



**National Park Service
Fire Ecology Annual Report
Calendar Year 2008**

Summary

The Chihuahuan Desert Fire Ecology Group has experienced an expansion in its workload over the past two years. For the first time plots were installed on cultural sites at Gila Cliff Dwellings NM as the park prepared for fire use fires moving onto the park from the surrounding Gila Wilderness. Plots were also installed for the first time at White Sands National Monument to assess the fire effects on shrub cover and density and grass cover as the park seeks to restore and maintain its remaining desert grasslands. Prescribed fire activity also occurred for the first time in a decade at Carlsbad Caverns NP and five years at Guadalupe Mountains NP involving the installation of new plots and the rereading of existing ones. Prescribed fire activity continued at Big Bend NP along the Rio Grande River in concert with Resource Management facilitating the eradication of exotic plants and restoring river bank fluvial dynamics. These efforts also assisted the Customs and Border Protection by removing screening cover used by undocumented aliens crossing the border into the United States. In 2008, the [Gyro-Trac](#) mulcher was used for the first time at Big Bend to remove fuels from an historic cottonfield at Sublett Farm Historic district. Additionally we incorporate legacy plots established in the '60s, the late '70s and the early '80s into our fire ecology plots network resulting in a master's degree for one of our former seasonal allowing us to validate trends in fuels accumulation seen in our JFS research. Additionally we initiated research following up on recently completed JFS research to evaluate fuel management alternatives to manage ultimately for natural fire regimes at Big Bend National Park's forest and woodlands. We also partnered with The Nature Conservancy to extend the research to include Guadalupe Mountains NP and the Davis Mountain Preserve. Following is a list of publications as a result of our two recently completed Joint Fire Sciences research projects at BIBE and GUMO. One of the projects includes work done in collaboration with the Nature Conservancy and our sister park in Mexico the Maderas Del Carman Protected Area:

Poulos, H. M. In press. The Physiological Ecology of Pine-Oak Forests of the American Southwest. Journal of Sustainable Forestry.

Poulos, H. M., A. E. Camp, R. G. Gatewood, and L. Loomis. 2007. A hierarchical approach for scaling forest inventory and fuels data from local to landscape scales in the Davis Mountains, Texas, USA. *Forest Ecology and Management* 244(1-3): 1-15.

Poulos, H. M., U. Manage Goodale, and G.P. Berlyn. 2007. Drought response of two Mexican oak species, *Quercus laceyi* and *Quercus sideroxyla* (Fagaceae) in relation to elevational position. *American Journal of Botany* 94:809-818.

Poulos, H. M., and G. P. Berlyn. 2007. Variability in needle morphology and water status of *Pinus cembroides* across an elevational gradient in the Davis Mountains of west Texas, USA. *Journal of the Torrey Botanical Society* 134(2): 281-288.

Poulos, H. M., A. H. Taylor, and R. M. Beaty. 2007. Environmental controls on dominance and diversity of woody plant species in a Madrean, Sky Island ecosystem, Arizona, USA. *Plant Ecology* 193(1): 15-30.

Camp, A. E., H. M. Poulos, R. Gatewood, J. Karges, and J. Sirotinak. 2006. Assessment of Top Down and Bottom Up Controls on Fire Regimes and Vegetation Abundance and Distribution Patterns in the Southwestern Texas Borderlands: A Hierarchical approach. Final Report to the Joint Fire Sciences Program, Project # 03-3-3-13, October 31, 2006.

Poulos, H. M., G. P. Berlyn, and U. M. Goodale. In Review. Physiological and structural mechanisms of niche differentiation in *Quercus rugosa*, *Q. laceyi*, and *Q. sideroxyla* (Fagaceae). *American Journal of Botany*

H. M. Poulos, A. E. Camp, J. Villanueva Díaz, J. Cerano Paredes, and R. G. Gatewood. In Press. Human and Climatic Influences on Fire Regimes and Forest Structure in the Chihuahuan Desert Borderlands. *Journal of Biogeography*.

Table 1. Fire Effects Plot Workload 2008

Complete the following table. In the “Total Plot” column, fill in total number of plots installed in the Monitoring Unit to date. Northern Great Plains is provided as an example. Denote any plots completed as pilot sampling.

Park	Monitoring Unit	Type of Plot (FMH, photo point, other)	Pre-burn	Immed. Post	Postburn (1-20 yrs)	Total Plots
Big Bend	Forest	FMH - forest	5	0	7	11
	¹ Piñon-Juniper - Oak woodland - Research	Other: Circular - Density	144	0	0	144
	Agave Lechiguilla-Grassland	FMH -Brush	0	0	11	11
	Sotol-Grassland	FMH -Brush	0	0	9	1
	WhiteBrush	FMH - Brush	0	0	5	5
	Exotic-Leahmanns - Rx	Other: Point-Intercept Transect	0	0	15	15
	² Exotic - Lehmanns - Herbicide	Other: Circular - Density	0	0	20	20
	Gambusia T&E	Photo Pt	0	0	9	9
	Gambusia T&E	Other: Census of Overstory trees	0	0	1	1
	Rio River Restoration	Other: BIBE Restoration	0	4	0	4
	Flood Plains Shrub - Mechanical	Other: Circular - Density	1	3	0	4
	Long-Term Fire Ecology	Other: Circular	14	0	1	15
Carlsbad Caverns	Exotic	FMH Brush	6	0	0	6
	Juniper Grassland	FMH - Brush	4	0	0	4
	Curlyleaf Muhly Grassland	FMH - Brush	28	0	0	28
	Tobosagrass - Shrub (Pilot)	Other: Circular - Density	0	15	0	15
	Shrub Desert (Pilot)	Other: Circular - Density	0	15	0	15
	Mesquite Shrub (Pilot)	Other: Circular - Density	1	0	0	1
Gila Cliff Dwellings	Cultural Sites - Manual Reduction	Other: Circular - Density	0	5	0	5
	Slot Canyon - Dwellings	Photo Points	0	0	11	11
	Open Grassland	Photo Points	0	6	0	6
Guadalupe Mountains	Douglas fir	FMH - Forest	1		5	6
	Alligator Bark Juniper	FMH - Forest	0	0	6	6
	Mulhy Grassland	FMH - Brush	0	0	6	6
	Curlyleaf Muhly Grassland	FMH - Brush	0	8	0	8
	Redberry Juniper-Grassland	Other : Circular - Density (Pilot)	0	1	0	1

Park	Monitoring Unit	Type of Plot (FMH, photo point, other)	Pre-burn	Immed. Post	Postburn (1-20 yrs)	Total Plots
Guadalupe Mountains (cont'd)	Grassland-Shrub	Other : Circular - Density (Pilot)	0	1	0	1
White Sands	Desert - Grassland	Circular - Density	5	0	0	5
Total						364

¹Installed by a Cooperative Agreement with the Rio Grand Institute;

²Non-fire herbicide single plant treatment by BIBE Resource Mgmt.

Table 2. Fire Ecology Staffing 2008

Complete or devise a staffing and personnel development table for fire ecologist and monitors. Include fire training (e.g. S-290, RX-310), distance learning or on-campus college credit, technology training, NWCG taskbooks initiated or completed, conferences attended, etc.

Ecologist and Monitors	Starting Date	Ending Date	# of Pay Periods	READ Qualified (Yes or No)	Training and Development
Richard Gatewood - Ecologist	1/1/08	12/31/08	26	No	FFI
John Zubia - Lead	3/2/08	11/21/08	19	No	
Alphonso Porras	6/16/08	11/07/08	10	No	Completed Crew Boss Task Book
Heather Dammayer	4/15/08	8/15/03	09	No	
Catherine Conahan (SCA)	5/18/08	8/9/03	10	No	

Table 3. Management Objectives and Monitoring Results 2008

Complete the following Summary table for each monitoring units for which analysis is available. Monitoring results should include time frame, confidence interval, and sample size. An example from Sequoia-Kings Canyon is provided as an example.

Monitoring Unit	Management Objective (Restoration)	Monitoring Results (XX% confidence interval)	Objective Achieved?
BIBE: Rio Grande Flood Plain	Stand replacement of Tamarisk, Giant Reed & Mesquite	Stem density reduction: 90 to 100% (Photo Point Observations, (n/a))	YES (Rx treatment followed up with herbicide treatments for complete removal)
Gambusia Habitat Restoration	Stand Replacement of Mesquite	Stem density reduction: 90 to 100% (Photo Point Observations, (n/a))	YES (Rx treatment followed up with herbicide treatments for complete removal)
	Maintain Cottonwood Overstory (Less than 10% Mortality)	Mortality = <10% (Census of all trees within unit)	YES

Monitoring Unit	Management Objective (Restoration)	Monitoring Results (XX% confidence interval)	Objective Achieved?
GICL: Fuel Reduction on Cultural sites	Reduce standing shrub cover on TJ Dwelling site complex by 100% (Manual Removal)	100% reduction (Photo points) Note: Circular density plots and point-intercept plots establish to monitor shrub recover	Yes
	Remove all standing and downed woody fuels from upland single dwelling sites (Manual Removal)	100% reduction (Photo points) Note: Circular density plots and point-intercept plots establish to monitor shrub recover	Yes
	Remove dead and downed and latter fuels in Canyon below Gila Cliff Dwellings (Manual Removal)	Dead and downed completely removed. Later fuels completely removed Trees limbed to 6 ft. (16 Photo Points)	Yes

Fire ecologist accomplishments and areas of focus

This section deals with roles and functions of the ecologist. Identify accomplishments and/or focus areas along with a rough estimate of the amount of time spent in these areas (see table format and example below). This includes planning documents produced, reviewed, or collaborated (e.g. fire management plans, monitoring plans, prescribed fire or mechanical treatment plans, etc.), presentations given and audience, meetings and task groups attended, contracts reviewed, interagency collaboration efforts, volunteer hours managed, and scientific or research publications produced.

Table 4. Fire Ecologist Accomplishments/Focus Areas

Category	Percent Time	Accomplishments and/or areas of activities
Planning	40%	- Wrote Mechanical Fuels Treatment plans for BIBE Sublett Farm, North Mill and Rio River Bank Restoration - Reviewed Rx Burn Plans (Both Chihuahuan Desert and southern Plains Parks): - BIBE Hannold Draw - BIBE Rio Restoration - LAMR North Canyon - LAMR Stilling Basin - LAMR Cedar Canyon - LAMR South Canyon - Reviewed Five Year Treatment Plans for BIBE, CAVE, GUMO - Annual updated of Fire Management Plan BIBE
FMH Plot work	10%	Scientific meetings, park staff, public, etc.
NPS Meetings/ task groups	<5%	- Internal Scoping for Vegetation Mangement Plan for PAAL - Resource Stewardship Strategies (RSS) development at GUMO - Chihuahuan Desert I&M Annual meeting - Southern Plains I&M Annual Meeting
Interagency work	5%	Collaborated with The Nature Conservancy on developing a joint research project to assess fuels treatment strategies for forests and woodlands at GUMO and The Davis Mountain Preserve.
Fire Assignments	5%	Firefighter Type II Training Assignment (1 two week

		assignment) FEMO (2 Prescribed Fires)
Research	10%	- Field work to establish plots and collect data for the fire surrogate research at BIBE. - Field work to validate fuel loading and vegetation maps modeled from JFS project. - Secured funding for expanding the research project at BIBE to a regional scale to include The Nature Conservancy's Davis Mountains Preserve and GUMO.
Data entry	0%	Biotechs entered Data.
Data Conversion	<5%	BIBE data converted. Will reenter CAVE data into FFI (CAVE fuels program inactive until FY08)
Data analysis	<5%	Data analysis limited to response for fuel loading question for prescribed fire planning or severity requests.
Supervision/Admin	<5%	Hiring, supervision, travel, payroll, etc.
Training	<5%	- FFI workshop - Firefighter Annual Refresher - IDEAS Training
Miscellaneous	5%	Worked with Southern Plains I&M to develop a model joint Fire Ecology and I&M model for monitoring Southern Plains Parks. The SPI&M will be providing funding for two BioTech seasonals that will work with the Fire Effects Module to do both fire effects and I&M data collection. Protocols will be added to fire effects plots to meet I&M needs. A model of plot distribution is being worked out.

Fire effects crew accomplishments and areas of focus

This section deals with roles and functions of the fire effects crew. Identify accomplishments and/or focus areas along with a rough estimate of the amount of time spent in these areas (see table format and example below).

Table 5. Fire Effects Crew Accomplishments/Focus Areas

Category	Percent Time	Notes
FMH plots	35%	
WUI plots	0%	
CBI plots	0%	
Planning	5%	- Lead Fire Monitor wrote prescribe burn plan for Basin Campground - Lead completed preparedness plan for FODA.
Other plot work	5%	- Assisted with Fire Surrogate Research Plot work. - Read Herbicide Treatment plots
Fire Assignments	<5%	Two Biotechs went on 1 fire assignment one as Crew Boss trainee and the other a FFT2.
Fuels Project work	30%	- Two biotechs assisted with 2 Rx projects - Lead and one biotech operated Gyrotrac on one mechanical fuels project.
Data entry	5%	Estimated amount of time spent entering data from paper to PC

Data conversion	<5%	Went through CAVE FMH paper files preparing for
Data analysis	0%	This is expected to be very low number or zero for fire effects crew/lead monitor
Supervision/Admin	>5%	Travel, payroll, etc.
Training	>5%	List all training courses attended including in-park, NPS/interagency, and non-government
Miscellaneous	<5%	• Two biotechs assisted with one SAR • One biotech assisted with Rio Grande Village Evacuation during Rio Grande Sept 08 Flood.

Complete Attached Annual Report Supplement (“2008 Annual Report Supplement.xls”)

Provide additional explanation for the Annual Report Supplement spreadsheet here.

Be sure to **complete numbers 1 and 2**. Number 3 is optional.

1. Identify types of fire effects monitoring databases or spreadsheets being used (e.g., FFI, Access, Excel).
2. Annual Meetings - Provide a brief description of the 2008 meeting(s) where fire ecologists present and discuss monitoring results with fire and non-fire park staff, and others have informal discussions.
3. Any other information relating to the spreadsheet that you would like to include.

INSTRUCTIONS FOR UPLOADING 2008 ANNUAL REPORT and SUPPLEMENTAL SPREADSHEET

1. Go to the Fire folder (<ftp://63.220.43.40/Fire/>) and then place the report and spreadsheet in the FEP Annual Report folder. Instructions for how to access and log into the FTP site are below; instructions include username and password.

2. Please e-mail Nate Benson, MaryBeth Keifer, and your regional ecologist to let us know when you get your report uploaded.

Call Nate Benson (208-387-5219) or Marybeth Keifer (559-561-6802) if you have any questions or problems.

Public FTP Server

The Denver Service Center announces the availability of a new public FTP server for use by the staff to transfer files outside of the NPS.

This is a public FTP server meaning NPS staff, cooperators and contractors located outside the NPS computer network can access the site. No anonymous FTP connections are allowed. Therefore, uploading and downloading of data requires a username and password. NPS staff may share this account information with cooperators but all are reminded that this site is for use only for NPS business.

The following usage policies should be observed:

Users must log on to the FTP server to download and upload files. No anonymous FTP access is allowed.

To conserve limited storage space, all folders and files on the server will be deleted 15 days from the date posted. Users are strongly encouraged to delete files and folders as soon as their contact/cooperator has downloaded them.

Users are reminded this is a public, non-reviewed site and therefore should **not** post sensitive or proprietary data on the site.

The Denver Service Center assumes no responsibility for the usage of this server.

Public FTP Site address: <ftp://63.220.43.40>

Username (UPDATED): [npsftpwin](#)

Password (UPDATED and case-sensitive): [FTP04npwin](#)

Please note: it is a zero, not an 'O'.