Non-commercial Spruce Restoration: The Ecological Restoration Team

Ben Rhodes – The Nature Conservancy in West Virginia

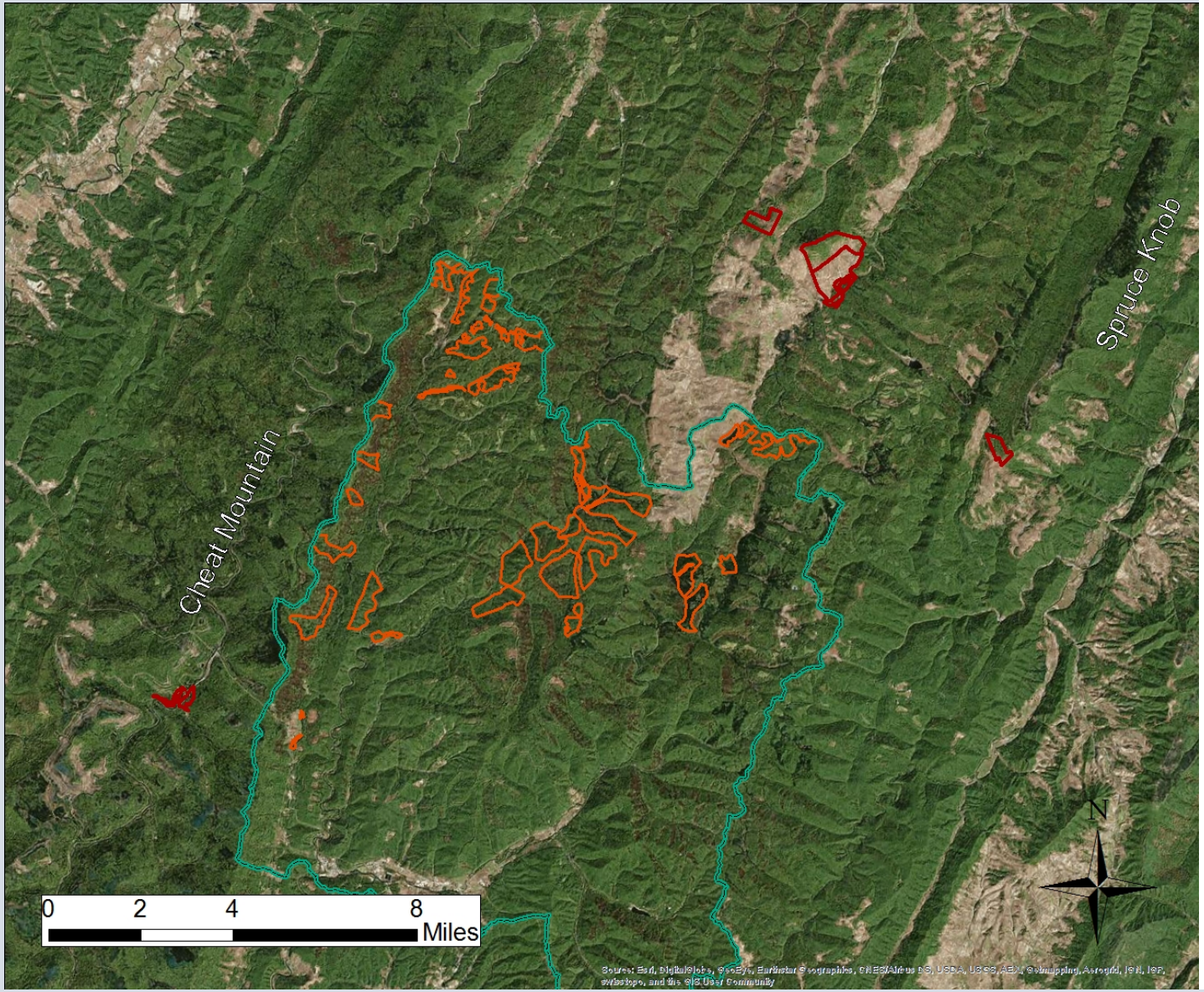
What We Do

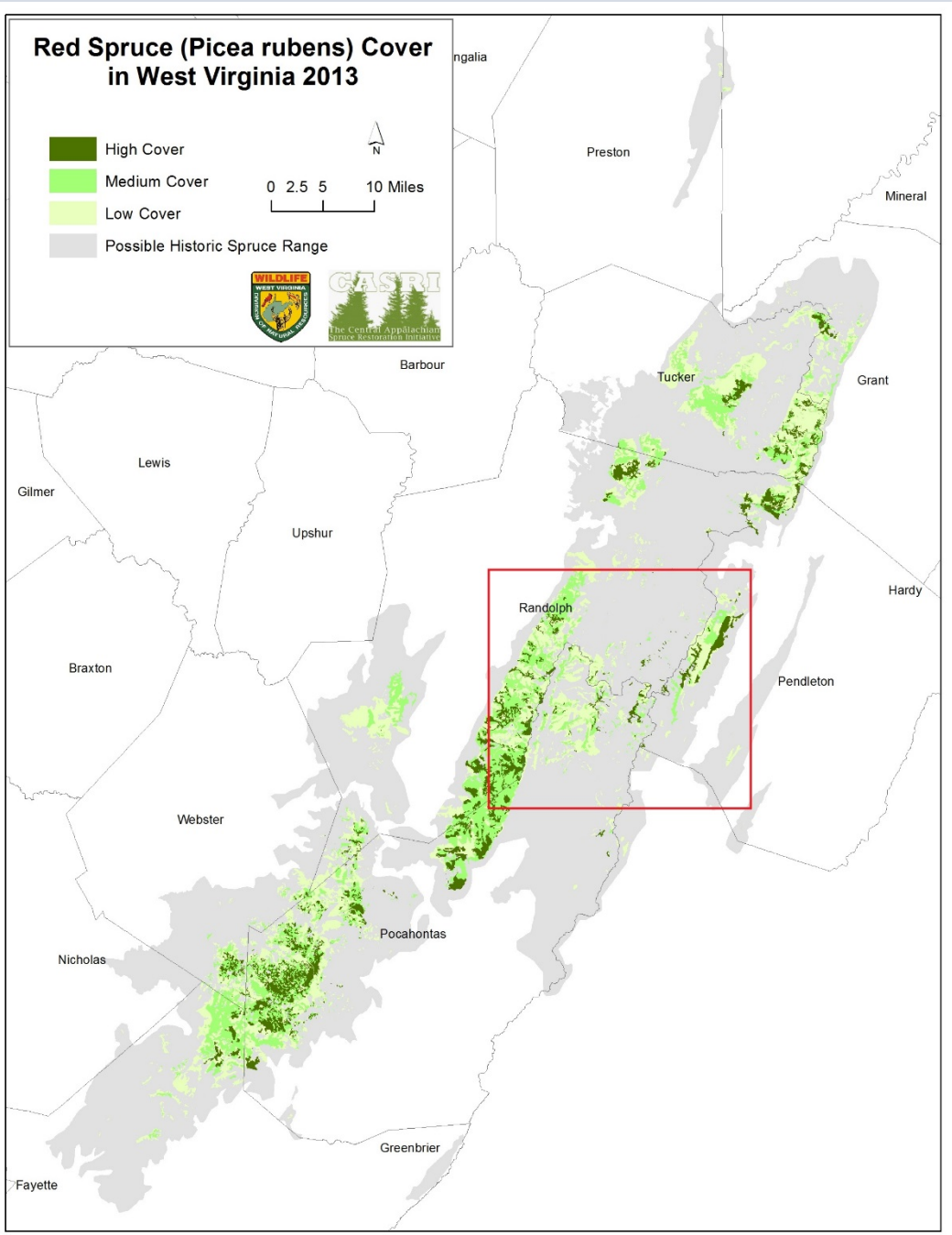
- CASRI's mandate: expand, connect, and improve existing red spruce stands
- Comprehensive red spruce-northern hardwood forest restoration:
  - Spruce release (connect)
  - Spruce-hardwood plantings (expand)
  - NNIS control (improve)
- Supplementary projects:
  - Mapping
  - Monitoring
- Funded by USFS, staffed by TNC and AmeriCorps

Objectives of Spruce Release

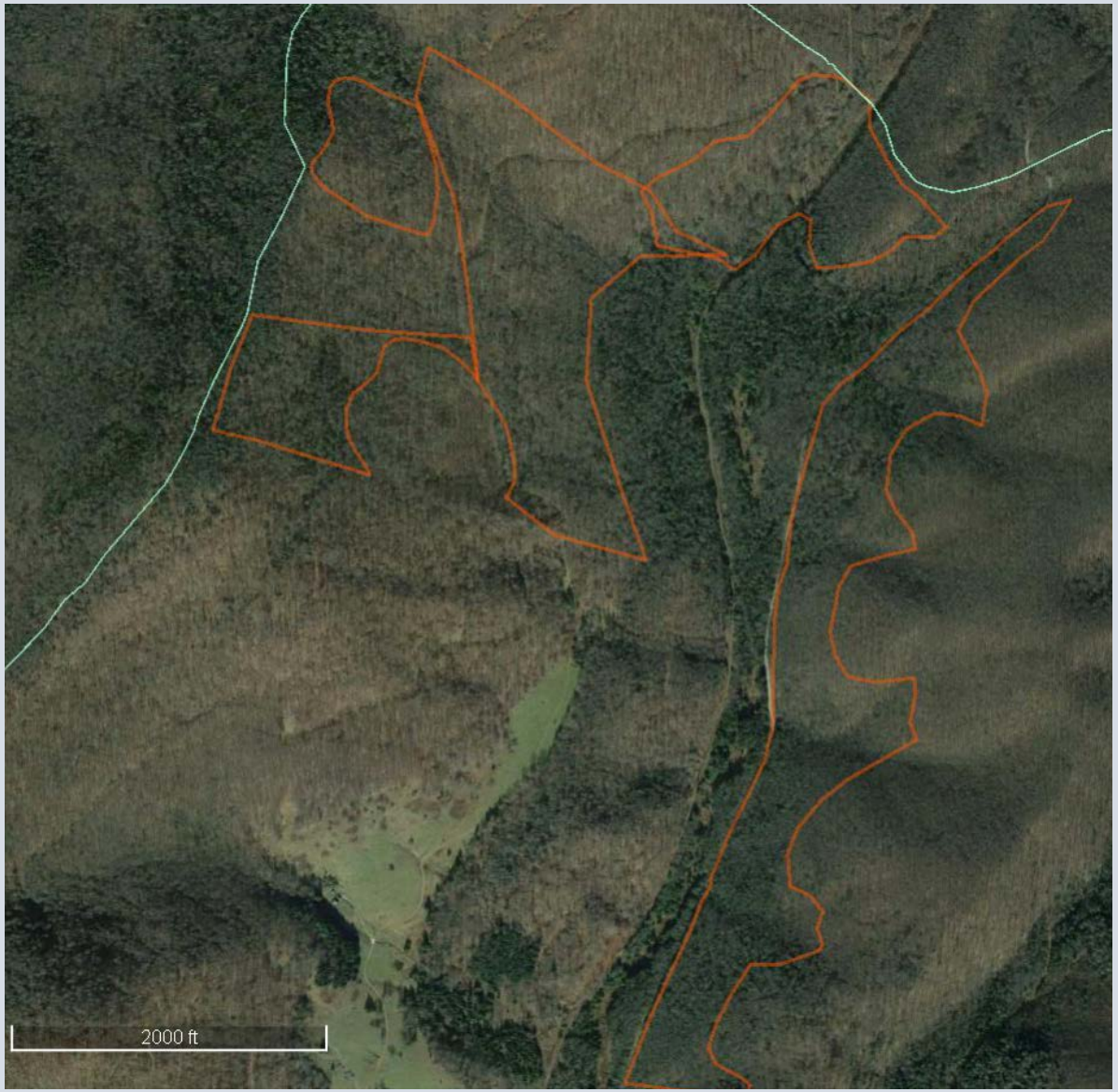
- The goal of the Upper Greenbrier North (UGN) spruce release project is to expand and connect existing patches of mature spruce.
- The United States Forest Service has identified distinct spruce release areas (units), prioritized by their location relative to mature spruce stands.
- The Ecological Restoration Team (ERT) removes competing hardwoods around suppressed understory and midstory spruce within each unit.
- It isn't just about the spruce – we seek to restore a functional red spruce-northern hardwood forest that supports a diverse plant and animal community.

Work Area


Cheat Mountain
Spruce Knob
0 2 4 8
Miles
N


Red Spruce (Picea rubens) Cover in West Virginia 2013
High Cover
Medium Cover
Low Cover
Possible Historic Spruce Range
N
0 2.5 5 10 Miles
WILDLIFE WEST VIRGINIA
CASRI
The Central Appalachian Spruce Restoration Initiative
Preston
Mineral
Barbour
Tucker
Grant
Lewis
Gilmer
Upshur
Randolph
Hardy
Braxton
Pendleton
Webster
Pocahontas
Nicholas
Greenbrier
Fayette

Work Area



Greenbrier headwaters: connecting habitat fragments

Little River tributaries: expanding mature spruce patches

Methods

<u>Two-step process:</u>

- Kill competing understory and small midstory hardwoods using a basal spray herbicide application.
  - Low-volume spray, minimal non-target damage if done right
- Once the small trees have died, create canopy gaps around midstory spruce by injecting select overstory hardwoods with herbicide.
  - Precise, extremely low volume, almost no chance for non-target damage

Accomplishments

FY 2015

- Adaptive management (learning process)
- Planted 9600 red spruce seedlings.
- Treated 500 acres of NNIS in and around spruce forests.
- Completed 328.5 acres of spruce release.

FY 2016

- Applied lessons learned in 2015 to maximize efficiency and effectiveness.
- Treated 550 acres of NNIS in and around spruce forests.
- Completed 500.9 acres of spruce release.

FY 2017

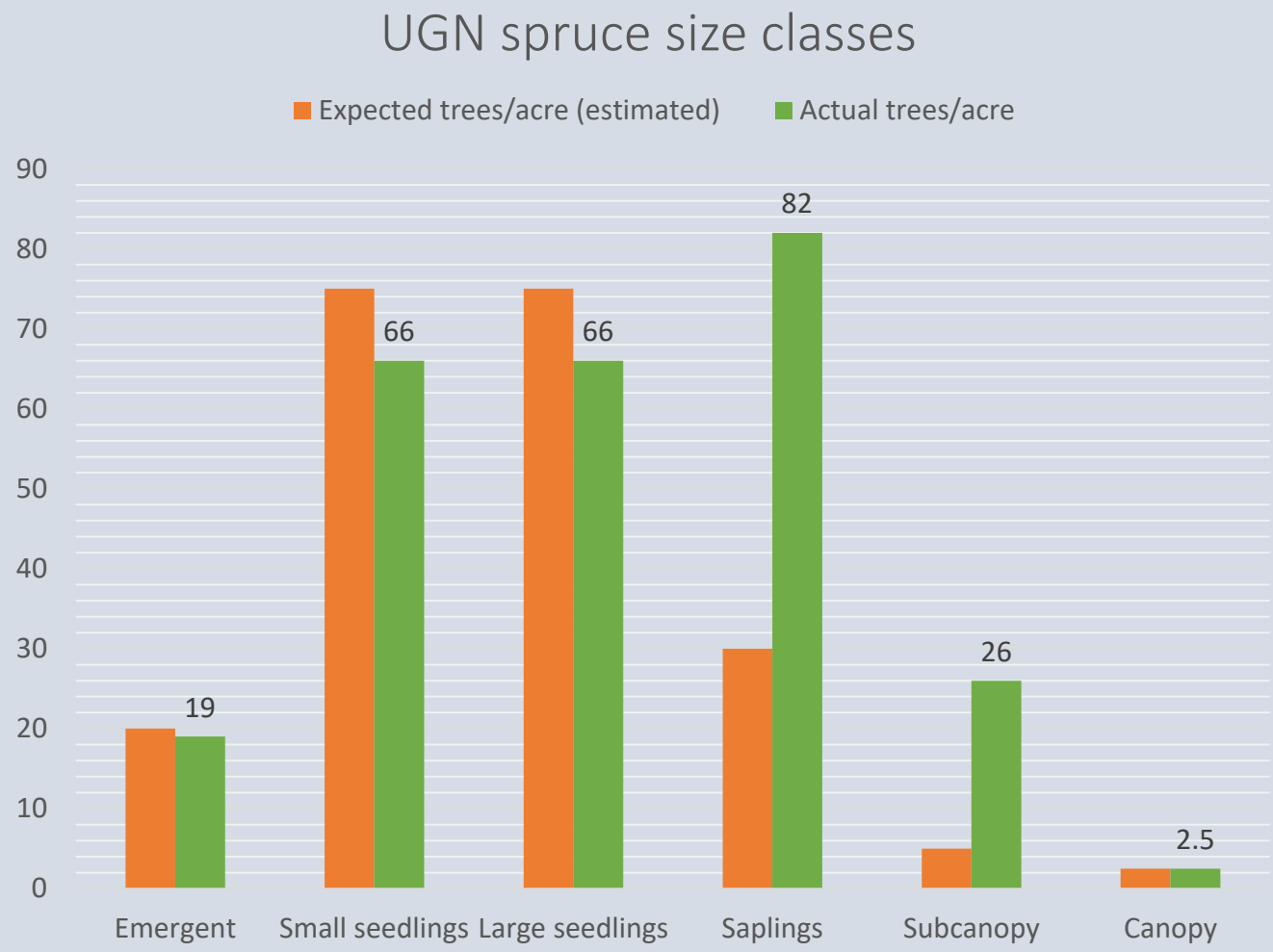
- Worked to improve efficiency via collaboration with volunteers and partners.
- Planted 25,500 red spruce seedlings.
- Treated 480 acres of NNIS in and around spruce forests.
- Completed 575 acres of spruce release (365,000 trees to date).

Lessons Learned

- Larger canopy gaps
- More canopy gaps
- No chainsaws

- Be thorough!
- Be flexible!
- Plan carefully!

- Monitoring is valuable but time-consuming.



On average, 173 spruce per acre need basal spray, 67 need canopy gaps.

Spruce Release:

Non-Commercial vs. Commercial

- Selective understory, midstory, and canopy removal using herbicide
- Canopy trees left standing
- Can be performed anywhere
- Minimal non-target impact
- 4700 acres planned on the UGN

- Non-selective understory and midstory removal using herbicide
- Canopy trees selectively cut down and sold
- Best used in areas with high-value hardwoods
- Generates funds that can be used for other restoration projects
- 1100 acres planned on the UGN

Moving Forward

- Expanding to new districts
  - Gauley in the south
  - Cheat-Potomac in the north
- Starting commercial release on a wider scale
  - First cuts will happen this year
- Spreading the word!

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