



**National Park Service
Northeast Region
Fire Ecology Annual Report
Calendar Year 2006**

Summary

In 2006, the Northeast Region Fire Effects Monitoring Crew, based at Shenandoah National Park, collected data at four parks and participated in several prescribed burns across the NPS Northeast Region. Data were collected at Antietam, Richmond, Saratoga, and Shenandoah; many new plots were installed at Antietam and Saratoga. The crew also assisted with pre- and post-burn data collection and burn-day monitoring at Cape Cod National Seashore, which has its own research/monitoring program.

The Fire Ecologist finally completed Shenandoah's Fire Management Plan, EA, and FONSI, made good progress on Fuels Treatment Monitoring Plans for Saratoga, Antietam, and Richmond, and is participating on behalf of Shenandoah in the Central Appalachian Fire Learning Network, including submitting an Action Site Nomination Form for a Shenandoah prescribed burn project. The Lead Monitor did presentations on monitoring at Shenandoah to Russian and South African delegations of visiting scientists and presented a poster at the Third International Fire Ecology and Management Congress. The Ecologist presented "Fire Works," a campfire program, and was one of three presenters discussing monitoring at the Southeastern Prescribed Fire Workshop in Junction City, TN.

Optional

In the past the NER FEM program has struggled with obtaining adequate sample sizes to conduct statistical analysis, due in part to the number of parks the crew services and to the phenology of the plant species being monitored. In response to this challenge, this year the program experimented with a customized nested frequency transect protocol to allow install and read more plots in less time. Results are promising so far and this winter the protocol will be submitted to Region for review and approval.

Table 3. Management Objectives and Monitoring Results 2006

We began conducting some data analysis at the end of calendar year 2006. Preliminary results indicate that variation among plots is too high for a sufficient sample size, but with the additional plots installed this year targeted in units scheduled to be burned we hope this will change soon. A summary of analysis conducted by park staff on Shenandoah's Big Meadows data is appended at the end of this report.

Table 1. Fire Effects Plot Workload 2006

Park	Monitoring Unit	Type of Plot (FMH, photo point, other)	Pre-burn	Imm. Post	Post-burn	Total Plots
Acadia NP	overlooks	FMH forest quad	0	0	0	8
Antietam NB	Burnside Bridge Vista	FMH brush plot	(abandoned 2 plots)			-2
	Burnside Bridge Vista	non-FMH brush transect	0	0	5*	5
	Otto Grasslands	non-FMH brush transect	-	-	-	0
	Pry House Vista	non-FMH brush transect	0	0	2*	2
	Snavelly Ford Woods	non-FMH forest transect	6*	0	0	6
	West Woods	non-FMH forest transect	5*	0	0	5
	Sherrick Farm Woods	FMH forest plot	(abandoned 1 plot)			-1
Cape Cod NS (assist)	Lombard -Paradise Hollow	non-FMH research plot	9	9	5	9 (lots)
Fred/Spots NMP	fields	photo point	0	0	0	8
		FMH brush plot	0	0	0	4
		non-FMH brush transect	-	-	-	0
Richmond NBP	Cold Harbor	photo points	0	0	4	4
		FMH forest plot	0	0	2	2
	Malvern Hill	FMH brush plots	5*	0	3	5
Saratoga NHP	fields	FMH brush plots	8*	0	4	21
Shenandoah NP	Big Meadows	non-FMH transects	0	0	0	0
	Fultz Run	CBI	-	0	0	20
	Grey Birch	FMH forest plots	0	0	0	10
	Lewis Mountain	CBI	-	0	16	16
	Rocky Top	CBI	-	0	0	19
	Sawmill	Brown's lines	0	0	0	10
	Shenandoah Complex	CBI	-	0	0	11
Total			33	9	45	162

* indicates new installations

Table 2. Fire Ecology Staffing 2006

	Starting Date	Ending Date	# of Pay Periods	Training and Development
KellyAnn Gorman	01/01/03	12/31/03	26	Fire Refresher, Heartsaver First Aid, FRCC, ACA, ENGB PTB initiated, presented at Southeastern Prescribed Fire Workshop
Missy Forder	02/05/06	12/31/06	23	Mentoring Program Orientation, Fire Refresher, DDC-8, Heartsaver First Aid, Retirement Seminar, 3 rd Int'l Fire Ecology & Mgt Congress
Akiva Gordon	05/14/06	09/16/06	9	Fire Refresher, DDC-8, SAR, Heartsaver First Aid, Pesticide Refresher
Melissa Bruggeman	05/28/06	09/16/06	8	Fire Refresher, DDC-8, SAR, Heartsaver First Aid
Chris Pearce	05/28/06	09/16/06	8	Fire Refresher, DDC-8, SAR

Table 4. Fire Ecologist Accomplishments and Area of Focus

Category	% Time	Accomplishments/Focus Areas
General Planning	10%	FMPs, EAs, FONSI, Section 7, etc.
Monitoring Programs	17%	General fire ecology work, such as: data collection and management, monitoring plans, treatment recommendations, literature searches, etc.
Presentations	1%	“Fire Works” campfire program presentation Fire Monitoring at Southeastern Prescribed Fire Workshop
NPS Meetings/ Task Groups	2%	Objectives and Monitoring Design, Adaptive Management Task Group Monitoring Plans Task Group
Interagency Work	13%	FPA, Central Appalachian FLN
Fire Assignments	17%	Prescribed Fires (Big M., Pumpkin Hill), 2 op. periods Wildfires (Lewis Mtn, Cardinal, Pigeon, Tanners Ridge), 25 op. periods
Supervision & Administration	23%	Hiring, supervision, travel, payroll, etc.
Training & Development	6%	Fire Refresher, Heartsaver First Aid, FRCC, ACA
Prescribed Fire	4%	Prescribed fire program development and implementation, including writing burn plans
Miscellaneous	8%	Mostly Acting FMO

Table 5. Lead Fire Monitor Accomplishments and Area of Focus.

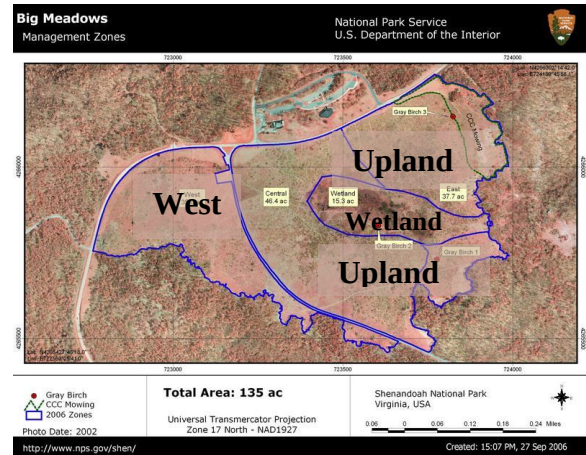
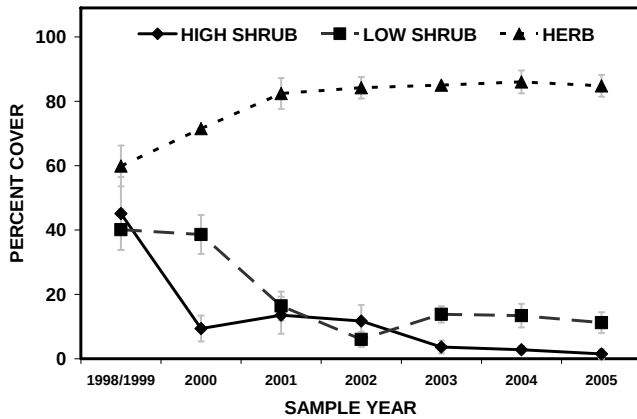
Category	% Time	Notes
FMH plots	7%	RICH and SARA
CBI plots	4%	SHEN Lewis Mountain
Other plot work	11%	Installed many non-FMH brush transects at ANTI
Fire Assignments	5%	FRSP Spotsy Rx Fire, 1 op. period Lewis Mtn WF, 8 op. periods
Data Entry & Mgt	14%	Completed data entry of all plot data collected in 2006
Leadership & Administration	23%	Includes travel prep. (but not travel itself), ordering supplies, timekeeping, employee orientation, trip reports, crew leading, errands
Training & Prof. Development	11%	Includes Heartsaver First Aid, IT/EEO/mandatory gov’t training, mentoring program, fire refresher; presented poster at 3rd Int’l Fire Ecology & Mgt Congress
FEAT Testing	10%	
Miscellaneous	15%	Includes monitoring reports and non-FEM activities

Table 6. Fire Effects Crew Accomplishments and Area of Focus.

Category	% Time	Notes
FMH plots	15%	RICH and SARA
CBI plots	4%	SHEN Lewis Mountain
Other plot work	16%	Assisted CACO staff with burn day and post-burn monitoring on non-FMH research plots; installed many non-FMH brush transects at ANTI
Fire Assignments	20%	CACO Rx Fire: 1 op. period x 3 folks = 3 op. periods Long WF: 2 op. periods x 1 folk = 2 op. periods Tripod WF, WA: 22 op. periods x 2 folks = 44 op. periods
Data Entry	13%	Completed data entry of all plot data collected in 2006
Admin. & etc.	5%	
Orientation & Training	10%	Includes PT, Heartsaver First Aid, Search and Rescue, mandatory gov’t training, plant ID, fire refresher, etc.
Miscellaneous	17%	Includes wildfire readiness, equipment maintenance, herbarium work, monitoring reports, and time spent assisting other park crews

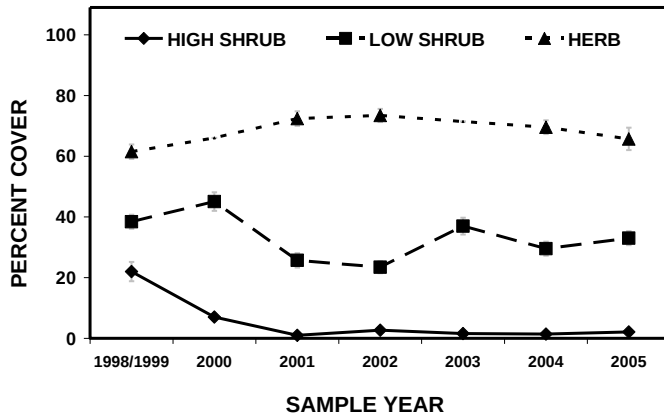
Summary of Vegetation Changes in the Big Meadow – 1998-2005

WETLAND



(above) Aerial photo of the Big Meadow showing vegetation **monitoring** zones.

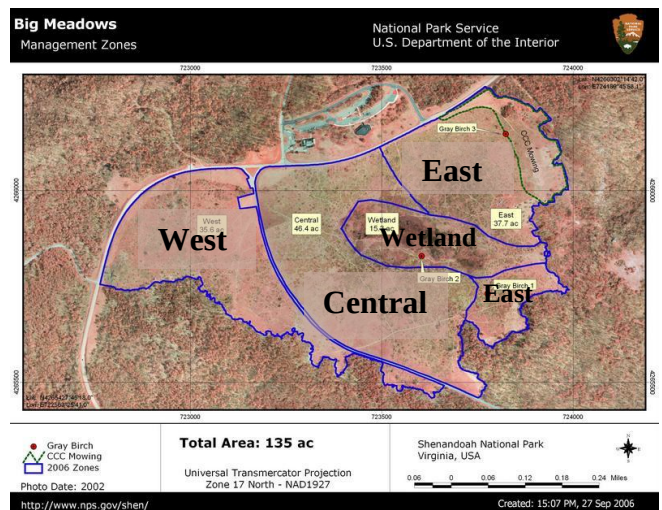
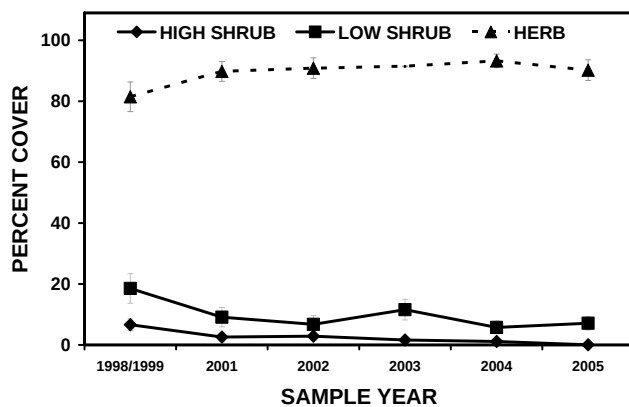
UPLAND



Fiscal Year Management Actions

1998/1999	None
2000	Mow / Burn Entire Meadow
2001	Burn Entire Meadow
2002	Burn Entire Meadow
2003	Burn Entire Meadow
2004	Mow East / Burn Central + West
2005	Mow Central / Burn West
2006	Mow West / Burn West + East

WESTERN



(above) Three graphs showing general vegetation changes in the Big Meadow over time. High shrubs are greater than 0.5 m tall, Low shrubs are less than 0.5 m tall, and herbs are non-woody vegetation.

(above) Aerial photo of the Big Meadow showing vegetation **management** zones.



**National Park Service
Acadia National Park
and
The North Country Area Fire Management Group
Fire Ecology Annual Report
Calendar Year 2006**

Summary

In Spring 2006 Acadia National Park conducted two small prescribed fires on park carriage road vistas. These burns, totaling 1.5 acres, are part of an on-going program to use prescribed fire to maintain several of the 100 plus vistas that were created as part of the park's historic carriage road system and motor road system. Visual surveys indicate that the program is successful in reducing woody stems within the vistas and in keeping them open as vistas.

Also in the Spring of 2006, Saratoga National Historical Park conducted four prescribed fires in historic fields within the park. The objectives of these burns, totaling 75 acres, are to use fire instead of mowing to maintain these grass fields and to prevent woody stem invasion into them.



**National Park Service
Fire Ecology Annual Report
Cape Cod National Seashore
Calendar Year 2006**

Summary

The Cape Cod National Seashore and the University of Massachusetts / Amherst under direction of CACO FMO David W. Crary, Jr. and UMass Professor William A. Patterson III successfully completed the twenty-first (21st) year of annual monitoring on research plots established in 1986 to explore the long-term effects of burning and mowing on coastal oak-pine forests.

The SHEN Fire Monitoring Crew was instrumental with providing assistance for immediate pre- and post-burn monitoring in July. Joel Carlson, CF, provided post burn (+ two years) on six JFSP 0.5 acres plots during the spring. UMass students Jesse Regnier and Matthew Sposito, hired with JFSP grant funds, provided monitoring support all summer long. SCA Daniel Leach also assisted summer monitoring efforts.

A generalized description of the Lombard Paradise Hollow 21 year Rx burn project may be viewed at:

http://www.umass.edu/nrc/nebarrensfuels/ma_barrens/cape_cod/index.html#brochure

Table 1. Fire Effects Plot Workload Cape Cod National Seashore 2006

Park	Monitoring Unit	Type of Plot (FMH, photo point, other)	Pre-burn	Immed. Post	Postburn (1-20 yrs)	Total Plots
Cape Cod National Seashore	Lombard Paradise Hollow (Truro, MA)	Forest mow/burn research 0.1 acre plots	Yes	Yes	Yes (1 – 20 year)	54
Cape Cod National Seashore	Lombard Paradise Hollow JFSP plots (Truro, MA)	Research Plot, 0.5 acres, mow burn (2003), burn (2004) and controls			Yes (+ 3 years)	6

Table 2. Fire Ecology Staffing Cape Cod National Seashore 2006

Monitor	Starting Date	Ending Date	# of Pay Periods	Training and Development
Matt Sposito	July 07	August 07	5 pp	UMass Student hire funded by JFSP
Jesse Regnier	June 07	August 07	6 pp	UMass Student hire funded by JFSP
Daniel Leach	May 07	August 07	5.5 pp	SCA funded via Barb Steward
Joel Carlson	Spring 07	Spring	1.0	80 hours sampling of JFSP plots
Fire Techs	2007		1.5 pp	120 hours by fire techs assisting Ryan DeSantis with sampling
UMass staff	2007		1.0 pp	80 hours of UMass support sampling

Table 3. Management Objectives and Monitoring Results 2006

Monitoring Unit	Management Objective	Monitoring Results	Objective Achieved?
Lombard Paradise Hollow	Research, vegetation	Collected data included: live and dead pre- and post-treatment fuel loading by size class and % cover and height class estimations of under- and over- story vegetation.	YES
	Research, burning	Day of burn information collected: RH, foliar moisture content, 1- 100 hr downed woody fuel moisture, wind speed and direction (each minute) and ROS	YES
Joint Fire Science Project Demonstration Plots	Research, Demonstration	Point intercept sampling of re-growth since 2004 burning of six 0.5 acre plots; included documentation of Dec 05 storm damage (90 mph windthrows)	YES



National Park Service
Delaware Water Gap National Recreation Area
Mid-Atlantic Fire Management Area
Fire Ecology Annual Report
Calendar Year 2006

Summary

The Delaware Water Gap planned to conduct three prescribed burn and monitor a unit burned in 2004 with cooperation of the US Forest Service. The Loch Lomond and Snyder prescribed burns were scheduled to be implemented in the spring. However, due to scheduling, resource, and weather conflicts, the burns were not implemented. As the Blue Mountain Lake 2 burn was postponed from the fall of 2005, the burn was supposed to be implemented in the spring, but scheduling conflicts with Dr. Patrick Brose of the USFS Northeastern Research Station this burn was postponed as well to the fall. The Blue Mountain Lake 2 prescribed burn was implemented in November 2006 with the assistance of the New Jersey Forest Fire Service, The Nature Conservancy, U.S. Fish and Wildlife Service – Walkill NWR, and the Upper Delaware Scenic and Recreational River. The weather was at the upper end of the prescription parameters and only 11 acres of the total 26 were burned with unremarkable results.

None of the other parks within the Mid-Atlantic Fire Management Area conducted any prescribed burns, monitoring, or fuels treatment.

Table 1. Management Objectives and Monitoring Results 2006

All results shown are XX% confidence intervals of the mean. Fuel reduction objectives/results are mean percent reduction from preburn to immediate postburn. Stand density objectives/results are for five-year postburn mean stand density. An underlined number of plots indicate that the minimum sample size has been attained for that variable.

Monitoring Unit	Management Objective (Restoration)	Monitoring Results (XX% confidence interval)	Objective Achieved?
BML 2	> 75% reduction 1-hr fuels > 50% reduction 10-hour fuels < 20% overstory mortality	20% 0%	NO

Table 2. Fire Effects Plot Workload 2005

Plots were monitored by Dr. Brose

Park	Monitoring Unit	Type of Plot (FMH, photo point, other)	Pre-burn	Immed. Post	Postburn (1-20 yrs)	Total Plots
Delaware Water Gap	Blue Mountain Lake 1	Other forest plot	0	0	6	6
Delaware Water Gap	Blue Mountain Lake 2	Other forest plot	12	0	0	15
Total			18		6	21

Fire Ecology Staffing 2006

The park has no fire ecology staff

Fire Ecologist Accomplishments/Focus Area

As the park has no fire ecologist, all accomplishments were completed by the FMO and senior firefighter. The percent time is a percent of time associated with prescribed fire and fuels treatment projects and not of time associated with total workload. Prescribed fire and fuels treatment projects account for 50% of the total workload.

Category	Percent Time	Accomplishments/Focus Areas
General Planning	89%	Provided guidance for GATE and FIIS with respect to prescribed fire and fuels treatments Prepared ESF and CatEx for Loch Lomond and Snyder prescribed fires, 1606 Repeater Site fuel reduction project
Monitoring Plans	0%	
Presentations	0%	
NPS Meetings/ Task Groups	1%	October 2006 FIIS meeting to assess fuel conditions and needs
Interagency Work	0%	
Fire Assignments and Fuels Projects	10%	COTR for fuel reduction projects
Research	0%	
Monitoring Field Work	0%	
Data Entry	0%	
Data Management and Conversion	0%	
Data Analysis	0%	
Supervision/Admin	0%	
Training & Professional Development	0%	
Miscellaneous		

Fire Effects Crew Accomplishments

The park has no fire effects crew. All monitoring was performed by Dr. Brose. While in the park, 100% of his time was dedicated to installing 15 new plots in the BML 2 unit and monitoring 6 plots in the BML 1 unit over a 3-day period.

DEWA had two seasonal employees in 2006 – one paid out of suppression funding and the other from hazard fuel reduction funding. The seasonal employees spent about 75% of their working on hazard fuel reduction projects involving clearing defensible space around park structures and clearing fire roads. Throughout the spring and summer, the Fire Management Office had additional support with hazard fuel projects from park volunteers and other park personnel whose primary duties were other than fire management activities.



**National Park Service
New River Gorge National River
Allegheny Fire Management Area
Fire Ecology Annual Report
Calendar Year 2006**

Summary

In Spring 2006 the New River Gorge National River conducted a prescribed fire over most of the designated grassland area located at the Sandstone Visitor Center. The prognosis of the burn seems to be positive in the suppression of undesirable species and favoring of native grasses and forbs. The data suggests that a program of prescribed fire the controlled burn would be beneficial as a an annual or biannual treatment of this site. The landscape as a whole (after the first year of maintenance and the prescribed fire) looks better and is healthier than ever before.

New River also conducted the Bluestone Burn in 2006. The park burned the fields later than they would have preferred. However, the primary objectives of maintaining the pre-established fields in an early succession vegetative state, utilizing fire as a means to remove woody vegetation, recycling nutrients and removing tall dead herbaceous vegetation were achieved. They also met the objectives of reducing 1 hr and 10 hr fuels in target area by 90% post-burn, maintained the average herbaceous vegetation height at less than 2 feet, 1 year post burn, and prevented woody shrub encroachment on the existing field perimeter. Contributing greatly to meeting these goals was the summer mowing by DNR.