WESTERN WASHINGTON HARDWOOD ASSESSMENT

2ND ANNUAL WESTERN HARDWOOD INTERNATIONAL CONVENTION & EXPOSITION
PORTLAND, OR
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2013 Western Washington Hardwood Assessment
Report Available


- At this link are:
  - The Report
  - Series of Report tables
  - An Extended Executive Summary
Funding for Study

- Washington Hardwoods Commission
- McIntire-Stennis Federal Cooperative Forestry Program
- Assessment coordinated by the UW Institute of Forest Resources
Four Questions Posed

- How much hardwood growing stock currently exists in WA
- What is the age (or size) class and location of the inventory
- What ownerships currently manage the growing stock
- How much volume is impacted by riparian management regulations
Previous Hardwood Assessments

- Classification of Landsat Thematic Mapper Imagery for the Purpose of Developing a Hardwood Forest Inventory for the State of Washington (Marshal and Associates, 1996)
- Report to the Hardwoods Commission (Marshal and Associates, 1999)
- Riparian Buffer Analysis (Marshal and Associates, 2000)
- A Hardwood Resource Assessment for Western Washington (WHC members, 2002)
2002: 9 billion board feet

- State & Local: 38%
- Large Industry: 31%
- Small Private: 31%
- Maple: 10%
- Cottonwood: 6%
- Alder: 84%
Methodology of Current Study

- Landsat-based inventory stratification based on the Gradient Nearest Neighbor (GNN) methodology
- Forest inventory data provided by OSU scientists who used GNN methods combined with FIA and other plot data from ODF, BLM, USFS, etc.
- Riparian buffer rules were modeled differently
- Washington State Biomass Assessment database which, in turn, is based on a parcel database maintained at the UW
Forest Vegetation Simulator (FVS) used to estimate future forest inventories from 2010 – 2030 in five year intervals

Four silvicultural treatment options are modeled

- No harvest alternative
- Commercial thinning
- Clear cut final harvest
- Commercial thinning and clear cut final harvest
Forest Vegetation Simulator (FVS) was calibrated against harvest data to create habitat/ecosystem type models for each FVS variant. 6,000 plots × variants × years × ownerships × management zones = 51,247,388 alternatives. Trees planted by habitat type in varying intensities but are not harvested during the simulation period; however they do contribute to total inventory.
Two primary western Washington treatments:

- **Commercial thin**
  - 150/250 TPA
  - 30+ yr. old stands
  - From below using a diameter limit

- **Final Harvest**
  - Minimum age varies by owner
  - Intensity varies by management zone & owner
    - 5 leave trees in the uplands
    - Buffers: Inner leave 100 TPA, Outer leave 10 TPA, Wetland leave 75 TPA
Reserved Acres

Unreserved Acres

Reserved Acres
## Forested Area W WA (millions of acres)

<table>
<thead>
<tr>
<th>Category</th>
<th>Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forested Acres</td>
<td>13.128</td>
</tr>
<tr>
<td>- Less open water</td>
<td>0.118</td>
</tr>
<tr>
<td>- Less parks &amp; other non-timber forest</td>
<td>1.848</td>
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<tr>
<td>- Less than 10 forested acres owned</td>
<td>0.715</td>
</tr>
<tr>
<td>Timberland</td>
<td>10.447</td>
</tr>
<tr>
<td>- Less withdrawn areas</td>
<td>2.157</td>
</tr>
<tr>
<td>Unreserved timberland</td>
<td>8.290</td>
</tr>
</tbody>
</table>
Timberland Acres (Owner)

Western Washington Unreserved Timberland Acres Over 10 Acres in Size by Owner Class (8.3 million)

- Large Private: 44%
- Federal: 19%
- Tribal: 3%
- State: 15%
- Small Private: 17%
- Other Public: 2%
Timberland Acres (Zone)

Western Washington Unreserved Timberland Acres

- Uplands: 73%
- Core Buffer: 17%
- Inner Buffer: 8%
- Outer Buffer: 1.5%
- Wetland Buffer: 0.5%

- Total Acres: 6,084,580
- Uplands: 678,492
- Core Buffer: 1,394,957
- Inner Buffer: 102,241
- Outer Buffer: 29,352
- Wetland Buffer: 17

- Total Unreserved Timberland Acres: 6,084,580
Timberland Acres (Area)

Unreserved Timberland Acres by Area

<table>
<thead>
<tr>
<th>Area</th>
<th>Acres</th>
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</thead>
<tbody>
<tr>
<td>NC</td>
<td>0</td>
</tr>
<tr>
<td>SC</td>
<td>500000</td>
</tr>
<tr>
<td>NP</td>
<td>1000000</td>
</tr>
<tr>
<td>SP</td>
<td>1500000</td>
</tr>
<tr>
<td>SW</td>
<td>2000000</td>
</tr>
</tbody>
</table>

Timbershed:

NC (13.8%)  SC (18.3%)  NP (24.2%)  SP (13.7%)  SW (29.9%)
2010 Inventory by Owner Class and Management Zone (19.8 BBF)

- Large Private
- Small Private
- State
- Tribal
- Federal
- Other Public

Board Feet

Billions

- Wetland Buffer
- Outer Buffer
- Inner Buffer
- Core Buffer
- Uplands

2010 Inventory (Owner & Zone)
2010 Inventory (Species & DBH)

2010 Inventory by Species and Diameter Class (19.8 BBF)

Diameter Class

0"-5"
5"-10"
10"-15"
15"-20"
20"-25"
25"-30"
30"-35"
35"-40"
40"-45"
45"-50"
50"+

Billions
0
1
2
3
4
5
6
7

Board Feet

- Other
- Birch
- Cottonwood
- Maple
- Alder
Available for Harvest (Owner & Zone)

Western Washington Hardwoods Available for Harvest in 2010 by Owner Class and Management Zone (8.3 BBF)
Available for Harvest (Zone)

Western Washington Hardwoods Available for Harvest in 2010
(8.3 BBF)
Available for Harvest (DBH)

Western Washington Hardwoods Available for Harvest in 2010 by Species & Diameter Class (8.3 BBF)
Harvest Modeling

- A 2010 baseline harvest of 2.74 BBF (includes coniferous & hardwood species) is maintained over 20-year planning period
- Eligible stands and treatments are identified then aggregated to the parcel and prioritized by volume/acre
- Species is NOT a factor in prioritizing the harvest
- Harvest targets are set by county & owner class
- Harvest target for this presentation is the average by county & owner class for the past ten years
All Species Harvest Volumes

Western Washington Annual Historic and Modeled Harvest Volumes (all species)

Board Feet

Billions

Federal
LargePrivate
OtherPublic
SmallPrivate
State
Tribal

Year

Historic
Predicted

2010 - 2030 Modeled Hardwood Harvest Volumes by Owner Type (MMBF)
Western Washington Modeled Hardwood Harvest Volumes by Species 2010 - 2030

Board Feet in Millions

Year

2010
2015
2020
2025
2030

Other
Birch
Cottonwood
Maple
Alder
Western Washington Modeled Hardwood Harvest Volumes by Diameter Class

- 450 Million Board Feet
- 400 Million Board Feet
- 350 Million Board Feet
- 300 Million Board Feet
- 250 Million Board Feet
- 200 Million Board Feet
- 150 Million Board Feet
- 100 Million Board Feet
- 50 Million Board Feet
- 0 Million Board Feet

Year:
- 2010
- 2015
- 2020
- 2025
- 2030
Apply annual modelled harvest to total inventory of 19.8 BBF as of 2010

Produces an estimate of total standing hardwood inventory on 8.3 million acres in western Washington
2010 – 2030 Inventory (Owner)

2010 - 2030 Hardwood Inventory by Owner Class (BBF)

Year

2010 2015 2020 2025 2030

Board Feet

Billions

2010

–

2030 Inventory (Owner)

Other Public

Federal

Tribal

State

Small Private

Large Private
2010 – 2030 Inventory (Species)

2010 - 2030 Hardwood Inventory by Species (BBF)

Board Feet

Billions

Year

2010

2015

2020

2025

2030

Other

Birch

Cottonwood

Maple

Alder
2010 – 2030 Inventory (DBH)

2010 - 2030 Hardwood Inventory by Diameter Class (BBF)

Billions

Board Feet

Year

2010

2015

2020

2025

2030

50"+

45"-50"

40"-45"

35"-40"

30"-35"

25"-30"

20"-25"

15"-20"

10"-15"

5"-10"

0"-5"
How much hardwood growing stock currently exists in WA?

- 8.3 BBF available for harvest in 2010
- Available growing stock is increasing over time
  - Harvest levels are less than the growth on inventory
- Economic availability was not studied

What is the age (or size) class and location of the inventory?

- 80% is greater than 10 inches in diameter
- 54% of the acres in Southwest (30%) and North Puget Sound (24%)

What ownerships currently manage the growing stock?

- Small private and large private owners each have about one-third of the available volume

How much volume is under riparian management regulations?

- 3.6 BBF in core buffer zone
- 2.9 BBF in inner buffer zone
- 0.4 in outer buffer zone
- 0.1 in wetlands buffer zone
Limitations of the study

- Leave trees & remnants from thinning are inventory but not available for harvest for 20 years
- When stands are harvested we are not controlling for species
- Harvest targets are for total volume across all species
- Inventory is from 2006 and is projected to 2010
- Mixed stands are the most difficult to classify
Future Work

- Validating the results of the study
- Considering ways to update the inventory for future use
The End