Unicois

Planted in 2013 and 2015

Understory management

NORTH CAROLINA Wildlife RESOURCES COMMISSION

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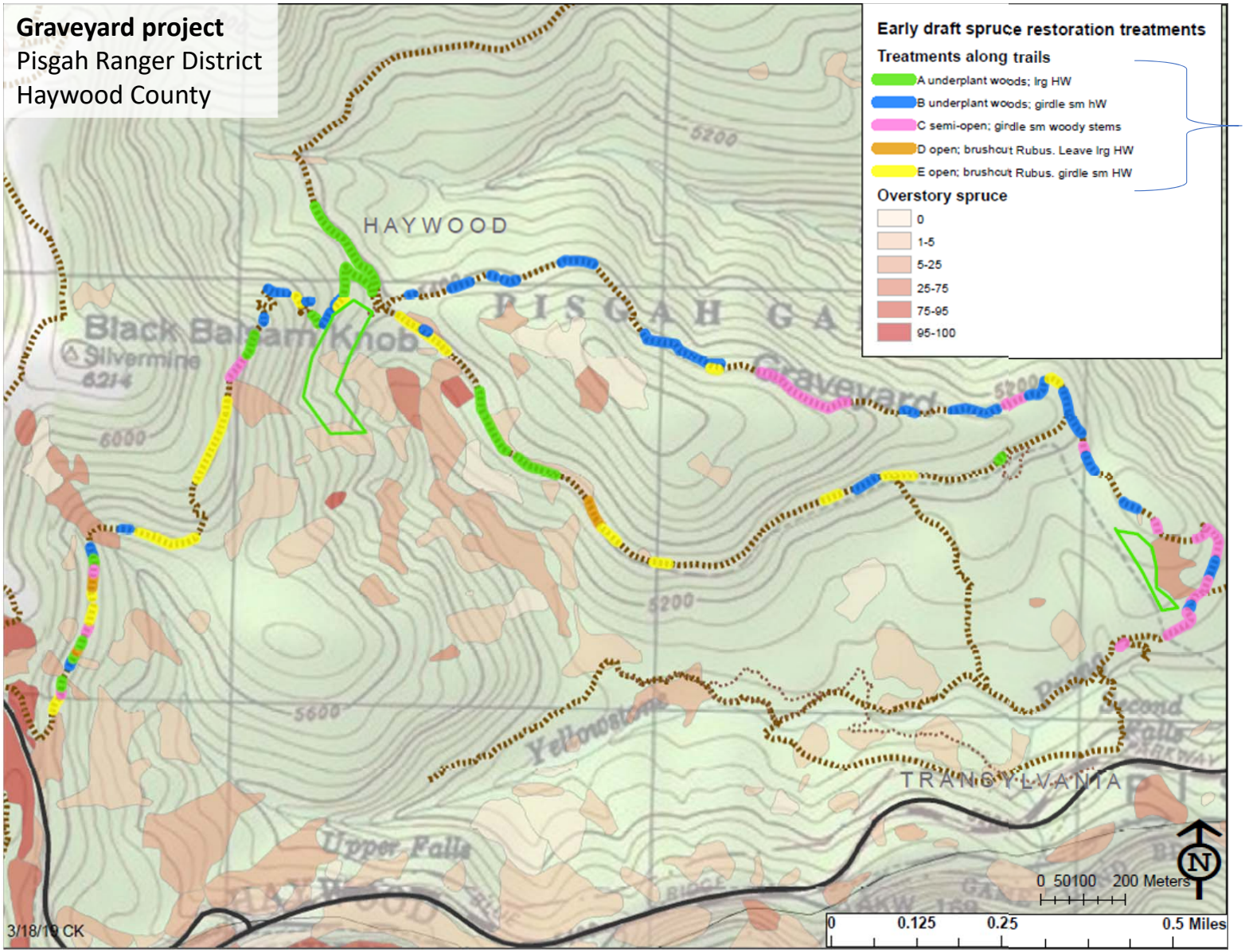
300 seedlings. Haul in crew 9/23: recruited help via The Pisgah Conservancy. Planted 9/25 by Haywood silviculture students.

Flat Laurel Branch openings



Different prescriptions needed

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Condition: Mostly open canopy, herbs, *Rubus*.
Rx: Weedeat just enough room to plant.

Condition: open canopy with clumps of trees.
Rx: weedeat just enough room to plant. Work toward and around clump of trees.

Condition: dense stand of small hardwoods or Rhodo. Rx: underplant in shade and cut/girdle small hardwoods. Release suppressed spruce.

Planning a spruce project

Assess PROBLEM AND NEED

IMPROVE QUALITY (↑ spruce in a forest patch)

CONNECT isolated patches of spruce forest

Evaluate APPROPRIATENESS

-Current Spruce Unit

-SASRI Plan criteria

-Rare species records or models

-Field visits to determine if planting is needed

Consider LOGISTICS

-Seedling propagation needs

-Access via roads, trails

COORDINATION and IMPLEMENTATION

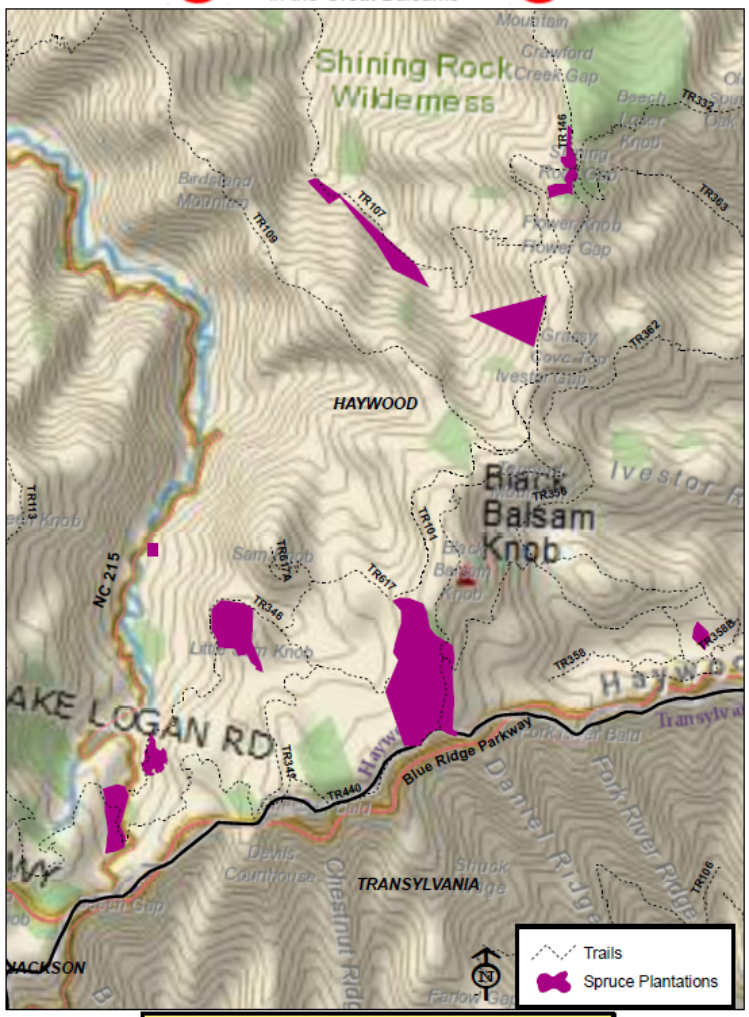
Landowner, regulations, compliance

Partners and outreach

Funding

Planting and Management

Monitoring



Pisgah National Forest — April 20 (Date of report) 1938

~~Sherwood~~ Project — North & west slopes of Little Sams Knob 35°19'30" N, 82°54'00" W

(2) ~~P-1~~ P-2 Previous No. (3) ____ Sec. (4) ____ T ____ R ____, ____ Meridian

____ Acres. Date established April 4 to April 14, 1938 (If period, give dates of beginning and ending)

Species (Scientific names)	Source of seed: Forest	Source of seed: Lot No.	Nursery where grown	Class (5) or age	Quality or condition at time of planting
rubra	Pisgah	21-31	Parsons	2-1	Fair #

Species (Scientific names)	Method of planting or sowing	Number trees or pounds seed per acre	Total amount used	Number of trees staked
rubra	One - man Center - Hole	751	35245	200

S-Planting

Pisgah National Forest — April 22 (Date of report) 1952

Sherwood Burn Project

Area No. (2) P-17 Previous No. (3) ____ Sec. (4) ____ T ____ R ____, ____ Meridian

19.1 Acres. Date established 3-26 to 4-11-52 (If period, give dates of beginning and ending)

Species (scientific names)	Source of seed: Forest	Source of seed: Lot No.	Nursery where grown	Class (5) or age	Quality or condition at time of planting
Pinus strobus	- -	- -	TVA, Clinton Tenn.	3-0	Good
Picea rubra	- -	- -	"	2-0	Good

Species (scientific names)	Method of planting or sowing	Number trees or pounds seed per acre	Total amount used	Number of trees staked
Pinus strobus	Bar slit	1100	3,000	- - -
Picea rubra	Bar slit	1100	18,000	- - -

Look for historic files, records!

Goal 3: Where (& who & why)?

- Who might lead the team?
- Who else should be on the team?

- Look at plotter map and circle some low-hanging fruit sites for restoration.
- Have any of you been to this site?
- Do you have info on this site, such as current condition of the forest, past history, land owner, etc?
- Why do you want to restore this site? Salamander habitat? Protecting headwater streams? Flying squirrel habitat connectivity? Improve forest health? Cones for crossbills? etc…

- What do teams need to get started?
- Were you able to come up with site(s)?
- What are next steps for the teams?
- Plan future meeting or site visit?
- Get additional guidance or training?

Scenario Based Prescriptions for High Elevation Forest Restoration

1) Mature Forest (High forest canopy, trees of seed bearing age)
   a. Red Spruce Plantation
   b. Northern Hardwood
   c. Mixed Red Spruce/ Fraser Fir

2) Open Conditions (lacking high forest canopy)
   a. Dense woody
   b. Open herbaceous conditions (i.e. edge of bald.)
   c. Patchy Tree Canopy (hardwood or conifer)

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Idea: a booklet we'll prepare later

Current Conditions: Mature Red Spruce Plantation

Discussion: The southern Appalachian landscape includes many examples of red spruce plantations. Many are mature, having been planted in the 1930's and 1940's during the CCC era in attempts to reclaim damaged and denuded spruce/fir forest. In many cases, these spruce did their job very well, now creating dense stands that let little light to the ground and contain very little structural and composition diversity in all the vegetative layers present.

Potential Goals and Objectives: (1) Introduce *structural* diversity, (2) Introduce *compositional* diversity (i.e. add hardwoods), and (3) maintain the long-term *health* of existing mature spruce

Treatment Discussion: In its most general sense there are two options available when interested in managing a mature red spruce plantation.

1) Defer Treatment – This may be the best option in many cases, for a variety of reasons. For example: the historic value of the existing plantation, tree height to crown ratios are too small, no way to feasibly get trees to the ground creating unnecessary hazards, etc.

2) Thin the stand of trees ---- LIGHTLY. Incrementally thin over the span of several years.

details, details…

Prescription Options/ Configurations:

- **Thin individual trees** throughout the stand choosing the least healthy and leaving the healthiest.
- **Thin in small groups** focusing on patches of less healthy trees or featuring hardwoods that might already be established in the main canopy or where pockets of desirable regeneration might exist.
- **Add groups just within the edge** (25 to 50% of average tree height) and prune the adjacent outside edge trees to draw light and understory response inside the stand.

Treatment Methods/Tools:

Girdling: It is effective at creating mortality and can be done mechanically for conifers. The trees die slowly, gradually increasing light levels. Dead stems, now called snags, remain standing until decay, gravity, and their neighbors allow them to fall. This may be suitable interior to a stand but may not be desirable near a trails or recreation areas.

Chainsaw felling: In stands with larger trees, areas with more open stand conditions, or where group openings are desired, felling spruce stems may be possible. Felling even a moderate number of stems across a large stand will produce a lot of slash on the forest floor requiring lopping to increase ground contact and future decay. Group felling of stems may make the group opening inaccessible for further restoration activities or smother desirable regeneration for some time if lopping does not occur. In all cases this will be labor (and cost) intensive.

Light Removal Harvest: Though in most cases removal of some red spruce stems is not feasible due to ESH, poor access, land management decisions, or stakeholder/land owner interest, removal where a niche market for spruce exists is possible. Lightly tracked, feller forwarding type equipment on existing access trails in the winter months can do "light touch" work in these types of situations creating desired structural conditions, leaving more aesthetically pleasing, restoration ready conditions.

Post thinning follow-up treatments: Though the most likely choice after thinning might be "wait and see". Several options are available that might jumpstart desired conditions especially before group openings brush in with midstory species like rubus.

- Planting or seeding of northern hardwoods (see pages XXXX- XXXX)

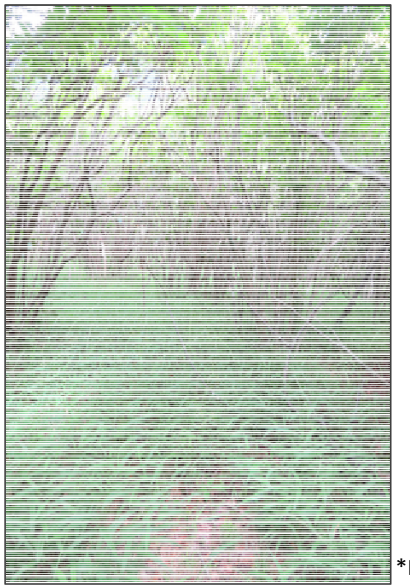
Existing Conditions:	*Monoculture of spruce, midstory and understory vegetation absent or limited*					
Basal Area[£]:	*250 ft2/ac*	**Overstory Species:**	*Red Spruce, Yellow Birch (scattered)*			
Stems per Acre[π]:	*200tpa*	**Midstory Species:**	*Absent*			
Stand Acres:	*60 acres*	**Understory Species:**	*Absent (interior), yellow birch, sugar maple (along edge)*			
Spruce/Fir Status:						
In canopy	In midstory	In understory	Live Crown Ratio (LCR)	Canopy Closure	Cone bearing trees nearby?	Competing Vegetation
Yes	*No*	*No*	*30 - 40%*	*100%*	*Yes*	*None*
Current Condition Notes:	*Red Spruce Plantation (i.e. Great Balsam DAR plantation)*					
Management Objective(s):	*Increase structural complexity, retention of mature spruce, improve forest health*					
Recommended Prescription:	*Non-commercial Variable Density Thinning, including skips and gaps*					
Prescription Details:	*(1) Retain an average stand basal area of 200 ft2/ac, by girdling trees with LCRs below 40% or other obvious health problems.*					
	(2) Select stems for girdling throughout the stand matrix reducing to target BA.					
	(3) Select groups of trees for girdling within the stand interior (> 1 tree height from edge), consider placing opening over desirable advanced regeneration or in pockets of poor health.					
	(4) Gaps should be no greater than ½ a tree height with a ½ tree height retention areas surrounding gaps for wind stability.					
	(5)					
Stand Specific Mitigations:	*(1) Do not release an individual spruce on more than 2 sides.*					
	(2) Do not girdle trees or install gaps within one tree height of the stand edge facing the prevailing wind direction.					
	(3) Gap length can be no longer than 1 tree height and not aligned with prevailing winds. Strive to leave trees with LCRs greater than 40% along edges of gaps.					
	(4) Do not girdle trees with obvious signs of cone production.					
	(5) Do not girdle trees within one tree height of roads, trails, and recreation sites.					
	(6) Do not place gaps within 2 tree heights of another gap.					

Mature Forest – Red Spruce Plantation

Seedlings in treefall gap in plantation

Mature forest- northern hardwoods with no or sparse spruce

Mature northern hardwoods with some spruce



*NNIS

Open canopy, dense woody stems

Open canopy- dense herbs and *Rubus*

Open canopy with patchy trees

What we're working toward…