<u>What does vegetation restoration success mean and how do you get there?</u>
Host: Stan Michals

- *Interestingly, one session's discussion was solely on restoration of grasslands while the other session's focus was forests.*
- *Both sessions differentiated between reclamation and restoration.*
- *Highlighted words or phrases indicate topics brought up in both sessions.*

- Affirm goals to identify **level of effort**, **priorities**, and timeframes.
- Identify **function**: increase diversity, restore historic processes, increase **natives**, or ecological benefits.
- Balance ideal (function) with practicality. Consider **level of effort**, l**imitations**, availability of **desirable seed**, conflicting and compatible neighboring uses.
- Planning must consider **complexity**, risks; include **disturbance** processes, performance measurements, include **sciences**, partnerships, development of BMPs and follow-up or post project planning.
- Science is necessary for obtaining performance measurements, **reference conditions**, adaptations, and defining **limitations**
- Projects of all scales have benefits.

<u>What are some novel, low-cost alternatives for management indicators for assessing ecosystem health?</u>
Host: Kurt Chowanski

Table 2 conversation turned to citizen science and volunteer opportunities with an emphasis on local participation. There was an interest in identifying sensitive species that could be identified and located. The species of interest could come from public input, or from the Black Hills National Forest Phase II Plan Amendment's list of Management Indicator Species. There was an interest in increasing public awareness and participation in existing national programs such as the National Phenology Network's Nature's Notebook, Frog Watch USA, and CoCoRaHS (Community Collaborative Rain, Hail & Snow Network). There was also interest in identifying something with wide local appeal that would also have some ecological relevance. There was a question about whether this would increase resource use, and how that might impact resource quality.

There was a second topic of communicating volunteer opportunities in natural resource monitoring and management. A couple of folks who have been volunteering with various state and federal agencies brought up several questions based on their experiences. How many volunteer opportunities are there? Does everyone who could use volunteers even consider it an option? How can potential volunteers find out about opportunities? Would there be any benefit to having a volunteer coordinator who could both facilitate volunteer opportunities and provide public outreach to find volunteers. Volunteer opportunities could come from academic, federal, state, local government, or private landowners.

What happens after the beetles?

Host: Jack Butler

We were fortunate to have Kurt Allen, Forest Health Protection, and Blaine Cook, Black Hills National Forest Silviculturist at our table during the first session (Kurt Allen moved to another table for the second session). For the most part, we did not get much past the question of how does mountain pine beetle outbreak stage influence fire severity. That seemed to be the main concern. Tree death caused by beetles alters the fuel structure and fire danger is highest in the red stage of beetle outbreak (0 to 2 years following outbreak). During the red stage, the dying/dead needles are still on the tree and very volatile. Any kind of fine fuels in the understory could serve as ladder fuels into the dead canopy. The needles drop off after about 3 years, but then the fine fuels in the understory increases, which increases ladder fuels. There was some discussion about reducing fine fuels through prescribed burns and livestock grazing. Back to the question about beetle outbreaks increasing fire severity, some recent research indicates that fire severity was, for the most part, unrelated to beetle outbreak. Weather and topography were still the strong drivers of fire severity. Kurt Allen describe the cyclic pattern of beetle outbreaks over the past 130 years. Over the 130 year period the Black Hills forest has been about 50% outbreak and 50% rebound. Overall, a relatively short time span between outbreak and rebound. There was a question about aspen increasing in beetle affected areas, and the conclusion was that opening up the pine canopy would increase existing stands of aspen, but not necessarily generate new stands of aspen.

Monarch Butterfly – Does federal listing under the Endangered Species Act change the way you look at a species or its habitat?

Host: Patti Lynch

1. What specifically would change in your current management of the monarch butterfly and its habitat if the species is listed as threatened or endangered?

- Determine distribution of species and its preferred habitats (presence/absence)
- Determine availability of host/nectar species.
- Identify and preserve native habitat.
- Identify threats to species and its habitat (direct and indirect effects).
- Review management practices to determine if these activities threaten this species and its habitat.
    - Herbicides/Pesticide Use: Type of chemical, spot spray vs. broadband spraying
    - Mowing Practices: Mow vs. non-mowing, timing.
    - Rx Burns: Time of year, periods between fires, leaving blocks of un-burned areas intermixed with burn areas.
    - Agriculture use/Seeding: Discourage use of “round-up ready” pretreated seed.

- Look at non-traditional habitat to manage (e.g., roadside buffers).
- The potential for funding would increase if species was elevated by federal listing (e.g., state action plans).
- Plant more native host and nectar species.

2. Are there some mechanisms in place that could be implemented within the next year to avoid federal listing?

- Educate SISMA, County Invasive Weed and Pest Boards and Conservation Districts so they can educate their partners.
- Re-define management practices in CRP Programs.
- Federal Agencies need to "step-up" monitoring.
- Encourage Candidate Conservation Agreements (CCA/CCAA) between FWS and land-owners.
- Help develop Species and Habitat Conservation Plans.
- Encourage Conservation Banks.
- Plant Milkweed!

3. What could you and/or others do to promote education, communications and collaboration to help reduce the risk factors that have been associated with the decline in Monarch numbers?

- Encourage cooperative partnerships at all levels: local, regional, international that would help overcome jurisdictional boundaries with the goal to maintain and enhance monarchs and their habitat.
- Educate public on the threats to the monarch- how they can play a role in reducing the threat to the monarch and other pollinators.
    - Develop Flyers for Extension Services
    - Interpretive programs
    - Schools
    - Nurseries/Plant vendors/Seed vendors
    - Pest Management Companies- chemical distributors/applicators
    - Citizen Science Projects
    - Gardening Clubs
- Encourage participation in developing pollinator friendly gardens and/or signing up to becoming a monarch waystation.
- Find more cost efficient methods (tools) to reduce threat of invasive species.

4. What could be some of the barriers between land management agencies and non-federal land stewards that could jeopardize conservation efforts?

- Public safety (e.g., mowing along roadsides for line of sight).
- Invasive species spread
- Economics of pesticide/herbicide spray techniques (aerial applications vs. spot treatments).
- Threats to livestock (e.g., poisoning from milkweed).
- Not understanding others' point of view or their economic needs that breaks down productive partnerships.
- Government Process/Rules.

<u>How can we improve coordinated stream condition monitoring and evaluation?</u>

Hosts: Kelly Warnke and Jessica Lucas

1. What types of monitoring related to stream condition are currently taking place?

- MIM – Multiple indicator monitoring is done by the Forest Service, Park Service, SD State, and citizen monitoring groups
- Water quality monitoring is done in National Parks
- There are concerns that as management changes, monitoring methods change as well. Not easy to compare data from different monitoring methods.
- There is a desire for MIM training to be offered to citizen scientists and private land owners who would like to monitor streams on their own land.
- The core MIMs team is available for trainings but the MIM method can also be taught by those who are already doing the monitoring. There may be opportunities for cross training between agencies and for private individuals.

2. What critical information related to stream condition is not being collected?

- Macro-invertebrate based monitoring used to be done but is no longer being used. Macro-invertebrates are good measure of the water quality.
- Amphibians can be used as Management Indicator Species (MIS) to determine stream health.
- Likely a strong correlation between presence/absence of amphibians, desirable macro-invertebrates, and stream condition.
- Water temperature is a concern for many trout streams. MIM does not directly measure water temperature.

3. What activities, circumstances, and situations promote knowledge sharing among agencies/entities that manage streams?

- A MIMs working group updated the program to include Black Hills specific plants.

- No further work has been done to centralize Black Hills MIMs data although some of the data is available through each agency.

<u>How do we work together to achieve an efficient, effective, and reliable native plant material supply?</u>

Host: Brennan Hauk

- Communication among agencies was frequently cited as an impediment to ensuring an available supply of local seed. Solutions discussed included establishing a list serve type notification when native seed was available and establishing a directory of local seed producers and growers.
- Agencies need to develop and maintain partnerships with NGO groups, such as TNC, interested in the use of local native plant materials, resource councils and native plant groups. Engage with local greenhouses and garden centers to promote the use of local native plants.
- Coordinate with local growers as much as possible to ensure small lots of seed can be produced at an economical cost.
- Continue advocating seed transfer zone work so local genotypes can be maintained while also reducing the amount of cultivars for each species grown out in the region.

<u>What are the unintended consequences of invasive species control?</u>

Host: Nina Steinmetz

Conversation focused on how to reduce undesirable side effects of invasive species control.

Prevention

- Wash equipment between locations. Make sure equipment is clean before entering an area.
- If necessary, seed treated areas with desired species to prevent re-infestation.
- Make sure mulch and seed used in projects is certified weed free.
- Minimize disturbance in all projects.
- Be mindful of grazing influence on invasives (overgrazing desirable species promotes undesired ones)

Control

- Choose what works (hand-pulling, mechanical, herbicides, biocontrol) but is least harmful to other species.
- Make sure control efforts are applied at most effective time/stage in plant growth.

Education and Cooperation

- Educate all employees/contractors/visitors/public on how to identify problem species and on items above.
- Cooperation among all is needed.

How can ranchers and public land stewards work together to benefit one another and the lands they cherish?

Host: Nina Steinmetz

- Identify common goals, including sustainability, ecosystem health, and resilience.
- Identify strengths and weaknesses of various management practices. Use these to determine a plan that is adaptable to conditions as they arise.
- Improve communication among public land stewards, grazing permitees, and public through education.
    - Engage in dialog regarding different perspectives on what is "misuse" of public land.
    - Discuss benefits and drawbacks of grazing in different areas.

How do natural resources benefit from planning that considers climate change?

Host: Amy Symstad

- Considering climate change is an opportunity to get necessary basic information about species.
- Think about what should be monitored: sensitive species, diversity, microclimate?
- Extreme climate events may be the key to species vulnerability or ecosystem change and can have long-lasting effects.
- This region needs cooperative, coordinated vulnerability assessments and climate change planning. This should be a multi-agency effort that includes all stakeholders.
- Consider how our current management practices, including development, affect flexibility to adapt to climate change.