

A photograph of a forest with tall trees and dense undergrowth. The text is overlaid on the image.

Planning and Creating Young Forests on a Large Scale

Plan the Work and Work the Plan

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Setting Goals: “Plan the Work”

- In 1996, the forestry team of the Collins Pennsylvania Forest (CPF) developed its first GIS database with stratified stands and a Current Standing Inventory.
- This documented what the staff already knew, the CPF age classes were way out of balance.
- A goal was set to use even-age management to balance the age classes over time to be able to provide high quality sawlogs to the Kane, PA sawmill in perpetuity.

Overarching Philosophy

- Focus on forest health.
- Harvest Priority Index (HPI) tool created to help standardize compartment exams.



HARVEST PRIORITY INDEX

Scores reflect stand health and will determine priority for regeneration planning

- Class I Score: 31-50 Regenerate soon
- Class II Score: 20-30 Delay regeneration for 5-15 years
- Class III Score: 8-19 Healthy stand, delay regeneration >15 years

CRITERIA

- Number of dead/dying trees (15 points)** LOW-2 MED-10 HIGH-15
Criteria refers to dead / salvageable / declining trees
- Size of trees in stand (5 points) SMALL-1 MED-3 LARGE-5
Criteria refers to sawlog component with the objective of prioritizing large diameter sawtimber stands
- Age of trees (5 points) YOUNG-1 MED-3 OLD-5
Criteria places higher priority on older stands even if many of the large diameter trees have been removed in previous harvests
- % Basal Area in UGS (10 points) <30%-2 30-50%-5 >50%-10
Criteria prioritizes regenerating low quality stands and promotes carrying better quality stands for longer rotations
- Threat to seed source (15 points)** LOW-2 MED-10 HIGH-15
Criteria prioritizes regenerating stands with marginal seed source (30-50 BA) which are at risk for windthrow / decline / etc.

NOTE: Points for each criteria are absolute to weight the scores

- Examples: For #1. only 2, 10 or 15 points can be given
For #2. only 1, 3 or 5 points can be given

REGENERATION ASSESSMENT

Classification will reflect current status of regeneration and interfering vegetation

1. Regeneration adequate to regenerate stand
2. Inadequate desirable regeneration and no major interfering vegetation problems
3. Interfering vegetation < 15 ft. tall (treatable with standard herbicide application)
4. Interfering vegetation > 15 ft. tall (woody stems difficult to spray)

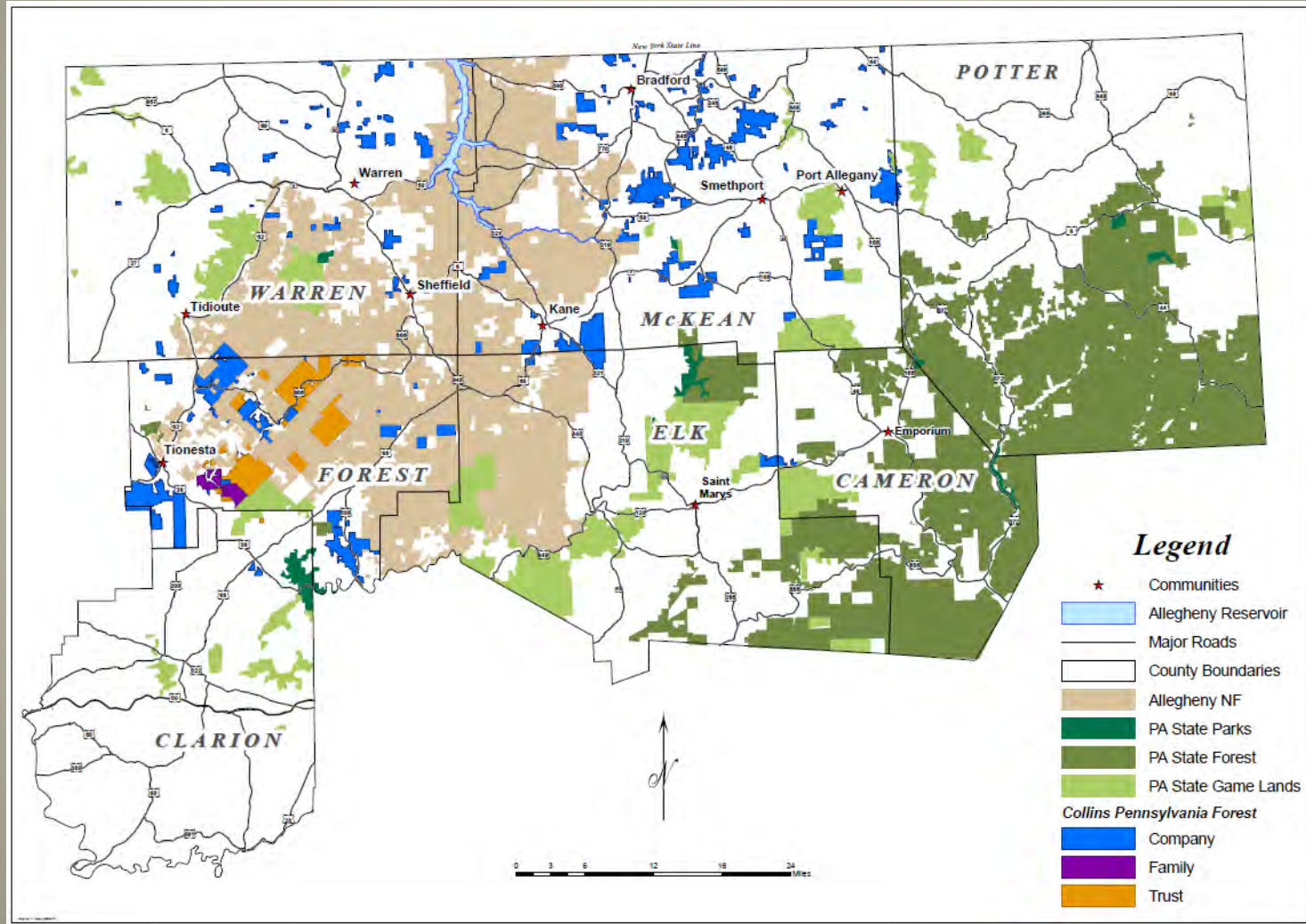
IF Interfering vegetation treatable with herbicide: Herbicide recommendation

1. Oust only
2. Oust & Accord
3. Oust & Accord – Low Rate (1/2 dose)

RECOMMENDED PRESCRIPTION

1. Regenerate in 1-10 years
2. Defer treatment for 5-10 years
3. Defer all treatments - re-examine in 10-20 years
4. Thin to improve spacing / species composition & remove UGS
5. Salvage
6. Shelterwood
7. Uneven age treatment

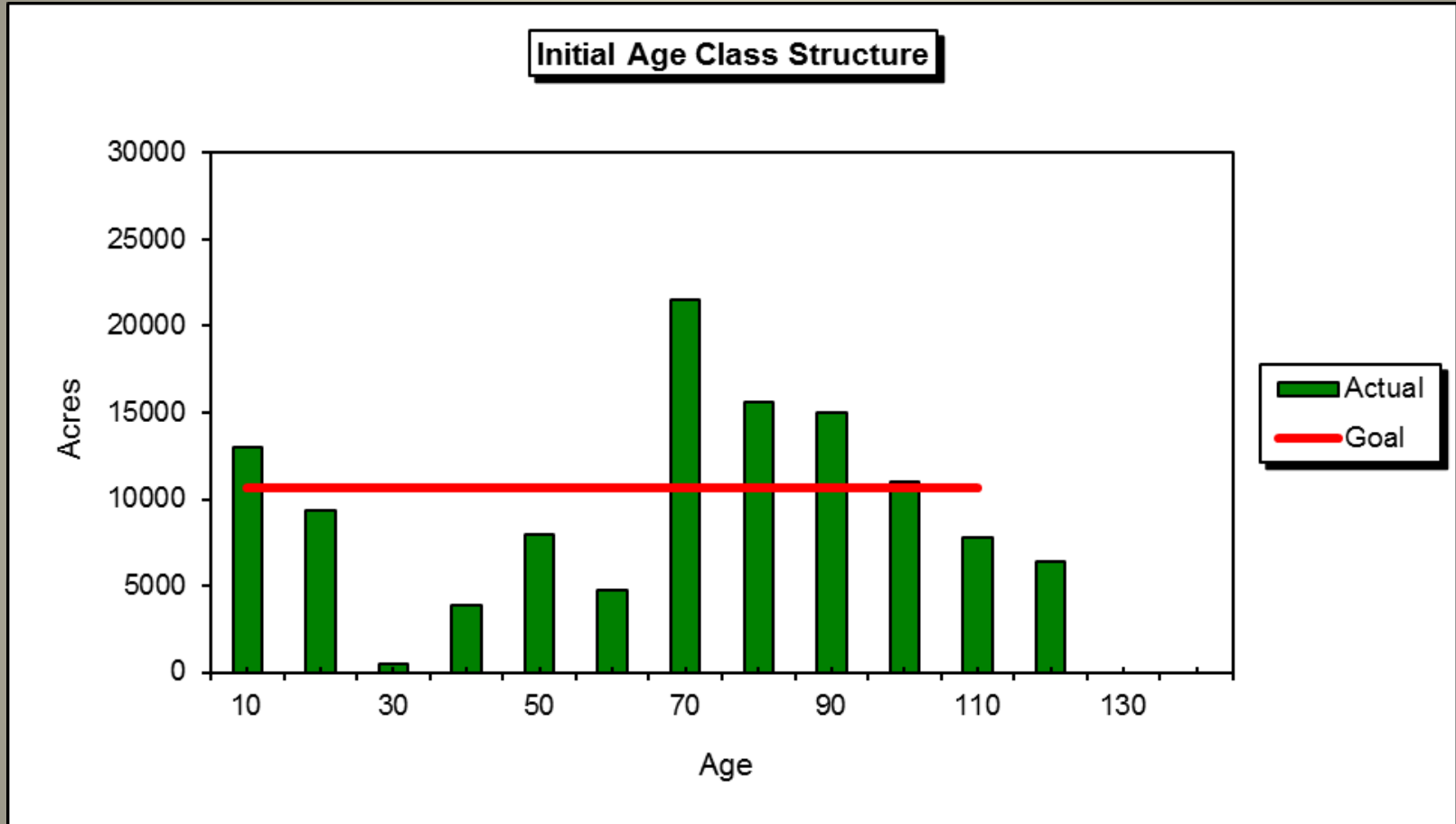
The Collins PA Forest – 118,000 Acres



Origins of the Even-Age Forest



The Collins PA Forest in 1996



Approaching the Goal by 2146

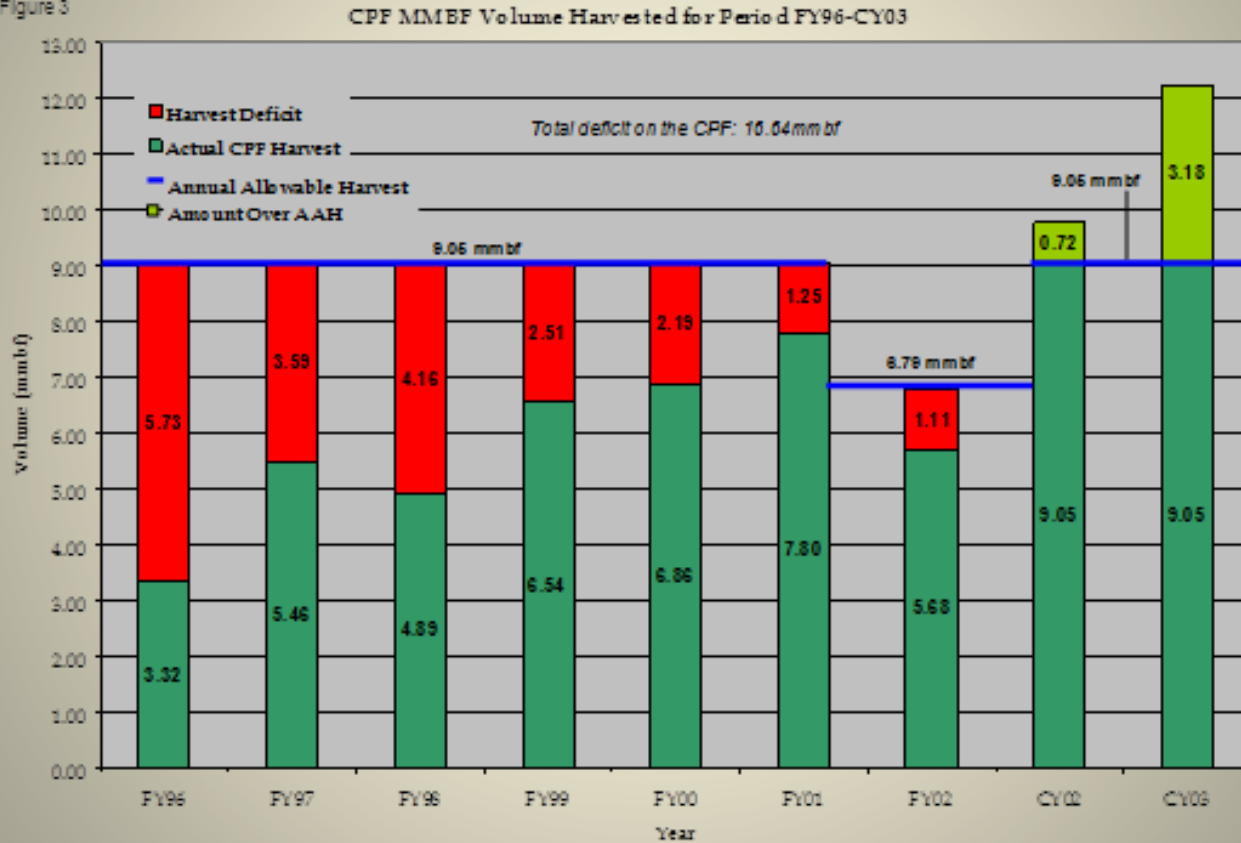


1996 Annual Harvest Goals to Get There

- Thinning Acres = No set goal
- Shelterwood Acres = 1,459
- Regeneration Acres = 1,164

Ramping Up To The New Harvest Level

Figure 3



Management Challenges Take Time



It is a Long Process to go from this...



To this Shelterwood...



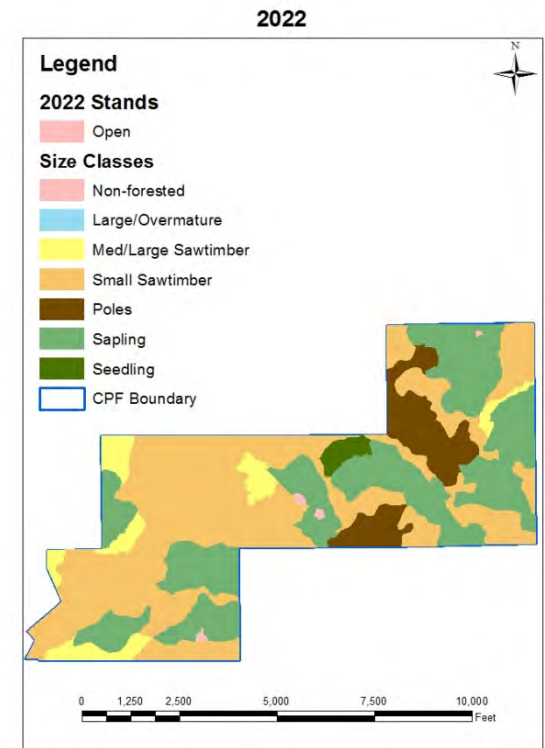
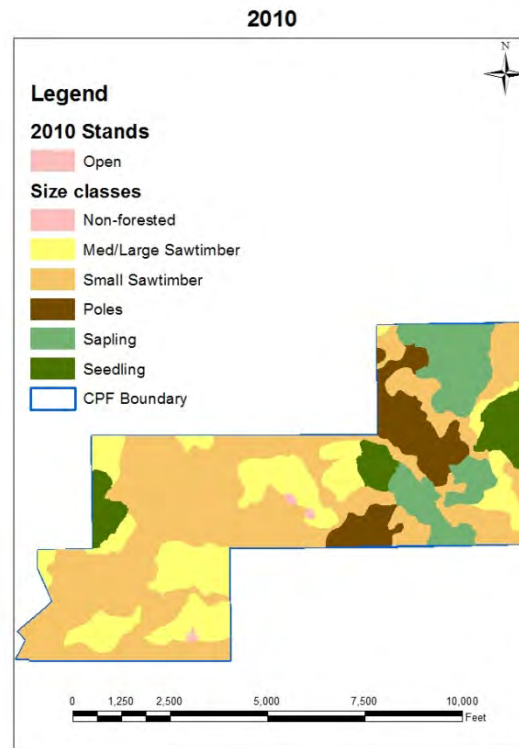
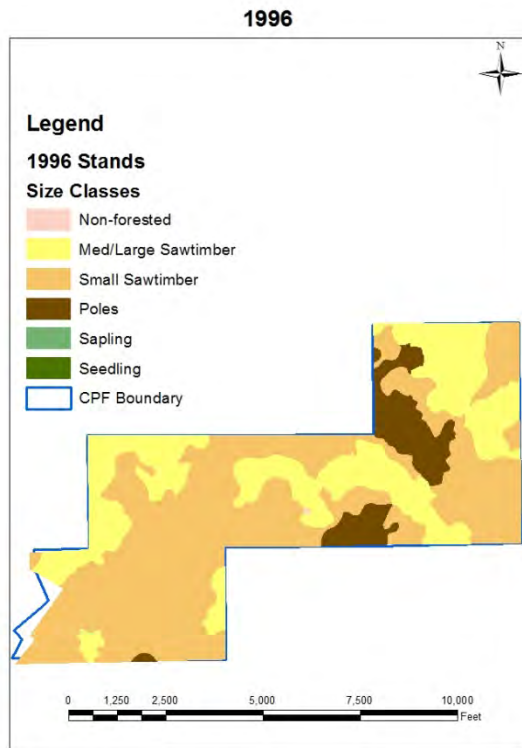
To established Regeneration...



To a Final Harvest and a Seedling/Sapling Stand



Changes through Time: “Work the Plan”



1300 Acres; zero acres of seedling/sapling

89 Acres of seedlings and 157 Acres of saplings; 19%

17 Acres of seedlings and 450 Acres of saplings; 36%

Then unplanned “stuff” happens



“In July 2003 we had to say our goodbyes” – The Dusty Trout, “Enos”

- On July 21, 2003 a derecho stretched across the CPF from SW Forest Co. to NE McKean Co. with a tornado taking down the Kinzua Bridge.
- The harvest deficit from 1996 to 2002 would soon be corrected.
- Although we had a harvest plan with an Annual Allowable Harvest (AAH) of 9.05 MMBF, we now had a huge swath of blowdown to recover before it deteriorated.

Blowdown Salvage: 2003-2005

- Severity varied from light (scattered trees down or damaged crowns), to moderate (less than half of the overstory down or damaged), to severe (more than half of the overstory down or damaged).
- Salvage efforts began the next day, but lots of scouting and planning went into the massive salvage effort for a couple years.
- **Total MBF Salvaged = 15,442 MBF**
- 764 acres of stand replacement
- 3,483 acres similar to shelterwood conditions
- 23,508 acres of light blowdown



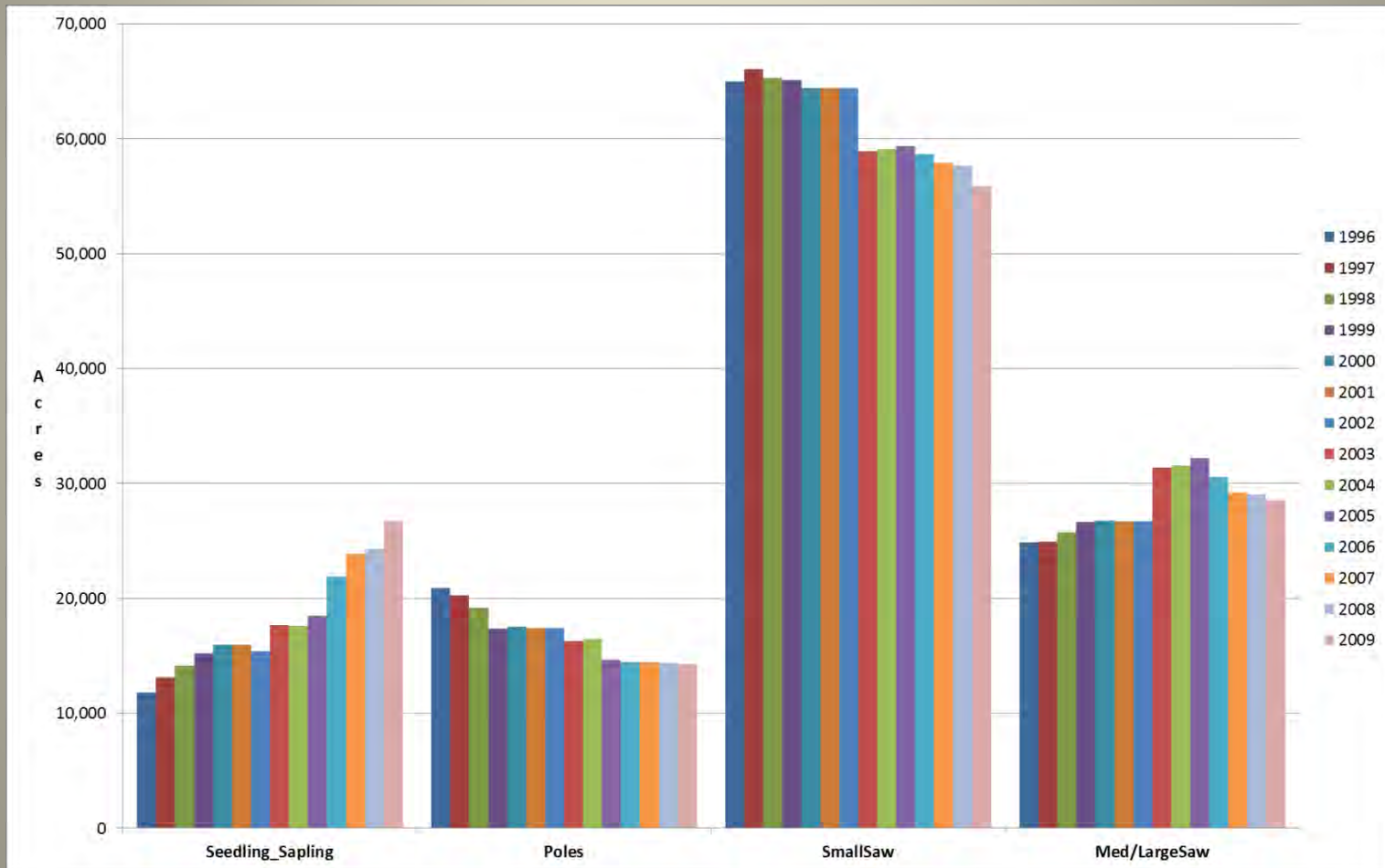
2008: Time to recalibrate

- A dozen years of forest management since the 1996 plan
- A major blowdown event in 2003
- More data and understanding about the forest
- Are we still on track to reach our goals?

2008-2009 Revisit to the Forest Model

- More data showed the forest is more productive than we thought in 1996.
- New Annual Harvest Goals (From 9.05 MMBF to 12 MMBF)
 - Thinning Acres = 650
 - Shelterwood Acres = 1,334
 - Regeneration Acres = 1,498

Shifting Age Classes: 1996-2009



EAB: Another huge unplanned harvest, “stuff” happens



**CPF Strategy for monitoring Ash salvage treatments
due to Emerald Ash Borer (EAB)
June 2014**

EAB: Time to Amend the Planned Work

- The Land Management Team met and discussed the Ash pre-salvage program.
- The goal was to develop a systematic program to capture most of the ash volume and value before it was lost, and have these harvest areas become part of our regular pipeline of projects with appropriate follow up actions.

Due to the Emerald Ash Borer infestation on the CPF, salvage of Ash before decline and decay is being prioritized. All harvest blocks targeting the Ash component will be classified as SALVAGE blocks in GIS Silv layer (tracks annual harvest treatments) and Harvest Basket (database to track all harvests and follow up protocols).

A variety of marking schemes may be used in these stands including:

1. Mark to take
2. Mark to leave
3. Remove by species and size (ex. cut Ash & Beech >6" DBH)
4. Combination of above schemes

Regardless of marking scheme, these harvests are designed to salvage Ash which is being affected by EAB while maintaining site productivity and future management options.

Ash is present in CPF timber stands in a variety of cover types, densities, development classes, and site conditions. Ash is often not evenly distributed within these stands. Stands with Ash will be evaluated and prioritized for treatment based on those factors. Each stand treated will present unique operational conditions and will result in a variety of timber stand conditions and future management options. Multiple stands may be treated in one larger treatment area (block).

Residual stands of five acres or more will be mapped (GIS stands layer) where there are distinct stand differences and the residual stands have different future timber management options. Residual stand species composition, density and development class (stand type) and specific monitoring protocols will be assigned to each stand which receives a "salvage" treatment.

In order to better monitor these stands after treatments, the following protocols will be used.

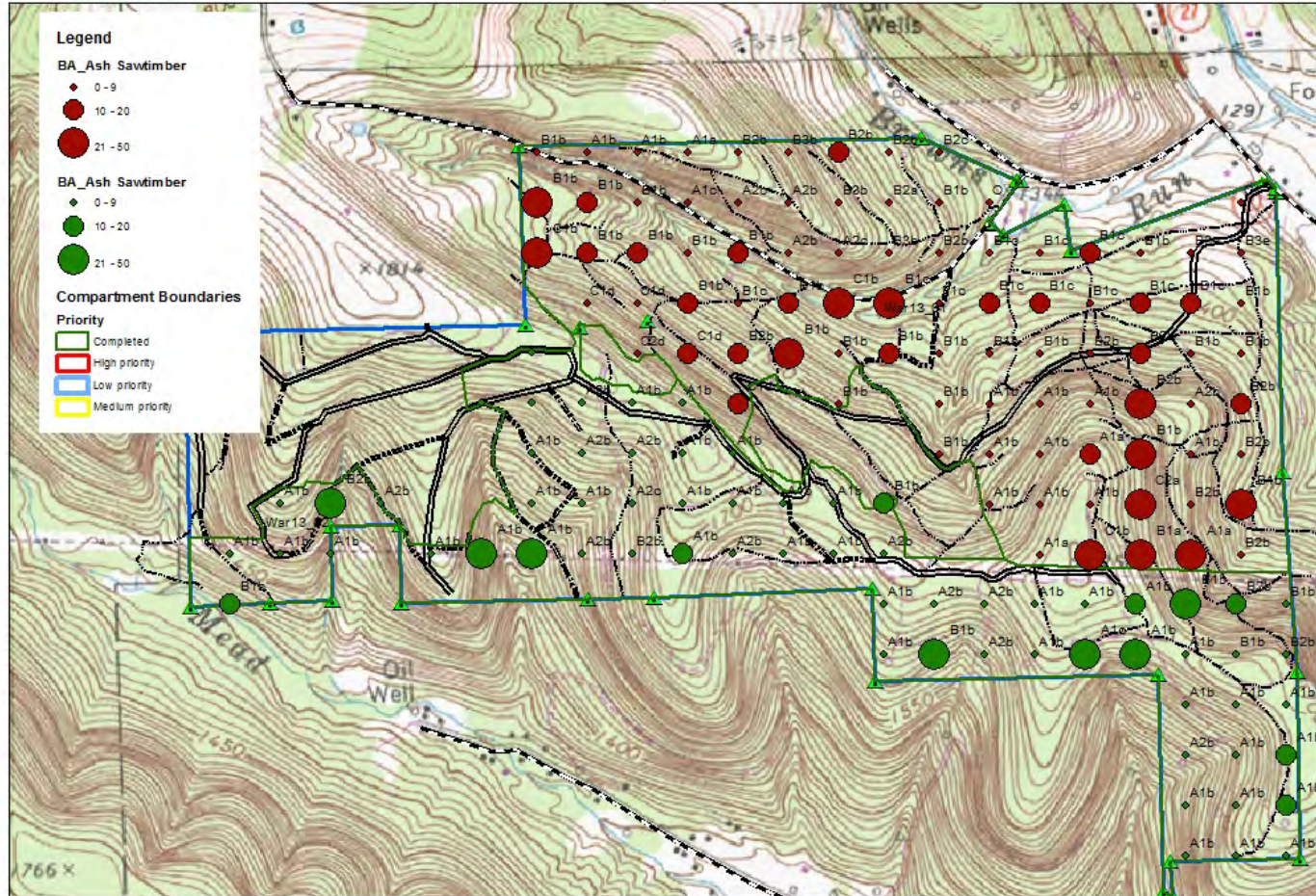
Residual Stand Condition	Salvage Treatment	Classification and Monitoring Protocols
Mature timber, good seed source, > 50 sq.ft. BA	Shelterwood	New timber type X2b & standard shelterwood protocols (regen check and/or plots during 3rd growing season)
Small to medium sawtimber, > 70 sq.ft. BA	Traditional Thin	New timber type X2c, revisit stand in 10th year
Small to medium sawtimber, 50-70 sq.ft. BA	Heavy Thin	New timber type X2c, revisit stand in 5th year
Small to medium sawtimber, 40-50 sq.ft. BA	Non-traditional Shelterwood	New timber type X3c, standard shelterwood protocols
Pole timber > 50 sq.ft. BA	Pole thin	New timber type Xxd, revisit stand in 10th year
20-40 sq.ft. BA over 5 inch DBH	Two age	New timber type X2f, standard 2 age regen protocols (regen check and/or plots during 3rd growing season)
5-20 sq.ft. BA over 5 inch DBH	Regeneration	New timber type Xxf, standard regen protocols (regen check and/or plots during 3rd growing season)

Annual summaries of salvage blocks will be done to monitor number of stands receiving Ash salvage treatments which fall into each of the above conditions and monitoring protocols.

Planning Focus Becomes EAB



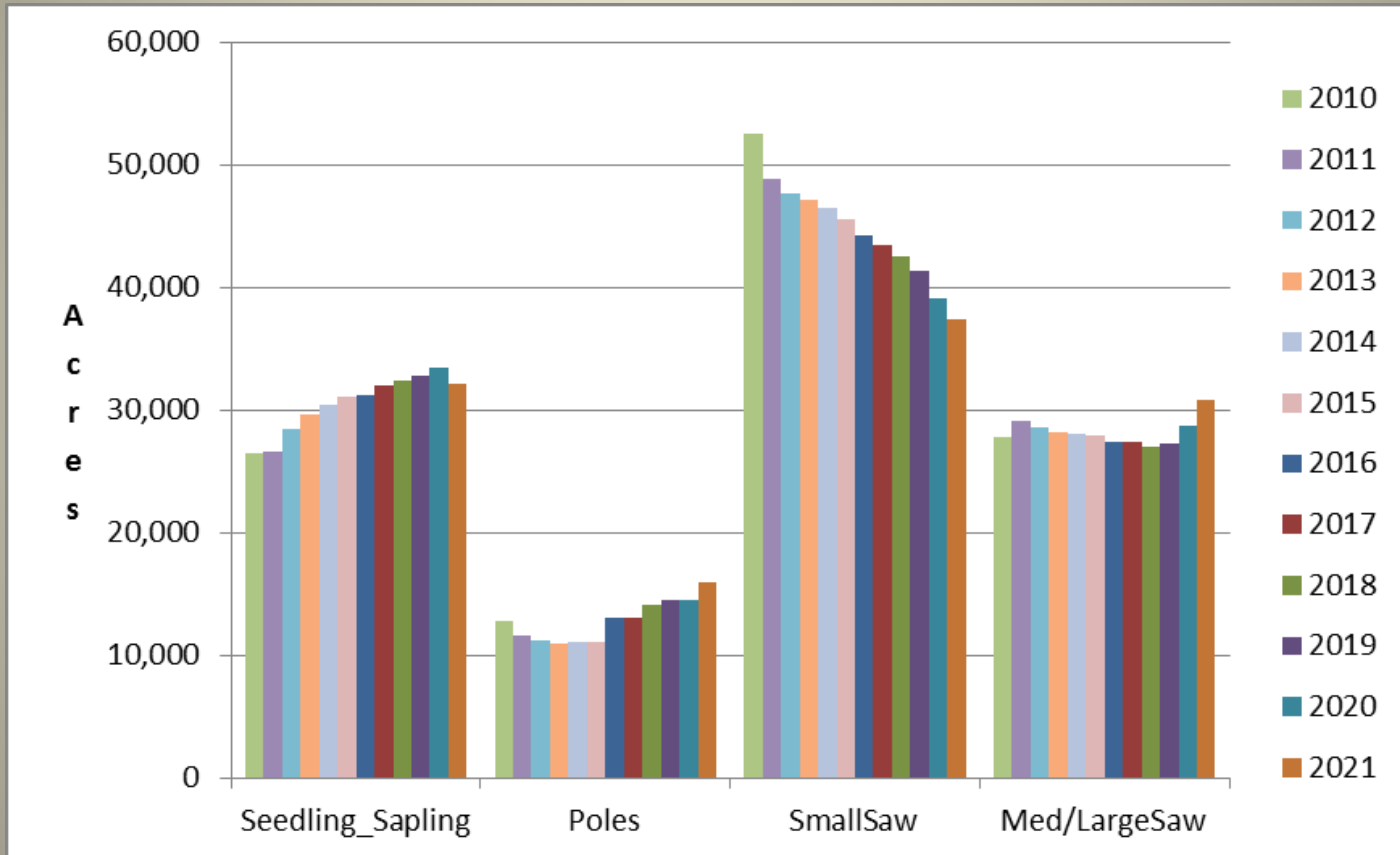
1 inch = 1,000 feet



2021: Time to Recalibrate, Again

- Another dozen years have gone by!
- Emerald Ash Borer was found on the CPF in 2013, and a major ash pre-salvage program harvested about **20 MMBF of ash**.
- Even more data has been collected. In 2008, a decision was made to measure 20% of our inventory plots in the 25-30 year old stands.

Another 12 years of Management: 2010-2021

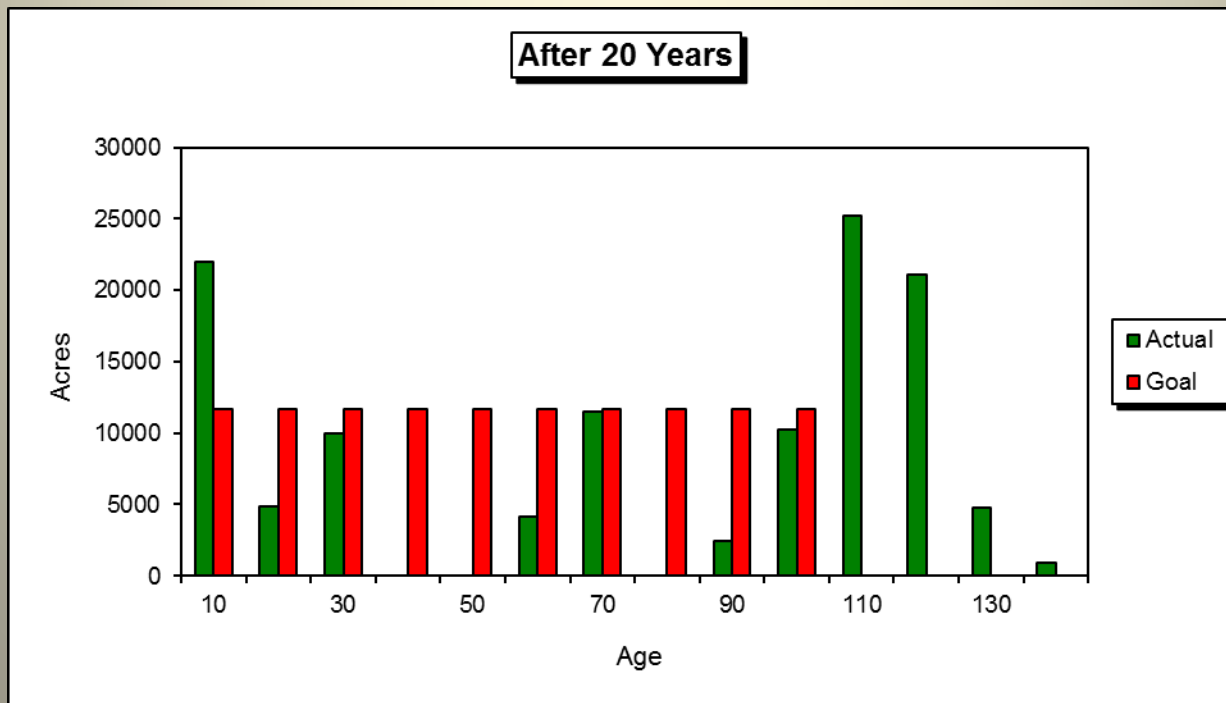


2021 Revisit to the Forest Model

- The Forest productivity is dialed in well, but the mature forest continues to age.
- New Annual Harvest Goals:
 - Thinning Acres = 587
 - Shelterwood Acres = 1,083
 - Regeneration Acres = 1,004

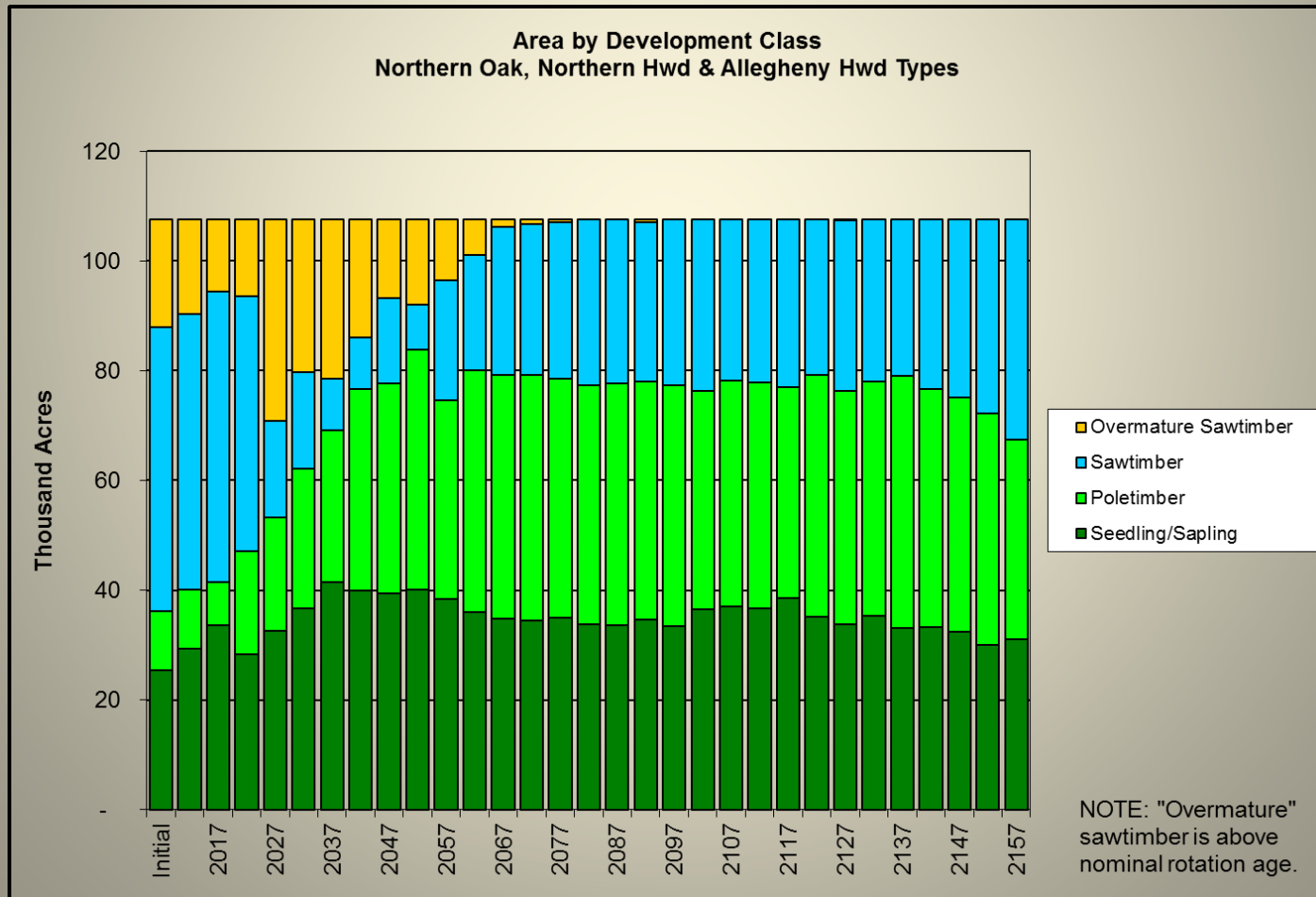
The 1996 Plan for 2016

- Pretty close to the seedling/sapling prediction for 2016 of 31,814 acres. 2016 actual acreage was 31,157.

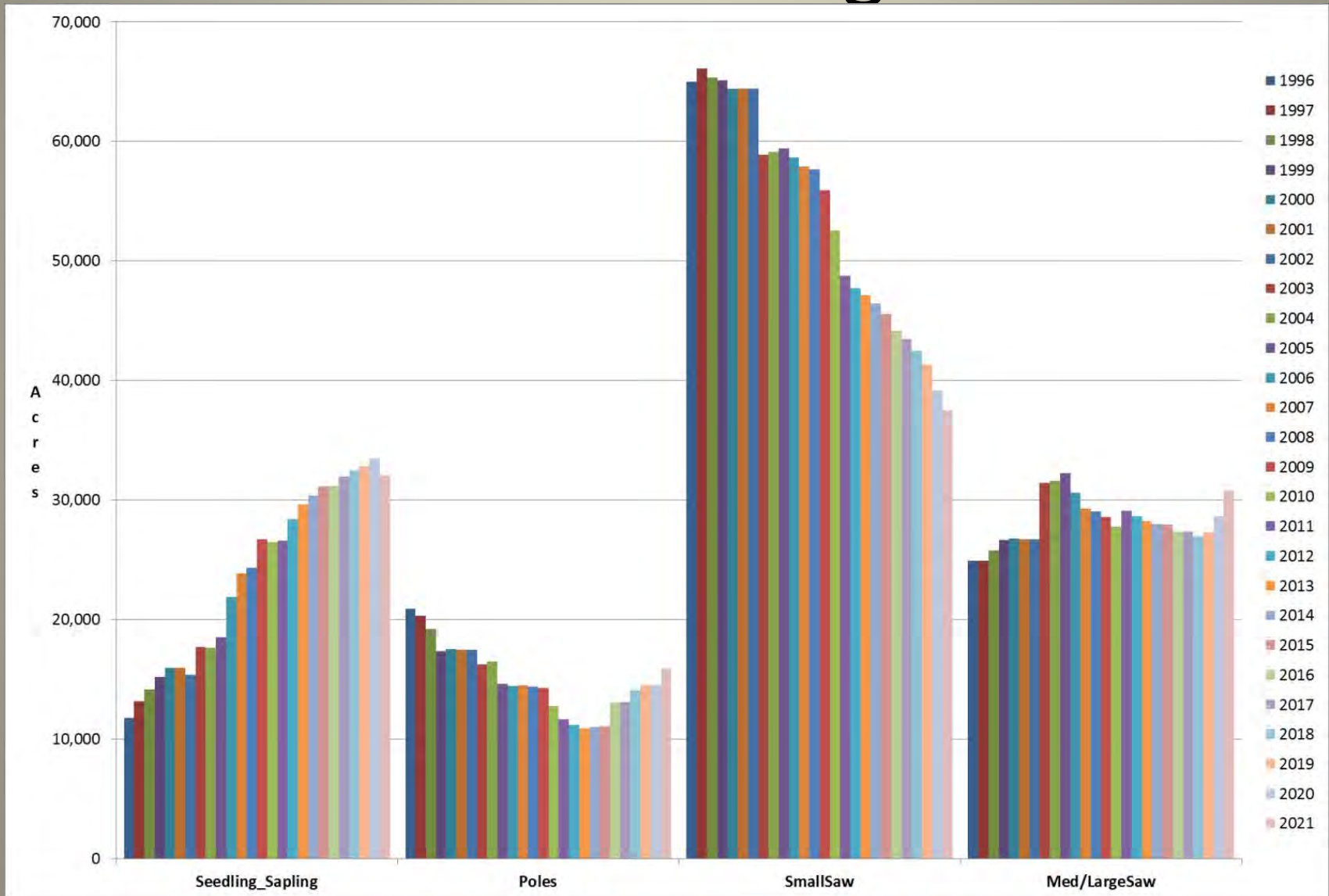


The 2009 Plan for 2022 vs. 2021 Actual

- Seedling/sapling goal 28,312 acres vs. 31,814 acres
- Pole timber goal of 18,752 acres vs. 15,894 acres



25 Years of “Working the Plan”

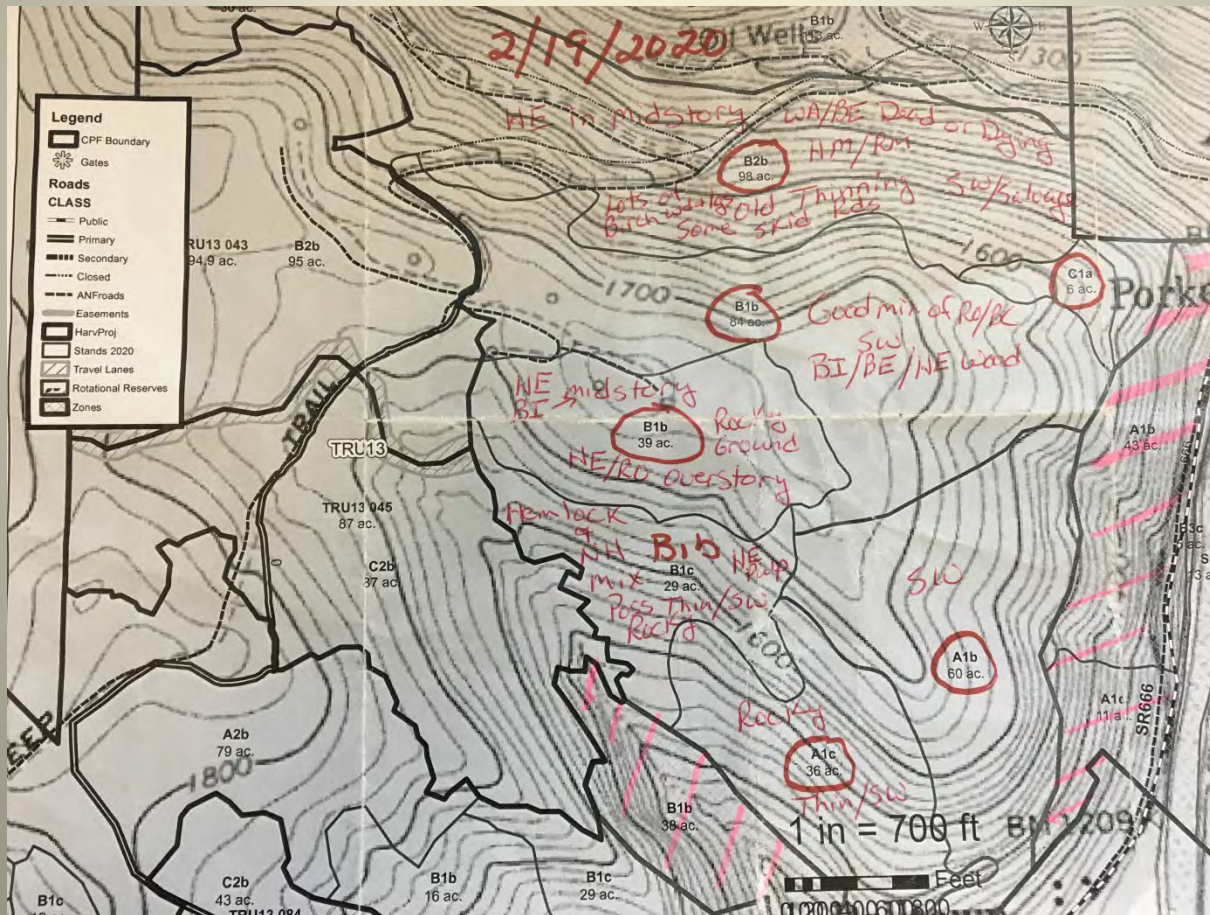


“Sometimes we have to do what we said we were going to do.” Paul Higby, Collins Chief Forester, 1978-2001



Good Planning and Good Execution Leads to Good Results

- Paper maps for notes, or whatever note taking works for **you** (phone, handheld unit, etc.), but **TAKE NOTES!**
- You cannot remember all the nuances you see in the field over the course of a day.



Questions/Comments?

“Plan the work, and work the plan”. And remember to smile and have fun along the way!

