



**National Park Service
Fire Ecology Annual Report
Calendar Year 2012
SOUTHERN GREAT LAKES AREA PARKS (INDU, LIBO, SLBE & CUVA)
Lead Monitor, Mary Fisher-Dunham (INDU)
Fire Ecologist, Scott Weyenberg**



Derby Ditch Wetland Burn Fall 2012

A. Summary

This was the 15th 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 three other parks: Cuyahoga Valley National Park (CUVA), Lincoln Boyhood National Memorial (LIBO) and Sleeping Bear Dunes National Lakeshore (SLBE). In addition, the INDU Fire Effects crew has for the last two years assisted with monitoring at Voyageurs (VOYA) and St. Croix (SACN).

At INDU, 13 prescribed burns were completed this calendar year; eight in the spring and five in the fall. Five additional units were burned during an active spring 2012 wildfire season.

At CUVA, their first prescribed burn was completed and monitoring was initiated in four units.



Tying in at CUVA's first NPS prescribed burn, Spring 2012

At LIBO, three prescribed burns were scheduled but were not completed.

Piles were burned at SLBE in the spring as part of a fuel treatment project. As the project is continuing, pending funding. It is expected that more piles will be burned at SLBE next year.

In December, the Lead received notice that her application for an Albright Wirth grant was awarded. The grant money will fund specialized botany training for Fire Effects and Wetland Restoration crews. See Training section below for details.

As with many of the FE programs across the country, the monitoring program at INDU will be cut by approximately 50% for the 2013 FY. This will increase the lead's furlough and decrease the seasonal staff from three persons to two as well as reduce their payperiods.

Table 1. Fire Effects Plot Workload (2012)* and Total Plots Installed

Park	Monitoring Unit	Plot Type (FMH Brush plot, photo point, CBI, etc.)	Pre-burn 2012	Immed. Post 2012	Postburn (1-20 yrs) 2012	Annual Total (2012)	Total Plots
Indiana Dunes	Prairie	FMH Grass plot	0	10	0	10	28
	Oak Savanna	FMH Forest plot	7	7	13	27	19
	Oak Woodland	FMH forest plot	3	3	3	9	22
	Oak Forest	FMH forest plot	0	0	0	0	1
	Pr/Sav/Wood/Complex (Howes Pr.)	Other - USGS†	18	31	0	49	31
	Sav/Wood/Forest	Other - NPS‡	25	23	28	76	96
	Sav/Wood/Forest/Wetlands	Photo	0	0	15	15	20
	Oak Savanna - mech. thinning **	Fuels & photo plots. Pilot study - cut vs. no cut	0	0	0	0	6
Cuyahoga Valley	Grassland	FMH Grass plot			8	8	8
		Photo	21	5	5	31	13
Sleeping Bear	Old Field	Photo	0	0	0	0	7
	Jack Pine	Photo	0	0	0	0	2
Lincoln Boyhood	Oak - Hickory	Other - USGS	6	0	0	6	12
Total			80	79	72	231	265

* Also assisted with monitoring at VOYA: 9 units with 50 plot reads. See Northern Great Lakes Area Annual Report for details.

** Pilot sampling plots

† Fixed radius plots - trees, line intercept - shrubs, nested freq. - herbs, Brown's transects - fuels.

‡ Variable radius - overstory, fixed radius - seedlings, saplings, herbs. Brown's transects - fuels.

Table 2. Fire Ecology Staffing 2011

Ecologist and Monitors	Starting Date	Ending Date	# of Pay Periods	READ Qualified (Yes or No)	Training and Development
Scott Weyenberg	1/1/11	12/31/12	26		See Northern Great Lakes Area report
Mary Fisher-Dunham	1/17/12 3/26/12	2/24/12 12/21/12	21	No, but interested	Fire refresher IC_700 National Incident Management System (NIMS) An Introduction
Coleman Minnery	5/21/12	9/28/12	9.5	No	Fire Refresher
Erik Injerd	5/21/12	9/28/2012	9.5	No	
Caitlin Andrews	5/21/12	8/24/12	7	No	
Michele Warner	8/25/12	9/28/2012	4.5	No	

Table 3. 2012 Management Objectives and Monitoring Results

Burn or Monitoring Unit	Management Objective (Restoration)	Monitoring Results (90% confidence interval)	Objective Achieved?	Year Analysis Completed (Range of data years included in analysis)
Mnoke Pr.	Prairie restoration	Native grass cover 43 $\pm$ 11% Non-native grass cover 81 $\pm$ 8%	No	2012 (2010)
Miller Woods Tolleston Dunes Inland Marsh	A fact sheet including summary data on all canopy strata was written for the planning meeting.	NA	NA	2012 (various)
Inland Marsh 1 (n=2) W. Beach 3 (n=1)	Reduce woody fuels	1hr: +16% ;10 hr: -24%; 100 hr: -55% 1hr: -40% ;10 hr: -75%; 100 hr: -81%	Yes	2012
Wood Lake (n=2) W. Beach 3 (n=1) Cal. Dune (n=3) Inland Marsh 1 (n=2)	Reduce leaf litter to 2" or less.	Post: 0.95" Post: 0.1" Post: 1.2" Post: 0.45"	Yes	2012
Dune Ridge (Oak Woodland) (n=25) (year 2 data)	Reduce overstory basal area. Reduce understory woody stem density.	5-15cm class: -48% (p=0.0001). 15-30cm class: -14% (p=0.005). >30cm class: no change. 0-1cm class: +218% (p = 0.039) 1-2.5cm class: -70% (p = 0.0001) 2.5-5cm class: -96% (p = 0.0001)	Yes Yes but is v. temporary	2009 ('05-'07)
Cowles Dunes (Oak Woodland) (n = 2) (3 reads)	Reduce overstory basal area. Increase species diversity.	Pre BA=77ft ² /ac.; Post 87ft ² /ac. 10 to 60% increase.	No Yes	2009 ('03-'08)
Inland Marsh 5 (Oak Savanna) (n = 1) (6 reads)	Reduce overstory canopy closure/basal area. Reduce shrub cover. Increase % cover of C ⁴ grasses	Closure slightly reduced and poles reduced significantly. Shrub cover increased from 40 to 60%. Grass cover remains stable.	Yes. No. No.	2009 ('98-'08)
Kintzele Ditch (Oak Forest) (n = 4) (6 reads)	Reduce overstory canopy closure/basal area. Reduce understory stem density. Reduce woody fuels	Closure unchanged, BA reduced in one size class due to wind throw. Stems less than 2' reduced. Overall woody cover increased after windthrow. 1-100 hour fuels: ~100% increase. 1000 hour fuels: ~100% increase.	No No No	2009 ('99-'08)

Burn or Monitoring Unit	Management Objective (Restoration)	Monitoring Results (90% confidence interval)	Objective Achieved?	Year Analysis Completed (Range of data years included in analysis)
Mnoké Pr. (Tallgrass pr.) (n = 20)	Increase in cover of seeded species.	ANOVA comparison test (p = 0.7 and 0.9) (n: 3 sets of 5 plots).	No	2010 ('04-'10)
	Increase cover of native forbs & grasses.	Native forb: +15% (p = 0.0007) Native grass: +5% (p = 0.05)	Yes	2005 ('95-'05)
	Decrease cover of non-native forbs & grasses.	Non-native forb: -43% (p = 0.01) Non-native grass: -12% (p = 0.0001)	Yes	2006 ('95-'05)
	Increase floristic quality index.	Pre (1995) = 40; 2006 = 52.	Yes	2006 ('95-'05)
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 ('05-'06)
	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 ('98-'05)

*Results are greatly simplified for this report.

B. Fire ecologist accomplishments and areas of focus

Table 4. Fire Ecologist 2012 Accomplishments/Focus Areas

See Northern Great Lakes Area report

C. Fire effects crew accomplishments and areas of focus

Table 5. Fire Effects Crew 2012 Accomplishments/Focus Areas

Category	Percent Time	Notes
FMH plots	21%	FHM plot sampling.
Other-USGS plots	2%	Howes Prairie and Lupine Lane sampling
Other- NPS plots	20%	Project Level sampling
CUVA plots	6%	Cuyahoga Valley National Park sampling
LIBO plots	7%	Lincoln Boyhood sampling
VOYA plots	5%	Assist with plot sampling at Voyageurs
Wildfire assignment	<1%	4 th July Step up.
Prescribed fire projects	3.5%	Prescribed Burns: FEMO on 5 units, FFII on 2 units: FEMO on CUVA, IM, WDS, BD, TD1; FFII - WDS
Travel out-of-park for plot or project work	5%	Voyageurs in June, CUVA in May and in September and LIBO in August.
Data entry	7.5%	In addition to this year's sampling data, we entered data into the LIBO database. Historic LIBO data (USGS) had not been entered previously in FFI.
Data Management	1%	Indirect management of data entry and data storage

Data analysis	1%	Prepared analyses for immediate post burn reports and queried raw data for review of plant Conservatism values.
Supervision/Admin	7%	Leads time as percentage of the total of both the crew's and Lead's hours; Lead's time spent in recruitment, hiring process and selection, supervision, training and performance evaluation of the crew.
Reports	4%	Prescribed fire reports, Immediate Post Burn Assessment Reports, Annual Park report, Annual FE report, NFPRS budget (2%)
Training	5.5%	Safety training, and mandatory NPS training and mandatory seasonal INDU orientation (three days). Includes Lead's physical training, ICS and refresher training for Lead and red carded crew. Botany training and developing training tools for FE staff for INDU, VOYA, LIBO, CUVA.
Miscellaneous	4%	Time troubleshooting computer problems, organization, responding to data or information requests and assisting with office moves, emails etc.

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?
Indiana Dunes	No	2009	11	0
Sleeping Bear Dunes	No	NA	NA	NA
Cuyahoga Valley	No	NA	NA	NA
Lincoln Boyhood	Yes	2003	0	NA

Table 7. Monitoring – 2012

Park	% 2012 Data Entered	% 2012 Data Quality Checked	# Prescribed Fires Monitored*	# Non-fire Fuels Treatments Monitored*	# Wildfires Monitored*	# BAER Treatments Monitored*
Indiana Dunes	100%	100%	21	0	2	0
Cuyahoga Valley	100%	100%	4	0	0	0
Lincoln Boyhood	100%	100%	2	0	0	0
Sleeping Bear Dunes	NA	NA	0	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 2012	# of Annual meeting(s) with Park staff	# of Formal presentations of results	Do you use Minitab?*
Indiana Dunes	7	2	1	No
Lincoln Boyhood	0	0	0	
Cuyahoga Valley	NA	1	0	
Sleeping Bear Dunes	NA	0	0	

* 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
Indiana Dunes	yes	1	0	0	
Lincoln Boyhood	yes	0	0	0	
Sleeping Bear Dunes	yes	0	0	0	
Cuyahoga Valley	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.

PRESCRIBED FIRE AND FIRE EFFECTS MONITORING



The Lead participated in 11 of the 13 prescribed burns as either a FEMO or crewmember. She also supervised three FEMO trainees. As FEMO, the Lead wrote or contributed to the final fire reports. The Lead drafts the fire effects post-burn severity assessment reports which are reviewed by the ecologist.

INDU: Eight units were burned in spring of 2012 via wildfire or prescribed fire. A total of 12 units were burned in the fall

SLBE: Planning is still being finalized for the Platte River Campground burn unit while plans to burn the Burfiend Field unit are on hold. Pile burning occurred in the spring and will continue till the grant is exhausted.

LIBO: The Cemetery Hill unit was again scheduled burn in the fall, along with several newly created units: West, Meadows and North Forty, but no burns were conducted due to uncooperative weather.

CUVA: Three burn units are designated in the park: Borrow Pit, Terra Visa and Coliseum. The southern portion of the Borrow Pit unit was burned last spring. This being the first prescribed burn at the park, it garnered wide attention from the media and local fire departments.

The prescribed fire and the pile burning scheduled for last fall was rescheduled for the spring of 2013, due to funding concerns and the finalization of the Terra Visa burn plan.

FIRE EFFECTS MONITORING 2012

The Fire Effects crew had a busy summer reading plots in our home park, and traveling outside the park to CUVA, LIBO and VOYA.

Program (Monitoring) Training

Once again several successful approaches were continued this year. The Lead continued with starting the crewmembers on the same date for a more efficient training period. Training consisted of reviewing custom and FMH protocols as well as sampling and data entry exercises.

The FFI database instruction notebook continues to be a useful reference for the crew.

Botany Training

For the first year in three, the specialized week-long botany training, focusing on sight identification by vegetative characteristics, was not funded. The lead worked performed the training in-house for the three new seasonal employees.

In December 2012, the Lead received notice that she was awarded an Albright Wirth grant. The grant request for the Botany training was submitted with the support of the FMO and INDU botanist, and assistance from one of the crew. This training was featured in the MWR Fire Ecology Newsletter, December 2011 Volume 3, Number 1 'Indiana Dunes Botany Training: Increasing Skills, Efficiency & Partnerships'. This unique program focuses on herbaceous plant identification using vegetative characteristics. It results in not only higher accuracy but increases efficiency, reducing field time by one to three weeks overall. In addition, this training is open to Resource Management personnel and affords an opportunity to form relationships with other team members in the park.

The Lead initiated an after hour's botany group in 2011, which grew and continued through 2012. Various sites, both in and out of park, are visited allowing participants to see new and interesting areas and learn new plants. Fire effects and wetland crew members were the most consistent participants, but we have had participation from other RM seasonal staff as well. We hope to continue the group helping members "grow" their taxonomical capacity.

Fire Training

One crew member received refresher training and a few days of hands on training with the fire crew. He was able to assist with the fall burns and hopes to assist with the 2013 spring burns.

Staffing

This year's field crew was all new and thus required more time for orientation and training. One seasonal from several years ago filled in late in the season when another left early for school. The lead works hard to retain staff year after year since it greatly reduces training costs and increases efficiency.

Program

The program revisions developed in 2011 continue to help with efficiency and we look forward to the analysis results.

Database cleanup and error checking is an ongoing battle, which will likely never be fully completed. Fortunately, the ecologist and lead have worked out a good system to expedite corrections when errors are found.

The Lead completed maps and prepared them for transfer to the park's new GIS server. Maps for each unit will help new crew members orient themselves and will ultimately increase efficiency. The new park GIS server should be a great help once all the division load their information.

INDU

The joint proposal for Reserved Funds, "Managing fuels and fire in restoring Midwestern Oak Savannas" with USGS plant ecologist, as lead investigator, with the Lead Monitor as NPS co-coordinator was not funded.

Two exciting new projects are scheduled to begin in 2013: a canopy gap enhancement study and LiDAR data acquisition. The gap enhancement study is being initiated at Miller Woods with base line sampling data to be collected next summer. The study proposes to mechanically enlarge current canopy gaps to increase the abundance of certain savannas species.

The Fire Ecologist and the GIS Specialist at the Great Lakes Inventory and Monitoring Network have submitted a proposal for funding LiDAR data acquisition at INDU. It will allow them to isolate and measure canopy gaps as well as the heights of the various canopy strata. This information can then be used to map the gaps and choose appropriate ones to enlarge.

The FMO was working on establishing a meeting to discuss prioritization of burn units and other related issues that need addressing. The ecologist has conducted analyses to be presented at the meeting. The Ecologist hopes to make this an annual meeting where analysis results can be presented and discussed. The meeting has been delayed till later this winter (2013).

Deja vu all over again.

One of the highlights of our 2011 field season was finding Blue Hearts, *Buchnera americana*. Blue Hearts had not been seen in the area since the late 1990s. Plants of the Chicago region say it is "one of our very rarest plants". This past season, two members of the fire effects staff, with several members the local



botany group, took a foray to the same area and discovered two additional locations of Blue Hearts.

LIBO

LIBO database's data was enhanced this season by FE crew entering and quality checking all the old data from USGS database. This data is from sampling that began in the 1980's. Data was entered for those USGS plots which have been absorbed by the Fire Effect program.

Six new plots were established at LIBO in two burn units. The new plots include four former USGS plots and two new installs.

Crew enjoyed the sampling at LIBO, which included finding a smooth green snake!

SLBE

No monitoring activities occurred this year. At this time, the goals for proposed burns only include fuel reduction. Therefore, only pre- and post-burn fuel sampling will be done. Currently, the only planned burns are pile burns.

CUVA

The Lead was the FEMO on the park's first prescribed burn. The lead visited all other burn units with Resource Management staff to be able send photos and to discuss appropriate protocols with the fire ecologist, prior to his visit.

In May, 2012, the Fire Ecologist and the Lead visited CUVA, met with Resource Management staff, and established and sampled plots in two burn units.

The third unit was sampled by the INDU fire crew in September 2012 with brief interaction with RM staff. The CUVA data base was created and all data entered.

The whole process at CUVA was successful and very beneficial. An early site visit to conduct basic assessments helped the Lead and Ecologist plan for a successful visit. With established protocols in hand, requiring only slight modifications on site, sampling was efficient and uniform. All participants clearly understood the prescribed fire goals and the long term RM goals for each site. The Lead felt informed and engaged as it is believed the RM staff did as well.

OTHER PARKS:

Voyageurs

In early June, half the INDU Fire Effects crew visited Voyageurs to assist with sampling of approximately 50 plots.

St. Croix

INDU Fire Effects crew did no sampling this year at St. Croix.



E. 2013 Direction

- Continue to work on communication with INDU resource management staff to define goals and objectives for the burn units. This will help us to refine the data we collect and focus on the most necessary units.
- Establish an annual fire ecology meeting attended by Fire and RM staff.
- Continue to work with INDU RM staff on fire related research projects. We are beginning a project related to Karner Blue butterfly habitat restoration involving mechanical thinning.
- Continue to develop working relationships with CUVA, LIBO and SLBE.
- Continue to evaluate the INDU park fire effects monitoring program to determine priorities in light of budget cuts.
- Use our data to review the current and recommended fire intervals at INDU in preparation of the upcoming FMP revision.

F. Optional Information

To date, FFI has been my friend. There are occasional glitches, but the database works well and the changes have been helpful. However, I would like to be able to do species specific searches to determine all occurrences of a species within the database. (FEAT used to let you do that, it is helpful to find all locations of a sensitive plant or an invasive plant in your plots)

With regard to PDA's, we would be interested in a webinar on the pros and cons of these devices, how to use them, which brands work best, etc.