Adaptive Management
Monitoring Plan
Ice Caves Grazing Allotment
September 2007

Background

Nancy Ryke, Mt. Adams District Ranger made a decision on September 21, 2007 to implement Alternative B, with modifications from the Ice Caves Grazing Allotment EA. The decision re-authorizes grazing on the allotment for 308 AUMs. It includes the following range improvements to protect existing resource damage: a drift fence excluding South Prairie (south portion of the allotment); 500 feet of fence extending the Cave Creek exclosure; and, the piping of the Lost Creek diversion. Alternative B includes an adaptive management component where outcomes are based on end-results for the resource, as opposed to specific seasons or a permitted livestock number. Alternative B authorizes 308 animal unit months (AUMs) or 88 cow/calf pairs for 3.5 months as a starting point, and future monitoring will dictate whether the permitted livestock changes (increases or decreases) would occur over the life of the permit.

Under this framework, monitoring is established to direct the collection of information that will be reviewed to assure compliance with Forest Plan Standards and Guidelines and move the Ice Caves Allotment toward the desired future condition. If this review indicates that current management does not result in the desired outcomes, adjustments in management will be made accordingly. All adaptive actions would be within the scope of effects documented in the September 2007 Ice Caves Grazing Allotment EA, or future NEPA analysis would be conducted.

A monitoring table has been developed with specific monitoring indicators and timeframes. This plan is a work in progress and more detailed protocol may need to be added if it is determined to better evaluate the identified objectives and desired conditions.

Adaptive Management Decisions

Condition trends would be documented by completing the effectiveness monitoring in the first season after the AMP has been developed and comparing that qualitative or quantitative data to the next monitoring period's data. If monitoring indicates that implementation standards are not being met or if a declining trend is apparent based on effectiveness monitoring, decreasing the amount of cattle or other measures to discourage riparian area and meadow use would be necessary. If implementation standards are being met and desired conditions are being met, as shown by effectiveness monitoring, increased numbers of cattle could be considered. This would only occur after further capacity studies determined that more forage was available to allow for an increase in AUMs.

Long-term trends would be evaluated every five years. If desired conditions are not met in five or ten years, or if an evaluation indicates that progress is not being made towards achieving desired conditions within the implementation timeframe, management would be re-evaluated. At that time, a decision would be made to either continue with adaptive management changes (such as a further reduction in AUMs, or construction of range improvements), or to remove cattle from the allotment.

Monitoring Protocol

Monitoring includes both implementation and effectiveness monitoring. Implementation monitoring (IM) will be focused on answering "Did we do it?" The answer to each implementation monitoring item should be "Yes", "No", or "Partially". Effectiveness monitoring (EM) should answer the question "Did it work?" This is where all of the measurements would occur.

Monitoring Indicators:

Utilization—the percent of vegetation utilized by cattle would be measured each year during and at the end of each grazing season. Utilization was the key indicator identified in the EA. The effects of the re-authorization in the allotment were based on the assumption that vegetation in the grazed areas would not be utilized more than 40% in the uplands and 30% in the riparian areas and meadows. This measure is critical to ensuring the assumption that limiting utilization to 30% in riparian and 40% in the uplands will improve conditions for pale blue-eyed grass, aquatic habitat, and Mardon skipper habitat.

IM Questions:

- Are the utilization standards in the AOI (30% in riparian; 40% in uplands)?
- Have utilization levels been checked at least twice annually?

EM Questions:

- Did we meet target levels of vegetation utilization?
- Did we avoid over-utilization in hotspots (identified streambanks, Peterson Prairie, Lost Meadow)?
- Is there enough forage for the permitted number of AUMs (considering wildlife use)?

Water Quantity/ Stream Temperature

IM Questions:

- Is the water diversion (and pipe) in place as described?
- Is the water diversion set and maintained at the prescribed flow volume through the course of the year?

EM Questions:

- Did water temperatures meet state water quality standards or show no increase due to diversion?
- Is only 1 cfs being diverted with the pipe in place?

Lost Creek Diversion Dam--

IM Question:

- Is there enough flow over the top of the dam to allow for fish passage?

Bank Stability--

EM Questions:

- Did the target levels of utilization (30% in riparian; 40% in uplands) meet our desired condition for riparian vegetation?
- Is there increased woody species canopy cover in the riparian areas?
- Is there a reduction in riparian damage?
- Did streambanks recover to the target level (80%)?

Condition of Fences--

IM Questions:

- Is the drift fence in place?
- Have the cattle guards been installed?
- Is the fence maintained to specified standard/condition?

EM Questions:

- Is the drift fence preventing drift into South Prairie?
- Are the cattle guards effective?

Range Readiness/Rosy Owl Clover--

IM Questions:

- Had the Rosy Owl Clover dropped its seed before cattle were rounded up?
- Were soils sufficiently dry when cattle were turned out?
- Was vegetation at correct stage of growth when cattle were turned out?

Mardon Skipper Populations--

EM Question:

- Did the target levels of utilization (30% in meadows) meet our desired condition for Mardon skipper habitat?

Pale Blue-Eyed Grass Populations--

EM Questions:

- Did the target levels of utilization (30% in riparian; 40% in uplands) meet our desired condition for pale blue-eyed grass?
- Was pale blue-eyed grass seed set maintained or increased/decreased?

Invasive Species--

IM Question:

- Did the permittee and Forest Service follow annual instructions/mitigations in regards to invasive plant prevention and reduction of spread?

EM Questions:

- Was there an increase in native cover versus non-native cover?
- Was there an increase in native diversity?

Desired Conditions, Monitoring Indicators, and Timeframes

Indicator	Desired Condition	Monitoring Protocol	Timeframe	Individual/Agency Responsible	Trigger	Adaptive Management
Vegetation Utilization	Maintain enough forage for deer and elk; maintain *Sisyrinchium* populations; re-growth of streamside herbaceous and woody species vegetation	The Landscape Appearance Method or other recognized utilization measurement	At least twice; once at key areas in-season and once at the end of each grazing season; more frequently if utilization approaching 30% in riparian areas and/or 40% in uplands	Forest Service Range Staff; Forest Service Natural Resources Staff; Permittee	Approaching or exceeding utilization standard (30% in primary range; 40% in transitory range)	First, determine cause. Then use the following tools: 1. Movement/distribution adjustment 2. Exclusion 3. Early off or Non-use for Resource Protection 4. Reduction in numbers
Capacity/ Suitability Analysis	N/A	If permitted numbers of AUMs needs to be re-evaluated, standard capacity/suitability analysis protocol will be followed	When requests for more or less AUMs are received or if major events (such as a fire) may have changed circumstances on the ground	Forest Service Range Staff	If it is determined that more or less forage is available for grazing	Permitted numbers of AUMs could be increased or descreased based on factors affecting forage availability
Stream temperatures in Lost Creek	Stream temperature meets or is below the Washington State standard (16°)	1. Monitor temperature upstream and downsteam of the diversion 2. Shut down the diversion for a brief period and allow temperatures in Lost Creek to be entirely free of diversion effects	1. Annually for the first few years; Frequently in August or when we expect temperatures to rise toward 16° 2. Every August for a few years	Forest Service Aquatic Staff	Downstream temperatures in Lost Creek exceed Washington State steam temperature standards (16°)	Water for the diversion would be shut off for the year; piping or trough design features could also be changed to facilitate less water being diverted
Lost Creek Diversion Dam	Enough water flow over the top to allow for fish passage	Monitor flow after the pipe is installed and fewer cfs is diverted	Initially when pipe is installed and during low-flow months	Forest Service Aquatic Staff	If dam is still a fish migration barrier	The diversion dam would be modified or breached to allow for fish passage

Indicator	Desired Condition	Monitoring Protocol	Timeframe	Individual/Agency Responsible	Trigger	Adaptive Management
Bank Stability	Stable banks will be maintained in each stream reach at 80% or more of reference conditions; herbaceous and woody species vegetation will recover along streambanks	Examine hoof damage at hotspots using riparian photo points or other consistent tool	Frequently throughout the summer	Forest Service Aquatic Staff; Forest Service Range Staff	Bank cattle trampling along banks is approaching or greater than 20%	1. Movement/distribution adjustment 2. Exclusion 3. Early off or Non-use for Resource Protection 4. Reduction in numbers Note: Cattle will be moved even if forage use has not reached target levels
Condition of Fences (esp. in South Prairie, Cave Creek, Peterson Prairie, drift fence and Lost Creek, if implemented)	Fences maintained and effective at excluding cattle from sensitive areas	Fences monitored at the same time as utilization checks; concern spots GPSed for return visits. Focus on hotspots each year; advise Ranger when improvements no longer effective.	Annually (at the beginning and end of each season) or when trespass is suspected or reported	Forest Service Range Staff; Permittee	Integrity compromised to the point of potential trespass	If fences are compromised and not effective, determine the cause. Then use the following tools: 1. Improvements enhanced (drift fence extended, repaired) 2. Movement/distribution adjustment (salting, herding, etc) 3. Early off or Non-use for Resource Protection 4. Reduction in numbers
Range readiness check determined by plant growth and firm and sufficiently dry soils	Plants at the defined stage of growth to avoid permanent physiological or compositional changes; soils dry enough to prevent compaction and displacement	Ocular estimate by experienced range conservationist	Annually (before cattle are turned out)	Forest Service Range Staff (inspections prior to livestock turn-out)	Plants not at the defined stage of growth; wet soils	Entry and exit dates could be adjusted to meet allowable use standards, Forest Plan standards and guidelines, and resource conditions.

Indicator	Desired Condition	Monitoring Protocol	Timeframe	Individual/Agency Responsible	Trigger	Adaptive Management
Seed set on rosy owl clover in Peterson Prairie	Seed able to set without any external disturbance; consistent hydrology to provide appropriate habitat; limited competition with invasive species	Evaluate seed's progression and ripeness	Annually (before round-up in the fall)	Forest Service Botany Staff	Seed not ripe and dropping by the time round up is scheduled.	1. Evaluate other round-up options 2. Construct temporary fence
Mardon skipper populations	Increased native species cover; decreased non-native vegetation cover; decreased bare ground	Monitor populations in areas that are protected from grazing by fencing, and in areas that are still available to cattle, but subject to utilization standards.	Every 2-3 years	Forest Service Natural Resources Staff	Long-term population trends on the grazed areas show decline compared with protected areas even though the utilization standards have been met	Assuming that the utilization standards have been met, the unprotected sites (i.e. Lost Meadow) could be fenced, or cattle use reduced or eliminated (i.e. Peterson Prairie).
Pale Blue-Eyed Grass (*Sisyrinchium*)	Decreased uprooting, trampling and herbivory by cattle; sufficient conditions for the pale blue-eyed grass to grow and sexually reproduce	Monitor populations in areas that are protected from grazing by fencing, and in areas that are still available to cattle, but subject to utilization standards.	Annually	Forest Service Botany Staff	Long-term trends on the grazed areas show decline compared with protected areas even though the utilization standards have been met	If livestock grazing is the main contributor to the decline, utilization standards may have to be adjusted, or cattle removed completely from the allotment
Ground cover of native grasses and forbs in the dry meadows and invasive weeds throughout the allotment.	A decrease in non-native and invasive vegetation cover within the allotment	Permanent plots or transects to measure native vegetation and non-native invasives at South Prairie, Cave Creek, and Lost Prairie. Measure cover (amount of bare ground included) of native vs. non-natives, and diversity.	Annually, or biennially	Forest Service Range Staff; Forest Service Natural Resources Staff; and Skamania County Weed Board	New infestations or an upward trend of existing infestations	1. Focus treatment on priority areas or new infestations of invasive weeds 2. Request additional funding to control invasive specie