CHAPTER 3. LANDSCAPE DISTURBANCES

Road and Trail Distribution – Forest-wide

This section evaluates the pattern of road and trail distribution on the Grand Mesa, Uncompahgre and Gunnison National Forests (GMUG) and the associated influences of this transportation network on vegetation and habitat. Both direct and indirect effects of roads and trails are discussed.

Existing Roads and Trails

Travel management planning efforts have been ongoing on the GMUG over the past fifteen years. As a result, inventories of existing roads and trails are relatively complete. Different levels of travel management decisions have been made for the different forests. For both the Uncompahgre (Uncompahgre Plateau and San Juans Geographic Areas) and Grand Mesa (Grand Mesa Geographic Area) National Forests, route by route determinations were made identifying which roads and trails will be maintained as part of the transportation system, what types of use will be allowed on those routes, and which routes will be eliminated, or decommissioned. Route by route decisions have not yet been made for the Gunnison National Forest (North Fork Valley and Gunnison Basin Geographic Areas).

All existing roads and trails known to occur on the GMUG were considered in this evaluation. For roads, this includes both classified or system roads (National Forest System Roads, county roads, state highways, federal highways, privately owned roads, Forest Service authorized roads) and unclassified roads (roads not currently identified as part of any of the above referenced systems). Roads are further categorized by maintenance level which relates to the type of road surface and type of vehicle: Level 1 – closed more than one year or administrative use only, level 2 – rough, high clearance vehicles, level 3 – native to gravel surface, passenger vehicles, level 4 – smooth gravel surface, passenger vehicles, level 5 – dust-free-possibly paved, passenger vehicles. The majority of roads on the GMUG are Level 2 roads.

Trails are also divided between classified or system and unclassified trails. Trails are further classified as being either motorized or non-motorized, based on the type of uses that are allowed on a trail. Trails use can be described as a hierarchy, starting at the top with all-terrain vehicles (ATVs), then motorcycles, mountain bikes, pack animals, with hikers being the lowest level in the hierarchy. A trail open to either ATVs or motorcycles is a motorized trail. A trail open to mountain bikes, pack animals or hikers is a non-motorized trail. A trail open to ATVs is also usually open to all other uses below ATVs in the hierarchy. A trail open to pack animals is also open to hikers, but no uses above it in the hierarchy. Both motorized and non-motorized trails have been classified as system trails. Unclassified trails have not been designated for specific types of use. Approximately ¾ of the existing trails are currently system trails; approximately ½ of the existing trails are managed as non-motorized trails, most of which exist in Wilderness areas.

On the Uncompahgre and Grand Mesa National Forests, unclassified roads and trails will be or have recently been decommissioned. On the Gunnison National Forest, unclassified roads and trails have yet to be evaluated to determine which ones will be included in the road system and which will be decommissioned. Currently all unclassified roads and trail on the Gunnison National Forest remain open to public travel.

To evaluate the direct influence roads and trails have on vegetation, the existing transportation inventory was compared to the existing vegetation cover. The following map (Figure 1) displays the road and trail transportation network. The following tables list the miles of roads (Table 1) and trails (Table 2) that occur in the different cover types on the GMUG.

Figure 1. Map of Existing Roads and Trails, Grand Mesa, Uncompahgre and Gunnison National Forests

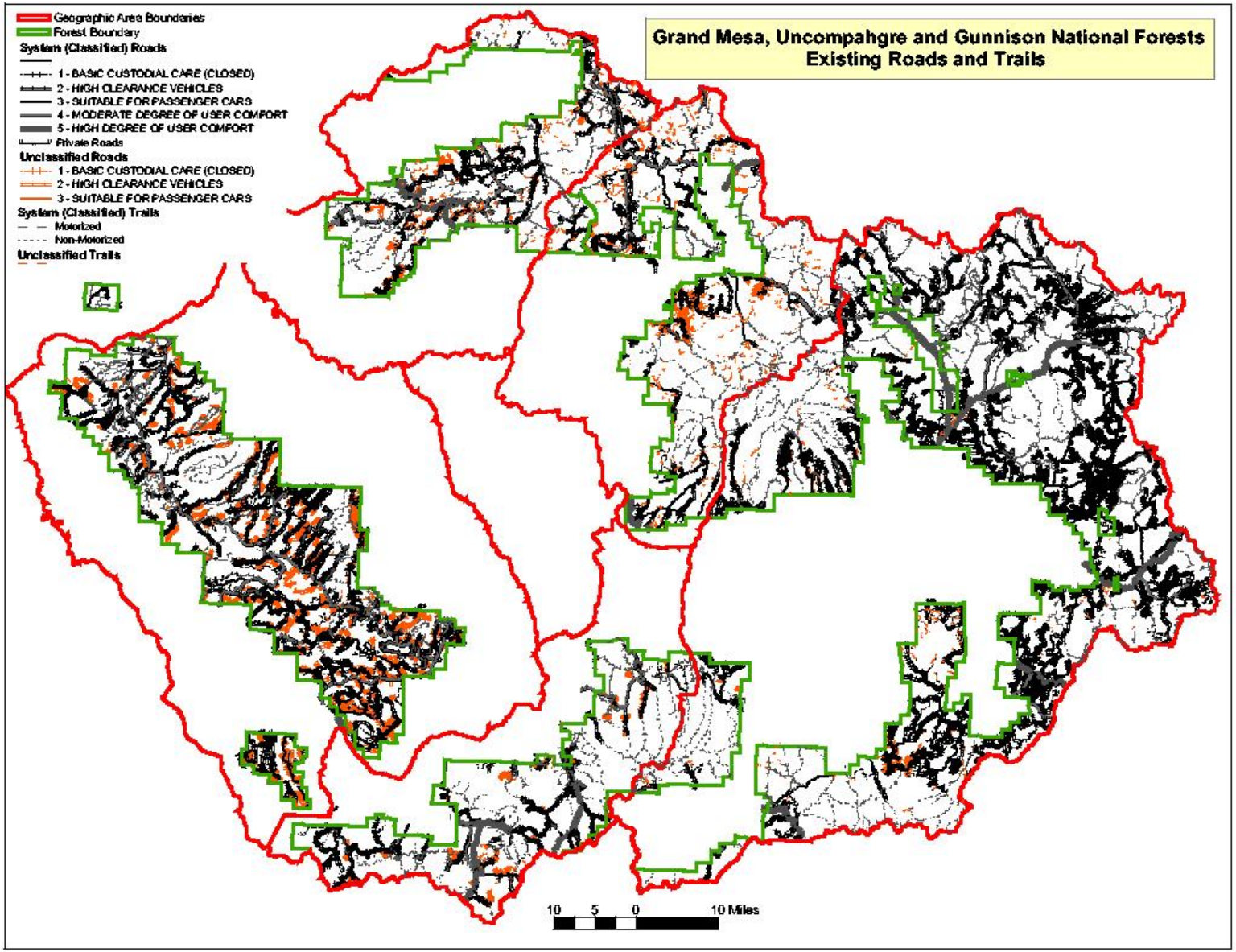

Table 1. Miles of Existing Roads within Different Cover Types, Grand Mesa, Uncompahgre and Gunnison National Forests

Cover Type	System Roads		Unclassified Roads		Total Road	
	Miles	**%**	**Miles**	**%**	**Miles**	**%**
Grass/Forb	998	22	77	11	1,075	21
Sagebrush	355	8	44	6	399	8
Gambel Oak	380	8	122	17	502	10
Mixed Mountain Shrub	82	2	12	2	94	2
Snowberry	55	1	6	1	61	1
Willow	214	5	1	0	215	4
Cottonwood	12	0	0	0	12	0
Aspen	819	18	147	21	966	19
Pinyon/Juniper	99	2	51	7	150	3
Ponderosa Pine	237	5	103	15	339	7
Lodgepole Pine	396	9	11	2	408	8
Limber Pine	2	0		0	2	0
Douglas-fir	34	1	2	0	36	1
Blue Spruce	3	0		0	3	0
Spruce/Fir	713	16	115	16	828	16
Bristlecone Pine	9	0		0	9	0
Bare/Rock	84	2	8	1	93	2
Water	4	0	1	0	5	0
Total	4,497		700		5,197	

More miles of roads occur in grass/forb (21 percent) than in any other cover type on the GMUG, followed by aspen (19 percent), then spruce/fir (16 percent) cover types. For system roads, the breakdown is similar to that for total roads. For unclassified roads, most are found in aspen (21 percent), then Gambel oak (17 percent), spruce/fir (16 percent) and ponderosa pine (17 percent).

Table 2. Miles of Existing Trails within Different Cover Types, Grand Mesa, Uncompahgre and Gunnison National Forests

	System Trails				Unclassified Trails		Total Trail	
Cover Type	**Motorized**	**Non-Motorized**	**Miles**	**%**	**Miles**	**%**	**Miles**	**%**
Grass/Forb	164	313	477	21	113	16	590	20
Sagebrush	15	9	24	1	12	2	36	1
Gambel Oak	73	100	173	8	97	13	270	9
Mixed Mountain Shrub	11	34	45	2	36	5	81	3
Snowberry	16	3	20	1	8	1	28	1
Willow	42	66	107	5	21	3	129	4
Cottonwood	0	3	3	0	1	0	4	0
Aspen	204	339	543	24	264	36	807	27
Pinyon/Juniper	5	44	49	2	8	1	57	2
Ponderosa Pine	16	20	36	2	5	1	41	1
Lodgepole Pine	97	23	120	5	9	1	129	4
Limber Pine	0	0	0	0	0	0	0	0
Douglas-fir	2	29	31	1	4	1	35	1
Blue Spruce	0	0	0	0	0	0	0	0
Spruce/Fir	158	392	550	24	137	19	687	23
Bristlecone Pine	0	1	1	0	0	0	1	0
Bare/Rock	7	62	70	3	11	1	80	3
Water	0	1	2	0	1	0	3	0
Total	812	1,439	2,251		727		2,978	

More miles of trails occur in aspen (27 percent) than in any other cover type, followed by spruce/fir (23 percent), then grass/forb (20 percent) cover types. For system trails, equal amounts occur in aspen (24 percent) and spruce/fir (24 percent) cover types, followed by grass/forb (21 percent). For unclassified trails, most are found in aspen (36 percent), then spruce/fir (19 percent).

Approximately 76 percent of the existing trails have been designated as system trails. Non-motorized trails make up approximately 48 percent of the total trail miles, while motorized (both system and unclassified) trails are approximately 52 percent. The majority of the non-motorized trails occur in designated Wilderness areas or areas managed for their wilderness character (Tabeguache and Roubideau areas).

Table 3 displays a comparison of the percentages of total road miles and total trail miles by cover type, to the percentages that each cover type occurs on the GMUG.

Table 3. Comparison of Distribution of Roads and Trails to Distribution of Cover Types, Grand Mesa, Uncompahgre and Gunnison National Forests

Cover Type	% of Roads within Cover Type	% of Trails within Cover Type	Cover Type % of GMUG
Grass/Forb	21	20	14
Sagebrush	8	1	3
Gambel Oak	10	9	9
Mixed Mountain Shrub	2	3	2
Snowberry	1	1	1
Willow	4	4	3
Cottonwood	0	0	0
Aspen	19	27	22
Pinyon/Juniper	3	2	4
Ponderosa Pine	7	1	3
Lodgepole Pine	8	4	8
Limber Pine	0	0	0
Douglas-fir	1	1	1
Blue Spruce	0	0	0
Spruce/Fir	16	23	22
Bristlecone Pine	0	0	0
Bare/Rock	2	3	7
Water	0	0	0

There are proportionately more roads in grass/forb, sagebrush, and ponderosa pine than would be expected if roads were equally distributed across all cover types. In contrast, there are proportionately less roads in aspen, spruce/fir and bare/rock cover types. Lower elevations and lower elevation cover types have more roads. A large percent of the higher elevations are included in designated Wilderness areas, where roads do not occur.

For trails, there are proportionately more trails in grass/forb and aspen cover types. Most of the grass/forb areas are alpine meadows within Wilderness areas. There are proportionately less trails in lodgepole pine and bare/rock cover types. Trail distribution across the remaining cover types are relatively equal with the distribution of cover types.

See the individual Geographic Area discussions for a further breakdown of miles of roads by maintenance level. See the Aquatic, Riparian and Wetland Assessment roads and trails discussions for evaluations of road densities by watershed.

Areas Influenced by Existing Roads and Trails

Direct and indirect effects from transportation networks and the use of those networks have been shown to influence areas up to ½ mile away from a given road or trail. To evaluate the amount of area potentially affected by existing roads and trails on the GMUG, the existing transportation network was buffered by ½ mile on either side. Figure 2 shows the extent of area within ½ mile of an existing road, Figure 3 shows the extent of area within ½ mile of an existing trail, and Figure 4 shows the combined area of the GMUG that is within ½ mile of either an existing road or trail.

Table 3 lists the acres by cover type that are within ½ mile of an existing road or trail on the GMUG. This table also shows the percentage of the total buffer area that is

comprised by each given cover type, the percentage of the total cover type that occurs within ½ mile of an existing route, as well as the acres and percentage of the total cover type that is not within ½ mile of an existing route.

Eighty percent of the GMUG is within ½ mile of an existing road or trail. Aspen, spruce/fir and grass/forb cover types make up the bulk of the acres within the buffer around existing transportation routes (24, 23, and 14 percent, respectively). However, the majority of all cover types on the GMUG lie within ½ mile of an existing road or trail, ranging from a low of 53 percent for bare/rock to a high of 94 percent of water, ponderosa pine and sagebrush cover types.

Spruce/fir, aspen, grass/forb and bare/rock cover types make up the bulk of the acreage that is outside the ½ mile buffer around existing roads and trails (27, 17 and 16 percent, respectively). Converse to the above situation, the minority of all cover types on the GMUG are outside the area of influence from roads and trails, ranging from a low of 6 percent of the water, ponderosa pine and sagebrush cover types, to a high of 47 percent of the bare/rock cover type. Most of the bare/rock cover type is above timberline, in Wilderness areas.

Figure 2. Area Within ½ Mile Of An Existing Road, Grand Mesa, Uncompahgre and Gunnison National Forests

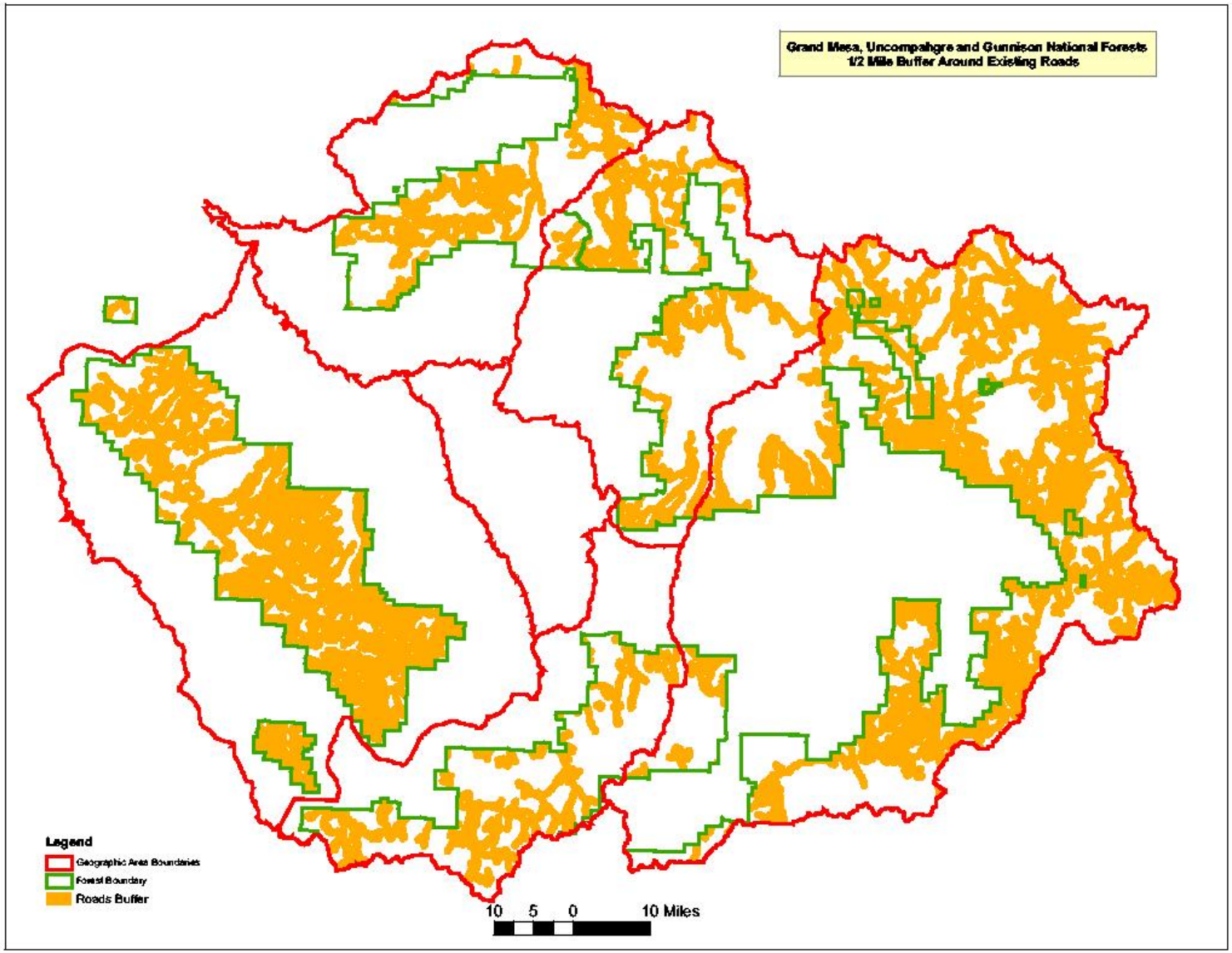

Figure 3. Area Within ½ Mile Of An Existing Trail, Grand Mesa, Uncompahgre and Gunnison National Forests

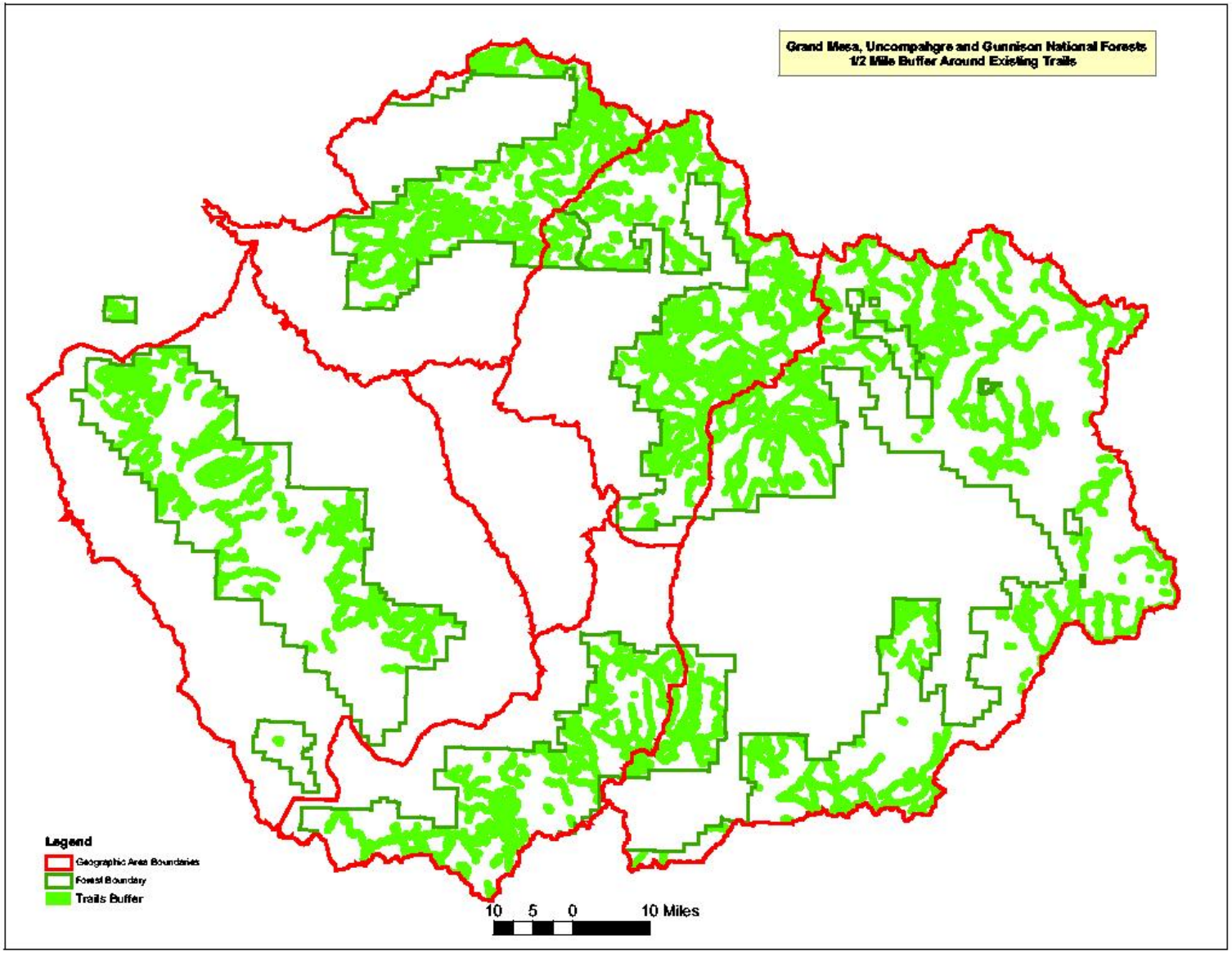

Figure 4. Area Within ½ Mile Of An Existing Road or Trail, Grand Mesa, Uncompahgre and Gunnison National Forests

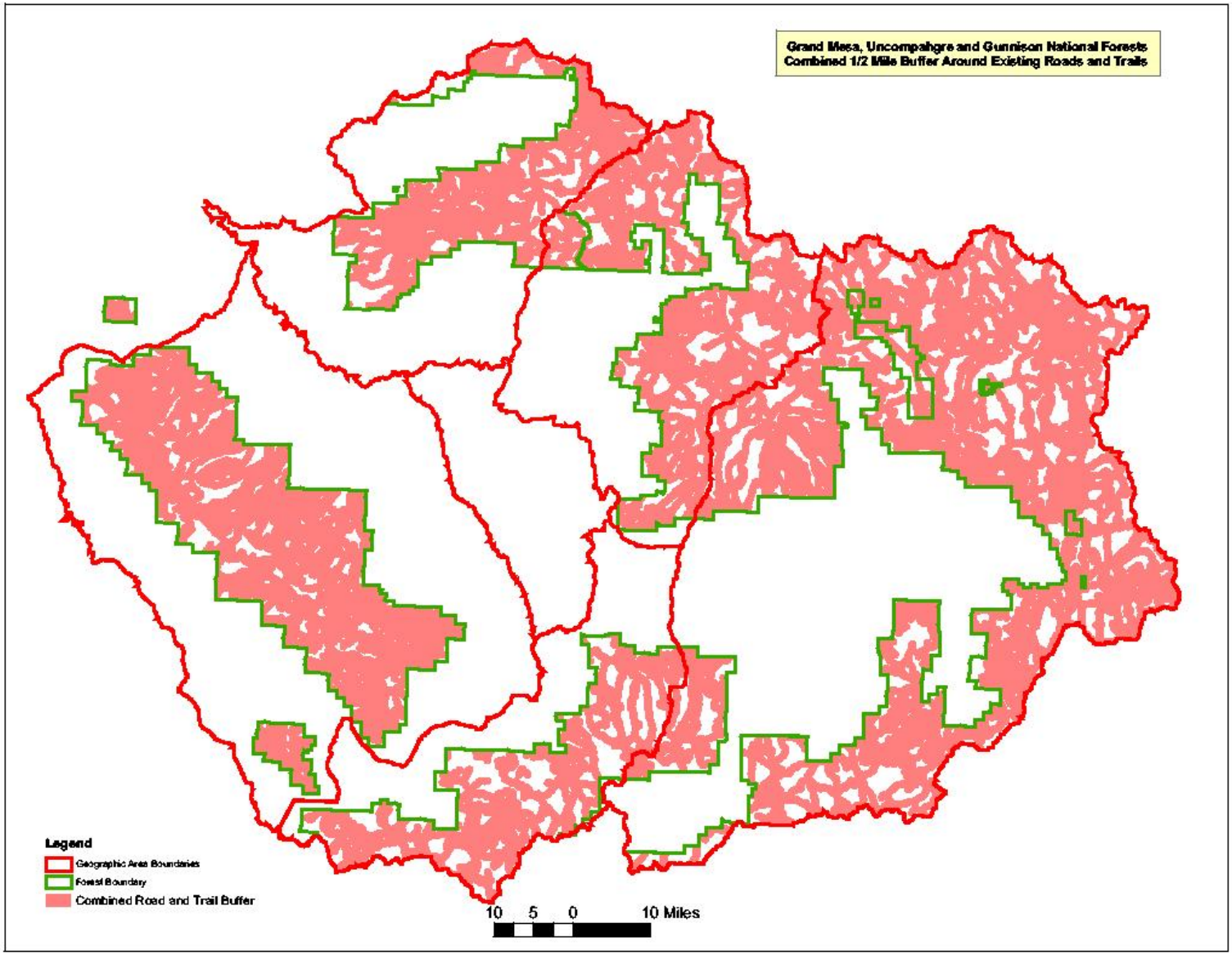

Table 3. Relative Amounts Of Acres In Cover Type, Inside And Outside Of ½ Mile Buffer Around Existing Routes, Grand Mesa, Uncompahgre And Gunnison National Forests.

Cover Type	Total Acres (on GMUG)	Acres in Buffer	% of Buffer	% of Total Cover Type in Buffer	Acres Outside 1/2 mile Buffer	% of Area Outside of Buffer	% of Total Cover Type Outside Buffer
Grass/Forb	439,349	353,070	14	80	86,279	14	20
Sagebrush	91,839	86,497	3	94	5,342	1	6
Gambel Oak	251,572	219,207	9	87	32,365	5	13
Mixed Mountain Shrub	56,759	45,729	2	81	11,030	2	19
Snowberry	18,668	17,026	1	91	1,642	0	9
Willow	84,891	68,973	3	81	15,917	2	19
Cottonwood	3,534	2,994	0	85	540	0	15
Aspen	715,433	609,163	24	85	106,270	17	15
Pinyon/Juniper	108,219	78,822	3	73	29,397	5	27
Ponderosa Pine	111,054	104,379	4	94	6,675	1	6
Lodgepole Pine	280,115	219,038	9	78	61,077	10	22
Limber Pine	585	487	0	83	98	0	17
Douglas-fir	43,607	32,331	1	74	11,275	2	26
Blue Spruce	2,552	2,341	0	92	211	0	8
Spruce/Fir	742,280	576,906	23	78	165,373	26	22
Bristlecone Pine	7,636	6,896	0	90	740	0	10
Bare/Rock	218,486	114,736	5	53	103,750	16	47
Water	10,241	9,664	0	94	578	0	6
Grand Total	3,186,820	2,548,260		80	638,560		20

Key Findings

- Miles of existing (known) road network on the GMUG National Forest

System	Unclassified	Total
4,497	700	5,197

- Roads mostly occur in grass/forb (21 percent), aspen (19 percent), and spruce/fir (16 percent) cover types. .

- Miles of existing (known) trail network on the GMUG National Forest

SystemTrails			Unclassified Trails	Total Trail Miles
Motorized	Non-motorized	System Subtotal		
812	1,439	2,251	727	2,978

- Trails mostly occur in aspen (27 percent), spruce/fir (23 percent), and grass/forb (20 percent) cover types.

- Eighty percent of the GMUG is within ½ mile of an existing road or trail.

- Seventy percent or more of most cover types on the GMUG occur within the ½ mile buffer.

Trends

- Because the existing road network is so extensive, the potential for future road development is low. Any new road construction that does occur will be associated with either oil and gas development or timber management, and these new roads will only be open to administrative traffic and/or temporary in nature.

Management Implications

- Travel management decisions (route-by-route) need to be completed for the Gunnison National Forest (North Fork Valley and Gunnison Basin Geographic Areas). Continued implementation of the Uncompahgre National Forest and Grand Mesa National Forests Travel Plans will reduce the density of open roads and trails; however the area of influence will only be slightly reduced. Reducing route density will reduce the amount of disturbance that can occur on these transportations routes, especially during hunting season, and as a result enhance habitat effectiveness.

- Because route-by-route decisions have been made which considered both resource management needs and recreation opportunities, opportunities for new roads and/or trails may be restricted by route density limitations.