Restoration Collaboration in Nantahala and Pisgah National Forests

August 23, 2008 Meeting Notes

NC Arboretum, Asheville, NC

During the meeting, participants divided into breakout groups to explore next steps for restoration action. In the morning, participants assembled into 5 groups and considered the "most important next steps" across all seven identified restoration goals. In the afternoon, new groups were formed around each goal, and participants delved more deeply into the topic of their choice. Both morning and afternoon discussions are synthesized in the following pages.

Morning Question:	**Afternoon Questions:**
What are the most important next steps we need to take to address one or more of these restoration topics? *When thinking about next steps, consider:* 1. How will this action address one of the seven critical ecosystem restoration needs? Which need will it address? 2. Does this action have potential for high- or broad-scale impact? 3. Will the action be supported by Forest Service partners?	*Looking at each group of related actions that was identified in the morning, consider:* 1. What would this action entail? What do we need to know or do to make this happen? 2. Who else could/should be involved? 3. If there are red flags, identify the source of concern. What might we do (beyond this meeting) to address this area of disagreement? Review your Topic as a whole 1. What is your reaction to the topic as a whole? 2. How might concerns be addressed beyond this meeting today?
1. Restore Stream Systems and Watersheds to a Healthy Condition	
Morning discussion Fisheries concerns • After road stabilization (closure, maintenance or relocation) restore brook trout where possible. • Remove man-made fish passage barriers (old roads, perched culverts – like in Santeetlah Creek). • Restore, and maintain grassy balds at Roan Mountain to a desire future condition based on plant and animal	Afternoon discussion What we need to do: • Inventory streams for negative impacts • Assess causes of impact (roads, trails, fish passage barriers, dispersed recreation, loss of riparian cover). • Identify options for improvements (closure, reconstruction, relocation or vegetative restoration). • Identify partners that can assist with these

diversity considerations.

- Verify that waters are appropriately classified by NC Dept. Of Water Quality (DWQ).

Watershed impacts:

- Identify forest users and the locations where they are causing negative impacts to trout streams (like Upper Tellico).
- Identify roads that impact streams, watershed values or dispersal needs fir rare species/communities. Consider for decommissioning or otherwise addressing resource impacts to stream systems (close or relocate roads where possible).
- Do cost-benefit analysis as a part of evaluating road restoration options.
- Identify and mitigate recreation-created impacts to streams (including dispersed camping impacts).
- Evaluate trail routes and conditions – identify ways to eliminate their negative impacts on stream health. Engage trail groups in making needed changes.
- Emphasize road restoration/removal in declining watersheds.
- Increase law enforcement efforts to address illegal use – especially by ATV's. Address local areas of heavy foot traffic and horseback or bike activities that impact streams.

efforts.

What we to know about an area:

- Stream condition – define negative impacts.
- What is priority for restoration.
- Options for overstory replacement.
- Level of impairment – monitoring needs (w/DWQ).

Condition inventories to identify road and trail impacts.

What we need to do – outreach with partners:

- Establish partnerships - beyond forest boundaries – to address larger watershed issues
- Do stream classifications (State of NC)
- Public education campaigns to promote sustainable land practices.
- Identify impacts of stream acidification
- Identify impacts of climate change
- Identify impacts of stormwater run-off
- Identify impacts of livestock/agricultural uses.

Who to involve:

Fish & Wildlife Service
Dept of Water Quality
Trail user groups
NC Ecosystem Enhancement Program
Universities
WRC
Lands trusts and other NGO's
Natural Heritage
EPA
NC Dept Water Resources
Trout Unlimited

Prioritizing Work: o Identify and prioritize streams in need of restoration, causes of impairment and options for addressing problems. o Coordinate with State of NC resource and regulatory agencies to identify priority watersheds for restoration activities. Outreach o Coordinate with local watershed associations. o Education campaign on importance of sustainable development outside forest lands to protect waters flowing into forest lands	National Park Service Local watershed groups What we need to know: • Who are the potential partners for larger-scale watershed assessments? Start with land trusts, watershed associations, local governments and adjacent landowners.
2. Rare Native Communities	
Morning discussion • Prioritize rare communities by global rank and threat (include wildlife habitat considerations such as connectivity and rare habitat types) • Model ecozones for historical spruce/fir, grassy understories, wetlands, etc • Identify threats to rare native communities – consider communities broader than plants including wildlife • Increase grazing in grassy bald habitats on Roan Highlands – which will also aid in rare, threatened and endangered species as well as the entire community • Restore balds in high priority areas – Roan Mtn, Max Patch • Restore, and maintain grassy balds at Roan Mountain to a desire future condition based on plant and animal diversity considerations	Afternoon discussion See afternoon discussion for T& E species. **Roan Mountain balds** Support the Treasured Landscape Grant in order funding Use the Student Conservation Association to 'ramp up' efforts to prevent encroaching vegetation

• Save healthy stands of hemlocks • Identify hemlock sites that are candidates for maintenance as refugia – still viable to refores in future, natural or biological controls used • Identify hemlock stands in relatively good health and treat them with imidicloprid and/or dinotefuran (both Tsuga Canadensis and Tsuga caroliniana are important) • Identify remaining untreated hemlock stands in recoverable condition. Prioritize for imidicloprid treatment • Treat hemlock adelgid in Joyce Kilmer Memorial Forest utilizing the latest science • Where old growth hemlock specimens are not responding to ladybugs, but can still be saved, go ahead and treat NOW with chemical treatment • Identify candidates for eventual chestnut restoration and conduct Phytopthora root disease risk evaluation. Soil baiting for pathogen FH activity with assistance	**Hemlocks** Find and prioritize the stands/areas that need attention first Prioritize by – healthy areas of hemlock, presence of T&E species, presence of streams that are protected by hemlocks, Carolina hemlock bluff forests, areas where hemlock is dominant Determine whether identified sites fall under the current NEPA decision How and who to find and prioritize: IKONOS satellite imagery, bear hunters, hiking clubs, Camcore (NC State), Eastern Native Tree Society, colleges and universities Form a concentrated regional landscape level group focused on HWA We did not address this item specifically
3. Restore Fire-Dependent Ecosystems	
Revise topic name: "Restore Fire-Dependent *and Fire-Adapted* Ecosystems" Morning discussion Burn Planning: • Burning projects can have an affect on other types of regeneration/restoration proposals (either positive or negative). Burn areas must be identified before time and money is spent on other vegetation projects. • Develop prescription for open oak woodlands (gold-winged warbler habitat) – a burn schedule is needed.	Afternoon discussion • Look for efficiencies in planning burn programs: - Look at scale of projects - Consider firing techniques - Consider multi-day burns - Not 100% black always desired outcomes • Use updated GIS layers from partners to ID ownerships and ecological data.

• Consider opportunities to work with neighboring conservation landowners (use GIS data to identify). • Funding and days for burning are limited – <u>all</u> project burn locations should be proposed by an interdisciplinary team so all resources and objectives are considered. Whenever possible, Fire Learning Network resources should be considered. Increase burning/emphasize these areas: • (Emphasize) fuel reduction in areas with a rapidly growing wildland-urban interface. • Increase use of fire in upland areas, pine stands, and rare native plant communities. • Select large areas for restoration/development of pitch pine/table mountain pine and oak savannahs. <u>Commit</u> to REPETETIVE BURNING. • Increase use of landscape-level prescribed fire • Include acres burned for balds and oak-dominated forests (in target accomplishment).	• Coordinate fire planning with other resource activities (to insure compatibility). • Require an interdisciplinary process which includes scientists and other partners in prescribed fire planning. • Utilize the Fire learning network for project planning • Choose areas that meet multiple resource objectives
. Where not to burn: • Limit fire management to appropriate ecological systems (table mtn pine, shortleaf pine, dry ridges, slopes, etc…). Don't harm mesic systems by igniting them.	Identify in fire plans areas where fire should be excluded.
Fire Outreach and Education: • Strengthen and develop a network of resource managers for project planning and implementation (Fire Learning Network, train-the-trainer). • Increase education and outreach to local communities about the ecological and	Use Fire Learning Network, Southern Research Station and other partners to assemble, collect and analyze fire-related data.

economic benefits of prescribed burns (will reduce complaints and gain local cooperation).	
4. Diversity in Low-Diversity Forest Stands	
Morning discussion • ID Stands with diversity and or structural issues to address with silvicultural activities in context of rapid assessment project development • Thining in pine, tulip popular monocultures. • Restoration of monoculture sites to mixed hardwood • Use silvicultural approach to reintroduce the hardwood species (such as oak or hickory or other mid-tolerant shade-tolerant species) into near monoculture, such as yellow pine or white pine stands • Map white pine dominated stands and tulip poplar stands with low herbaceuous diversity. Prioritize logging/restoration by economic maturity and ease of access. Develop specific treatment for each stand, not a "one size fits all approach." • Encourage and maintain diversity in pine stands through timber stand improvement release work • Focus on old growth candidates • Timber stand improvement: stand density reduction • Do more timber stand improvement work across the landscape. More thinnings to advance growth of residual stands, dev. Age/species diversity • Emphasize early successional habitat • Replace undesirable species (white pine, loblolly invasives) with more desirable species (chestnut, shortleaf) • Direct timber harvest toward low	Afternoon discussion **A. Restoring diversity** 1. Restore tree species and structural diversity scale of stands 2. Increase diversity of age classes 3. <u>How</u>? Intermediate stand treatments, burning, trained contractors, harvesting 4. Old white pine plantations, old field locations – focus for oak regeneration • Old clearcut with high component of tulip poplar and red maple • Treatments must be site specific • Markets for products removed in intermediate treatments • Focus on sites most appropriate – rapid assessment field visits

diversity stands with the goal of increasing stand diversity.
• Define "diversity" with regards to forest stands and identify desirable future conditions.
• Conduct oak decline risk rating in rapid assessment areas as a guide for actions to restore/maintain oak component
  o Losing oak diversity
  o Risk rating – where can we do the most good?
  o Can do with existing data (FS veg)
• Many predominantly oak stands are in decline due to old age, drought, insects, and diseases. On upland sites where decline is worse, regeneration of stands must be done before the seed source (overstory oaks) dies. Otherwise, we will not be successful in perpetuation of oaks.
• Be selective with oak restoration (don't "force" oaks to grow where other diverse species seem to persist)
• Restore more oak/hickory in old cuts
• Don't "boiler plate" one oak species management for all oak species. (i.e. red oaks are different from northern red oak, chestnut oak, etc)
• Where appropriate, restore oak forest to pine plantations
• Pick stands to develop advanced oak reproduction and <u>actually</u> do the treatments
• Restore lost oak habitat and maintain existing oak forest to achieve multiple values associated with habitat and harvest goals
• Expand partnerships with forest products industry to identify areas of common ground for restoring diversity
	B. **Restoring oak**
	1) Make priority to do oak decline risk rating and use in rapid assessment to identify and to treat to maintain oak
	2) Target old clearcuts for advance oak regeneration release
	3) Midstory treatments to encourage advance oak regeneration (fire)
	4) Prioritize where oak restoration is appropriate
	  a. Pine and poplar at appropriate places - maintain appropriate species mix where it is best adapted
	<u>How to resolve question of where to restore oak</u>
	• Soil mapping, risk rating
	• Bring in researchers; map
	• Set up detailed followup
	
	B. Major concern about how to finance needed restoration treatments. **Developing markets** has to be a priority.

• Expand timber harvesting operations to create more diversity in low diversity forest stands	*See ideas at left.*
5. Viable Native Plant Communities	
Morning discussion	Afternoon discussion
• Support "Cooperative Weed Management Areas" through partnerships, MOUs, etc • Use tools such as WIMS and EDDMapS with citizen outreach and cooperative weed management areas to map, control and monitor problems • Harness volunteers for: early detection, assessment, monitoring of control efforts • Increase invasive exotic plan inventories for volunteers to begin control, maintenance and restoration • Suport early detection and rapid response through Eddmaps.org and help with education and public awareness	**A. Increase inventory efforts by increasing partners and actors** How? Involvement in cooperative weed management partnerships with Memoranda of Understanding for external partners. There are models of other such areas across the US, including one in NC. Ask Bob Gale for more specific examples/names. Who should be involved in a cooperative weed management area? • Federal agencies: USFS, NPS, DOT, DOT • State groups: Cooperative Extension, NC Parks and Recreation, universities, • NGOs and individuals: adjacent landowners, recreation groups, hiking groups, garden clubs, Appalachian Trail Conservancy, The Nature Conservancy, SAMAB
• Identify high priority overlapping areas, i.e., where restoring fire patterns also restores native communities; fire → invasives → restoration • Prioritize nonnative invasive species to control • Prioritize areas in need of control based on threats to rare communities and species (ex: Linville Gorge) • Treatment of nonnative invasive species of (a) kudzu along the Cheoah R and Nantahala Gorge, (b) Bittersweet in Fontana area	**B. Prioritize areas for invasive species control** based on: - 7 ecosystem restoration goals, especially where the area hits multiple categories (this addresses the concern that this entire goal should be treated as a component of other projects under other goals) - available partners - rare communities - early invasion areas - areas that are infestation sources

	How? Use GIS and inventory data in rapid assessment process Who? Whoever has inventory/monitoring data
• Address forest rule to allow a greater use of a variety of pesticides throughout the forest • Possible use of selected herbicides to control invasive species in a designated wilderness • Get NEPA approval for a long-term, multi NF-wide flexibility and ability to control non-native invasives when and where its needed, and in a timely manner (emphasis is original) • Make available a FS staffperson (with access to herbicide/tools) for volunteer efforts	**C. Control methods for nonnative invasive species** -Consider all: mechanical, manual, chemical, biological -Increase use of integrated pest management -Focus more on chemical treatment How? Complete an EA for herbicides Who? A FS staff with job targets
• Increase capacity for forest to collect and grow native species to establish in control areas • Involve volunteers in exotic insect monitoring • Follow up project monitoring after invasive treatment on yearly basis • Work closely with coop. weed management group • Identify levels of control (Identify how far you are willing to go to save the community) What steps are you willing to take?	**D. Monitoring and follow up treatment** How? -Reestablish native vegetation -follow up in future rapid assessments -Use volunteers to monitor -Annual monitoring/treatment -Cooperative weed management areas -Set objectives based on success or lack thereof Who? -Volunteers, FS agency and orgs (see part A for more complete list)
• Establish volunteer clearinghouse • Educate and engage volunteers in helping to control already established invasives and avoid introducing new ones	**E. Maintain partnerships and communication/info exchange throughout the process**

	Overarching thoughts: • Don't forget invasive wildlife and invertebrates (i.e. bugs) • Crosswalk to other restoration topics via prioritization • Related to other goals: When you plan for other rapid assessment projects, (for example early successional wildlife plots/fire & natural disturbance openings) then implement an invasive control program
6. Wildlife Habitat	
Morning discussion • Doing now – can do more – Create E.S. edges, roads and wildlife openings • Early successional habitat moving across the landscape over time • Create early successional habitat • Wildlife openings expanded • Identify a variety of options to create early successional habitat • Through stewardship contracting create (outside timber base options) E.S. areas across the landscape through wildlife objectives broader areas, not just timber harvest • Focus efforts to improve oak region and grass/forb diversity for benefit of a range of wildlife and plant species through combinations of fire and mechanical treatments. • Keep wildlife openings well isolated to discourage <u>not</u> encourage invasive species. • ID specific actions to address skewed age class distribution on national forest system lands • Address loss of early successional habitat throughout forest	Afternoon discussion <u>How</u>? • What is the % of ES today? Present level • What ES is already there? • What is the definition of ES? • What is the quality of ES? • How large are these areas? • What are we managing for in terms of species? How much habitat is there? What habitat do we need? • What is the optimum % of habitat for that forest structure? • Breakout forest structure county by county, landowner by landowner, forest by forest? • How is the ES currently managed? • Juxtaposition of all the habitat types to each other <u>Who</u>?: NCWRC, birding groups (Partners in Flight, Audubon), research station, academic community, conservation groups (Ruffed Grouse, Wild Turkey Federation, Quail Unlimited) <u>Red Flags:</u> Should we consider landscape context

• Identify key areas for golden-winged warbler and ruffed grouse, then develop and implement strategies to develop habitat
• Implement rotational disking rather than annual mowing
• More chemical mowing
• More clearcuts for more early successional habitat
• Recognize benefits of ringing undesirable trees to open forest floor
•
  • Focus on common ground. Make sure that ecological restoration focuses on repairing damaged ecosystems.
  • Restore previous wildlife openings and new ones in old pine plantations, tulip poplar, other monoculture stands
  • Avoid openings in mature stands that are approaching old growth characteristics, especially far from existing roads
• Address wildlife habitat concerns using state wildlife action plan as a guide
• Consider state wildlife action plan
• Expand efforts to create more early successional habitat with NC wildlife commission and other wildlife advocacy groups
	outside land USFS lands in determining early successional goals given degree of existing disturbance outside national forest? → Yes within the context of quality of ES.
	Other types of habitat besides early successional? (e.g. interior) → Argue that all habitat types need to be considered including ES, group does not agree on how much ES but does not believe it is a priority
	
	<u>How?</u>
	• Overlap with topic #4
	• Where are the high priority areas for ES, and where within those areas are the damaged ecosystems?
	<u>Who:</u> Research station, conservation groups
	NCWRC, academic
	<u>Red Flags:</u>
	Concern: Creating early successional habitat replaces one artificial condition with another artificial condition.→ This focus addresses this concern
	<u>How?:</u>
	• Is the state wildlife action plan science or policy based?
	• What is the FS working relationship with WRC?
	• Will the state plan have any impact on FS management?
	• What is the economical impact?
	• Is the state plan consistent with research?
	<u>Who</u>?: NCFWC, research station, conservation groups

•	Overall thoughts • Broaden wildlife habitat beyond early successional to consider a greater suite of species Is this really about shifting the age mosaic of forest lands?
7. Threatened and Endangered Species	
Morning discussion	Afternoon discussion
• Accurately map known (especially plant) populations. Determine where they really are versus expected presence (including opportunities to restore(?) displaced communities) • Increase natural heritage databases with current fauna information. • Prioritize monitoring needs based on known or perceived threats and rarity of species • Prioritization of research needs for T&E aquatic species as well as terrestrial • Identify threats to threatened and endangered and all rare species in the mountains • Engage community/local volunteers to assist with monitoring (how can current programs add value and capacity?) • Determine management needs for T&E • Recognize and develop silvicultural prescriptions and other management tools for all species either already determined as threatened or in jeopardy of becoming threatened • Identify rare species that tend to be disturbance dependent and the needs for any current restoration	**Mapping** Update population data so it is current Identify areas that need to be revisited Who – College and university professors and students, The Nature Conservancy, State and Natural Heritage, Wildlaw **Prioritize** Identify areas threatened by invasives – control of invasives in these areas where T&E sp. exist Identify areas impacted by recreation (rec. as a vector as well as 'trampling' of species) Who – College and university professors and students, The Nature Conservancy, State and Natural Heritage, Wildlaw **Engage** Who – College and university professors and students, The Nature Conservancy, State and Natural Heritage, Wildlaw Education of the public through local outfitters, trail clubs, retail outlets **Management** Better communication between wildlife, fire and timber management

• Use T&E's as a "clue" for how to manage a given habitat. For example, burn in habitats where fire-dependent T&E's occur	
Overall Restoration Comments	
Morning discussion Overall restoration comments: • Need to consider restoration needs on the broader landscape, not just on national forest lands. • Need to build our (collective) capacity for restoration projects – coupled with economic development: - Organize and recruit a volunteer public workforce to conduct restoration projects – these are a potential workforce for all restoration projects - Use FS restoration projects as part of a training curriculum to develop a private, for-profit ecological restoration industry in WNC. - Organize a "partners consortium" to raise funds that can augment USFS resources, support volunteer projects, and help manage a volunteer workforce.	Afternoon discussion What we need to do: • Keeping the landscape context and focus is important. • Be careful not to let the rapid assessment process prevent quick action when needed. • Partnership synergy/potential is ripe now – especially for larger. Cross-ownership issues. • Don't forget to use existing information and education outlets to show progress. • Be careful not to compartmentalize topics. • Look for projects that overlap. • Start small – with attainable and discreet goals.

Additional Afternoon Comments

These comments were shared to entire group while each breakout team was summarizing the results of their smaller discussion.

1. Streams and Watersheds

- No additional comments

2, 7. Rare Communities and T&E species

- State and Natural Heritage data is plant-centric and needs more focus on wildlife
- Don't forget rare communities such as bogs, spruce-fir (northern flying squirrel habitat)

3. Fire-Dependent Ecosystems

- No additional comments

4. Restoration of diversity in low-diversity forest stands

- Recognize three levels of diversity: species, age-class, structural

5. Invasives

- Don't forget the issue of hogs
- Recognize the importance of corridors created through recreation, timber harvesting, wildlife openings

6. Wildlife Habitat

- Natural levels of early successional habitat should be included in the assessment of how much should exist
- Overlap with # 4, increasing diversity
- Important to look at entire landscape no just Forest Service lands when we do the assessment
- Include "quality" of habitat in the inventory, relative to species – recognize that there is a distinction between early successional grass/forb habitat and shrubs and forests
- One North Carolina website may have data on non-federal land
- Think of satellite industry grants for conservation projects
- Remember early successional habitat created by prescribed burns in inventory