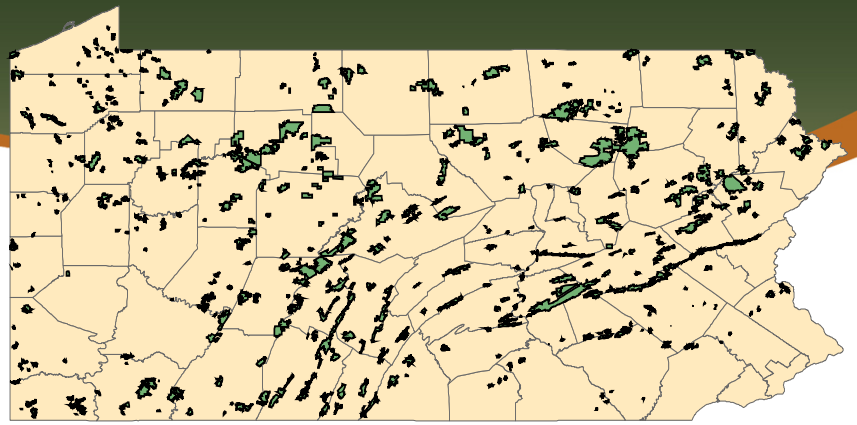
Building capacity to use prescribed fire for wildlife conservation and resilient landscapes

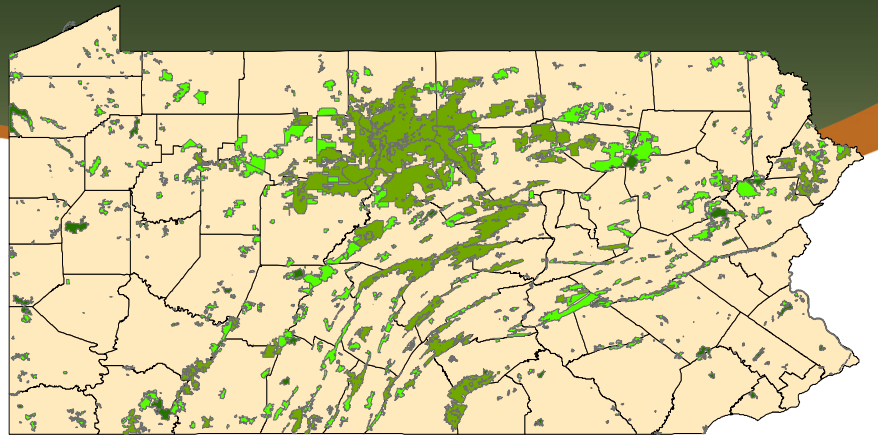
Benjamin C. Jones, Habitat Division Chief
Pennsylvania Game Commission

The Landscape



- 1.5 million acres on over 330 tracts
- …create and maintain public hunting, special preserves or other wildlife management uses.
- Mandate to manage for wildlife conservation and hunting opportunity
- Forest sustainability, commercial timber, recreation

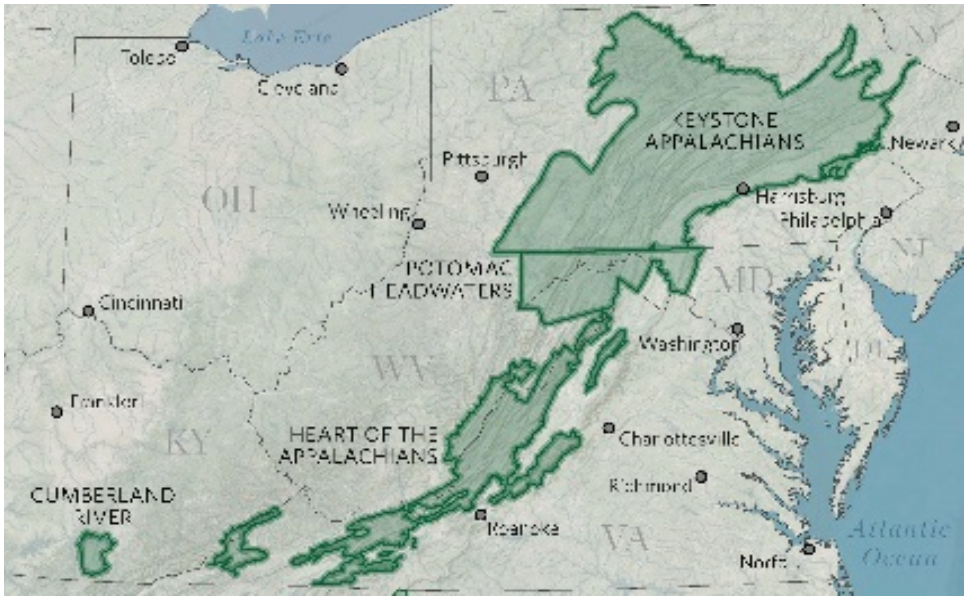
The Landscape



- 2.1 M acres State Forest; 450,000 State Parks; 500,000 Natl Forest; 50,000 Nature Conservancy; 18,000 National Guard Training Center.

- Ecosystem management, timber, wildlife conservation, recreation, clean water, native flora and fauna etc…

- Oak and oak-pine ecosystems; 800,000 acres on PGC alone!

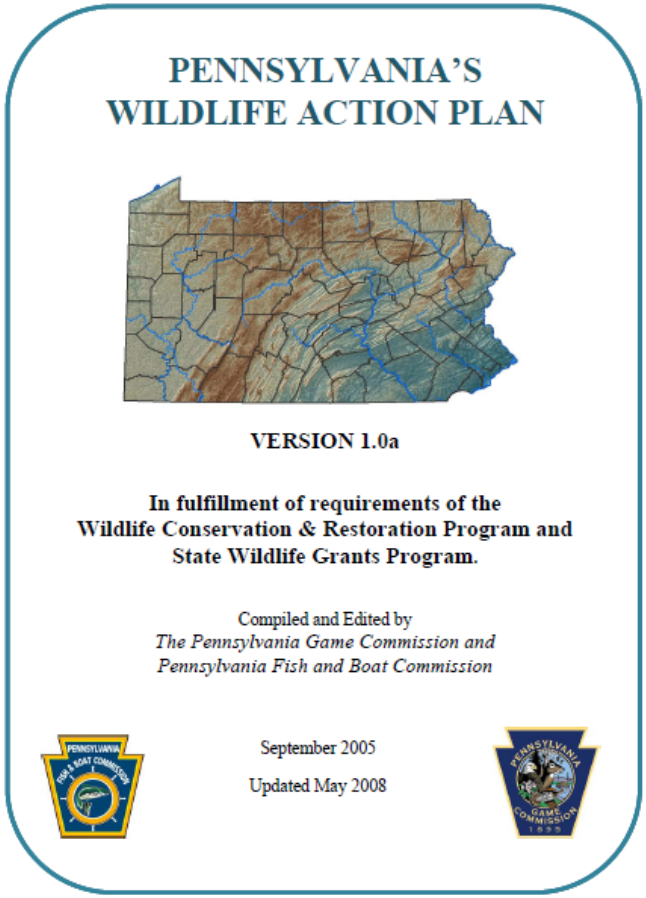

Lake Erie
Toledo
Cleveland
PA
KEYSTONE APPALACHIANS
Pittsburgh
OH
Wheeling
POTOMAC HEADWATERS
Cincinnati
WV
MD
Washington
KY
HEART OF THE APPALACHIANS
Charlottesville
CUMBERLAND RIVER
Roanoke
VA
Atlantic Ocean

Goals

- Restore/maintain oak and oak-pine ecosystems
  (northern red oak to scruboak pitch pine)
- Restore/maintain early successional habitats
- Over 800,00 ac on PGC land alone



Justification


PENNSYLVANIA'S
WILDLIFE ACTION PLAN

VERSION 1.0a

In fulfillment of requirements of the
Wildlife Conservation & Restoration Program and
State Wildlife Grants Program.

Compiled and Edited by
The Pennsylvania Game Commission and
Pennsylvania Fish and Boat Commission

September 2005

Updated May 2008

"Sensitive birds and mammals"

Cited fire exclusion as a "major threat" to key habitats

Management Guidelines for Barrens Communities in Pennsylvania

The Nature Conservancy
Protecting nature. Preserving life.™

Funding was provided by the U.S. Fish and Wildlife Service through State Wildlife Grants program grant T-36-P, administered through the Pennsylvania Game Commission.

Planning Team

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Anthony Davis	Ecologist, Western Pennsylvania Conservancy
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Ralph Harnishfeger	Professor of Biology, Lock Haven University of Pennsylvania
Nels Johnson	Director of Conservation Programs, The Nature Conservancy
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Betsy Leppo	Entomologist, Western Pennsylvania Conservancy
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Dale Schweitzer	Entomologist, The Nature Conservancy and NatureServe

Volunteers:

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Nick Bolgiano	State College Bird Club and Pennsylvania's Special Area Program
Douglas Gross	Endangered Birds Specialist, Pennsylvania Game Commission
Carl S. Keener, Ph.D.	Professor Emeritus of Biology, The Pennsylvania State University
Michael Knoop	Special Projects Coordinator, Western Pennsylvania Conservancy
Katie Ombalski	Conservation Biologist, ClearWater Conservancy
Bill Palmer	Wildlife Biologist, Pennsylvania Game Commission
Brad Ross	Biological Consultant for ClearWater Conservancy
James F. Thorne, Ph.D	Senior Director of Science and Coordinator, Natural Lands Trust, Inc.
Chris Tracey	Ecologist, Pennsylvania Natural Heritage Program
Wayne Tyndall	State Restoration Ecologist, Maryland Natural Heritage Program

USDA United States Department of Agriculture

The Fire–Oak Literature of Eastern North America: Synthesis and Guidelines

Patrick H. Brose
Daniel C. Dey
Thomas A. Waldrop

Forest Service
Northern Research Station
General Technical Report NRS-135
July 2014

Figure 58.—Oak savannas are characterized by widely-spaced trees and a diverse herbaceous community of forbs and grasses. In eastern North America, oak savannas only occupy a small fraction of their historic range. Photo by Daniel Dey, U.S. Forest Service.

Reconstructing historical fire regimes across Pennsylvania

Investigators:

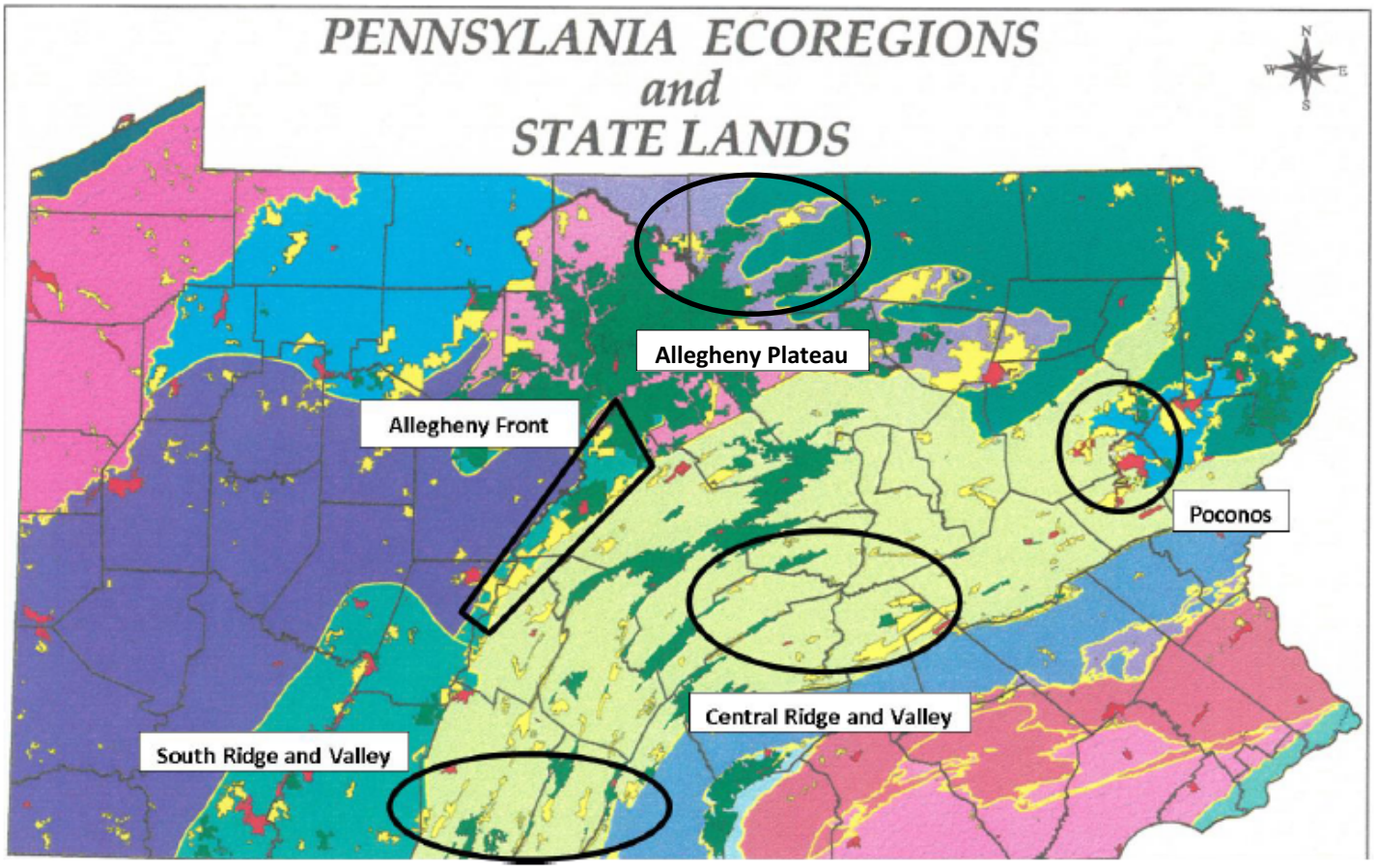
University of Missouri

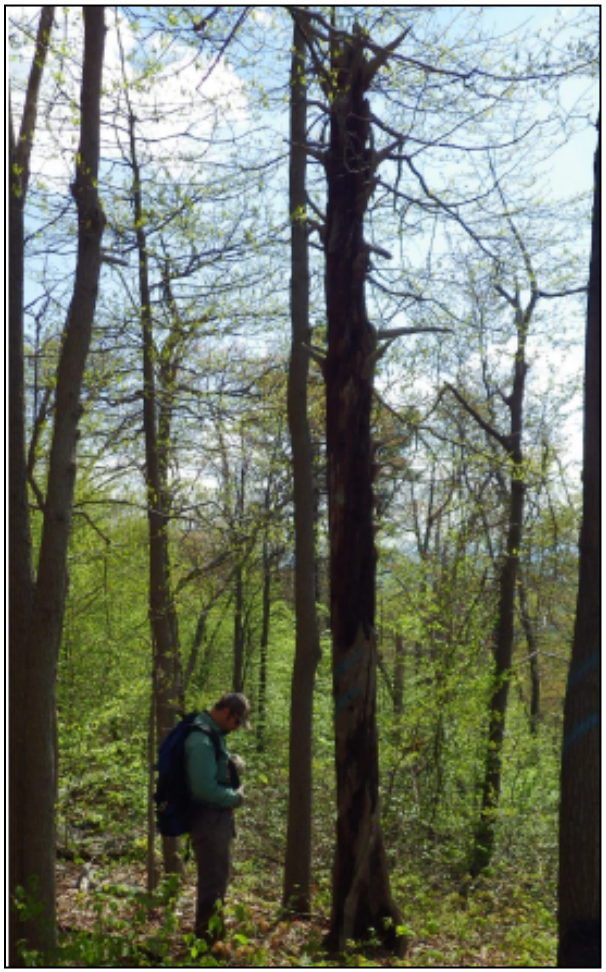
Michael C. Stambaugh, Joseph M. Marschall, Richard P. Guyette

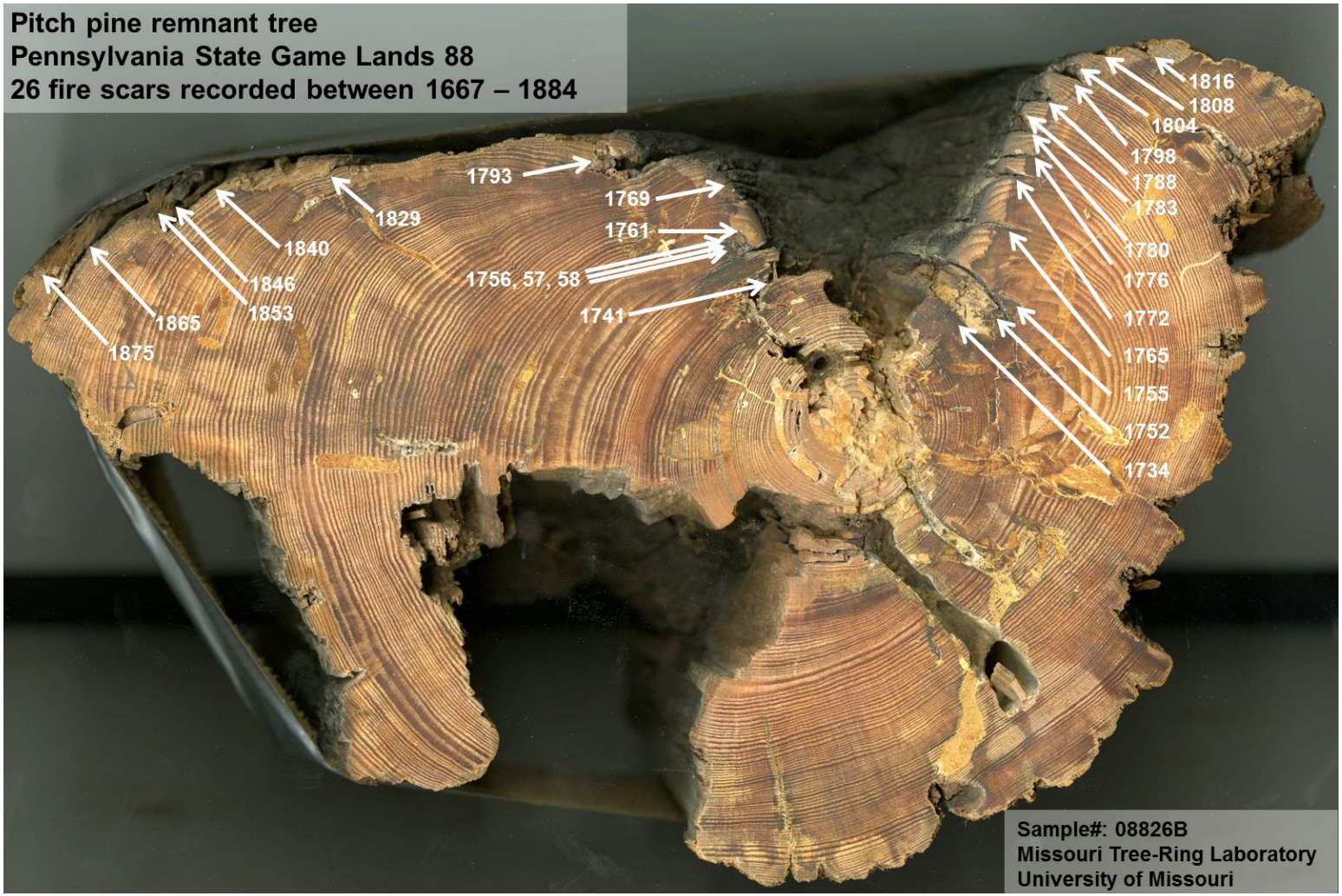
Cooperators:

Pennsylvania Game Commission, Benjamin Jones

U.S. Forest Service, Patrick H. Brose, Daniel C. Dey


PENNSYLANIA ECOREGIONS
and
STATE LANDS
Allegheny Plateau
Allegheny Front
Poconos
Central Ridge and Valley
South Ridge and Valley




Pitch pine remnant tree
Pennsylvania State Game Lands 88
26 fire scars recorded between 1667 – 1884
1816
1808
1804
1798
1788
1783
1780
1776
1772
1765
1755
1752
1734
1793
1769
1761
1756, 57, 58
1741
1829
1840
1846
1853
1865
1875
Sample#: 08826B
Missouri Tree-Ring Laboratory
University of Missouri

Numerous hurdles to overcome

- State law that held burn managers criminally and civilly liable.
- Culture of fire suppression.
- Lack of prescribed fire training, experience.
- But there were a few torch bearers.

Formed the Pennsylvania Prescribed Fire Council

PA Game Commission, The Nature Conservancy, Fort Indiantown Gap NGTC, Department of Conservation & Natural Resources, National Park Service, U.S. Forest Service, Natural Lands Trust, U.S. Fish & Wildlife Service, Quality Deer Management Association, National Wild Turkey Federation, Pheasants Forever, Natural Resources Conservation Service, Penn State, PA Forestry Association.

PENNSYLVANIA
PRESCRIBED FIRE COUNCIL

PRINTER'S NO. 282

THE GENERAL ASSEMBLY OF PENNSYLVANIA

HOUSE BILL

No. 262 Session of 2009

INTRODUCED BY HALUSKA, BARRAR, BENNINGHOFF, BEYER, CARROLL, FLECK, GODSHALL, GOODMAN, HUTCHINSON, LEVDANSKY, READSHAW, ROHRER, SIPTROTH, STABACK, BRENNAN AND WALKO, FEBRUARY 5, 2009

REFERRED TO COMMITTEE ON ENVIRONMENTAL RESOURCES AND ENERGY, FEBRUARY 5, 2009

AN ACT

Regulating prescribed burning practices; providing for the powers and duties of the State Forester and the Department of Conservation and Natural Resources; and establishing certain immunities.

The General Assembly of the Commonwealth of Pennsylvania hereby enacts as follows:

Section 1. Short title.

This act shall be known and may be cited as the Prescribed Burning Practices Act.

Section 2. Legislative declaration and findings.

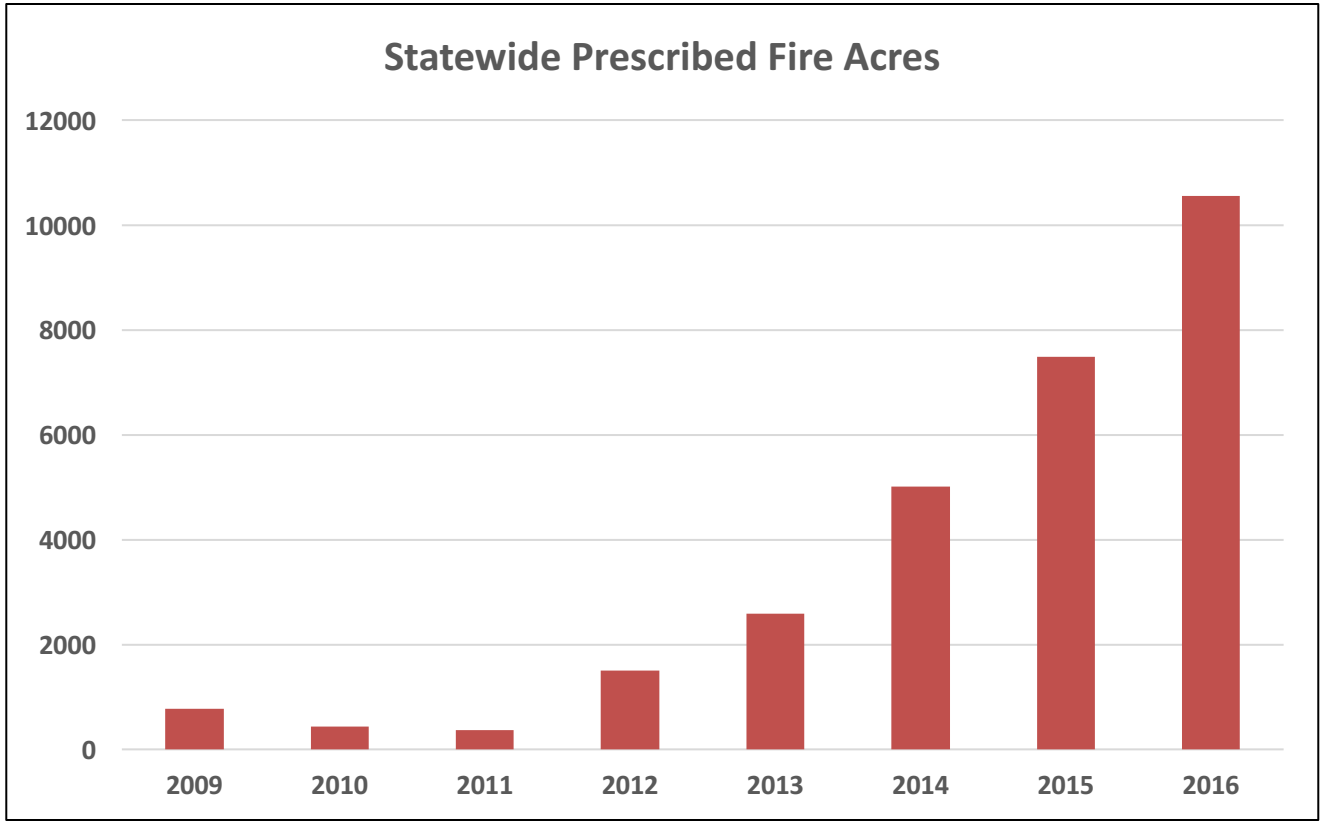
- Removed criminal and civil liability for those lawfully engage in prescribed fire.

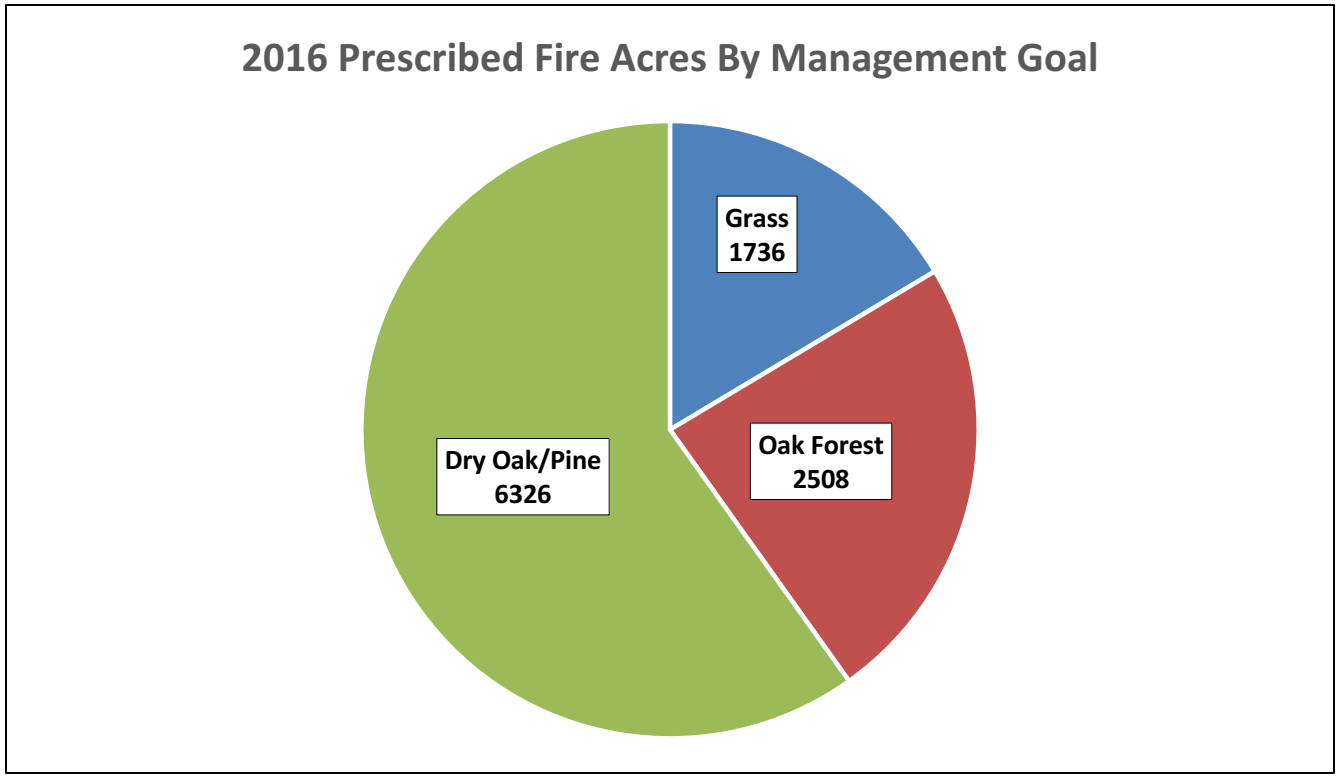
- Set standards for using prescribed fire.
  - -Burn plan requirements
  - -Review process
  - -Burn Boss credentials
  - -Training standards

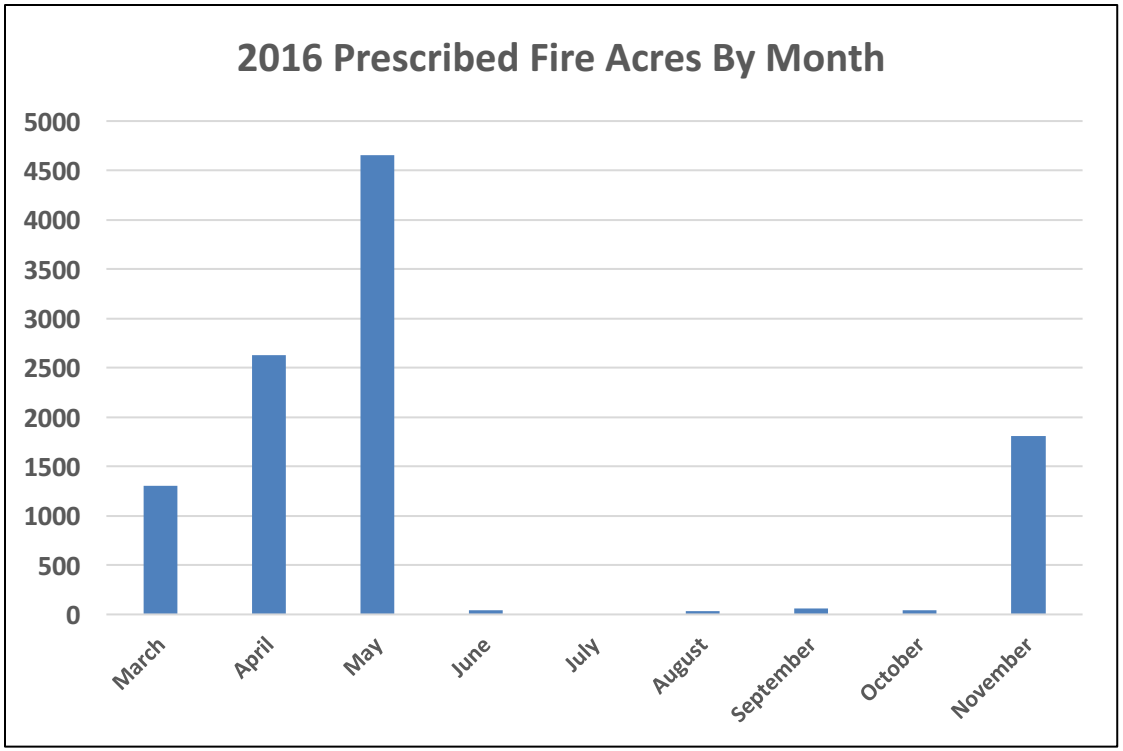
- Prescribed Fire Council remains relevant.
- Reviews proposed changes to the state standards.
- Networking hub for fire managers.
- Training clearinghouse, and sponsors courses.
- Public outreach and education primary objectives.

PENNSYLVANIA
PRESCRIBED FIRE COUNCIL

PA Game Commission Prescribed Burning since 2009




2016 Prescribed Fire Acres By Management Goal
Grass
1736
Oak Forest
2508
Dry Oak/Pine
6326


2016 Prescribed Fire Acres By Month
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
March
April
May
June
July
August
September
October
November

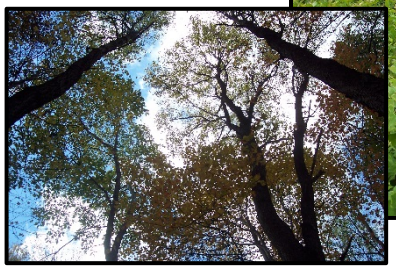
Monitoring

- Balance of time spent vs information gained
- Goals of monitoring are to improve our:
  - -adaptive management process
  - -ability to make informed management decisions
  - -efficiency in habitat restoration and management
  - -shared knowledge base as habitat ecologists and fire managers (i.e., FLN)
- Goals of monitoring are NOT to:
  - -get manuscripts accepted in peer-reviewed journals
  - -determine if fire really works in oak ecosystems

Metrics

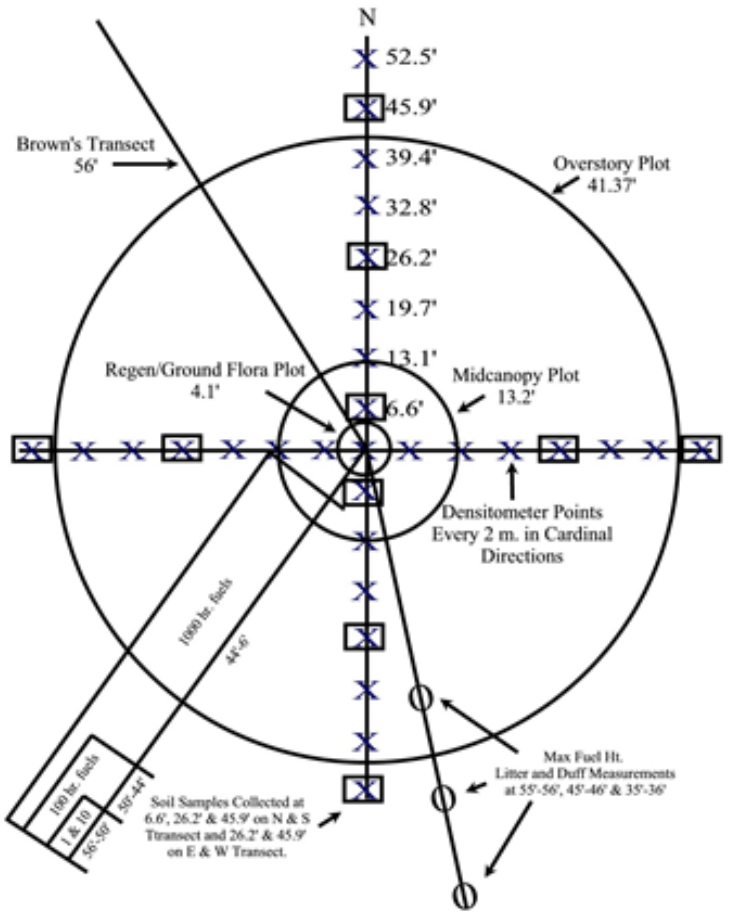
- Regeneration counts
- Shrub-herbaceous ratio
- Canopy condition
- Wildlife response
- Fuel loading
- Public response/perception
- Herbaceous cover, tree mortality, water quality, etc.



Monitoring

- CFI style permanent veg plots
- Improved mobile veg plots
- SILVAH plots



Monitoring

- CFI style permanent veg plots
- Improved mobile veg plots
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- Photo monitoring

Monitoring

- CFI style permanent veg plots
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- Canopy monitoring

Monitoring

- CFI style permanent veg plots
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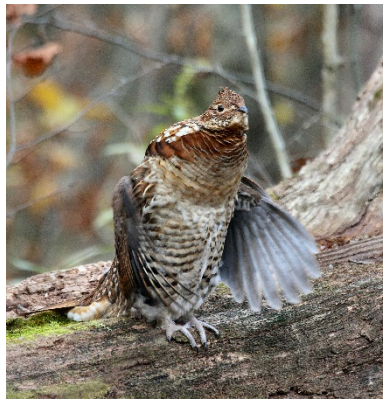
- Photo monitoring
- Canopy monitoring
- Wildlife monitoring



Monitoring

- CFI style permanent veg plots
- Improved mobile veg plots
- SILVAH plots
- Photo monitoring
- Canopy monitoring
- Wildlife monitoring
- Pre and post burn walk through

Rx Fire Follow-up 10-25-2016

SGL 040
Buena Vista Rx Fire

195 acres burned on 5/7/14

It is the end of the 3rd growing season since the prescribed fire. There are still on-going fire effects. Stand analysis was implemented in June of 2013 using SilvAH in order to maintain a pre-fire record of stand conditions. I planned to re-analyze the stand in June of 2017 (the third June following the fire) but because of numerous inquiries for the results of this particular burn, I bumped up the analysis. Please recognize that SilvAH is agricultural software designed to maximize timber volume and value, not to document habitat characteristics and change. FIA has permanent fixed plots in this stand. Their data should be collected, analyzed and shared as it will provide a real documentation of change. That being said there is useful information that can be extracted from SilvAH.

Hayscented fern continues to expand. Pre-analysis showed 5% of the plots had fern beyond the interference threshold. 40% of the plots post-fire had fern interference. As anticipated, hayscented fern has expanded in this unit.

There is a dramatic reduction in tall woody interference. Pre-fire 93% of the plots had beech brush in the 6'-15' size class. Post-fire only 20% had living beech brush in that lowest crown class. There was an even greater difference in low woody interference. Pre-fire 91% of the plots had interfering levels of beech brush under 6 feet. Currently only 10% of the plots had beech brush <6 feet tall at interfering levels. Every beech stem <2" DBH that was topkilled during the burn has resprouted, but these stump sprouts are still 1-1.5' tall 3 seasons post burn. There has been no additional emergence of root suckers. This prescribed fire was extremely successful in killing the low beech brush interference and has created a longer window of opportunity to get desirable regeneration than I had anticipated. Based on the growth and expansion of beech brush, I would estimate that on this site there is a 10-year window of reduced low shade. A second prescribed fire around year five could potentially eliminate low beech interference. Stayed tuned.

Pre-Burn, closed canopy, red maple with a few oak, decadent blueberry and scrub oak.

Post-Burn one growing season, canopy (mostly maple) mortality, scruboak sprouting, blueberry production exponential.

Sunlight