

Wisconsin Forestlands Woody Biomass Harvesting Guidelines First Draft

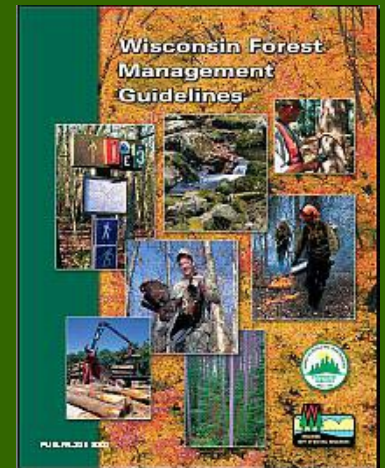


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Wisconsin Forestlands Woody Biomass Harvesting Guidelines

- Sustainable forest management
- Generally accepted forestry practices
- Issues of concern – potential impacts
 - Biodiversity (includes wildlife)
 - Soil productivity
 - Water quality
- What's different
 - Increased removal of woody materials from the site
 - ↪ Whole tree harvesting (tops/branches)
 - ↪ Small diameter trees
 - ↪ Shrubs



Wisconsin Forestlands Woody Biomass Harvesting Guidelines

Documents

- Scoping Document - Finalized
- ❖ **White Paper with Guidelines and Rationale**
– 1st Draft (in technical review)
- Guidelines – To be developed



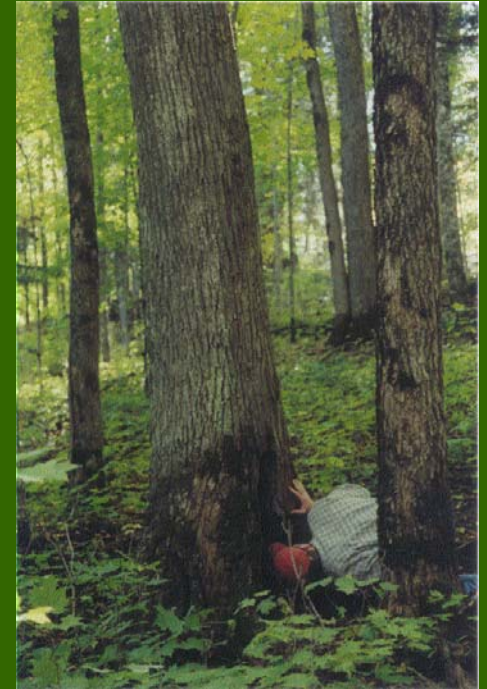
Proposed Biomass Harvesting Guidelines and Rationale Biodiversity Considerations



Biodiversity (including wildlife) Guidelines

Why? What are the concerns?

- Potential reduction or loss of representation of:
 - Species
 - Types of communities, habitats, and ecosystems
- Forest ecosystem sustainability
 - Reduction of ecological complexity
 - Altered processes and functions



General Guidelines for the Conservation of Biodiversity Biomass Harvest Sites

- **Conserve species, communities, and habitats**
 - Maintain habitat, shelter, and food
 - Consider organism responses to disturbances
 - Retain legacies – composition and structure
- **Maintain ecological complexity and processes**



1A. Reminder – Follow Silviculture Hndbk. Recommendations for Tree and Snag Retention in Managed Stands



Even-aged Rotations

- **Retain as many snags as possible**
- **Retain reserve trees and patches, at 5-15% crown cover or stand area, including large vigorous trees, mast trees, and cavity trees**

Considerations – Reserve Tree Retention

- **Reserve trees and patches are not cut during stand rotation.**
Harvesting may occur in the future or may be foregone to achieve other benefits.
- **Additional consideration for biomass harvests:**
consider 10-15% retention to compensate for increased removals;
include reserve patches 0.1-2.0 acres

Even-aged Intermediate Treatments

- Retain as many snags as possible
- Retain ≥ 3 , preferable large, cavity trees per acre
- Retain ≥ 3 , preferable large, mast trees per acre
- If previously established, manage reserve trees and patches. Management may include timber harvesting or passive retention

Uneven-aged Systems

- **Retain as many snags as possible**
- **Retain ≥ 3 , preferable large, cavity trees/acre**
- **Retain ≥ 3 , preferable large, mast trees/acre**
- **Consider retaining 3-6 trees/acre to develop into large, old trees and to complete their natural lifespan, often becoming cavity trees and snags**

Considerations – Tree Retention

- Trees retained can be scattered uniformly throughout a stand or irregularly dispersed as single trees, groups, and patches.

Recommendation: retain irregularly distributed patches along with scattered groups and individuals.



Considerations – Tree Retention

- Large trees and snags are $>12''$ dbh, and preferably $>18''$ dbh
- Species diversity is encouraged
- Individual trees can satisfy multiple benefits
- Clearly designate, in writing and/or by marking, which trees will be retained (not cut) prior to any cutting operations.



Considerations – Snags

- Retention of snag diversity, species and size, can provide greatest array of benefits
- Snags determined to be a threat to human safety can be cut and retained on site as coarse woody debris.



Why? Maintain Wildlife Trees and Snags

- Large trees – for habitat structure
- Mast trees – for food
- Cavity (den) trees – for shelter
- Snags – for habitat, shelter, and food
- For wildlife – the more the better
 - the bigger the better
 - strive for species diversity



2A. Retain and Limit Disturbance to Down Coarse Woody Debris (CWD) Already Present

- Stems, limbs, and stumps ≥ 6 inches diameter
- Large (>13 inches diameter) CWD is depauperate
- Habitat, shelter, and food



Tree, Snag, and CWD Retention – Why?

- **Develop and manage forests that more closely resemble natural systems**
 - ★ **Wildlife adapted to these habitats**
 - **Complex array of niches (habitat)**
 - ★ **Sustain species, communities, and ecosystems**
 - **Composition, structure, and function**
- **Emulate natural disturbance processes**
- **Natural disturbances create lots of woody debris**
 - **Timber harvests reduce woody debris**
 - **Biomass harvests further reduce woody debris**

Tree, Snag, CWD Retention – Why?

- **Silvicultural practices based on:**
 - Natural disturbance regimes
 - Natural stand developmental processes
- **Biological legacies – compositional and structural legacies in heterogeneous patterns**
 - Create and retain live trees, snags, and CWD
 - Well documented benefits of large structures
 - Maintain ecological complexity
 - Influence reorganization and recovery processes
 - Lifeboat function
- **Provide diverse habitat, shelter, and food for native organisms**

3A. Retain 1/3 of Fine Woody Debris on Site, Well-distributed if Possible

➤ Alters microenvironment and provides habitat

➤ FWD potentially retained on site in:

- Reserve patches
- Special habitats (e.g. seeps)
- RMZs and drainageways



➤ FWD potentially retained on site for nutrients

➤ FWD potentially retained on landscape:

- Wetlands and wetland borders, nutrient poor sites, and sites with shallow soils
- Forests with non-biomass management objectives (e.g. reserve forests, habitat mgmt.)

3A. Retain 1/3 of Fine Woody Debris on Site, Well-distributed if Possible

- FWD accumulates with stand development
- CWD and snag retention
- Necessity and amounts of additional retention for biodiversity conservation is uncertain



4A. Do Not Remove the Forest Litter Layer, Stumps, and/or Root Systems

➤ Stumps

- Part of CWD resource (habitat)



➤ Root systems

- Mycorrhizal diversity
- Soil issue – nutrients and productivity



➤ Litter

- Habitat for many organisms
- Soil and water issues
- Large part is non-woody biomass



5A. Minimize stand entries to the extent possible

➤ Limit disturbance to organisms and ecosystems



6A. Roads and landings should not occupy more than 3% of the harvest area.

Roads, landings, and skid trails should not occupy more than 15% of the harvest area.

- **Potential barriers to movement of some organisms**
- **Potential avenues of invasion by some undesirable organisms**
- **Access for increased human presence causing disturbance to some organisms**





Site Specific Guidelines for the Conservation of Biodiversity

- **The conservation of a wide array of organisms with viable populations requires the conservation of a wide array of well represented habitat conditions.**
- **Forests**
 - **Successional stages**
 - **Developmental stages – young to decadent**
 - **Disturbance regimes – type, severity, timing, pattern**

1B. Do Not Harvest Biomass Within Specific Sites Where Endangered or Threatened Species are Known to Exist or are Discovered During Operations



- **Consult specialists and databases** to assess potential occurrences, habitat requirements, and management recommendations
- **Exception:** If biomass harvests have been demonstrated to maintain or improve habitat for the species present, then follow appropriate management guidelines.



2B. Do Not Harvest Biomass Within Specific Known or Probable Occurrences of Rare Community Types

- **Consult specialists and databases** to assess potential occurrences, community characteristics, and mgmt. recommendations
- **Exception:**
If biomass harvests have been demonstrated to maintain or improve the element occurrence, then follow appropriate management guidelines.



3B. Consideration – Specific Sites where Special Concern Species or SGCN are known to exist or are discovered

- Manage appropriately to sustain species and habitat.
Determine if biomass harvesting would be appropriate.
- **Consult specialists** to evaluate potential impacts of proposed management activities.



4B. Consideration – Specific Sites representing exceptional community composition or structure, or sensitive site types

- Manage appropriately to sustain community or site type. Determine if biomass harvesting would be appropriate.



- **Consult specialists** to evaluate potential impacts of proposed management activities.



5B. Salvage: Retain $\geq 5\%$ of area in unsalvaged patches 0.1-2.0 acres in size

- Patches should include large diameter reserve trees, mast trees, cavity trees, snags, and down coarse woody debris if present
- Legacies can sustain function, modify environment, and influence reorganization

➤ Habitat



Thank you

