, Oregon, Washington, Wyoming, and California to helitack crew member and resource advisor positions in Tennessee and Mississippi. These experiences enabled the entire crew to work their complete field season and make huge strides in attaining valued qualifications.

The remainder of the season was devoted to data entry and management, sample processing, GIS, and training. The NPCB crew assisted NOCA resource management in rereading prescribed fire Cheatgrass monitoring plots in the Stehekin valley. The crew was also able to support the NOCA fire crew in initial attack incidents, operation of the Desolation Peak lookout, and thinning operations at LARO.

Table 1. Fire Effects Plot Workload 2012

Park	Vegetation Monitoring Type	Plot Type	Pre-burn	Immed. Post-burn	Post-thin	Postburn (1-20 yrs)	Annual Total (2012)	Total Plots
John Day Fossil Beds NM	Big Sagebrush/Bunchgrass	FMH Brush	0	0	0	3	3	21
	Western Juniper Shrubland	FMH Forest	0	0	0	3	3	16
Lake Roosevelt NRA	Ponderosa Pine/ Common Snowberry Forest	FMH Forest	3	7	1	7	18	40
	Ponderosa Pine/Bitterbrush	FMH Forest	0	0	0	0	0	3
North Cascades NP	Stehekin Valley FFRA: Mixed Conifer	FMH Forest	3	0	0	8	11	40
	Stehekin Valley Contours (Open/Mid/Closed Canopy Mixed Conifer)	FMH Forest	0	0	0	0	0	23
Olympic NP	East-side Mixed Conifer (permanent RAPS plots)	Rapid Assessment	0	0	0	0	0	5
San Juan Island NHP	Garry Oak Woodland	FMH Forest	0	4	0	4	8	12
	Douglas Fir/ Lodgepole (permanent RAPS plots)	Rapid Assessment	0	0	0	0	0	4
	Annual Brome Grasses	FMH Grass	0	0	0	0	0	10
Whitman Mission NHS	Giant Wild Rye – Meadow Restoration	FMH Grass	0	0	0	0	0	5
Total			6	11	1	25	43	179

Pilot sampling plots*

Table 2. Fire Ecology Staffing 2012

Ecologist and Monitors	Start Date	End Date	# Pay Period	READ Qualified (Yes or No)	Training	Development
Karen Kopper Fire Ecologist	1/01/12	n/a	26	No	Fire Refresher	UW fire severity and fire history research in pursuit of PhD,
Cedar Drake Lead Fire Effects Monitor	3/25/12	12/29/12	20	Yes	Fire Refresher, SERO helitack detail, MEVE helitack detail, First Aid/ CPR, Defensive Driving, DOI Motorboat Operator course	READ wildfire assignments, READ assignment on DWH oil spill, HECM assignment, RX burn assignment
Sheah Mucci Assistant Lead Fire Effects Monitor	4/25/12	10/17/12	12	No	Fire Refresher, READ training, MEVE helitack detail, Forest Pathology	FALA experience, HECM assignments, RX burn assignment
Robbie Andrus Fire Effects Monitor	4/25/12	10/22/12	12	No	Fire Refresher, S-341, S-212, Forest Pathology	GISS wildfire assignments, FALA experience, RX burn assignment
Justin Duncan SCA-Fire Ecology Intern	5/9/12	8/08/12	6	No	First Aid/ CPR, Defensive Driving	Fire Effects and botany training with NPCB crew



2012 NPCB Fire Effects Monitoring crew
(l. to r. Cedar Drake, Justin Duncan, Robbie Andrus, Sheah Mucci)

Table 3a. Management Objectives and Monitoring Results

North Cascades National Park



FPSME2-31 Q3-Q2
Douglas Fir / Ponderosa Pine Forest
Pre-burn (1997)



FPSME2-31 Q3-Q2
Douglas Fir / Ponderosa Pine Forest
05YR05 (2009)



FPSME2-4 P2-O
Douglas Fir / Ponderosa Pine Forest
Pre-burn (1997)



FPSME2-4 P2-O
Douglas Fir / Ponderosa Pine Forest
Pre-burn (2008)

North Cascades National Park

Douglas fir / Ponderosa Pine Forest

Management Objective	Monitoring Results (90% confidence interval)	Objective Achieved?
05YR05 (5 years after 2 RX burns + 1 thin) Analysis completed 2012 (1996 – 2009)		
Trees		
Reduce the density of saplings and pole size trees (2.5-15 cm dbh) to 10-30 trees/acre as measured 2 years after final treatment prior to maintenance.	n=8 PRE=82.0 trees/acre, SD=34.0, 05YR05= 10.6 trees/acre, SD=11.8	Yes
Reduce the density of small and medium sized overstory trees (15-60 cm dbh) to 25-75 trees/acre as measured 2 years after final treatment prior to maintenance.	n=8, PRE= 133.0 trees/acre, SD=59.9, 05YR05= 63.7 trees/acre, SD=24.8	Yes
Maintain the density of large overstory trees (>60 cm dbh) at 1-20 trees/acre as measured 2 years after final treatment prior to maintenance.	n=8, PRE= 6.6 trees/acre, SD=6.1, 05YR05= 3.5 trees/acre SD=4.6	Yes
Reduce mean basal area to an average of 35-75 ft ² / acre as measured 2 years after final treatment prior to maintenance.	n=8, PRE= 153.3 ft ² /acre , SD=46.5 05YR05=89.9 ft ² /ac , SD=29.3	No
Increase canopy base height to 2 meters as measured 1 year post-treatment.	n=6 05YR05=5.7 m , SD=2.1	Yes
Herbaceous Cover		
Maintain a minimum of 30 percent cover of native understory vegetation (shrubs and herbaceous) 2 years after the initial treatment.	n=8, 00PRE= 46.3%, SD=31.5, 05YR05= 57.0%, SD=24.4	Yes
Report percent cover of non-natives per species. Alert Managers to the presence of new exotic species, and work with them to determine critical thresholds.	<i>Amaranthus albus</i> cover: n=8, PRE= 0%, 05YR05= 0.15 %, SD=0.32 <i>Bromus tectorum</i> cover: n=8, PRE= 0%, 05YR05= 0.64 %, SD=1.69 <i>Poa bulbosa</i> cover: n=8, PRE= 0%, 05YR05= 0.04 %, SD=0.11	N/A
Fuel Load		
Maintain an average of 2–6 tons/acre of small diameter woody fuel (0.2 -3”) two years after final treatment prior to maintenance.	n=8, 00PRE= 2.5 tons/acre, SD=0.7, 05YR05=3.9 tons/ac, SD=1.5	Yes
Maintain an average of 4-12 tons/acre of large diameter woody fuel (≥ 3”) two years after final treatment prior to maintenance.	n=8, 00PRE= 10.4 tons/acre, SD=6.6, 05YR05=10.9 tons/ac, SD=5.2	Yes
Reduce litter and duff by 40-75% 2 years after final treatment prior to maintenance.	X= 51% decrease 90%CI: (23.3<x<74.7) n=8, 00PRE= 25.1 t/ac, SD=8.8 05YR05= 12.3 t/ac, SD=5.6	Yes

North Cascades National Park Fire Effects Monitoring Results

Fire effects monitoring plots are utilized to track fuel reduction and restoration objectives for tree density, understory cover and dead and downed fuel loads in the Stehekin Valley. Each unit is thinned and burned as needed. The monitoring objectives were changed this year in response to the 17th year review of the Forest Fuel Reduction and Firewood Management Plan. Some additional variables were added, and others were changed to specify the quantities of the variables that are desired rather than the percent change desired. The following analysis uses the new objectives to examine fire effects on eight plots that were thinned and burned twice five years ago.

Trees: The 5-year post-treatment density of pole trees (10.6 trees/acre) and overstory trees (63.7 trees/acre) were within the targeted range of 10-30 and 25-75 trees per acre, respectively. Large overstory tree (greater than 60 cm dbh) density (4.6 trees/acre) was also maintained within the desired density of 1-20 trees per acre. The post-treatment basal area (89.9 ft²/acre), however, was still higher than the desired range of 35-75 ft² per acre. More overstory trees less than 60 cm dbh could be removed to meet the desired basal area, and still stay within the desired overstory tree density.

The post-treatment canopy base height of 5.7 meters was well within the minimum desired canopy base height of 2 meters.

Seedling density was not analyzed for this report because there is still some data entry required to obtain the post-treatment densities. However, a range of 25-75 seedlings per acre is proposed as the desired post-treatment density. This range is based on an average 40 percent mortality of ponderosa pine seedlings with minimal competition, which would yield 10-30 pole size trees.

Herbaceous Cover: The 5-year post-treatment cover of understory vegetation (57 % cover) was well within the minimum desired cover of 30 percent. There were three non-native species present; *Amarantus albus* “Pigweed” (0.15 % cover), *Bromus tectorum* “Cheatgrass” (0.64 % cover), and *Poa bulbosa* “Bulbous bluegrass” (0.04 % cover).

Fuel Load: All of the dead and downed fuel loads were within the desired range of conditions by the fifth-year post-treatment. There were 3.9 tons/acre of small diameter fuels (1/4” to 3”), 10.9 tons/acre of large diameter fuels (≥ 3 ”), and 5.6 tons/acre of litter and duff.

Lake Roosevelt National Recreation Area



FPIPO1-21 50P-O
Ponderosa Pine/ Snowberry Forest
Pre Treatment: 00PRE (2007)



FPIPO1-21 50P-O
Ponderosa Pine/ Snowberry Forest
1 Year after 1st Seeded Pile Burn: 10YR01 (2012)



FPIPO1-22 Q1—Q4
Ponderosa Pine/ Snowberry Forest
Pre Treatment: 00PRE (2007)



FPIPO1-22 Q1-Q4
Ponderosa Pine/ Snowberry Forest
1 Year after 1st Seeded Pile Burn: 10YR01 (2012)

Lake Roosevelt National Recreation Area

Ponderosa Pine / Snowberry Forest (FPIPO1D10)

Management Objective	Monitoring Results (90% confidence interval)	Objective Achieved?
10YR01 (1 year after 1st seeded pile burn) Analysis Completed 2012 (2007-2012)		
Trees		
Reduce the density of seedlings to 2-20 trees/acre (5-50 trees/ha) as measured 2 years after final treatment prior to maintenance.	n=5 00PRE= 35.6 trees/acre, SD=37.2 10YR01= 45.3 trees/acre, SD=59.7	No
Reduce the density of pole size trees (1-6 in = 2.5-15 cm dbh) to 2-20 trees/acre as measured 2 years after final treatment prior to maintenance.	n=5, 00PRE= 170.0 trees/acre, SD=112.6 10YR01= 4.9 trees/acre, SD=5.3	Yes
Reduce the density of small and medium sized overstory trees (6-20 in = 15-60 cm dbh) to 25-75 trees/acre as measured 2 years after final treatment prior to maintenance.	n=5, 00PRE= 157.8 trees/acre, SD=60.2, 10YR01= 93.9 trees/acre, SD=47.1	No
Maintain or increase the density of large overstory trees (> 20 in = >60 cm dbh) to 1-8 trees/acre (2-20 trees/ha) as measured 5 years after final treatment prior to maintenance.	n=5, 00PRE= 4.1 trees/acre, SD=5.0 10YR01= 3.2 trees/acre, SD=5.3	Yes
Reduce mean basal area (poles + overstory) to an average of 35-75 ft ² / acre as measured 2 years after final treatment prior to maintenance.	n=5, 00PRE= 131.3 ft ² /ac , SD=20.1 10YR01= 94.0 ft ² /ac , SD=32.9	No
Increase canopy base height (poles + overstory) to 2 meters as measured 1 year post-treatment.	n=5, 10YR01=8.1 m , SD=1.2	Yes
Herbaceous Cover		
Maintain a minimum of 30 percent cover of native understory vegetation (shrubs and herbaceous) 2 years after the initial treatment.	n=5, 00PRE= 39.6%, SD=31.5 10YR01= 40.0%, SD=33.7	Yes
Maintain <20% relative cover of non-natives by 5 years following treatment.	n=5, 00PRE= 18.5 SD=12.3, 10YR01= 19.6%, SD=14.7	Yes
Fuel Load		
Maintain an average of 2–6 tons/acre of small diameter woody fuel (0.2 -3”) two years after final treatment prior to maintenance.	n=5, 00PRE= 2.9 t/ac, SD=1.6 10YR01=5.4 t/ac, SD=2.4	Yes
Maintain an average of 4-12 tons/acre of large diameter woody fuel (≥ 3”) two years after final treatment prior to maintenance.	n=5, 00PRE= 7.9 t/ac, SD=8.0 =8.6 t/ac, SD=11.6	Yes
Reduce litter and duff by 40-75% 2 years after final treatment prior to maintenance.	X= 10.7% Increase, n=5, 00PRE= 11.9 t/ac, SD=6.12, 10YR01= 13.3 t/ac, SD=9.01	No

Lake Roosevelt National Recreation Area Monitoring Results

The fuels management program continues to be very active at LARO. There are 42 fire effects monitoring plots in eleven burn units in the ponderosa pine forests of the park. The following is an analysis of fire effects one year following pile-burning and seeding. The analysis uses objectives that were rewritten following the fire management review, to reflect conditions based upon the quantities rather than on the percent change desired.

Trees: The 1-year post-treatment density of pole trees (4.9 trees/acre) was within the targeted range of 2-20 trees per acre, however the density of overstory trees (93.9 trees/acre) was not within the desired range of 25-75 trees per acre. Large overstory tree (greater than 60 cm dbh) density (3.2 trees/acre) was maintained within the desired density of 1-8 trees per acre. The post-treatment basal area (94 ft²/acre) was higher than the desired range of 35-75 ft² per acre. More overstory trees less than 60 cm dbh should be removed to meet the desired basal area and overstory tree density.

The post-treatment seedling density (45.3 trees/acre) was higher than the targeted range of 2-20 trees per acre. Seedling density increased following the treatment, possibly due to an increase in exposed mineral soil in the post-treatment area that facilitated seedling germination.

The post-treatment canopy base height of 8.1 meters was well within the minimum desired canopy base height of 2 meters.

Herbaceous Cover: The native understory vegetation (shrubs, herbs and grass) increased slightly to 40 percent cover in the post-treatment. This met the objective to maintain a minimum of 30 percent herbaceous cover. The relative cover of non-natives (19.6 percent) was also within the acceptable range of less than 20% relative cover.

Fuel Load: The woody fuel loads were within the desired range of conditions by the fifth-year post-treatment, with 5.4 tons/acre of small diameter fuels (1/4" to 3") and 8.6 tons/acre of large diameter fuels ($\geq 3"$). The 40 to 75% reduction of litter and duff was not achieved, however.

John Day Fossil Beds National Monument



BARTR1-14 30P-0P
Big Sagebrush Shrubland
Pre-burn (2002)



BARTR1-15 30P-0P
Big Sagebrush Shrubland
Pre-burn (2002)



BARTR1-14 30P-0P
Big Sagebrush Shrubland
Ten Years Post-burn (2012)



BARTR1-15 30P-0P
Big Sagebrush Shrubland
Ten Years Post-burn (2012)

John Day Fossil Beds National Monument

Monitoring Unit: Western Juniper Forest (FJUOC1D06)	Management Objective	Monitoring Results (90% confidence interval)	Objective Achieved?	Year Analysis Completed (Range of Data [Yrs] Included in Analysis)
	01YR10 (10 years post-broadcast burn)			
	Trees			
	Reduce density of junipers 10 – 40 % trees/ac (t/ac) by 1 year post-burn	x=13.0 % Reduction, 90%CI: (-3.1<x<29.3) n=8, PRE= 46.5 t/ac, SD=31.5; 01YR01= 41.5 t/ac, SD=30.5; 01YR10= 40.5 t/ac, SD=30.9	Yes	2012 (1999-2012)
	Shrub Density			
	Reduce shrub density by 20 – 60 % shrubs/acre (s/ac) by 1 year post-burn	x=59.2% Reduction n=8, PRE=600.3 s/ac, SD=224.2; 01YR05=244.8 s/ac, SD=166.8; 01YR10 =244.8 s/ac, SD=137.5	Yes	2012 (1999-2012)
	Graminoid Cover			
Monitoring Unit: Big Sagebrush Shrubland (BARTR1D02)	Reduce or maintain non-native grass cover within 10% of pre-burn cover by 2nd year post-burn.	x=184.21% Increase, n=8, PRE=12.2% cover, SD=10.7; 01YR05=29.3% cover, SD=14.5; 01YR10= 34.7 % cover, SD=17.6	No	2012 (1999-2012)
	01YR10 (10 years post-broadcast burn)			
	Shrub Density			
	Reduce shrub density by 20 – 60 % shrubs/acre (s/ac) by 1 year post-burn	x=66.7% Reduction, 90%CI: n=14, PRE=427.8 s/ac, SD=110.9; 01YR05=133.0 s/ac, SD=127.2; 01YR10= 142.6 s/ac, SD=118.5	No	2012 (1999-2012)
	Graminoid Cover			
	Reduce or maintain non- native grass cover within 10% of pre-burn cover by 2nd year post-burn.	x=18.8% Increase, 90%CI: n=14, PRE=53.1% cover, SD=28.7; 01YR05=64.8% cover, SD=29.0; 01YR10= 63.1% cover, SD=26.2	No	2012 (1999-2012)

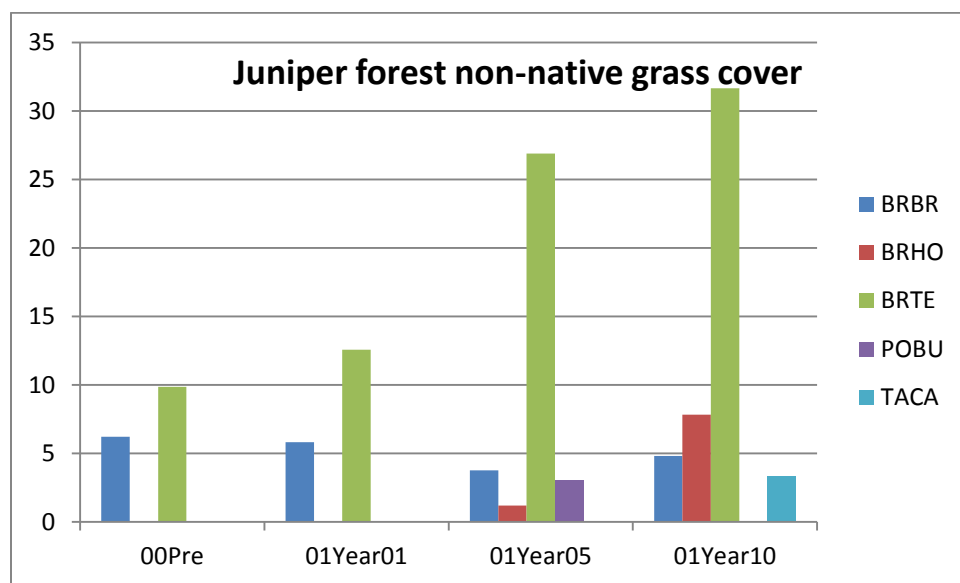
John Day Fossil Beds National Monument Monitoring Results

The primary objectives for prescribed burning in the juniper forest and sagebrush shrublands are to reduce encroachment of juniper into the shrublands, and sagebrush into the grasslands. A secondary goal is to prevent the increase of non-native grass cover. The following report is an analysis of fire effects ten years after broadcast burning. This analysis contains two additional forest plots and three additional brush plots than the 2011 report, yielding a robust total of 8 forest and 14 brush plots.

Trees: The objective, to reduce the density of junipers by 10 to 40 percent in the juniper forest was achieved one year post-burn, and continues to be in the range of the desired condition 10 years following treatment. There were 40.5 juniper trees per acre 10 years after burning, resulting in a 13 percent reduction from the pre-treatment condition of 46.5 trees per acre.

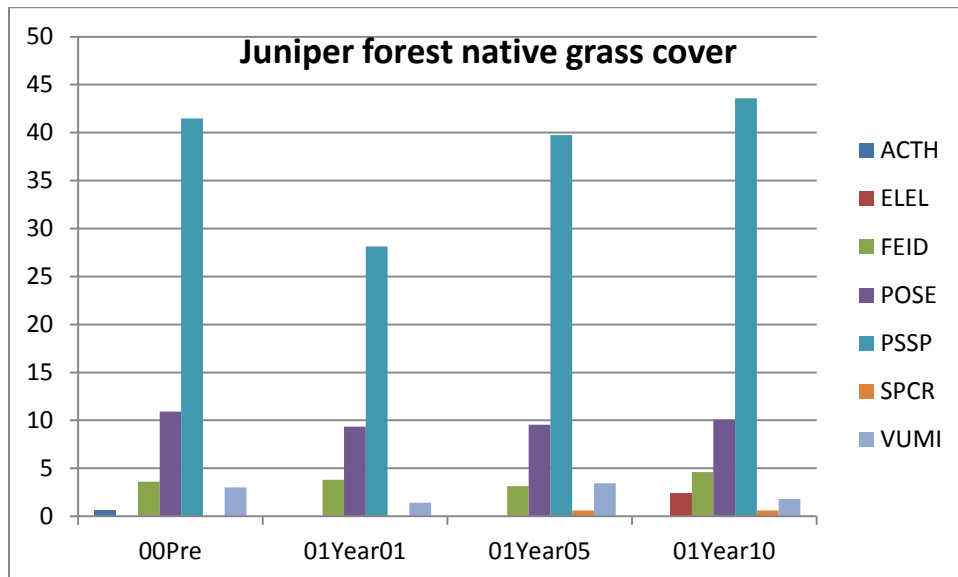
Shrubs: The objective, to reduce the density of shrubs by 20 to 60 percent, was achieved in the juniper forest, but over-achieved in the shrubland. Ten years post-treatment, shrub density was reduced by 59.2 percent (from 600 shrubs per acre to 245 shrubs per acre) in the forest, and by 66.7 percent (from 799 shrubs per acre to 143 shrubs per acre) in the shrubland.

Graminoid Cover: Non-native grass cover is outside of the acceptable range (a less than 10 percent increase) in both the forest and shrublands. In the tenth year post-treatment, non-native grass cover was 184 percent above pre-treatment cover in the forest and 19 percent above pre-treatment in the shrublands. Despite the large increase in non-native grass cover in the forest, the pre-treatment cover was 12 percent in the forest compared to 53 percent in the shrublands, and was still not dominant in the forest (35 percent cover) by ten years post-treatment, despite its predominance (63 percent cover) in the shrublands. The following graphs display the cover per individual non-native grass species.

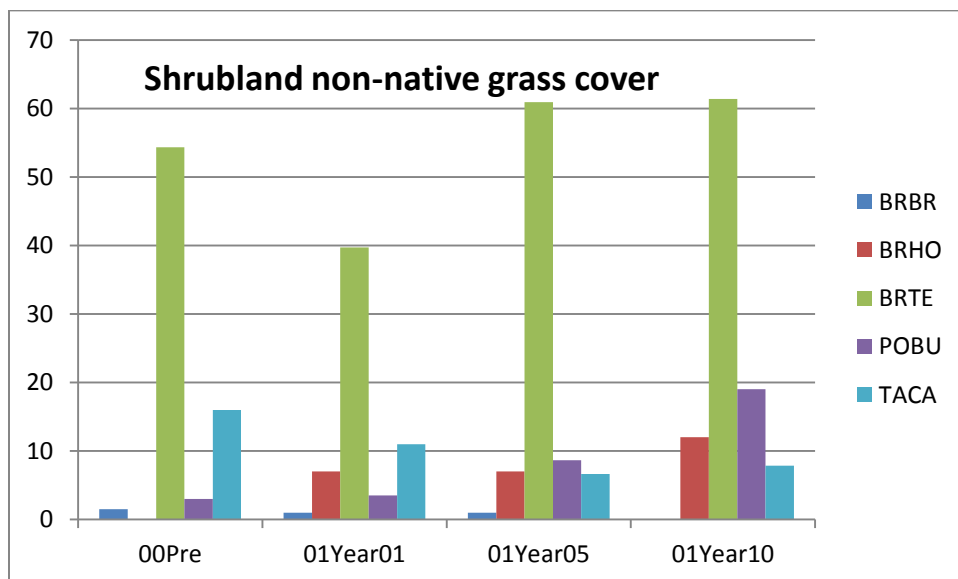


BRTE (*Bromus tectorum*, "Cheatgrass") is the dominant non-native grass. BRBR (*Bromus briziformis*, "Rattlesnake grass") is the only other non-native grass present before burning. By the fifth year post-

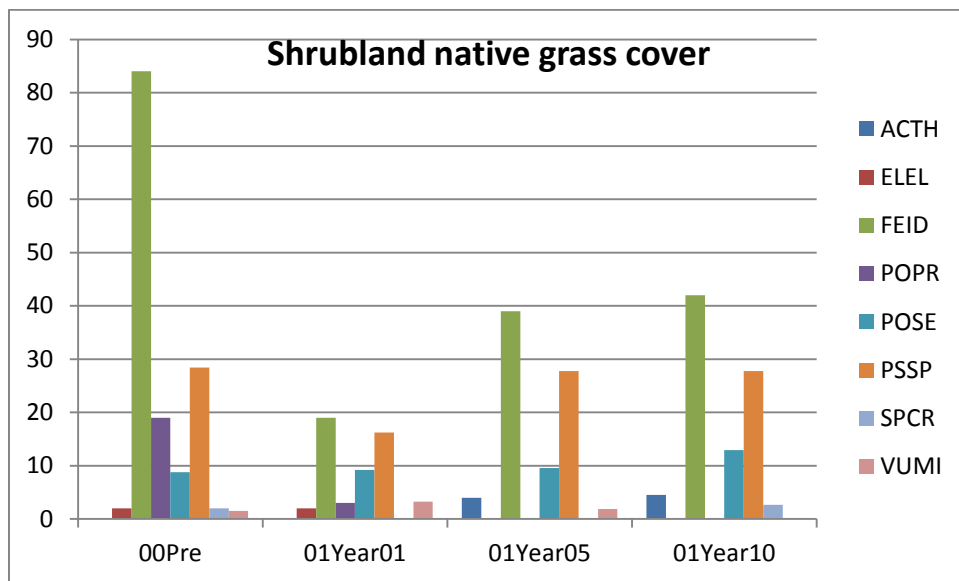
burn, three other non-native grasses were found in the plots; BRHO (*Bromus hordeaceus*; “Soft brome”), POBU (*Poa bulbosa*, “Bulbous bluegrass”), and TACA (*Taeniatherum caput-medusae*; “Medusahead”).



The juniper forest understory is primarily comprised of native grasses. PSSP (*Psuedoroegneria spicata*; “Bluebunch wheatgrass”) is the most common. POSE (*Poa secunda*; “Sandberg’s bluegrass”), FEID (*Festuca idahoensis*; “Idaho fescue”), and VUMI (*Vulpia microstachys*; “Little fescue”) are all consistently present. ACTH (*Achnatherum thurberianum*; “Thurber’s needlegrass”) only occurs in the pre-treatment plots, whereas ELEM (*Elymus elymoides*; “Western bottlebrush grass”) and SPCR (*Sporobolus cryptandrus*; “Sand dropseed”) are only found on and after the fifth-year postburn.



BRTE (*Bromus tectorum*, “Cheatgrass”) is the dominant non-native grass in the shrubland, where it declined immediately following burning, but had exceeded its pre-burn cover by the fifth-year post-burn. BRBR (*Bromus briziformis*, “Rattlesnake grass”), POBU (*Poa bulbosa*, “Bulbous bluegrass”), and TACA (*Taeniatherum caput-medusae*; “Medusahead”) are the only other non-native grasses present before burning; the former two decreased following the burn, whereas POBU continued to increase. BRHO (*Bromus hordeaceus*; “Soft brome”) invaded after burning, and continued to increase in cover.



FEID (*Festuca idahoensis*; “Idaho fescue”) is the most common native grass in the shrubland, where it co-occurs with PSSP (*Psuedoroegneria spicata*; “Bluebunch wheatgrass”) and POSE (*Poa secunda*; “Sandberg’s bluegrass”). ELEL (*Elymus elymoides*; “Western bottlebrush grass”) and POPR (*Poa pratensis*; “Kentucky bluegrass”) dropped out after the first year post-burn, whereas ACTH (*Achnatherum thurberianum*; “Thurber’s needlegrass”) only appeared in the fifth year post-burn. VUMI (*Vulpia microstachys*; “Little fescue”) and SPCR (*Sporobolus cryptandrus*; “Sand dropseed”) occurrence was also variable.



SCA Intern, Justin Duncan, collecting herbaceous cover data at John Day Fossil Beds National Monument

San Juan Island National Historical Park



FQUGA1-12 P2-O
Garry Oak Woodland
Young Hill Unit
Pre Treatment 00PRE (2011)



FQUGA1-12 P2-O
Garry Oak Woodland
Young Hill Unit
1 Year Post Pile Burn 03YR01 (2012)

San Juan Island National Historical Park Monitoring Unit: Garry Oak Woodland (FQUGA1D02)		
Management Objective	Monitoring Results (90% confidence interval) Year Analysis Completed: 2012 (2011-2012)	Objective Achieved?
03YR01 (1 year after 1st pile burn)		
Trees		
Maintain less than 5% mortality of overstory QUGA trees/acre	x=0% Reduction, n=2, PRE=18.2 t/ac, SD=10.1; 03YR01=18.2 trees/ac, SD=10.1	Yes
Shrub Cover		
Decrease the percent cover of shrubs by 30%.	x=121.6 % Increase, 90% n=2, PRE=127.5% shrub cover, SD=17.7; 03YR01= 282.5% shrub cover, SD=17.7	No
Herbaceous Cover		
Increase the percent cover of native perennial grasses by 20%.	x=18.5% Reduction, n=2, PRE=16.3% cover, SD=14.5; 03YR01=13.3% cover, SD=1.7	No
Accept up to a 20% increase in cover of non-native grass.	x=1.9% Reduction, n=2, PRE=8.0% cover, SD=8.3, 03YR01=7.8% cover, SD=4.3	Yes
Increase the percent cover of native herbaceous species by 20%.	x=28.2 % Reduction, n=2, PRE=40.7 % cover, SD=34.5; 03YR01= 29.2% cover, SD=8.1	No

San Juan Island National Historical Park Monitoring Unit: Garry Oak Woodland (FQUGA1D02)		
Management Objective	Monitoring Results (90% confidence interval) Year Analysis Completed: 2012 (2011-2012)	Objective Achieved?
03YR01 (1 year after 1st pile burn)		
Accept a 20% increase in cover of non-native herbaceous species from preburn levels.	x=27.8% Reduction, n=2, PRE= 14.6% cover, SD=17.7; 03YR01= 10.5% cover, SD=8.1	Yes
Fuel Load		
Reduce the total fuel load by at least 50% (tons/acre)	x=21.2% Increase, n=2, PRE=20.0 tons/ac, SD=7.5; 03YR01=24.3 tons/ac, SD=2.2	No
Reduce the one-hour fuels by at least 50% (tons/acre)	x=14.9 % Reduction, n=2, PRE=0.47 tons/ac, SD=0.01; 03YR01=0.54 tons/ac, SD=0.26	No
Reduce the ten-hour fuels by at least 50% (tons/acre)	x=5.7 % Increase, n=2, PRE= 0.56 tons/ac, SD=0.21; 03YR01= 0.59 tons/ac, SD=0.20	No
Reduce the hundred-hour fuels by at least 50% (tons/acre)	x=16.5% Reduction, n=2, PRE= 4.1 tons/ac, SD=2.4; 03YR01= 3.5 tons/ac, SD=1.6	No
Reduce the thousand-hour fuels by at least 50% (tons/acre)	x= 40.9% Increase, n=2, PRE=11.5 tons/ac, SD=4.9; 03YR01=16.2 tons/ac, SD=3.5	No
Reduce the litter and duff by at least 50% (tons/acre)	x=5.3% Increase, n=2, PRE= 4.4 tons/ac, SD=0.2; 03YR01= 4.7 tons/ac, SD=0.2	No

*The "PRE" 05YR02 plots were thinned before the plots were installed, so they are actually "post-thin" plots.

San Juan Island National Historical Park Monitoring Results

Thinning and burning have been used to restore the Garry oak woodland and reduce fuels at Young Hill for over a decade. This year we analyzed the first results of pile-burning. These results are preliminary, given the small sample size of two plots.

Trees: No overstory Garry oak trees were killed during the pile-burning; therefore, the objective to maintain less than 5 percent mortality of these trees was achieved. There is an average of 18.2 overstory trees per acre in these plots.

Shrubs: Pile-burning was primarily focused on reduction of trees rather than shrubs; therefore, the objective to reduce shrub cover by 30 percent was not achieved. The percent cover of shrubs increased by 121.6 percent (128 percent pre-treatment cover to 283 percent post-treatment cover).

Vegetative Cover: The objectives to increase the percent cover of native perennial grasses and native herbaceous cover by 20 percent each were not achieved; the former declined by 18.5 percent (16.3 percent pre-treatment cover, 13.3 percent post-treatment cover) and the later by 28.2 percent (40.7 percent pre-treatment cover, 29.2 percent post-treatment cover). The objectives to maintain the percent cover of non-native grasses and non-native herbaceous cover

by 20 percent each were achieved, however; the former declined by 1.9 percent (8 percent pre-treatment cover, 7.8 percent post-treatment cover) and the later by 27.8 percent (14.6 percent pre-treatment cover, 10.5 percent post-treatment cover).

Fuel Load: The objective to reduce the total fuel load by at least 50 percent was not achieved, nor was any of the objectives to reduce the fuel load per size-class by at least 50 percent achieved. The total fuel load increased by 21.2 percent (20.0 tons/acre pre-treatment, 24.3 tons/acre post-treatment). The fuel loads for one-hour (0-1/4" diameter) and hundred-hour fuels (1-3" diameter) were reduced, but not by 50 percent. Fuel loadings in the other size classes increased after pile-burning, especially the thousand hour (≥ 3 " diameter) fuel load which increased by 40.8 percent (15.6 tons/acre pre-treatment, 19.6 tons/acre post-treatment).



Sheah Mucci and Robbie Andrus completing forest plot at Lake Roosevelt National Recreation Area

B. Fire ecologist accomplishments and areas of focus

Table 4. Fire Ecologist 2012 Accomplishments/Focus Areas

Category	Percent Time	Accomplishments and/or areas of activities
Planning	5	LARO FMP revisions, LARO, SAJH and NOCA rx-fire planning
Presentations	5	SAJH FX monitoring report, NOCA 17 Year Review presentation
NPS Meetings/ task groups	3	NOCA wilderness committee, NOCA housing committee, NOCA IDT Review committee
Interagency work	10	CESU MORA fuel mapping project, UW Fire Mtn Ecology Lab
Research	30	UW fire history and severity research – literature reviews, proposal, and dissertation. Fire history sample processing,
Data collection	5	Fire history plot visits
Data entry	1	Estimated amount of time spent entering data from paper to PC
Data analysis	25	NRCA analyses for NOCA and MORA, FX monitoring annual report and review analyses, Fire history and severity analyses
Supervision/Admin	10	Hiring, supervision, payroll, travel authorization/vouchers, purchasing, etc.
Training		Estimated amount of time spent in training (include time for all training courses attended including in-park, NPS/interagency, and non-government)
Travel out-of-park for plot or project work	1	Travel to Stehekin and SAJH
Miscellaneous	5	Fire history sample processing

C. Fire effects crew accomplishments and areas of focus

Table 5. Fire Effects Crew Accomplishments/Focus Areas

Category	Percent Time	Notes
FMH plots	38%	The NPCB crew conducted 43 FMH plot reads at 4 different sites in 2012. Includes logistical prep time and foot travel to plots.
Wildfire and Detail Assignments	23%	FFT2, HECM, GISS and READ duties on a variety of wildfire assignments in WA, OR, CA, WY, TN, and CO. READ detail at DWH Oil Spill in MS.
Supervision/Admin	8%	Travel, payroll, credit card statements, logistics planning, vehicle maintenance, purchasing, hiring, performance evaluations
Data entry	7%	Completed all data entry for 2012. Database cleanup.
Training	7%	S-341, S-212, READ, DOI Motor Boat Operator, Fire Refresher, First Aid/CPR, Defensive Driving, Forest Pathology Training
Travel out-of-park for plot or project work	5%	Travel from Marblemount to LARO, JODA, SAJH, NOCA (Stehekin)
Miscellaneous	4%	Writing FFI data entry protocols, training SCA intern, verifying Fire FX plot visit history, creating new GIS maps for monitoring units, search and rescue support
RX Fire Assignments	2%	FEMO and FFT2 duties on LARO RX burns

Category	Percent Time	Notes
Data analysis and YER completion	2%	Data analysis and completion of 2011 Year End Report
Cheatgrass Monitoring Plots	1%	Assisted NOCA RM staff in rereading prescribed fire cheatgrass monitoring plots
Plant identification / herbarium maintenance	1%	Keying out and mounting voucher specimens, inventorying herbarium and field voucher collections in database
NOCA 17 year FFRA review	1%	Preparation and attendance of 17 year FFRA review in Stehekin
Non-Fire Fuels Treatments	1%	Cross training with Fuels crew (assisting with thinning)

D. Additional Program Information

Table 6. Planning - 2012

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 2012)	Assisted with how many BAER plans in 2012?
John Day Fossil Beds NM	yes	2000	1	0
Lake Roosevelt NRA	yes	2003, revision in progress	1	0
North Cascades NP	yes	2005, revision in progress	2	0
San Juan Island NHP	yes	1998	1	0
Olympic NP	no	unknown	n/a	0
Whitman Mission NHS	yes	2001	1	0

Table 7. Monitoring

Park	% 2012 Data Entered	% 2012 Data Quality Checked	# Prescribed Fires Monitored*	# Non-fire Fuels Treatments Monitored*	# Wildfires Monitored*	# BAER Treatments Monitored*
John Day Fossil Beds NM	100%	100%	0	0	0	0
Lake Roosevelt NRA	100%	100%	7	1	0	0
North Cascades NP	100%	100%	0	3	0	0
San Juan Island NHP	100%	100%	4	0	0	0

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

Table 8. Communicating Results - 2012

Park	# of Project Monitoring Reports completed in 2011	# of Annual meeting(s) with Park staff	# of Formal presentations of results	Do you use Minitab?*
John Day Fossil Beds NM	1	0	0	Yes
Lake Roosevelt NRA	1	1	0	Yes
North Cascades NP	2	3	2	Yes
San Juan Island NHP	1	1	1	Yes
Olympic NP	0	0	0	n/a
Whitman Mission NHS	0	0	0	n/a

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

Table 9. Research - 2012

Park	Are research needs identified in FMP or Monitoring Plan? (yes or no)	# of Proposals Submitted in 2012	# of Proposals Funded in 2012	# of Research Projects Supported in 2012*	Additional Comments
John Day Fossil Beds NM	no	0	0	0	
Lake Roosevelt NRA	yes	1	0	1	LARO & NOCA GIS research proposal unfunded but work was completed by region
North Cascades NP	yes	1	0	2	GIS research proposal above. Stehekin fire history research supported.
San Juan Island NHP	no	0	0	0	Revised FMP will identify research needs
Olympic NP	yes	0	0	0	
Whitman Mission NHS	no	0	0	0	

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

D. Additional Program Information

E. 2013 Direction

The NPCB Fire ecology program has voluntarily reduced staffing from four fire effects monitors (lead, assistant lead and two seasonals) in 2011 to a lead and assistant lead fire effects monitor with short-term assistance from one seasonal fire effects monitor and SCAs in 2013. We will prioritize monitoring of new treatments, and 5th and 10th year reads of treatments where fire effects are variable. Future projects will have fewer plots, and rapid assessment techniques will be employed whenever possible.

We will discontinue monitoring of post-treatment reads where treatment effects are predictable and well-documented; however, we will focus more time on reporting of robust results and success stories in park bulletins, and in research reports.

F. Optional Information

Recommendations for Improvement to FFI:

- It would be useful if when adding the “default monitoring status” (ex. 03Year01, 10Year05, 04Posr, etc) to a sample event in the Project Management tab that the same monitoring status would be automatically added to the respective plot/visit on the Reports & Analysis page.
- Accolades to the 2011 improvement of being able to import data from a previous read to a current read. This is highly useful in the case of tree measurements. Please add the ability to copy an entire page of fuel data as well.
- Please add the ability to copy and paste rows and columns of data.
- Add a small header box for fuel constants so that it only needs to be toggled once for the all fuel measurements for a single plot
- The NPCB Fire Effects crew would be very excited to field test the tablet version of FFI in 2013. The capability to enter field data directly into the FFI database would save our program both significant time and money. It is one means by which we may be able to continue to collect data from our annually scheduled plot load despite reduced funding/staffing levels.

INSTRUCTIONS FOR UPLOADING 2012 ANNUAL REPORT

1. Save your report as a PDF file using the following file naming convention “2012 *Park/Network Name* Annual Report.pdf”.
2. Go to the NPS Fire Ecology Sharepoint site (<http://npsfamshare.nps.doi.net/wildlandfire/firescience/fireecology/default.aspx>). In Fire Ecology Documents, upload your report to the 2012 Park and Network Fire Ecology Program Annual Reports folder.
3. Please e-mail your regional ecologist, Nate Benson, and MaryBeth Keifer to let us know when you get your report uploaded.

Call MaryBeth Keifer (603-795-2333) or Nate Benson (208-387-5219) if you have any questions or problems.