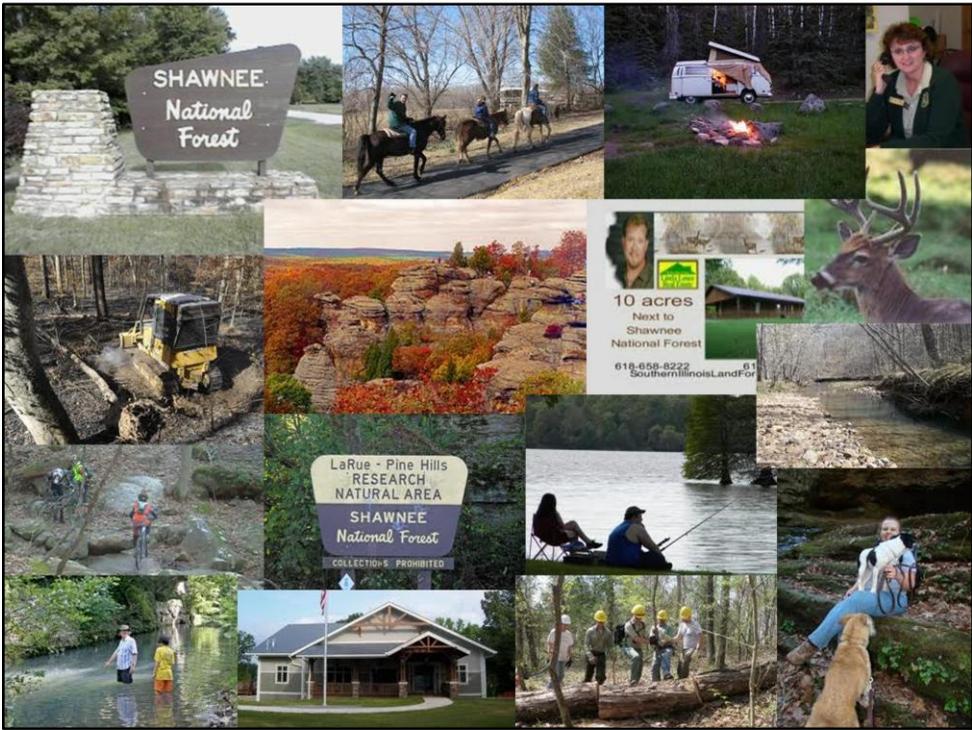




The South Pope Project is located on the Shawnee National Forest in southern Illinois.

**** Note: This presentation is part of the DA4CC class and while the information and thoughts from this class project will be considered in the NEPA decision process, it is not a formal part of the project analysis process. The class project also deviates from the "true life" scenario.*



As with most national forests, there are a variety of uses and competing interests.

Decision Background – Problems

- Invasive pine is impacting forest diversity
- Forest succession is leading to the loss of the wildlife-valuable, fire-adapted oak-hickory forest and to the reduced contribution of early seral forest
- Invasive plants (e.g., Japanese stiltgrass) have increased in distribution as a result of ice storms and are now widespread
- Fuel loading has increased as a result of 2008-2009 ice storms

Project purpose and need.

Decision Background – Project Objectives

- Remove invasive pine and pine seed source to restore native hardwood forest (note: implementation before canopy closes following ice storms might favor oak-hickory development)
- Restore fire adapted ecosystems (including the oak-hickory forest community)
- Reduce coverage and spread of invasive plants
- Reduce fuel loading on both federal and adjacent private lands

There is a near-term opportunity created by the 2008 and 2009 ice storms to remove pine and favor oak-hickory. This opportunity will be diminished over time as the canopy openings created by the storm damage close, favoring sugar maple and beech and other shade tolerant hardwoods.

Fundamental Objectives	Restore forest composition (vegetation and wildlife) and structure and restore resilience to disturbances, recognizing that disturbances are changing as climate changes.			Restore diversity of age classes	Reduce wildfire risk to the wildland urban interface		Maximize Economic Value	Strategic Objectives	
Means Objectives	Remove NNIS pine	Remove NNIS plants other than pine, esp. Japanese Stiltgrass	Increase contribution of oak and hickory	Implement regeneration harvests	Reduce fuel loads	Reduce crown fire potential	Maximize timber revenue and minimize treatment costs	Achieve respectful public discourse [trying to achieve this in ALL alternatives]	Incorporate adaptive management
Ideal Criteria	No pine trees w/ dbh > 5 cm, less than 10% smaller	Reduce stiltgrass by at least 40%	Oak and hickory basal area contribution of 70-90% in uplands and 30-90% in lowlands in 25 years	Spatial pattern analysis using FRAGSTATS indicating increased age class diversity	Fuel loads < 10-12 tons per acre	Reduce metrics of fire behavior (e.g., torching, crowning indices, canopy bulk density)	\$	Constraints	
Realistic Measurable Criteria	Acres treated				FVS FFE extension model output		\$	Fundamental public acceptance	
								Early success	
								Share with the public early on problems associated with invasive pine	

Objectives Table

NNIS = Non-native invasive species

Level of Aggressiveness/ Severity of Effects	Mechanical Treatments of Pine	Mechanical Treatment of Shade-Tolerant Hardwood Trees	Herbicide Treatments	Pine Fire Treatments	Hardwood Fire Treatments	Biological Control	Soil & Plant Nutrient Supplementation	Wildlife Diversity Enhancement
Least Aggressive	No treatment	No Treatment	No treatment	No treatment	No treatment	No treatment	No treatment	No treatment
↓	Girdle pine	Implement crop tree release by cutting shade-tolerant, oak-competitor species less than 10" dbh in the vicinity of oak and hickory	Herbicide NNIS plants	Burn repeatedly to set back invasive plants, including Japanese stiltgrass and to favor the oak-hickory forest type	Selectively burn with backpack flamethrowers to increase vegetative diversity	Use goats and/or cattle to control invasive species	Add calcium, other nutrients, and charcoal in patches and at different levels to increase diversity	Construct bird boxes
↓	Shelterwood cut pine	Cut all oak-competitor species less than 10" dbh	Herbicide pine	Burn pine w/ high-severity fire	Burn hardwood forest once with low-severity fire	Introduce insects to weaken invasive pine		Deer control to enhance plant quality/diversity
↓	Cut pine with Overstory removal		Herbicide shade-tolerant, oak competitor species		Burn hardwood forest once with mixed-severity fire			Selectively kill trees to provide snags for birds and down woody debris for plants, fungus, insects, and animals
↓	Clearcut pine and cut shade-tolerant, oak competitor species				Burn repeatedly (at low-severity) to set back invasive plants, including Japanese stiltgrass and to favor the oak-hickory forest type			
↓	Push pine over with a bulldozer							
Most Aggressive								

Note: For this table, read columns down – there is no specific relationship to rows across. The options are listed in general order of increase in action or effect. Some options are not mutually exclusive within a column.

Objectives		Priority	Alternatives (1 most effective and 5 least effective)						
Objectives-Fundamental	Objectives-sub	IDT Leader's 100 Pennies	Goal	Status Quo	Most Action	Initial Proposal	Snags, Goats, & Soils	No Herbicide	Lighter 2 step Shelterwood
Restore forest composition (vegetation and wildlife) and structure and restore resilience to disturbances, recognizing that disturbances are changing as climate changes.	Remove NNIS pine and NNIS pine seed source	28	Min	5	1	3	1	2	2
	Remove NNIS plants other than pine, esp. Japanese Stiltgrass	28	Min	5	1	2	1	4	2
	Increase contribution of oak and hickory	28	Max	5	2	3	2	4	1
Restore diversity of age classes	Regenerate forest	0	Max	5	1	3	1	3	4
Reduce fire risk to the WUI	Reduce fuel loads	0	Min	2	5	1	4	3	1
Reduce fire risk to the WUI	Reduce crown fire potential	16	Min	2	5	1	4	3	1
Maximize economic value	Maximize timber revenue	threshold/tiebreaker	Max	5	5	3	5	2	4
	Minimize costs	threshold/tiebreaker	Min	3	5	2	4	1	3
Public Acceptance		threshold/tiebreaker		1	5	4	4	2	3

Here is a simplified consequences table. We made several changes since last week. **First**, we dropped any language referring to treatment aggressiveness, thinking that the terminology might give the public the wrong impression and bias analysis. As you can see along the top, we renamed the alternatives to be more descriptive, removing bias. **Second**, we looked for dominated alternatives and were able to drop the status quo alternative. **Third**, I asked our NEPA ID team leader for help in determining priorities and she allocated 100 pennies among the different objectives. She thought that restoring diversity of age classes really wasn't an objective, so we went ahead and grayed out this row. **Fourth**, we looked to see if any objectives were really thresholds. We determined that as long as public acceptance and net cost are within a reasonable ranges, we'll be happy. So then, we grayed out the maximize economic value and public acceptance rows from the table. **Finally**, we looked for even swaps and realized that we didn't care so much about fuel loads as metrics of fire behavior and dropped *reduce fuel loads* from the table.

Objectives		Priority	Alternatives (1 most effective and 5 least effective)					
Objectives-Fundamental	Objectives-sub	IDT Leader's 100 Pennies	Goal	Most Action	Initial Proposal	Snags, Goats, & Soils	No Herbicide	Lighter 2 step Shelterwood
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	Increase contribution of oak and hickory	28	Min	2	3	2	4	1
Reduce crown fire potential	Reduce metrics of fire behavior	16	Min	5	1	4	3	1

Here is the final simplified consequences table.

Adaptive Management

- How can adaptive management be designed to maximize learning?
- Documentation of learning is key, even if during informal after action reviews or field trips
- Claim credit for learning
- Apply new knowledge to future projects if too difficult to apply to this project
- Think about when to stop monitoring – how much is enough?
- How quickly do we need to learn? Is massive monitoring needed up front or is a phased approach sufficient? Applying the expected value of information approach would help us focus in on what is truly important to monitor
- Active monitoring targets specific uncertainty
- Passive monitoring is more general monitoring just looking for trends, etc.
- One approach would be to identify a few units to sample (and get help with the experimental design)
- Use the scoping process to further advertise for help from researchers for help on this and especially on future projects. Begin building management-research partnerships.
- Is there potential for regrets in the South Pope Project? If there is little potential for big losses (irreversible negative consequences across very large areas), then what is learned could be applied to the next project if that is easier to plan and implement. If there are big surprises, in this project, they could be addressed in other ways (i.e., SIRS?).
- There should be a balance between specificity of trigger points and possible subsequent courses of action and momentum of budget processes and a relatively narrow course of proposed action. In some cases change in the current project are appropriate and in other cases lessons learned would be better incorporated into future projects. Some changes are difficult to administratively implement due to funding sources, etc.

Our adaptive management approach does not have to be overwhelming in scale. Would a modest approach be more palatable to the client and easier for us to analyze? We also recognize that this is the first “large” project in 15 years, it will take several years to implement, and it is hoped to set a template for additional projects. The scope of area to learn from is at least the entire Shawnee National Forest. The inclusion of an adaptive management approach is also about building trust and can help with the objective of public acceptance. Key messages are to not promise more than you can reasonably deliver and remember to take it one step at a time.

Suggested Changes

- Explore the opportunity to work with researcher Craig Paukert, lead investigator at the USFS Missouri Cooperative
- Could Leslie Brandt help with adaptive management design?
- Is there a way to incorporate the light 2- or 3-step shelterwood into the PA, even if on a trial basis to incorporate into adaptive management? Is this treatment better received by the public? Does it better promote the oak-hickory forest type?
- Is there a way to learn by monitoring light treatments on private lands?
- Is the operational efficiency objective just perceived? Are there ways to implement a lighter 3-step shelterwood sequence and still accommodate the District's desire for operational efficiency and minimal future entries?
- Could the state and/or other constituents favoring multiple entries help fund subsequent entries or assist with monitoring?
- Could there be a benefit to optimizing treatments with regard to the view shed, perhaps maximizing aesthetics adjacent to roads but maximizing pine removal farther from roads?
- Is there a benefit to further refining assignment of prescriptions? For example focusing burns on sites of medium quality where oak would benefit most?
- Be careful with language and how alternatives are framed. We want to stay away from ranking alternatives in terms of aggressiveness or using other labels that could bias analysis (including our reaction and the public's reaction).
- Educate the public that no action is really an action that leads to change (i.e., continued succession from the oak-hickory forest type to the beech-maple forest type).

Although this South Pope Project is already in the planning phase, some changes could be made after scoping. Other changes could be applied to future projects.

Additional Suggestions

- Monitoring should recognize that different targets would be reached at different times (e.g., prescribed fire would reduce fuel loads after the first burn, but species composition changes would continue after many burns and might not be realized for several decades).
- With respect to monitoring, what triggers can be identified where the course of action should be changed during implementation?
- Start educating the public now on why pine is bad
- Provide pictures of completed similar treatments, even if from a different forest (Hoosier?).
- Additional clearcutting might be good where excessive logging damage is expected or where response to lighter treatments is uncertain. Explain clearcutting is a tool for restoration rather than an ends by itself.
- Lighter treatments requiring multiple entries might be appropriate for stands where aesthetics is a priority.

Additional Suggestions

- Some tradeoffs were probably considered in development of the PA, but not explicitly explained. For example, perhaps the thought process on why more clearcutting was dropped from consideration and why lighter treatments are not proposed. Take credit for these thought processes in the PA.
- Be upfront about the high level of uncertainty. Perhaps state that the treatments are expected to generally move the project area towards the desired condition, but much variability is expected in treatment effects.
- There is also social uncertainty in that we do not know about how the public will respond to treatments right after they are implemented and a few years later after the forest recovers. Use pictures for common context.
- A phased implementation approach – starting small and then going big – might help build trust and also benefit adaptive management. Harris Branch is a small pilot project, but even with that the leap to South Pope seems large. Explain the risk of opportunity losses of going too slowly.

Final Conclusions

- Need for decision analysis early in planning process – much time could have been saved if the problem and objectives were better defined and agreed on earlier
- Climate change is now important in the planning process.
 - Project is being designed to be consistent with the Central Hardwoods Climate Change Response Framework
 - Shawnee NF received a letter from Heartwood environmental group concerning climate change and carbon sequestration
- *Some of the SDM techniques can now be used to evaluate the actual alternatives that come out of the scoping and public comment phases to help clarify and broaden the discussion*

Using the Shawnee project as a case study had some challenges. It is an actual project well underway in the formal project planning process. What this meant was that for some of the class, the exercise was somewhat hypothetical as the timeline for embedding the discussion into the actual project has passed. Nonetheless, as Brad is involved with the analysis and with the involvement of the IDT leader in providing input to the exercises, many of the ideas and options that came from the SDM exercises may be considered later in the process as opportunities arise.

Key Learning about SDM

- Multiple scales of structured decision making
 - Project is finest scale – helps if there is a larger structured decision to tier to, especially for adaptive management
- Lots of decision support tools. Need to pick right tool for each situation.
 - Consider social vs. analytical needs of audience and decision
 - Most (every?) decision context is different, evaluate use of tools with fresh eyes every time.
- Use of some structured decision support tools requires moderate to high technical and facilitation skills.
 - Apply adaptive management approach. Won't be perfect but can learn each time
 - Use it or lose it OR nothing ventured, nothing gained

A few key lessons about the SDM process. **First**, for land management decisions, there are always multiple layers of decisions. In this example, the project tiers to higher level Forest Plan decisions, which tier to Regional and national level strategies and priorities. When higher level decisions are not made with SDM, use of SDM at the project level can highlight additional issues/questions/uncertainties that are beyond the project scope. **Second**, we've been exposed to a lot of new SDM tools and techniques. Each team demonstrated a slightly different use and emphasis of the tools, which highlighted the need to choose wisely and freely from the toolbox. Don't get locked into just one tool and don't automatically use a tool just because it's been used before. **Third**, some of the tools clearly require brushing off the math skills and require learning/using good facilitation skills to draw out information from others, especially the weighting exercises. There are also usually less intensive and more qualitative methods to use the same structured approach. We need to be comfortable using as much of the toolbox as possible but keep the focus on the goal (better informed decisions) rather than the particular use of an analytical tool. With practice, we can sharpen the tools to make their use easier over time.