

# WFPS Silviculture Accomplishment Report

## Topic: Northern Hardwoods Management

### **WFPS Recommendations:**

1. The WNDR should transition from guidelines and policy based on the order of removal as established in the WDNR Silvicultural Handbook and establish guidance, as opposed to rules, for individual tree selection in northern hardwood stands. Guidance should be adaptable to landowner objectives, consider both biological and economic concerns, and foster development of crop trees while maintaining minimum basal area stocking levels consistent with current northern hardwood silvicultural science.
2. The definition for the term “crop tree” should be revised and expanded to include various elements that incorporate landowner objectives whether they are economic, ecological, or social. A crop tree will have the potential to increase in value by a jump in grade or increase in ecological function; having not yet achieved its maximum economic, ecological, or social potential. The tree will exhibit quality with future potential. When the potential for increase in value growth peaks, it should no longer be considered a crop tree and should be eligible for harvest, subject to landowner objectives.
3. Develop a marking guide that accounts for variable stand conditions, along with the current typical Wisconsin northern hardwood stand structure, and that includes considerations for the range of crop tree definitions and landowner objectives.
4. Provide training to foresters marking single tree selection harvests to increase knowledge on management designed to foster development of crop trees. Multi-stakeholder involvement with developing and providing the training in accepted methods to promote crop trees will be important to ensure a range of sustainable practices are considered.
5. Provide training for foresters that write MFL plans and timber harvest prescriptions, and DNR foresters who may be required to inspect forest tax law harvests, so they understand crop tree definitions and revised marking guides. This would also include training on how to better communicate plans and prescriptions and how to correctly state the intended outcome of a specific harvest method.
6. Move away from the heavy reliance on uniform basal area and basal area stocking as criteria for adherence to forest tax law plans or prescriptions. Rather, the focus should be on retention and increase of stem quality, along with considerations for landowner objectives, while maintaining minimum basal area stocking levels consistent with current northern hardwood silvicultural science including accounting for natural regeneration needs and residual stem quality factors.

### **WFPS Assignments:**

- 1.1 The Wisconsin Silviculture Guidance Team (SGT) will examine whether the concept of order of removal should be retained and/or revised along with investigating other tree selection options. If retained, it will also explore how to add flexibility within the standard order of removal. SGT will expand current work revising and adding clarity to The WDNR Silviculture Handbook, Chapter 24: Tree Marking and Retention Guidelines and Chapter 21: Natural Regeneration - Single Tree Selection (STS). This work will include additional explanation on the proper application of marking processes within the context of landowner objectives and the resulting silvicultural prescription.

Assigned Party: WI SGT

Estimated Delivery Date: December 2018

*Implementation Note: There is confusion among foresters (both public and private) on the intent and usage of the standard "order of removal" marking recommendation in relation to northern hardwood management. Specifically the standard order of removal is often confused or used interchangeably with the single-tree selection (STS) regeneration method. Already confused by many with intermediate thinning, the STS method has multiple prescription components that are not considered by the standard order of removal marking guide. To facilitate flexibility in marking assessment, SGT should also explore options for evaluating marking other than the Marked Assessment Tool. Example stand level metrics to replace the current tool based on OOR would be identified along with an appropriate methodology to determine if marking achieves goals.*

- 1.2 The SGT Northern Hardwood Ad Hoc Team will revise the WDNR Silviculture Handbook, Chapter 40: Northern Hardwood Chapter to add clarity to the single tree selection section, marking guide examples, and explore additional options to the single tree selection method to provide additional flexibility in achieving landowner objectives.

Assigned Party: WI SGT/Northern Hardwood Ad Hoc Team

Estimated Delivery Date: December 2018

- 2.1 The Wisconsin Silviculture Guidance Team will evaluate and review ongoing work to develop a crop tree definition and complementary Growing Stock Classification System (GSCS) to help foresters evaluate tree quality and potential.

Assigned Party: WI SGT

Estimated Delivery Date: December 2018

*Implementation Note: Work on defining a growing stock classification should be explicit in discussing the difference between a tree classification and a marking prescription. Economic maturity and related decisions on when to harvest a tree is a management consideration reflected in a prescription, not determined by growing stock status.*

- 2.2 The Wisconsin Silviculture Guidance Team will work to better define timber, aesthetic, and wildlife crop trees and provide tools for assessing crop trees within the WDNR Silviculture Handbook. In addition, The WDNR Northern Hardwood Ad Hoc Team will add a new economics section and revised stem quality section to the Northern Hardwood Chapter to expand on crop tree assessment.

Assigned Party: WI SGT/Northern Hardwood Ad Hoc Team

Estimated Delivery Date: December 2018

- 2.3 The Wisconsin Silviculture Guidance Team will expand discussion on crop tree selection in addition to the Growing Stock Classification System in Chapter 24: Marking Guidelines.

Assigned Party: WI SGT

Estimated Delivery Date: December 2018

*Implementation Note: Risk and economic loss (ex. present value, rate of return) should be reviewed.*

- 3.1 The SGT will develop a tool to guide tree harvest and retention decisions made while marking timber. The tool will be adaptable to various stand level prescriptions and related landowner management objectives.

Assigned Party: WI SGT

Estimated Delivery Date: December 2018

*Implementation Note: Better field marking guides are needed, not only for northern hardwoods but all cover types, to improve the implementation of silviculture prescriptions on the ground.*

- 3.2 The SGT Northern Hardwood Ad Hoc Team will add northern hardwood marking prescription examples for specific regeneration methods, stand conditions, and landowner objectives as an appendix to the revised Northern Hardwood Chapter.

Assigned Party: WI SGT/Northern Hardwood Ad Hoc Team

Estimated Delivery Date: December 2018

- 4.1 The WDNR in cooperation with partners will develop an ad hoc team to provide training based on the Northern Hardwood Chapter revision. This training will include examples of northern hardwood single tree selection, crop tree considerations, and prescriptions based on assessing stand conditions and varying management / landowner objectives.

Assigned Party: WDNR Silviculture Program

Estimated Delivery Date: March 2019

*Implementation Note: Additional training is needed for foresters on the implementation of single-tree selection in northern hardwoods. As Wisconsin northern hardwood stands transition from a typically even-aged structure to an uneven-aged structure after multiple stand entries, foresters have not always been clear on how to mark trees using the single-tree selection method. This confusion has led to misunderstandings about order of removal and when to harvest mature trees using this method.*

- 4.2 The USFS, UWSP, WDNR, and stakeholders are currently working to develop a northern hardwood marteloscope (i.e. tree marking training site) at the USDA-FS Argonne Experimental Forest. This hands-on marking site will give public and private foresters experience implementing a variety of northern hardwood management prescriptions reflecting varying landowner management objectives.

Assigned Party: US Forest Service/UWSP

Estimated Delivery Date: March 2019

*Implementation Note: Potential exists to expand marteloscopes to other parts of the State and explore the creation of a hardwood marker certification program based on marteloscope training.*

- 4.3 The WDNR SGT and UW-Extension in cooperation with partners will explore the creation of on-line training modules on basic northern hardwood silviculture. This training component could be coupled with the hands-on marteloscope for in-depth forester training.

Assigned Party: UW-Extension, WDNR Silviculture Program, WI SGT

Estimated Delivery Date: June 2019

*Implementation Note: Resources (staff and funding) and IT expertise would be needed to develop these training proposals.*

- 5.1 In coordination with Assignment 4.1, The WDNR Silviculture and Tax Law Programs will provide training for staff and partners based on prescription writing and WDNR Silviculture Handbook interpretation emphasizing the principles of sound forestry and flexibility within WDNR Silviculture Handbook guidance.

Date: 3/26/18

Assigned Party: WDNR Silviculture and Tax Law Programs  
Estimated Delivery Date: March 2019

*Implementation Note: This type of training is currently provided to MFL CPW plan writers and new DNR foresters. In addition, a prescription writing exercise was recently reintroduced in Silviculture Orientation, a course taken by all new WDNR Foresters and Technicians.*

6.1 The SGT Northern Hardwood Ad Hoc Team will review and consider revisions to the Northern Hardwood Chapter, single tree selection section based on best available science. While some USFS Dukes and Argonne Experimental Forest research specific to stand density management is already discussed in the chapter, there is the potential to expand this information. See Assignment 1.2

Assigned Party: WI SGT/Northern Hardwood Ad Hoc Team  
Estimated Delivery Date: December 2018

*Implementation Note: The focus of this recommendation deals primarily with the acceptable range of variation in basal area stocking for northern hardwood stands managed with single tree selection in order to allow for flexibility yet still maintain conditions for the development of quality stems. Implementation should seek to enhance flexibility and address basal area retention standards.*

**Ties to July 2014 WFPS Economically Burdensome Topics:**

- MFL Administration – Silvicultural Flexibility
- MFL Administration – Consistency of DNR Foresters
- MFL Administration – Marking Guidelines
- General Harvesting Restrictions – Order of Removal
- General Harvesting Restrictions – Silviculture Handbook Limitations

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**Context**

In the late 1980s, the first edition of the WDNR Silviculture Handbook was created to bring together best available silvicultural information and practice from researchers, foresters, and others involved in Wisconsin forest management. Previously foresters had to rely on scattered and sparse information from Manager's Handbooks, journal articles, and local knowledge. Over the last 30 years, teams of foresters and other experts have invested significant time in maintaining and updating the Handbook to address changing management needs and incorporate new information. The Handbook has grown to address diverse management concerns, including wildlife and landscape considerations as well as emerging issues, such as invasive species. Cover type chapters have been expanded from less than 10 pages in some cases to well over 50 pages.

The recent WFPS recommendations and assignments touch on several sections of the WDNR Silviculture Handbook. Among the WFPS assignments are the direction to:

- Incorporate new and enhanced discussion of landowner management objectives and silvicultural prescription writing
- Provide additional tools for foresters to increase understanding and application of chapter information, including tatum guides, assessment tools, and example marking guides

The Northern Hardwoods chapter of the Silviculture Handbook has been under review since February 2016. It was identified as a priority for revision by WI SGT. The chapter was last updated in 2006. Chapter 24, Tree Marking and Retention Guidelines was last updated in 2015.

Date: 3/26/18

## **Silviculture Handbook**

WI SGT is conducting a broader review of the Handbook structure and format to holistically address the concerns raised and to improve overall communication of important silviculture concepts. The recent WFPS recommendations and assignments touch on several sections of the WDNR Silviculture Handbook.

Among the WFPS assignments are the direction to:

- Incorporate new and enhanced discussion of landowner management objectives and silvicultural prescription writing
- Provide additional tools for foresters to increase understanding and application of chapter information, including tatum guides, assessment tools, and example marking guides

In addition to completing the WFPS assignments, this effort is intended to:

- Survey Handbook users to investigate potential improvements to structure and format based on themes resulting from the WFPS
- Modify the organization and presentation to improve the utility and function for Handbook users
- Standardize chapter structure and citations for all cover types, so all chapters have the same information in the same place

To survey Handbook users, WI SGT will be working with UW-Extension to conduct two focus groups – foresters working for public/governmental agencies and foresters working for private landowners. These focus groups are scheduled for late April 2018. Information gathered from the focus groups will be used to develop and refine the survey. The results of the focus groups and the proposed survey for all Handbook users will be presented to WI SGT at their May meeting. The survey is slated to occur in early June.

## **Chapter 24: Tree Marking and Retention Guidelines**

To address WFPS assignments related to Chapter 24, WI SGT supported forming a new Ad Hoc Team. Up to this point, WI SGT had been dealing with many of the issues, such as growing stock standards, order of removal, and crop trees, within WI SGT as whole. In light of the urgency resulting from the WFPS, WI SGT forwarded those issues and the work completed thus far to a new Ad Hoc Team.

Applications for the Ad Hoc Team were solicited in March 2018 and the first meeting is scheduled for April.

## **Chapter 40: Northern Hardwoods**

Northern Hardwood Ad Hoc Team was formed in 2016 and began meeting in February 2016. They met 10 times prior to June 2017, when their work was put on hold, pending the outcome of the WFPS. This Ad Hoc Team was charged with following tasks:

- Clarify management options in degraded hardwood stands
- Clarify management options for conversion from even-aged to uneven-aged stands
- Clarify single tree selection
- Develop a Growing Stock Standard
- Develop a Stand Assessment Checklist
- Provide a NH Decision Model
- Add discussion of sedge and ironwood treatment options

In light of the WFPS assignments, the NH Ad Hoc Team will also be addressing:

- Order of removal
- Rotation age
- Economic considerations
- Crop tree definition and assessment

The NH Ad Hoc Team has now reconvened and their first meeting was in March 2018 and future meetings and conference calls are scheduled to continue their work.

### **Marteloscope**

Christel Kern with the US Forest Service in Rhinelander is leading the effort to establish a marteloscope at Argonne Experimental Forest. Coordinates and tree inventory data has been collected on site. Currently, data is being verified and evaluated to determine if more information/plots need to be gathered. The goal is to the site up and functioning by fall of 2018. Funding assistance has been provided by the SAF.

### **Next Steps**

1. Continue work with the Silviculture Handbook, Chapter 24, and Chapter 40
2. Conduct focus groups and prepare survey on Silviculture Handbook
3. Survey users of the Silviculture Handbook
4. Continue development of the marteloscope
5. Explore viability of convening a Northern Hardwoods Symposium in the Lake States area (last held in the 1980s)

# WFPS Silviculture Accomplishment Report

## Topic: Aspen and Red Pine Rotation Ages

### **WFPS Recommendations:**

7. Establish guiding principles that allows flexibility in rotation ages depending on site potential. Guiding principles should recognize that the timing to rotate a particular stand can be influenced by unique stand conditions and other considerations such as land owner objectives, operability, markets, economics, social and ecological considerations.

### **WFPS Assignments:**

- 7.1 The Wisconsin Silviculture Guidance Team Rotation Ad Hoc Team will continue work to define flexible rotation age guidance for aspen and red pine based an examination of current research, actual stand data, field experience, and WFPS study results.  
Assigned Party: WI SGT/Rotation Age Ad Hoc Team  
Estimated Delivery Date: December 2018

*Implementation Note: Economic considerations would be one of the main things to address as this is the weakest part of the current discussion. SGT created an ad hoc team to develop an economics chapter for the handbook and the chapter was finalized in 2016. The economics chapter covers the costs and revenues needed to calculate an economic rotation and the factors that influence economic rotations. SGT formed the Rotation Ad Hoc Team in 2016 to examine Silviculture Handbook rotation ages for aspen, red pine and oak. The team was specifically asked to review suitable economic rotations for these cover types.*

### **Ties to July 2014 WFPS Economically Burdensome Topics:**

- MFL Administration – Silvicultural Flexibility
  - MFL Administration – Consistency of DNR Foresters
  - General Harvesting Restrictions – Rotation Age/Economic Maturity
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### **Context**

In late 2015, WI SGT identified inclusion of economic rotations as a priority for these chapters. The chapters were last updated in:

- Chapter 32 – Red Pine: September 2010
- Chapter 41 – Oak: November 2012
- Chapter 43 – Aspen: May 2002

To address requests for greater flexibility, WI SGT created a Rotation Age Ad Hoc Team with the charge to investigate economic/financial rotation length guidance for the Red Pine, Oak, and Aspen chapters. The Red Pine, Oak, and Aspen chapters of the Silviculture Handbook has been under review by the Ad Hoc Team since February 2016.

The charge and sideboards for the Ad Hoc included:

- Review current Silviculture Handbook guidance on rotation lengths for Aspen, Red Pine, and Oak cover types
- Review literature, Lake State's guides, and other available studies

Date: 3/26/18

- Investigate the economic considerations of rotation length, specifically economic or financial rotations (e.g., soil expectation value) for the above cover types
- Develop and recommend economic/financial rotation length guidance for Aspen, Red Pine, and Oak cover types that is supported by the literature, applicable to a range of Wisconsin habitat types, and maintains long-term site productivity
- All recommendations must be developed within the context of sustainable forestry

To complete its work, the Ad Hoc Team gathered information from four sources:

- 1) Field Survey – What are foresters recommending? How much flexibility? (185 respondents)
- 2) Lake State’s guides
- 3) Peer-reviewed literature and research
- 4) Studies – WFPS, Minnesota Study, Wisconsin casestudies

The Ad Hoc Team suspended its work in June 2017 pending the outcome of the WFPS.

### **Chapter Review**

The Ad Hoc Team reconvened in early February 2018 with a brief conference call and held a face-to-face meeting in March 2018. At that meeting, the assignments from WFPS were reviewed and the ad hoc evaluated the work done to date. Based on discussion at the Ad Hoc Team meeting, further modifications are being considered by the Ad Hoc Team. The Ad Hoc Team hopes to have proposed language for SGT review in May 2018.

### **Next Steps**

1. Complete evaluation of rotation ages for red pine and aspen
2. Forward proposal onto SGT for their review and modify as needed
3. Solicit public comment on the proposed revision to the red pine and aspen chapters
4. Make modifications to proposed revision based on public comments
5. Forward proposed revision to Chief State Forester for approval