

Managing Eastern White Pine in Virginia

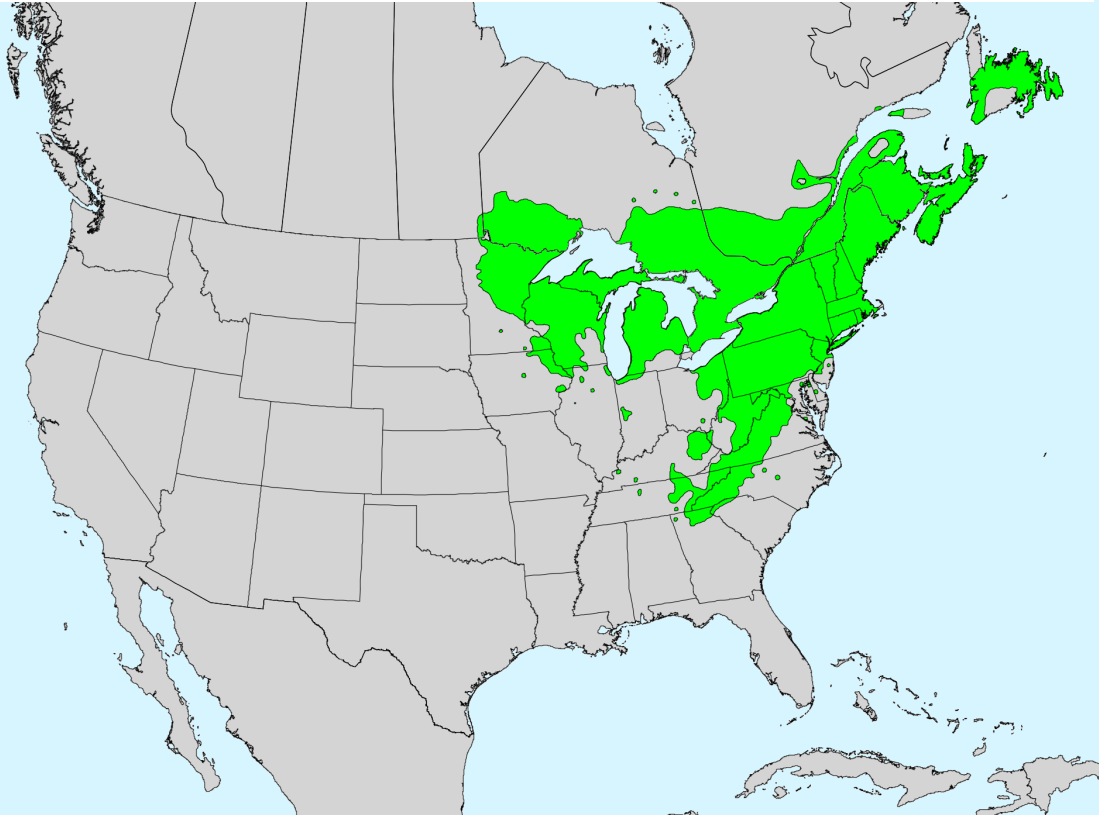
Zach Olinger

Virginia Department of Forestry

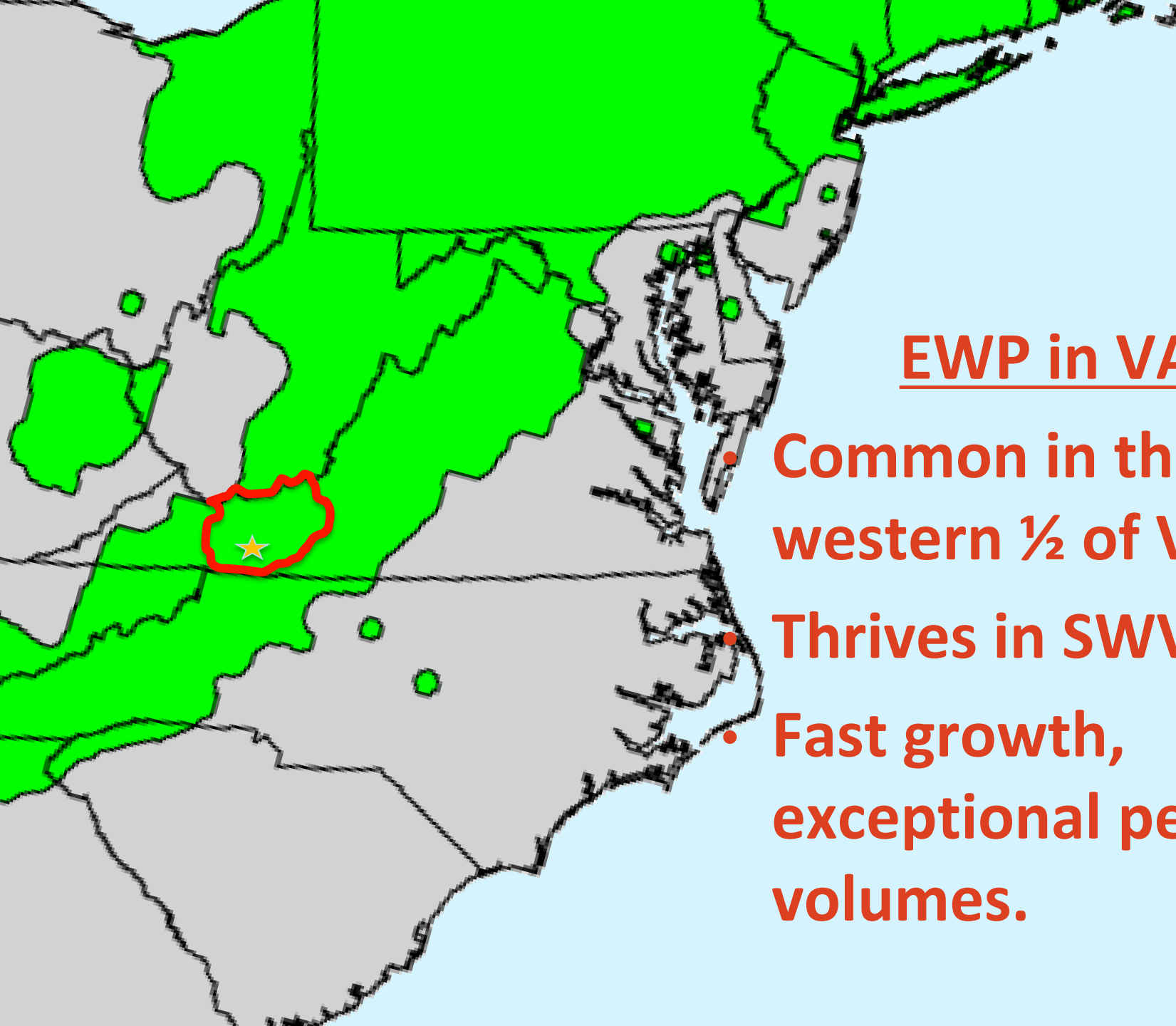




Natural Range of Eastern White Pine



Map courtesy of Little, Elbert L., Jr. 1971. Atlas of United States trees. Volume 1. Conifers and important hardwoods. Misc. Publ. 1146. Washington, DC: U.S. Department of Agriculture, Forest Service.



EWP in VA

- Common in the western ½ of VA
- Thrives in SWVA
- Fast growth, exceptional per acre volumes.



Eastern White Pine in Virginia

Acres

- 382,040
- 330,842 (87%) natural
- 212,279 Pine/HW

- 2020 FIA Data: released April 2022





EWP in Virginia

Volume

- 180 million trees
- 1,174,667,769 Ft³

2020 FIA Data: released April 2022





EWP in Virginia

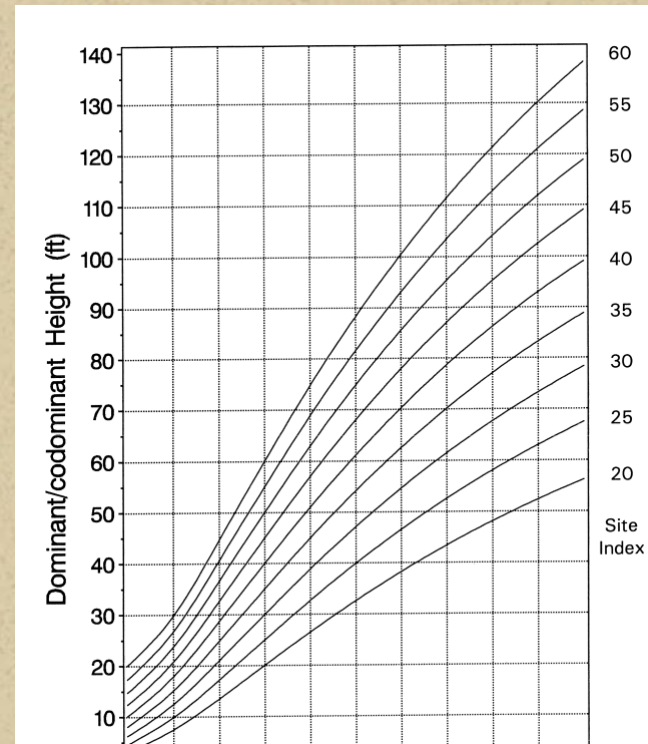
- Annual Growth 38.73 million Ft³
- Annual Removal 12.97 million Ft³

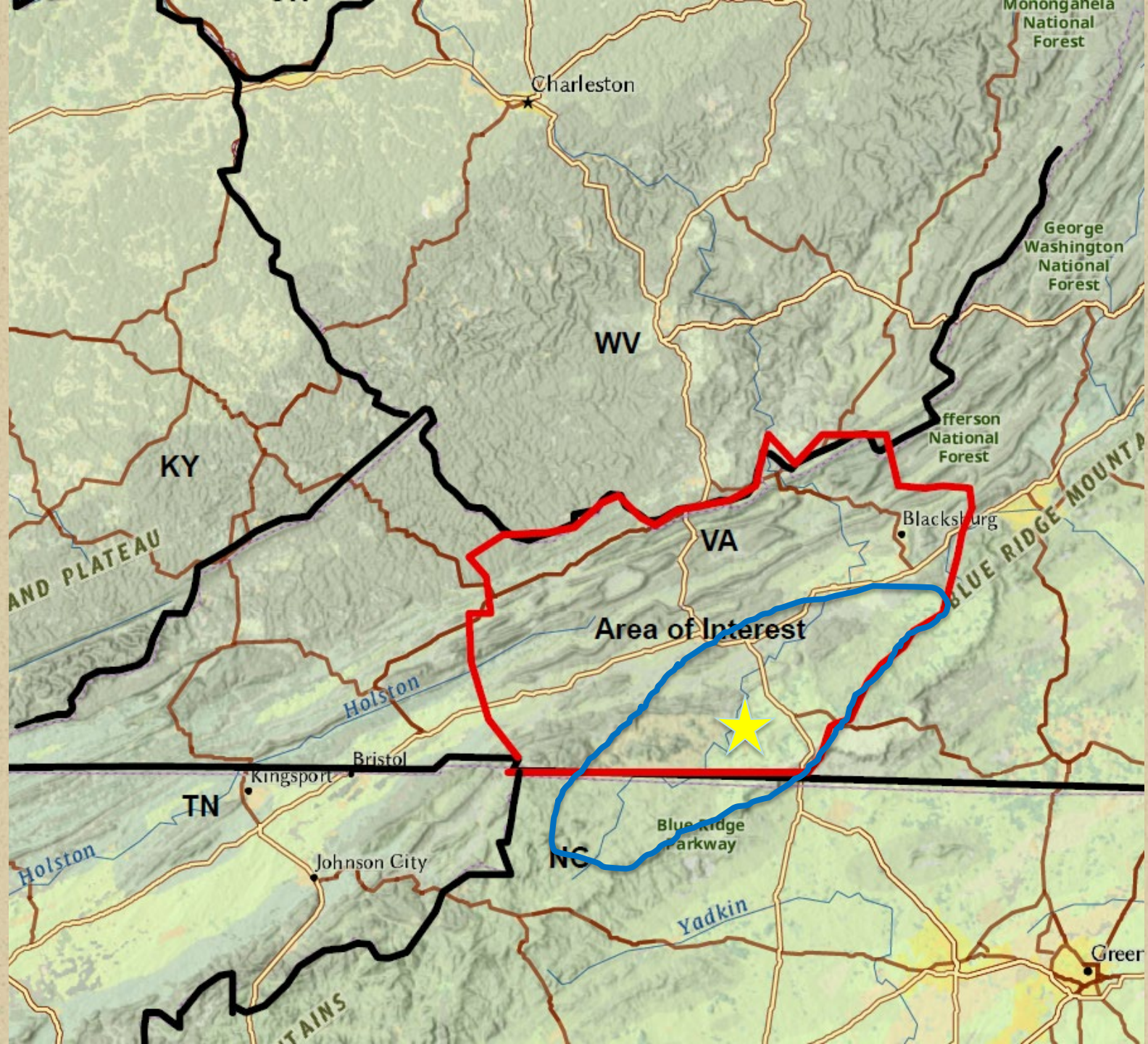




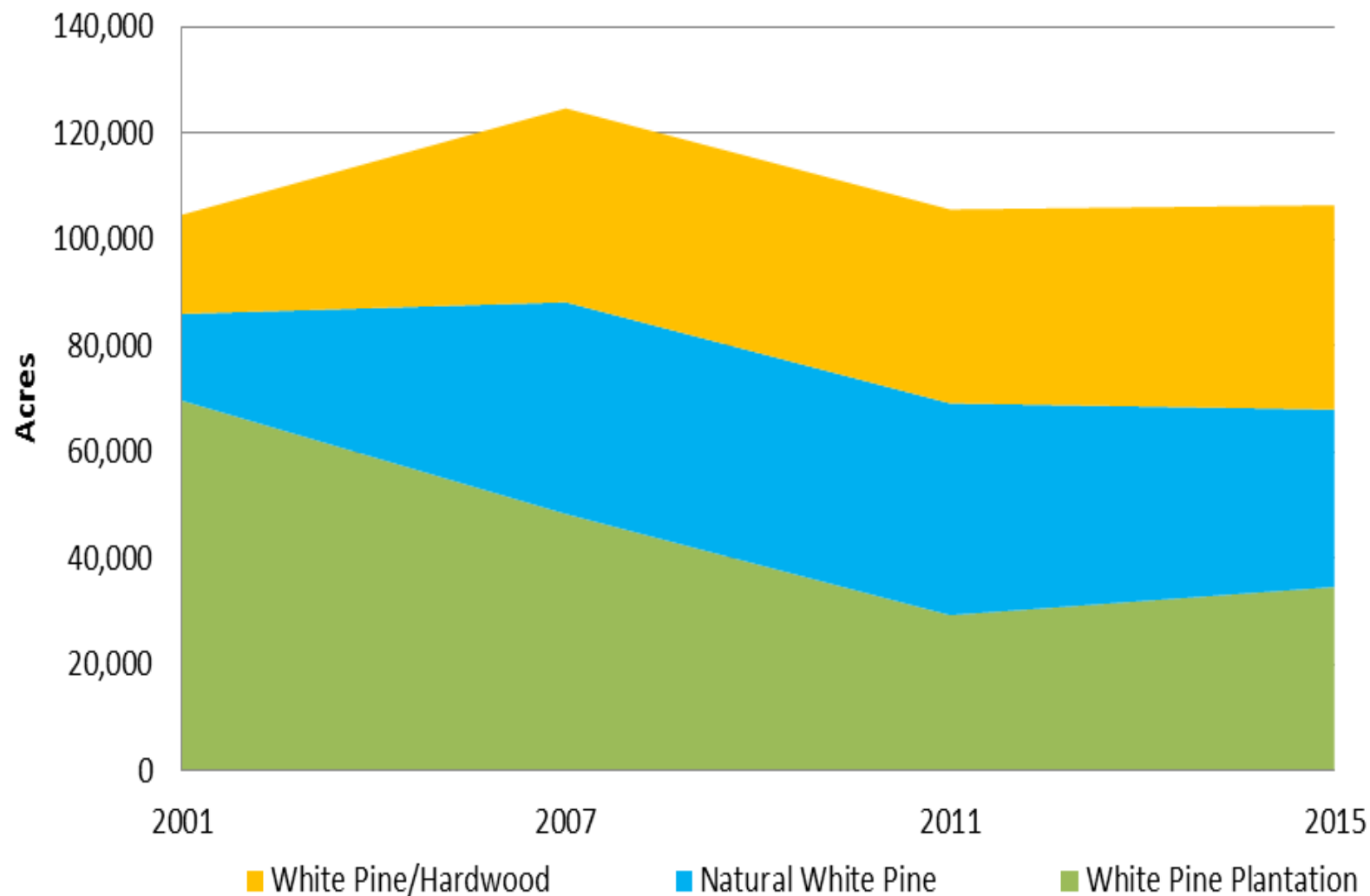
EWP in Virginia

- Economically mature by age 40.
- Site indices from 60-130 (Base age 50)
40-80 (Base age 25)
- Annual height growth of 24-48" +





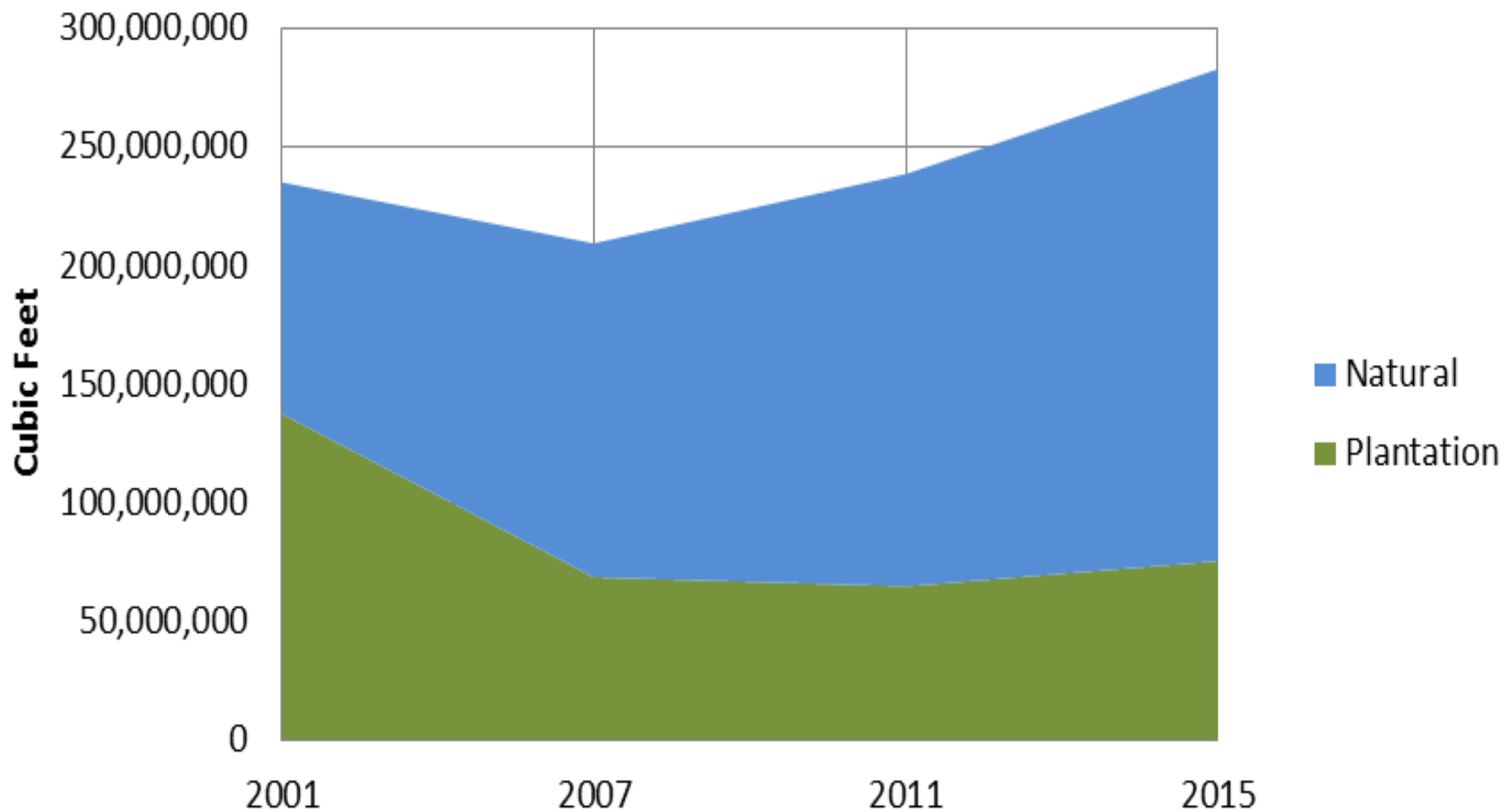
Acreage of White Pine Forest Types in the Area of Interest*



*Bland, Carroll, Floyd, Giles, Grayson, Montgomery, Pulaski, Smyth, Tazewell, Wythe No Federal land; slopes <40%



Volume of White Pine in the AOI by Stand Origin





White Pine Trends in SWVA

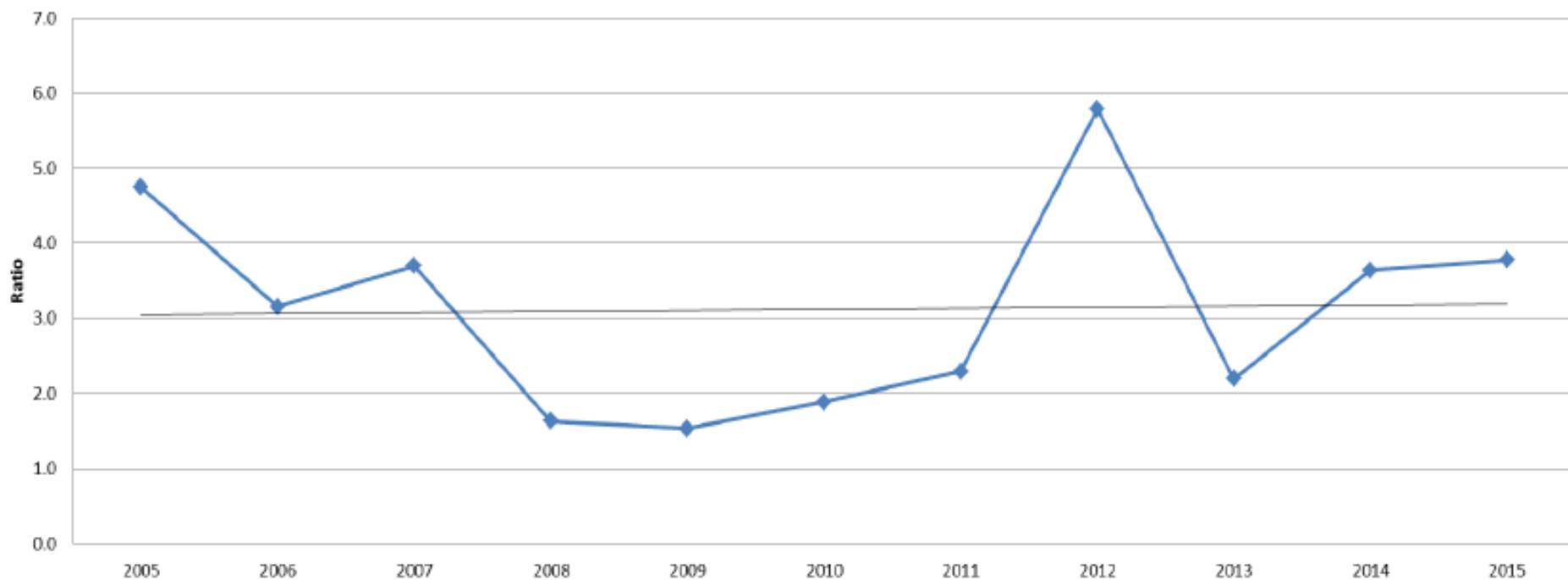
- Total acres in white pine is fairly stable
- Total volume of white pine is increasing
- Volume and area of plantation white pine has taken a sharp decline
- Limited volume in 0 to 15 aged stands
- Sawtimber stumpage prices consistent but flat
- White pine greenery is in high demand
- Demand for white pine resources is forecasted to increase



Growth to Drain Ratio

The trend line for growth to drain ratio for the AOI have been consistently above 3:1 for the past 10 years with a slight increasing trend.

Growth to Drain Ratio and Trendline for White Pine in the AOI, 2005 - 2015





Why white pine in VA?

- Native
- Soils
- Climate



SWVA Climate

	Independence, VA	Manchester, NH
■ Avg Jan High:	43°	33°
■ Avg Jan Low:	27°	17°
■ Avg July High	81°	83°
■ Avg July Low	64°	63°
■ Annual Precip:	46"	44"

SWVA Climate

Independence, VA

Manchester, NH

■ Avg Last Frost: Apr 28 May 4

■ Avg First Frost: Oct 15 Oct 6

Growing Season 169 Days 154 Days



Why White Pine in VA?

Unparalleled volume per acre



Why Grow White Pine?

Volume per acre = price per acre

- Eastern white pine at age 40 on a good site commonly produces 40,000 Bf/acre
- 7.4 acre stand on previous slide was cruised at 413,736 Bf. Or 55,910 Bf/ acre



White Pine Markets

- Cabin logs
- Molding/Trim
- Siding
- Paneling
- Furniture
- Cabinets





Other white pine uses

- Christmas trees
- Greenery for wreaths and roping(tipping)
- Reforestation



Harvest

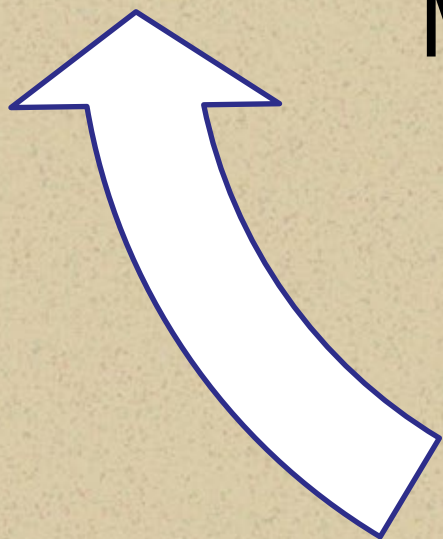


Site Prep

Stand
Establishment



Pine
Management



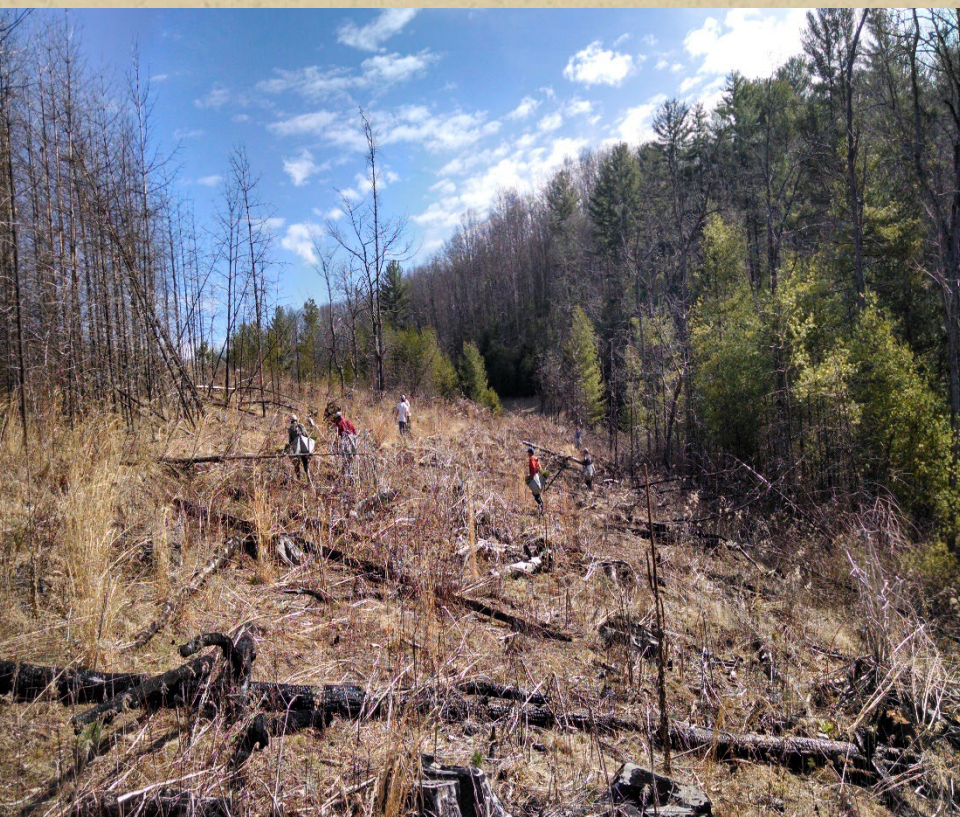
Inter
mediate
management





Stand Establishment

Planting



Natural Reneneration





Pine Management

Planting

- Open field planting
- Pine Cutovers
- Stand Conversion- from hardwoods



Planting White Pine

- 10' X 10'
 - ◆ 435 tpa
- 12 X 12
 - ◆ 302 tpa





Planting white pine

In a cutover, requires site preparation:





Planting White Pine

- May Require Release



Thinning

- Historically not common in SWVA white pine
 - Lack of markets
 - Ability of white pine to “self thin”



BF Volume of white pine per acre by age and spacing

Board Feet

Spacing

AGE	4X4	5X5	6X6	SITE INDEX 70		8X8	9X9	10X10	12X12
10	--	--	--	15	81	186	275	352	483
15	1,195	1,982	2,562	2,799	3,038	3,445	3,806	4,128	4,702
20	7,122	8,258	9,222	9,636	10,073	10,828	11,507	12,130	13,240
25	15,333	16,717	17,999	18,561	19,164	20,234	21,203	22,096	23,675
30	24,021	25,594	27,126	27,804	28,550	29,842	31,047	32,145	34,091
35	32,261	33,984	35,691	36,479	37,317	38,780	40,152	41,390	43,683

Cubic Feet

AGE	Height	SITE INDEX 70					10X10			
10	24	830	693	630	610	594	572	557	547	534
15	43	3,261	2,896	2,715	2,660	2,612	2,546	2,503	2,472	2,432
20	58	5,991	5,480	5,222	5,142	5,071	4,975	4,911	4,866	4,807
25	70	8,241	7,674	7,382	7,291	7,213	7,104	7,031	6,978	6,912
30	79	9,883	9,315	9,018	8,927	8,845	8,734	8,658	8,604	8,537
35	86	11,015	10,469	10,181	10,093	10,016	9,908	9,836	9,784	9,714

Matthews State Forest
U1 Stand 19
08/07/2017

Plot 1 -thinned

of trees- 23
Bf Volume- 4523
Avg DBH of sawtimber trees- 15.1"
Avg Bf/tree- 197
Pw volume- 12 cords
1080.3 cubic ft
17.45 tons

Plot 2- unthinned

of trees- 35
Bf Volume- 2256
Avg DBH of sawtimber trees- 11.48"
Avg Bf/tree- 66.35
Pw volume- 8.64 cords
777.21 cubic ft
12.55 tons

Summary: In 20 years since the thinning, the thinned pines have produced 100% more volume in board feet, regardless of the fact that the unthinned stand held 50% more trees. Cordwood and cubic ft volume has also increased significantly in the thinned stand.



Tipping

- Removal of branch tips to make holiday wreaths and garland
- Typically done at age 8-12
- Removes tips of lower limbs
- Trees can be left to grow into timber or removed for another tipping cycle.
- Source of mid-rotation income



Tipping



<https://youtu.be/0xDy-PpD-Aw?t=455>





75 feet of White Pine Garland

Tipped Pine:





Tipping





Tipping





EWP Health Concerns in VA

- Bast Scale / Caliciopsis complex
- Annosus root disease
- Needle cast



Sources:

- <https://www.fs.fed.us/database/feis/plants/tree/pinstr/all.html>
- Managing Eastern White Pine in the Southeast; Forestry Report R8-FR 1; USDA Forest Service, Sept 1983
- <https://weatherspark.com/y/17972/Average-Weather-in-Independence-Virginia-United-States-Year-Round>

A large pile of cut logs in a forest. The logs are stacked in a way that shows many cross-sections of the wood, revealing the growth rings. The wood is a warm, golden-brown color. The background shows a forest with tall, thin trees and a clear sky.

Questions?



Sources Continued





Economics of White Pine

- 40 year economic maturity
- Relatively strong local markets
- Opportunity for early return through tipping
- Unparalleled volume per acre