National Fire Plan

Fire Issues Unique to the Northeastern Area of the United States

The New Jersey Forest Service has a critical need to refine the national Fire Danger Rating System so that it is specific for the Pine Barrens. We will address this fire research need in the Northeastern area as part of the National Fire Plan.

> *"It can rain in the morning and I can light it on fire in the afternoon."*
> David Harrison, former NJ State Fire Supervisor
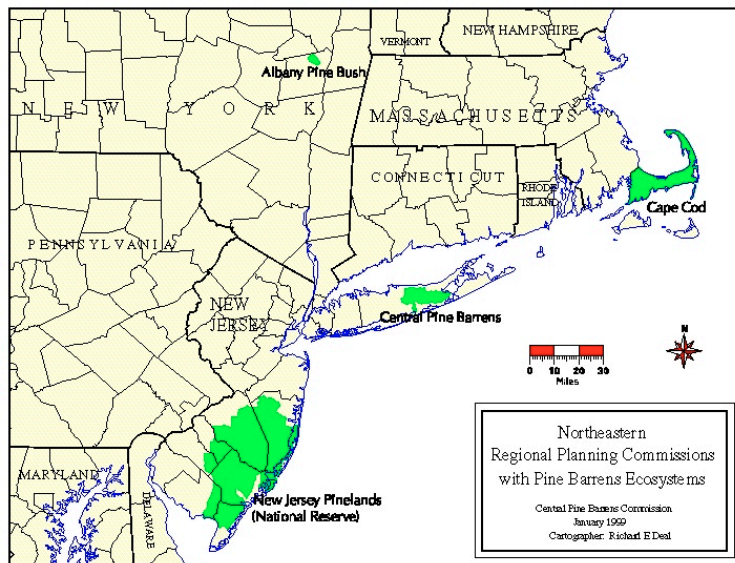
New Jersey Pine Barrens:

- 1.1 million acres in size
- Occupies 22% of New Jersey
- It is the largest body of open space on the Mid-Atlantic seaboard between Richmond and Boston.
- It is underlain by aquifers containing 17 trillion gallons of some of the purest water in the land

Photo By Chris Polk

Pine Barrens: Fire Characteristics

- Fire cycle vegetation, volatile fuel
- Porous soil- Low water holding capacity
- Low decomposition
- Infertile system
- Coarse woody debris and litter buildup
- Low fuel moisture

Northeastern Regional Planning Commissions with Pine Barrens Ecosystems

Central Pine Barrens Commission
January 1999
Cartographer: Richard E Deal

Fire Cycle Types & Fire Return Intervals Which Maintain Them

Dwarf pine plains	5-15 yrs
Pitch pine-scrub oak barrens	15-25 yrs
Pine-oak woodlands	20-30 yrs
Pine-ak forest	30-60 yrs
Oak-pine forest	60-100 yrs
Oak or oak hickory forest (At edges of the Pine Barrens)	100-200 yrs

Extensive Fires in the Pine Barrens

- 1963 Pinelands burned *190,000 acres*
- 1930 Eight large wildfires *172,000 acres*
- 1923 Approximates *1,000,000 acres*
- 1915 Approximately *102,000 acres*
- 1894 One fire, *125,000 acres*
- 1885 *127,500 acres* burned
- 1870 *50,000 acres* in Bass River Twp.
- 1755 One fire, *30 miles long* (Barnegat to Little Egg Harbor)

19th Century: Not Unusual for *1,000,000 acres* to burn a year

21st Century: ??????? Acres

Fire History

- 1963 Pinelands fire burned over 190,000 acres
- In 1997, 1550 fire incidents, 4950 acres burned
- 1% by lightning, 99% is by people
- Prescribed burn 20,000 acres annually
- Wildland-Urban Interface fires are now the fastest growing source of property loss.

Communities Near Federal Lands at Risk from Fire in the Wildland/Urban Interface

High Risk Communities
Water
Forest
Non-Forest

Proposed Project Description

Refine National Fire Danger Rating System for the New Jersey Pine Barrens

- Use towers & ground meteorology stations, with control sites & prescribed burns
- Measure microclimate & % moisture content of fuel: live & dead
- Develop CO_2, H_2O, energy budget Baselines & flux prior to burn & monitor after prescribed burn
- Estimate standing biomass coars woody debris to determine fuel loading
- Develop & apply this methodology to similar regional fuel types to improve predictions for the National Fire Danger Rating System

Proposed Research Description

Land managers, fire officers, and research scientists in New Jersey, the Northeast & North Central will utilize their strengths to address these issues:

- Regional climate & fire danger modeling
- Forest management & fire impacts on carbon budget & emissions
- GIS modeling of forest productivity, fuel loading, water yield, air pollution, & climate change
- Carbon, water, energy flux measurements at landscape levels
- Wildland-Urban interface fires & land use

Partners

- Maris Gabliks   NJ DEP Fire Supervisor
- Warren Heilman   NCRS fire meterologist
- David Hollinger   NERS carbon flux scientist
- David Nowak   NERS urban forester
- Ruters University Silas Little Expt. Forest
- Northern Global Change Program
- Northeastern Research Station, Northern Area
- North Central Research Station

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