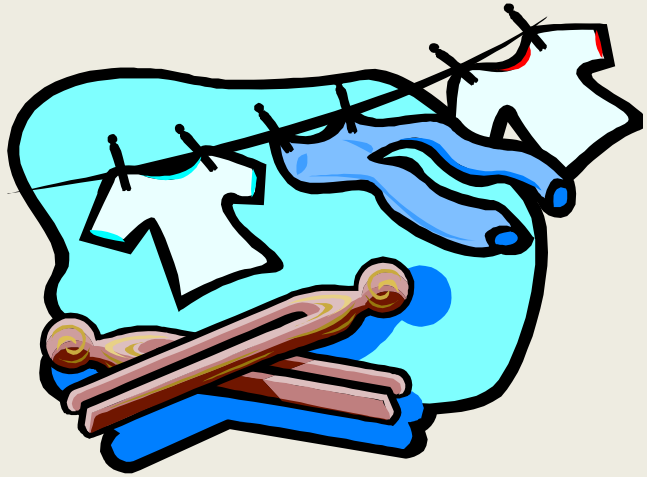
Highlights & Lessons Learned:

Stream Restoration on Two State Forests in the Mountains of North Carolina



Tom Gerow, Jr. RF

BMP Staff Forester, Nonpoint Source Program

NCDA&CS - North Carolina Forest Service

ncforestservice.gov

Who We Aren't... and Why Stream Restoration?

We are not....the USFS, NPS, F&W, the Game Warden, or the Park Ranger

- We are a state agency within NCDA&CS
- Manage ~ 52,000 acres of "State Forest" in NC

Manage for multiple resources.....

- we implement silvicultural practices to restore & enhance forest / timber conditions
- we implement erosion control BMP practices to protect & conserve soil conditions
- we implement hydrologic restoration practices to restore degraded water resource conditions

A Different Perspective...

- We are the landowner. Our agency focuses on the owner.
- Most presentations focus on technical aspects.
  - Few seem to recognize or discuss the landowner's view
- We obtained the funds to do the work, but:
  - We contracted-out & supervised the work.
- Have you ever been inspected for permit compliance?

- Forestry's experience in tree planting & regeneration.
  - Some focus too much "between the banks" and forget the veg.
- We adapted procedures used for wildfire project management to stream restoration project management.
  - Communication Plan, Information Delivery, I&E afterwards

Stream Restoration Activity

Wilkes County

- **Rendezvous Mountain Educational State Forest**
- **Purlear Creek**
- **~ 4,100 linear feet (LF)**
- **~ 1 acre of wetland**
- **Multi-year, phased restoration** (lesson learned)

Transylvania County

- **DuPont State Recreation Forest**
- **Two Projects:**

1. **Little River above & below Hooker Falls Access Area, ~ 400 LF**
2. **Reasonover Creek, below the outfall from Lake Julia, ~ 600 LF**

Highlights: Purlear Creek

Before:

Small, perched, rotten, short culvert. Served as an effective dam.

Highlights: Purlear Creek

New arch culvert. Stabilized road surface.
Re-established aquatic habitat connectivity.
Now can accommodate stormflow.

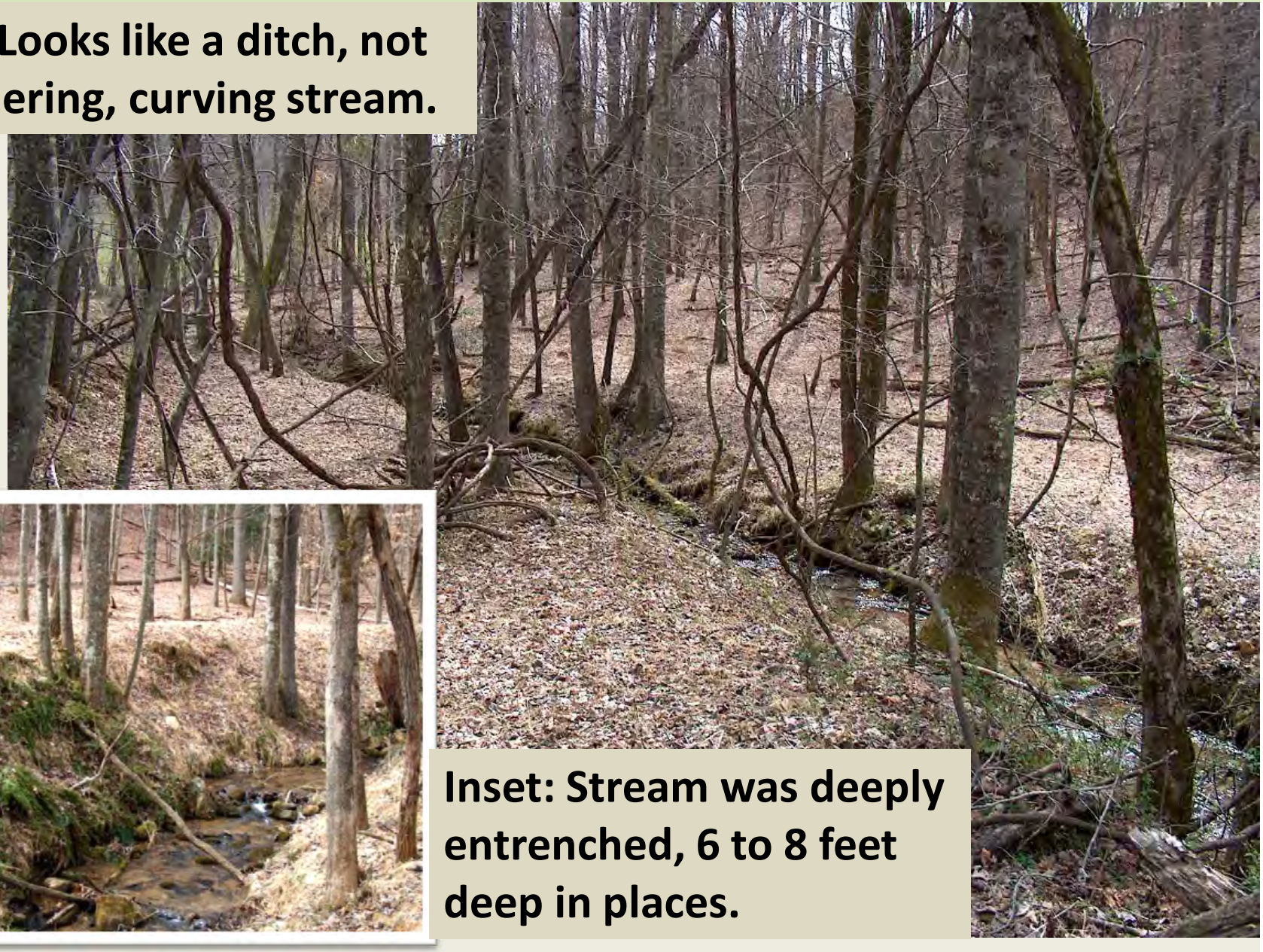
Lesson Learned: Purlear Creek - Culvert

<u>After 1 year</u>: Decades of silt & sediment build-up behind the under-sized culvert is now naturally releasing since the opening is larger.

Good or Bad??

Highlights: Purlear Creek

Before: Looks like a ditch, not a meandering, curving stream.



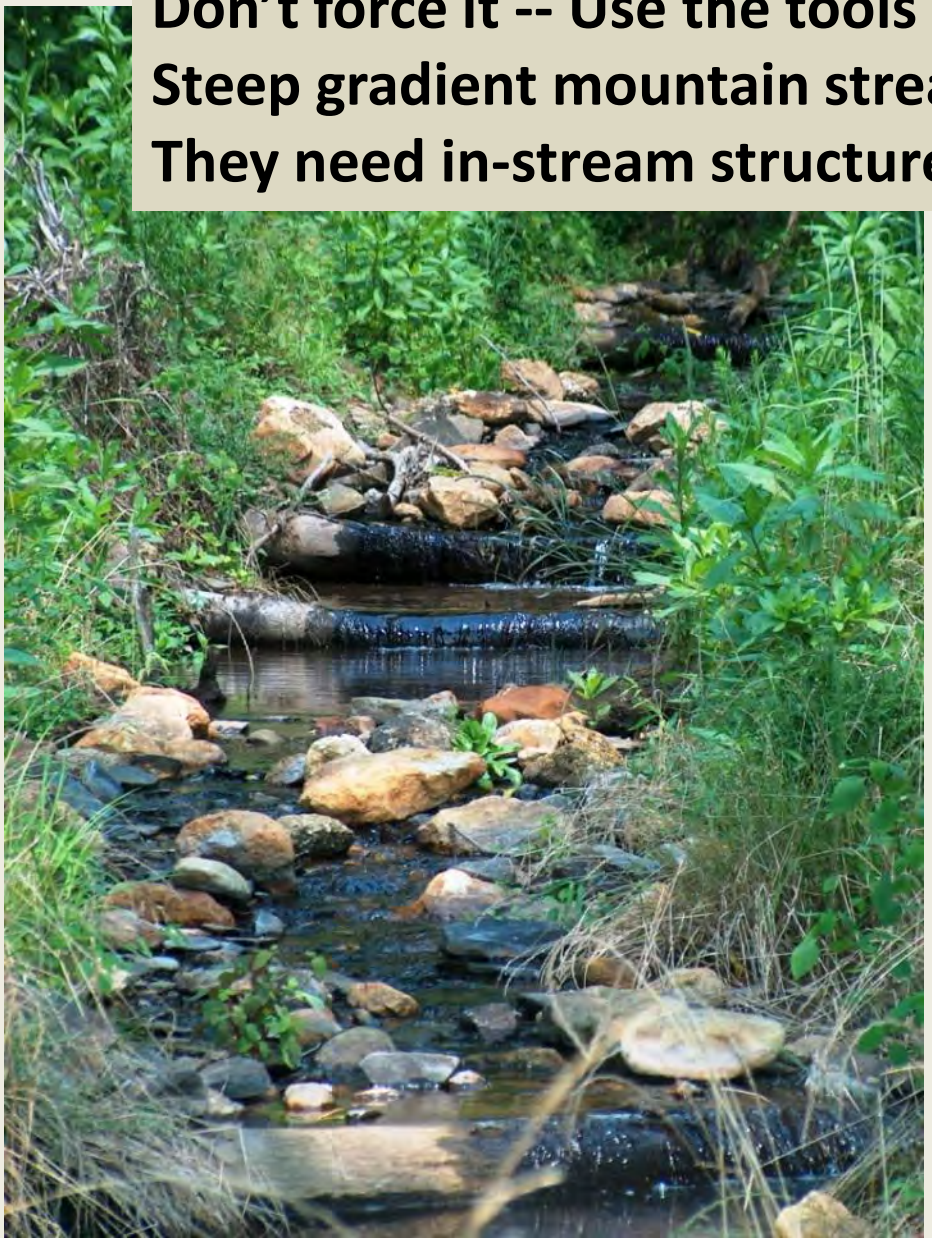
Inset: Stream was deeply entrenched, 6 to 8 feet deep in places.

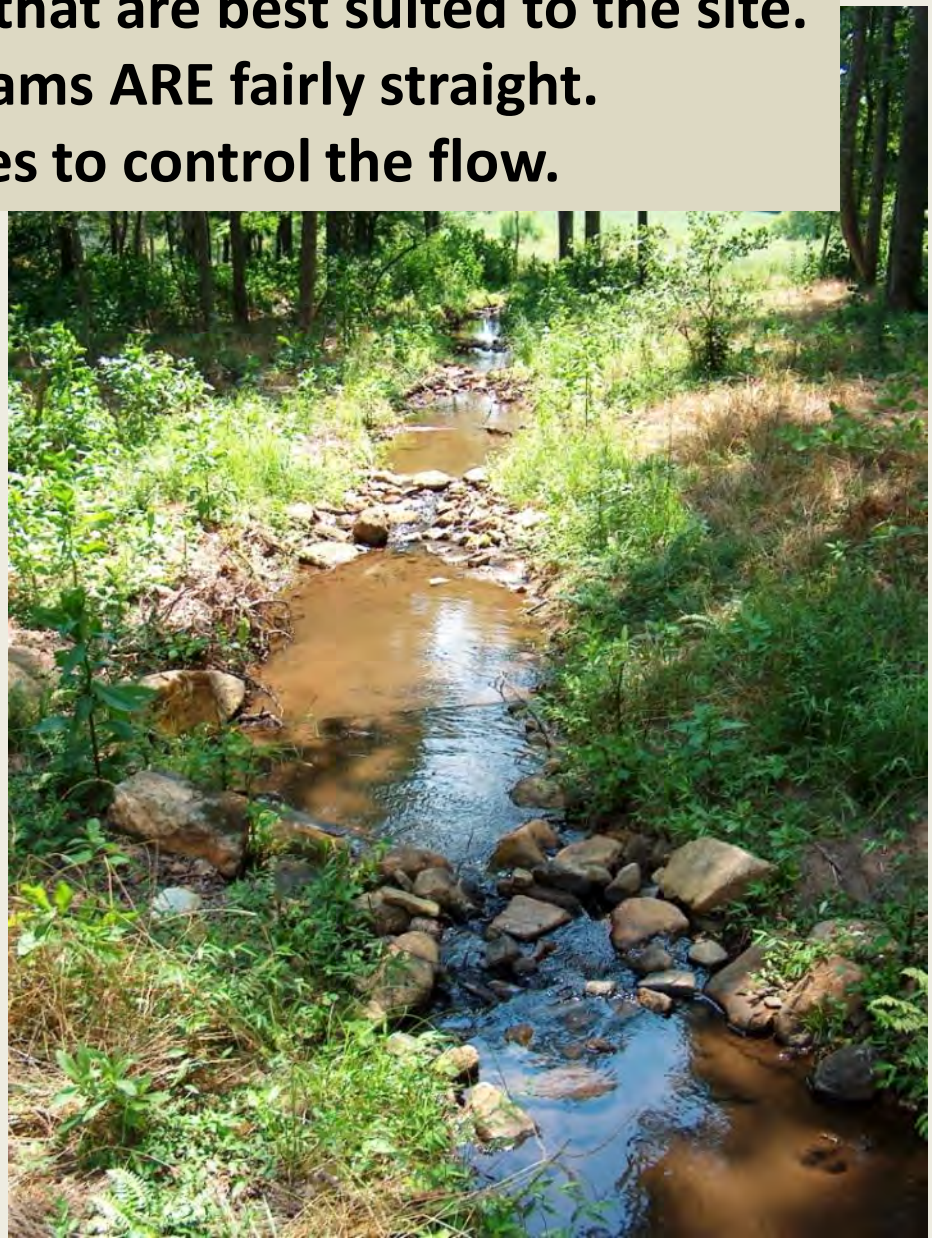
Highlights: Purlear Creek

New channel excavated within true, natural valley.
Stream elevation raised to re-connect to floodplain.
Still looks pretty straight, though??

Lesson Learned: Purlear Creek - Gradient

Don’t force it -- Use the tools that are best suited to the site.
Steep gradient mountain streams ARE fairly straight.
They need in-stream structures to control the flow.





Highlights: Purlear Creek

But.....when you are in the flat-lands, meandering stream design is vital to stability. With in-stream structures.

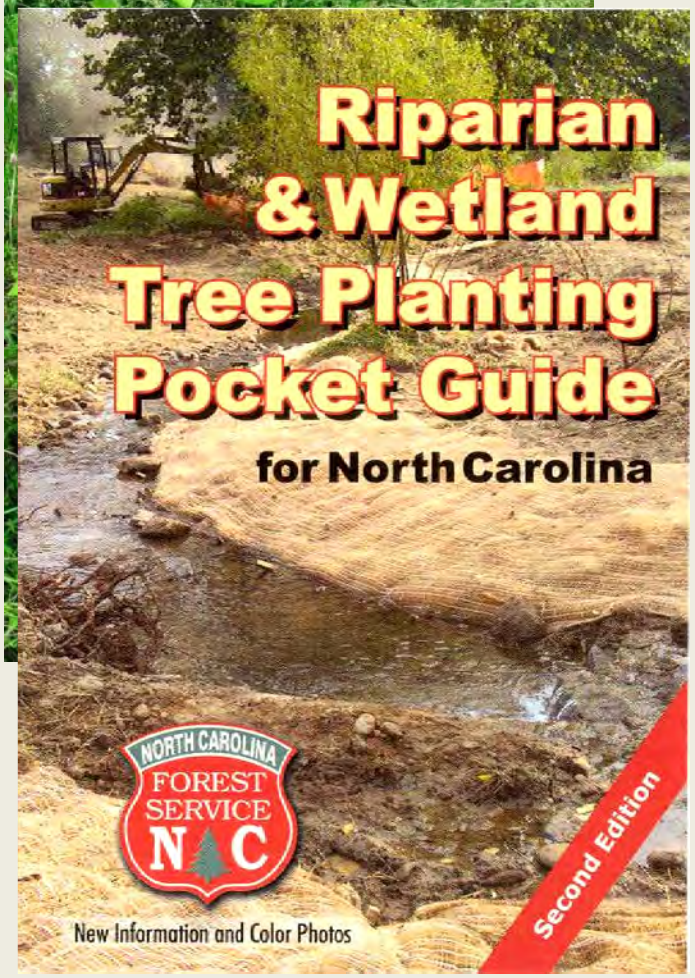
Lesson Learned: Purlear Creek - Blow outs

Make sure your stream design is capable.
Expect some blow-outs and plan for minor repairs.

Highlights: Purlear Creek

Abundant re-growth of grasses, shrubs, and tree seedlings after restoration.

Lesson Learned: Don’t Skimp on Re-Veg



...we planted ~12 different hardwood species appropriate for the soils, elevation, and location.
Shovels, power augers, and dibble bars.

Pick your seedlings like you pick your stocks: *Diversify, Diversify, Diversify....*

Lesson Learned: Purlear Creek - Invasives

Recognize this? If you don't have invasive plants BEFORE your restoration....expect them AFTER!

Highlights: Little River @ Hooker Falls - Before

Highlights: Little River @ Hooker Falls - During

Large boulder cell structure. Backfilled with gravel and stone.

Highlights: Little River @ Hooker Falls - After

June 2007. 3½ weeks after restoration.

Lesson Learned: You Can't Fool Mother Nature

March 2011. 3½ years after restoration.

Lesson Learned: Use More & Bigger Rock !

Lesson Learned, again:
If you do not have access to "free" boulders on-site.....

....then you will need to write a bigger $check$ to pay for the work.

Highlights: Little River @ Hooker Falls - Part 2

Our newly, twice-again restored river bank / waterfalls access area.

Highlights: Reasonover Creek - Before

Lesson Learned: Reasonover Creek

Make hay when the sun shines. Have the equipment, people, and materials in place to *git 'er dun* when the window opens.

Highlights: Reasonover Creek - After

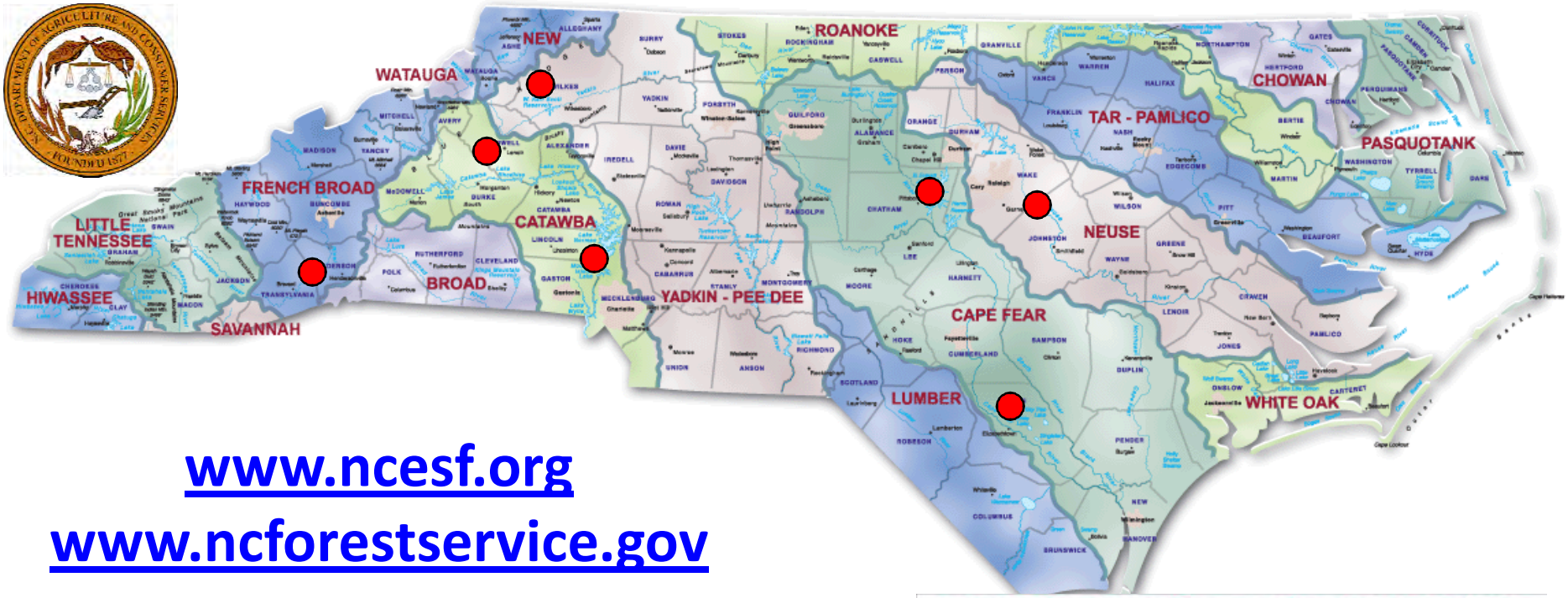

Tell your story to the public, and share the spotlight with your partners
Restoration and Stabilization of Hooker Falls Access Area
This is what we started with.....
.....And this is how we fixed it.
Would you believe...?
MULKEY

Lessons Learned - Summary

- Consider landowner's perspective
- Be patient...these things take time....
- Teamwork & Partners
- Plan, with contingencies
- Expect repairs
- Monitor and plan for invasive plant control
- On-site materials = lower $costs$
- Communicate (x)8
  - Landowner
  - Regulators
  - Public Safety
  - Public Information
  - Contractor <=> Engineer
  - *Communication Plan* to cover the basics: who, what, where, why, how, and when,..... Share it with all stakeholders.
  - Alert the media (?)
  - Interpretive education

Lessons Learned…?

State Forest Locations



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