



**National Park Service
Fire Ecology Annual Report
Calendar Year 2010
SOUTHERN GREAT LAKES AREA PARKS (INDU, LIBO, & SLBE)
Lead Monitor, Mary Fisher-Dunham (INDU)
Fire Ecologist, Scott Weyenberg**

A. Summary

This was the 13th year of the fire effects program at Indiana Dunes National Lakeshore (INDU). This year's staff included one permanent and three seasonal positions. The crew is responsible for the monitoring at INDU and two other parks: Lincoln Boyhood National Memorial (LIBO) and Sleeping Bear Dunes National Lakeshore (SLBE).

At INDU, thirteen prescribed fires were completed. No fires were completed at LIBO or SLBE. A fire was scheduled for spring at SLBE, but due to weather issues it did not occur. It is tentatively re-scheduled for 2011.

The fire ecologist and lead monitor completed a thorough review of the INDU Fire Effects program. In July, the fire ecologist visited INDU for week to assess how the protocol changes initiated by the review were working.

In August, the fire ecologist, prescribed fire specialist and lead monitor met with LIBO staff to discuss and review the updated LIBO fire management plan. Summer monitoring of the LIBO plots was also conducted during the visit.

Table 1. Fire Effects Plot Workload 2010

Park	Monitoring Unit	Type of Plot (FMH, photo point, other)	Pre- burn	Immed. Post	Post burn (1-20 yrs)	Total Plots
Indiana Dunes	Prairie	FMH grass plot		12	20	28
Indiana Dunes	Oak Savanna	FMH forest plot	3	3	0	25
Indiana Dunes	Oak Woodland	FMH forest plot	2	2	5	22
Indiana Dunes	Oak Forest	FMH forest plot				1
Indiana Dunes	Pr/Sav/Wood/ Complex (Howes Pr.)	Other - USGS	16*	31	0	31
Indiana Dunes	Sav/Wood/Forest	Other - NPS	35	35	59	152
Indiana Dunes	Sav/Wood/Forest	Photo			15	19
Sleeping Bear	Old Field	Photo				7
Sleeping Bear	Jack Pine	Photo				2
Lincoln Boyhood	Oak - Hickory	Other - USGS			6	8
Total			56	83	105	295

*Pre-burn fuels were done on only 16 plots due to differences in vegetation, i.e. some plots are prairie.

Table 2. Fire Ecology Staffing 2010

Monitors	Starting Date	Ending Date	# of Pay Periods	READ Qualified (Yes or No)	Training and Development
Mary Fisher-Dunham	2/16/2010	12/17/2010	22	No	Botany Training, Fire Ecology Meeting/ArcGIS
Jillian Mueller-Dienes	5/17/2010	9/24/2010	9.5	No	Botany Training (40 hour),
Jillian Post	5/17/2010	8/27/2010	7.5	No	Botany Training (40 hour),
Mary Beth Wiseman	5/17/2010	9/24/2010	9.5	No	Botany Training (40 hour),

Table 3. Management Objectives and Monitoring Results 2010

Fuel reduction objectives/results are mean percent reduction from pre-burn to immediate post-burn.

Burn or Monitoring Unit	Management Objective (Restoration)	Monitoring Results (90% confidence interval)	Objective Achieved?	Year Last Analysis Completed
Dune Ridge (Oak Woodland) (n=25) (year 2 data)	Reduce overstory basal area.	5-15cm class: -48% (p=0.0001). 15-30cm class: -14% (p=0.005). >30cm class: no change.	Yes	2009
	Reduce understory woody stem density.	0-1cm class: +218% (p = 0.039) 1-2.5cm class: -70% (p = 0.0001) 2.5-5cm class: -96% (p = 0.0001)	Yes but is v. temporary	2009
Cowles Dunes (Oak Woodland) (n = 2)	Reduce overstory basal area.	Pre BA=77ft ² /ac. Post 87ft ² /ac.	No	2009
	Increase species diversity.	10 to 60% increase.	Yes	2009
Inland Marsh 5 (Oak Savanna) (n = 1) (10 year time span, 6 reads)	Reduce overstory canopy closure/basal area.	Closure slightly reduced and poles reduced significantly.	Yes.	2009
	Reduce shrub cover.	Shrub cover increased from 40 to 60%.	No.	2009
	Increase % cover of C ⁴ grasses	Grass cover remains stable.	No.	2009
Kintzele Ditch (Oak Forest) (n = 4) (9 year time span, 6 reads)	Reduce overstory canopy closure/basal area.	Closure unchanged, BA reduced in one size class due to wind throw.	No	2009
	Reduce understory stem density.	Stems less than 2' reduced. Overall woody cover increased after windthrow.	No	2009
	Reduce woody fuels	1-100 hour fuels: ~100% increase. 1000 hour fuels: ~100% increase.	No	2009
Mnoké Pr. (Tallgrass pr.) (n = 20) (multi-year analysis)	Increase in cover of seeded species.	ANOVA comparison test (p = 0.7 and 0.9) (n: 3 sets of 5 plots).	No	2010
	Increase cover of native forbs & grasses.	Native forb: +15% (p = 0.0007) Native grass: +5% (p = 0.05)	Yes	2005
	Decrease cover of non-native forbs & grasses.	Non-native forb: -43% (p = 0.01) Non-native grass: -12% (p = 0.0001)	Yes	2005
	Increase floristic quality index.	Pre (1995)= 40; 2006 = 52.	Yes	2006
Hobart Prairie Grove (Oak woodland) (year 1 data)	Reduce woody stem density by thinning and fire.	Thinning: 0-2" class: -22% to -71% (p = 0.15) (n=3). Fire: 0-2" class: -36% (p = 0.009) (n = 3).	Yes Yes	2007 2007
	Reduce woody fuel loading.	1000 hour: 16% (n = 7) 1-100 hour: -1% (n=13)	No No	
Oak Savanna (n = 7 burn units)	Reduce woody fuels.	1000 hour: No change (p > 0.05). 1-100 hour: No change (p > 0.05).	No No	2005

*Results are greatly simplified for this report.

B. Fire ecologist accomplishments and area of focus

See Northern Great Lakes annual report.

C. Fire effects crew accomplishments and areas of focus**Table 5. Fire Effects Crew Accomplishments/Focus Areas**

Category	Percent Time	Notes
FMH plots	20.25%	• Re-measured INDU plots.
Other plot work	25 %	• Re-measured INDU & LIBO plots.
Fire Assignments	3.75%	• Spring Rx – 7 shifts • Fall Rx - 4 shifts. • No wildfire assignments or details
Fuels Project work	0%	
Data entry	16 %	2010 data entry is complete the exception is LIBO whose database protocols were completed Dec 2010. The fuel data has been entered, but the FE summer sampling from 2005 to 2010 and the USGS data from 1985 needs to be entered, unless the USGS database can be converted. (Still waiting for update.)
Data analysis	<7 %	• Reports and analysis: Post Rx burn reports, Immediate Post Burn Report and analysis, Fire and Fire Ecology Annual Reports
Supervision/Admin	16 %	• The Lead monitor hired and supervised three monitors. Lead conducted recruitment/outreach activities and visits to schools to comply with INDU outreach mandate. • Outward program administration and coordination with ecologist, fire staff, RM staff. Program administration and planning and reports.
Training	9 %	• Sampling techniques, Botany Training week, ongoing plant ID review, PT, weekly safety and mandated NPS/INDU training, Fire Ecology Meeting/ArcGIS training
Miscellaneous	10 %	• Misc. administrative duties; including computer maintenance and troubleshooting, time and attendance, personnel, travel, policy, budget/request for supplies, e-mail, the 2010 plant ID project

D. Additional Information

Table 6. Data Entry and Projects Monitored

Park	% 2010 Data Entered	% 2010 Data Quality Checked	# Prescribed Fires Monitored*	# Non-fire Fuels Treatments Monitored*	# Wildfires Monitored*	# BAER Treatments Monitored*
Indiana Dunes National Lakeshore (INDU)	100%	100%	9	0	0	0
Lincoln Boyhood National Monument (LIBO)	18%**	0%	NA	NA	NA	NA
Sleeping Bear National Lakeshore (SLBE)	NA	NA	NA	NA	NA	NA
Cuyahoga Valley National Park	NA	NA	NA	NA	NA	NA

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

** See report for LIBO, Section E below.

E. Optional Information

INDU

The INDU fire monitoring program underwent a thorough review and revision last year. A concerted effort was made to improve efficiencies and reduce work load. To this end, sampling methods were streamlined, plots were abandoned and SOPs were finalized. From that review a single document was developed that includes the Program Summary, Fire History, Protocols, Protocol History and Implementation Plans. The Fire Effects crew was able to use updated FMH protocols and field datasheets this year. While the newly modified protocols have reduced point intercept field and data entry time, it has increased plant diversity sampling time and data entry time. The Fire Ecologist visited for a week in July to see the protocol changes in action and meet with other Fire, Resource Management and USGS staff.

For the second year in a row, an effort was made to have all seasonal crew members start on the same day to achieve a more efficient training period. In addition, formalized training continued consisting of reviewing project level and FMH protocols and FFI data entry exercises. FFI data entry instructions were further refined to help seasonal staff input data correctly. A week long botany training course was held for the fire effects crew, fire personnel and resource management staff. This botany training has proven to be highly beneficial in increasing the efficiency and quality of sampling.



2010 Botany Training

To build capacity in the program, the lead monitor initiated the Fire Effects Plant ID project. This year's first stage was to annotate the Fire Effects species list. Modifications to the field species list were made by adding brief descriptions of the key characteristics for many of the

commonly encountered species. This annotation will be expanded to include more species in the subsequent years. As a second part of the project, field notebooks containing species names, codes, key features and a line drawing of each commonly encountered plant were created. Less common species will be added in the future. Next year, the goal is to take good quality photos that capture identification features for each species and add them to the notebooks sheets and digital herbarium.

To meet diversity goals for the park, increased time has been directed toward outreach and recruitment. Photos of the crew working were taken throughout the year to improve the recruitment flyer. The lead monitor continues to add to the contact list and is working on establishing contacts for specific schools. As part of the out-reach, she visits schools, distributes announcement flyers and contacts professors.

In co-operation with a USGS scientist and fire staff, the Lead placed thermocouples and heat sensitive paint tags throughout the West Beach burn unit to record fire intensity. While prescribed fire is recommended at this site, a high intensity burn on the northern slopes and mesic pockets was not desired. Data from the thermocouples will help determine the overall intensity in these areas.

Fire staff conducted several experimental burns to assisted USGS researchers with a JFSP study on the effects of fire on Oriental bittersweet. A success story was submitted regarding this effort.

The regularly scheduled fire meeting for upcoming burns was held in December with the fire ecologist participating via a conference phone. Besides discussing the upcoming spring burns, bigger picture issues were also discussed including fire frequencies, Karner Blue butterfly habitat, burn unit prioritization and potential mechanical treatments. The depth of these issues shows a clear need for a more formalized meeting on these topics.

SLBE

No fire effects monitoring occurred at SLBE this season. The Burfiend Field burn did not occur because the spring weather turned hot and dry too early. Another prescribed burn is planned for the Platte River campground to reduce hazardous fuels. Monitoring of this unit will only include pre- and post-burn fuel sampling. Sampling will be conducted in concert with the burn travel if it occurs. No other plot reads are planned at SLBE.

LIBO

The INDU FMO and AFMO met with the new LIBO superintendent and other staff in early August. Shortly thereafter, the INDU prescribed fire specialist and Fire ecologist met with LIBO staff to discuss expanding the prescribed burn program. In addition, the fire ecologist assessed the potential for restoration of each ecosystem at LIBO.

Concerns about 2011 fire effects funding prompted reading the plots one year earlier than scheduled. Sampling coincided with the aforementioned meetings with LIBO staff. The fire ecologist worked one day with the fire effects crew and the Lead sat in on the final meeting with LIBO staff.

The fire ecologist and Lead worked on determining the best way to update the USGS LIBO database in FFI. Conversion of the ACCESS database to FFI does not appear likely as was originally thought. The past data from Fire Effects sampling will be entered as soon as possible in 2011, and a determination will be made if the data in the USGS database can be migrated into the new LIBO database. The Lead will be working on a crosswalk for USGS species codes to FFI codes, refining the database as needed and potentially entering data collected by the USGS back to 1985.

Other

In September 2010, the Lead, Fire Ecologist, and the Bio Tech (Prescribed Fire) attended the September 2010 Fire Ecology Meeting, which included ARCGIS training.

Fire Ecology meeting/ARCGIS training, September 2010.

