

Revision of the Inyo National Forest Land Management Plan

Rangeland Management Supplemental Report

**Inyo National Forest Supplement to
USDA Forest Service Pacific Southwest Region
Rangeland Analysis and Planning Guide R5-EM-TP-004**

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for:

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Table of Contents

Introduction	4
General.....	4
Vegetation Types	5
Grazing Systems	7
Proposed Utilization Standards: Vegetation Parameters	8
Sedge Dominated Wet Meadow	8
Sedge-Grass Dominated Moist Meadow	9
Douglas’ Sedge-Stipa-Elymus-dominated Dry Meadows	10
Desert Shrub	10
Sagebrush/Bunchgrass	10
Bitterbrush	11
Subalpine Meadow.....	12
Alpine Dwarf Shrub.....	13
Aspen	13
Willow	14
Watershed Evaluation Criteria and Corrective Actions.....	15
Watershed Assessment Protocol	15
Potential Problems and Corrective Actions	17
Examples of broad scale problems and their potential solutions	18
Glossary	25
Grazing Systems	25
Season of Use.....	25
Other Terms	26
References Cited.....	27

Tables

Table 1. A preliminary list of desired species that are selected for monitoring key species	6
Table 2. Utilization guidelines for Carex dominated wet meadow by grazing system.....	9
Table 3. Utilization guidelines for Carex-grass dominated moist meadow by grazing system.....	9
Table 4. Utilization guidelines for desert shrub by grazing system.....	10
Table 5. Utilization guidelines for sagebrush/bunchgrass by grazing system growth	11
Table 6. Utilization guidelines for bitterbrush vegetation type by grazing system.....	11
Table 7. Utilization guidelines for subalpine meadow by grazing system	12
Table 8. Utilization guidelines for alpine dwarf shrub by grazing system	13
Table 9. Utilization guidelines for aspen by grazing system	13
Table 10. Utilization guidelines for willow by grazing system	14
Table 11. Hydrologic Function Characteristics Rating Table for Riparian Vegetation Types	19
Table 12. Hydrologic Function Characteristics Rating Table for Upland Vegetation Types	22

Introduction

The rangeland standards from the 2012 Planning Rule conversion process of the 1988 Land and Resource Management Plan Inyo National Forest, as amended in 1995, were brought forward into the Revised Land Management Plan (Revised Plan) for the Inyo National Forest. These rangeland standards will allow the Inyo to sustain and improve rangeland ecosystems. They are summarized in matrices based on vegetation condition, vegetation type, grazing system, and site-specific hydrologic function.

Under Alternatives A, B, C, and D the Inyo National Forest rangeland conditions evaluation process, originating from Forest Plan Amendment #6 (USDA Forest Service 1995), was included as forest standards described in Appendix F of the draft Revised Plan, R5-MB-294 (USDA Forest Service 2016). As described under the 2012 Planning Rule, “(standards) should not direct or compel processes such as analysis, assessment, consultation, planning, inventory, or monitoring” (FSH 2209.12_22.13.4).” Similar direction is given for forest plan guidelines. Therefore, in the final EIS under Alternatives B, B-modified, C, and D, the same rangeland condition evaluation process is removed from the final Revised Plan (In Process) and retained in this specialist report and the planning record for this project as a forest rangeland guide. The final Revised Plan will include two grazing standards that direct the forest to maintain the evaluation process into the future as follows:

- 01 Present vegetation conditions and their similarity to desired vegetation conditions are used to determine the base allowable utilization standard following the Inyo National Forest Supplement to the Pacific Southwest Region’s “Rangeland Analysis and Planning Guide” (R5-EM-TP-004).¹
- 02 Forage utilization standard determinations must include an evaluation of hydrologic function during rangeland condition evaluations following the Inyo National Forest Supplement to the Pacific Southwest Region’s “Rangeland Analysis and Planning Guide” (R5-EM-TP-004).¹

This specialist report describes the rangeland condition evaluation process that would be used in the forest supplement to R5-EM-TP-004. The regional guide, which includes an assembly of agency approved analysis, inventory and monitoring protocols made available on Region’s public website @ <https://www.fs.usda.gov/main/r5/landmanagement/resourcemanagement>. The Inyo National Forest Supplement to R5-EM-TP-004 will be posted on the forest public website under planning @ <https://www.fs.usda.gov/main/inyo/landmanagement/planning> or as forest supplement to FSH 2209.21 Range Analysis and Management Handbook in the directives system once the Final Revised Plan is published.

General

Management matrices, or tables, were developed based on the Region 5 Range Environmental Analysis Handbook FSH 2209.21 (USDA Forest Service 1969), Region 5 Rangeland Analysis Field Guide (USDA Forest Service 1993) and Pacific Southwest Region Rangeland Analysis and Planning Guide R5-EM-TP-004 (USDA Forest Service 2017). The 1969 range analysis handbook and 1993

¹ Vegetation condition assessment protocols and watershed condition rating protocols as described in Forest Plan Amendment 6 to the 1988 Forest Plan have been moved from the Forest Plan and retained as Inyo National Forest Supplement to the Pacific Southwest Region’s “Rangeland Analysis and Planning Guide” (R5-EM-TP-004) where it can be periodically updated. The forest supplement to R5-EM-TP-004 can be found on the Inyo National Forest webpage for Forest Planning.

range analysis guide provided for a continuum of allowable uses, depending on vegetative condition. An interdisciplinary team made adjustments to the figures in the tables based on the specific grazing system used, current literature, and professional experience with Inyo National Forest rangeland conditions. An interdisciplinary team considered these standards to be the maximum allowable per vegetation type on the Inyo National Forest.

Allowable use refers to use by all users, including wildlife, recreation and domestic livestock. Allowable use is measured by percent weight removed for grasses and sedges; and by percent leader growth removed or broken (i.e., measured by length or volume) for shrubs and trees. Allowable use figures were based on a normal precipitation year and adjustments should be made by managers during drought years. Note that five percent allowable use refers to incidental use such as occasional stray and recreational animals. In practice, five percent (5%) means no planned use.

The regional guides identify strategies for monitoring different ecological types and for determining desired conditions. The hydrologic function evaluation criteria modify the use standards where necessary. Habitats of threatened, endangered, sensitive and proposed wildlife and plant species are evaluated and allowable use standards modified as necessary after consultation with the U.S. Fish & Wildlife Service, in order to maintain species viability. Cultural sites will be surveyed, and use will be in accordance with Section 106 of the National historic Preservation Act, and other relevant laws.

Vegetation Types

Rangeland vegetation types were originally classified according to the Region 5 *Rangeland Analysis Field Guide R5-EM-TP-004* (May 1993) and adjusted based on the presence of commonly found plant associations on the Inyo National Forest, and updated based on the current regional *Plant Guide for Resource Managers R5-TP-042* (Lorenzana and others 2017) and local studies (Weixelman and Gross n.d.). A preliminary list of desired species selected for monitoring key species is shown in Table F-1. Desired plants refer to plant species that are representative of a specific vegetation type, in a healthy state; key species refers to a plant species of sufficient abundance and palatability to justify their use as indicators, to the degree of utilization for the associated vegetation type.

Additional desired and key species may be identified by an interdisciplinary team, based on site specific conditions and objectives, at the time of site-specific project planning. Non-native grass species in the genus *Poa* are not identified as key species. If a key species is not present at a given site, a different representative desired species may be substituted during actual monitoring.

Table 1. A preliminary list of desired species that are selected for monitoring key species

Vegetation Type	Desired Species	Key Species
Carex-Dominated Wet Meadows	<i>Carex nebrascensis</i> <i>Carex aquatilis</i> <i>Carex utriculata</i> <i>Carex athrostachya</i> <i>Eleocharis spp.</i>	<i>Carex spp.</i>
Carex-Grass-Dominated Moist Meadows	<i>Carex spp.</i> <i>Trifolium spp.</i> <i>Deschampsia caespitosa</i> <i>Poa spp.</i> <i>Hordeum brachyantherum</i> Miscellaneous forbs	<i>Carex spp.</i>
Carex douglassii – Stipa-Elymus Dominated Dry Meadows ¹	<i>Carex douglassii</i> <i>Stipa spp.</i> Other <i>Carex spp.</i> <i>Elymus trachycaulus</i> <i>Spartina gracilia</i> <i>Hordeum brachyantherum</i> <i>Distichlis spicata</i>	<i>Stipa spp.</i> <i>Elymus trachycaulus</i> <i>Spartina gracilia</i>
Desert Shrub	<i>Pseudoroegneria spicata</i> <i>Ambrosia domosa</i> <i>Stipa hymenoides</i> <i>Grayia spinosa</i> <i>Atriplex spp.</i> <i>Menodora spinescens</i> <i>Krascheninnikovia lanata</i> <i>Stipa speciose</i> <i>Ephedra viridis</i> <i>Ephedra nevadensis</i> <i>Psoralea polydenius</i>	<i>Stipa hymenoides</i> <i>Stipa speciose</i> <i>Grayia spinose</i> <i>Krascheninnikovia lanata</i>
Sagebrush/Bunchgrass	<i>Atriplex spp.</i> <i>Grayia spinose</i> <i>Stipa spp.</i> <i>Elymus elymoides</i> <i>Stipa hymenoides</i> <i>Ephedra viridis</i>	<i>Grayia spinose</i> <i>Stipa spp.</i> <i>Elymus elymoides</i> <i>Stipa hymenoides</i>
Bitterbrush	<i>Purshia spp.</i> <i>Artemisia tridentate</i> <i>Stipa spp.</i> <i>Elymus elymoides</i> <i>Stipa hymenoides</i> <i>Ribes cereium</i> <i>Ribes velutinum</i> <i>Elymus spp.</i> <i>Poa secunda</i>	<i>Purshia spp.</i>

Subalpine Meadow	<i>Carex spp.</i> <i>Elymus spp.</i> <i>Eleocharis spp.</i> <i>Deschampsia caespitosa</i> <i>Danthonia spp.</i> <i>Poa spp.</i>	<i>Carex spp.</i> <i>Poa spp.</i> <i>Deschampsia caespitosa</i> <i>Danthonia spp.</i>
Alpine Dwarf Shrub	<i>Artemisia arbuscular</i> <i>Ribes spp.</i> <i>Eriogonum spp.</i> <i>Koeleria macrantha</i> <i>Elymus elymoides</i> <i>Poa spp.</i>	<i>Poa spp.</i> <i>Koeleria macrantha</i> <i>Elymus elymoides</i>
Willow	<i>Salix spp.</i>	<i>Salix spp.</i>
Aspen ²	<i>Populus tremuloides</i>	<i>Populus tremuloides</i>

¹ This type does not include degraded wet or moist meadows. Dry meadows do not represent a management issue on the Inyo NF. Use the same standards for this type as for adjacent dryland vegetation types on a site specific basis.

² This type does not include use standards for the understory vegetation. For understory vegetation, use the appropriate vegetation matrix.

Grazing Systems

There are five primary grazing systems used on the forest: season-long; once over; compressed season; deferred rotation; and rest rotation. There are three others that are either not in current use, or used less frequently: year round; holistic resource management; and setback pastures. Here are the descriptions of eight grazing systems:

- **Season-long:** This system permits continuous grazing throughout the entire plant growing season. Season-long grazing often requires more restrictive standards (i.e. reduced utilization levels) than other grazing systems due to repeated use of individual plants over an extended period of time. This repeated use can lead to a downward trend in plant vigor if utilization levels are set too high.
- **Once over:** Once over grazing refers to a duration of approximately three days for sheep or five to seven days for cattle, within a given management unit. This grazing scheme is of short duration and low to moderate intensity. Once over grazing may occur early, mid or late season.

- **Compressed season:** This system enables permitted head months to be reached by allowing more livestock over a shorter period of time. For example a historical permitted use of 150 head for 4 months (600 head months) might be changed to 600 head for 1 month to reach the same 600 HM'S of use.
- **Deferred rotation:** This is a system in which units are used for only a portion of the growing season. The use standards are set individually according to the timing of use, i.e. first half or second half of the plant growing season.
- **Rest rotation:** This includes only the two-pasture rest rotation system in which there would be total rest on one pasture and season-long use on the other. Allowable use was largely based on season-long use for the grazed pasture. Rest rotation systems with 3 or more pastures are treated as “deferred rotation”, because one pasture is grazed early and another is grazed late as in a deferred rotation system, while the third is rested.
- **Year-round:** This refers to grazing on a 9 to 12 month basis per year. This form of grazing was considered, but is currently not in use on the Inyo National Forest.
- **Holistic resource management:** Commonly associated with Alan Savory and the Center for Holistic Resource Management, holistic resource management typically incorporates high intensity-short duration grazing strategies as well as other resource management techniques. Holistic resource management is unique with each land use application; it is inconsistent with predetermined utilization standards and could be adopted on an allotment specific basis as decided by a holistic resource management interdisciplinary team. If this grazing system is to be implemented, the holistic resource management team should determine appropriate allowable use standards and participate in the requisite site specific NEPA analysis.
- **Setback pastures:** Setback pastures are resource enclosures, or pastures, that can be grazed occasionally. They normally will be assigned standards on a site specific basis.

Proposed Utilization Standards: Vegetation Parameters

In this section the proposed utilization tables, or matrices, for each vegetation type (i.e., Carex- dominated (wet) meadows, Carex-grass-dominated (moist) meadows, desert shrub, sagebrush, bitterbrush, subalpine meadow, alpine dwarf shrub, willow and aspen) by grazing system are presented.

Within the matrices there are overlaps in the numbers of desired plants over total herbaceous plants. Total herbaceous refers to the total number of plants counted out of 100 tallied. This includes invaders as well as desired plants. It does not include tallies on litter, bare soil, gravel or rock. When more than one vegetation type exists within a management unit, more than one use standard may exist. Livestock should be removed from a unit when the first (in chronological time) allowable use standard is reached.

Sedge Dominated Wet Meadow

The desired species within this vegetation type include: Nebraska sedge (*Carex nebrascensis*), Water sedge (*Carex aquatilis*), Beaked sedge (*Carex utriculata*), Long-bracted sedge (*Carex athrostachya*), Spikerush (*Eleocharis* spp.). Key Species include: all desired sedges (*Carex* spp.). Allowable use is in percent by weight.

Table 2. Utilization guidelines for Carex dominated wet meadow by grazing system

Desired Plant Tally ¹ (Total Herbaceous)	Season-long ²	Once Over (Early Season/Late Season)	Compressed Season	Rest Rotation ³	Deferred Rotation (Early Season/Late Season)
68 (68+)	45%	60%/45%	NR ⁴	-	50%/40%
51-67 (51+)	45% ²	45%/35%	NR	-	50%/40%
19-50 (19+)	25%	35%/25%	NR	-	40%/30%
7-34 (16-85)	15%	25%/15%	NR	-	30%/20%
0-16 (0-45)	5% ⁵	15%/10%	NR	-	20%/10%

¹ Number of vegetation hits tallied out of 100 total using the Step-point method (USDI BLM 1999).

² Number given is for concave meadow; drop by 10 % for convex meadow.

³ Two pasture systems use season-long standards; ≥3-pasture systems, use deferred rotation early/late season standards.

⁴ Grazing practice not recommended.

⁵ The 5% allowable use is for incidental use only. The intent is not to have grazing at this level.

Sedge-Grass Dominated Moist Meadow

The desired species within this vegetation type include: Sedges (*Carex* spp.), Clovers (*Trifolium* spp.), Tufted hair grass (*Deschampsia caespitosa*), Bluegrasses (*Poa* spp.), Northern meadow barley (*Hordeum brachyantherum*), and miscellaneous forbs. Key Species include: All desired sedges (*Carex* spp.); native competitor sedges on mesic meadows identified in the regional *Plant Guide for Resource Managers* (R5-TP-042 2017). Allowable use in percent by weight.

Table 3. Utilization guidelines for Carex-grass dominated moist meadow by grazing system

Desired Plant Tally ¹ (Total Herbaceous)	Season-long	Once Over (Early Season/Late Season)	Compressed Season	Rest Rotation ²	Deferred Rotation (Early Season/Late Season)
>51 (55)	40%	55%/40%	55%/40%	-	45%/35%
37-57 (>37)	40%	40%/30%	40%/30%	-	45%/35%
17-57 (>20)	20%	30%/25%	30%/25%	-	35%/25%
0-20 (>10)	10%	20%/10%	20%/10%	-	25%/15%
<13 (0-25)	5% ³	10%/5%	10%/5%	-	15%/5%

¹ Number of vegetation hits tallied out of 100 total using the Step-point method (USDI BLM 1999).

² Two 2-pasture systems use season-long standards; ≥3-pasture systems use deferred rotation early/late season standards.

³The 5% allowable use is for incidental use only. The intent is not to have grazing at this level.

Douglas’ Sedge-Stipa-Elymus-dominated Dry Meadows

The desired species within this vegetation type include: Douglas’ sedge (*Carex douglassii*), Needlegrasses (*Stipa* spp.), other sedges (*Carex* spp.), slender wheatgrass (*Elymus trachycaulus*), alkali cordgrass (*Spartina gracilia*), Northern meadow barley (*Hordeum brachyantherum*) and spiked salt grass (*Distichlis spicata*). Key Species include: needlegrass (*Stipa* spp.), slender wheatgrass (*Elymus trachycaulus*) and alkali cordgrass (*Spartina gracilia*). Based on a site-specific analysis, use the same standards for this type as for the adjacent vegetation types.

Desert Shrub

The desired species within this vegetation type include: bluebunch wheatgrass (*Pseudoroegneria spicata*), white bursage (*Ambrosia domosa*), Indian ricegrass (*Stipa hymenoides*), Spiny hopsage (*Grayia spinosa*), shadescale (*Atriplex* spp.), Spiny menodora (*Menodora spinescens*), winterfat (*Krascheninnikovia lanata*), Desert Needlegrass (*Stipa speciose*), Green ephedra (*Ephedra viridis*), Nevada Mormon tea (*Ephedra nevadensis*), and Nevada indigobush (*Psorothamau polydenius*). Key Species include: Indian ricegrass (*Stipa hymenoides*), Desert Needlegrass (*Stipa speciose*), Spiny hopsage (*Grayia spinosa*) and winterfat (*Krascheninnikovia lanata*). Allowable use for this system is defined as: Percent use on grasses is by weight. Percent use on brush is the percent of the current year’s growth. Whichever vegetation type is utilized first limits the amount of time grazing is allowed.

Table 4. Utilization guidelines for desert shrub by grazing system

Desired Plant Tally ¹ (Total Herbaceous)	Season-long	Once Over (Early Season/Late Season)	Compressed Season	Rest Rotation ²	Deferred Rotation (Early Season/Late Season)
29-41 (>38)	30%	50%/40%	50%/40%	NR	40%/30%
8-40 (>30)	30%	50%/40%	50%/40%	NR	40%/30%
<32 (>10)	20%	30%/20%	30%/20%	NR	30%/20%
<14 (>5)	10%	20%/10%	20%/10%	NR	20%/10%
<8 (<11)	5% ³	10%/5%	10%/5%	NR	10%/5%

¹ Number of vegetation hits tallied out of 100 total using the Step-point method (USDI BLM 1999).

² Grazing practice not recommended.

³ The 5% allowable use is for incidental use only. The intent is not to have grazing at this level.

Sagebrush/Bunchgrass

The desired species within this vegetation type include: all late seral sagebrushes (*Artemisia* spp.) identified in the regional *Plant Guide for Resource Managers* (R5-TP-042 2017) for sagebrush steppe, saltbrush (*Atriplex* spp.), Spiny hopsage (*Grayia spinosa*), needlegrasses (*Stipa* spp.), bottlebrush squirreltail (*Elymus elymoides*), Indian ricegrass (*Stipa hymenoides*) and Green ephedra (*Ephedra viridis*).

Key Species include: Spiny hopsage (*Grayia spinosa*), needlegrasses (*Stipa spp.*), bottlebrush squirreltail (*Elymus elymoides*) and Indian ricegrass (*Stipa hymenoides*). Allowable use for this system is defined as: percent use on grasses is by weight; percent use on brush is percent of the current year’s growth. Whichever vegetation type is utilized first limits the amount of time grazing is allowed.

Table 5. Utilization guidelines for sagebrush/bunchgrass by grazing system growth

Desired Plant Tally ¹ (Total Herbaceous)	Season-long	Once Over (Early Season/Late Season)	Compressed Season	Rest Rotation	Deferred Rotation (Early Season/Late Season)
29–41 (>38)	50%	40%/60%	40%/60%	50%	40%/60%
8–40 (>30)	50%	40%/60%	40%/60%	50%	40%/60%
<32 (>10)	40%	30%/50%	30%/50%	40%	30%/50%
<14 (>5)	20%	20%/40%	20%/40%	20%	10%/40%
<8 (<11)	5% ²	10%/30%	10%/30%	5	5%/30%

¹ Number of vegetation hits tallied out of 100 total using the Step-point method (USDI BLM 1999).

² The 5% allowable use is for incidental use only. The intent is not to have grazing at this level.

Bitterbrush

The desired species within this vegetation type include: bitterbrush (*Purshia spp.*), big sagebrush (*Artemisia tridentate*), *Stipa spp.*, bottlebrush squirreltail (*Elymus elymoides*), Indian ricegrass (*Stipa hymenoides*), wax currant (*Ribes cereium*), desert gooseberry (*Ribes velutinum*), wheatgrasses (*Elymus spp.*), and Sandberg’s bluegrass (*Poa secunda*). Key Species include: bitterbrush (*Purshia spp.*). Allowable use for this system is defined as: bunchgrass standards from the Sagebrush/Bunchgrass site matrix are applied to the herbaceous component of the bitterbrush vegetation type. Percent use on bunchgrass is by weight. Percent use on bitterbrush is the percent of the current year’s growth. Whichever category is utilized first limits the amount of time grazing is permitted in the bitterbrush vegetation type.

Table 6. Utilization guidelines for bitterbrush vegetation type by grazing system

Desired Plant Tally ¹ (Total Herbaceous) [<i>Purshia sp.</i> Condition]	Season-long	Once Over (Early Season/Late Season)	Compressed Season	Rest Rotation	Deferred Rotation (Early Season/Late Season)
29–41 (>38) [<15% Purshia in Form Classes 3 and/or 6 ²]	40%	50%/40%	50%/40%	NR ³	50%/40%
8–40 (>30) [<15% Purshia in Form Classes 3 and/or 6 ²]	40%	50%/40%	50%/40%	NR	50%/40%

<32 (>10) [<15% Purshia in Form Classes 3 and/or 6 ²]	30%	40%/30%	40%/30%	NR	40%/30%
<14 (>5) [<15% Purshia in Form Classes 3 and/or 6 ²]	20%	30%/20%	30%/20%	NR	30%/20%
<8 (<11) [<15% Purshia in Form Classes 3 and/or 6 ²]	5% ⁴	20%/5%	20%/5%	NR	20%/5%

¹ Number of vegetation hits tallied out of 100 total using the Step-point method (USDI BLM 1996).

² Browse utilization and form classes using Extensive Browse or Line Intercept methods (USDI BLM 1996).

- Form Class 1 - All available, little or no hedging.
- Form Class 2 - All available, moderately hedged.
- Form Class 3 - All available, severely heavily hedged.
- Form Class 4 - Partially available, little or no hedging.
- Form Class 5 - Partially available, moderately hedged.
- Form Class 6 - Partially available, severely hedged.

³ Grazing practice not recommended.

⁴ The 5% allowable use is for incidental use only; the intent is not to have grazing at this level. Also used if all hits are decadent and there is no regeneration.

Subalpine Meadow

The desired species within this vegetation type include: Sedges (*Carex spp.*), wheatgrasses (*Elymus spp.*), spikerush (*Eleocharis spp.*), tufted hair grass (*Deschampsia caespitosa*), oat grass (*Danthonia spp.*), and bluegrass (*Poa spp.*). Key Species include: sedges (*Carex spp.*), bluegrasses (*Poa spp.*), tufted hair grass (*Deschampsia caespitosa*) and oat grass (*Danthonia spp.*). Allowable use is percent by weight.

Table 7. Utilization guidelines for subalpine meadow by grazing system

Desired Plant Tally ¹ (Total Herbaceous)	Season-long	Once Over (Early Season/Late Season)	Compressed Season	Rest Rotation ²	Deferred Rotation
>38 (40)	30%	35%/30%	NR ³	30%	NR
31-40 (>30)	20%	30%/20%	NR	20%	NR
19-30 (>21)	15%	20%/15%	NR	15%	NR
9-20 (>9)	5% ⁴	10%/5%	NR	5%	NR
<11 (<28)	5%	5%	NR	5%	NR

¹ Number of vegetation hits tallied out of 100 total using the toe-point method Step-point method (USDI BLM 1999).

² Only the 2-pasture system is used, because of the short growing season.

³ Grazing practice not recommended.

⁴The 5% allowable use is for incidental use only. The intent is not to have grazing at this level.

Alpine Dwarf Shrub

The desired species within this vegetation type include: low sagebrush (*Artemisia arbuscular*), current (*Ribes* spp.), buckwheat (*Eriogonum* spp.), Junegrass (*Koeleria macrantha*), bottlebrush squirreltail (*Elymus elymoides*), bluegrasses (*Poa* spp.) identified as late seral in the R5 Plant. Key Species include: Junegrass (*Koeleria macrantha*) and bottlebrush squirreltail (*Elymus elymoides*). Allowable use is by percent weight.

Table 8. Utilization guidelines for alpine dwarf shrub by grazing system

Desired Plant Tally ¹ (Total Herbaceous)	Season-long	Once Over (Late Season Only)	Compressed Season	Rest Rotation ²	Deferred Rotation
>38 (40)	25%	30%	NR ³	25%	NR
31-40 (>30)	20%	20%	NR	20%	NR
19-30 (>21)	15%	15%	NR	15%	NR
9-20 (>9)	5% ⁴	5%	NR	5%	NR
<11 (<28)	5%	5%	NR	5%	NR

¹ Number of vegetation hits tallied out of 100 total using the Step-point method (USDI BLM 1999).

² Only the 2-pasture system is used, because of the short growing season.

³ Grazing practice not recommended.

⁴ The 5% allowable use is for incidental use only. The intent is not to have grazing at this level.

Aspen

The desired and key species within this vegetation type include: American quaking aspen (*Populus tremuloides*). Allowable use is by percent (by number) aspen regeneration utilized (either consumed or trampled) annually.

Table 9. Utilization guidelines for aspen by grazing system

Age Class ¹ / Regeneration	Season-long	Once Over (Late Season Only)	Compressed Season	Rest Rotation	Deferred Rotation
≥ 2 Age classes / Adequate regeneration	20%	20%	20%	20%	20%
< 2 Age classes / Adequate regeneration	No Use	No Use	No Use	No Use	No Use
≥ 2 Age classes / No regeneration	No Use	No Use	No Use	No Use	No Use
< 2 Age classes / No regeneration	No Use	No Use	No Use	No Use	No Use

¹ Sites with stems <2 years and/or no regeneration were combined and put into a No Use (0% Use) category. The objective in aspen stand management is to manage for a minimum of two age classes and adequate regeneration. If just one class exists prevent or mitigate browsing to release suppressed age classes. Age Classes: seedling, young plant, mature plant, decadent plant, sprouts or suckers (Jones et al. 2005).

Willow

The desired and key species within this vegetation type include: willows (*Salix* spp.). Allowable use for this system is defined as: percent (by volume) available willow twigs and leaves utilized and broken (trampled).

Table 10. Utilization guidelines for willow by grazing system

Age Class ¹ and Regeneration ²	Season-long	Once Over	Compressed Season	Rest Rotation	Deferred Rotation
Form Classes 1 & 4 Upward or static trend in regeneration	11-20%	11-20%	11-20%	11-20%	11-20%
Form Classes 2 & 5 Static trend in regeneration	6-10%	6-10%	6-10%	6-10%	6-10%
Form Classes 3 & 6 or Downward trend in regeneration	0-5%	0-5%	0-5%	0-5%	0-5%

¹ Browse utilization and form classes using Extensive Browse method (USDI BLM 1996a).

- Form Class 1 - All available, little or no hedging.
- Form Class 2 - All available, moderately hedged.
- Form Class 3 - All available, severely heavily hedged.
- Form Class 4 - Partially available, little or no hedging.
- Form Class 5 – Partially available, moderately hedged.
- Form Class 6 – Partially available, severely hedged.

² Apparent or measuring trend in shrub or tree regeneration using Extensive Browse or Line Intercept methods (USDA Forest Service 1993, USDA BLM 1996a, 1996b; Jones et al. 2005)

Watershed Evaluation Criteria and Corrective Actions

An ecosystem approach to determining proper forage utilization standards must include an evaluation of current watershed condition and hydrologic function at the site-specific key grazing area. A watershed that is fully functional will have the ability to capture, store and slowly release water over time. When a watershed or sub-watershed is non-functional or degraded, the ability to store and release water for plant use over the grazing season is reduced or lost. After a preliminary allowable use factor has been determined from the vegetation matrices adjustments and corrective actions may be identified based on watershed evaluations, in order to implement restoration of watershed function.

A watershed evaluation consists of two parts, a site specific evaluation and a broad scale watershed analysis. A site specific evaluation assesses hydrologic function characteristics in representative riparian, upland and stream channel vegetation types based on evaluation criteria listed in Table F-11 and Table F-12. The broad scale watershed analysis examines watershed characteristics over a much greater area, including all areas upstream and downstream within the watershed per the national Watershed condition Classification guidance (USDA Forest Service 2011).

If the results of these evaluations indicate that the watershed is fully functional, with no off-site factors that need to be addressed, no adjustment to the preliminary allowable use factor is needed. If the watershed is less than fully functional, the results of the site-specific and broad scale evaluations are integrated by an interdisciplinary team and corrective actions are developed that specifically relate to the identified problems on the ground. The number of corrective actions required is dependent on the severity and number of problems present.

Watershed Assessment Protocol

Identify the watershed area to be evaluated. This will usually be a sub-watershed, however it is important to consider the entire watershed condition and identify any upstream or downstream contributing factors and impacts. Site specific watershed observations will be taken in conjunction with the vegetation step point data collection (USDI BLM 1999).

Broad-scale Evaluations

The area upstream will be considered and any factors contributing to watershed problems at the site will be noted. These may be outside of the grazed vegetation, the allotment or National Forest. Working down from the top of the watershed will help identify and track these contributing factors. The area downstream from the site will also be considered. Any factors found on the site that are contributing to watershed problems downstream will be noted. The information regarding upstream and downstream impacts will be used by the Forest's interdisciplinary team to determine the effective location for application of the mitigation actions identified in the site specific evaluations.

Site-specific Key Grazing Area Evaluations

Use the hydrologic function table for the appropriate vegetation type and check the appropriate category for each hydrologic function characteristic on the tally sheet. Complete the streambank and channel assessment if there is a stream channel within the vegetation type. The methodology is intended to be a rapid visual assessment, not a detailed quantitative measurement. The intent is to identify, categorize and respond to readily apparent problems. Tally the number of checks for each characteristic, keeping the tally sheets separate for riparian, upland and stream channel.

Allowable Use Adjustment Protocol

All allowable use level reductions in the following section refer to the allowable use matrices. A one level reduction is defined as changing the allowable use to the value in the box directly below the previously identified allowable use factor. A two level reduction requires changing the allowable use to two boxes directly below the previously identified allowable use factor.

For riparian vegetation (type a), out of a possible five check marks:

- Good or fully functional: if four or more are in the fully functional category and no checks are in the degraded or non-functional categories, then no corrective actions are required.
- Fair or functioning at risk: if one check is in the degraded category, two or more checks in the at risk category, and no checks in the non-functional category, then either one management change or a reduction of one allowable use level from the vegetation matrices must be implemented.
- Poor or degraded: if one check is in the non-functional category and up to one check is in the degraded category, or if two checks are in the degraded category and no checks are in the non-functional category, then either two management changes, or a reduction of two allowable use levels from the vegetation matrices, or one management change and a reduction of one allowable use level, must be implemented, or the area must be rested.
- Non-functional: if any two or more checks are in the degraded category and one check is in the non-functional category, or if two or more checks are in the non-functional category, then the area must be rested until recovery is documented.

For upland vegetation (type b), out of a possible eight total check marks:

- Good or fully functional: if at least six are in the fully functional category and no checks are in the degraded or non-functional categories, the no action is required.
- Fair or functioning at risk: if at least four checks are in the at risk category or better and no more than two checks are in the degraded and no checks in the non-functional categories, then a reduction of one allowable use level or one management change is required.
- Poor or degraded: if three checks are in the degraded category, or one check is in the non-functional category and the remainder are in the at risk or fully functional categories, then a reduction of two allowable use levels, or two management action changes, or a reduction of one allowable use level and one management action must be implemented.
- Non-functional: if four or more checks are in either the degraded or non-functional categories, or two or more checks are in the non-functional category, then a reduction of two allowable use levels and one management action change, or a reduction of one allowable use level in the use table and two management actions must be implemented.

For stream and streambanks, use the proper functioning condition protocol^{17 18}, as discussed in chapter 3 or the updated versions of these protocols:

- If threatened at fully functional category then no change is required.
- If rated at functioning at risk with an upward trend, then either one management change or a reduction by one allowable use level is required.

- If rated as functional at risk with a downward trend or non-functional categories, then the area must be rested until recovery is documented.

Consider any broad scale contributing factors noted and determine if correcting those factors will help correct site-specific problems. If so, successful corrective action for those contributing factors will count toward total corrective actions required.

Potential Problems and Corrective Actions

The following is a list of potential problems and possible corrective actions that may be applied in order to reach management goals. Actual problems and solutions will normally be identified and developed on an individual site basis by a forest interdisciplinary team.

Presence of hummocks rated as “degraded” in wet meadows:

- Delay on-date to allow wet areas to become firm.
- Change to a shorter duration grazing system.
- Fence the wet area to exclude grazing.
- Drop the forage use by one level in the allowable use table.

Presence of rills, gullies and headcuts:

- Construct grade control structures.
- Slope back and protect headcuts.
- Revegetate headcuts and raw areas and protect from trampling.
- Protect headcuts and raw areas and allow natural revegetation.
- Change to a shorter duration grazing system.
- Drop the forage use by one level in the allowable use table.

Presence of compacted soils:

- Delay on-date to allow wet areas to become firm.
- Change to a shorter duration grazing season.
- Protect compacted areas (fencing, brush, etc.) to allow natural healing.
- Drop the forage use by one level in the allowable use table

Presence of bare ground due to disturbance:

- Reseed with native/endemic desirable plants.
- Delay on-date until after seed has been set on desired plants.
- Change to a shorter duration grazing system.
- Drop the forage use by one level in the allowable use table.

Presence of poor streambank stability:

- Evaluate upstream areas for poor management practices.

- Protect banks from trampling with brush, fencing, etc.
- Establish a riparian pasture and graze at lower intensity and shorter duration.
- Delay on-date to allow banks to become firm prior to grazing.
- Change from cattle to sheep.
- Drop the forage use by one level in the allowable use table.

Presence of stream channel incisement:

- Same as for poor streambank stability.
- Restore the entire reach, including reconstruction of the natural stream channel configuration, profile, and pattern.

Examples of broad scale problems and their potential solutions

A road with poorly designed drainage is crossing a wet meadow or a stream causing headcutting. The headcuts can be stabilized by sloping back and seeding, placing sod or erosion control cloth over the raw earth, then protect from grazing, trampling and allowed to heal. The road can also be evaluated and be removed and rehabilitated, redesigned or relocated.

A road is channeling overland flow leading to rills and gullies in an upland. In addition to grade control structures in the gully, the road can be redesigned or relocated.

A stock trail is crossing a wet meadow, resulting in a change in meadow gradient and headcuts originating from the trail working uphill through the meadow. Along with sloping back, revegetating and protecting the headcuts from trampling, the trail can be raised by building a causeway or must be relocated out of the soft meadow.

Changing water levels in a stream or reservoir is resulting in a drop in hydrological base level and headcuts working upstream throughout the tributaries. If possible, the water level in the stream or reservoir should be stabilized. If that is not possible, the tributary can be stabilized at or near the point where it enters the main body of water with some sort of grade control. Then the headcuts can be treated, rested and allowed to revegetate and recover.

Uphill road building, mining, logging, grazing or other activities is increasing local sediment loads, changing instream flow patterns and causing bank erosion and sloughing. The streambank area can be protected from trampling and the vegetation given a chance to grow and stabilize the banks. The upstream sediment source should also be identified and corrected.

Table 11. Hydrologic Function Characteristics Rating Table for Riparian Vegetation Types

Characteristic	Definition	Non-functional	Degraded	At-Risk	Fully Functional
Sod or surface organic layer	Sod is the upper layer of soil and identified by the depth of the layer in which fine roots and organic material are integrally mixed with mineral soil at the surface; an organic layer may be present in especially wet sites and can be considered a special kind of sod. Record typical sod depth.	Where sod layer would be expected, it appears to be fragmented and discontinuous. More than 50 % of the area has bare mineral soil without a protective organic or sod cover. The sod layer is thinner than expected for the site and/or fragmented by erosion, trails or other disturbance.	Where sod layer would be expected, it appears to be fragmented and discontinuous; up to 10-50 % of the area may be missing sod layer, or sod layer thinner or fragmented by erosion, trails or other disturbance.	Where sod layer would be expected, it is thick and mostly continuous, but up to 10% of the area may be missing sod layer or sod layer is thinner or beginning to be fragmented by erosion, trails, or other disturbance. Alkali meadows may fit in this category as an assessment of natural risk factors.	Wet and moist meadows have a thick (>2"), continuous sod layer throughout most of the site. Especially wet or spring areas may have a layer of organic soil above the mineral layer. Dry meadow sites should have thick grass litter cover; sod layer may be <2" thick over the entire site. Alkali meadows may naturally lack this sod layer; naturally at greater risk to compaction and erosion.
Compaction	Compaction is best assessed with a tile spade, using undisturbed (or highly disturbed) areas as comparative references. Platiness, mashed roots or lack of roots are indicators of severe compaction. Note extent, severity, and depth of compaction where possible.	Similar to at-risk, except degree and extent of compaction is more severe. Plant vigor and cover is affected, rooting depth is restricted to few inches at surface; probably associated evidence of water runoff.	Evidence of slight or moderate compaction over much of the site, or severe compaction in small but critical areas (e.g., near streambanks or sideslopes capable of delivering sediment to stream or moving soil offsite.) Plant vigor and rooting depth appear to be affected. Compaction is not alleviated over the winter rest period.	Some evidence of slight or moderate compaction levels over parts of the site. No severe compaction except in major trails, bedding or salt areas. (Severely compacted areas are not near streambanks or sideslopes capable of delivering sediment to stream.) Extent of compaction is minimal and plant vigor and rooting depth are not greatly affected.	No evidence of severe compaction. Slight or moderate compaction is limited only to trails, salting or bedding areas.
Hummocks	Hummocks are a surface ground pattern of mounds and	Numerous static hummocks are evident in	Similar to "At-Risk" but the degree and extent of	Slight evidence of static hummocks with distinct	No evidence of static hummocks or where

Characteristic	Definition	Non-functional	Degraded	At-Risk	Fully Functional
	intermounds that can form naturally in alpine environments where organic or wet soils are present. May also form in mineral soils due to disturbance. Disturbance can also make these natural temporary features permanent and compaction between the mounds can lead to reduced water infiltration and erosion leading to nickpoints and headcuts. Hummocks, when permanent, are part of the landscape for an undetermined amount of time.	most spring areas and wet spots. There is distinct topographical relief. Roots are exposed on edges of hummocks and/or hoofmarks present. Vegetation composition is different on top of the hummocks and between the hummocks. Vegetation between hummocks does not effectively capture sediment.	hummocking is greater. Static hummocks are evident in most spring and wet areas with the following characteristics: There is distinct topographical relief. Roots may be exposed on edges of hummocks or hoofmarks present. Vegetation composition may be different on top and between the hummocks. Vegetation between hummocks is mostly able to capture sediment.	relief and trailing pathways. Hummocks are still mostly vegetated with similar species on top and between hummocks. There may be one large area in a critical part of the watershed (e.g., headwater spring) or several smaller areas. Vegetation between hummocks is able to capture sediment.	hummocks are present they are naturally occurring features resulting from frost heave in organic soils. In such cases positions change from year to year and vegetation should be similar and continuous on and between hummocks.
Rills & gullies	Rills are intermittent depressions formed by erosion and concentrated flow during heavy rains at least 2-3 cm deep and greater than 1 meter in length. If rills have enlarged to the point where they are greater than 10 cm deep and 15 cm wide they are considered gullies ²	Rills present at intervals of less than 1.5 meters; Rills and gullies are numerous and well developed, may occur in a dendritic pattern, with active erosion; or a few well-developed gullies with active erosion.	Rills occur in exposed areas at intervals of 1.5 to 3 meters (5 to 10 feet); gullies are well-developed with active erosion; some vegetation may be present; rill and/or gully pattern may be branching or dendritic.	Some rills in evidence at infrequent intervals of over 3 meters (10 feet) OR some evidence of gullies that show some bed or slope erosion; some vegetation is present on the sideslopes; apparent trend is toward revegetation and improving stability.	No evidence of active rills or gullies. Old rills or gullies may be present, but are in stable condition. Channel beds and sideslopes contain vegetation.
Headcuts & nickpoints	Nickpoints are the initial stage of a headcut, before a rill or gully has developed. Headcuts are the uppermost end of a rill or gully. Both headcuts and nickpoints are characterized by a vertical or	Headcut near the bottom of the meadow or numerous headcuts present and active within the meadow. Vegetation conversion is occurring,	Headcut near the bottom of the meadow or several headcuts or nickpoints present and active within the meadow.	Some evidence of nickpoints, they may be partially vegetated. Apparent trend is toward revegetation and stabilization.	No active headcuts or nickpoints, any remnant headcuts or nickpoints are well vegetated and stabilized.

² Modified from Best Management Practices Evaluation Program User's Guide, USDA Forest Service, Region 5, 1992, 2000.

Characteristic	Definition	Non-functional	Degraded	At-Risk	Fully Functional
	undercut dropoff perpendicular to the flow of water; when water is present the headcut is a waterfall.	and the water table may be dropping.			
Bare ground due to disturbance	In most cases in moist and wet meadows vegetative cover is assumed to be near 100 percent; there are exceptions (e.g., alkaline meadows and some high alpine dwarf shrub meadows).	Bare ground is 15% more than would be expected in the natural range of variation for a particular vegetative type.	Bare ground is 10 to 15% greater than would be expected in the natural range of variation for a particular vegetative type.	Bare ground is 5 to 10% greater than would be expected in the natural range of variation for a particular vegetative type.	Bare ground is less than 5% or is within the natural range of variation for a particular vegetation type.

Table 12. Hydrologic Function Characteristics Rating Table for Upland Vegetation Types

Characteristic	Definition	Non-functional	Degraded	At Risk	Fully Functional
A-horizon	A-horizon is the surface mineral horizon characterized by dark colors and organic enrichment. Check soil survey for typical depths and colors. (Note: due to scale of mapping be aware that some inclusions and exceptions may occur naturally.)	A-horizon appears to be fragmented or discontinuous or is thinner than the predicted range of variation. More than 50% of the subsoil or b-horizon may be exposed. Remaining a-horizon is found only around plant roots and nutrient cycling and a-horizon development is impeded due to lack of vegetation.	A-horizon appears to be fragmented or discontinuous and/or is thinner than the predicted range of variation. Up to 50% of the subsoil or b-horizon may be exposed. Nutrient cycling and a-horizon development is impeded due to lack of regenerating vegetation.	A-horizon is present and continuous, but is thinner than the predicted range of variation or fragmented with up to 10% of the subsoil or b-horizon exposed. Nutrient cycling may be affected by lack of regenerating vegetation.	A-horizon is present and within the range of variability expected for that soil type. Plant cover is within the range of variability and nutrient cycling is active with a-horizon development ongoing.
Mass soil movement	Mass soil movement characteristic relates to sheet and wind erosion and to the depletion of the a-horizon. This rating criterion also includes unstable slopes and mass sloughing areas.	Extreme movement of soil is visible. Subsoil is exposed over much of the area. Area may have embryonic dunes and wind-scoured depressions. Soil is moving off-site. Terracing may be noticed or erosion may have eliminated terraces too.	Moderate movement of soil is visible. More soil and debris is deposited against minor obstructions than would be expected under undisturbed conditions and/or soil appears to be reaching waterways or channels and moving offsite. Slight terracing may be noticed.	Some movement of soil is visible. Slight buildup of soil and debris against minor obstructions may occur (more than would be expected under undisturbed conditions); soil is not reaching waterways or stream channels for transport offsite. Slight terracing may be noticed. Naturally sloughing or at risk areas are included in this category.	Little or no soil movement is present or the soil movement is within the range of variability expected for the site and soil is not moving offsite.
Surface litter and/or rock	This characteristic is also related to erosion and nutrient cycling. (This must be carefully judged on lower productivity sites where litter accumulation is naturally low and associated with the vegetation and not the bare spaces between.)	Extreme movement and redistribution of litter and surface rock/pebbles by wind or water erosion is evident and these materials appear to be moving offsite or shows extreme redistribution in the form of embryonic dunes or flow patterns.	Moderate litter movement and redistribution of litter or surface pebbles or rocks by wind or water erosion is occurring. Litter is moving offsite. (Flow patterns and evidence of surface rock and soil movement off site may also be visible).	Litter shows some apparent redistribution by wind or water erosion (built up against obstacles other than the plants that produced the litter). Pebbles and surface fragments show evidence of redistribution by wind or water. Litter is essentially remaining on site.	Litter is accumulating in place. Rock or small surface pebbles do not show movement by wind or water beyond the natural range of variation and litter remains on site.

Characteristic	Definition	Non-functional	Degraded	At Risk	Fully Functional
Flow patterns	Flow patterns characteristic is evidence of excessive water erosion and concentrated flow. It often precedes or is associated with riling. (This is not to be confused with natural ephemeral features found in some ecological types).	Flow patterns are numerous and readily noticeable. The site may have large barren fan deposits. Sediment may be moving off site.	Well defined flow patterns regularly spaced and often containing deposits of sand, silt, and litter and small "alluvial fans".	Few well defined flow patterns; some have intermittent deposits of sediment or litter.	Little or no evidence of concentrated water flow. Soil surface is capable of absorbing and holding water received.
Bare ground due to disturbance	The natural range of variation of bare ground should be determined based on the ecological type or the combination of soil productivity and the vegetation.	Bare ground is 15% or more than would be expected in the natural range of variation for a particular ecological type.	Bare ground is 10 to 15% greater than would be expected in the natural range of variation for a particular ecological type.	Bare ground is 5 to 10% greater than would be expected in the natural range of variation for a particular ecological type.	Bare ground is within the natural range of variation for a particular ecological type.
Pedestaling	Erosion by wind or water from around the base of a plant or a gravel so that it appears to be on a "pedestal".	Most rocks and plants are pedestaled and roots are exposed.	Rocks and plants on pedestals are generally evident, plant roots are exposed, or small rock and plant pedestals occur in flow patterns.	Slight pedestaling, usually at edges of flow patterns or around a few plants.	Little or no evidence of pedestaling.
Compaction	Compaction is best assessed with a tile spade, using undisturbed (or highly disturbed) areas as comparative references. Platiness, mashed roots or lack of roots are indicators of severe compaction. Note extent, severity, and depth of compaction where possible)	Similar to at-risk except degree and extent of compaction is more severe. Plant vigor and cover is affected, rooting depth is restricted to few inches at surface, and there will probably be associated evidence of water runoff.	Evidence of slight or moderate compaction over much of the site or severe compaction in small but critical areas (e.g., near streambanks or sideslopes capable of delivering sediment to stream or moving soil offsite.) Plant vigor and rooting depth appear to be affected. (Compaction is not alleviated over the winter rest period.)	Some evidence of slight or moderate compaction levels over parts of the site. No severe compaction except in major trails, bedding or salt areas. (Severely compacted areas are not near streambanks or sideslopes capable of delivering sediment to stream.) Extent of compaction is minimal and plant vigor and rooting depth are not greatly affected.	No evidence of severe compaction (platiness). Slight or moderate compaction (resistance to tile spade, mashed roots or lacking roots) is limited only to trails and or salting or bedding areas.

Characteristic	Definition	Non-functional	Degraded	At Risk	Fully Functional
Rills & gullies	Rills are intermittent depressions formed by erosion and concentrated flow during heavy rains at least 2-3 cm deep and greater than 1 meter in length. If rills have enlarged to the point where they are greater than 10 cm deep and 15 cm wide they are considered gullies. ³	Rills present at intervals of less than 1.5 meters; Rills and gullies are numerous and well developed, may occur in a dendritic pattern, with active erosion; or a few well-developed gullies with active erosion. Trend is apparently declining.	Rills occur in exposed areas at intervals of 1.5 to 3 meters (5 to 10 feet); gullies are well-developed with active erosion; some vegetation may be present; rill and/or gully pattern may be branching or dendritic. Trend is not apparent or appears not to be revegetating or stabilizing.	Some rills in evidence at infrequent intervals of over 3 meters (10 feet) OR some evidence of gullies that show some bed or slope erosion; some vegetation is present on the sideslopes; apparent trend is toward revegetation and improving stability.	No evidence of active rills or gullies. Old rills or gullies may be present, but are in stable condition. Channel beds and sideslopes contain vegetation.
Headcuts & nickpoints	Nickpoints are the initial stage of a headcut, before a rill or gully has developed. Headcuts are the uppermost end of a rill or gully. Both headcuts and nickpoints are characterized by a vertical or undercut dropoff that is perpendicular to the flow of water; when water is present the headcut is a waterfall.	Headcut near the bottom of the meadow or numerous headcuts present and active within the meadow. Vegetation conversion is occurring, and water table may be dropping.	Headcut near the bottom of the meadow or several headcuts or nickpoints present and active within the meadow.	Some evidence of nickpoints, they may be partially vegetated. Apparent trend is toward revegetation and stabilization.	No active headcuts or nickpoints, any remnant headcuts or nickpoints are well vegetated and stabilized.

³ Modified from Best Management Practices Evaluation Program User's Guide, USDA Forest Service, Region 5, 1992, 2000.

Glossary

Grazing Systems

- **Season-long:** This system, aka continuous season-long, permits continuous grazing throughout the entire plant growing season. Season-long grazing often requires more restrictive standards (i.e. reduced utilization levels) than other grazing systems due to repeated use of individual plants over an extended period of time. This repeated use can lead to a downward trend in plant vigor if utilization levels are set too high.
- **Once over:** Once over grazing refers to a duration of approximately three days for sheep or five to seven days for cattle, within a given management unit. This grazing scheme is of short duration and low to moderate intensity. Once over grazing may occur early, mid or late season.
- **Compressed season:** This system enables permitted head months to be reached by allowing more livestock over a shorter period of time. For example a historical permitted use of 150 head for 4 months (600 head months) might be changed to 600 head for 1 month to reach the same 600 HM'S of use.
- **Rest rotation:** This includes only the two-pasture rest rotation system in which there would be total rest on one pasture and season long use on the other. Allowable use was largely based on season-long continuous use for the grazed pasture. Rest rotation systems with 3 or more pastures are treated as “deferred rotation”, because one pasture is grazed early and another is grazed late as in a deferred rotation system, while the third is rested.
- **Deferred rotation:** This is a system in which units are used for only a portion of the growing season. The use standards are set individually according to the timing of use, i.e. first half or second half of the plant growing season.
- **Year-around:** This refers to grazing on a 9 to 12 month basis per year. This form of grazing is currently not in use on the Inyo National Forest with the exception of grazing by wild horses and burros on designated wild horse and burro territories.
- **High Intensity-short duration:** aka holistic resource management or prescriptive grazing typically incorporates high intensity-short duration or compressed season grazing strategies as well as other resource management techniques. These strategies are unique with each land use application and therefore can be inconsistent with predetermined utilization standards. If this grazing system is to be implemented, an interdisciplinary resource management team would recommend appropriate allowable use standards during the requisite site specific NEPA analysis.
- **Setback pastures:** Setback pastures are resource enclosures, or pastures, that can be grazed occasionally. They normally will be assigned standards on a site specific basis.

Season of Use

- **Early season:** Refers to use before range readiness (pre-boot stage: before seedhead is formed) of key species. This is especially hard on perennial grasses physiologically.
- **Late season:** After seed maturity.
- **First half (of the season):** Grazing during the first half of the growing season (normally refers to a rotation-type system). First-half grazing allows time for regrowth of grasses, sedges, and shrubs when sufficient soil moisture is present, so use standards generally can be a little higher (in percentage of the plan taken) than late season. Use during the first half coupled with a shorter

season of use such as “deferred rotation” or “once over” will generally yield higher allowable use standards.

- **Second half (of the season):**
 - ◆ **Wet/moist meadows and shrubby species:** Grazing during the second half of the growing season allows less time for regrowth before onset of dormancy, so generally requires a more restrictive standard than first-half grazing. It tends to be particularly hard on browse and shrub species such as bitterbrush and willow because by this time of year they are becoming more attractive to livestock as the herbaceous forage begins to dry out.
 - ◆ **Perennial bunchgrass species:** Second half grazing of perennial bunchgrass on dry sites is often preferred because regrowth is not always possible anyway due to lack of moisture. In this case it is generally better to wait until the second half to commence grazing, thus allowing adequate time for plants to reach seed maturity and restore root reserves before having their herbage removed.

Other Terms

Range ready: For grasses, this is normally boot or post-boot stage (emergence of the seed from the plant sheath). For shrubs and forbs, it is normally full flower or when the leaders reach a given length.

Desired plant species – Plant species which compose the desired vegetation or desired plant community. The composition and structural characteristic of the plant community on a site or an ecological unit which meets forest plan or other management objectives (USFS 1997)

Key species – Forage species whose use serves as an indicator to the degree of use of associated species. In many cases, key species include indicator species, and species traditionally referenced as increasers, decreasers, desirables, or intermediates (USFS 1997).

Head Months – One month’s use and occupancy of range by one weaned or adult animal cow (and calf) bull, steer, heifer, horse, burro, mule, or five sheep or goats (USFS 1997).

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