

Plant Community Ecology of the New Jersey Pinelands: Dynamics and management

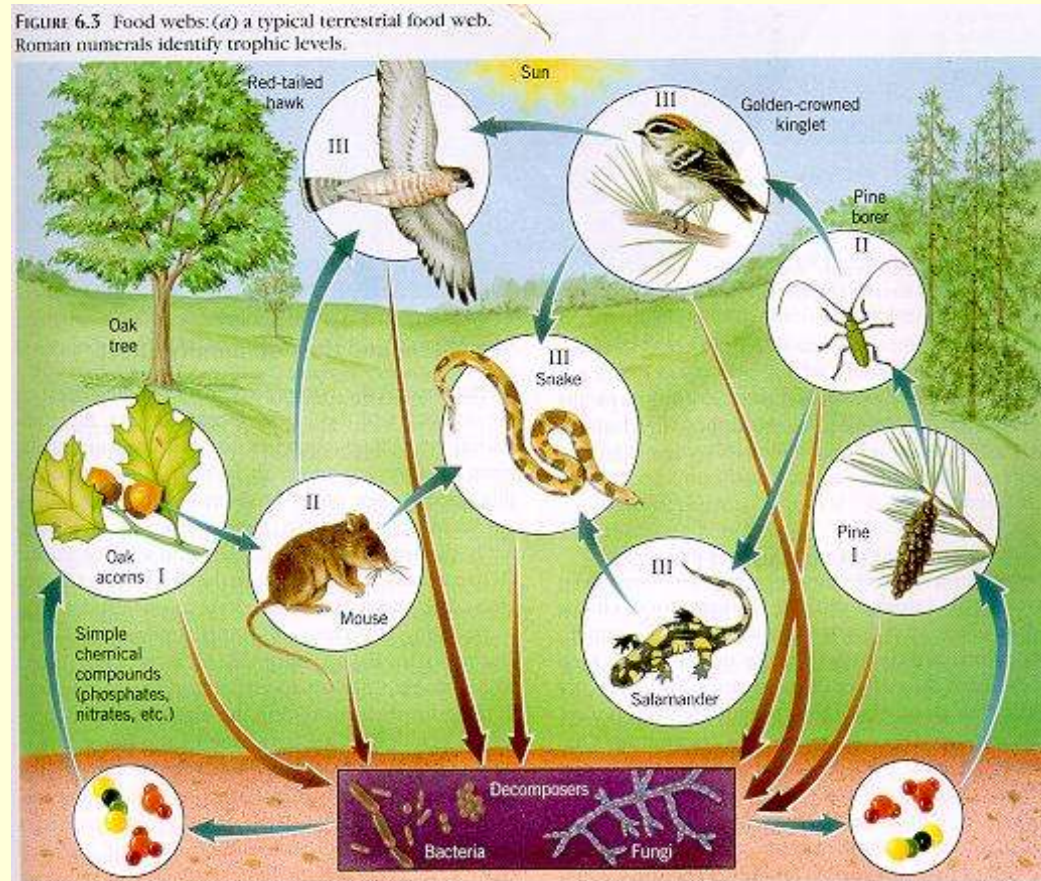
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Community

A group of interacting species that occur together at the same place and time



Community classification in the Pine Barrens

- Witmer Stone (1911)
- John Harshberger (1916)
- Jack McCormick (1967)
- Breden et al. (2001)
- PPA (Ferren and Juelg, draft 2008)

Pinus rigida—*Quercus marilandica* / *Corema conradii*

Shrubland = Pitch Pine / Blackjack Oak / Broom

Crowberry Shrubland. (Also called the New Jersey Pine

Plains or Dwarf Forest). **G2 S1**

Cladium mariscoides—*Danthonia sericea*—*Lophiola*

aurea Herbaceous Vegetation = Twig-rush—Silky

Oatgrass—Golden Crest Herbaceous Vegetation. Also

called a Pine Barrens Savanna. **G2 S1S2**





Challenges to classification

- Broad classes ignore variation
- Narrow classes preclude generality
 - No two sites are identical

Variation is ubiquitous, it is up the user (scientists, managers, regulatory community) to decide how to classify it

Protection of communities

- Protects component populations
- Protects interaction networks
- Protects potential

Succession

- Change in species composition through time
- The process of the recovery of vegetation after a disturbance

Disturbance

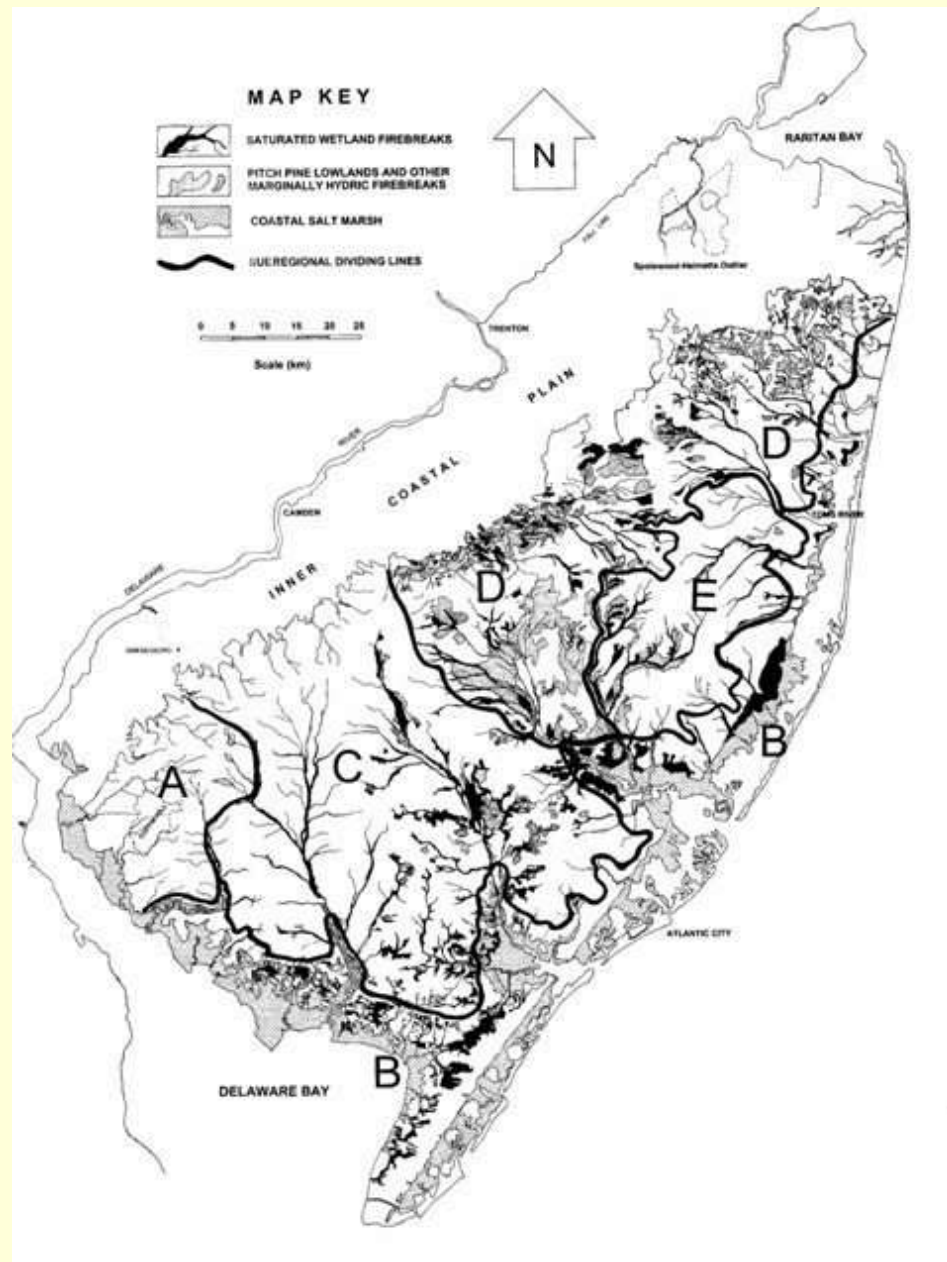
An event that destroys biomass

- Fire
- Windstorm
- Insect outbreak
- Human development

Disturbance regimes

Patterns in the frequency, intensity, and extent of a disturbance

pine plains > pine-oak woods > cedar swamps



History

- Expansion and contraction with changing sea level through Cretaceous and Tertiary (150 - 2 mya)
- Changes with glacial advance and retreat (last 2 million years)
- Pollen records for last 10,000 years

Recent history

- European colonization - 1600s
- Development of industry - 1700s, 1800s
- Expansion of built infrastructure and agriculture - 1900s to present
- Protection and recovery - mid-1900s to present

History, succession, and communities

- All ecology (and management) is influenced by history
- Landscapes are dynamic
- Community classification can be applied to any point on a successional trajectory
- At a community-landscape level, we are managing succession

Peripheral or disjunct species

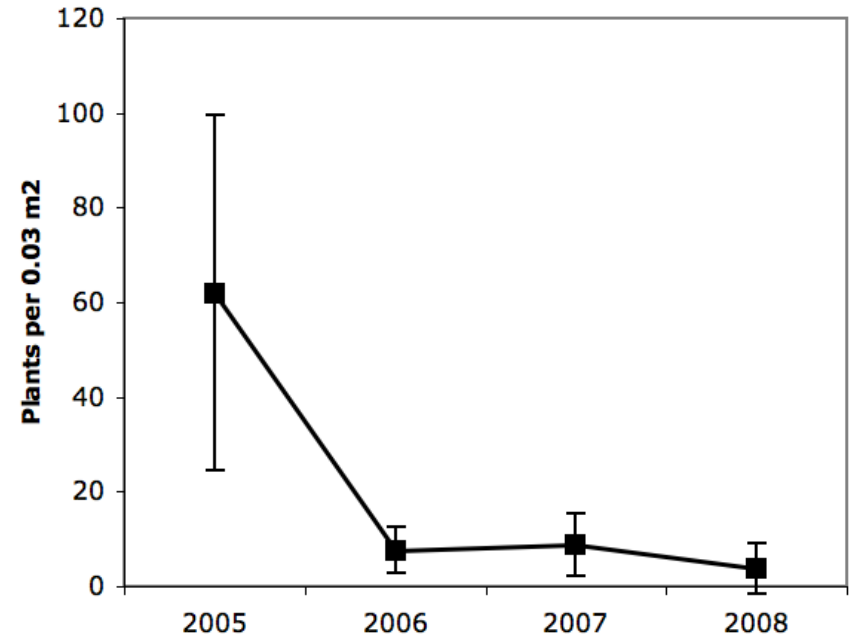


Rhynchospora microcephala



Stylisma pickeringii

Rhynchospora knieskernii



Palmer and Bien, unpublished

Disturbance vs. stress

Disturbance: An event that destroys biomass

- Fire
- Windstorm
- Insect outbreak
- Human development

Stress: A factor that affects production of biomass

- Nutrient subsidy
- Groundwater depletion
- Pollution