Monitoring Strategy

The 2012 planning rule, which is found at 36 Code of Federal Regulations (CFR) 219, guides forest/grassland plan monitoring across the Forest Service. The Caribou-Targhee National Forest conformance strategy focuses on addressing the purpose of the forest/grassland plan monitoring program as described in 36 CFR 219.12(a)(1), which includes the need for monitoring information that enables the responsible official to determine if a change in plan components in the plan area may be needed.

In addition, each forest plan monitoring program must contain one or more monitoring questions and associated indicators addressing each of the following eight requirements, which are noted at 36 CFR 219.12(a)(5):

1. *The status of select watershed conditions.*
2. *The status of select ecological conditions including key characteristics of terrestrial and aquatic ecosystems.*
3. *The status of focal species to assess the ecological conditions required at 36 CFR 219.9.*
4. *The status of a select set of the ecological conditions required under 36 CFR 219.9 to contribute to the recovery of federally listed threatened and endangered species, conserve proposed and candidate species, and maintain a viable population of each species of conservation concern.*
5. *The status of visitor use, visitor satisfaction, and progress toward meeting recreation objectives.*
6. *Measurable changes on the plan area related to climate change and other stressors that may be affecting the plan area.*
7. *Progress toward meeting the desired conditions and objectives in the plan, including for providing multiple use opportunities.*
8. *The effects of each management system to determine that they do not substantially and permanently impair the productivity of the land (16 U.S.C. 1604(g)(3)(C)).*

The following monitoring items from Table 5.2 address each of the eight monitoring requirements:

1. *The status of select watershed conditions.*
   - *Detrimental soil disturbance*
   - *Ground cover*
   - *Soil heating*
   - *Big sagebrush and mountain brush canopy cover*
   - *Changes in shrub and understory diversity in bulbous bluegrass treatments*
   - *Changes in shrub and understory diversity from other vegetation treatments*
   - *Vegetation changes*
   - *Riparian properly functioning condition*
   - *Water quality*
   - *Riparian breeding birds*

2. *The status of select ecological conditions including key characteristics of terrestrial and aquatic ecosystems.*
   - *Detrimental soil disturbance*
   - *Ground cover*
   - *Soil heating*
   - *Big sagebrush and mountain brush canopy cover*
   - *Changes in shrub and understory diversity in bulbous bluegrass treatments*
   - *Changes in shrub and understory diversity from other vegetation treatments*
   - *Vegetation changes*
   - *Riparian properly functioning condition*
   - *Water quality*
   - *Riparian breeding birds*

3. *The status of focal species to assess the ecological conditions required at 36 CFR 219.9.*[1]
   - *Sage grouse and Columbian Sharp-Tailed grouse*
   - *Riparian breeding birds*

4. *The status of a select set of the ecological conditions required under 36 CFR 219.9 to contribute to the recovery of federally listed threatened and endangered species, conserve proposed and candidate species, and maintain a viable population of each species of conservation concern.*
   - *Changes in shrub and understory diversity from other vegetation treatments*

5. *The status of visitor use, visitor satisfaction, and progress toward meeting recreation objectives.*
   - *Developed site conditions*
   - *Dispersed area use and condition*

6. *Measurable changes on the plan area related to climate change and other stressors that may be affecting the plan area.*
   - *Ground Cover*
   - *Big sagebrush and mountain brush canopy cover*
   - *Changes in shrub and understory diversity in bulbous bluegrass treatments*
   - *Changes in shrub and understory diversity from other vegetation treatments*
   - *Vegetation changes*
   - *Riparian properly functioning condition*
   - *Riparian breeding birds*
   - *Developed site conditions*
   - *Dispersed area use and condition*
   - *Travel and recreational activity impacts*

[1] At this time, focal species have not yet been identified for the Curlew National Grassland. Therefore, the forest/grassland plan monitoring program will not address focal species. The monitoring items listed under the monitoring requirement: The status of focal species to assess the ecological conditions required at 36 CFR 219.9 are those relative to the Curlew National Grassland Land Resource Management Plan Management Indicator Species.

7. *Progress toward meeting the desired conditions and objectives in the plan, including for providing multiple use opportunities.*
   - *Developed site conditions*

8. *The effects of each management system to determine that they do not substantially and permanently impair the productivity of the land (16 U.S.C. 1604(g)(3)(C)).*
   - *Detrimental Soil Disturbance*
   - *Ground Cover*
   - *Soil heating*

The purpose of forest plan monitoring and evaluation is to evaluate, document, and report how well we are implementing the forest plan, how well the forest plan is working, and if the forest plan purpose and direction remain appropriate. ***Monitoring*** *determines actual conditions and circumstances and compares them with assumptions and expected or desired results. Second,* ***evaluation*** *examines the reasons for the conditions we find and where these do not match desired conditions, identifies potential alternative approaches.*

Types of Monitoring

The monitoring identified in this grassland plan is not all of the monitoring conducted on the Curlew National Grassland. Other forms of monitoring, which address other laws, policies, and site-specific decisions are also ongoing. Three categories of monitoring (see Forest Service Manual 1925.21) comprise both forest/grassland plan and individual project monitoring:

- *Implementation Monitoring – Used to determine if plans, prescriptions, projects, and activities were implemented as designed and in compliance with the forest/grassland plan;*

- *Effectiveness Monitoring – Used to determine if plans, prescriptions, projects, and activities are effective in accomplishing Plan goals, and objectives, and moving toward desired conditions; and*

- *Validation Monitoring – Used in cases of uncertainty to determine if initial data, assumptions, and coefficients used to predict outcomes in the development of the Plan are correct.*

Most monitoring at the national forest/grassland level is in the first two categories.

Forest Plan Monitoring and Evaluation

Tables 5.2 displays the monitoring plan for the Final Land and Resource Management Plan for the Curlew National Grassland. The grassland plan monitoring program identified the plan monitoring questions and associated indicators. Monitoring questions and associated indicators must be designed to inform the management of resources on the plan area, including by testing relevant assumptions, tracking relevant changes, and measuring management effectiveness and progress toward achieving or maintaining the plan's desired conditions or objectives. Questions and indicators should be based on one or more desired conditions, objectives, or other

components in the plan, but not every plan component needs to have a corresponding monitoring question.

Expected precision and reliability of the monitoring for each area is included as required. (36 CFR 219.12(k)(4)) Two classes of precision and reliability are used:

- ***Class A** has methods that are generally well accepted for modeling or measuring the resource or condition. Results are repeatable and often statistically valid. Reliability, precision, and accuracy are very good. The cost of conducting these measurements is higher than other methods. These methods are often quantitative in nature.*

- ***Class B** methods are based on project records, communications, on-site ocular estimates, or less formal measurements like pace transects, informal visitor surveys, air photo interpretation, and other similar types of assessments. Reliability, accuracy, and precision are good, but usually less than Class A. Class B methods are often qualitative in nature, but still provide valuable information on the status of resource conditions.*

We expect to achieve monitoring and evaluation in each of the areas, but actual budget levels and funding mixes (amounts by "program areas" such as recreation, watershed, wildlife, etc.) will affect accomplishment. We may see swings in relative emphasis tied to funding or current issues but we expect to be able to monitor and evaluate some movement toward goals and objectives in each focus area. We also expect that partnerships can be developed to accomplish more in monitoring and evaluation.

Table 5.2 Curlew Grassland Plan Monitoring Plan

Resource	*Monitoring Question*	Parameter Monitored	Monitoring Activity	Type of Monitoring	Frequency of Measurement	Precision Reliability	Priority	Responsibility
Soils	*Are management activity areas meeting the Regional Soil Quality Standards?*	Detrimental Soil Disturbance	Evaluate according to R-4 Soil Quality Standards. Apply Grassland-wide on representative sites of various land treatments.	Implementation Effectiveness	Annually	A	2	Forest Soil Scientist
	Are management activities allowing soils to rebuild?	Ground Cover	Grassland-wide on representative sites or habitat types where new land treatments occur. Evaluate the rate at which habitat types recover from hydrologic disturbances. Include measurements of fine organic matter to address long-term soil productivity.	Implementation Effectiveness	Annually	A	2	Forest Soil Scientist
	How is fire intensity impacting soil quality?	Soil Heating	Evaluate fire intensity to determine impacts on soil quality. Measure area extent of severely burned soils.	Implementation	After each fire event.	B	2	Forest Soil Scientist
Vegetation	*Are vegetation conditions stable or moving toward desired future conditions?*	Big Sagebrush and Mountain Brush Canopy Cover	Reevaluate sagebrush canopy cover classes using a Landsat analysis similar to the USU and Prevedel studies or a more site-specific inventory method. Approved methods in the FSH 2209.11 will be used.	Implementation Effectiveness	Every 10 years	A	1	District Rangeland Managers

Resource	*Monitoring Question*	Parameter Monitored	Monitoring Activity	Type of Monitoring	Frequency of Measurement	Precision Reliability	Priority	Responsibility
		Changes in shrub and understory diversity in bulbous bluegrass treatments.	Establish a monitoring plan in consultation with the Regional Ecologist, using control plots to determine vegetation trends. Protocol will include methods that will show the changes in understory and overstory vegetation and canopy cover reestablishment.	Implementation Effectiveness Validation	Bulbous bluegrass treatments would be measured at times prescribed by Regional Ecologist	A	1	District Rangeland Managers
		Changes in shrub and understory diversity from other vegetation treatments.	Protocol will include methods that will show the changes in understory and overstory vegetation and canopy cover reestablishment and other shrub parameters. Include evaluation of sage grouse habitat quality.	Effectiveness Validation	Before treatment and in years 3 and 10 after treatment.	A	1	District Rangeland Manager and Wildlife Biologist
		Long-term vegetation benchmarks	Establish at least one nested frequency transect within representative native vegetation in the NW unit to monitor long-term condition and trend.	Effectiveness	Every 10 years	A	1	District Rangeland Manager
		Vegetation Changes	Document and map natural and man caused disturbances.	Implementation	Annually	A	1	District Rangeland Manager

Resource	*Monitoring Question*	Parameter Monitored	Monitoring Activity	Type of Monitoring	Frequency of Measurement	Precision Reliability	Priority	Responsibility
Water and Riparian	*Are forest management activities and natural events affecting the ecological conditions of terrestrial and aquatic ecosystems and watershed conditions?*	Riparian Properly Functioning Condition	Reassess streams for PFC using the BLM/FS Protocol and the Integrated Riparian Evaluation Guide or other established protocols. Compare recovery rates between annually and periodically grazed pastures.	Effectiveness Validation	Every 5 years	B	2	District Rangeland Managers
		Water Quality	Monitor water quality on water quality limited streams.	Effectiveness Validation	Annually	A	1	Forest Hydrologist
Wildlife—Management Indicator Species	*Are forest management activities and natural events affecting the ecological conditions indicated by the status of management indicator species?*	Sage Grouse and Columbian Sharp-tailed grouse	Each spring conduct sage and sharp-tailed grouse lek surveys in cooperation with BLM, IDFG and other interested parties on known active and inactive leks.	Validation	Annually	B	1	District Biologist
		Riparian Breeding Birds	Monitor riparian breeding bird habitat keying in on willow shrub structure. Methods may also include long-term point counts for birds.	Effectiveness	Every 5 years	A	1	Forest Wildlife Biologist

Resource	*Monitoring Question*	Parameter Monitored	Monitoring Activity	Type of Monitoring	Frequency of Measurement	Precision Reliability	Priority	Responsibility
Livestock Grazing	*Is the livestock grazing permitted by the Forest maintaining or allowing recovery of riparian and upland vegetation?*	Livestock Utilization	Monitor grazing utilization/stubble height parameters; protocol to be established in consultation with IDT and Regional Ecologist. Protocol will include (at a minimum) yearly utilization mapping and upland and riparian key area utilization transects.	Implementation Effectiveness	Annually—use mapping on 100% of CNG; transects/cages in at least 25% of pastures	A	1	District Rangeland Manager
Recreation and Access	*Is recreation and access adversely effecting other resources?*	Developed Site Conditions	Review fee records and other methods to determine use levels and site conditions.	Implementation Effectiveness Validation	Annually	A	1	District Recreation Specialist
		Dispersed Area Use and Condition	Use observations, road and trail counters to monitor resource conditions and use levels at dispersed recreation sites.	Effectiveness	Annually	B	1	District Recreation Specialist
		Travel and Recreational Activity Impacts	Use observations and surveys to assess resource conditions in areas of concern such as high use areas or along travel routes.	Implementation Effectiveness	Annually	B	2	District Recreation Specialist