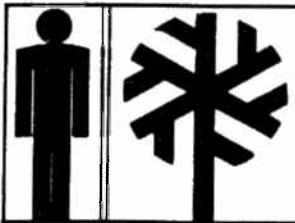


Stock Use and Meadow Management Plan

Sequoia & Kings Canyon

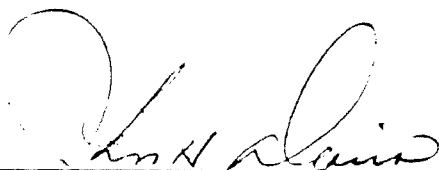


NATIONAL PARKS / CALIFORNIA

STOCK USE AND
MEADOW MANAGEMENT PLAN

Sequoia and Kings Canyon
National Parks
February 1986

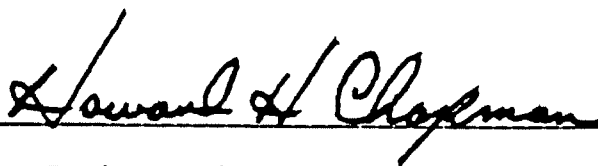
Approved By:



Date 2/28/86

Superintendent

Approved By:



Date 3/5/86

Regional Director

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1. INTRODUCTION

Pack and saddle stock have been used in the southern Sierra Nevada since the mid-nineteenth century, first for exploration and then in conjunction with sheep and cattle grazing and mining. In the late nineteenth century, and progressively into the twentieth century, pack and saddle stock were used for access to the mountains of the region for recreational purposes. The numbers of pack and saddle stock used for recreational trips increased and peaked in the 1930s, dropped in the 1940s, increased again in the 50s, and have since declined. The use of pack and saddle stock is still recognized as a traditional, historically and culturally significant, and legitimate activity that will continue in the backcountry of Sequoia and Kings Canyon National Parks (Evison, 1981).

The Act that created the National Park Service states that its "purpose is to conserve the scenery and the natural and historic objects and the wild-life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for future generations." National Park Service policy and the legislation that created these Parks require that ecosystems in the backcountry be protected and preserved while allowing for their use and enjoyment (United States Department of Interior, 1978; Sequoia and Kings Canyon National Parks, 1976). Most of the backcountry of these Parks was added to the National Wilderness Preservation System on September 19, 1984; this requires additional care in considering uses that are to be allowed in the backcountry. Some disruption of natural ecosystems and processes by pack and saddle stock is expected and considered acceptable as the necessary consequence of a form of backcountry use that is appropriate in Sequoia and Kings Canyon; the impacts of stock use, however, are potentially significant enough to compel development of a management program for its regulation. The principal purpose of the Stock Use and Meadow Management Plan is to provide the framework for such a program.

Pack and saddle stock have several distinctive effects on park resources. These include:

- Removal of vegetation which may affect plant vigor, reproduction, and ultimately, density and composition. Some of the vegetation otherwise would be consumed by native herbivores. Grazing displaces native grazers by disturbance. These effects may reduce or eliminate native animals from local areas.

- Trampling of vegetation and underlying soils, particularly wet meadows. Trampling reduces water quality by muddying, damages plants, and can produce significant detrimental erosional effects such as damage to streambanks and changes to meadow drainage patterns.

- Impacts such as deposition of stock urine and feces on trails, in streams, near camps, trampling of streambanks and other fragile soils, grazed appearance of forage areas, etc.

-Drift fences required for control of stock movement compromise wilderness values.

The 1971 Master Plan for these Parks proposed eventually to eliminate the use of pack and saddle stock in the backcountry. Current policy as stated above necessitates changing the Master Plan. The Master Plan is scheduled for revision in 1987. It will be modified as it relates to pack and saddle stock by rewording paragraph 9 on page 24 of that document to read as follows:

Recreational pack and saddle stock use of the backcountry of these Parks is a long established historically and culturally significant traditional use that will be continued with controls that keep the effects of such use within acceptable limits. Stock will continue to be used to support maintenance and management activities in the backcountry, augmented as necessary by use of helicopter for search and rescue, fire management, resource protection, maintenance and supply and other similar functions. Stock used by the National Park Service will follow the same guidelines as for recreational stock use.

This document represents the Stock Use and Meadow Management section covered briefly in the Backcountry Management Plan. The Backcountry Management Plan regulates all recreational uses of the backcountry of these Parks. This Plan discusses the character of these Parks' meadow resources and reviews the history of use and management. It provides the basis for patterns and levels, and for specific management prescriptions for forage areas within these Parks. A bibliography of materials relevant to stock use and meadow management is also included.

2. OBJECTIVES OF THE STOCK USE AND MEADOW MANAGEMENT PROGRAM

A goal of backcountry management in Sequoia and Kings Canyon is to allow recreational use of saddle and pack stock within guidelines that will protect the Parks' natural resources and values, the processes that shape them and the quality of experience distinctive to them. The following objectives for stock use and meadow management provide a more specific interpretation of this goal:

2.1. Allow--to the extent possible--pack and saddle stock to be used in the backcountry of the Parks on the same areas and trails, at the same levels and patterns that have occurred in recent past years unless information from the monitoring system indicates need for change.

2.2. Establish controls to protect forage areas from further induced change in plant composition, density, cover and/or vigor, and from increasing adverse effects to soils and associated sod that may lead to deteriorated productivity or unnatural erosion, and to allow recovery where necessary.

2.3. Minimize the effects of pack and saddle stock on trails, camps, drainage patterns, and water quality.

2.4. Ensure that a series of meadows (or definable parts of meadows), including representatives of all major types within these Parks, be protected from stock use so that they are perpetuated as--or allowed to become--natural functioning ecosystems in as near-pristine condition as possible. These meadows will provide an opportunity for all visitors to enjoy seeing representative samples of pristine or near-pristine meadows, and will provide opportunities for scientific study. This includes comparison with meadows that are grazed, so that the relative effects of climate, plant-succession, and grazing may be better understood.

2.5. Develop and maintain a program of education and participative support for minimum impact stock use, and improved understanding and cooperation between stock users and backpackers.

2.6 In areas where past use has left an impact on park resources, rehabilitation projects will be considered. An example is the trail rerouting and rehabilitation work done in 1983 at the Siberian Outpost.

2.7. Establish a monitoring program that will provide continuing information about the effects of pack and saddle stock on the resources of the Parks, so that guidelines may be modified to protect park values or to allow additional use to occur. The monitoring program will take into account variation in annual climate, the characteristics of specific forage areas, and the inherent abilities of the different species to withstand grazing and trampling pressure.

2.8. Establish procedures to provide for modification of the Plan including benchmarks that signal a need for change and at the same time assure that no significant modifications to Section 4 of this Plan are made without provision for public review and comment.

3. BACKGROUND INFORMATION

3.1. Description of the Meadow Resource

Meadows and other forage areas, including woodland meadows, forest grasslands, and alpine vegetation, are among the most attractive and important natural resources within Sequoia and Kings Canyon National Parks. Meadows and their surrounding camp areas frequently serve as the principal destinations of backcountry travelers. Meadows and their environs are important to those visitors who ride and/or pack into the backcountry, both for camping nearby and as places to graze their stock.

Meadows and associated forage areas serve as important sources of food, birthing sites, nesting areas, and hunting grounds for many species of wildlife. Meadows/forage areas provide an excellent opportunity for scientific research and observation. Natural (or near natural)

meadow/forage area vegetation may serve as a baseline to which the professional resource manager can refer to evaluate the effects of use on other meadows and forage areas. The value of such baseline conditions has contributed strongly to earning these Parks International Biosphere Reserve status.

Biotic change caused by shifts in climate or by geological action is natural. Many kinds of disturbance occur naturally in meadow/forage area ecosystems; this Plan will attempt to deal with those associated with human activities and stock use.

Meadows and their associated forage areas are complex ecosystems, varying widely in character and composition (Benedict and Major 1982, Ratliff 1982). Tables 1A and 1B (Appendix) list common meadow species and physiognomic types found in these Parks. The plant associations and physical conditions of a meadow determine its tolerance to the effects of grazing and trampling. Only a very broad, relatively insensitive, classification system can be employed at the meadow level. Since it is often of limited value to generalize about the vegetation of meadows as a whole, it is important to understand the characteristics and tolerances of the plant associations that combine to form meadows. It is at the plant association level that prescriptions for meadow management must be formulated.

Stock foraging is not confined to open meadow environments. Woodlands include extensive areas of grasslike species (grasses, sedges, rushes) and other herbaceous plants found within aspen or conifer stands along streams, in seeps, or as an extension of the forest meadow transition. Woodland forbs and grasses may provide abundant and nutritious forage, especially when bunch grasses are present (Sumner, 1941). Foraging also takes place among the vegetation that grows in the forest. Horses and mules spend a considerable amount of time in forested areas where they are protected from wind and mosquitoes and are able to keep their hoofs dry. Alpine vegetation, above timberline, is also utilized as a forage resource, but these areas are lightly used by most stock parties, primarily because the campsites above treeline are generally unsuitable.

In summary, the meadow/forage area resource is diverse and dynamic. Meadows are popular destinations for backpackers and stock users alike. They also provide important habitat for many species of animal life. Ratliff (1985) recently reviewed what is known about the ecology and management of Sierran meadows.

The focus of this Plan is management of pack and saddle stock impact on meadow and related forage area vegetation, trails, and camps.

3.2. History of Stock Use and Associated Impacts

Sheep and cattlemen of the gold rush era found the meadows and plateaus of the High Sierra unaffected by early Spanish immigrants (Strong, 1964). Large numbers of domestic sheep and cattle first invaded current park lands

during the great drought years of 1862-1864 (Burcham, 1957). The next forty years can be characterized as a period of heavy, unregulated use. Tens (and perhaps hundreds) of thousands of sheep were driven into the High Sierra annually. Use was locally heavy (Muir, 1877; Reports of the Acting Superintendent of Sequoia and General Grant National Parks, 1892, 1894; Dudley, 1896, 1898, 1899; King, 1902), and virtually all of the areas now included within the Parks that were accessible to sheep were grazed. Cattle were also common in the area but were generally confined to the more easily accessible plateaus and drainages.

Sequoia and Kings Canyon National Parks were established in stages spanning the years 1890-1940 (Strong, 1968), and thus different areas have different grazing histories. Sequoia National Park was established in 1890 but was not expanded to include the Kern Canyon and Sierra Crest regions until 1926. Kings Canyon National Park was established in 1940. Prior to this time, that area was administered by the U. S. Forest Service. With establishment of these Parks, grazing by sheep and cattle was virtually eliminated. Exceptions included a considerable amount of trespass grazing from 1890 to 1905, special wartime grazing permits during and immediately following World War I, and lifelong grazing permits extended as a condition of establishing Kings Canyon National Park. The Forest Service effectively regulated grazing by permit on its lands after 1905. Even so, grazing pressure was heavy as maximum herd sizes on Forest Service allotments were not reached until the 1920s and 1930s (Harper, 1974). Thus, many meadows in Kings Canyon National Park were degraded at the time of its establishment (Sumner, 1941). Detailed accounts of the use of the High Sierra by domestic livestock during pre-park and early park periods are presented by Burcham (1957), Otter (1963), Loughman (1967), Vankat (1970), Harper (1974), Holmes and Dobson (1976), DeBenedetti (1977), Vankat and Major (1978), and DeBenedetti and Parsons (1979).

Recreational use of pack and saddle stock on land now included within these Parks predates their establishment. Large stock-assisted Sierra Club outings began visiting this area in the early 1900s. Loughman (1967) reported that the use of pack and saddle stock for recreational purposes increased steadily after World War I and peaked in the 1930s. Following a decline in the 1940s, use again increased in the early 1950s, only to decline again through the early 1960s (Briggle, et al., 1961). Use levels have ranged between 8,800 and 11,500 stock nights during the seven years from 1977-84 (National Park Service Annual Stock Use Reports 1977-84). The current level of use as measured by the number of stock nights spent in the backcountry is about one-third of the level of the early 1950s and may be as little as one-sixth of the peak levels of the 1930s.

Backcountry meadows in these Parks have been the object of several studies, mostly qualitative in nature. As with Sumner (1941), these reports were the result of observations that many meadows seemed to be in a deteriorated condition; the cause of this deterioration was believed to be overgrazing by pack stock, cattle, and/or sheep.

There has been much controversy over both the definition and the magnitude of the effects of grazing. The Sumner series of observations (1940, 47, 48, 68), in conjunction with Sharsmith (1959), suggested that many meadows in the 1930s and 1940s were undamaged even with heavy use. Other areas, at the same time, were assessed as seriously deteriorated. None of the authors, however, proposed that areas they examined were unaltered compared to what would have been their condition without grazing by livestock.

For example, Ratcliff (1956) noted during a survey of the Rock Creek areas that the Rock Creek, Crabtree, and Wright Creek areas were in good condition considering the past and then current levels of use. Near Timberline Lake, however, he found damage due to trampling. He noted that his report should not be extrapolated to represent conditions in Kings Canyon. Sharsmith (1959) also found Crabtree meadows in good shape.

Damage found by Sumner, Sharsmith, and Ratcliff was, in general, proportional to use the area received. Strand (1972) observed that, "many strategically located meadows along popular trails have been severely damaged by pack stock, and their recovery from earlier abuse either prohibited or delayed."

The issue of what constitutes "damage" invokes the need to shift from qualitative to quantitative assessment (e.g., Bennett, 1964 and Strand, 1972). Bennett selected ten meadows and determined their condition, trend, and causes of such trends, and made recommendations for their future management. Strand reread Bennett's transects and attempted to show trends in conditions. Strand found some meadows in a slightly deteriorating or slightly improving condition; others showed no trend. In general "those meadows which received the greatest amount of grazing were also those determined to be in a state of deterioration or which showed the least amount of recovery from a previously deteriorated state. This was determined by changes in the relative densities of forage species, low value species, and invasion species" (Strand, 1972).

Grazing had been restricted on the meadows assessed by Strand and Bennett after the earlier Sharsmith and Sumner reports. The 1960 Backcountry Management Plan (Briggle, et al., 1961) was the first attempt to formally implement the recommendations of Sharsmith and Sumner:

Ecological studies in these Parks clearly indicate that overgrazing, not drought cycles and floods, has been the primary cause of meadow deterioration despite the beliefs of a few stockmen to the contrary.
(Briggle, et al., 1961)

Both the 1960 Plan and the current Plan agree that the history of scientific study indicates that (1) prior to the use of restrictions, locally significant damage (i.e., deteriorating vegetation and soils) existed in the Parks; (2) the result of restrictions has been a general slowdown in deterioration and, in many areas, improvement; (3) there is a

finite level of use which results in unacceptable impact, and past use patterns give some idea of what this level may be.

Modern recreational use and impact is more localized than historic livestock use. Popular and strategically located meadows and forage areas were reported to be in deteriorated conditions during surveys conducted as recently as 1959 (Sumner, 1941; Sharsmith, 1959). Even when grazed meadows are healthy and productive, removal of forage by stock diverts nutrients and energy from the natural system, and deprives native herbivores and decomposers of them.

3.3. Pack and Saddle Stock Management History

Past grazing management in these Parks has not been systematic. Heavily grazed meadows sporadically have been identified and specific regulations established to lessen effects.

Due to evidence of grazing effects, a framework for a systematic approach to meadow management was proposed in the early 1940s (Sumner, 1941; Armstrong, 1942). Flexible opening dates for specific forage areas based upon onsite conditions, allowable herbage removal prescriptions, and long-term trend monitoring were to be the foundation of the system. All meadows, then would receive protection based upon ecological factors and site-specific characteristics. Unfortunately, the Armstrong-Sumner system was not implemented. In many ways this approach was similar to the present Plan.

Management concern about the condition of many backcountry meadows led to Park Service support of an inventory of meadow conditions in 1959 (Sharsmith, 1959). Sharsmith visited many Kings Canyon meadows previously surveyed by Sumner (1941) as well as meadows in Sequoia National Park. He qualitatively described trends in specific meadows through comparative photography and narratives. He concluded that many popular and strategically located meadows were in worse condition than at the time of Sumner's survey and were continuing to deteriorate.

As a result of these studies, several meadows were added to the lists of those meadows closed to all grazing or subject to restricted grazing (N.P.S., 1937, 1949, 1960-1964; Briggie, et al., 1961). Use limits were established, including: head limits for specific forage areas (N.P.S., 1949); closure of certain meadows to grazing and opening dates for meadows (N.P.S., 1960-64; Briggie, et al., 1961); and a limit of 20 head per stock party in 1966. At the same time, the Service expanded management tools to include opening dates for meadows. A program to reroute trails out of meadows was initiated; lodgepole pine and other woody species thought to have encroached into meadows as a result of historic grazing were removed in several places. No cohesive set of criteria defining acceptable or allowable impact accompanied these actions, however.

Many drift fences still in existence today are holdovers from pre-park days when they were installed for convenience or to take best advantage of

forage for sheep and cattle. Facilities such as tourist pastures or government corrals date back at least to 1937.

Recent surveys of meadow conditions (Sumner, 1968; DeBenedetti, 1979) have reported the improved appearance of many historically heavily grazed meadows. Quantitative studies (Strand, 1972; DeBenedetti, 1979) suggest that the above conclusion may be superficial, and that subtle shifts in species composition may have occurred.

4. THE MANAGEMENT SYSTEM

Pack and saddle stock permitted within Sequoia and Kings Canyon National Parks include horses, mules, burros, and llamas. All regulations and the guidelines presented in this Plan apply equally to all types of pack and saddle stock.

Forage areas are defined as the primary meadows and their associated forested or alpine grasslands, etc., which are commonly used by stock for grazing. Other areas within accessible proximity of the trails and travel zones open to use, although not designated as forage areas and not having an established use level, may also be used for grazing by pack and saddle stock. Some additional forage areas are also classified. From information available at this time, the primary meadow within each of the forage areas is believed most sensitive to the influence of grazing and will reflect early change. Thus the primary meadow will be monitored and used as a barometer to guide decisions on future adjustments in timing and level of grazing use.

4.1. Grazing Management Tools and Techniques

4.1.1. Opening Dates

Opening dates are established for all park forage areas. These dates are designed to prevent unacceptable mechanical disturbance to surface soil and vegetation, which is defined as mechanical breakage of the root-soil complex to the point that vigor of individual plants, or networks of plants, deteriorates as evidenced by change in species density, or composition, or both. This breakage increases soil erosion over what would be natural without grazing.

Specific opening date estimates for the Parks' major forage areas are based on quantitative data gathered from individual meadows between 1977 and 1984. Moisture conditions and associated physical impact by stock have been tracked in specific plant associations throughout the season in several dozen meadows for the entire study period. Numerous other meadows have been evaluated less frequently. In meadows where specific data do not exist for all types of hydrological years, or where only one data point was available, extrapolations were made based on similar vegetation, location, and comparable meadow physiography.

Opening dates for wet, dry, and normal years have been prescribed for the major forage areas.

Water Content in May 1st Snowpack	
Wet Year	150% or more of long-term average
Normal Year	50% to 150% of long-term average
Dry Year	50% or less of long-term average

In the initial five-year (1977-81) effort to monitor moisture conditions in individual plant associations in specific forage areas, it was found that moisture was retained at or near the surface for two to four times longer than the norm when the water content of the April 1 or May 1 snowpack exceeded 150 percent of the long-term average. The actual time beyond the norm required for meadow vegetation to dry to a point where trampling damage does not occur depends primarily upon the type of plant association(s) present in the meadow. However, late spring and early summer weather conditions, the topographic position of the meadow, and the size of the watershed it resides in may also cause some variation in this date. Correspondingly, meadows were found to retain moisture for a period of one to three weeks less than the norm during the years where the April 1 or May 1 snowpacks were below 50 percent of the long-term average. While these relationships certainly occur along a gradient, the 50 percent and 150 percent level breaking points were found to correlate well with obvious wet (i.e., 1969, 1973, 1978, 1980) and dry (i.e., 1972, 1976, 1977) years.

Opening dates are keyed to sensitive vegetation and soil within the forage area. Sensitive vegetation and soils are defined as the plant association(s) and soil surfaces that are most susceptible to trampling damage and would be expected to be trod upon by free-roaming animals when present; or that are especially sensitive to herbage removal. The key plant association may not necessarily comprise a majority of the specific meadow. In nearly all cases, the key association accounts for at least 15 percent of the total meadow area.

Opening dates vary considerably depending on factors previously mentioned. The general range for normal years is from mid-July to mid-August with some locations earlier or later depending on elevation, exposure, vegetation, etc. Of course, wet years are later and dry years earlier. Opening dates are established so that, generally, once a given drainage basin is open to use, the entire basin is open. Necessary protection of the resource is provided and the system is simplified for both the stock user and park management. Actual opening dates will seldom be the specific dates listed in the appendix because the field conditions from year to year will vary. For example on a year classified as normal it may be found that the actual conditions for a specific meadow or basin trend toward dry, so the actual opening date will be set somewhere between the normal and dry season date.

Opening dates are therefore flexible according to actual field conditions and the specific plans for use of each given area within the Parks.

Studies of the effects of early season use and its relationship to climatic conditions are continuing as funding and personnel are available. As more information and experience are gained, the large range of moisture content included in the definition of a normal year may be narrowed, or adjusted for specific forage areas.

In some areas of the Parks opening of high mountain passes will often correlate with readiness of forage areas for grazing. However, there is not always a correlation between the opening of mountain passes and readiness of forage areas, and a majority of the areas used most by stock are accessible without crossing high mountain passes.

Tentative opening dates will be available following the April 1 snow survey. Opening dates for specific forage areas will be established immediately following receipt of the results of the May 1 snow survey each year. Specific opening dates are listed in Appendix IIIA. Earlier opening dates may be allowed at the discretion of the Superintendent. Those wishing to use a particular forage area prior to the opening date for any given year may apply in writing to the Superintendent for a variance. They should describe their trip plans, i.e., proposed route, dates, and number of stock. Modifications of opening dates will be considered on a case-by-case basis by the Superintendent. More favorable consideration will be given to permitting early use of the backcountry when feed is carried in.

4.1.2. Grazing (Herbage Removal) Management

The level of stock use within the backcountry has declined in recent years, from about 1500 Animal Unit Months (AUM) in 1955 to less than 400 AUMs in 1984. Coincidentally, general conditions of meadows appear to have improved in that time. However, there is no direct evidence to indicate that the two situations are directly related, and there are places within the backcountry that are used heavily each year which show signs of that use. Those heavy-use meadows are stocked at rates that are comparable to irrigated and fertilized meadow pasture.

Past studies conducted to evaluate meadow conditions were generally qualitative and only a few of the meadows were addressed with each study. Figures showing actual stock use levels were not available to correlate with meadow conditions described at those times, therefore making conclusions on stocking rates impossible.

Recent past use levels 1977 through 1984 have been documented and general evaluations of meadow conditions indicate that it would be reasonable to continue current levels and patterns/timing of use until data from the monitoring program indicate that a change should be made.

The following guidelines are designed to continue the general pattern of use and distribution that is currently found in park forage areas and to prevent undesirable change resulting from the effects of grazing.

4.1.3. Use Levels

Use of each of the classified meadows and related forage areas will continue at the average use level that occurred during the years 1977 through 1984. This means the actual use level will be higher than average on some years and lower on others. If the average use level trends toward increase from the 1977 through 1984 average and monitoring data show any significant further departure from conditions of comparable meadows, use levels and patterns may be adjusted. Increase in use may be allowed where information from the monitoring program indicates.

Traditional methods of adjusting use levels and patterns will be employed when appropriate, including:

- adjust the number of nights a given party may use an area.
- adjust the number of stock per party; maximum number of stock per party is 20. Exceptions may be granted by the Superintendent.
- adjust opening dates.
- close an area (or part of it, if feasible) temporarily, as conditions warrant.

For the purpose of calculating use levels, an overnight stay by a horse or mule is defined as one animal-night. An overnight stay by a burro is one-half an animal-night, and by a llama, one-third of an animal-night, because forage consumed is that much different. Thirty animal-nights are equal to one AUM.

Certain forage areas have traditionally received heavier use and will be carefully monitored annually to detect departure from natural conditions as determined through the monitoring program. Those forage areas are identified in Appendix I. If use pressure lessens on any given forage area, it will be removed from the list and, conversely, forage areas that become heavily used will be added to the list for more intense monitoring. A heavy use forage area is defined as one in which the primary meadow (key area) receives use at a rate of two or fewer acres per AUM.

Forage areas that have number of night or number of stock restrictions are listed in Appendix III B & C.

There are some forage areas that are permanently closed to stock because of very heavy backpacker camping use, small size, or relative sensitivity of the area, etc. Those closed areas are listed in Appendix IIID.

There are some forage areas that are temporarily closed due to heavy stock impact and when recovery has been sufficient those areas will be reopened. Those temporary closures are also listed in Appendix IIIE.

All use levels are subject to change as monitoring data indicate. Such changes will be announced by March 1st preceding the coming season, with opportunity for comment by interested parties.

4.1.4. Trail Use and Off-Trail/Cross-Country Stock Travel

The majority of all backcountry stock use occurs on the primary trail system in the Parks. More than 95 percent of recent off-trail travel has occurred within areas designated for off-trail travel under this Plan.

Three types of "off-trail" stock travel occur at present. First is traditional use of undeveloped routes (e.g., Ferguson Creek, Upper Goddard Canyon). Second is cross-country travel to infrequently visited destinations. Third is use of trails recently removed from the maintenance inventory (e.g., Shepherd Pass, Sixty Lakes Basin, John Dean Cutoff).

Current regulations (36 CFR Sec. 2.16 (b)) require that the Superintendent designate areas and trails that are open to stock travel. This has not previously been done; this Plan designates those areas and trails.

4.1.4.1. Maintained Trails

Travel by stock and rider or by loaded pack stock, and utilization of associated forage areas, is permitted on all officially maintained trails, except the Mt. Whitney trail from one mile above Guitar Lake to the summit of Mt. Whitney and Sawtooth Pass trail from Monarch Lake to the switchbacks below Columbine Lake. A map showing the designated trails and areas open to use is available from the NPS. Stock are allowed access to all areas for camping purposes that are within 1/2 mile of trails open to stock use. Traditional campsites outside of the 1/2 mile corridor may be designated for use by the Superintendent and included in the appendix.

4.1.4.2. Off-Trail Travel

Travel off-trail is permitted in certain specific travel zones or portions thereof as outlined in Appendix IV. Stock travel and associated grazing is also permitted on certain designated trails that are no longer maintained and are identified in Appendix IV. Stock travel, but no overnight grazing, is permitted on some specific trails in the backcountry, and a number of frontcountry trails associated with developed areas, as identified in Appendix IV.

Trails and areas open to use may be changed from time to time. Areas or trails that have been closed may be reopened where there is evidence that no park resources or other values will be compromised. Areas or trails may be closed to stock use where there is evidence of adverse effects on resources. Proposed modifications of areas and trails open to stock use will be publicly announced and comments sought before a decision is made.

Trips to areas not open to off trail travel may be allowed. Such trips may be proposed to the Superintendent and will be considered on a case by case

basis. Such proposals should be made to the superintendent at least two weeks in advance of the proposed start of the trip.

4.1.5. Drift Fences

Drift fences are provided in specific locations for visitor safety, resource protection, and visitor or administrative convenience. Fences maintained primarily for convenience also have direct resource protection functions, including dispersal of stock use and protection of fragile areas. Fences that become unnecessary will be removed. Guidelines for drift-fence management:

- (1) The establishment of new fence, temporary or permanent, must be approved by the Superintendent prior to construction. Detailed justification and a description of the fence route and dimensions must be provided for consideration.
- (2) Fence posts will be of natural material. Exceptions must receive specific approval from the Superintendent.
- (3) Pole gates will be utilized throughout the Parks. Swing gates will be replaced by pole gates as they fall into disrepair.

4.1.6. Stock and Camp Etiquette

To minimize the impact of stock to camps and trails and to allow for the restoration of damaged areas, the following regulations are enforced:

- (1) Tie stock to trees for no more than enough time to unpack the animals. Animals pawing the soil away at the base of individual trees cause soil disturbance, root damage, and debarking of trees. Deep depressions and exposed roots are visible evidence of the problem. Picketing is prohibited.
- (2) When tying stock for periods longer than for unpacking (such as for overnight), tie a line between two trees or rocks and tether animals to the line. The line must be located on a hardened (flat, sparsely vegetated) site to limit the damage done to tree roots and plants. Animals that continue to paw should be hobbled while tied.
- (3) When camping, animals must not be tied within 100 feet of lakes, streams, trails or campsites except while loading or unloading. Manure deposited within or at the perimeter of camps while loading or unloading must be dispersed to points at least 100 ft. from camps, water, or trails. This distance protects water quality, lessens impact on the campsite, and helps reduce insect problems.
- (4) Stock present in forage areas prior to opening dates or areas closed to grazing must be tied as per (2) and (3), and fed.

- (5) Scatter the manure and smooth over areas where stock have been kept. This speeds up the decay process and reduces odor and visual impact.
- (6) Short-cutting trails and switchbacks is prohibited.
- (7) Loose herding is prohibited except as necessary for safety while crossing steep rocky passes or where the exposure is great and there is danger of animals falling off the trail.

4.2. Network of Meadows Closed to Grazing

As indicated in the Introduction, a series of meadows will be protected from grazing to provide opportunity to compare ungrazed meadows with grazed meadows as part of the monitoring program, provide opportunity for other scientific study of meadows that are not affected by stock grazing, and to provide opportunity for park visitors to observe a representative sample of meadows, in proximity to general travel routes, that are not affected by grazing. For scientific study purposes, a major value of Sequoia and Kings Canyon (an International Biosphere Reserve) is that it contains ecosystems that are as undisturbed as is reasonably possible. Meadows that are representative of each significant type (by physiography, origin, plant associations, and unique features) will be protected from grazing by stock. Basin, slope, and streamside stringer meadows; meadows of pre-glacial and post-glacial origins; and meadows representative of the area's common meadow plant associations are included. Selection criteria for nominee meadows are the following:

- (1) They have received little or no stock use during the last 20 years, and where possible, during the last 50 years.
- (2) Fences are not necessary to protect the meadows from use associated with nearby forage areas.
- (3) Where feasible, they are accessible by trail so that they can easily be observed by the public and utilized efficiently for scientific study.

The meadows closed as per the above criteria are listed in Appendix VI and their general locations are shown in Figure 2. See also Appendix III D for other permanently closed meadows.

Meadows that are closed to grazing in this section are not fenced and it is recognized that occasionally stock will drift through these meadows from nearby meadows where stock use is allowed. Such circumstances will not be cause for law enforcement action. However, should a stock party camp near and deliberately turn stock loose on any of the closed meadows, necessary action will be taken.

4.3. Closure of Bighorn Ewe-Lamb Range to Stock and Foot Travel

Ewe-lamb groups and ram groups generally exhibit different responses to encounters with humans. Recent studies (Wehausen, 1979, 1983; Elder, 1977) in the southern Sierra have indicated that interactions between humans and/or stock and ram groups, both along trails and in cross-country settings, result in only minor disruptions of sheep behavior unless they are startled by an abrupt and unexpected encounter. Ewe-lamb groups are much more sensitive, with flight reactions being triggered by encounters at greater distances. These actions result in added risk to the survival of lambs. Additionally, both ewe-lamb and ram groups are significantly stressed by the presence of people or stock above them. It is generally accepted that lambs are more susceptible to any disease that might be transmitted by pack stock or humans.

In order to safeguard this limited resource, ewe-lamb range in the area between Sawmill Pass and Dragon Pass is closed to entry by foot travelers and pack and saddle stock, excepting travel on the now-unmaintained Baxter Pass Trail. Cross-country travel in ewe-lamb range is prohibited.

Boundaries of closed ewe-lamb range and associated restrictions may be altered as additional information is obtained about existing herds or to protect bighorn as they are re-introduced to their historic ranges.

4.4. Temporary Variances

Climatic conditions, accessibility to portions of the backcountry, needs and interests of backcountry stock parties, and other factors change from year to year, making it possible to consider temporary variances in site specific guidelines.

Variances may be made in opening dates, numbers of stock per trip, number of nights per area, number of stock per area, etc. Such variances will normally be on a case-by-case basis, to accommodate special visitor needs where effects on park resources would be within acceptable limits. Short-term or one-time-only variances proposed by visitors will be considered on a case-by-case basis by the Superintendent.

Variances proposed by visitors should be made at least two weeks in advance to provide adequate time for consideration.

4.5. Esthetic Impacts

The effects of stock use appear to some park visitors to be very severe even though actual ecosystem integrity may not necessarily be compromised to a great extent. The grazed appearance, hoofprints, droppings, bells on stock, etc., are offensive to some visitors.

The NPS will work cooperatively with stock users and backpackers to improve mutual understanding of each other's interests. NPS will encourage each

group through printed material and other processes to travel and camp at locations and in such ways that are least impacting on other visitors.

4.6. Resource Rehabilitation

In areas where use has caused detrimental effects to vegetation, soils or other resources, the NPS will evaluate the effects and may undertake a rehabilitation program. This could include such things as filling in eroded trails or hitching areas and revegetating the areas. It could also include removing the effects of exotic animals, such as dams made by beavers, which are not native to the Parks.

5. MONITORING AND PLAN EVALUATION

Long-term information on the condition of meadows, and on stock use, is necessary to evaluate the Plan and to adjust it to accomplish objectives.

Although stock graze areas outside the confines of primary named meadows, the primary meadows will be routinely studied to assess the status of soils and vegetation. This information will be relied upon to indicate the status of surrounding and associated areas grazed by livestock. The assumption is that while stock graze associated areas, primary meadows are sensitive to stock grazing and will readily reflect the effects of grazing use and can therefore be used essentially as a barometer. If the species composition, density, and soil condition in the primary meadows remain comparable to similar but ungrazed meadows, the associated meadows will remain in good health. The monitoring program will be expanded over time to assess the validity of this assumption.

5.1. Stock Use Monitoring

All stock parties are required to report their itineraries within the month that they complete their trips. The location of each overnight camp, the number of people and stock present, the corresponding dates, and the number of stock fed or grazed, are to be reported. Stock use reporting cards are available and commercial pack stations and administrative crews will be supplied with cards each spring. Private stock parties are given stock cards when obtaining wilderness permits, or cards may be filled out by backcountry rangers when contacting them in the field. Backcountry rangers are given a supply of cards each spring. Data are summarized each fall in an Annual Grazing Report which is a summary of information developed from the Stock Use Reporting Cards. From this information, and preceding annual reports, it is possible to identify changing trends in use, and determine which user groups utilize individual forage areas. Within-season use monitoring is necessary for those areas where standard use levels may be exceeded.

5.2. Opening Dates

Opening dates have been prescribed for nearly all park forage areas (Appendix III) based on data collected on the effects of early season grazing and travel. Data will continue to be collected as in the past. Established dates will be compared with on-site conditions in specific forage areas, as reflected from field data, and adjustments to the normal dates in the Plan made when necessary.

5.3. Vegetation and Soils Status

The primary emphasis of the monitoring program will be to measure changes in species composition and bare ground over time. In addition photographic records will be taken in each of the study areas to provide a visual record of general change over time. In meadows that for various reasons do not lend themselves to species composition analysis, photographic records and written descriptions of soils and erosion conditions will be made periodically.

SPECIES COMPOSITION

Common Plant associations in nearby grazed and ungrazed meadows will be sampled periodically (3-5 years) to compare their relative changes in species composition. The change in species composition in the ungrazed association will serve as the control, and will be compared to the changes in species composition in the grazed association, the treated area. In this way the relative impacts of grazing and background environmental factors and events (e.g. climate, avalanches, rock slides, floods, wildlife, etc.) on species composition can be effectively measured.

The frequency of plant species and percent bare ground will be measured in the following manner. Each meadow will be mapped according to dominant species associations and each association will be designated as a site. In each site one hundred nested quadrats (10x10 cm inside a 25x25 cm) will be sampled (the number of quadrats could increase depending upon the type and extent of meadow). The data to be recorded will be: (1) the presence of all plant species (2) proportion of bare ground within the quadrat and (3) the stock hoofprints that are more than 1" deep. The nested quadrats are located randomly on systematically placed perpendicular transects along a one hundred pace transect line.

SOILS ANALYSIS

In association with the frequency data, a soils analysis will be made at each site. The analysis will record evidence of bare ground, soil compaction, gullyng, sheet erosion, and rill erosion. These indicators will be recorded in general terms in addition to the bare ground recorded as a statistic of the frequency data.

PHOTOGRAPHIC RECORDS

Several plant associations do not meet the assumptions of the above monitoring system. They fail in at least one of the following ways: (1) there is no nearby ungrazed meadow of similar composition for comparison, (2) the species composition is too sterile to show changes in composition and (3) the distribution is too sparse to be adequately sampled using the proposed sample design. Therefore, an alternative monitoring system is necessary.

The system will be photographic records of gross change over time. Photographs will be taken from permanent locations in these meadows. The photographs will be analyzed to detect general changes in vegetation, e.g., shift from grasses to sedges or sedges and grasses to forbs, enlargement or shrinking of the vegetative type, changes in soils conditions and erosional effects and proportion of bare ground. When significant changes, as defined in the modification section, are detected more intense monitoring will be employed to record their direction and magnitude.

The above frequency plot information will also be accompanied by photographic records of the transect clusters to provide records of gross change over time. Such things as expansion or contracting of the area included within each site (vegetative type), encroachment of pine or willow into meadows, and erosion by stream channels will be evident from these records. Such records will complement the data from frequency records.

Data will be collected from forage areas that are grazed; heavy use areas have priority. In addition data will be collected from comparable ungrazed areas for comparison purposes. Where possible, the meadows closed to grazing will be used for these comparative studies.

The data from frequency plots, photographic records and written descriptions of soils conditions will be compared from year to year to determine whether or not there is change in species composition, proportion of bare ground or erosional effects. Where comparable meadows are available the frequency data will be compared to ungrazed meadows to aid the analysis of grazing effects. Climatological data will also be collected to evaluate the extent to which climate may have affected changes in species composition and percent of bare ground. Grazing use records will provide information that will show what levels of stock use resulted in present conditions and will help give direction to adjustment of future levels and patterns of stock use.

5.4. Modification of the Plan

It will be necessary to modify the Plan from time to time as data from the monitoring program indicate that use levels and patterns need to be adjusted. Modifications may be more or less restrictive.

In comparing the paired grazed and ungrazed areas or the photographic records beginning with the base year of the monitoring program,

modifications to the Plan (especially grazing use levels and patterns) will be necessary when the grazed area shows:

- (1) more than 15 percent change in the dominant species as recorded by the frequency plots,
- (2) more than a 15 percent change in the proportion of bare ground and corresponding proportional changes in the recorded erosional effects,
- (3) an encroachment of willow or pine that affects more than 15 percent of the meadow area.

Modifications to Section 4 of the Plan or others that could have long-term effects on either park resources or visitor use will be made available for public review before a decision is made by the Superintendent.

6. ACKNOWLEDGMENTS

Development of this Plan included a considerable amount of public involvement over several years, but most intensely from early 1984 through early 1986. During that time general public meetings and several meetings with special interest groups were held and many letters reviewed. In addition several organizations and a few individuals made thorough reviews/analyses/comments on the various draft versions of the Plan. The following groups were those most frequently involved and their input and comments and analyses contributed significantly to completion of the Plan.

High Sierra Packers Association
High Sierra Stock Users Association, Public Lands Committee
Sierra Club
National Parks and Conservation Association
International Llama Association

Appreciation is expressed to these groups and the many individuals who took an interest and the time to comment on the various drafts of the Plan as it was being developed. Significant modifications to the Plan resulted from the comments received.

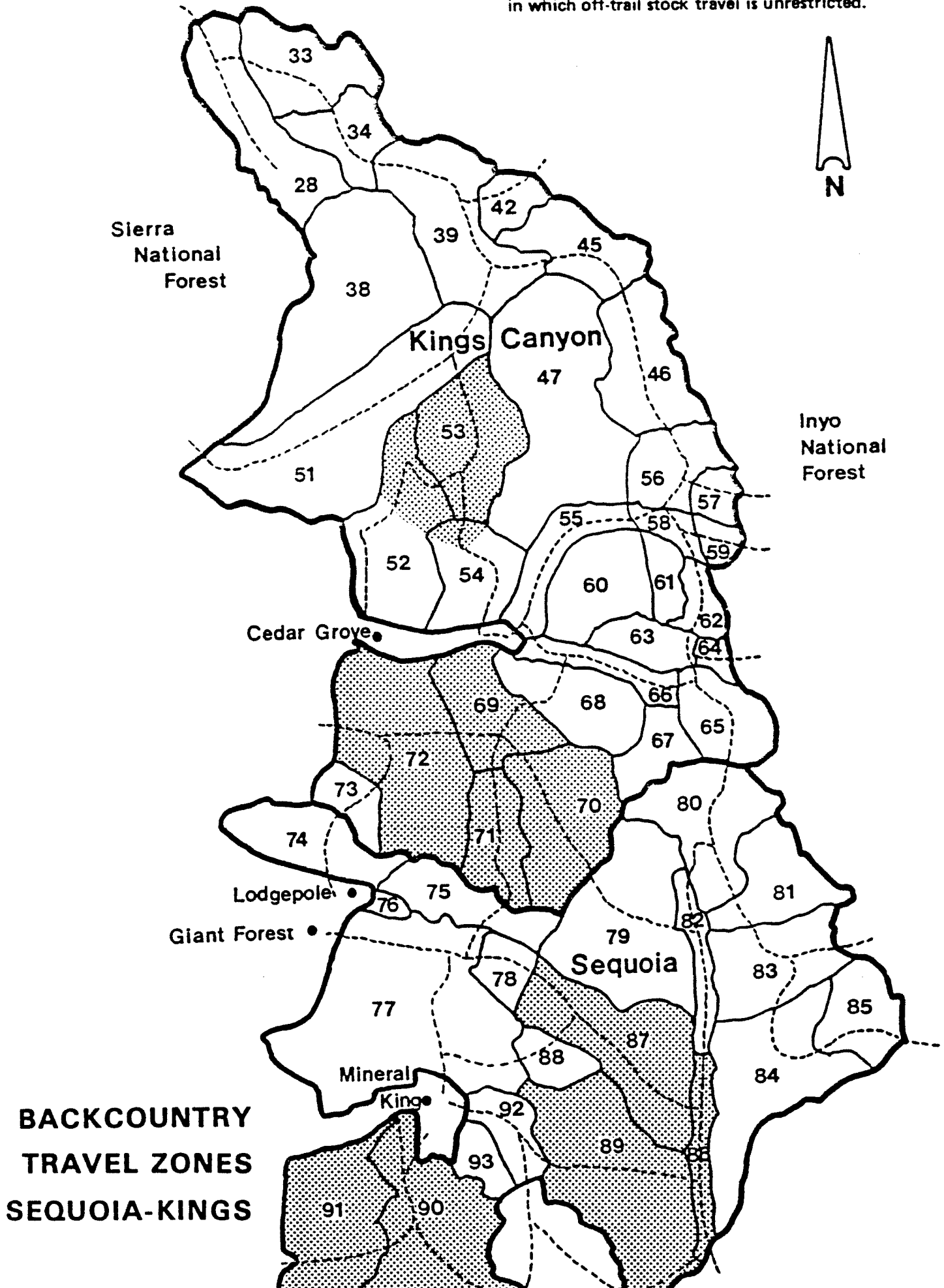
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FIGURE 1: Stippled Areas are Travel Zones in which off-trail stock travel is unrestricted.



SIERRA NEVADA REGION BIGHORN SHEEP EWE-LAMB RANGE

Sequoia-Kings Canyon National Parks

SEQUOIA-KINGS CANYON
NATIONAL PARK

SEQUOIA
KINGS
CANYON
NATIONAL
PARK

Baxter Pass Trail
open to travel

Closed to all visitors
Bighorn Sheep Range

NORTH

102 80,036

Feb. '85 WRO-PP

Table 1A. Physiognomic Types by Generalized Elevation and Moisture Classes

	Xeric	Mesic	Wet
Alpine	Fine shorthair sedge Coarse medium sedge Medium grass-herb	Fine grass & sedge-herb Medium sedge-herb	Tall sedge Fine sedge
Subalpine	Fine shorthair sedge Medium grass & herb	Fine grass & sedge-herb Tall grass & sedge-herb	Fine sedge Tall sedge
Montane	Tall grass-herb Wirey medium Juncus	Tall grass Tall grass & sedge-herb	Tall grass & sedge-herb

Table 1B. Common Meadow Species by Generalized Elevation and Moisture Classes.

Elevation Zone	Xeric	Mesic	Wet
Alpine:			
	<u>Carex exserta</u>	<u>Calamagrostis breweri</u>	<u>Carex rostrata</u>
	<u>Carex breweri</u>	<u>Carex subnigricans</u>	<u>Heleocharis pauciflora</u>
	<u>Stipa occidentalis</u>	<u>Scirpus clementis</u>	
	<u>Trisetum spicatum</u>	<u>Heleocharis pauciflora</u>	
		<u>Oryzopsis kingii</u>	
		<u>Scirpus criniger</u>	
		<u>Carex</u> sps.	
Subalpine:			
	<u>Carex exserta</u>	<u>Calamagrostis breweri</u>	<u>Carex rostrata</u>
	<u>Stipa occidentalis</u>	<u>Deschampsia caespitosa</u>	<u>Heleocharis pauciflora</u>
	<u>Muhlenbergia</u>	<u>Danthonia intermedia</u>	<u>Deschampsia caespitosa</u>
	<u>richardsonis</u>	<u>Agrostis idahoensis</u>	
	<u>Trisetum spicatum</u>	<u>Oryzopsis kingii</u>	
		<u>Heleocharis pauciflora</u>	
		<u>Juncus mertensianus</u>	
		<u>Juncus orthophyllus</u>	
		<u>Carex</u> sps.	
Montane:			
	<u>Agropyron</u>	<u>Elymus glaucus</u>	<u>Glyceria elata</u>
	<u>trachycaulum</u>	<u>Agropyron trachycaulum</u>	<u>Calamagrostis</u>
	<u>Elymus glaucus</u>	<u>Poa pratensis</u>	<u>canadensis</u>
	<u>Juncus balticus</u>	<u>Carex</u> sps.	<u>Deschampsia caespitosa</u>
			<u>Scirpus microcarpus</u>
			<u>Carex nebraskensis</u>
			<u>Carex</u> sps.

Note: Nomenclature based on Munz, A California Flora, 1959, and Munz, Supplement to a California Flora, 1968.

Table 2. Characteristics of Use for Forage Areas Frequented by Different User Types

User Type	Timing	Duration	Frequency	Periodicity	Spatial
Commercial	July-Sept.	Short	Frequent	Repeated year after year	High Elev.
Private	Mid-Season (mostly Aug.)	Long	Very frequent continuous	Repeated year after year	Lower Elev.
Admin.	June-Sept. Season long	Long	Infrequent	Repeated and occasional	All Elev.

Appendix I. Heavy Use Forage Areas

The following heavy use meadows will receive special attention in monitoring to detect any significant change in species composition and density in relation to proportion of bare ground.

Scaffold Meadow
Austin Camp
Pinto Lake
Upper Funston Meadow
Castle Domes Meadow

The following forage areas that approach maximum levels will be reviewed annually for possible inclusion on the above list.

Cony Camp	Grasshopper Meadow
Upper Vidette	Shorty's Meadow
Brewer Creek(Grasshopper Camp) Junction Meadow	
Funston Meadow	Lower Rock Creek Lake Stringer
Cement Table Meadow	
Forester Meadow	
South Fork Meadow	

Appendix II. Drift Fence Classes and Maintenance Priorities

Each drift fence was reviewed and placed into one of the following maintenance priority classes:

- Class 1: Highest priority. Necessary for visitor safety or direct resources protection of a specific area.
- Class 2: High to medium priority. Fence necessary for private, commercial, or administrative convenience. Indirect resource protection derived from fence.
- Class 3: Low priority. Remove if its maintenance or the overall maintenance load becomes problematic.
- Class 4: Remove at earliest convenient date. These fences are unused, ineffective, etc.
- Class 5: Review Status/additions.

Drift Fence Maintenance Priorities

<u>Class 1</u>	<u>Class 2</u>	<u>Class 3</u>	<u>Class 4</u>	<u>Class 5</u>
McClure Mdw	Big Pete			Bearpaw Mdw
Dusy Creek	Ladder Creek			Lwr Rock Cr
Castle Domes	Stillwater			Pinto Lake
Lower	Granite Basin Lip			E. Vidette
Baxter Creek	Shorty's (2 fences)			
Charlotte Lk	East Vidette			
Charlotte Creek	Cement Table			
Screwball Camp	Big Wet			
Junction Mdw	Grand Palace Hotel			
(Bubbs)	The Grave			
Lower Vidette	Lower Ranger			
East Lake	Upper Ranger			
Austin Camp	Rattlesnake #1			
Grasshopper	Rattlesnake #2			
Lackey Cabin	Rattlesnake #3			
J R Mdw	Rattlesnake #4			
Scaffold Mdw	Evolution Meadow			
Comanche Mdw	Paradise Jct.			
Williams Mdw	Cartridge Creek			
Redwood Mdw	Goddard Bridge			
Upper Funston	Rock Gate			
Rattlesnake Ck				
Laurel Creek				
Lower Funston				
Kern Rgr. Sta.				

Appendix III. Annual Grazing Guidelines

As indicated in Section 4. of the Plan (The Management System), specific details including opening dates, grazing use levels and special closure, areas and trails open to use, meadows closed to grazing for study, etc., management of drift fences and other guidelines are covered in this appendix. This appendix, or portions of it, will be available to stock users annually. Portions or specific items may be updated or modified annually as necessary. Significant modifications will be made available for review by interested public before being implemented.

A. Opening Dates

<u>Zone</u>	<u>Area</u>	<u>Dry Year</u>	<u>Normal Year</u>	<u>Wet Year</u>
28	Goddard Cn.	July 1	July 15	Aug 1
33	Evolution	June 15	July 1	July 15
33	McClure/Colby	June 21	July 15	Aug 15
33	McGee Cn.	July 15	Aug 1	Aug 15
38	Blue Cn.	July 1	July 15	Aug 1
39	LeConte	July 1	July 15	Aug 15
51	Gnat Meadow	July 1	July 15	Aug 1
51	Simpson Mdw.	July 1	July 15	Aug 1
52	Kennedy Cn.	July 1	July 15	Aug 1
53	N. side Granite Pass	July 15	Aug 1	Aug 15
53	Horseshoe/State Lakes	July 15	Aug 1	Aug 15
54	Granite Basin	June 20	July 7	Aug 1
56	Twin Lakes	July 1	July 15	Aug 1
57	Woods Lake Basin	July 15	Aug 1	Aug 15
58	Castle Domes	July 1	July 15	Aug 1
58	Baxter	July 7	July 21	Aug 1
61	Sixty Lakes Basin	July 7	July 21	Aug 20
63	Charlotte	July 1	July 15	Aug 1

65	Vidette	July 1	July 15	Aug 1
66	Junction Mdw.(Bubbs)	June 15	July 1	July 20
67	East Lake	July 1	July 10	July 20
69	Roaring River	June 10	June 25	July 10
70	Cloud Canyon	June 15	July 1	July 20
71	Deadman Canyon	June 15	July 1	July 20
72	Sugarloaf	June 15	July 1	July 15
72	Ferguson	June 15	July 1	July 20
72	Crowley Cn.	June 15	July 1	July 20
77	Cliff Creek/Pinto Lake	June 15	July 1	Aug 1
77	Redwood Mdw.	June 1	June 15	Aug 1
75	Lone Pine Creek	July 1	July 15	Aug 1
79	Milestone	July 1	July 15	Aug 5
79	Kern/Kaweah	July 1	July 15	Aug 1
80	Tyndall Creek	June 20	July 1	July 25
81	Wright/Wallace Cr.	June 20	July 1	July 25
82	Jct. Mdw.(Kern)	June 25	July 5	July 25
86	Funston/Upper F.	June 1	June 15	July 1
83	Crabtree	June 20	July 1	Aug 1
84	Rock Creek	June 20	July 1	Aug 1
87	Chagoopa/Big Arr.	June 20	July 10	Aug 10
88	Big Five	July 1	July 15	Aug 10
88	Little Five	July 1	July 15	Aug 10
89	Rattlesnake/Forstr	June 15	July 1	Aug 1
90	Hockett	June 10	June 20	July 20

B. Limits on number of nights per area.

Redwood Meadow - 1 night per party

Upper Funston Meadow - 2 nights per party

Lower Funston - 2 nights per party

Junction Meadow (Bubbs Creek) - 1 night per party

Upper Rock Creek - 2 nights per party

Cloud Canyon/Cement Table - 2 nights per party

Shorty's Meadow - 2 nights per party

Bubbs Creek - 1 night per party

Junction Meadow (Bubbs Creek) - 1 night per party

Castle Domes Meadow - 1 night per party

Sixty Lakes Basin - 1 night per party

Charlotte Lake - 2 nights per party (Below drift fence only)

Upper Evolution Valley - 1 night per party

C. Stock Per Party Limits

Redwood Meadow - 15 head per party

Junction Meadow (Kern) - 15 head per party

Crabtree Meadow - Parties with more than 15 head must check with ranger
for camping/grazing area.

Scaffold Meadow - 15 head per party

Cloud Canyon/Cement Table - 15 head per party

Junction Meadow (Bubbs Cr.) - 15 head per party

Castle Domes Meadow - 15 head per party

Sixty Lakes Basin - 15 head per party

D. Areas Closed to Grazing

Permanent closures due to heavy visitor use, small size and sensitivity of the area:

Hamilton Lake, Zone 78, the entire lake basin.

Mineral King Valley, all of Zones 92 and 93, the entire valley (except for walking burro or llama parties)

Timberline Lake, Zone 83, all of the meadow associated with the lake.

Guitar Lake, Zone 83, all of the meadow associated with the lake. (walking burro or llama parties are allowed).

South Fork Kings River to Bubbs Creek Bridge, not a travel zone since it is not backcountry.

Bubbs Creek up to Junction Meadow, Zone 66 to the lower drift fence at Junction Meadow. (walking burro/llama parties are allowed)

Roaring River Area, Zone 69, Seville Lake, Tom Sears Meadow. (Lackay Cabin, and JR Pasture are administrative pastures closed to public use).

Granite Lake, Zone 54, all of the forage area associated with the lake.

East Lake, Zone 67, all of the meadow area immediately adjacent to the lake.

Paradise Valley, Zone 55, up canyon to the lower Castle Domes Drift Fence.

Woods Creek Crossing, Zone 58, the small meadows south of the crossing.

Rae Lakes, Zone 62, the entire basin is closed to grazing use.

Charlotte Lake, Zone 63, immediately above and below the lake.

Vidette Meadow, Zone 65, the meadow proper, up to the drift fence. (a new drift fence is proposed immediately above the meadow that will open some stringer meadows to use between the meadow and the existing East Vidette drift fence).

Kearsarge/Bullfrog, Zone 64, the entire lakes basin is closed.

Dusy Basin, Zone 42, the entire basin, including Rainbow Lakes.

McGee Lakes, Zone 34, the area around the lakes above 10,000 ft.

Evolution Lake, Zone 34, all of the area associated with the lake. (walking burro and llama parties are allowed).

E. Areas temporarily closed to grazing

Vidette Meadow--the area from immediately above the primary meadow to the existing East Vidette drift fence. When the new drift fence is built immediately above the primary meadow, the area between the new drift fence and the existing drift fence (further east) will be opened to grazing.

Appendix IV. Trails And Areas Open to Use**A. Off-Trail Travel**

The following travel zones and portions thereof are open to off-trail travel:

Travel Zones 69-72 (Roaring River), Zone 86 (Lower Kern Canyon), Zone 87 (Chagoopa Plateau), 95 percent of Zone 89 (Rattlesnake Creek) grazing subject to Annual Grazing Regulations, Zones 90-91 (Hockett Plateau-South Fork of Kaweah River), portions of Zones 47 (Cartridge Pass and Creek), Zone 53 (State Lake and Lake of the Fallen Moon area), portions of Zone 52 (Kennedy Canyon). See Figure 1.

B. Unmaintained Trails

Stock travel and grazing are permitted on the following designated unmaintained trails; grazing is subject to the Annual Grazing Regulations:

- Zone 28 Hell-For-Sure Pass
- 33 Lower McGee Canyon below 10,400'
- 38 Blue Canyon below 10,000'
- 46 Old Cartridge Pass Trail--John Muir Trail at Taboose Jct. over Cartridge Pass to Lake Basin and down Cartridge Creek to the Simpson Meadow Trail. Note that much of this trail is very rough, may be dangerous and the part down Cartridge creek may be extremely difficult if not impassable due to brush.
- 53 Glacier Lakes
- 54 Grouse Lake
- 57 Woods Lake Basin (no grazing at Woods Lake)
- 61 Sixty Lakes Basin (spot trips only--one night grazing)
- 68 Sphinx Lakes
- 77 Redwood Meadow to Granite Creek
- 80 Milestone Basin (Below 11,200')

- 80 John Dean Cutoff
- 81 Wright Lakes Basin (below 11,200')
- 81 Wallace Creek (Below 11,200')
- 83 Lower Whitney Creek
- 83 Camp below Lower Crabtree Lake
- 84 Forgotten Canyon-Funston Lake
- 84 Siberian Outpost - Rocky Basin Lakes
- 84 Lower Rock Creek (West of trail crossing of Rock Creek below Ranger Station)
- 85 Miter Basin Trail from New Army Pass Trail at Lower Rock Creek Lake to outlet stream from Primrose Lake in Miter Basin.

C. Day Use and Pass-Through

Day Use and Pass-Through Only. Stock travel is permitted, but use of associated forage areas prohibited:

Backcountry Trails/Routes

- Zone 28 Upper Goddard Canyon (Martha Lake): 1 mile above Hell-for-Sure Pass Junction to Martha Lake (subject to opening date restrictions of meadows traversed in reaching Martha Lake)
- 45/47 Cataract Creek from John Muir Trail to old mine.
- 46/47 Cartridge Pass trail jct with John Muir Trail west along South Fork of Kings R. for about 3 to 4 miles.
- 58,59 Baxter Pass: From the JMT to the Park Boundary.
- 65 John Muir Trail to the Camp area below Golden Bear Lake.
- 80 Shepherd Pass: Park Entrance toward John Muir Trail for 1 mile.
- 81 Wallace Lake: Above 11,200 ft., & trail to Wright L.
- 81 Wright Lakes: Above 11,200 ft., & trail to Wallace L.
- 84 Siberian Pass: Pacific Crest Trail at New Army Pass Spur Jct (near east end of Siberian Outpost) to Old Siberian Pass

- 85 Miter Basin: Above the outlet stream from Primrose Lake in Miter Basin

80,81,83,84 John Muir Trail to Kern Canyon Overlooks Stock users may dayride from the JMT to overlooks along the Kern Canyon Rim.

Frontcountry/Threshold Trails

- (1) Grant Grove Area
Sequoia Lake
South Boundary
Park Ridge
Manzanita
Azalea
North Boundary
Grantview
Grant local trails: Permission subject to approval by Superintendent on a case-by-case basis.
- (2) Redwood Mountain: All trails
- (3) Giant Forest/Lodgepole Area
Lakes Trail
Alta Trail
2 Hour Loop
1 Hour Loop
Panther Gap
Seven-Mile Hill
Wolverton Cutoff
- (4) Cedar Grove local trails: Permission subject to approval by Superintendent on a case-by-case basis.
- (5) Mineral King Basin Trails (open to burro and llama overnight use)
Mineral King Valley
Mosquito Lake #1
Mosquito Lake #4
Crystal Lakes
Eagle Lakes
Cobalt Lakes
White Chief Bowl
Farewell Gap Trail to Farewell Gap
Franklin Pass Trail to Franklin Pass
Sawtooth Pass Trail to Monarch Lakes
Trail closed to stock use 1 mi. beyond Monarch Lakes
Timber Gap Trail to Timber Gap
- (6) Ash Mountain local trails: Permission subject to approval by Superintendent on a case-by-case basis.

Appendix V. Stock Use Reporting Card

Name of Pack Outfit, NPS Crew or Party,
Private Stockperson: _____

STOCK USE REPORTING FORM
Sequoia and Kings Canyon National Parks

Trip No.	Date	Forage Area Utilized	#Stock Overnight	#Animals Grazed	#Animals Fed	#People	Comments
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Form Completed By: _____ Date _____

Instructions for Completing Stock Use Reporting Form

1. The name of the pack outfit, NPS crew or party, or private stockperson is to be entered on the appropriate line.
2. The specific location of each overnight forage area and the number of people and animals present in the party must be recorded on a daily basis for each overnight trip. Whenever there is a change in overnight forage area (for all or part of the stock party), total number of animals, or total number of people a new entry should be made. Record the date(s) of each overnight period for which the rest of the information on that line applies in space labeled date (i.e., 7/3-7/4 means the nights of both July 3 and 4 were spent at the same location with the same number of stock and people).
3. A forage area is defined as any set of foraging grounds that comprises a distinct forage unit. Where animals wander between indistinctly separated foraging grounds, such as at Woods Lake, the entire area constitutes the forage unit. Where forage areas are distinct, record the name of the specific area. It is important to consistently call the same forage area by the same name.
4. Comments on meadow conditions, amount of forage, animal behavior, or other suggestions are solicited.

Appendix VI. Meadows Closed to Grazing

- (1) Goddard Creek Meadow Chain; Zone 38, along Goddard Creek at an elevation of 10,200 ft.-10,400 ft. 15 acres.
- (2) Northward wooded section of Big Pete Meadow (only the very wet sphagnum based portion of the meadow which is in the trees toward the

creek); Zone 39 on John Muir Trail (JMT)--2 miles north of LeConte Ranger Station at 9,200 ft. 3.5 acres.

(3) Woods Lake (only the area immediately adjacent to the main lake); Zone 57, on Sawmill Pass access route off the John Muir Trail. 10.9 acres.

(4) Dragon Lake Meadow; Zone 62, 11,600 ft. on spur trail to Dragon Lake off John Muir Trail. 3.3 acres.

(5) Ellis Meadow; Zone 72 about 1-1/2 miles south of the Roaring River Trail and midway between the east and west forks of Ferguson Creek at an elevation of 8,700 ft. Not on a maintained trail. 26 acres.

(6) Lake South America Col Meadow; Zone 80 on the trail from Lake South America toward the John Muir trail and Tyndall Creek area and being in the next drainage east and south of Lake South America, (not at Lake South America itself), at 12,000 ft. 75 acres.

(7) Wright Lakes Drainage Meadow #27; Zone 81, located in a small side drainage in east central Wright Lakes Basin, (sort of a sink hole) and virtually inaccessible to stock, at 11,000 ft. 15 acres.

(8) Wallace Creek Drainage Meadow #38; Zone 83 east of the JMT along Wallace Creek about 1/2 mile below Wallace Lake in the day use stock travel area at 11,000' - 11,200 ft. 26 acres.

(9) Guyot Creek Meadow; Zone 84 just Southwest of where the John Muir Trail crosses Guyot Creek at 10,400 ft. 60 acres (est).

(10) Crabtree Stringer; Zone 83 on John Muir Trail adjacent the Crabtree Ranger Station at 10,500 ft. 6 acres.

(11) Rock Creek Ranger Station Meadow; Zone 84 on the Pacific Crest Trail, the very wet meadow area adjacent to the Rock Creek Ranger Station at 9,600 ft. 16.4 acres.

(12) Rock Creek Penned Up Meadow; Zone 85 on path from Rock Creek Lake Meadow to Miter Basin at 10,600 ft. 12 acres.

(13) Mitchell Meadow, Zone 90, off the trail about 1/4 mile east of Sand Meadow at 8,600 ft. 60 acres.

(14) Lower Rock Creek Lake #2 Meadow, Zone 85, 1/2 mile downstream from Rock Creek Lake at 10,320 ft. 5/5 acres.

The maps on the following pages show the specific locations of meadows that are closed to grazing as discussed in Section 4.2.

MEADOWS CLOSED TO ALL GRAZING

Sequoia-Kings Canyon National Parks

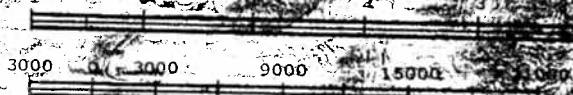
KINGS CANYON
NATIONAL PARK

INYO NATIONAL FOREST

SEQUOIA
KINGS
CANYON
NATIONAL
PARKS

2. BIG PETE MEADOW

1. GODDARD CREEK MEADOW CHAIN



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MEADOWS CLOSED TO ALL GRAZING

Sequoia-Kings Canyon National Parks

SEQUOIA NATIONAL PARK

SEQUOIA

KINGS

CANYON

NATIONAL

PARKS

3. WOODS LAKE PROPER



INYO NATIONAL FOREST

4. DRAGON LAKE MEADOW



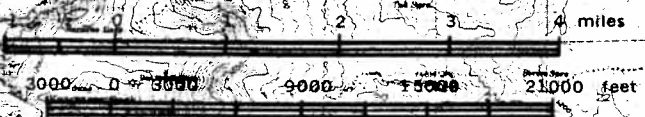
7. CHARLOTTE LAKE MEADOWS



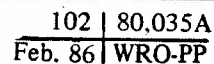
8. KEARSARGE BULLFROG BASIN



NORTH



Sequoia-Kings Canyon National Parks



MEADOWS CLOSED TO ALL GRAZING

Sequoia-Kings Canyon National Parks



5. ELLIS MEADOW

KINGS CANYON NATIONAL PARK

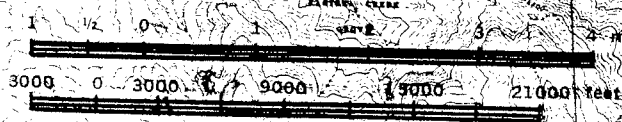
SEQUOIA
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SEQUOIA NATIONAL PARK



NORTH



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Sheet 4

MEADOWS CLOSED TO GRAZING

Sequoia-Kings Canyon National Parks

