SASRI Meeting hosted by USFS
Mt. Rogers, July 23, 2014

Location: Konnarock Community Center, Troutdale, VA. Followed by field trip to Whitetop Mtn, VA
See List of participants at the end of the notes.

Welcome from Katherine Medlock, TNC-TN. Group shared their hopes for the day. Themes included:

- Cones collected in the Fall of 2013. FS Cones collected from 6 trees on GWJ, 16 trees on CNF in NC/TN. Processed, inventoried, and in seed bank in MS. Folks were excited to think about the next steps for these seeds.
- Excited to learn about next steps in the region
- Possibilities for replacing hemlocks with spruce
- Excited about spruce restoration work in designated Wilderness areas
- Wildlife interests for rare species in spruce systems
- Interested in planting technics and silvics

Announcements:

- Carol Croy is willing to help folks think through the Wilderness issues associated with restoration on FS lands.
- Barb Crane sent announcement via Bob Lewis that the Washington office funded the region to collect and store cones for the next two years via Camcore.
- NCWRC recently completed management plans for Pond Mtn and Three Top Game lands, will include spruce restoration.
- Fall symposium at Southern Highlands Reserve is focusing on spruce and fundraising for spruce. Coordinating with TN TNC. Sat 9/13/2014.

Restoration Planning:
Katherine Medlock gave a brief history of the development of a spruce restoration plan for the Southern Blue Ridge (SBR). Past SASRI meetings identified this need and volunteers created a mapping committee to look at available information. The mapping committee created a list of historic mapping efforts and determined a need to do some additional mapping of the current distribution of spruce. With additional funding from USFWS, Nick Hollingshead is currently doing that mapping and will be giving an update of his progress on **August 28th at 2:00 pm** on a webinar. Katherine will send out the information via email ASAP. The mapping committee agreed that restoration priorities are not as simple as A (historic) - B (current) = C (where to restore). There is a need to also develop some restoration criteria, guidelines or a filter process for determining the highest priority areas for restoration. Katherine is working to write the plan and would like to hear from SASRI members to develop this list of restoration criteria. See notes from the field trip for some of the suggestions made for developing this list.

Planting and Propagation:
Kelly Holdbrooks from Southern Highlands Reserve (SHR) gave an update about the current planting and propagation efforts. SHR is a nonprofit whose mission is to educate people about native plants. Kelly brought some seedlings to show everyone: 2009 seedling (very large). She also brought some younger seedlings

(2011) that have been transplanted into Rootmaker Pots which we hope will shave a year off of the growing process. SHR is also trying new custom soil mix, some fertilizers, and mycorrhizal root fungus root bath.
Interest in getting NC Forest Service involved. e.g., Linville Tree Nursery. Dean Simon of NCWRC is most likely to know someone there.
Cones were provided from NCWRC and USFWS in Fall of 2013. SHR staff spent 125 hours preparing the 2013 seeds. Every cone bag has an accession record. They started (germinated) 1 tray of seeds from each accession record. Looking into the future, we know that we have a small number of seedlings to plant in 2014, however, the number gets much larger as the seeds collected in 2013 become available for planting (2016 and beyond).

- 2014: focus on community awareness and plant 120 seedlings
- 2015: 800 to 1000 seedlings.
- 2016: estimated 23,000!!!
- Need to work with SASRI partners to propagate these at a rate that we all need them.
- Need people to join the Planting and Propagation Committee. Anyone is welcome, though we need a few strategically-affiliated people too.

Chris Kelly from NCWRC gave an update about the propagation that has been underway thus far.

- 2013: Planted 1,200 in Unicois (Graham Co) as a conservation measure for flying squirrels where hemlock has died.
- 2014: working out where to plant 120 seedlings in the Great Balsams where we can highlight the project and draw community awareness. Decisions needed about whether this is going to be open to anyone or if we should invite some key people who can get involved and then help spread the word. Tentatively considering a tract of TNC land near Richland Balsam. Also considering other private sites in the Balsams. There is no NEPA for planting on USFS or NPS land, so need to plant them on private land this year.
- 2015 and beyond: Seedlings ready to plant in 2015 are from Unaka, Roan, Grandfather, and Great Balsams.
- NEPA: One of the greatest hurdles is the NEPA. Approaches 1) incorporate spruce restoration as an option in USFS veg mgt projects that encompass high elevation forest that are in the pipeline already, 2) do CE now for planting; more NEPA needed later for release work that involves cutting or herbicide (what about girdling?), 3) incorporate into Nantahala-Pisgah Forest Plan revision (but revision won't be done for several years), 4) New EA for planting on Pisgah and Nantahala NF (but won't be ready for a few years). Need buy in from district rangers and forest supervisor.
- Next batch of seeds propagated by SHR could be coordinated with geneticists to propagate desired seeds.
- Seedling cost: it is expensive to grow these seedlings but they have very hardy root systems. We're looking at fund raising (adopt a spruce site) ideas.
- Described some goals about restoration pertaining to Northern flying squirrels: restore historically mixed stands that, after logging and burning, have regenerated to pure northern hardwoods.

CASRI Update and Lessons Learned

Andrea Brandon is the Coordinator for the Central Appalachian Whole System of The Nature Conservancy. She shared information about the successes from the Central Appalachian Spruce Restoration Initiative (CASRI) (see powerpoint for more details).

MONITORING PROGRAM DEVELOPMENT

- CASRI started with an extensive monitoring plan, but, it proved too complicated to implement. They have recently shifted to creating a 2 page form and are also shifting to a more methodical method of capturing the data regularly.

SOILS WORK

Webinar about spodosols soil analysis.

Rediscovering Spodosols in the Allegheny Highlands, Skip Bell, NRCS:
https://www.youtube.com/watch?v=NyyLwXrvs_k&list=UUqWbDV7-rsBe_dtwm4QqwJA

Using Ecological Site Descriptions to Describe and Manage the Habitat of WV Northern Flying Squirrel in WV, Jason Teets, NRCS:
https://www.youtube.com/watch?v=EMp0yxw864g&list=UUqWbDV7-rsBe_dtwm4QqwJA

**While this last one is long, it was a tremendous presentation:
Forest Restoration Modeling Using Ecological Site Descriptions, AKA, "The Red Spruce Soil Storybook", Travis Nauman, WVU:
https://www.youtube.com/watch?v=jZSMyrUfo2o&list=UUqWbDV7-rsBe_dtwm4QqwJA

- Working closely with soils scientists to inform land mgt decision making. Soils finding provides a lens thru which to ID restoration and protection actions. CASRI working toward developing hard #s to tie carbon sequestration potential in Central Appalachain spruce systems. Soils under spruce store more carbon than soils under Northern Hardwood stand and more than soils under spruce in Canada. See briefing paper to quantify what does that carbon seq potential. Build more support for spruce restoration. Makes it more attractive to potential funders.

WHAT IS RESTORED?

- A few years ago CASRI developed a Restoration Approach document to inform goals and objectives. Used current forest floristics and structure as reference condition because didn't have a lot of data to go off of. So they've revisited this document to pull together historic accounts, photos, early land surveys, old-growth stands, + undisturbed areas, historic range of variability, to modify those Reference Conditions. Some of this info came from the Southern Apps. Now need to plug that into their Restoration document.
- Carol asked if the soil analysis could distinguish between historic spruce and historic hemlock sites. Andrea: probably cannot, but elevation can inform that. e.g., planting spruce to supplant hemlock or where historic presence of spruce is not clear. Questions about "is that true restoration or is it land management to benefit that landscape?" In WV the overlap is more common than in Southern Apps.
- Cordie suggested that for reference conditions we shouldn't get our info from just 1 source; all these bits of info are pieces of the puzzle to figure out where

spruce was prior to disturbance. Photos, soils, elevation, historic accounts, pristine old growth areas, etc.

- There was a discussion about restoration of structure vs. restoration of function only. This discussion will be used to inform the restoration criteria included in the plan. There was general agreement that the reference condition would be used as a guide for restoration while restoring function could be a land management goal that isn't specifically tied to restoration, but, to other priorities (wildlife foraging, riparian stabilization following hemlock decline, etc.).

RESEARCH COMMITTEE DEVELOPMENT

- Objectives would be to identify research needs related to spruce restoration and conservation, to prioritize those research needs, and to work as liaisons between researchers and managers.
- Example Research questions (can be found in the powerpoint slides).
- Most agreed with the suggestion that CASRI and SASRI only needed one joint research committee.
- Andrea put out a call for people to get in on the Research committee. Suggestions included: Stacy Clark (SRS researcher) and Jason Rodrigue (Forester with National Forests in NC).
- Andrea anticipates that we can become eligible for these big funding pots. Need to merge CASRI and SASRI, bridge the work we're doing. Get the research part going.
- Kelly suggested grad student(s) working on these research questions from forestry depts at both ends- S and C Apps.

LESSONS LEARNED: COMMUNICATIONS

- External audiences, such as magazine and newspaper articles.
- Internal audiences, through fact sheets and success stories.
- Tell your story as loudly and proudly as possible!

ON THE GROUND-

- Spring plantings may be better than fall plantings.
- Complex planting plans are beautiful on paper, but difficult to implement. They had different planting prescriptions and delineated by soils mapping, marked on landscape, etc but planters did not implement right.

AS A GROUP-

- it helps to have people in the partnership that are slow and steady planners and outgoing communicators.
- Start small with no regrets projects.
- There will be controversial actions with controversial sites. Wait until the collaborative is well established and knows how to handle such potential controversy.

CASRI FIELD DAY

- Sept 16 time TBD. Kumbrabow State Forest, Valley Head, WV. Learn more about active management on state lands, how soil science is informing restoration action, and meet and greet with fellow spruce enthusiasts! Jason Teets soil scientist is helping to plan this.

Northern Flying Squirrel Research at Virginia Tech (Mark Ford PhD student)—Cordie Diggins

See powerpoint slides for details.

- Microhabitat study- where squirrels are foraging on the landscape. Are they linked with deep organic soil horizons? Spodic dystrudepts - less developed soil horizon showing that spruce was probably there but not sure if dominant. Usually in Logged and unburned stands.
- True spodosol- spruce dominant historically
- Folistic Epipedons can occur above both spodosols and spodic dystrudepts.
- 13 squirrels tracked in WV. Foraging points and random points for each squirrel. 520 survey plots total. 95% of home range is over spruce (squirrel at Kumbrabow). Most microhabitat sites had digs, but can't tell what species of animal did the digging. Found 3 species of truffles. At telemetry points, deeper organic horizon (15.3cm+-; shallow at random pts 10 cm). Spruce dominant in canopy or abundant in understory more so than in random pts (which were mostly in NH).
- Occupancy Model for squirrels in the works for S Apps. Nest box survey data + Andy Evans veg plots and community mapping (picked up from Rick Odom). Andy defined where Northern Hardwood forests were. Corrected for lack of surveys in pure conifer that NCWRC boxes missed. Occupancy increases to 100% where shorter distance to spruce and where LFI is more concave/sheltered. Also in a scenario where there's a less sheltered landform but there's spruce nearby, occupancy is high. Roan Mtn spring study: foraging in conifer.
- HABITAT USE STUDY- resource use vs availability. 40 squirrels in WV. 13 in NC/VA plus 2015 squirrels. Potential for microhabitat study in S Apps. Roan = smaller home range and core use areas in pure conifers.
- CURRENT MONITORING: Nest boxes WV since 1985. NC since 1996. VA 1985-2006 or 2009 then Cecil retired. Trapping too. Labor intensive and low capture rates. ACOUSTIC SURVEYS for monitoring occupancy over time. Rapid assessment (weeks vs years).
- BIOACOUSTIC PROTOCOL she will be working out in her study- detector type, survey length, seasonal differences, temporal variation in call patterns with SFSQ, effects of weather and lunar cycle, playback surveys.
- SPRUCE RELEASE STUDY—Rentch et al (Cordie and Mark too). In press, Natural Areas Journal. In WV. Using Basal Area (BA), created different sizes/types of canopy gaps by removing X amount of BA. Low = 33% BA removal. Med - ? Large = 100% BA removal. Pretty much removing 1-2 overtopping trees over the spruce did the job.
- 6 year response measured in 2013. Spruce did respond in Med and High categories; not noticeably in small and control sites. HEIGHT and DBG responses. Also measured canopy openness after X amount of time. These are all >6ft trees to start with. Silvics on spruce are lacking in the South.
- Probably need to go back and re-release these to help them get up into the overstory because the window of the gap closes pretty quickly.

Field Trip:
Site 1: Mix of spruce and Northern Hardwoods. Stand was hit with Southern Pine Beetle and very selective logging was done in small gaps. Group agreed the area looked very good. Flying Squirrel using the area. Determination of need for planting can be aided by presence or absence of advanced regeneration. Forest Service is considering some future girdling to encourage expansion of existing area.

Group discussed a short list of restoration site criteria that included elevation, aspect, landform (sheltered vs. ridge), moisture and micro-habitat. Where there is not clarity, it would be a good location for research and adaptive management.
Site 2: Pure spruce stand near the top of Whitetop Mountain. This location lacks the structural diversity that a reference condition would include. Historic evidence suggests this site has been in a "stagnant" condition for 100+ years. Group discussed girdling trees to create small openings and encourage structural diversity. Several also recommended coring trees (possibly already done 10+ years ago, needs verification).
Site 3: Bald location with some previous planting. Group discussed and debated the trade-offs between bald and spruce habitats. Jefferson National Forest plan calls for maintenance of bald habitats. It is important to many visitors. High priority spruce restoration and planting sites include those areas that are no longer maintained as balds.
Site 4: Elk Garden. Continued discussion about trade-offs between bald and spruce habitats. Also discussed the frequency of future SASRI meetings and next steps for the group.

Participants:

Kelly	Holdbrooks	SHR
Katherine	Medlock	TNC-TN
Jay	Martin	FS-VA
Fred	Huber	FS-VA
Chris	Kelly	NCWRC
Sue	Cameron	USFWS
Carol	Croy	FS-VA
Bob	Lewis	FS-Cherokee
Shane	Halon	USFWS
Joe	McGuiness	FS-Cherokee
Mike	Schafale	NC Heritage
Beth	Merz	FS-VA
Tom	Blevins	FS-VA
Steve	Lindeman	TNC-VA
Andrea	Brandon	TNC-CAWS
Cordie	Diggins	Virginia Tech
Mark	Ford	Virginia Tech
Kendrick	Weeks	NCWRC
Kevin	Parker	NCWRC
Hugh	Irwin	The Wilderness Society
Tom	Speaks	FS-VA
Todd	Fearer	App Joint Venture
Dave	Jordan	Private