Norwood Landscape Health Assessment

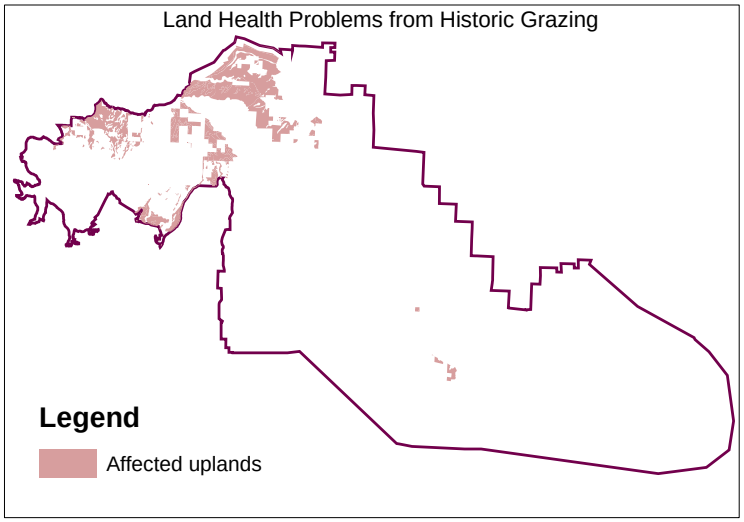
CAUSATIVE FACTOR DETERMINATION

Causative factors behind land health problems are addressed here for all standards taken together. The reason behind this is that one cause may impact several indicators and health standards at once. In addition, most of the land health problems observed in the landscape unit are not clearly linked to one causative factor, nor are they always related to a cause that is presently occurring. Often, causes were indirectly suggested, using the condition of indicators as evidence. In many areas, problems are occurring as a result of several causative factors which overlap spatially. As a result, acreage figures reported below may overlap for various causes.

Historic Grazing: Settlement of the area in the late 1880s opened the way for large unregulated livestock operations to graze much of the area. Ranchers had free and unlimited use of unreserved, unappropriated public lands until the Taylor grazing act of 1934. The primary purpose of this act was "to stop injury to the public grazing lands by preventing overgrazing and soil deterioration, to provide for their orderly use, improvement, and development, to stabilize the livestock industry dependent upon the public range, and for other purposes."

Regional accounts of settlement in this part of Colorado indicate that livestock numbers grazing the public rangelands were once many times what they are now (accounts vary widely ranging from 10-100 times the current number), and that the vegetation changed dramatically following the introduction of livestock. The Uncompahgre Plateau because of its abundant grass, plentiful water, and relatively low elevation was preferred as cattle range. It was not until the passage of the Taylor Grazing Act that the current system of individual grazing allotments was established and implemented.

Prior to the Taylor Grazing Act, areas close to Norwood, Redvale and Nucla had heavy spring and fall use by livestock until the middle of the 20th century mostly by small 'farm flocks and herds". In areas were lower elevation and the milder climate allowed wintering livestock to exist without supplemental feeding at all or very limited feeding.

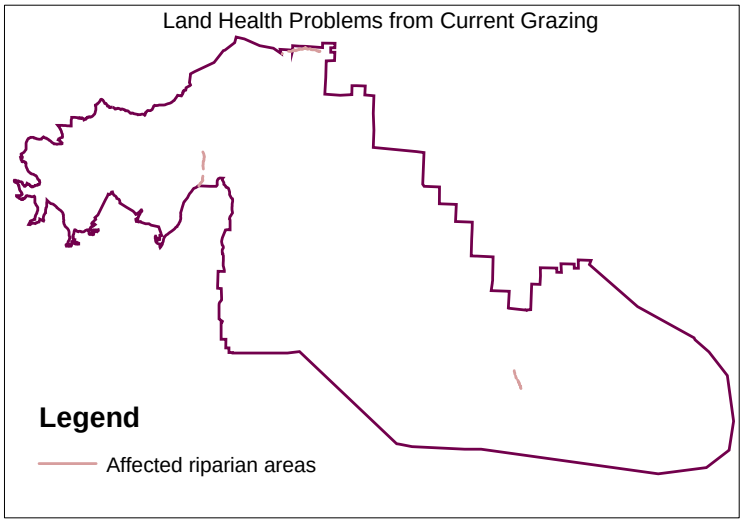


The interdisciplinary team used a number of factors to infer that historic grazing had contributing to problems in an area. Types of problems included a lack of cool season grasses in otherwise grassy communities, lack of forbs, or dominance by annuals, unpalatable plants, or woody species. Historic grazing was a more significant problem in areas which were easily accessible to livestock and

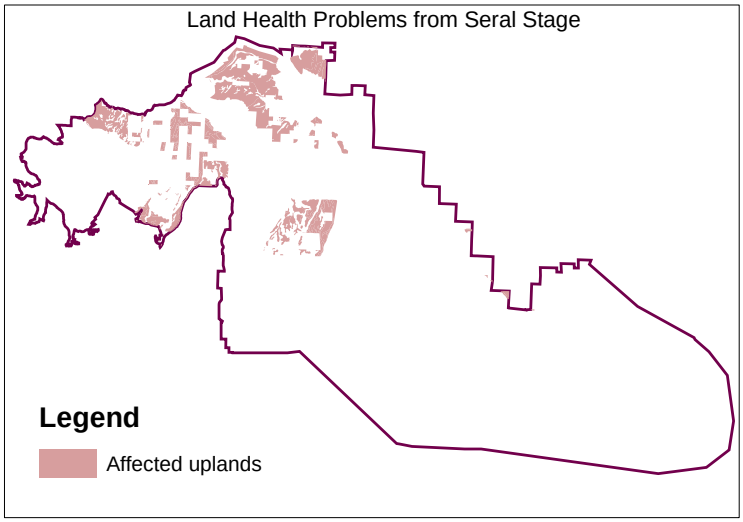
close to ranching communities, along major stock trails, or long established watering areas, and in areas with deep and productive soils. When the problems listed above coincided with these locations, historic grazing was considered a likely cause.

The interdisciplinary team identified 5,224 acres where historic grazing impacts had probably contributed to a polygon failing to meet either Standard 1 or 3. An additional 10,013 acres were rated as meeting Standard 1, 3 or 4 with problems, and historic grazing was cited as a factor. Historic grazing was not considered to be a factor behind any stream or water problems.

Current Grazing: Evidence of livestock grazing was searched for at each site to determine whether grazing was causing problems with soil or vegetation. The following evidence was searched for: poor condition areas with abundant livestock droppings, crowned grass plants, terracing of slopes from livestock paths, heavy use on four-wing saltbush or other palatable shrub species. Livestock grazing was considered to be causing problems in riparian areas when abundant cattle sign was coupled with heavy utilization on woody and herbaceous species. Utilization information would be stronger evidence, however this has not been gathered very consistently nor uniformly across the Norwood LHA area in the past.



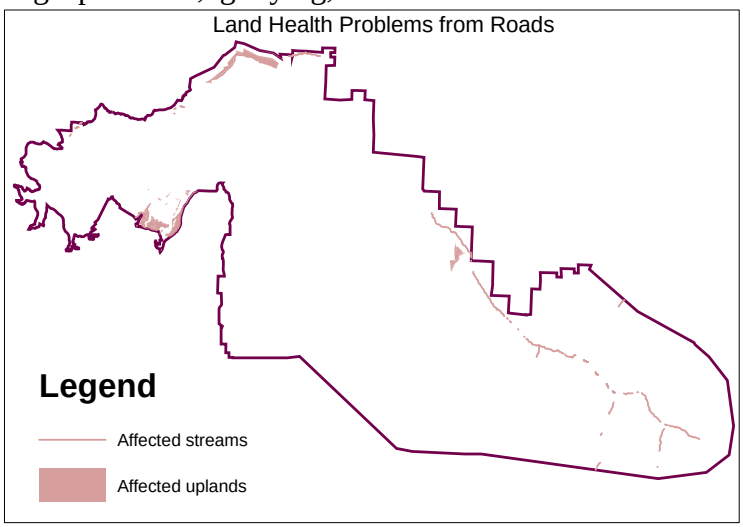
There were no upland areas found where there was clear evidence that current livestock grazing was causing problems with meeting upland standards (Standards 1, 3 and 4). There were 1.7 miles of streams where current grazing practices appeared to contribute to stream segments meeting a standard with problems. There were an additional 3 miles which met Standards 2 and 5, but showed signs of heavy grazing which could affect those stream segments in the future.



Seral Stage: The age class of plant communities (seral stage) contributed to problems meeting standards in some instances. Some seral stages appear to naturally have diversity, understory and soil problems. While these stages would normally occur on the landscape in certain proportions, if they occupy a disproportionate amount of the landscape they cause an undue stress to the health of the land. These stages become imbalanced in several ways—one by excessive vegetation treatments or disturbances, and secondly by disruption of natural disturbance patterns such as caused by fire suppression. While resource managers have speculated that grazing may have reduced fine fuels so that fire regimes were altered and the seral stage distribution across the landscape was affected, no evidence has been found to substantiate this, particularly in the sagebrush and pinyon-juniper vegetation types (Eisenhart 2004). Fire suppression and moderate levels of chaining or other vegetation treatments have occurred on this landscape unit over the past 50 years.

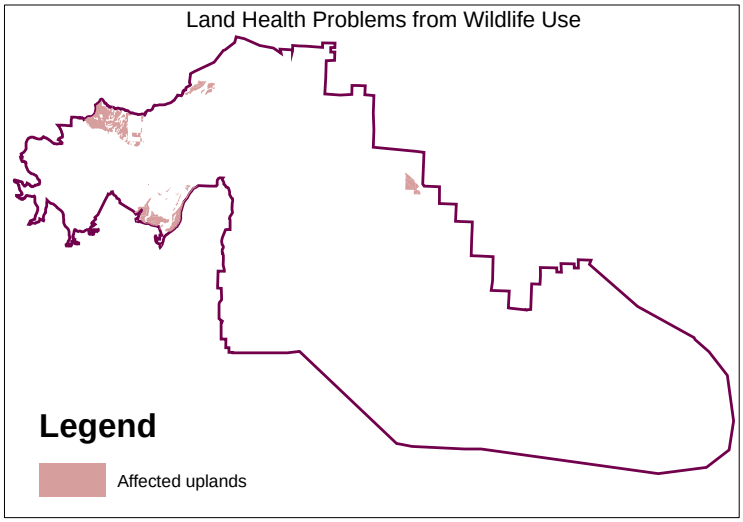
Seral stage was cited as contributing to 4,878 acres not meeting Standards 1 or 3; and seral stage contributed to 13,459 acres meeting Standards 1 or 3 with problems. Standards 2, 4 and 5 were not affected by seral stage.

Roads: Poor road placement, road maintenance, and weeds associated with road maintenance cause problems with soil and vegetation indicators. These include causing high bare ground, runoff drainage problems, gullying, noxious weed infestations and exotic plant dominance. Roads were a contributing factor for 126 acres failing to meet either Standard 1 or 3, and 2,380 acres meeting Standards 1 or 3 with problems. One mile of stream met Standards 2 and 5 with problems in part because of road encroachment into the riparian area. Although another 25 miles of streams were in good condition currently, but could decline in the future because they were threatened by road encroachment. The nearly completed



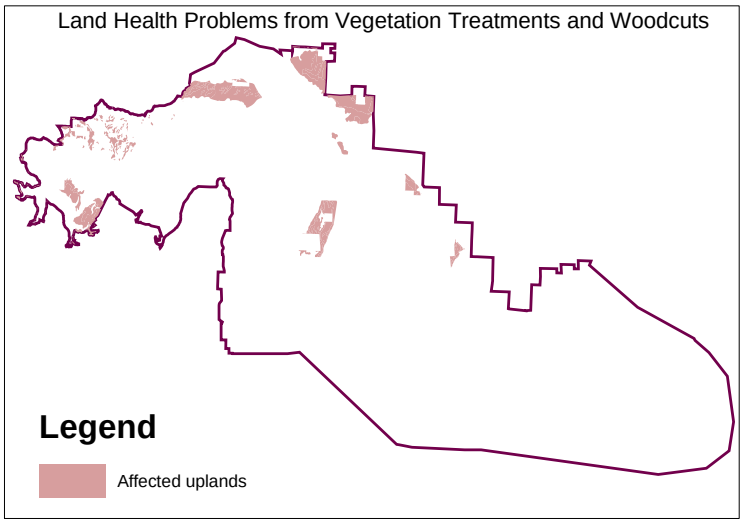
road inventory for the area also shows a substantial mileage of the road segments are contributing to gullying which was not detected during the health assessment.

Heavy Browsing on Shrubs: Heavy browse utilization caused by grazing animals (primarily deer and elk) causes shrubs to have a compact growth form, and often reduces shrub vigor. Heavy browsing can be an indication that deer and elk populations are too high for available habitat. Heavy browsing contributed to 3,778 acres meeting Standard 1 or 3 with problems. Standards 2, 4 and 5 were not evidently affected.

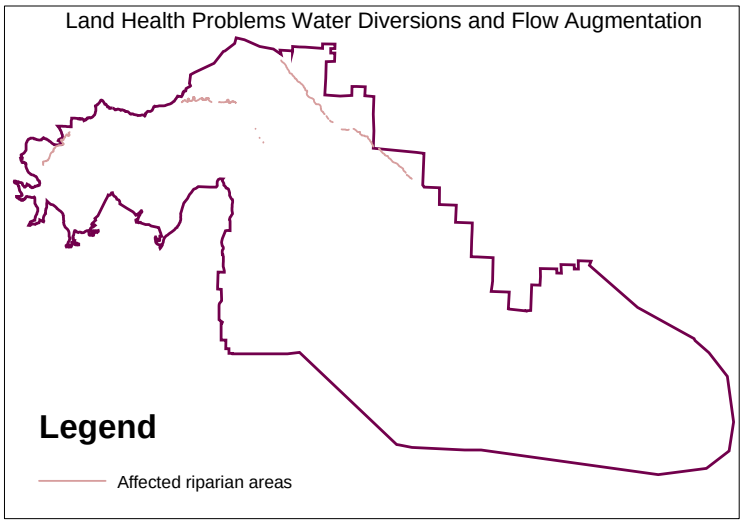


OHV Use and other Dispersed Recreation: Off-road driving whether by motorcycle, ATV, or four wheel vehicle can cause problems with high bare soil, excessive runoff drainages, reduced understory cover, and exotic plants. There was no evidence observed that these activities were contributing to problems meeting Land Health Standards in the Norwood LHA area.

Past Vegetation Treatments and Woodcuts: Many vegetation treatments done over the past 50 years were either poorly implemented, not seeded, seeded with nonnative species like crested wheatgrass, or poorly managed after treatment. Some woodcuts suffer from similar problems, and are also likely to be weed-infested. Indictors like diversity, exotic plants, herbaceous species cover, bare soil and pedestalling sometimes reflected poor health for soils and vegetation as a result. Vegetation treatments and woodcuts contributed to 2,753 acres not meeting either Standard 1 or 3, and contributed to and additional 9,124 acres meeting Standard 1 or 3 with problems. Standards 2, 4, and 5 were evidently not substantially impacted by old vegetation treatments or woodcuts.



Water Diversions: Water diversions and flow augmentation—either using natural channels to convey additional irrigation water or to drain irrigation tailwater--have altered flows and contributed to channel morphology and riparian vegetation changes along many streams in west central Colorado. Water diversions contributed to 1.3 stream miles meeting Standards 2 and 5 with problems. An additional 16.5 stream miles were presently meeting standards, but may decline in condition in the future as a result of these uses. The Lower San Miguel River is significantly affected by water diversions from the CC Ditch, while the streams that drain the Norwood, Redvale and Nucla agricultural areas are receiving supplemental, often sediment-laden water.



Other Causes: A variety of other causes were also cited for some polygons failing to meet a standard, or meeting with problems. These problems are listed below.

Cause	Acres Not Meeting	Acres Meeting w/ Problems	Miles Not Meeting	Miles Meeting w/ Problems
Drought	0	678	0	0
Watershed Condition/Recent Burns	421	8,415	4.4	8.5
Interspersed w/ private lands, weedy region	33	958	0	0
Fire Suppression	4,450	3,806	0	0
Noxious or invasive weeds	2,375	147	1.3	2.9

Causes of Large Scale Problems: The long term trend for the west-central Colorado landscape is one in which vegetation seral stage is advancing, the average patch size is getting larger, the amount of "edge" is decreasing, the size and quality of browse stands are declining. This has been addressed to a large extent in the Norwood LHA area by the Mailbox Park vegetation treatments, and the Burn Canyon, Bramiers, Craig Draw and Naturita Ridge fires. Vegetation mosaic objectives are contained in the Uncompahgre Field Office Fire Management Plan. There are still some problems with attaining these objectives, which should be addressed through development of a vegetation management strategy.

Concerns about tree invasion causing major land health problems are lessening in light of the ongoing drought and recent research on pinyon dendrochronology and stand structure on the Uncompahgre Plateau. This research indicates that many woodland stands have experienced density increases followed by density declines over the past several centuries, and these appear to be linked to climate fluctuations (Eisenhart 2004). Two prolonged wet periods over the past century are likely contributing to the increases in tree density, both within woodlands and invasion into new communities. Land management practices are probably also contributing, as livestock grazing may enhance tree establishment, and young trees have reappeared in the woodland chainings from the mid 20th century. However, the drought has recently killed many of these "invading" trees, with tree death in some "invaded" areas as high as 90%. As yet there is no evidence that frequent fire in the shrub communities repelled tree invasions, so the effects of fire repression are not yet implicated.

Other, more difficult landscape level issues include human development and oil and gas drilling which are both expanding and causing fragmentation of key habitats for several species. Further, the abundance and amount of area supporting exotic and noxious vegetative species is increasing. Because of these, this area, as well as much of the adjacent landscape, is declining in overall quality for many species, and is becoming more favorable for weedy, invasive, typically nonnative species, with cheatgrass being the principle species of concern.

DECISION RECORD

DECISION: It is my decision to accept this determination of cause for problems associated with the Standards for Rangeland Health found during the Norwood Landscape Health Assessment.

RATIONALE: The determination was based on extensive data collection coupled with review by an interdisciplinary team familiar with the landscape unit and the history of land uses that have occurred there.

SIGNATURE OF AUTHORIZED OFFICIAL: _____

Barbara Sharrow, Field Office Manager
Uncompahgre Field Office

DATE SIGNED: