Rapid Assessment of Cattle Impacts in Riparian Exclosures & Critical Habitat on the Gila National Forest

Trampled streamside vegetation and bank shearing are a result of cattle congregating inside a riparian excluded area within the Luna Allotment on the San Francisco River

Prepared by the Center for Biological Diversity

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CENTER for BIOLOGICAL DIVERSITY

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BACKGROUND

Federal public lands in the Southwest harbor incredible biological diversity, including many threatened or endangered species dependent on healthy riparian habitat. Preservation of these species and protection of these federal lands is of significant public interest. Since our founding, the Center for Biological Diversity has led efforts to reform overgrazing on public lands, particularly as it relates to the health of critical habitat. One of our significant court challenges was a 1997 suit which argued that the U.S. Forest Service had failed to consider the effects of grazing on seven imperiled species including the Southwestern willow flycatcher (SWWF), the Mexican spotted owl, the spikedace, and the loach minnow. In 1998, a settlement agreement emerged from this legal challenge, *Southwest Center for Biological Diversity v. U.S. Forest Service* (D. Ariz. CV-97-TUC-JMR), resulting in an order to remove cattle from hundreds of stream miles on twenty-three allotments in the Gila National Forest (GNF). Consistent with the National Environmental Policy Act (NEPA) and the Endangered Species Act (ESA) these grazing exclosures should remain in place unless additional analysis deems them unnecessary.

The settlement commitments made by the Forest Service resulted in the placement of extensive exclosure fencing and agreements with permittees to remove cattle from these areas. Early assessment showed the rapid recovery of streamside herbaceous vegetation, cottonwood saplings in flood channels, willow recruitment along the river's edge and improved bank stability and integrity. This resulted in an on-going process of restoration on many miles of critical riparian habitat. Within the past several years, however, there has been a substantial increase in trespass cattle in areas within grazing exclosure areas. Increasing anecdotal evidence pointed to heavy grazing impacts along certain reaches of both the Gila and San Francisco Rivers. Concerns about the slow rate of vegetative and geomorphic recovery in other areas raised the issue of whether cattle are truly absent from critical riparian habitats excluded from grazing.

In 2015, the Gila National Forest responded to a request for information on allotments with

yellow billed cuckoo habitat[1], stating that the "*1998 consultations resulted in the removal of livestock from hundreds of miles of riparian habitat*" and that its "*rich consultation history provides evidence*" that species are not being jeopardized by FS projects. It further stated that the agency "*has moved into a new era of restoring systems*" and in reference to the yellow billed cuckoo (YBC), stated that the species will be protected by the existing protections for other listed riparian species (spikedace, loach minnow, SWWF etc.), and that proposed YBC critical habitat "*is excluded from livestock grazing*." In addition, current Annual Operating Instructions and Forest Service NEPA documentation continue to promulgate these claims. For example, recent GNF public scoping documents[2] stated that that in the Black Bob Allotment "*The San Francisco River is excluded except at designated water access points,"* and that in the Lower Plaza Allotment *"The Tularosa River is excluded from livestock grazing on National Forest System Lands."*

Unfortunately, discrepancies between these statements and the conditions on the ground continued to accumulate. Recent Forest Service Biological Assessments of allotments and our on-the ground observations simply don't line up. In addition, strong evidence of significant damage caused by feral cattle in the Gila Wilderness continues to mount. These multiple lines of anecdotal evidence convinced the Center that an immediate, comprehensive assessment of riparian areas which are allegedly excluded from grazing was warranted.

Subsequently, in 2017, twenty-seven allotments in the GNF were surveyed for current cattle grazing impacts to vegetation, streambanks, and soil stability. In March, 2018, a report was made available to the GNF that showed that of the approximately 106 miles surveyed, 11.8 miles of riparian habitat were absent of any cattle impact, 17.2 miles exhibited light impacts, 12.4 miles had moderate levels of impact and over 64 miles were deemed to have significant negative impacts from cattle. In October of 2018, a set of Cattle Impact Spot Checks were

[1] October 15, 2014 letter (file code 2670) from Gila Resource Staff Officer to Gila Forest Supervisor.
[2] December, 2017 Proposed Action and Notice of Intent to prepare an Environmental Assessment for the Black Bob and Lower Plaza Allotments: Reserve Ranger District, Gila National Forest, Catron County, New Mexico. Available online at: https://www.fs.usda.gov/nfs/11558/www/nepa/108212_FSPLT3_4111444.pdf

conducted on nine of the most severely impacted allotments to determine if any action had been taken by the Forest Service. All of the allotments still showed ecological impacts from cattle and eight had moderate or significant impacts. Five of the allotments recorded recent cattle use and three of the allotments had cattle grazing inside exclosures.

In the Spring of 2019, this current survey was initiated to determine if cattle had been removed from inside exclosures and if negative impacts to riparian habitat from these cattle were decreasing, remaining the same, or increasing. Livestock grazing is one of the most prevalent causes of species being federally listed in this region and there are documented negative impacts on the eight (8) threatened and endangered species which are specifically dependent on aquatic and riparian habitat and occur in the Gila National Forest. Therefore, the 2019 survey was expanded to include allotments with critical or proposed critical habitat for these eight species (Table 1) for a total of thirty allotments.

Table 1. SPECIES WITH FINAL CRITICAL HABITAT (FCH) OR PROPOSED CRITICAL HABITAT (PCH) IN THE GILA NATIONAL FOREST	
Chiricahua leopard frog (CLF)	FCH
Gila chub (GC)	FCH
loach minnow (LM)	FCH
narrow-headed garter snake (NHG)	PCH
Northern Mexican garter snake (NMG)	PCH
Southwest willow flycatcher (SWWF)	FCH
spikedace (SD)	FCH
yellow billed cuckoo (YBC)	PCH

Objectives of the survey included documentation of the extent, frequency and intensity of impacts attributed to cattle across hydroriparian, mesoriparian, and xeroriparian habitats and a quantitative assessment of those impacts in six specific categories. Data were augmented with georeferenced photographs and overall impact levels were calculated for each allotment and drainage. This report contains a summary of results for all thirty allotments surveyed as well as individual descriptions and overall impact maps for each allotment. Allotment descriptions contain georeferenced-hyperlinked photos for specific cattle impacts observed. All the data is

stored in a GIS database containing hundreds of additional photographs. A thorough explanation of the survey methods is included at the end of the report.

RESULTS SUMMARY

Across the Gila National Forest there are still widespread examples of fences down and in disrepair between private property and Forest Service land. This presents virtually unlimited access for cattle to cross into excluded areas. Many fences between authorized upland grazing areas and excluded riparian areas are in disrepair or all together absent. Throughout the majority of the riparian areas supposedly excluded from grazing there is intense pressure on native grasses resulting in their replacement with non-palatable invasive plants. De-vegetated and denuded soils are widespread across the landscape and there are sheared streambanks along many miles of the Gila River, San Francisco River and both their tributaries. Browse pressure by cattle is causing the full suppression of woody regeneration along miles of waterways and preventing the restoration of critical habitat. Results from this 2019 rapid assessment survey found negative cattle impacts in all GNF districts and all of the allotments included in this report surveyed. Of the thirty allotments, 83% contained significant impacts*.

Of the 134 miles of riparian habitat surveyed, only 8.6 miles were absent of any impact. Light impacts accounted for 38.6 surveyed miles, moderate impact accounted for 23.9 miles, and there were significant impacts on 63.1 miles, or 47% of the total surveyed (Figures 1. & 2. and Tables 2. & 3.). Trespass cows with tags or brands were recorded and photographed in 15 (≈50%) of the allotments. Feral cows were photographed in at least 2 allotments.

**See methods section for specific grazing impact category descriptions and weighting table used to calculate overall impact rating of absent, light, moderate and significant.*

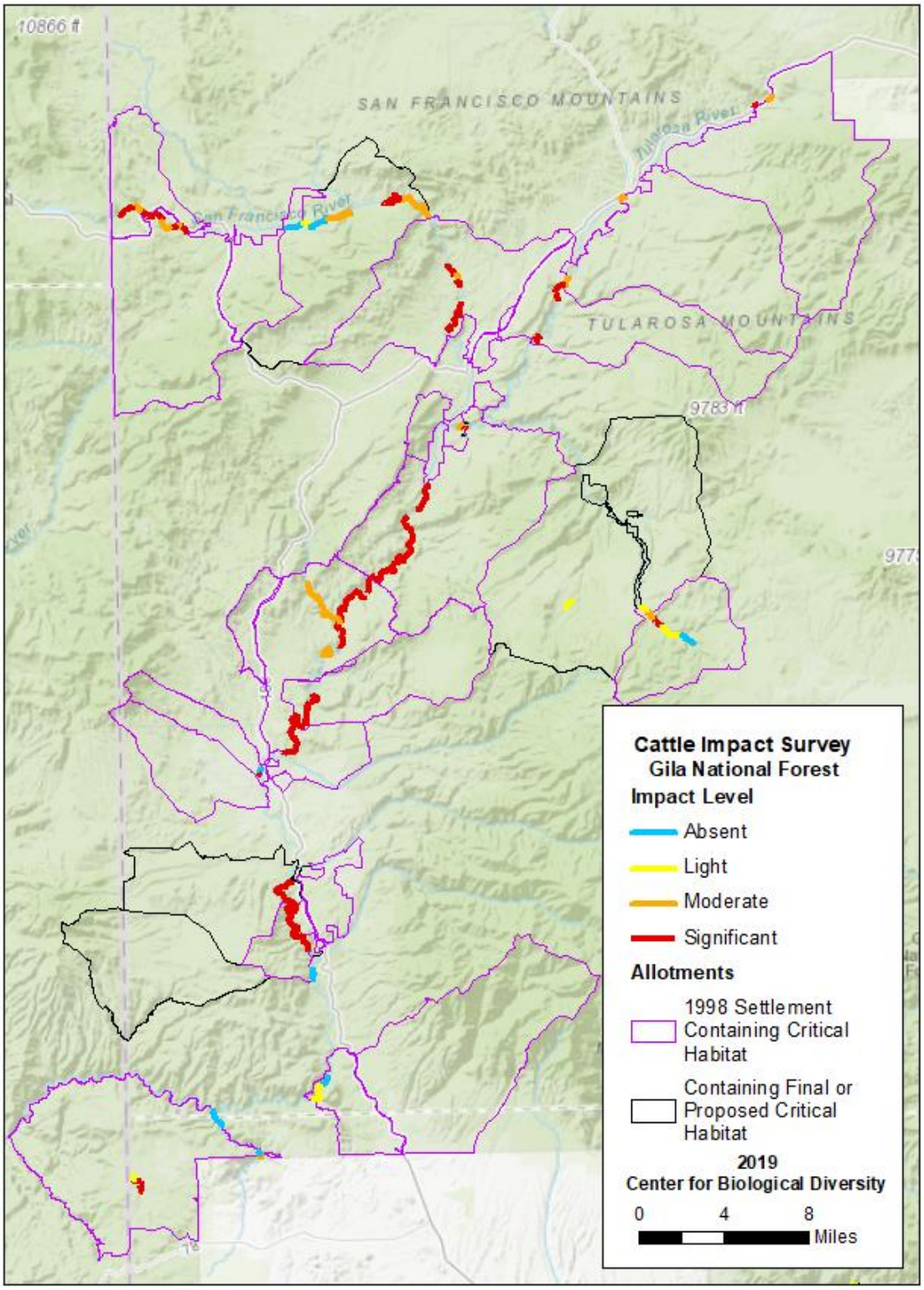


FIGURE 1. CATTLE IMPACTS WITHIN RIPARIAN AREAS WITH CRITICAL AND PROPOSED CRITICAL HABITAT FOR EIGHT THREATENED OR ENDANGERED SPECIES IN GILA NATIONAL FOREST ALLOTMENTS WITHIN THE SAN FRANCISCO WATERSHED

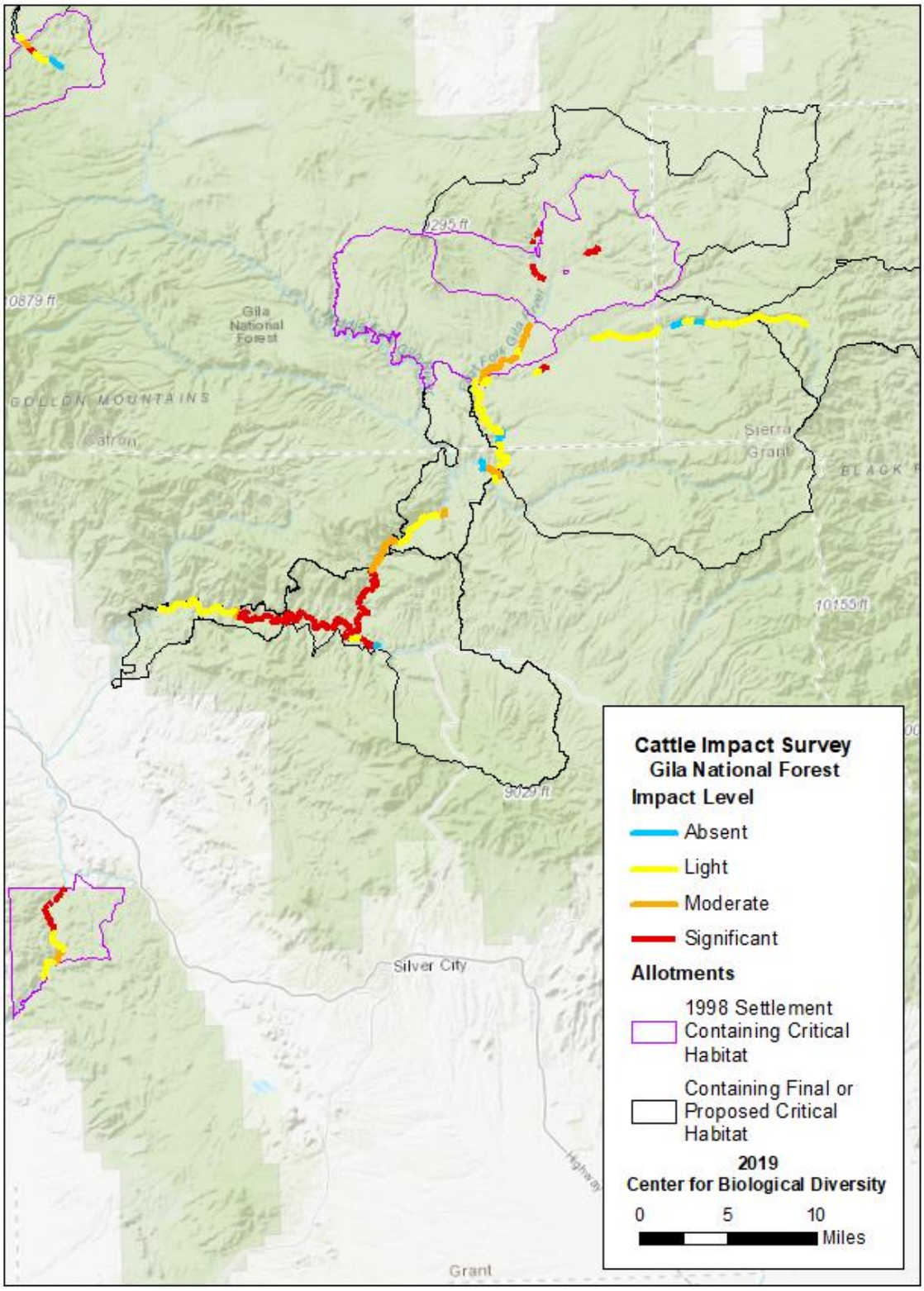


FIGURE 2. CATTLE IMPACTS WITHIN RIPARIAN AREAS WITH CRITICAL AND PROPOSED CRITICAL HABITAT FOR EIGHT THREATENED OR ENDANGERED SPECIES IN GILA NATIONAL FOREST ALLOTMENTS WITHIN THE GILA RIVER WATERSHED

TABLE 2. SURVEY MILES OF CATTLE IMPACT BY ALLOTMENT IN THE GILA NATIONAL FOREST-2019

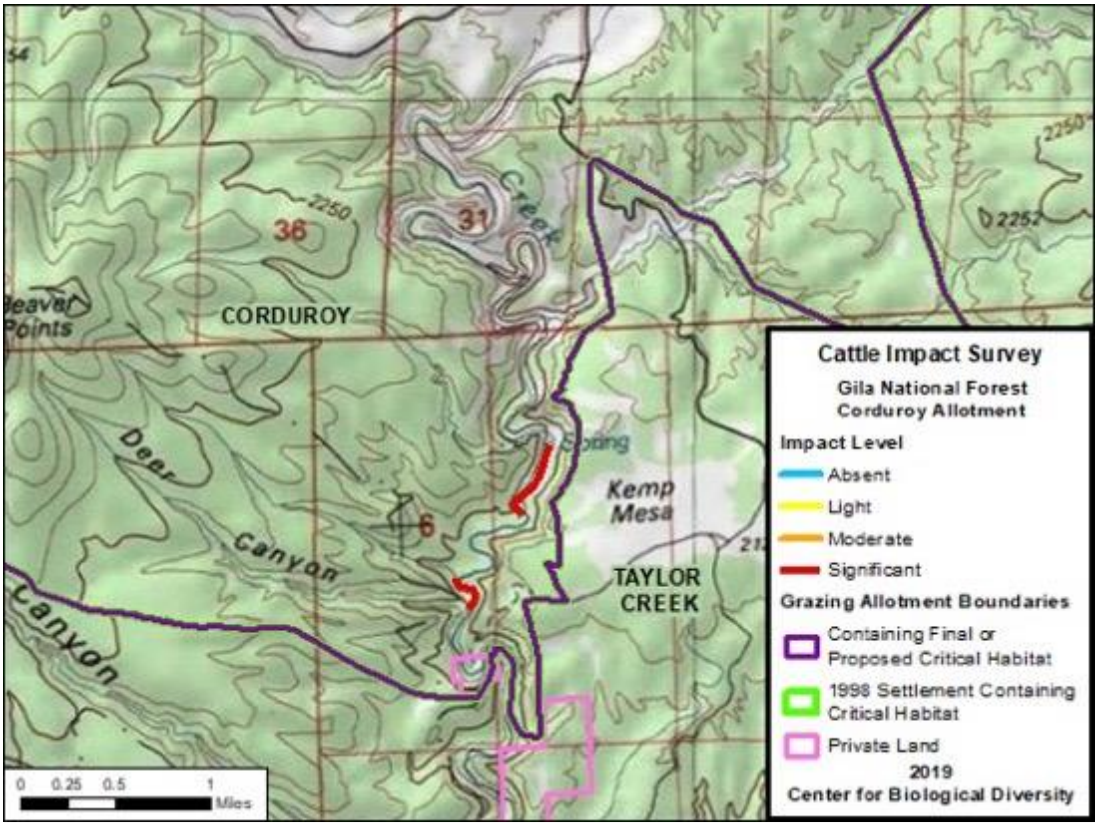
District	Allotment	Drainage	Absent	Light	Moderate	Significant	Total
Black Range	Corduroy	Beaver Creek				**.7**	.7
	South Fork	Diamond Creek		3.4			3.4
Glenwood	Alma	San Francisco River				**1.8**	1.8
	Citizen & Roberts Park	San Francisco River				**2.0**	2.0
	Devil's Park	San Francisco River				**3.0**	3.0
	Dry Creek	San Francisco River	.6	1.1			1.7
	Harden Cienega	Mule Creek & Harden Cienega Creek	1.1	.2	.3	**1.1**	2.7
	Harve Gulch & Bighorn	San Francisco River	0.6			**4.3**	4.9
	Kelly	San Francisco River & Saliz Canyon			4.1	**5.7**	9.9
Quemado	Laney	San Francisco River	2.0	.4	3.4	**1.6**	7.4
	Luna	San Francisco River			1.6	**2.8**	4.4
Reserve	Alexander	Tularosa River			.7		.7
	Black Bob	Cienega Canyon & San Francisco River			.2	**3.4**	3.6
	Corner Mountain	Negrito Creek	.8	1.5	.5	**.7**	3.5
	Deep Canyon	Tularosa River				**1.7**	1.7
	Frisco Plaza	San Francisco River & Tularosa River				**7.5**	7.5
	Govina & West Sand Flat	Tularosa River			.3	**.4**	0.7
	Lower Plaza	Tularosa River			.3	**0.1**	0.4
	Negrito-Yeguas	Negrito Creek & Shotgun Canyon		.9		**1.2**	2.1
	White Rocks	San Francisco River	.2			**.1**	.3
Silver City	Brock Canyon	Gila River		5.7	0.8	**5.1**	11.6
	Gila River	Gila River		2.9	.9	**2.9**	6.7
	Redstone	Gila River & Sapillo Creek	0.2	.7		**13.9**	14.8
Wilderness	Diamond Bar	Diamond Creek & East Fork Gila	2.4	17.4		**.6**	20.4
	Jordan Mesa	East Fork Gila River		.8	5.4		6.2
	Taylor Creek	Taylor Creek & Beaver Creek				**2.4**	2.4
	XSX	Gila River	.7	3.6	2.7		7.0
	Not in Allotment	Gila River			2.7		2.7
Total Miles of Impact			**8.6**	**38.6**	**23.9**	**63.1**	**134.2**

TABLE 3. OVERALL SURVEY MILES OF CATTLE IMPACTS ON THE GILA NATIONAL FOREST BY DISTRICT-2019					
District	**Miles/Absent**	**Miles/Light**	**Miles/Moderate**	**Miles/ Significant**	**Total/Surveyed**
Black Range	0.0	3.4	0.0	.7	4.1
Glenwood	2.3	1.3	4.4	17.9	25.9
Quemado	2.0	.4	5.0	4.5	11.9
Reserve	1.0	2.4	2.0	15.1	20.5
Silver City	.2	9.3	1.7	21.9	33.1
Wilderness	3.1	21.8	10.8	3.0	38.7
Total	**8.6**	**38.6**	**23.9**	**63.1**	**134.2**

ALLOTMENT SURVEY DESCRIPTIONS

District: **Black Range** **Allotment:** **Corduroy**
Type: **R-3** **Critical/Proposed Critical Habitat: CLF**
Drainage: **Beaver Creek** **Surveyed:** **7/9/2019**

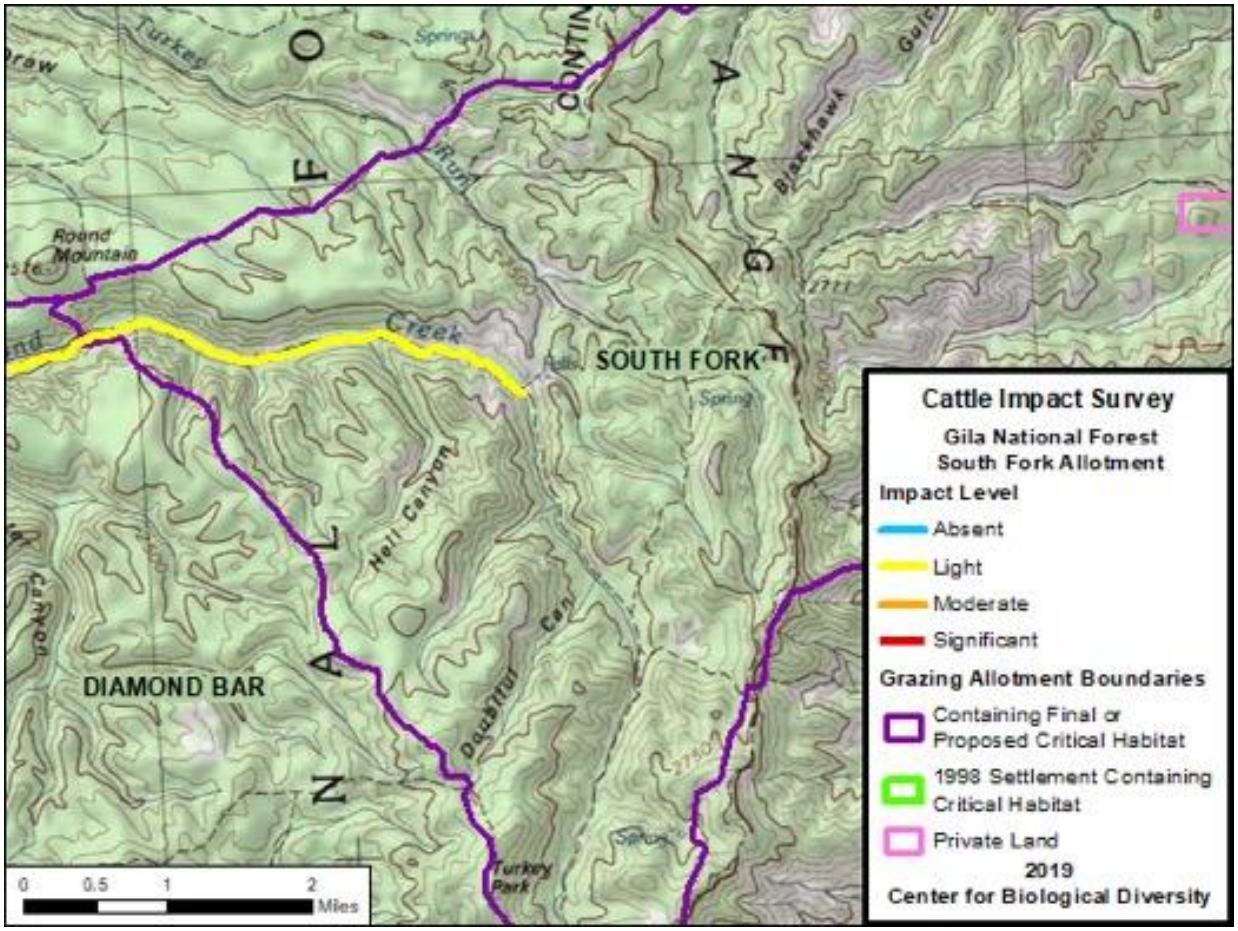
Much of the habitat in the upstream area surveyed was extremely degraded due to cattle grazing. Woody vegetation was cleared, mowed, and trampled (photo) and the numerous ponds suitable for frogs were sheared and rendered nearly unusable. The southern portion was less degraded within the waterway but was still heavily grazed along the banks. Despite the numerous fences it appears that cows and elk move freely through the area on a regular basis. All frogs seen and heard appeared to be bull frogs (*Lithobates catesbeianus*).



Absent	*Light*	*Moderate*	*Significant*	*Total*
			.7miles	*.7miles*

District: **Black Range** **Allotment:** **South Fork**
Type: **R-3** **Critical/Proposed Critical Habitat: NHG**
Drainage: **Diamond Creek** **Surveyed:** **8/4/19**

Diamond Creek is a perennial but low volume, intermittent stream, interspersed with wet meadows. Vegetation in the upper reaches is characterized by mixed conifer forest and willow thickets. Within the allotment there were several examples of wet meadow trampling, streambank degradation and cattle grazing (photo). The fence line at the Diamond Bar/South Fork allotment boundary (photo) needs repair as does the Turkey Run trailhead fence. Near the trailhead, one reddish bull cow was spotted with no ear tags (photo).

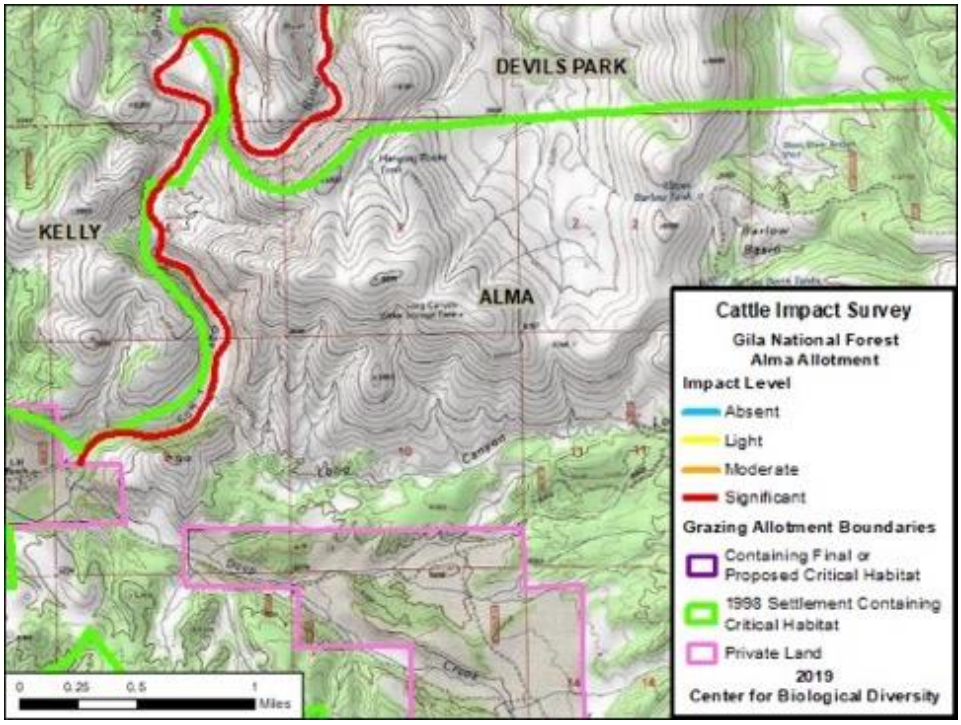


Absent	*Light*	*Moderate*	*Significant*	*Total*
	3.4miles			*3.4miles*

District: **Glenwood** **Allotment:** **Alma**
Type: **1998 Settlement** **Final/Proposed Critical Habitat: YBC, SWWF, LM, SP, NHG**
Drainage: **San Francisco River** **Surveyed:** **6/14/19**

Grazing pressure in this allotment is severe and pervasive. Stream banks are consistently sheared and denuded of woody vegetation (photo). Trampling, rutting, and grazing have led to denuded landscapes (photo) along the riparian edge with severely impacted soils. Cattle presences appears constant with trails and river crossings radiating throughout the allotment. At least 10 cows were seen - many of these cows had ear tags and brands (photo). Toward the downstream end of the survey there was an angry bull that charged the surveyor before continuing down river (photo).

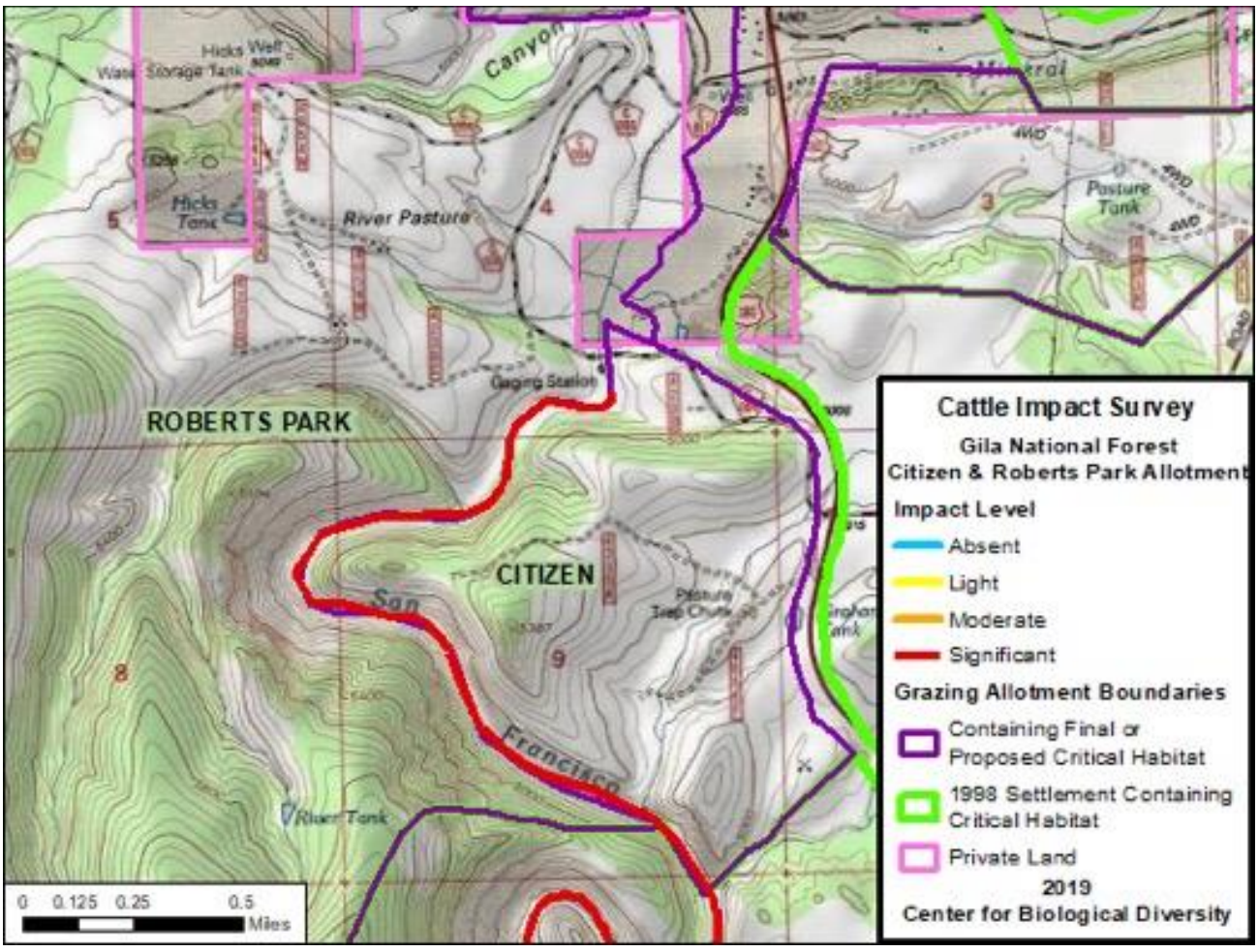
There has been no improvement in the condition of this allotment since 2017. Impacts are persistent and pervasive, leading to ecologically compromised landscapes.



Absent	*Light*	*Moderate*	*Significant*	*Total*
			1.8miles	*1.8miles*

District: **Glenwood** **Allotment:** **Citizen & Roberts Park**
Type: **R-3** **Final/Proposed Critical Habitat: YBC, SWWF, LM, SD, NHG**
Drainage: **San Francisco River** **Surveyed:** **7/6/19**

Cattle within this allotment are using multiple river benches as semi-permanent bed-down areas and many of these areas are beaten down to bare soil (photo). A herd of 10 cattle, some with brands or ear tags, roamed this section of river bottom from the allotment boundary at the upstream end (the road/bridge) to the intersection with the allotments at the downstream end. This reach had sections with no water.



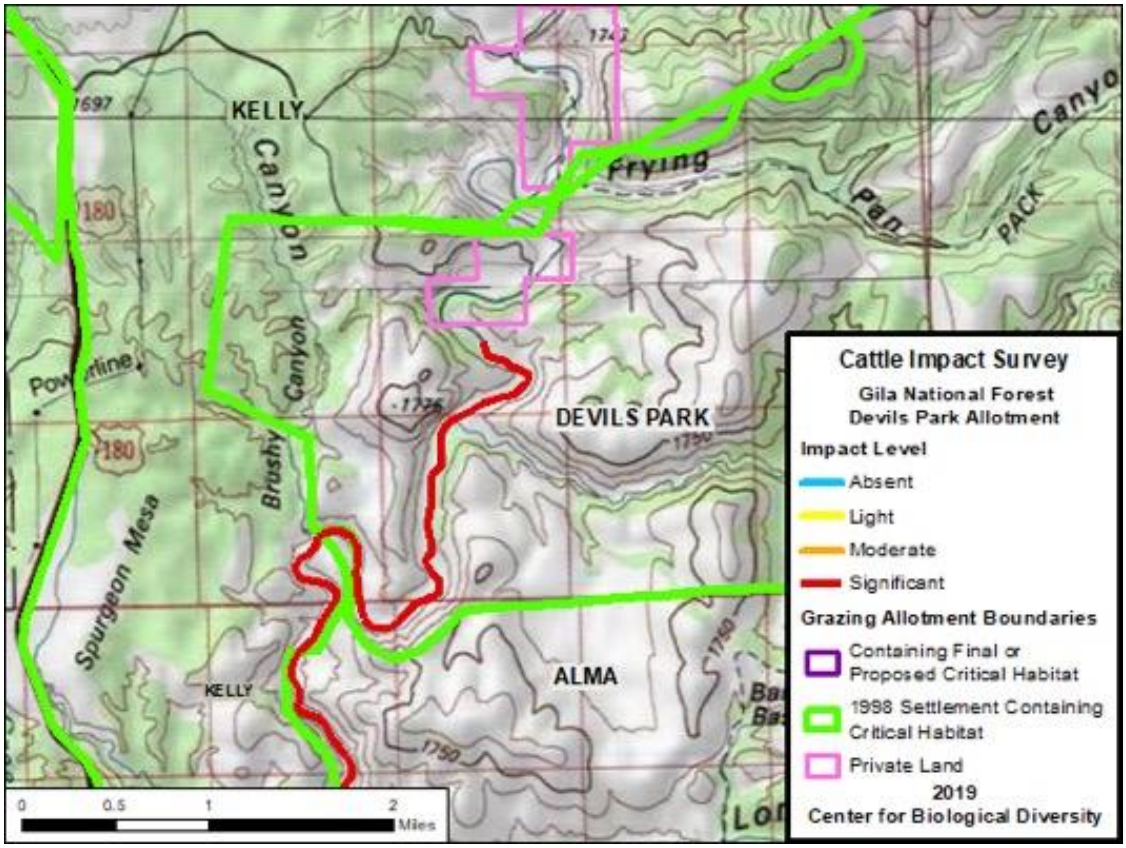
Absent	*Light*	*Moderate*	*Significant*	*Total*
			2.0miles	*2.0miles*

District: **Glenwood** **Allotment:** **Devils Park**
Type: **1998 Settlement** **Final/Proposed Critical Habitat: LM, SD, NHG**
Drainage: **San Francisco River** **Surveyed:** **6/14/19**

The river canyon in this surveyed section is narrow and severely impacted. Streamside vegetation is heavily grazed and woody vegetation is completely absent in many areas leaving a mat of Bermuda grass (*Cynodon dactylon*) (photo). A lack of vegetation on the river banks, in addition to heavy cattle traffic, has led to extreme shearing and large chunks of the river embankment are falling into the river (photo). Upland areas are heavily rutted and covered in cattle trails. Where the San Francisco intersects with Devil's Creek, fencing is in disrepair.

There has been no improvement in the condition of this allotment since 2017.

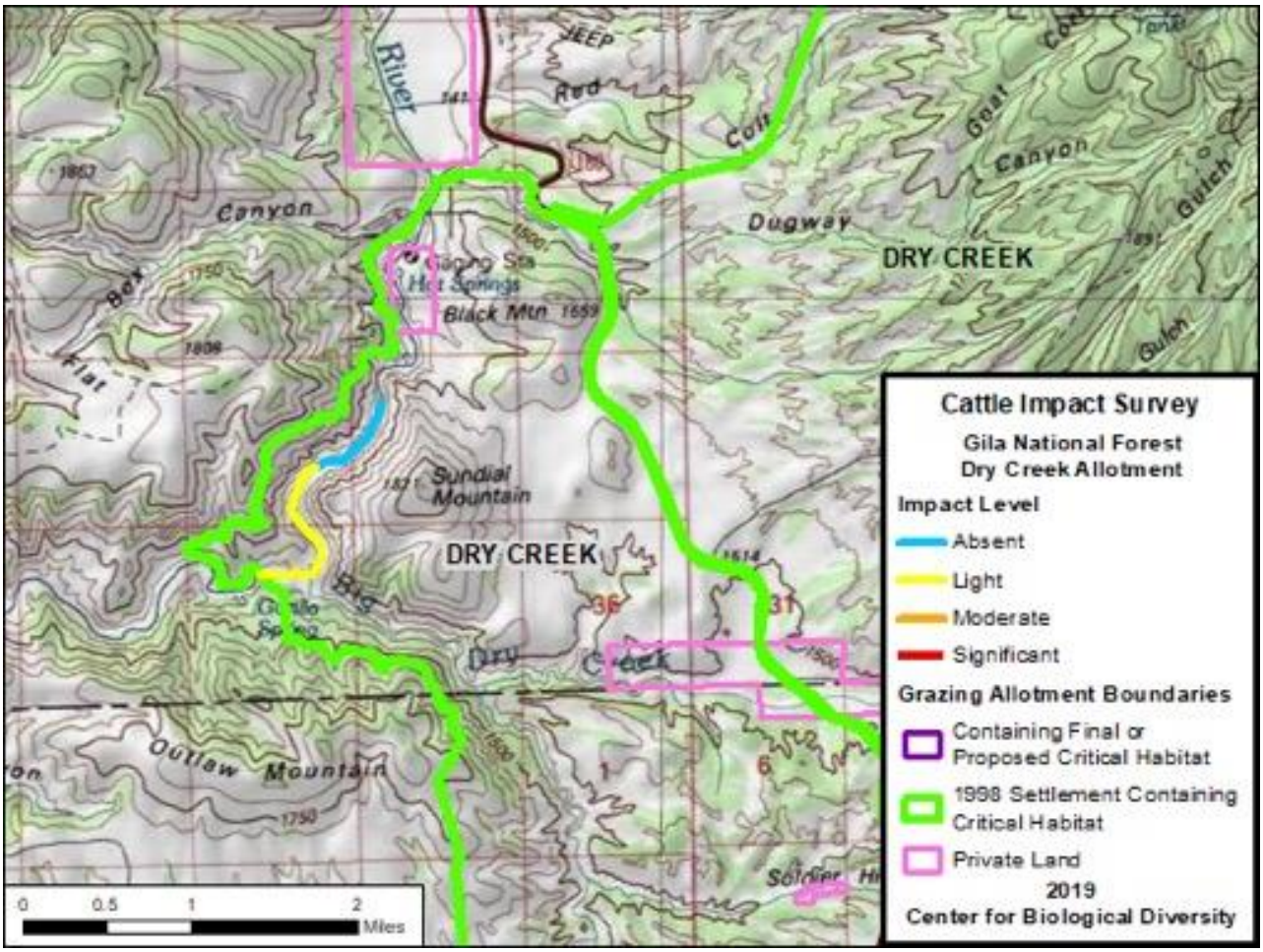
Impacts are persistent and pervasive, leading to ecologically compromised landscapes



Absent	*Light*	*Moderate*	*Significant*	*Total*
			3.0miles	*3.0miles*

District: **Glenwood** **Allotment:** **Dry Creek**
Type: **1998 Settlement** **Final/Proposed Critical Habitat: YBC, SWWF, LM, SD, NHG**
Drainage: **San Francisco River** **Surveyed:** **6/12/19**

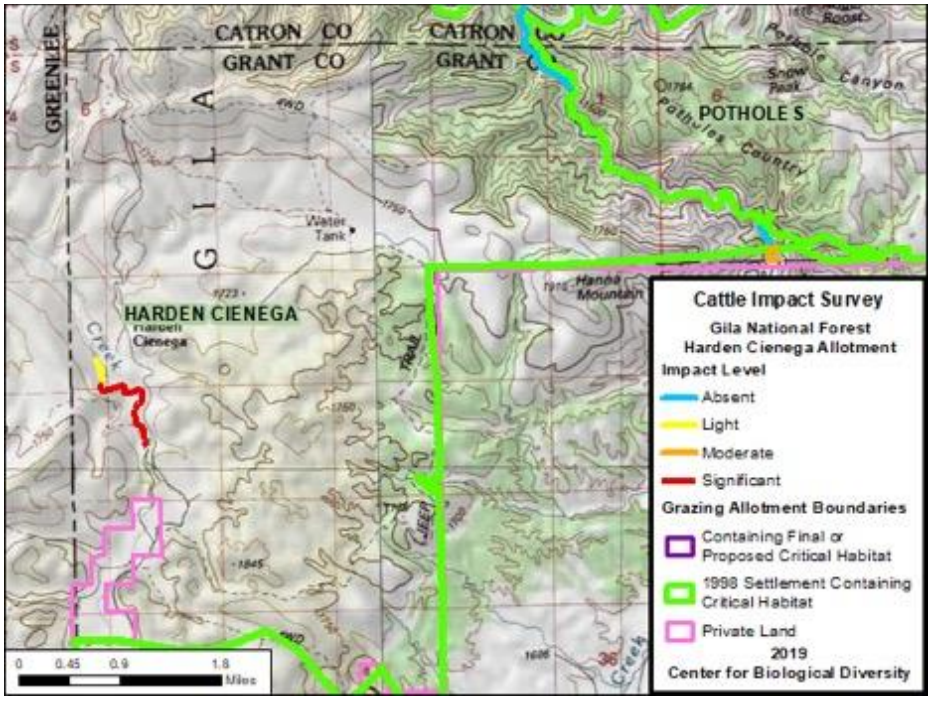
Cattle tracks were observed along the river on gravel bars. ATV trails are present throughout the allotment and cross the river several times within the reach. Cattle tracks followed the ATV trail and were also found amid willow shrubs on the adjacent, slightly-elevated berms. There was low level grazing on grasses from 10-20% herbivory across the impacted area. Upstream, impacts diminish and disappear.



Absent	*Light*	*Moderate*	*Significant*	*Total*
.6miles	*1.1miles*			*1.7miles*

District: **Glenwood** **Allotment:** **Harden Cienega**
Type: **R-3** **Final/Proposed Critical Habitat: GC, LM, SD, NHG, NMG**
Drainage: **Mule Creek** **Surveyed: 8/31, 9/20, 10/14-2019**
Harden Cienega Creek

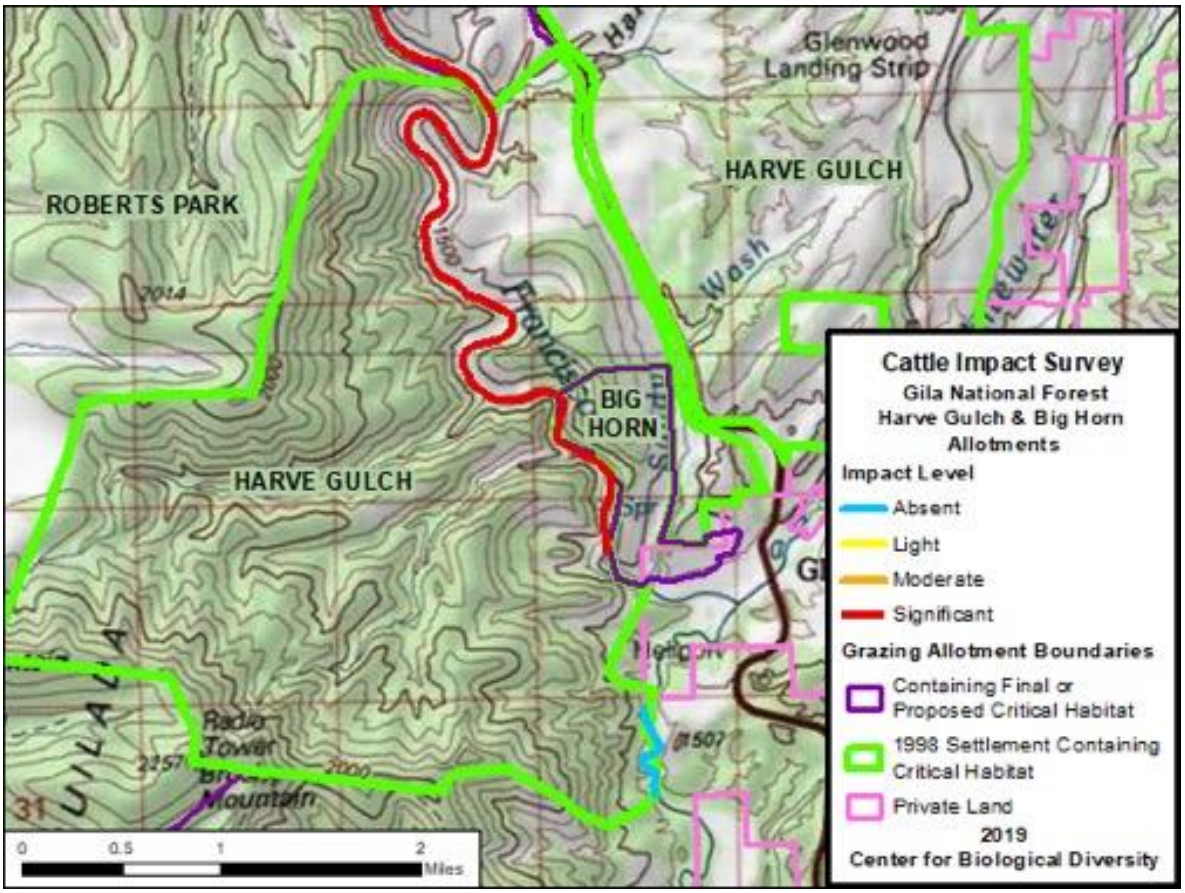
At the mouth of Mule Creek where it meets the San Francisco River, the riparian area is free of cattle impacts and signs of current cattle use. Vegetation is lush and undisturbed. At the upstream end of Mule Creek near its origins the creek flows out of private property. At the juncture where it meets Forest Service land there are some moderate impacts to the streambed where trespass cows are utilizing and grazing the first ½ mile of public land (photo). Portions of Harden Cienega Creek were also surveyed. Some small water "potholes" within the Cienega were highly impacted by the constant presence of cattle. Most available run-off is being diverted into watering ponds for cattle. Lower reaches of Harden Cienega Creek with Gila chub critical habitat were not surveyed due to private land blockages that do not appear on available maps.



Absent	*Light*	*Moderate*	*Significant*	*Total*
1.1miles	*.2miles*	*.3miles*	*1.1miles*	*2.7miles*

District: **Glenwood** **Allotment:** **Harve Gulch & Bighorn**
Type: **1998 Settlement** **Final/Proposed Critical Habitat: YBC, SWWF, LM, SD, NHG**
Drainage: **San Francisco River** **Surveyed:** **7/6/19**

Throughout the riparian exclosure, extensive browsing is suppressing woody regeneration (photo). Benches with semi-permanent bed down areas are beaten down to soil. Grazing and trampling are also contributing to de-vegetation and bare soils (photo). This reach had some sections with no water. A herd of 10 cattle, some with brands or ear tags (photo), were seen and appear to be residing along the river and in upland forests. Downstream, where the river passes through Glenwood, cattle signs disappear.



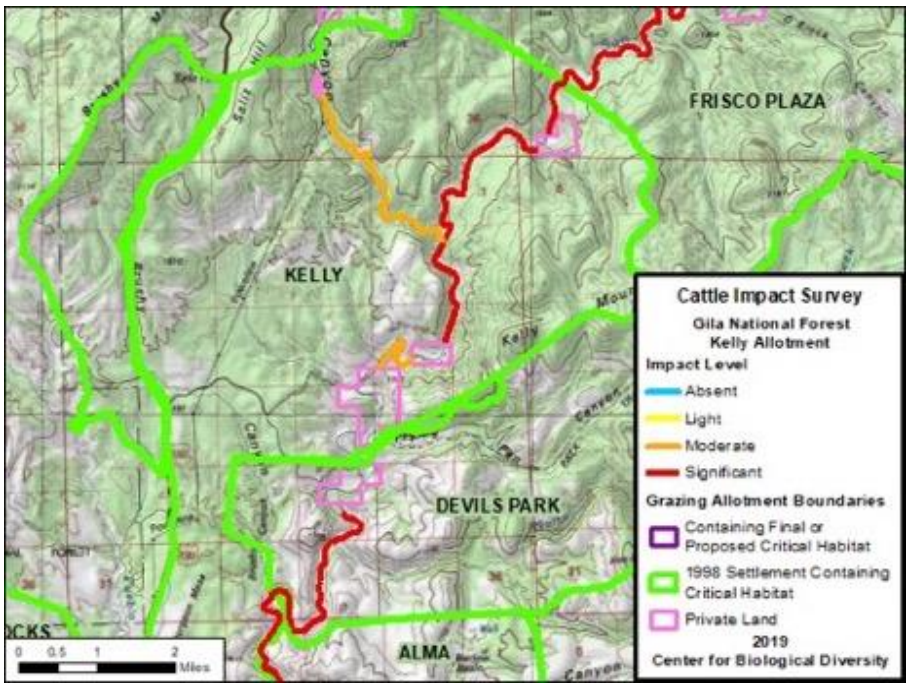
Absent	*Light*	*Moderate*	*Significant*	*Total*
.6miles			*4.3miles*	*4.9miles*

District: **Glenwood** **Allotment:** **Kelly**
Type: **1998 Settlement** **Final/Proposed Critical Habitat: LM, SD, NHG**
Drainage: **San Francisco River** **Surveyed:** **5/31 & 6/1-2019**

At the upstream end of the allotment down to the confluence with Saliz Creek the river has large cottonwoods and alders but little new woody regeneration. Grasses were sparse and when visible, grazed to <3 inches. On Saliz Creek, grazing is reduced, but still with moderate impacts to grass and browse. Downstream from Saliz, along the San Francisco, upland areas are completely devoid of re-growth with trampled, barren areas, and large wallows (photo). There is evidence that cows are roaming freely up and down the river as there are many sheared and chiseled river crossings (photo). On the southern end of the Kelly allotment where it meets with the Alma and Devils Park allotments, a large branded bull was sighted grazing along the river (photo).

There has been no improvement in the condition of this allotment since 2017.

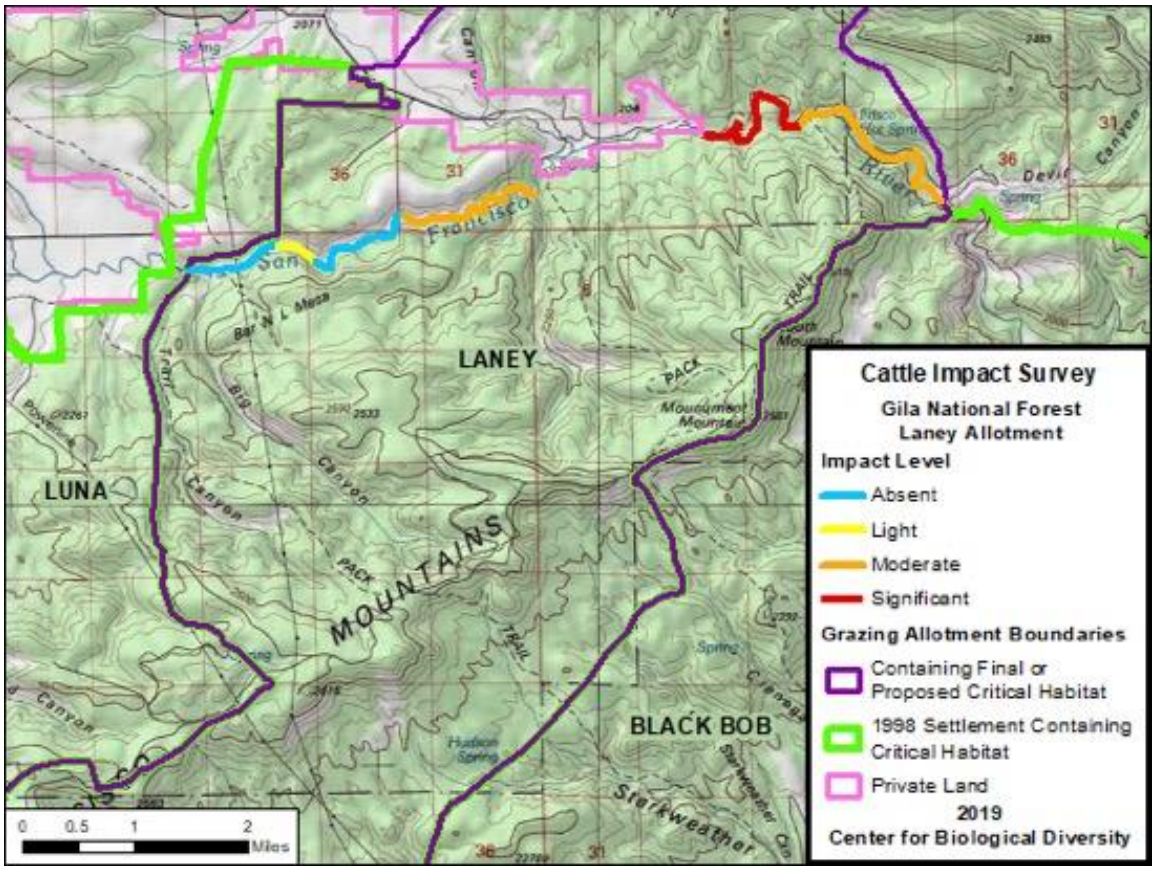
Impacts are persistent and pervasive, leading to ecologically compromised landscapes



Absent	*Light*	*Moderate*	*Significant*	*Total*
		4.1miles	*5.7miles*	*9.9miles*

District: **Glenwood** **Allotment:** **Laney**
Type **R-3** **Final or Proposed Critical Habitat: SWWF, NHG**
Drainage: **San Francisco River** **Surveyed:** **6/1/2019**

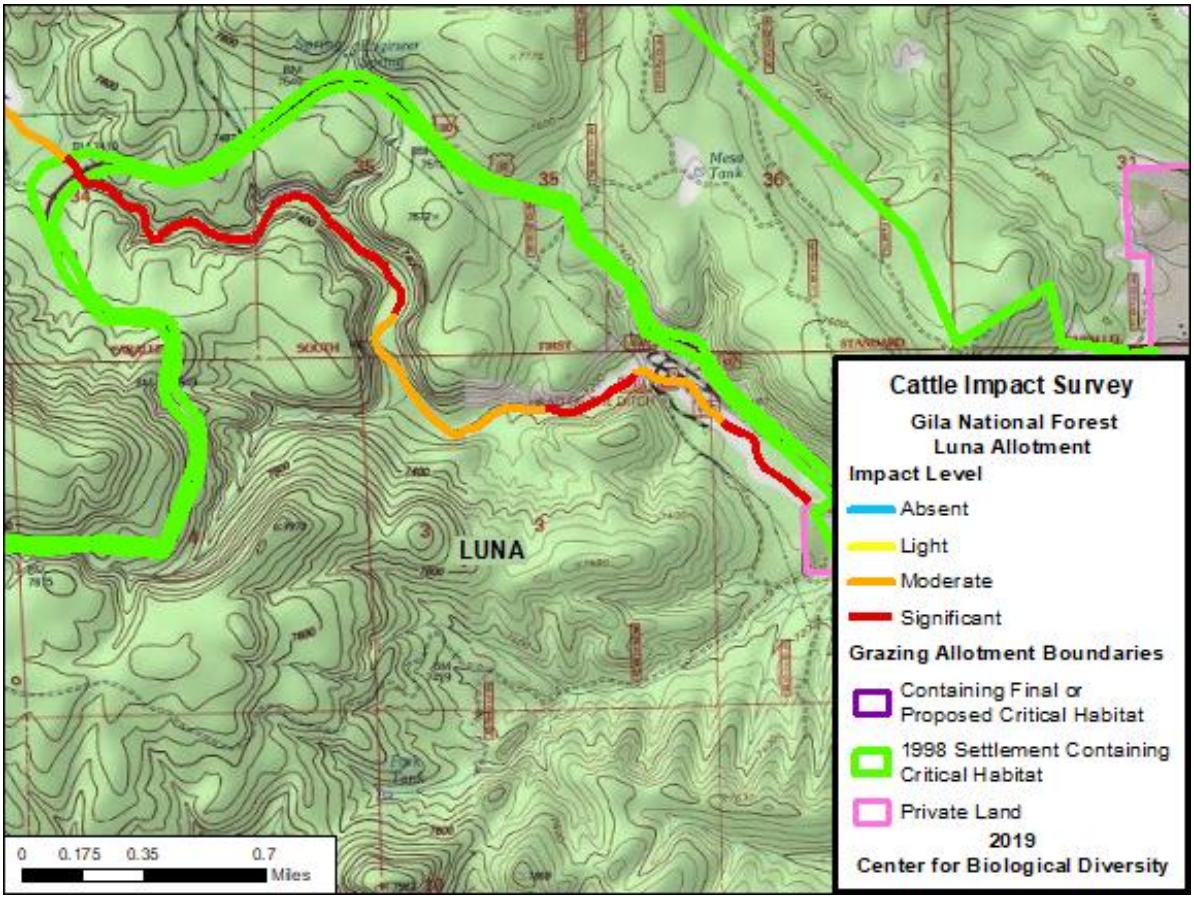
On the western end of the allotment, current cattle signs are scattered and isolated. Nearly all herbaceous flora is uniformly low growing, possibly from long term grazing pressure selecting for short, rhizomatous grass species like *Poa pratensis*. Woody vegetation within the floodplain shows signs of long term browse pressure. There is limited woody recruitment and an entire lack of multi-age stands. Cottonwood seedlings that have survived are heavily browsed, few exceeding 2 feet in height. Grazing and trampling is widespread on river's edge (photo) and streamside trails are degrading and shearing banks (photo).



Absent	*Light*	*Moderate*	*Significant*	*Total*
2.0miles	*.4miles*	*3.4miles*	*1.6miles*	*7.4miles*

District: **Quemado** **Allotment:** **Luna**
Type: **1998 Settlement** **Final/Proposed Critical Habitat: SWWF, NHG**
Drainage: **San Francisco River** **Surveyed:** **6/1/2019**

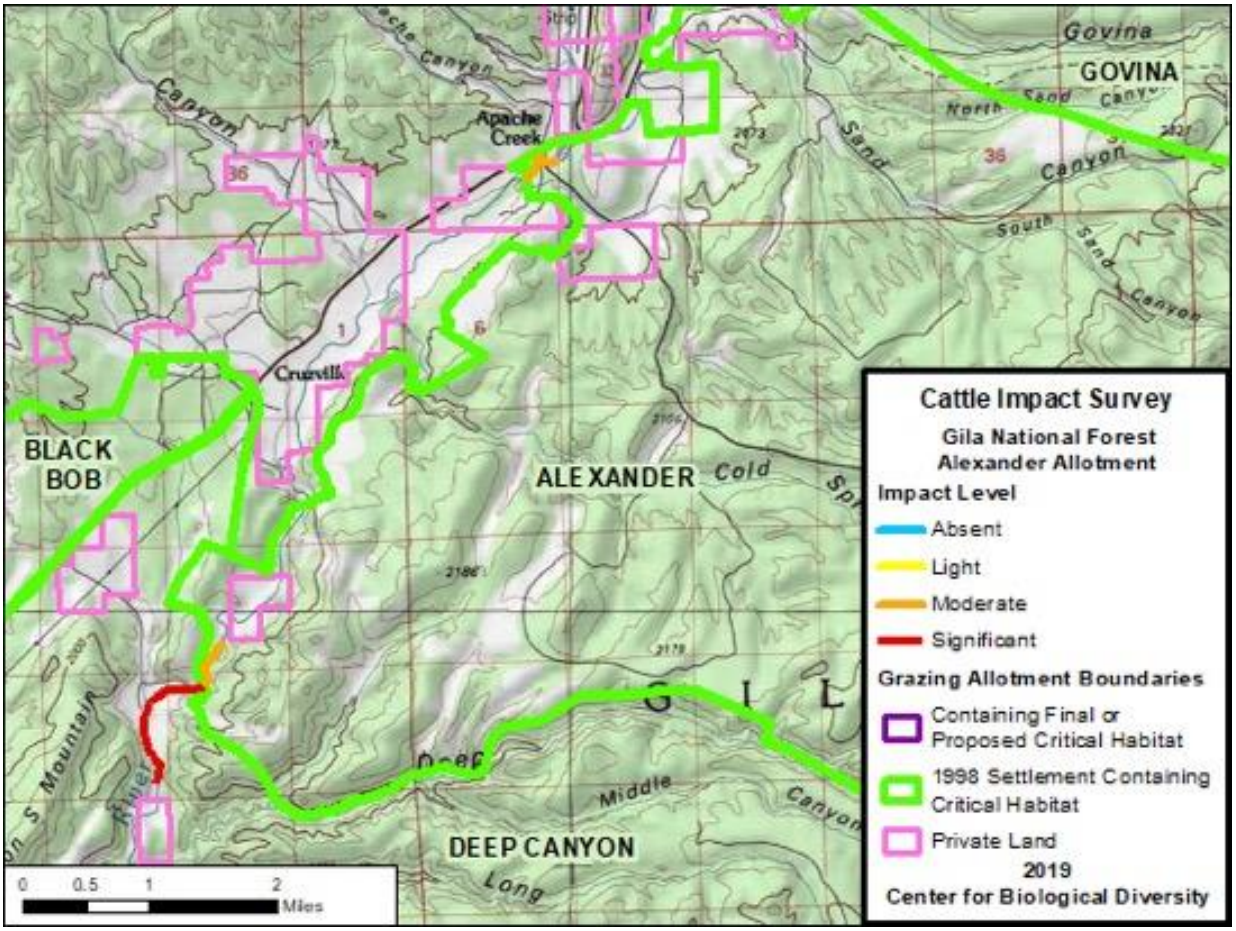
In the narrow canyon below Head of the Ditch Campground, impacts are concentrated and severe with streamside cattle trails and heavy grazing degrading the riparian edge (photo). Once under the Hwy 180 bridge near Stone Creek, impacts become more diffuse. Stream conditions appear worse than in 2017 based on repeat photos taken at several geo-referenced photo points. Approximately 12 black angus breed cows were seen near the Head of Ditch Campground with yellow ear tags (photo) .



Absent	*Light*	*Moderate*	*Significant*	*Total*
		1.6miles	*2.8miles*	*4.4miles*

District: **Reserve** **Allotment:** **Alexander**
Type: **1998 Settlement** **Final/Proposed Critical Habitat: LM, CLF, NHG**
Drainage: **Tularosa River** **Surveyed:** **6/15/17**

Impacts were greatest at the southern section of the allotment between private property parcels. Current cattle use and impact is evident, with recent tracks, trampling, and multiple water crossings and entry points (photo). On the northern end of the allotment impacts from cattle decrease and predominant signs are from elk. Access to other public land sections of the allotment were blocked by closed fences and road closures.

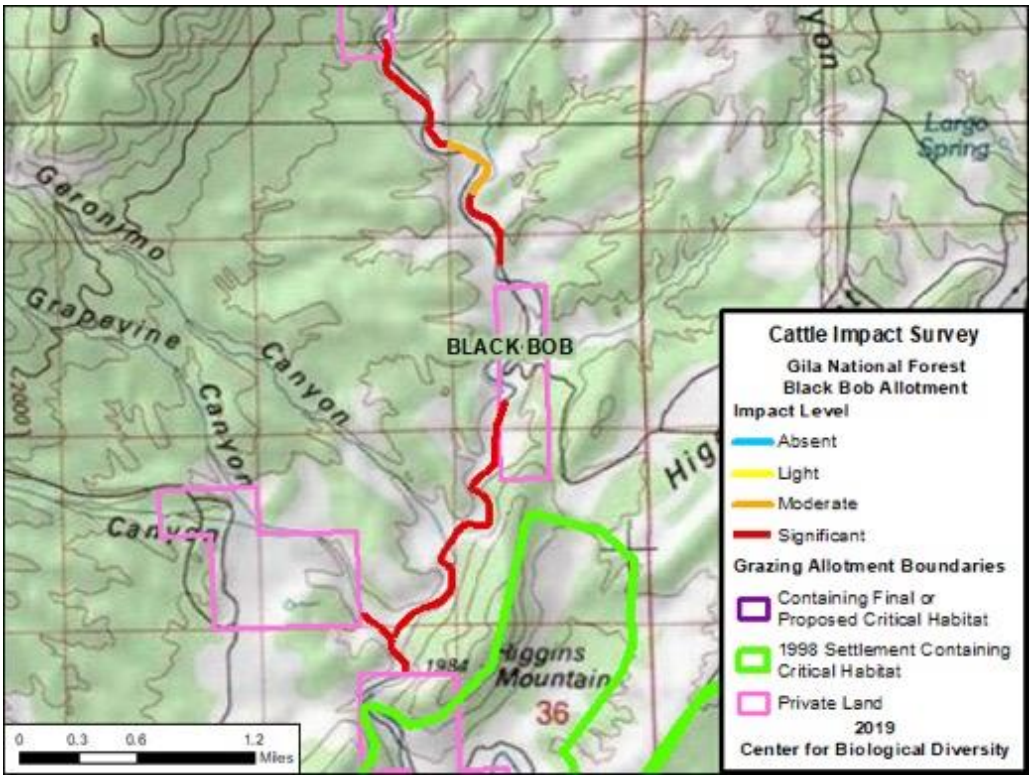


Absent	*Light*	*Moderate*	*Significant*	*Total*
		.7		*.7*

District: **Reserve** **Allotment:** **Black Bob**
Type: **1998 Settlement** **Final/Proposed Critical Habitat: LM, NHG**
Drainage: **San Francisco River** **Surveyed:** **5/31/2019**

Cattle sign are current and evidence of recent grazing and browsing is consistent in all reaches between private property parcels. Much of the toe slope vegetation is gone, creating a barren, severely over-grazed appearance (photo). Woody recruitment is very minimal throughout and the stream side vegetation is stunted with very few seed heads. Banks are sheared and cattle are crossing the river at multiple points (photo). The Cienega portion of the allotment is completely degraded despite being fenced on all 4 sides.

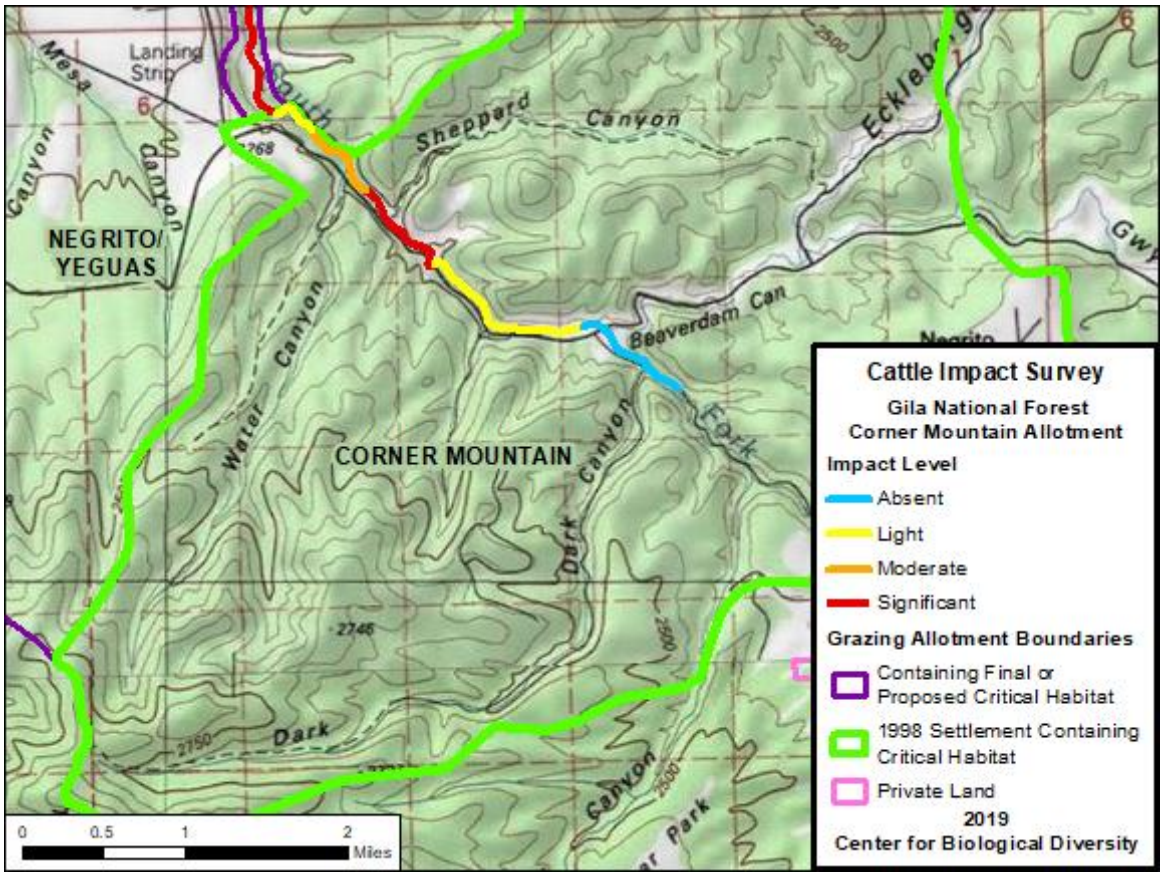
There has been no improvement in the condition of this allotment since 2017. Impacts are persistent and pervasive, leading to ecologically compromised landscapes.



Absent	*Light*	*Moderate*	*Significant*	*Total*
		.2miles	*3.4miles*	*3.6miles*

District: **Reserve** **Allotment:** **Corner Mountain**
Type: **1998 Settlement** **Final/Proposed Critical Habitat: NHG**
Drainage: **Negrito Creek** **Surveyed:** **5/31/2019**

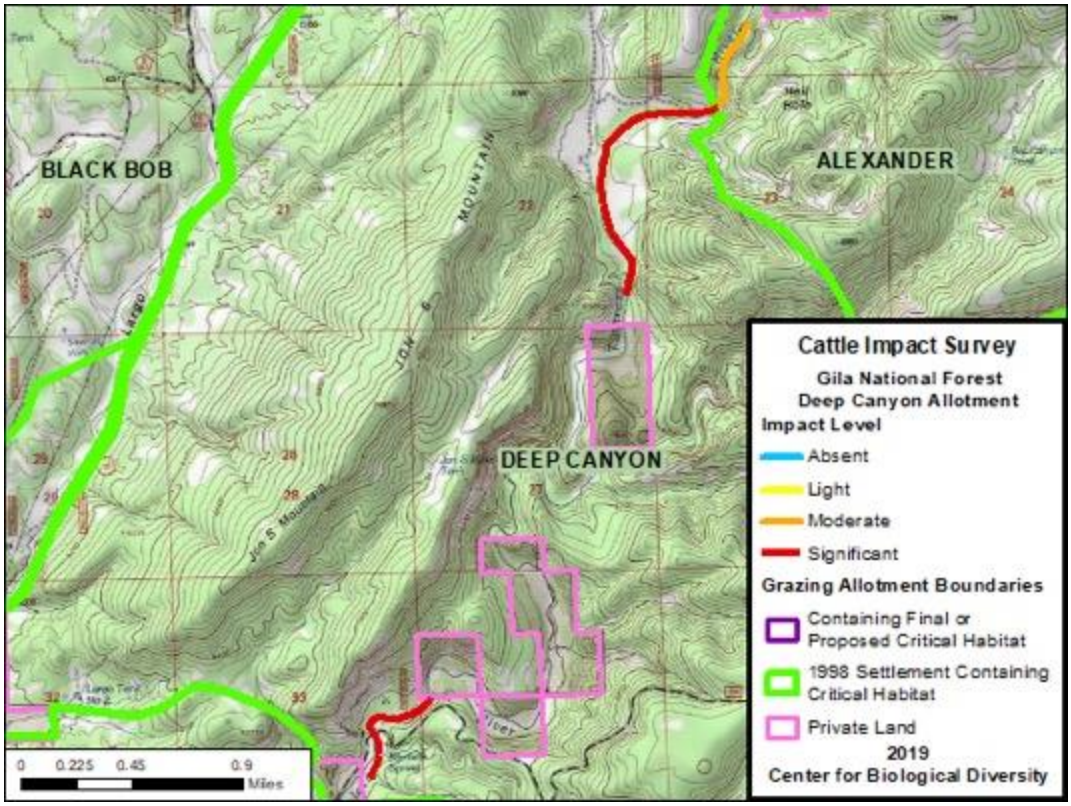
There is evidence of cattle crossing around the fencing that separates the Negrito/Yeguas allotment (which is stocked) from the Corner Mt allotment (which should be vacant). However, cattle *are* entering the allotment, trampling (photo) and degrading sensitive meadow springs along Negrito Creek, where the impact is significant (photo). Woody regeneration is also being negatively affected. Towards Dark Canyon and the road intersection impacts decrease and then end.



Absent	*Light*	*Moderate*	*Significant*	*Total*
.8miles	*1.5miles*	*.5miles*	*.7miles*	*3.5miles*

District: **Reserve** **Allotment:** **Deep Canyon**
Type: **1998 Settlement** **Final/Proposed Critical Habitat: LM, CLF, NHG**
Drainage: **Tularosa River** **Surveyed:** **6/1/19**

The downstream section of the allotment was characterized by severely over-grazed banks and the presence of Bermuda grass. There was fresh sign of both horse and cow trampling the river's edge and defecating in the water (photo). A black and white cow with a blue ear tag was seen just past the private boundary in this section of the allotment (photo). In the upstream section of the allotment there were also severe impacts from over-grazing resulting in desert-like landscapes and extensive bare ground (photo). Cattle are living within excluded areas, heavily grazing and browsing, leaving no wood vegetation streamside (photo). In this section of the allotment, four more tagged cows were seen within the exclosure and the fencing at the private property boundary was torn and in disrepair.

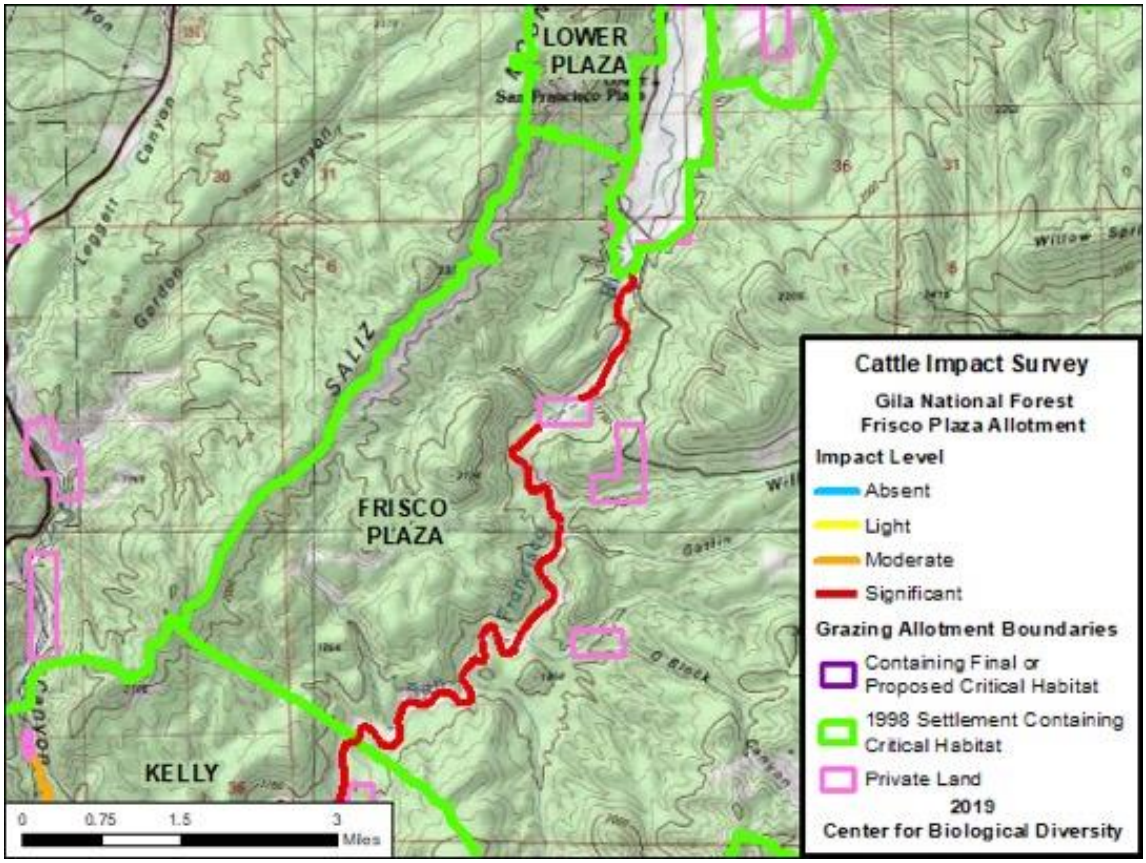


Absent	*Light*	*Moderate*	*Significant*	*Total*
			1.7miles	*1.7miles*

District: **Reserve** **Allotment:** **Frisco Plaza**
Type: **1998 Settlement** **Final/Proposed Critical Habitat: LM, SD, NHG**
Drainage: **San Francisco River** **Surveyed:** **5/31/19**

Throughout the allotment, riparian vegetation is heavily grazed and there is severe habitat degradation. Grasses along the banks are mowed down to stubble and there is little herbaceous diversity (photo) (photo). Heavy browsing on Alder tree recruitment is evident throughout the allotment and uplands are trampled with understory vegetation grazed down or completely gone. Trails crisscross the entire allotment and cattle feces are present in the water (photo). There are several water gap fences down.

There has been no improvement in the condition of this allotment since 2017. Impacts are and persistent and pervasive, leading to ecologically compromised landscapes.

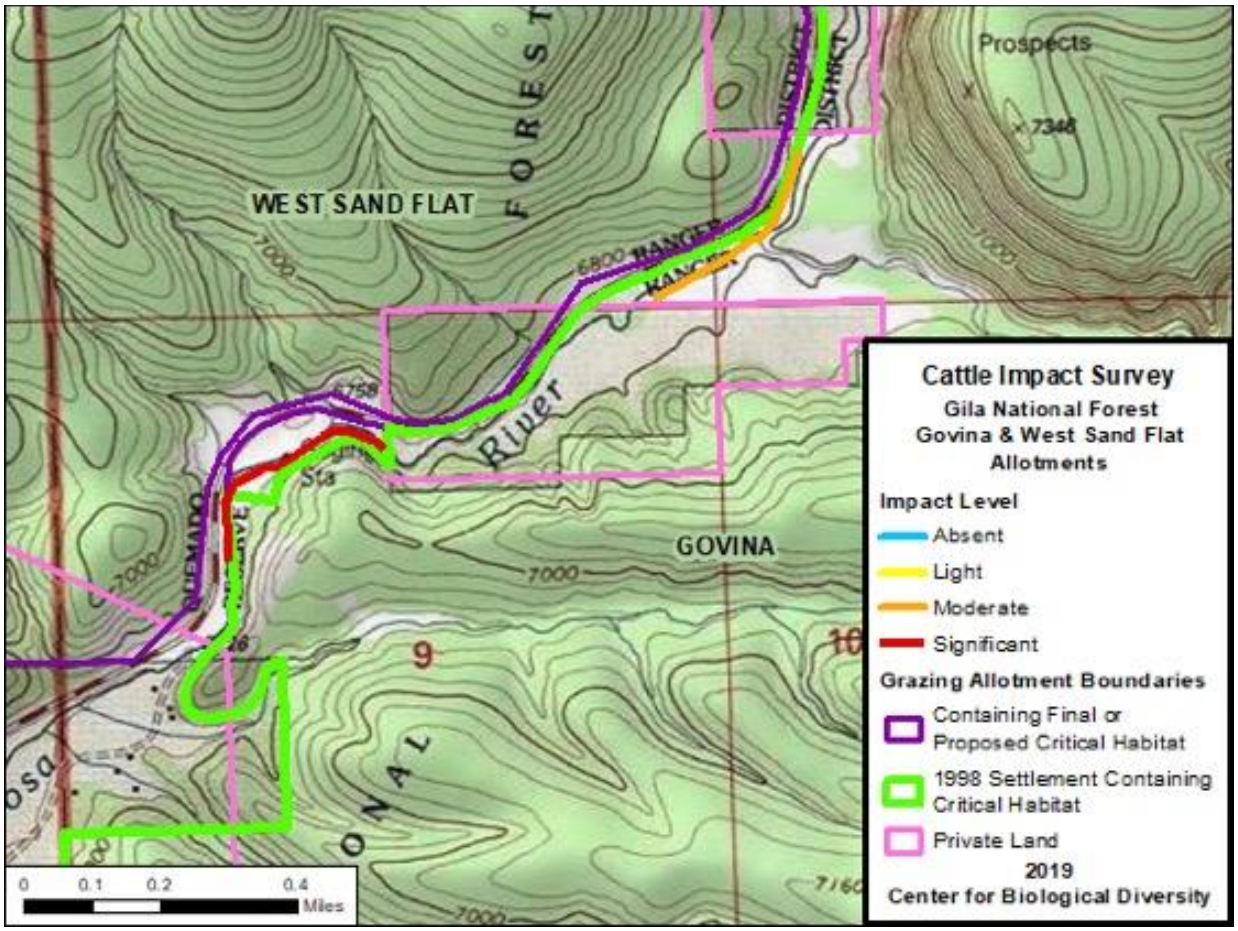


Absent	*Light*	*Moderate*	*Significant*	*Total*
			7.5miles	*7.5miles*

Center for Biological Diversity

District: **Reserve** **Allotment:** **Govina & West Sand Flat**
Type: **1998 Settlement** **Final/Proposed Critical Habitat: CLF, NHG**
Drainage: **Tularosa River** **Surveyed:** **5/31/2019**

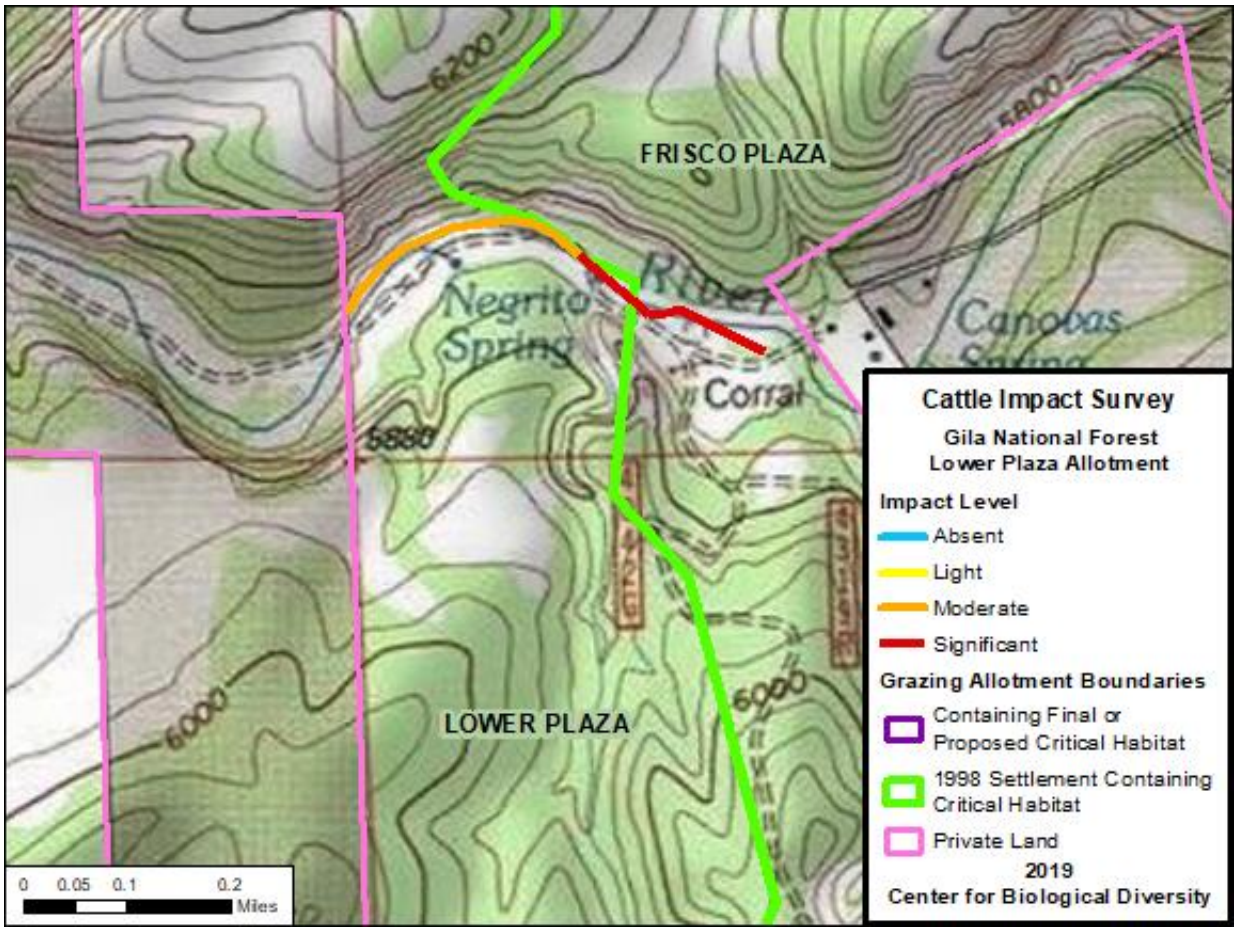
This survey included roadside allotment segments bounded by private property parcels. There was some current cow sign and some moderate to severe impacts from long term grazing pressure. There is replacement of riverside vegetation with non-palatable grasses and bare ground (photo). A water gap fence at the private property boundary was in disrepair (photo) and fences between private property and exclosure had been left open (photo).



Absent	*Light*	*Moderate*	*Significant*	*Total*
		.3miles	*.4miles*	*.7miles*

District: **Reserve** **Allotment:** **Lower Plaza**
Type: **1998 Settlement** **Final or Proposed Critical Habitat: CLF, NHG**
Drainage: **Tularosa River** **Surveyed:** **5/31/2019**

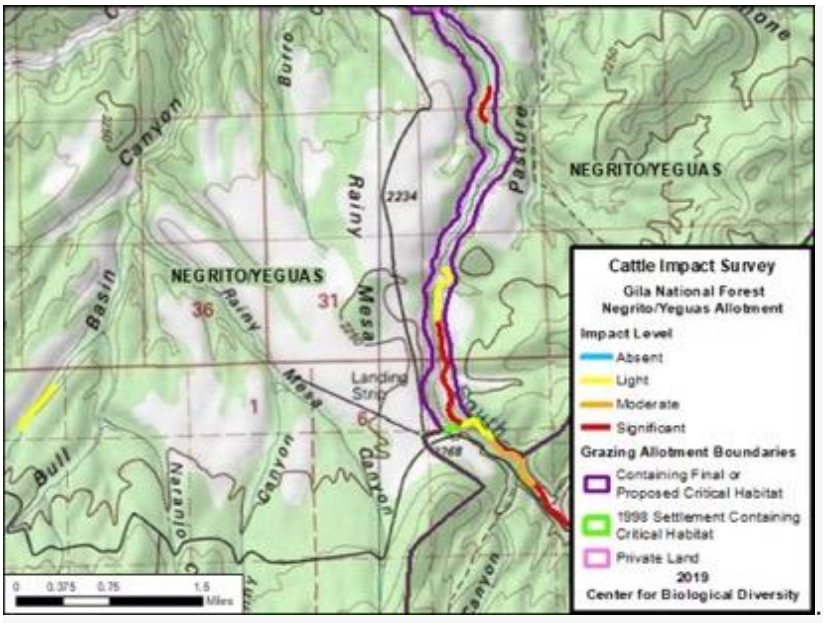
This small excluded portion of the Tularosa has significant degradation from continued use by cattle accessing the water through an established corridor from the private property boundary. Impacts have spread beyond the corridor and there are severe impacts in all categories: grazing, browse pressure, trampling and trailing. The reach is characterized by wallows, bare soil, and degraded streambanks (photo).



Absent	*Light*	*Moderate*	*Significant*	*Total*
		.2miles	*.1miles*	*.3miles*

District: **Reserve** **Allotment:** **Negrito-Yeguas**
Type: **R-3** **Final or Proposed Critical Habitat: CLF, NHG**
Drainage: **Negrito Creek** **Surveyed: 5/31/ & 7/8/2019**

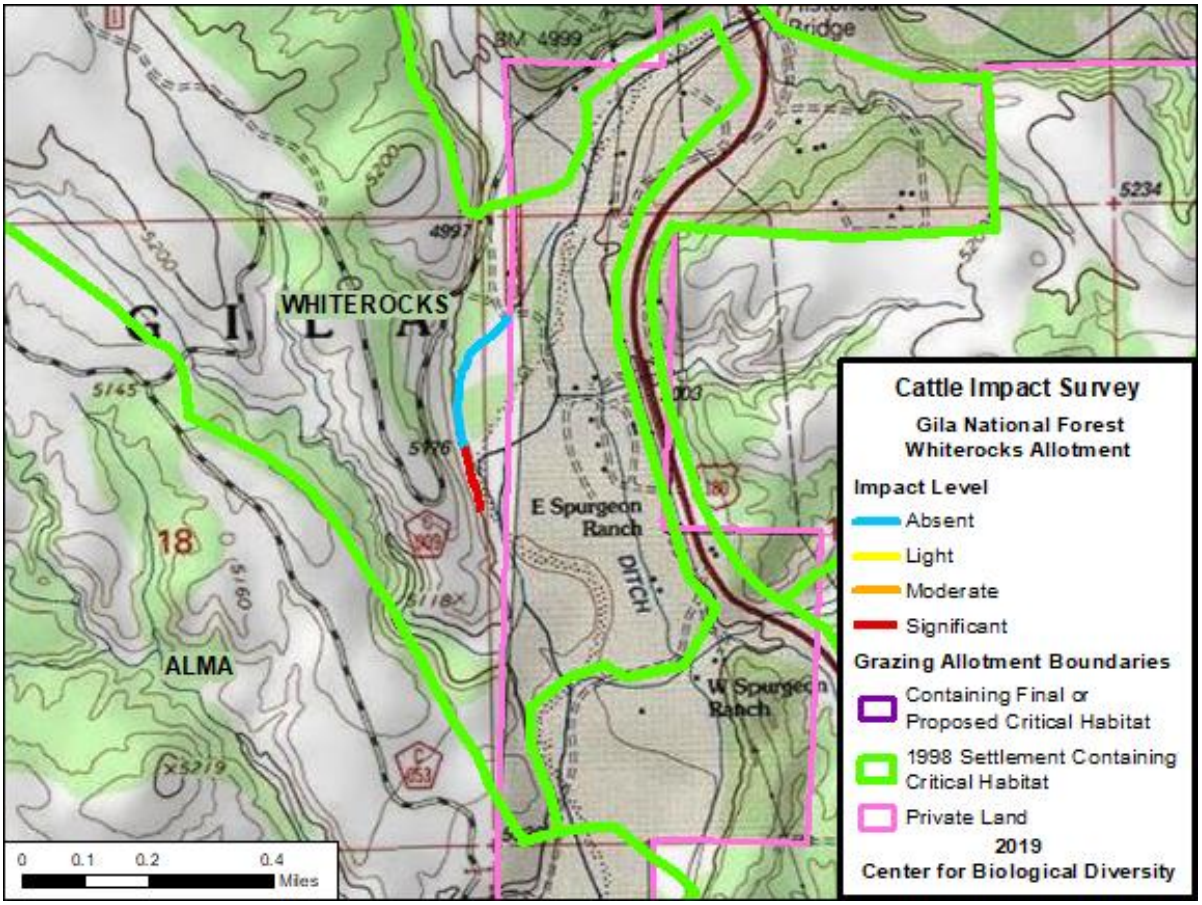
Three tanks with critical CLF habitat in the north of the allotment were surveyed. At Long Mesa tank, thick livestock fencing juts out into the tank to provide access to the water without allowing large mammals into the majority of the tank. However, the fence was down in 5 places and two cows were seen in this excluded area and both had brands and tags (photo). A smaller pond towards the east had no water and far less cattle sign. On Rainy Mesa, Burro Tank was surveyed and found to be well fenced on the outside but the inner section fences were down and the back gate was chained open. At Long Mesa and Burro, the tank shorelines were trampled and highly disturbed by cattle (photo). The downstream end of the allotment was heavily impacted with current use and intense grazing had reduced grasses to less than 1 inch in low mats. Cow trails cross the river and feces are in the water (photo). Cattle from the ranch at the north end of the allotment are appear to live permanently in the canyon. At the upstream end of the allotment, a large herd of cattle were seen.



Absent	*Light*	*Moderate*	*Significant*	*Total*
	.9miles		*1.2miles*	*2.1miles*

District: **Reserve** **Allotment:** **White Rocks**
Type: **1998 Settlement** **Final/ Proposed Critical Habitat: YBC, LM, SD, SWWF, NHG**
Drainage: **San Francisco River** **Surveyed: 8/19/2019**

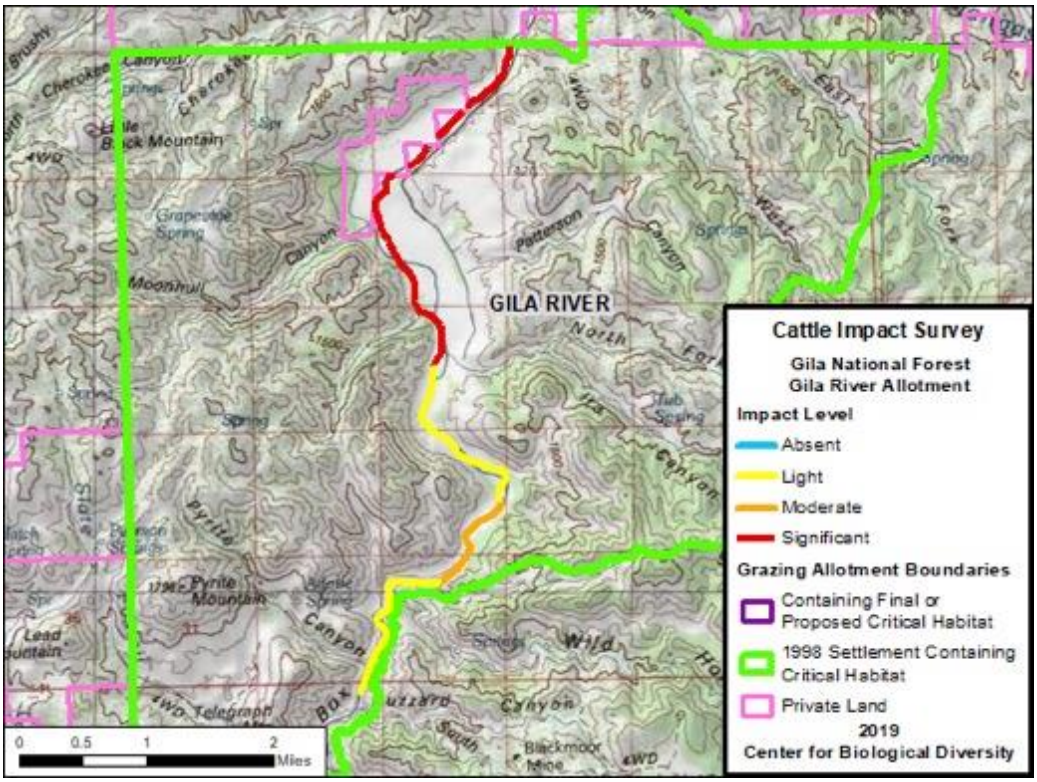
A short section of the White Rocks (vacant) allotment was surveyed. There was extensive negative impact from horses grazing along the river and using the area as a congregating watering hole. The banks were heavily trampled from multiple horses and was becoming de-vegetated (photo). There were lighter grazing impacts in the grassy upland away from the river's edge.



Absent	*Light*	*Moderate*	*Significant*	*Total*
.2	.		*.1*	*.3miles*

District: **Silver City** **Allotment:** **Gila River**
Type: **1998 Settlement** **Final/ Proposed Critical Habitat: YBC, LM, SD, SWWF, NHG, NMG**
Drainage: **Gila River** **Surveyed** **6/4/19**

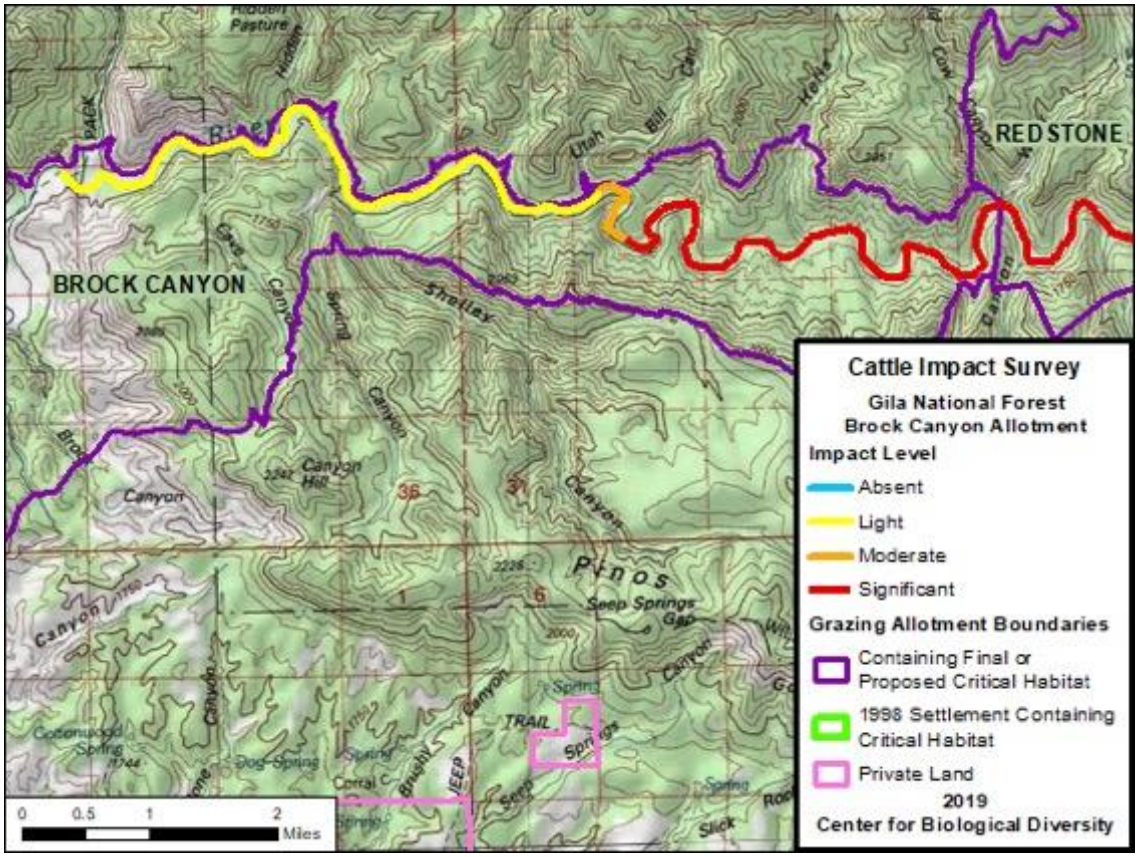
The first four upstream miles of this allotment are heavily impacted by cattle. Stream banks are heavily denuded with numerous cow trails leading to and across the river. The riparian edge is heavily grazed with little herbaceous vegetation and areas where wallowing is creating bare soils (photo). Exclosure fencing separating upland private lands is in disrepair in several places and water gap fences are down and cattle trails appear throughout this area. In this section, there were three separate sightings of cattle grazing in this area-all with ear tags (photo)(photo). Downstream, cattle sign drops off and streamside vegetation is healthy and un-grazed.



Absent	*Light*	*Moderate*	*Significant*	*Total*
	0.9 miles	0.8 miles	4.3 miles	6.0 miles

District: **Silver City** **Allotment:** **Brock Canyon**
Type: **R-3-Closed** **Final/Proposed Critical Habitat: YBC, LM, SD, GC, SWWF,**
Drainage: **Gila River & Sapillo Creek** **Surveyed:** **6/19/19** **NHG, NMG**

At the upstream end of the allotment, the river is plagued with feral cow impacts. The upland benches are denuded of grasses from heavy trampling. There is intense browse and graze pressure on the riparian edge that is suppressing woody and herbaceous diversity (photo). A feral bull and female cow were seen. Moving downstream, impacts diminish and cow sign becomes older. Grazing impact becomes spotty, but feral cows still present.



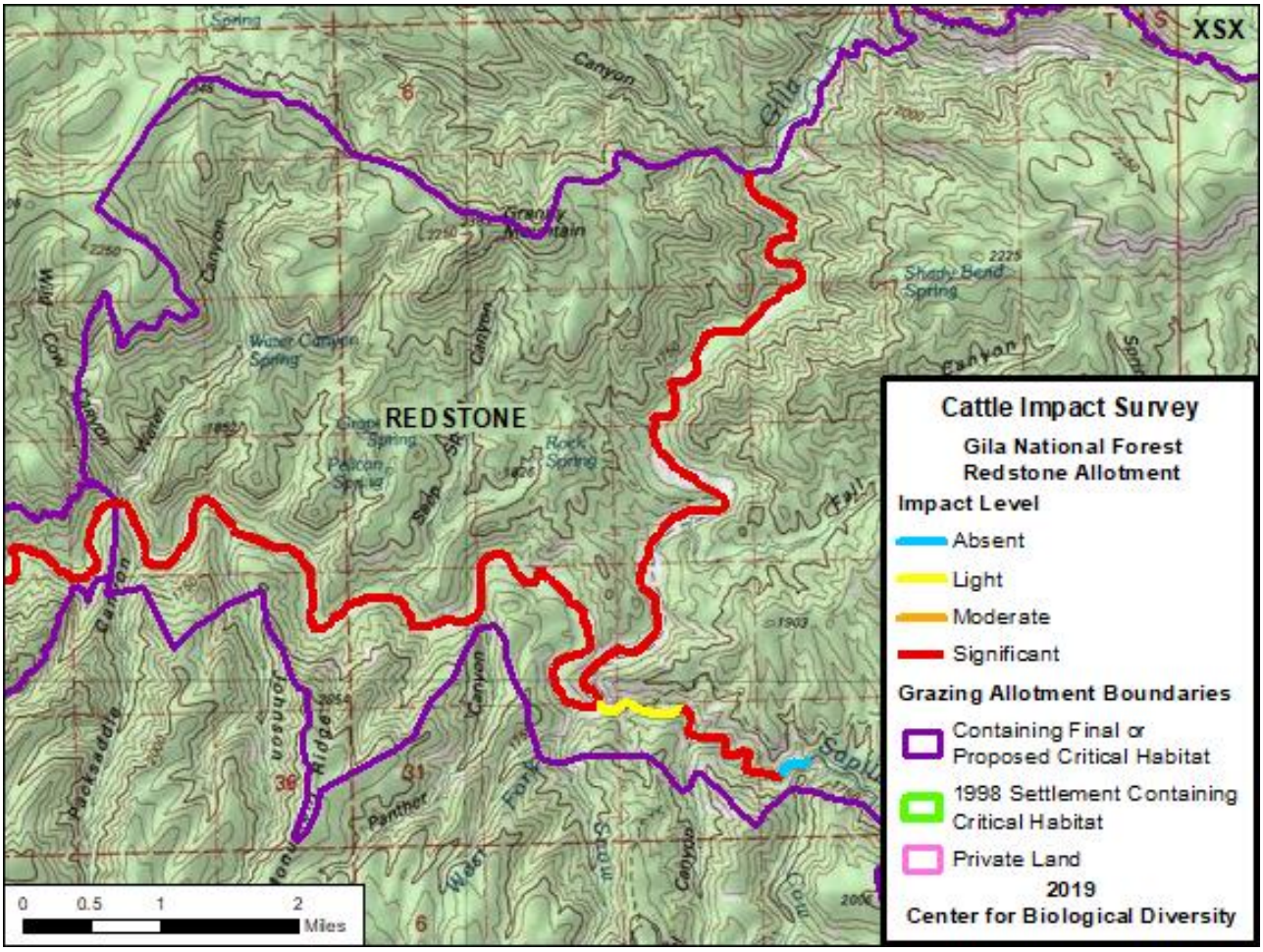
Absent	*Light*	*Moderate*	*Significant*	*Total*
	5.7miles	*.8miles*	*5.1miles*	*11.6miles*

District: **Silver City** **Allotment:** **Redstone**
Type: **R-3** **Final/Proposed Critical Habitat: LM, SD, NHG, NMG**
Drainage: **Gila River** **Surveyed:** **6/19/19**

According to the surveyor, with very few exceptions, this stretch of the river has been "devastated" by feral cattle. On the upstream end of this vacant allotment, grazing and cattle disturbance was mostly restricted to grasses and stream banks but further downstream woody vegetation was also heavily impacted. Expansive areas along and away from the river were trampled, full of ruts, and devoid of palatable plants. Stream crossings and trails were heavily eroded and sheared throughout the allotment. Large territorial bulls were heard calling and seen aggressively standing their ground (photo). Two additional large groups of cattle were seen - one was 7 strong, made up of mostly bulls. The second group was at least 20 strong with 7 bulls, 9 cows, and 4 calves. A couple of lone cows and single bulls were heard and or seen during the rest of the survey. No cows had tags or brands and some cattle were aggressive. Near Packsaddle Canyon a young cow was encountered. While the disturbance and sign appeared slightly less than the rest of survey (but still significant) the sighting of the young cow indicates there may be more cows up some of the side canyons.

Sapillo Creek was surveyed from the western confluence with the Gila River upstream until it abruptly hits a box canyon waterfall. The initial western section of the creek is fenced off and there was little sign of disturbance in this area. After crossing the fence, cattle impact became immediately apparent and worsened as the survey continued. Stream crossings were trampled, grazing became more obvious, and fresh cow sign was more abundant. About 1.5 miles upstream, a group of tagged and branded cattle were seen made up of six cows,2 calves, and 1 bull (photo). They quickly ran away trampling and snapping vegetation as they left. The area before and past this herd was heavily grazed and trampled and didn't possess the dense canopy cover contained by much of the undisturbed Sapillo.

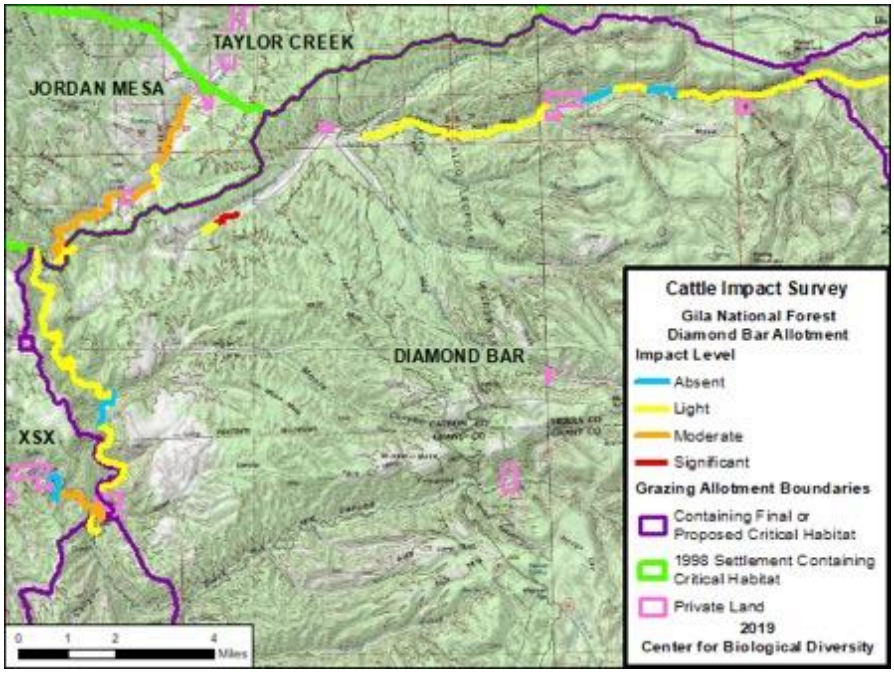
District: **Silver City** **Allotment:** **Redstone**



Absent	*Light*	*Moderate*	*Significant*	*Total*
	.2miles	*.7miles*	*13.9miles*	*14.8miles*

District: **Wilderness** **Allotment:** **Diamond Bar**
Type: **R-3-Vacant** **Final/Proposed Critical Habitat: LM, SD, CLF, NHG**
Drainage: **Diamond Creek** **Surveyed:** **6/18, 7/9, 8/3 (2019)**
East Fork Gila River

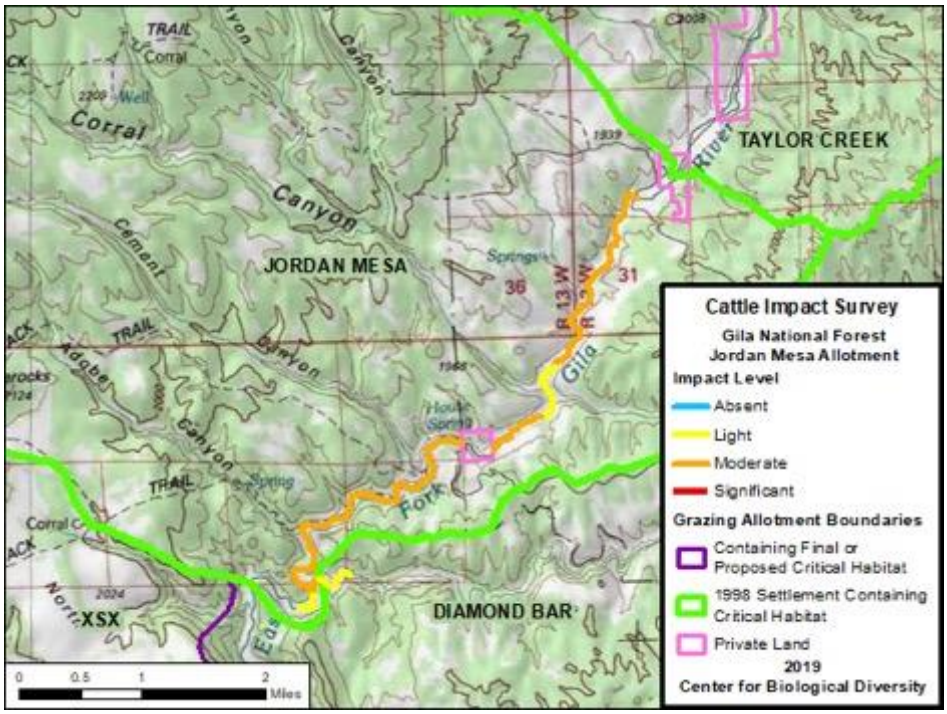
While in much of Diamond Creek there was little to no cow sign, horse sign was abundant in the east end of the drainage. Grazing, trampling, and stream bank degradation was widespread (photo). A total of 10 horses were seen on this portion of the allotment and most of the damage appeared to be caused by their activity (photo). To the west and downstream, Diamond Creek appears to be fenced and protected from the stock. Near the intersection with Jordan Mesa allotment, grazing impacts increase again and are severe in open grassy fields. Throughout the majority of the East Fork of the Gila River corridor there were definitive signs of transient cattle. Some areas are also experiencing grazing impacts. Towards the downstream end of the allotment with the Black Canyon junction, there were fresh cattle tracks and localized trampling.



Absent	*Light*	*Moderate*	*Significant*	*Total*
1.4miles	*8.5miles*		*.6miles*	*10.5miles*

District: **Wilderness** **Allotment:** **Jordan Mesa**
Type: **1998 Settlement-Vacant** **Final/Proposed Critical Habitat: LM, SD, NHG**
Drainage: **East Fork Gila River** **Surveyed:** **6/18/19**

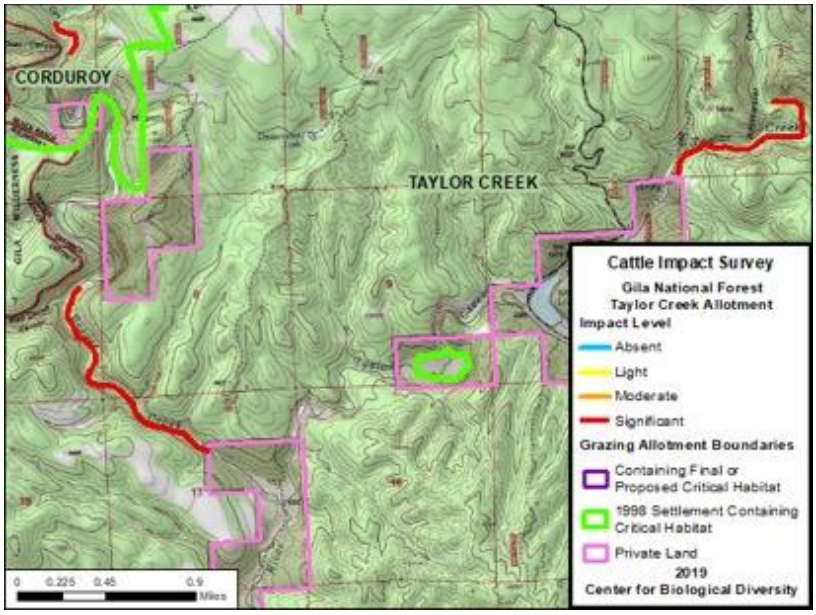
There were current signs of cattle using or moving through the entire survey area of the East Fork. Overall impacts are most severe closest to the private property boundary at the upstream end of the reach and more moderate moving downstream. However, grazing impacts on grasses and herbaceous growth increase again below Adobe Canyon where there is a down fence in the arroyo leading into the riparian area (photo). Historic and perennial browse pressure impacts have resulted in a stream reach with virtually no woody regeneration except for isolated and stunted willows (photo). Historical grazing impact has lowered grass species diversity and increased non-native populations (photo) and current grazing impacts are affecting herbaceous regrowth. A group of branded cows was seen grazing near Adobe Canyon (photo).



Absent	*Light*	*Moderate*	*Significant*	*Total*
2.4miles	*17.4miles*		*.6miles*	*20.4miles*

District: **Wilderness** **Allotment:** **Taylor Creek**
Type: **1998 Settlement** **Final/Proposed Critical Habitat: LM, SD, CLF NHG**
Drainage: **Beaver Creek** **Surveyed:** **6/17/19**
Taylor Creek

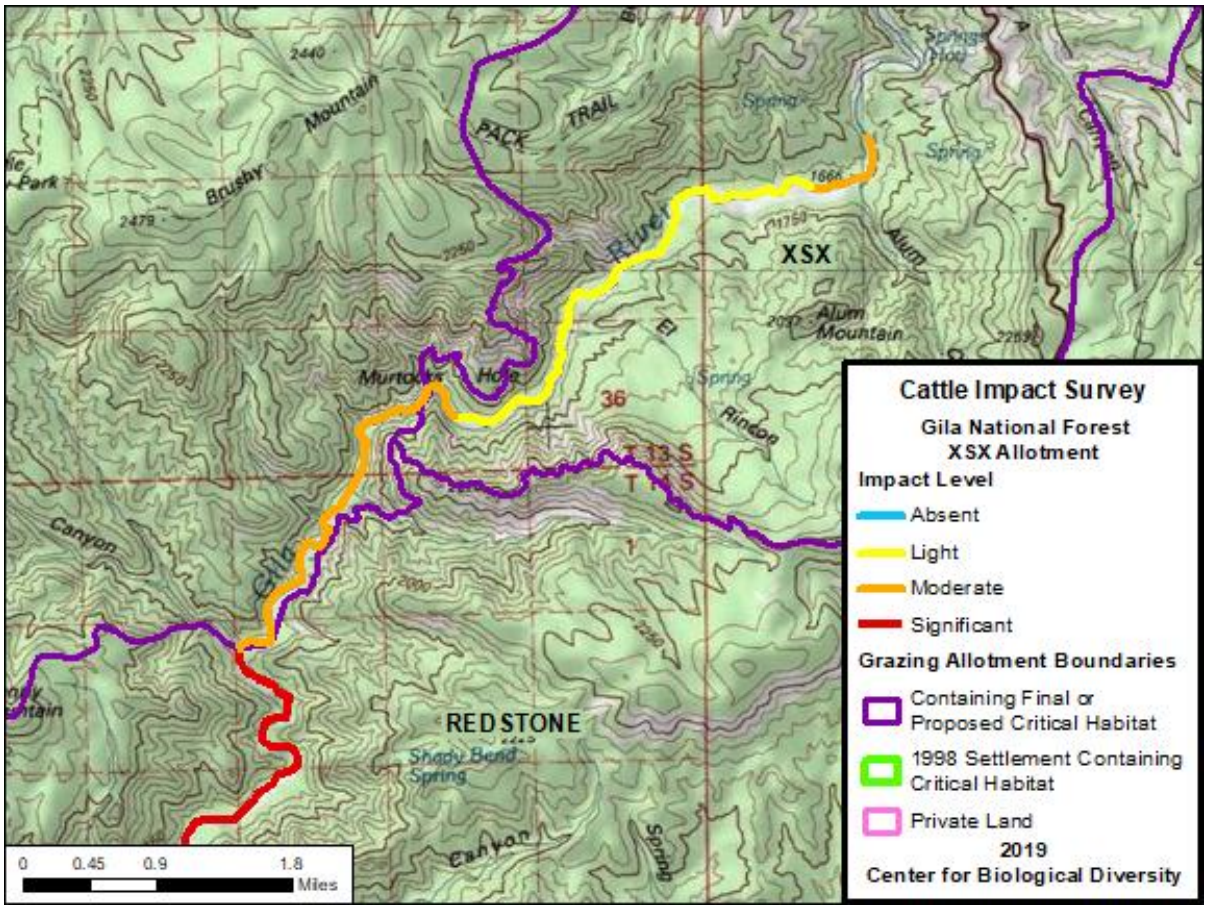
On Beaver Creek, downed fences at the time of the survey allowed cattle to access the riparian exclosure from neighboring private ranches. Grazing impacts on herbaceous growth, perennial browse pressure on woody regeneration (photo) and ground cover disturbance and trampling (photo) were all rated severe in all segments of the surveyed reach. There were wallows and bare ground from perpetually utilized gathering areas (photo). A small herd of cows were seen inside the exclosure with brands (photo) immediately upon entering the allotment. On Taylor Creek, cattle are also passing freely through downed fences from private property into the riparian exclosure. Severe impacts were recorded across all categories on the first mile of stream with extensive trampling and wide trailing along the waterway. Cattle are grazing heavily (photo) and impacting herbaceous growth at the water's edge as well as creating sheared banks while watering in the creek. There is long-term suppression of woody regeneration by perennial browse pressure, preventing the restoration of riparian woodlands.



Absent	*Light*	*Moderate*	*Significant*	*Total*
			2.3miles	2.3miles

District: **Wilderness** **Allotment:** **XSX**
Type: **1998 Settlement** **Final/Proposed Critical Habitat: LM, SD, CLF, NHG**
Drainage: **Gila River** **Surveyed:** **6/17/19**

Several historic pastures, near the old homestead site at Alum camp, were populated by stunted vegetation, old cattle trails, and some signs of grazing impact (photo). Cows may be moving into the area. A burn area along the river took up a considerable section of the allotment in the south. At Murtock's Hole, the allotment boundary ends. There is a 2.7 mile stretch of increasing impacts from feral cows moving downstream to the Redstone allotment boundary where impacts become severe and pervasive.



Absent	*Light*	*Moderate*	*Significant*	*Total*
	3.6miles	*1.0miles*		*4.6miles*

METHODS

Data on cattle impacts in riparian areas with critical or proposed critical habitat were collected for more than 250 segments on the Gila National Forest, each ¼ to I mile in length. Approximately 135 miles of riparian habitat were surveyed. Surveyors used the ARC-GIS compatible COLLECTOR tablet software to collect field data. Over 700 geo-referenced photo points were taken. An interactive, GIS database, with all segment data, photos, and overall impact scores was created.

Surveyors walked the stream reaches of allotments and recorded the level of impact in the following six categories:

- Grazing impacts on herbaceous vegetation and grasses
- Browsing impacts on multiyear stems and near channel woody regeneration
- Ground disturbances from trailing, trampling, and wallowing
- Extent and pervasiveness of ground disturbances in exclosure reaches
- Intensity of streambank degradation
- Extent and pervasiveness of streambank erosion levels in exclosure reaches from cattle.

For each of the six categories of cattle impact, detailed condition descriptors were determined based on pre-survey sample areas and field observations. Each level of condition was then assigned a severity level of 1-4 (Table 4, next page).

Table 4. Condition descriptors and severity scores for six cattle impact categories

Category	Condition: 1	Condition: 2	Condition: 3	Condition: 4
GRAZING EVIDENCE ON GRASSES AND HERBACEOUS GROWTH	**LIMITED** Less than 1% of the grasses impacted.	**LIGHT** Few to some patches of grazed area or selective grazing in patches.	**MODERATE** Multiple grass patches grazed, more than 20% of grass impacted in patches.	**SEVERE/HEAVY** Multiple patches grazed, low grass heights less than 1 inch. More than 30% grazed in patches.
BROWSE PRESSURE/WOODY Stems	**LIMITED** Less than 1% of woody stems impacted.	**LIGHT** Browsing limited to multiyear stems.	**MODERATE** Browse pressure on near channel woody recruitment.	**HEAVY/SEVERE** Multiple green-line or near channel recruitment browse.
GROUND COVER DISTURBANCE/INTENSITY	**LIMITED** Limited to transient evidence of use.	**LOW** Isolated trailing and cow trails developing.	**MODERATE** Multiple trails and the presence of wallows and rutting areas. Some bare soils.	**SEVERE** Trails, plus wallows, rutting and compaction leading to denuded ground and larger areas of bare soils.
GROUND COVER DISTURBANCE/EXTENT	**LIMITED** Few examples of disturbance.	**SCATTERED** Trails or disturbances in more than one location in segment.	**MODERATE** Trails meander through entire segment and there are multiple moderate level disturbances (see above).	**PERVASIVE** Multiple locations of disturbance and multiple types of disturbances, including severe moderate and low (see above).
STREAMBANK DEGRADATION/INTENSITY	**LIMITED** No visible signs, but other cattle impact on both sides of river that evidence crossing.	**LOW** Trails leading to streambank and water's edge.	**MODERATE** Trailing and trails creating unstable banks, some chiseling, or in low relief banks-muddy compaction.	**SEVERE** Trailing leading to shearing and removal of a portion of the streambank leaving vertical surfaces.
STREAMBANK DEGRADATION/EXTENT	**LIMITED** Isolated example of streambank entry.	**SCATTERED** Bank degradation of any intensity in more than one location.	**MODERATE** Multiple examples of low and moderate bank degradation (see above).	**PERVASIVE** Multiple examples of low, moderate, and severe degradation (see above).

At each segment endpoint, each impact category was evaluated based on the condition descriptors and a score given. A segment was rated 0 for a particular category if no evidence of impact was seen. Subsequent to the field survey, each segment was rated for its overall impact level based on a cumulative and weighted score of the six impact categories. Overall impact levels were categorized as absent, light, moderate, or significant, based on these ratings. Each survey segment was color coded for its overall impact level (see Table 5, next page). Segments

were then linked together across the riparian miles. Based on these coded segments, a series of maps was made for each allotment surveyed.

Table 5. Weighting table for *overall impact levels* of stream reach segments based on condition scores (0-4) from six categories of cattle impacts

ABSENT	LIGHT IMPACT	MODERATE IMPACT	SIGNIFICANT IMPACT
ALL ZEROS	ANY COMBINATION OF ONE'S & TWOS & ZEROS	AT LEAST (5) TWOS WITH ANY OTHER NUMBER	ANY TIME THERE ARE (3) THREES WITH ANY OTHER COMBINATION OF NUMBERS
		ANY COMBINATION OF TWOS, THREES, AND ONE'S	ANY COMBINATION OF NUMBERS WITH AT LEAST (1) FOUR
	(UNLESS (5) TWOS-` then moderate)	*(UNLESS (3) THREES-then significant)*	
BLUE	***YELLOW***	***ORANGE***	***RED***

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