CHAPTER 3. LANDSCAPE DISTURBANCES

Livestock and Rangeland Management - Uncompahgre Plateau

Domestic livestock grazing has been a major use on the GMUG since Euro-American settlement occurred in the area in 1881. Heavy livestock grazing use was a major disturbance factor altering rangeland vegetation quantity, quality and species composition; which in turn, influenced other ecosystem processes such as fire frequency, erosion, and wildlife species habitat and occurrence. Livestock management has constantly been changing, through reductions in livestock numbers, season and use, and improvements in rangeland vegetation condition and trend. This section briefly describes these changes, current conditions, and management implications of livestock and rangeland management for the Uncompahgre Plateau Geographic Area.

Conditions and Trends

Historic

Prior to Euro-American settlement of the Uncompahgre Plateau Geographic Area (GA), in 1881, only livestock owned by the Utes grazed in this area (numbers are not available). In 1880, 5,000 cattle were brought in to Fort Crawford (near Colona) to provide meat to the Utes (Spencer 1909). Grazing was limited to the Uncompahgre valley, until settlement transformed these lower areas into farms and communities (beginning in 1881). Grazing shifted to the Uncompahgre Plateau during the summer seasons.

Within a very short time all portions of the Uncompahgre Plateau were stocked with cattle and for over a half century, use was excessive and damaging. (See quotes from Hayden Report and J.D. Dillard in the riparian section) In 1883, sheep were brought into the Uncompahgre Valley (numbers not available). Disputes over division of the range between cattle and sheep, large operators and small occurred (Spencer 1909). Large herds of cattle and sheep grazed the area with little management controls until after the start of the 20th century. By 1902 documented evidence indicated that the range was already beginning to deteriorate.

The establishment of the Uncompahgre National Forest in 1905 signaled the first attempt to try to control grazing activities. The seasons of use for cattle ran from April 1 or May 1 (depending on the amount of snow) to November 30. Cattle drifted up with the snow line on the Plateau and were pushed out by snow in the winter. The range was considered to be overstocked when the National Forest was established and one of the first orders of business was to reduce livestock numbers and season of use (Spencer 1907).

The Uncompahgre Plateau emerged as one of the most contentious and controversial grazing areas in the National Forest System during the 1920s to the 1950s. The stockmen resisted most attempts to reduce numbers of livestock and seasons of use. There was always a demand for more studies and claims that use by wildlife was the source of the

deteriorated vegetative conditions found throughout the Uncompahgre Plateau in those years.

By the late 1940s, Forest Service personnel were documenting extreme overuse and rating portions of the Plateau as being "depleted" and "totally devoid of desirable forage". This led to a decision in 1950 to reduce seasons and numbers on most grazing allotments on the Uncompahgre Plateau. Subsequent appeals by the livestock industry were finally settled in early 1952 when the Secretary of Agriculture ruled that the Forest Service had the authority and responsibility to establish grazing seasons and permitted numbers. This was a landmark case that set precedent throughout the United States and provided the basis for the evolution of improved grazing management during the following forty years.

The 1950s through the 1980s can be characterized as the period of rangeland development on the Uncompahgre Plateau. Fences, stock ponds, and spring developments were gradually installed to provide better control of livestock. Extensive areas of piñon-juniper woodlands were chained and reseeded to palatable forage species to increase carrying capacities for livestock and improve livestock distribution (see Vegetation assessment for additional information). On the Naturita Division, large expenses of sagebrush were disked and reseeded to crested wheatgrass in an attempt to improve ground cover and establish forage for domestic livestock.

Figure 1 shows the trend in cattle and sheep numbers permitted on the entire Uncompahgre National Forest (includes the Uncompahgre Plateau and San Juan Geographic Areas). Note: Data is not available for all years.

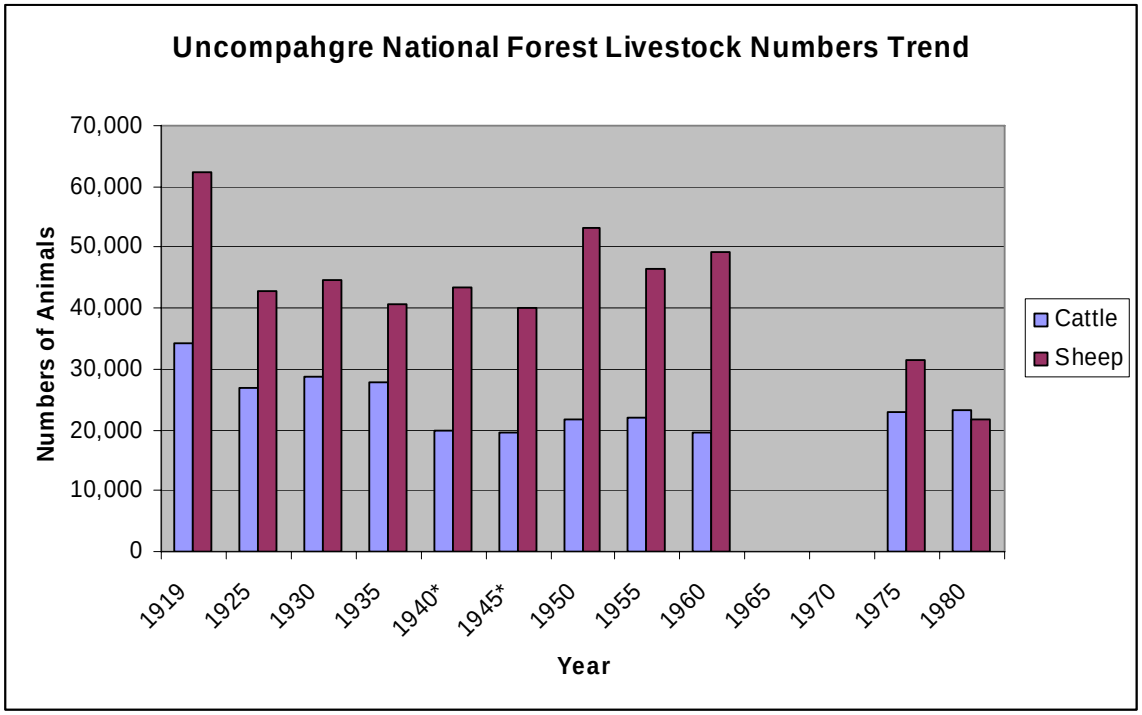

Figure 1. Permitted Livestock Numbers for the entire Uncompahgre National Forest (1908 – 1980)

For comparison, Table 1 displays the number of livestock permitted to graze the total GMUG in 1983 and 1991 when the first Forest Plan and significant amendment were completed. Current permitted numbers are also displayed.

Table 1. Permitted Livestock, GMUG National Forests

Year	Cattle	Horse	Sheep
1983	65,000	5,300	61,000
1991	64,000	5,000	53,000
2005	57,000	300	29,000

Permitted numbers are only part of the picture. The length of the season of use is an additional indicator of intensity of use. During the early 1900s the season of use was seven to eight months long (April or May until November). From the 1930s to 1950 the season of use was six months long (May until October). After 1950 the season of use was adjusted to be four and one-half to five months long (June to October). By 1983 grazing seasons were adjusted so the majority of cattle were permitted from mid May to mid October, and sheep were permitted from mid July to mid September. Season of use has been further reduced so that most cattle grazing does not begin until June. Various grazing systems have been implemented over time, further adjusting the timing, intensity and duration of livestock grazing within a given area.

Current

Livestock grazing is permitted within established allotments. The size and number of allotments have varied over time. Changes in the number and configuration of allotments have occurred over time because allotments have been combined to improve livestock management, allotments have been vacated or closed in areas where resource conflicts exist, or class of livestock has been changed. Figure 2 displays the current allotments on the Uncompahgre Plateau Geographic Area. Not all NFS lands on the Uncompahgre Plateau are included in grazing allotments. Private lands within the Forest boundary are excluded from allotments, with few exceptions. There are currently 36 allotments on the Uncompahgre Plateau GA, including 94 percent of the NFS lands. Thirty-three allotments are permitted for cattle, one for sheep, and two for both cattle and sheep.

Not all areas within an allotment are considered to be suitable for livestock grazing. Lands generally suitable for grazing are those lands that produce the forage for grazing allocation. Slopes below 40 percent are generally considered suitable for cattle grazing. Slopes below 60 percent are generally considered suitable for sheep grazing. Areas not suitable for grazing include but are not limited to: bare and rocky areas; lakes, reservoirs, rivers, and perennial streams; very wet soils; areas with mass movement risk; roads and trails; slopes greater than 60 percent; dense timber stands with canopy closure greater than 70 percent and limited understory forage; areas not capable of producing forage (nutrient-poor soils, shallow soils, alkali flats); areas without water sources or the potential to develop water; areas fenced to keep livestock use out (e.g., developed recreation sites, administrative sites). Lands that do not produce adequate forage, or fail to meet the other requirements for suitability within an allotment are labeled unsuitable.

Unsuitable rangelands are not used to determine carrying capacity for livestock. However, unsuitable rangelands within an allotment may still be used by livestock for such purposes as shade, loafing, trailing, bedding, incidental grazing, and movement between areas of suitable forage throughout the grazing season.

Figure 3. displays the lands generally suitable for livestock grazing on the Uncompahgre Plateau GA. (Note: Information is currently not available for several allotments on the Naturita Division of the Uncompahgre Plateau GA. This information will be added as it becomes available.)

By the early 1990s, the overall result of the range development program, coupled with implementation of rotational grazing systems, has been a significant improvement in rangeland forage conditions over those described in the 1940s. Updated range analysis during the 1990s indicated most of the Uncompahgre Plateau rangelands have improved to fair or good condition.

Rangeland condition is based on the ecological condition of a site, by comparing existing vegetation composition and cover to potential composition and cover that would be appropriate for a given location. Current rangeland vegetation condition was determined by local rangeland management specialists based on their knowledge of the ground combined with results of range analysis. Figure 4 displays the current rangeland vegetation condition for the Uncompahgre Plateau GA. Areas displayed with no condition on the Uncompahgre Plateau portion of the GA are not considered to be suitable for livestock grazing. Note: Data is not currently available for the Naturita Division portion of the GA. Following the Burn Canyon Fire in 2002, which burned much of the Naturita Division west of Naturita Canyon, new range analysis information has been collected and current rangeland condition will soon be determined.

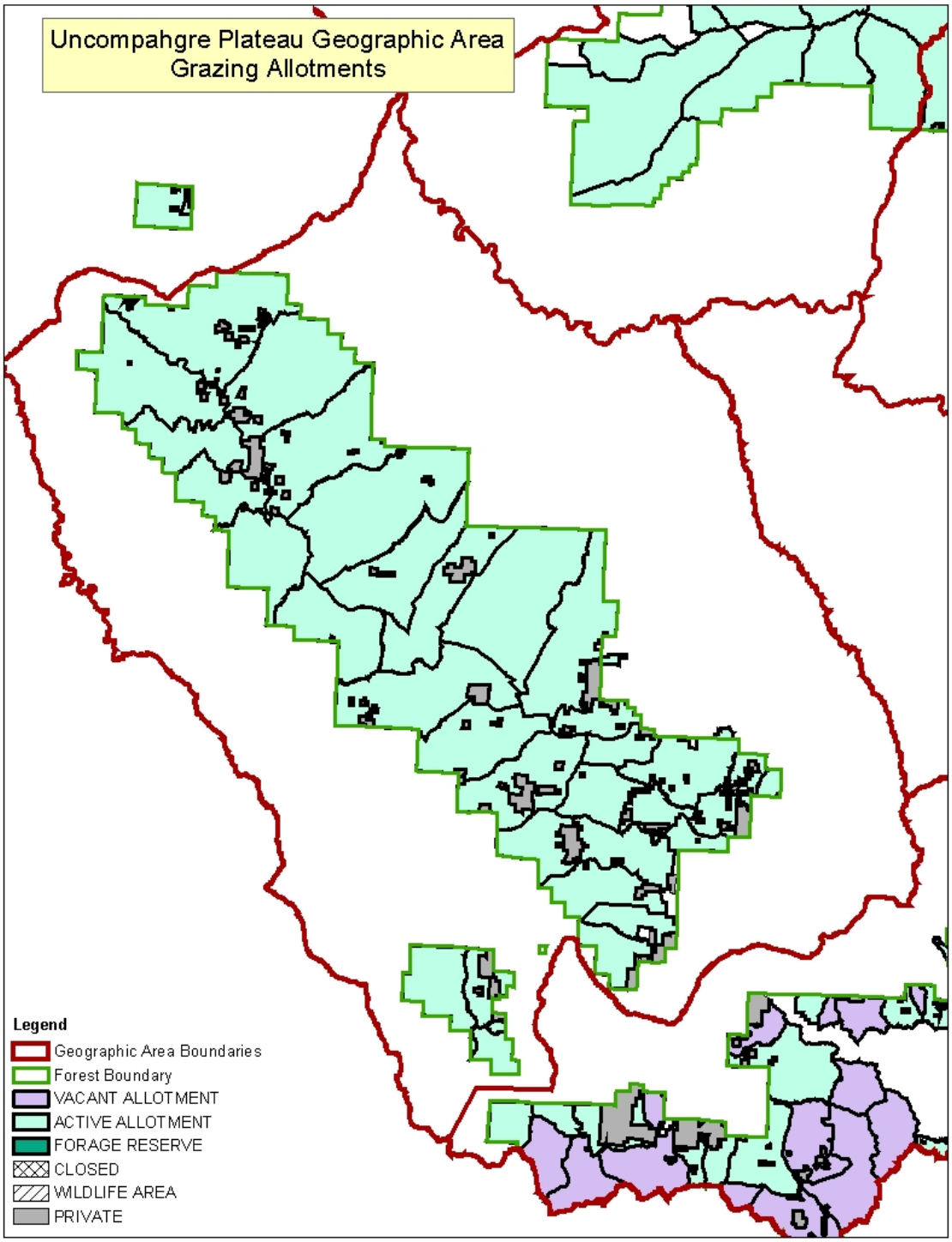

Figure 2. Current Grazing Allotments, Uncompahgre Plateau Geographic Area

Table 2 displays the acres of rangeland condition classes by vegetation type. On the Uncompahgre Plateau GA the majority of the rangeland suitable for grazing occurs in aspen (28 percent), oak (25 percent), ponderosa pine (17 percent) and pinyon-juniper (11 percent) cover types. The majority of the rangeland unsuitable for grazing occurs in pinyon-juniper (24 percent) in areas with little understory vegetation, no water sources, and on steep slopes. Approximately 23 percent of the unsuitable rangeland is in oak, primarily on slopes greater than 60 percent. Of the rangeland areas suitable for grazing, 5 percent is in poor condition, 52 percent is in fair condition and 43 percent is in good condition. Most of the poor condition rangeland is in spruce-fir (due to lack of forage under mature canopied stands) and pinyon-juniper (due to low amounts of available forage and species composition in the understory – more annuals and non-native species). Most of the fair condition rangeland is in ponderosa pine, aspen and oak, as is the majority of the good condition rangeland. This is a function of the dominance of these cover types on the Uncompahgre Plateau GA. The majority of most cover types is in good condition with few exceptions. Most of the pinyon-juniper, ponderosa pine and spruce-fir cover types are in fair condition due to a combination of understory availability and species composition of that understory. The majority of the lodgepole pine cover type, a non-native species on the Uncompahgre Plateau that was planted in clear cuts that did not regenerate in the early 1960s, is in poor condition due to lack of understory under dense canopied stands. Figure 4 displays this rangeland condition.

Trend in rangeland vegetation is an evaluation of whether current conditions are moving towards desired conditions (upward), are remaining static (no change), or moving away from desired conditions (downward). Current trend was also determined by local rangeland management specialists based on measured trend transects and knowledge of on-the-ground conditions. Trend in rangeland conditions is displayed in Table 3 and in Figure 5. As mentioned before, trend data is not available for the Naturita Division. Elsewhere on the Uncompahgre Plateau GA, areas that do not show trend are not suitable for grazing.

On the Uncompahgre Plateau GA the majority of the rangeland suitable for grazing is in a static trend (82 percent), and the majority of each cover type is in a static trend. Only one percent of the suitable rangeland is in a downward trend, mostly in the grass/forb cover type. Some of these poor trending areas are where cattle were concentrated during round-ups or in pastures for many decades. The majority of the poor range area is in old fire scars where a combination of top soil loss occurred during high intensity rainstorms following fire events, native plant species did not regenerate and invasive plant species and non-native species predominate. The majority of areas in upward trend occur in aspen and Gambel oak – again partly a function of the dominance of these cover types on this landscape.

A comparison of condition and trend is presented in Table 4. The majority of the suitable rangeland on the Uncompahgre Plateau GA is in fair conditions with a static trend. Most of the suitable rangeland in an upward trend is in fair and good condition. Only small areas of fair and poor condition are in downward trend.

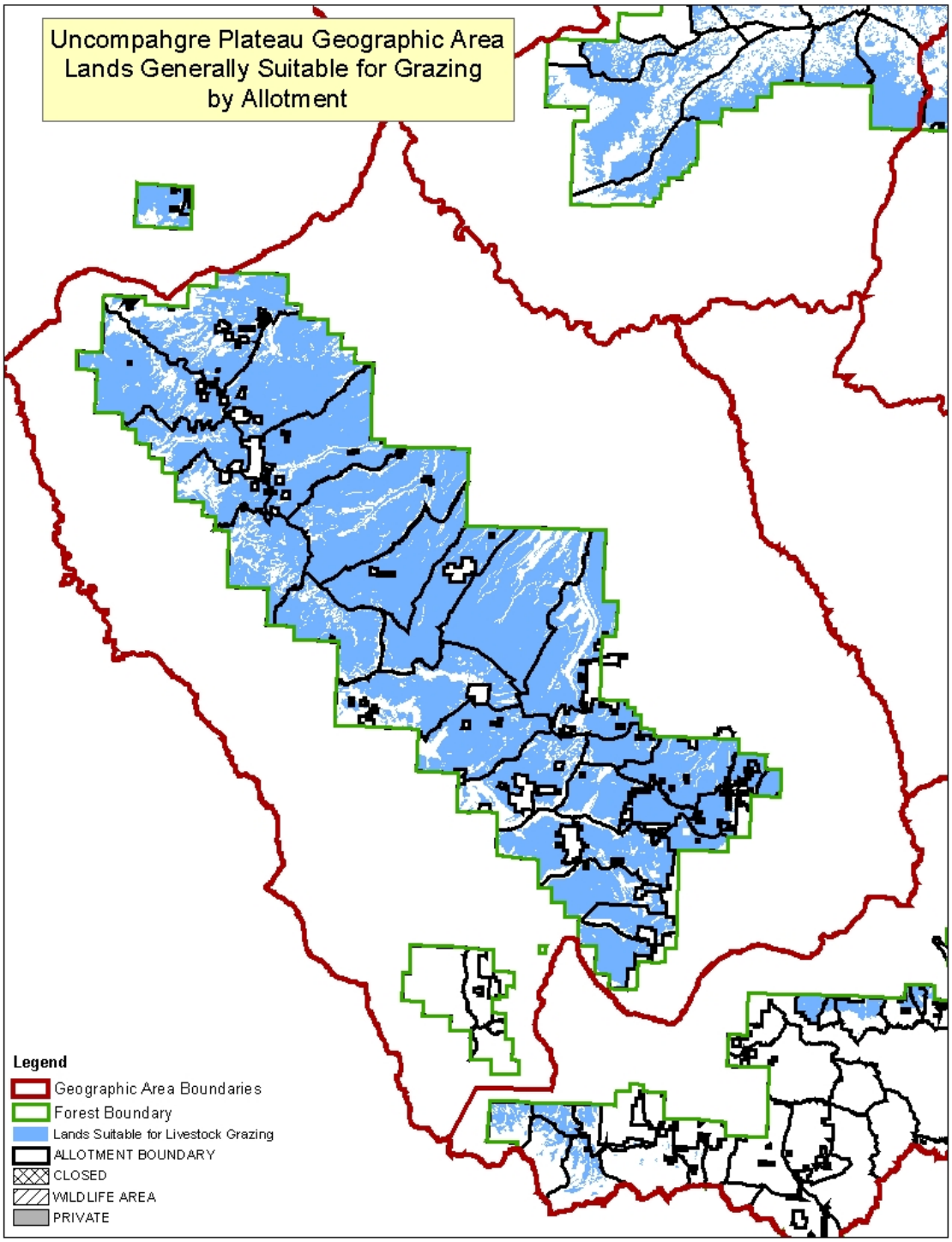

Figure 3. Lands Generally Suitable for Grazing, Uncompahgre Plateau Geographic Area

Table 2. Rangeland Condition by Cover Type for the Uncompahgre Plateau Geographic Area *

Cover Type	Poor		Fair		Good		Total Suitable		Unsuitable	
	Acres	% of suitable cover type	Acres	% of suitable cover type	Acres	% of suitable cover type	Acres	% of Total Suitable	Acres	% of Total Unsuitable
Grass/Forb	1,657	7	8,436	35	14,092	58	24,185	5	10,548	8
Sagebrush	827	5	6,961	41	9,230	54	17,018	4	2,423	2
Gambel Oak	3,259	3	45,624	40	64,847	57	113,730	25	30,094	23
Mixed Mountain Shrub	21	1	1,120	37	1,890	62	3,030	1	3,222	2
Snowberry			237	4	5,446	96	5,684	1	2,051	2
Willow			310	38	503	62	813	0	636	0
Cottonwood			61	16	314	84	375	0	833	1
Aspen	1,385	1	51,343	40	75,832	59	128,560	28	23,913	18
Pinon/Juniper	4,680	9	46,026	88	1,615	3	52,320	11	31,666	24
Ponderosa Pine	2,796	4	57,178	75	15,895	21	75,869	17	10,029	8
Lodgepole Pine	141	79			37	21	178	0		
Douglas-fir			99	33	203	67	302	0	1,698	1
Blue Spruce					18	100	18	0	157	0
Spruce/Fir	5,987	18	21,466	64	6,301	19	33,755	7	11,531	9
Bare/Rock**			3	100			3	0	771	1
Water**			19	100			19	0	443	0
Total	20,753	5	238,883	52	196,222	43	455,858		130,013	

*Data for Naturita Division is not currently available and is not included in table.

** Areas are classified as a cover type is the dominant cover occupies more than 25 percent of area. Areas identified as Bare/Rock and Water cover types include areas with terrestrial vegetation.

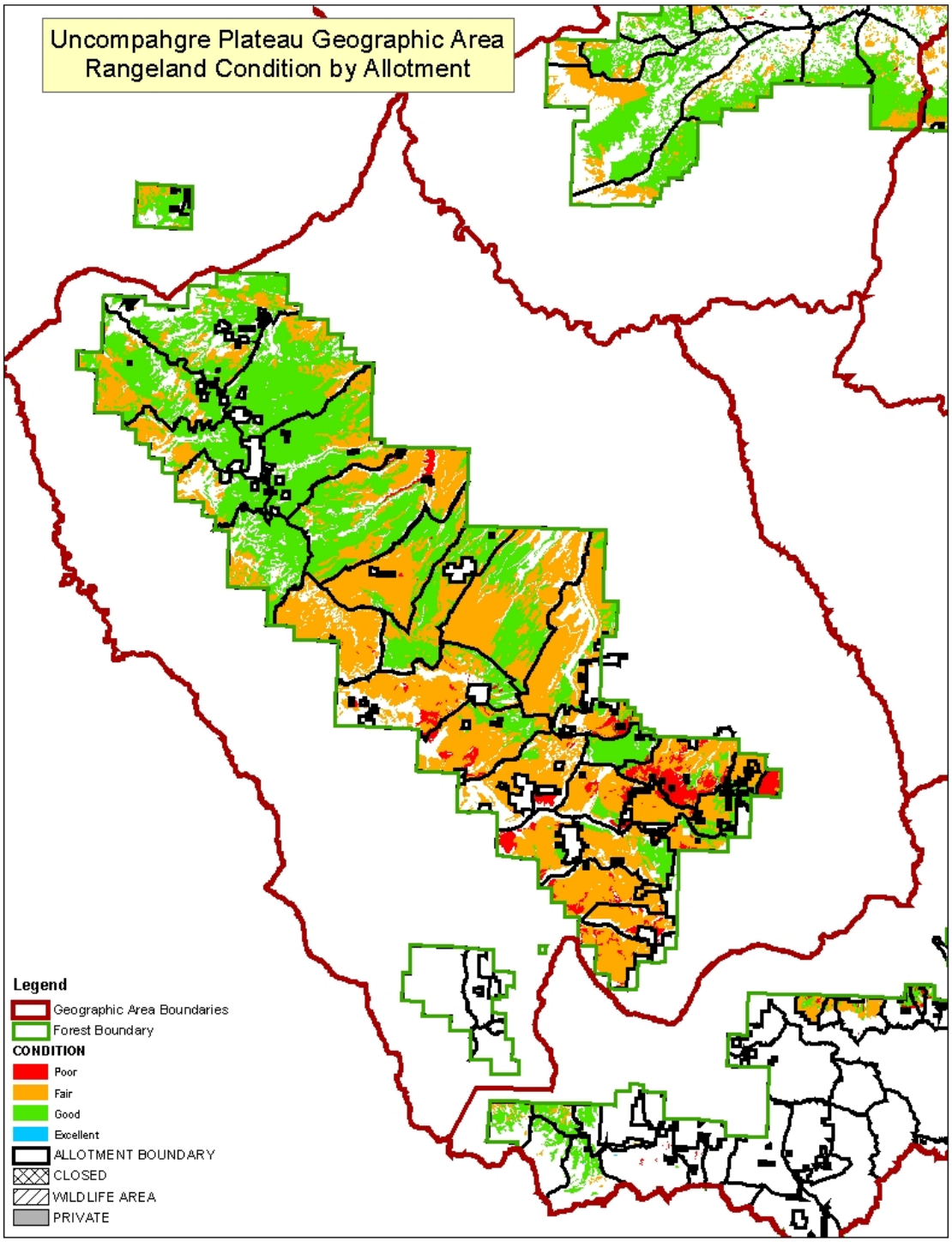

Figure 4. Rangeland Condition, Uncompahgre Plateau Geographic Area

Table 3. Trend in Rangeland Conditions on the Uncompahgre Plateau Geographic Area*

Cover Type	Downward		Static		Upward		Total Suitable		Unsuitable	
	Acres	% of suitable cover type	Acres	% of suitable cover type	Acres	% of suitable cover type	Acres	% of Total Suitable	Acres	% of Total Unsuitable
Grass/Forb	901	4	21,053	86	2,621	11	24,575	5	10,158	8
Sagebrush			16,702	98	388	2	17,090	4	2,350	2
Gambel Oak	1,754	2	85,357	78	22,871	21	109,982	24	33,841	28
Mixed Mountain Shrub	41	1	1,173	40	1,722	59	2,936	1	3,316	3
Snowberry			5,614	99	70	1	5,684	1	2,051	2
Willow			655	82	144	18	799	0	650	1
Cottonwood			207	55	168	45	375	0	832	1
Aspen	131	0	104,332	79	26,887	20	131,349	28	21,124	18
Pinon/Juniper	1,637	3	47,375	81	9,638	16	58,649	13	25,337	21
Ponderosa Pine			64,192	85	11,654	15	75,846	16	10,051	8
Lodgepole Pine			178	100			178	0		
Douglas-fir			408	89	50	11	458	0	1,541	1
Blue Spruce			158	100			158	0	17	0
Spruce/Fir			33,765	90	3,579	10	37,344	8	7,942	7
Bare/Rock			29	91	3	9	31	0	742	1
Water			47	71	19	29	66	0	396	0
Total	4,463	1	381,243	82	79,814	17	465,521		120,350	

*Data for Naturita Division is not currently available and is not included in table.

** Areas are classified as a cover type is the dominant cover occupies more than 25 percent of area. Areas identified as Bare/Rock and Water cover types include areas with terrestrial vegetation.

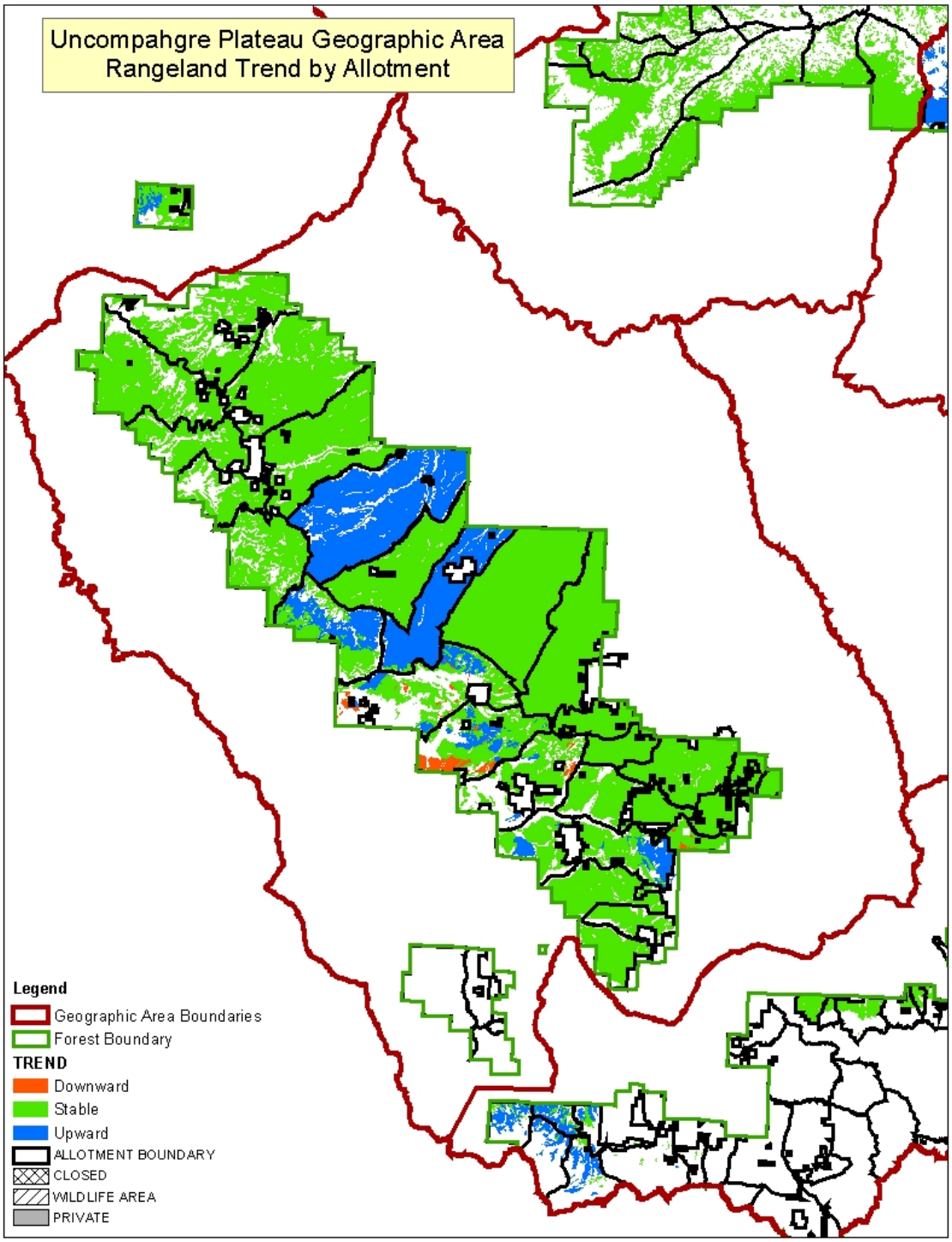

Figure 5. Rangeland Trend, Uncompahgre Plateau Geographic Area

Table 4. Relationship of Rangeland Condition and Trend on Rangeland Suitable for Grazing on the Uncompahgre Plateau Geographic Area.

Condition	Trend						Total Acres	% of Total
	Downward		Static		Upward			
	Acres	% of Condition	Acres	% of Condition	Acres	% of Condition		
Poor	837	4	18,256	88	1,661	8	20,753	5
Fair	3,626	2	188,741	82	38,053	17	230,420	52
Good		0	156,952	80	39,019	20	195,971	43
Excellent							0	
Total	4,463	1	363,948	82	78,734	17	447,145	

A landscape level Environmental Assessment for the northern two thirds of the Plateau was completed in 1995. Primary concerns were rangeland health, riparian conditions, wildlife habitat conditions, and economic stability of the local ranches and communities. Management changes that resulted from this assessment focused on the length of time and season of grazing use to allow forage plants to grow prior to use or to regrow following defoliation. Permitted head months were reduced by seven percent. Subsequent to this decision, opportunities to combine several allotments have arisen, allowing further reduction in grazing pressure. A similar landscape EA was completed (2003) for the remaining 15 grazing allotments on the southern end of the Plateau. The issues and concerns for this EA were similar to the previous discussion and the decision focused on implementing best grazing practices.

All of the grazing allotments on the Uncompahgre Landscape are managed under some form of planned grazing program. Each allotment is reviewed annually in company with the grazing permittees. Annual Operating Instructions (AOI) are agreed upon, based on an assessment of how the allotment was used the previous year, the objectives contained in the allotment management plan, and any new concerns that may have developed. In recent years, some AOIs have been altered to use livestock as a vegetative management tool. In some cases, careful timing of cattle use can be used to reduce less desirable plant species, while improving conditions for more desirable plant species. Livestock grazing is also being used to treat some species of noxious weeds, enhance winter game range forage conditions, and to aid in the establishment of desirable forage species following disturbances.

The current drought has forced major changes on the grazing program for this area. Numbers of livestock and timing of grazing use have been altered to insure range forage plants meet their physiological needs in light of greatly reduced availability of moisture and nutrients. The primary focus of the grazing program during the drought is careful monitoring of use by grazing animals, both domestic and wild, to guard against overuse of vegetation. Figures 6 and 7 display the recent trends in authorized livestock numbers and authorized animal unit months (AUMs).

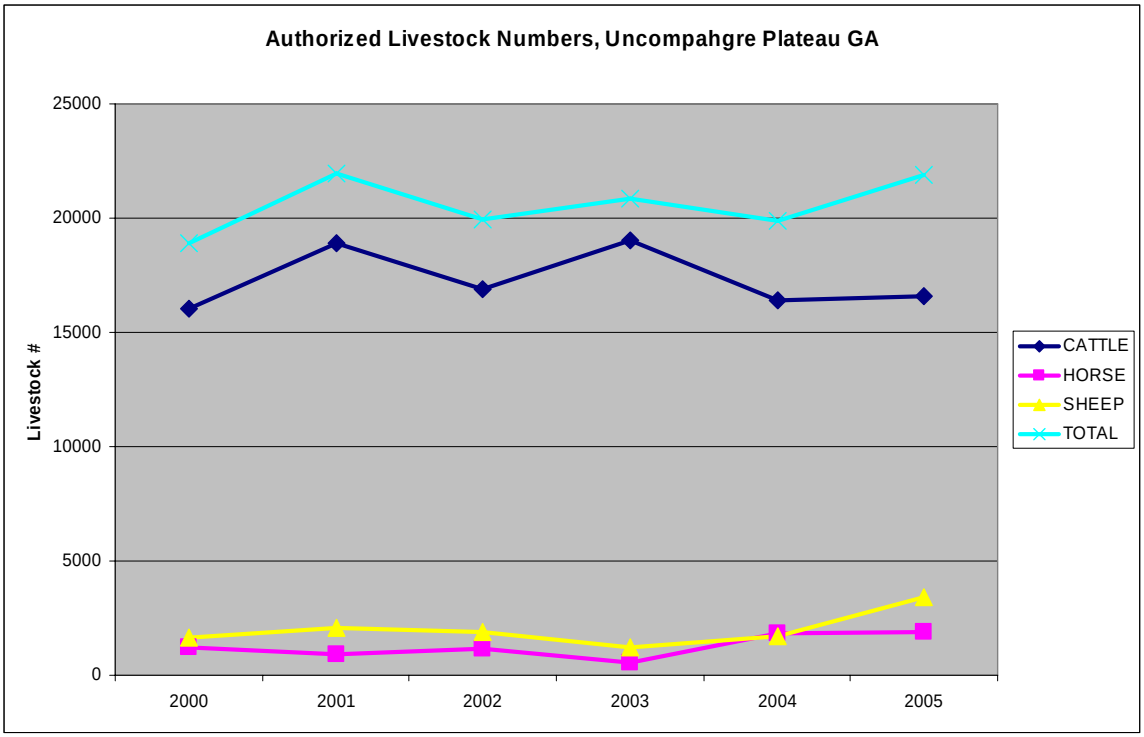

Figure 6. Authorized Livestock Number (2000-2005), Uncompahgre Plateau GA

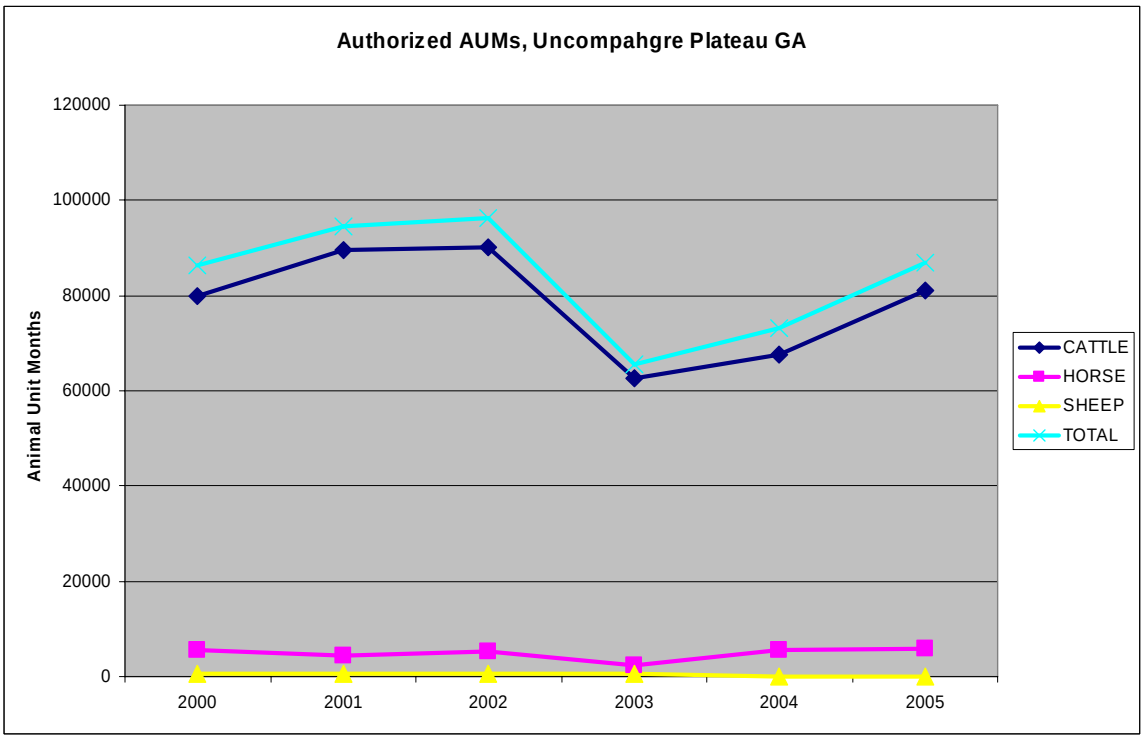

Figure 7. Authorized Animal Unit Months (2000-2005) Uncompahgre Plateau GA

Relationship between Federal Livestock Grazing and Local Communities

There is a relationship between permitted livestock grazing on federal lands (NFS and BLM) and private land holdings in the Uncompahgre Plateau Geographic Area. Permittees on both the NFS and BLM are required to own base property (land owned and used by the permittee for a farm or ranch operation, must include the basic facilities necessary to conduct a ranching operation and the capability to produce a part of the annual forage crop needed to support the permitted livestock over a yearlong period (FSH 2209.13, 12.21)). Most livestock permittees own land in addition to what they declare as base property; land which they also manage as part of their ranching operations.

In addition to providing forage for livestock, much of this private land also provides habitat for wildlife, especially big game species. The relatively undeveloped nature of the majority of this private land also provides open space to the surrounding communities.

Ferriday conducted a study to determine how much private land is associated with permitted livestock grazing on the Uncompahgre Plateau Geographic Area (2002) and the GMUG (2004). (NOTE: County parcel data was used for these studies. Incomplete data was available for Ouray county.) These studies found that of the 41 permittees on the Uncompahgre Plateau GA, 24 of them also have grazing permits on public land (administered by the BLM). These 41 permittees also own approximately 137,000 acres of private land in the five county region (Mesa, Delta, Montrose, San Miguel and Ouray counties), in 276 different parcels. The majority of this private land is located near or adjacent to public land on Glade Park, surrounding Nucla and Naturita, and west of Montrose. Figure 8 displays the private land owned by grazing permittees on the Uncompahgre Plateau. Table 5 displays the number of parcels and acres owned by permittees on the Uncompahgre Plateau, and the county in which the private land occurs.

Table 5. Number of Parcels and Acres of Private Land owned by NFS Permittees on the Uncompahgre Plateau GA.

	Delta	**Mesa**	**Montrose**	**Ouray***	**San Miguel**
# Parcels	19	41	189	7	20
Acres	2,375	4,186	54,915	478	75,089

*Note: Incomplete parcel data was available for Ouray County when the study was completed.

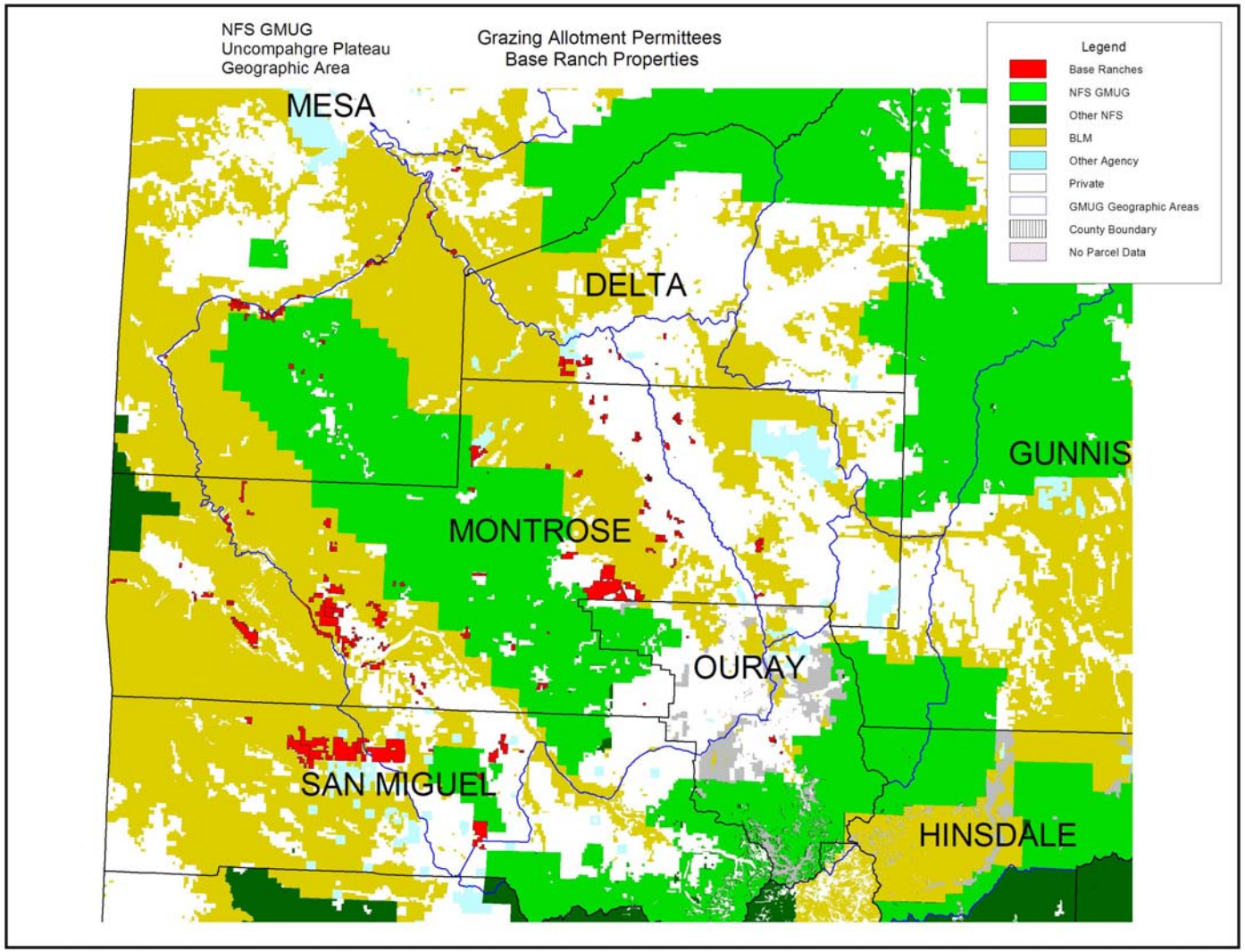

Figure 8. Private Lands owned by Grazing Permittees on the Uncompahgre Plateau GA

Table 6 displays the private land owned by Uncompahgre Plateau GA permittees as a percent of the private land in the various counties, and a comparison of the private land owned by all GMUG NF permittees as a percent of the private land within each county, and the private land owned by all federal permittees (GMUG NF and BLM). Livestock permittees on Uncompahgre Plateau GA own property in five different counties, and contribute a large amount of the open space related to federal grazing permits in both Montrose and San Miguel counties.

Table 6. Percent of Private Land within each county owned by Uncompahgre Plateau GA Permittees, private lands owned by GMUG NF Permittees, and private lands owned by all federal (GMUG NF and BLM) Permittees..

	Delta	**Gunnison**	**Mesa**	**Montrose**	**Ouray***	**San Miguel**
% of Private owned by UP GA Permittees	0.7		1.0	13.1	0.4	12.8
% of Private owned by GMUG NF Permittees	13.8	16.3	11.4	19.4	12.4	18.5
% of Private owned by all Federal Permittees	20.7	27.1	32.3	22.0	20.0	19.0

*Note: Incomplete parcel data was available for Ouray County when the study was completed.

Implications

Past changes in livestock management have resulted in improvements in rangeland condition and trend. Livestock management will continue to be the primary tool used to continue to maintain or achieve desired changes in condition and trend. However; due to the intensity of past livestock grazing, some areas of suitable rangeland no longer have the potential to achieve good conditions with stable or upward trend. Loss of top soil and native seed sources will not allow historic rangeland conditions to be restored. Some areas never had the potential to achieve good conditions with stable or upward trend (e.g., pinyon-juniper sites with very drought conditions).

Past fire suppression efforts have allowed shrubby and woody species to increase over time, reducing available forage in areas where dense overstories occur. Management activities that increase the diversity of seral or structural stages in rangeland vegetation types can result in increases in available forage in areas that are opened up or reset to earlier seral conditions.

Areas preferred by livestock tend to coincide with areas that have higher susceptibility to invasive plant species (deeper soils, better soil moisture conditions, more solar radiation reaching the ground). Livestock management needs to be implemented so that suitable habitat for invasive plant species is not created. Where feasible, livestock management can be used as a tool to reduce existing infestations of invasive plant species.

Future livestock management activities should be coordinated with wildlife habitat management. Competition between wild and domestic ungulates has been occurring in localized areas. This should be reduced where it is currently occurring and preventing the achievement of desired vegetation conditions (e.g., exceeding moderate amounts of utilization, preventing aspen regeneration following harvest). The Forest Service and

Colorado Division of Wildlife should cooperate in identifying and maintaining wild ungulate populations within objective levels that when combined with permitted livestock use result in desired forage utilization.

Livestock grazing strategies also need to be designed to reduce or eliminate potential influences on other wildlife species such as Gunnison sage-grouse, or other ground nesting birds. Sufficient residual vegetation needs to be left or allowed to regrow following livestock grazing to provide necessary cover for many bird species. To prevent nest trampling, timing of grazing may need to be adjusted to avoid periods when birds are on the nest. Management guidance provided in the Gunnison sage-grouse Rangewide Conservation Plan (2005) should be incorporated into livestock management.

Needs for Change

The current Forest Plan contains direction related to range utilization and livestock management that are no longer current with range management science and practice. Plan standards and guidelines set percent utilization limits based on the type of grazing system used. There are no standards related to improving rangeland health. Current livestock management is focused on adjusting the length of time, season of grazing use, intensity of use, and duration to allow forage plants to grow prior to use or to regrow after use. In some case high intensity, short duration grazing is used, which exceed existing plan standards, but achieves improved range conditions. The revised forest plan needs to include standards that relate to elements of rangeland health, such as maintaining riparian areas, wetlands, and stream channels in proper functioning condition, desired plant community composition, and wildlife habitat conditions.

The current Forest Plan contains very limited direction related to livestock management or range improvements, both structural and non-structural. The revised Forest Plan needs to contain guidelines to integrate livestock management and range improvements with other resource objectives.

Recent NEPA analysis and planning for range management has been based on adaptive management, which relies on monitoring to determine if desired objectives are being achieved. If monitoring results indicate that things are not working, adjustments in management can be made, and the adjustments are monitored. The revised forest plan needs to address adaptive management concepts.

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