Plenary: How Resilient Are New England Forests After Biomass Harvesting?

**Resilient** (Merriam-Webster):
- able to become strong, healthy, or successful again after something bad happens
- able to return to an original shape after being pulled, stretched, pressed, bent, etc.
"Health is the capacity of the land for self-renewal. Conservation is our effort to understand and preserve this capacity" (Leopold 1949)
Resilient - the ability to bounce back and thrive after change

The Panel:
Operational & Economic Aspects of Biomass Harvesting- Jeff Benjamin, University of Maine
Site & Stand Productivity- Russ Briggs, SUNY-ESF
Effects on Water Quality & Quantity- Mark Green, Plymouth State University
Effects on Fish & Wildlife Habitats- Keith Nislow, US Forest Service
Purpose of the panel:

This panel seeks to bring the latest science to practitioners on the effects of biomass harvesting and also provide a forum to encourage ideas on where we need more research on these topics.

Biomass harvesting:

“harvesting wood products (usually) from in-woods chipping of all or some portion of trees including limbs, tops, and unmerchantable stems, usually for energy production.”

The Dictionary of Forestry - SAF
Resources-Resilience-Renewal-Restoration
94th Annual Winter Meeting, New England
Society of American Foresters
March 25-27, 2014
North East State Foresters Association review of biomass harvesting guidelines

www.nefainfo.org
Additional States with Biomass Harvesting Guidelines since the NEFA review:

- Kentucky
- South Carolina
- Maryland
- (Mississippi is working on one)

Key learnings from NEFA review:

- **Peer reviewed scientific research** forms the basis of the biomass harvesting guidelines that have been published to date, but only to a point

- Science identifies important effect areas but **no sure-bet metrics** to guide field harvesting activities
Key learnings from NEFA review (cont.):

1. **Woody debris** - many recommendations about leaving both large and small sized harvested woody biomass on the site during and after the harvest.

- None of the research quantifies the minimum amount that is necessary to assure that invertebrate populations and their habitat are maintained.

*Is this enough?*
This?

Or this?
Key learnings from NEFA review (cont.):

2. **Soil nutrients** – Recommendations to leave biomass material on the site in order to assure that soil nutrients are replenished over time, but no research to date definitively confirms the amount of material that must be left to avoid the degradation of soil nutrients.

- The metric of leaving “a third” of the harvested tops and branches is a common recommendation, but there is no evidence supporting whether this amount is effective for protecting soil fertility every time.

Key learnings from NEFA review (cont.):

- **Harvest intensities** - there is virtually no discussion in any of the guidelines on how different intensities of harvest removals, cutting cycles, and products removed, among other factors, should influence the targets for retained tops, coarse woody debris, fine woody debris, etc.
Key learnings from NEFA review (cont.):

Despite lack of scientific certainty on what these guidelines recommend, there is consistency in them about the following issues:

- The most central concern with biomass harvesting is the potential loss of soil nutrients needed for plant growth.
- Extra care in harvesting must be taken when sensitive or low nutrient soils are present.
- Harvesting should not result in the removal of soil, roots or stumps on harvested areas.

- Coarse and fine woody debris should be maintained on the site during and after biomass harvesting to assure soil nutrients are maintained and to provide habitat for invertebrates.
- When harvesting using whole tree harvesting equipment, leave at least 1/3 of the biomass portion of the harvest on the site.
- To maintain wildlife habitat and structural diversity, assure that standing live trees and snags, as well as coarse and fine woody debris remain on the site.
North East State Foresters Association

www.nefainfo.org

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