

Outline

- Silviculture Defined
- Silvicultural Methods
- Effect on Amphibians: Amph Characteristics
- Mechanisms for population decline



<http://www.ecopointing.com/biological-forest-management/>

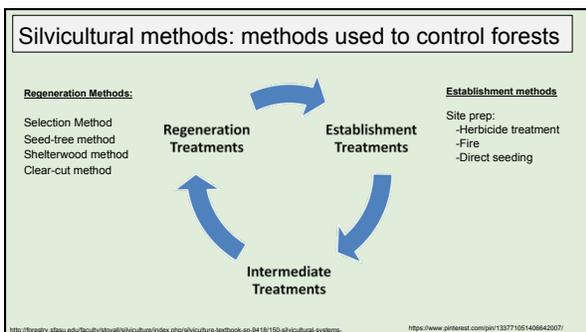


Silviculture

“Silviculture is the art and science of controlling the establishment, growth, composition, health, and quality of forests and woodlands to meet the diverse needs and values of landowners and society on a sustainable basis.” (USDA)



https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd0413732.pdf
https://www.google.com/search?q=silviculture&esp=2&site=webp&source=im&isb=isch&sa=X&sq=2&ved=0aLUKEwStM3pTAHUCLSYwHob8pQ2_AUBygC&oeq=1366&th=889#img=2&Kms=1&hl=en&as_srl=1





<u>Amphibian Characteristics:</u>	<u>Amphibians Require:</u>
<ul style="list-style-type: none"> • Complex life cycle • Small Home Ranges • Permeable Skin • Ectothermic • In Decline <p>Amphibian</p> <p>http://www.illinois.edu/faculty/steve/silviculture/index.php/silviculture-textbook-04-19-155-silvicultural-systems-146-8620/ http://www.illinois.edu/faculty/steve/silviculture/index.php/silviculture-textbook-04-19-155-silvicultural-systems-146-8620/</p>	<ul style="list-style-type: none"> • Sometimes aquatic & terrestrial habitat • Apt temperature and humidity • Juxtaposition and edge • Sufficient leaf litter & vegetation in terrestrial and breeding areas • Myriad of quality of coarse woody debris • Limited disturbance

Effect on Amphibians: Mechanisms for Population Decline

Prescribed Fire

Habitat Spatial Loss and Quality Degradation leads to:

Loss of cover (ground and canopy) → Increased detection by predators + susceptibility to desiccation + erosion + increased water temperature

Erosion → Sedimentation → Hydrology changes → ash and sediment in interstitial spaces + loss of amphibian habitat

“The spatial distribution of amphibian habitat in a watershed may influence the resistance and resilience of a population to [fire] disturbance”
-- Pilliod, David (2003)

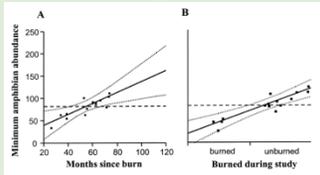
Forest management that reduces canopy cover adversely affects salamanders, while retaining full canopy cover has a positive effect --
Mehner, Charles E. (2010)



Prescribed fire: Case study

Shurbon, Jamie M. (2003) “Effects of Prescribed Burning on Amphibian Diversity in a southeastern U.S. National Forest”

- Amphibian species richness increased linearly with time since the last fire, and anuran abundance was lowest at sites burned during the study
- There were negative immediate and short-term effects on abundance and diversity
- Findings suggest that extensive and frequent prescribed burns are not beneficial to all members of fire-adapted southeastern pine communities.



Effect on Amphibians: Mechanisms for Population Decline

Fertilizers, Herbicides & Pesticides

Water Pollution & Toxic Environment

Fertilizers → Increase habitat for parasites → Increased contact → Amphibian deformities

Herbicides → Increased susceptibility to fungal infection → Deformities or Death

