



**National Park Service
Northeast Region
Fire Ecology Annual Report
Calendar Year 2004**

The Fuels/Fire Ecology Program Manager, Doug Wallner participated in several Fire Management Plan (FMP) scoping sessions, served as contracting representative, and reviewed several FMP's. In conjunction with the regional compliance officer, he developed regional instructions for the use of the hazard fuel categorical exclusion for FMP's.

He participated and made a presentation, along with the Shenandoah Fire Ecologist, to the Northeast Region Natural Resources and Science Staff at a retreat held at Gateway NRA. He also participated in the Northeast area FRCC Reference Conditions Modeling workshop in Delaware, OH.

The Fuels/Fire Ecology Program Manager and the with the Shenandoah Fire Ecologist have participated in the revision of the fuels management and fire ecology chapters of the Wildland Fire Reference Manual (RM-18).



**National Park Service
Shenandoah National Park
Mountains-to-the-Sea Fire Ecology Staff
Fire Ecology Annual Report
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Summary

This summer, the Mountains-to-the-Sea Fire Effects Monitoring Crew, led by Missy Forder, collected data at five parks, assisted with data collection at a sixth, and participated in several prescribed burns across the NPS Northeast Region.

Data were collected at Acadia, Fredericksburg and Spotsylvania, Richmond, Saratoga, and Shenandoah. As part of a cooperative manpower-exchange effort, the FEM crew assisted the Shenandoah Vegetation Monitoring crew to collect post-burn data on 79 vegetation transects at Big Meadows, a resource management prescribed burn unit at Shenandoah. In addition, the crew assisted with pre-burn data collection on six non-FMH plots and burn-day monitoring at Cape Cod National Seashore, which has its own monitoring program. No data were collected at Antietam because no burns were conducted. In addition, no CBI data were collected this year because 2003 was a wet year and no fires were large enough for CBI analysis.

The Fire Ecologist, KellyAnn Gorman, and Lead Monitor, Missy Forder participated in five prescribed burns conducted at Fredericksburg and Spotsylvania and at Richmond; the Lead Monitor and crew participated in the research burn at Cape Cod.

Next year we plan to expand to install plots and do pre-burn data collection at George Washington Birthplace National Monument and Petersburg National Battlefield.

Table 1. Fire Effects Plot Workload 2004

Park	Monitoring Unit	Type of Plot (FMH, photo point, other)	Pre-burn	Immed. Post	Postburn (1-20 yrs)	Total Plots
Acadia NP	overlooks	FMH forest quad	8	0	0	8
Antietam NB	grassland	FMH brush plot	0	0	0	2
	hardwood	FMH forest plot	0	0	0	1
Cape Cod NS (assist)	Lombard - Paradise Hollow	non-FMH	6	0	0	(lots)
Fred. and Spots. NMP	fields	Photo points	0	0	0	8
		FMH brush plots	3	2	1	4
Richmond NBP	Cold Harbor	FMH forest plots	0	0	2	2
Saratoga NHP	fields	FMH brush plots	0	0	2	13
Shenandoah NP	Big Meadows	non-FMH transects	0	0	79	(79)
	Fultz Run	CBI	0	0	0	20
	Grey Birch	FMH forest plots	0	0	0	10
	Rocky Top	CBI	0	0	0	19
	Sawmill	Brown's lines	10	0	0	10
	Shenandoah Complex	CBI	0	0	0	11
Total			27	2	5	108

Table 2. Fire Ecology Staffing 2004

Monitor	Starting Date	Ending Date	# of Pay Periods	Training and Development
KellyAnn Gorman	01/01/03	12/31/03	26	FEAT Stats training, ESRI online GIS training, L-380, FRCC on-line certification
Missy Forder	01/26/03	11/27/03	23	completed FEMO task book, S-390, FEAT Stats, S-217
Caitlin Morse	04/05/03	09/30/03	13	S-217
Angela Sokolowski	05/03/03	09/30/03	11	S-390, S-217

Table 3. Management Objectives and Monitoring Results 2004

No data were analyzed in calendar year 2004.

Ecologist (KellyAnn Gorman) Accomplishments

Planning documents:

- Updated and revised prescribed burn plans for Big Meadows, Pumpkin Hill, and Sawmill projects at SHEN
- Scoped and wrote SHEN FMP EA; still shepherding it through the review and approval process
- Assisted in the development of the Five-year Plan of Proposed Fire and Fuels Treatments for SHEN
- Scoped and re-wrote SHEN FMP, soon to begin the review and approval process
- Reviewed and made comments on APCO, BOWA, and PETE EAs
- Provided guidance and procedures for public review of FMP EAs for APCO, BOWA, COLO, GEWA/THST, PETE
- Participated in and documented on-site visit to determine if HAMP needed a FMP

Presentations:

- Prescribed burn success stories submitted to InsideNPS: 3 for FRSP, 1 for RICH, 2 for SHEN
- Fire Works PowerPoint program presented to large, mixed “campfire” program audience at SHEN
- Fire Works PowerPoint program presented to about a dozen community college students at Byrd VC SHEN

Meetings / tasks groups / workshops:

- Northeast Region Natural Resources and Science Retreat, Fort Wadsworth, NY
- Southeast area FRCC Reference Conditions Modeling workshop
- Northeast area FRCC Reference Conditions Modeling workshops (2)
- Pine Barrens research progress review tour
- Internal scoping for ASIS FMP and FMP EA

Interagency collaboration:

- Assisted in the development of FMUs and values at risk for FPA
- (FRCC workshops were interagency efforts)
- FPA Weighting Factors workshop



**National Park Service
Cape Cod National Seashore
Fire Ecology Annual Report
Calendar Year 2004**

Summary

The Cape Cod National Seashore and the University of Massachusetts / Amherst under direction of FMO David W. Crary, Jr. and Professor William A. Patterson III successfully completed the nineteenth (19th) 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. Additionally six Joint Fire Science Project funded demonstrations plots (0.5 acres each) had post treatment data collected. Modified FIREMON sampling techniques were used to describe vegetation prior to proposed (WUI) fuel treatment projects at the Doane Rock and Marconi project areas.

Table 1. Fire Effects Plot Workload Cape Cod National Seashore 2004

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	Forest mow/burn research 0.1 acre plots	Yes	Yes	Yes (1 – 19 year)	19
Cape Cod National Seashore	Joint Fire Science Demonstration Plots	0.5 acre plots	Yes	Yes	Yes (1 yr)	6
Cape Cod National Seashore	Doane Rock Treatment Area	Modified FIREMON sampling	Yes	No	No	9
Cape Cod National Seashore	Marconi Area Treatment Area	Modified FIREMON sampling	Yes	No	No	1
Total						

Table 2. Fire Ecology Staffing Cape Cod National Seashore 2004

Monitor	Starting Date	Ending Date	# of Pay Periods	Training and Development
John Norton-Jensen			Contract	
Nell Blodgett			Contract	

CESU used to complete monitoring work in 2004 at Cape Cod National Seashore.

Table 3. Management Objectives and Monitoring Results 2003

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	Brushcutting by hand of understory vegetation at ~\$225/acre resulted in a 71% decrease in predicted flame lengths	YES
WUI Fuel Reduction Projects (Doane and Marconi)	Pre-treatment data collection only	Data: Basal area and structure of overstory vegetation, shrub density, duff thickness, downed woody fuels (Brown's), species list	YES

Ecologist Accomplishments. CACO FMO serves as the fire ecologist. During 2004 the CACO FMP and Environmental Assessment was prepared.



**National Park Service
Delaware Water Gap National Recreation Area
Fire Ecology Annual Report
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Delaware Water Gap is participating with and providing a study site for Dr. Patrick Brose of the USFS, Northeastern Research Station for a Joint Fire Science funded project entitled “ Integrating prescribed fire into management of mixed-oak forests of the mid-Atlantic region: Developing basic fire behavior and fuels information for the silvoh system”.

Due to the near elimination of the natural fire regime of mixed-oak forests of the Mid-Atlantic region has led to several undesirable changes. One of these is the inability of oaks to regenerate on their own. As part of this study the Blue Mountain Lakes #1 Prescribed Fire was conducted by the staff, led by FMO Cliff lively and Fuels Technician Tom Liogys, of Delaware Water Gap. This study is to evaluate and update hardwood fuel models for prescribed fire and wildland fire management. Oak regeneration response to prescribed fire will also be investigated at as part of the study. This is first in a series of projects in the area. Burn #1 is 16 acres in size containing 6 plots. Each plot contains 5 measurement sites. Each plot was inventoried and monitored prior to and during the burn. Plots are to be inventoried post-burn and biennially until completion of the study in approximately 2008. Northeast Research Station Fire Science Lab will conduct the research. Burns are planned for adjacent blocks for FY06.



**National Park Service
New River Gorge National River
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The park received a final report for a project entitled “Restoration of a New River Flatrock Forest Community, New River Gorge National River, West Virginia” conducted by Laura S. Gellerstedt and Dr. James E. Johnson of Virginia Polytechnic Institute. In this study, a combination of thinning, herbicide application, and prescribed burning (in Spring 2002) was used, and compared to conditions in control, or untreated, plots. Thinning proved an effective way to promote the desired overstory species and select against the invading upland and riparian species. Likewise, the selective use of herbicide, targeted to stumps and the foliage of undesirable trees and shrubs, also proved effective. The value of the prescribed burning was less certain. While the treatment that included burning showed the only significant increase in density of target seedlings over the course of the study, the total number of target seedlings at the end of the study in 2003 did not differ significantly among the three treatments. Presumably, the burning would reduce fuel levels and create seedbed conditions favorable to regeneration. While this did occur, the burning also consumed many desirable seedlings of both Virginia pine and eastern redcedar. Both species are quite susceptible to fire injury.

However, the RX burns did remove the duff layer exposing mineral soils, which should provide a more suitable seedbed for the target species, i.e. Virginia pine, eastern redcedar, and post oak. The burns did result in lowering overstory basal area of competing upland and riparian species, providing favorable conditions for regeneration of the target species. The heavy treatment (which included a combination of herbicide, thinning, and RX fire) was more effective than the control in creating conditions that favored the target species in the first two years after treatment. In addition, the importance, density and dominance of the undesirable riparian and upland species in the understory were significantly lower in the heavy treatment compared to the control two years post-burn. The importance of target species in the heavy treatment was significantly higher than in the control in 2002 and 2003. The number of exotic plant seedlings was greater in 2003 than in 2000, and this occurred across all treatments, including the control. The increase in seedling density for all species, including exotics, may be associated with record precipitation in 2002 & 2003.