# ALDO LEOPOLD AND THE BLUE:
# GRAZING, EROSION AND WILDERNESS

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The Blue River arises in the mountain country between Alpine, Arizona, and Luna, New Mexico, and zigzags south through the rugged canyons of the Blue Mountain Range, keeping mostly on the Arizona side of the border with New Mexico. The Blue watershed covers an area roughly 20 miles at its widest east to west, and over 40 miles as the crow flies from the north to its southern mouth. There the Blue merges with the San Francisco coming out of New Mexico, and after not many miles this river passes through Clifton, Arizona to join the Gila River. The tributaries of the upper Blue begin in green forests of Ponderosa pine, spruce and fir at about 8000 feet, while the lower Blue descends to just below 4000 feet in drier country dominated by juniper, cedar and pinyon. The Blue watershed on average receives about 20 inches of rain a year.

The Blue, remote, rough and historically dangerous due to roving Apache bands – Geronimo's among them – never was settled by the Spaniards, and attracted Anglo-American pioneers only in the 1880's. Some came to farm, while others, especially Texans, brought ideas of running herds of cattle. The two pursuits were complementary, and by the 1890's a thriving ranching and farming community of about 300 people was scattered along the river and its creeks. It was granted the post office of "Blue, Arizona," which still exists and puts it on the map, if somewhat obscurely.

Blue continued for a hundred years as primarily a ranching community until the mid-1990's. Then, rather abruptly, under environmentalist and political pressures from both inside and outside the U.S. Forest Service, the Alpine Ranger District of the Apache-Sitgreaves National Forest radically cut back the permitted number of cattle allowed to graze on Forest allotments on the Blue. Cuts ranged up to 80%. The cumulative effect of these reductions in the Alpine District (which covers most of the

Blue), succeeded in decreasing cattle numbers far below the minimum that would allow families on the Blue to make a living by ranching, as their forebearers had. Some "permittees" (ranchers with Forest Service permits to graze an "allotment" of federally owned land) have since given up ranching altogether, some still keep the few cows allowed them, but all have had to seek income elsewhere. In comparison, the smaller number of ranches on the lower Blue lying in the Clifton Ranger district did not see large cuts in the 1990; but one allotment there was retired in the late 1980's, and only two family ranches today remain viable.

Researching this situation led me to the story of Aldo Leopold and his experiences and writings on the Blue. These still have relevance today. Indeed, Leopold's comments on the Blue have often been cited, inside and outside of the Forest Service, by opponents of present day cattle grazing to bolster their case. The record, however, is more complicated than the citations from Leopold would suggest; in fact, it is replete with ironies. This article proposes to explore further the issues of grazing, erosion and wilderness that Leopold initially raised about the Blue.

Aldo Leopold, as most readers know, is today widely recognized and even revered for his writings on wild nature and the ethics of conservation, and for his advocacy for creating wilderness areas within the U.S. National Forests. Also well-known is the fact that the early part of his working career was spent with the U.S. Forest Service in the Southwest, where he began developing his ideas. Less remembered is that his initial posting as a newly graduated forester in 1909 was to the newly created Apache National Forest in Arizona as a "forest assistant." His first important assignment there was to be crew chief of a reconnaissance party taking inventory of timber in the Blue Range.

The two years he was stationed on the Apache Forest gave Leopold a good opportunity to know the Blue and its people. He appreciated the excellent hunting of the country, he relished the wildness there, and he would later call the Blue "this smiling valley" (Meine 1988: 87-93; Leopold 1946: 629; Leopold 1949: 133). The Blue is mentioned in lyrical terms several times in his classic *A Sand County Almanac.* Perhaps it was also on the Blue that Aldo Leopold had the memorable experience he recounts of killing a wolf and "seeing a fierce green fire dying in her eyes" (Leopold 1949: 129-130). This encounter symbolized the beginning of his evolving ideas about predators, the balance of nature, and wilderness. Leopold's biographer Curt Meine has

arrived at the conclusion that the event probably happened on Leopold's 1909 reconnaissance of the Blue, citing circumstantial evidence and a "process of elimination" (Meine 1988: 93-94, 543). However, because Leopold himself did not identify the time and place of his "fierce green fire" epiphany, speculation also exists that the scene may have been a literary reconstruction of various experiences and ideas occurring to him over time.

## I.

In any case, despite Leopold's enthusiasm for the wild qualities of the Blue, he must have recognized that the place was far from virginal: the valley had been significantly altered by the arrival of settlers in the previous 20 years. Overgrazing, woodcutting , drought and flood had wrought great ecological change to the river and lands surrounding it.

The years 1885 through 1905 had seen on the Blue the same pattern of livestock boom and bust that occurred throughout the Southwest, the only difference being that it came later to the Blue. The boom was fueled by a number of converging factors: an open range with free access to grazing, the elimination of the Indian threat, the extension of railroads to ship cattle to market (Clifton, Arizona, and Magdalena, New Mexico provided railheads for the Blue), and ample financial capital in the form of bank loans enabling ambitious ranchers to greatly enlarge their herds.

Some of the early pioneers on the Blue seized this opportunity. During the 1890's "many cattle were brought into the country" (Fritz 1978: 68). Too many cattle would be brought in. Like ranchers elsewhere in the Southwest, cattlemen on the Blue originally did not fully comprehend the limits of the land, or the problem of overstocking and overgrazing . Naturally, they wanted to prosper in the cattle market, and provide a good living for their families. But even if they had all been restrained in their goals, and had possessed a knowledge of their environment which probably could only be learned through hard experience, the early ranchers would still have found it difficult to ward off the overstocking and destruction that occurred on the Blue as elsewhere on the western frontier.

The range was "open" – free for anyone to use. A pioneer family on the Blue could only homestead a quarter section of 160 acres to claim as private property. So a

classic situation of the "tragedy of the commons" ensued. The range belonged to no one, or to anyone who could bring their livestock onto it. This meant not just the cattle of people settled on the Blue, but also the cattle of neighboring settlements. People from Alpine and Nutrioso in Arizona, and in Luna and across the Blue Range in New Mexico, drove their herds into the Blue country for what was considered then as now excellent winter range.

By 1900, Blue country was as full of livestock and people as it would ever be. My analysis of the Census of that year puts the population at about 300 – the same estimate an old cowman later gave to Aldo Leopold (U.S. Census Bureau 1900; Leopold 1921: 270). Over 40 ranches or farms lined the Blue valley, and homesteaders were still arriving.

No one could accurately estimate the number of cattle there at the time – there is no way of knowing – but all opinions agree the number was extravagantly high compared to later standards. The four biggest outfits had together upward of 10,000 cattle by their own estimates, but many others on the Blue and from outside the Blue also ran cattle there (Cosper 1982). A later Forest Supervisor would comment: "The abundance of grasses was very much over estimated as to carrying capacity. The Blue River and surrounding area was stocked heavily" (McDonough 1983).

As before in the West, overstocking combined with drought brought disaster. The five years 1899 through 1904 saw precipitation fall well below normal – "a most severe drought" (Fritz 1978: 68; Bahre 1996: 2). The damage done to the upland pastures by overgrazing in these conditions is not documented, but can be imagined.

> During the late 1890's and around 1900 a drought hit the country and lasted until the feed on the winter range around Springerville and St. John's were in bad shape. Some of the cattlemen began throwing large herds of cattle into the Blue River. As the drought continued, more cattle were thrown into Blue River until it was heavily grazed. A rancher named Wall was reported to have thrown hundreds of head of cattle into Bush Creek, depleting the range until many of them died, and others had to be removed to prevent a complete loss from starvation.
>
> (*Pioneer Meeting*: n.d.)

Cattle died by the thousands. Those that survived were concentrated on the river bottom by the remaining water. There was competition for this prime land, and for the water itself. Due to the drought, cattlemen relied increasingly on growing feed for their

stock, which could be done only on irrigated fields on the river bottom, and often serious conflict erupted over poorly defined property rights to land and water.

> With the coming of feed raising on Blue River, fences became a necessity, which at first, was a bone of contention for the range riders, that brought about range feuds, quarrels, and killings, over boundary lines, cut fences, and water holes, and furnished what some of them took as an excuse to "shoot out" many other disagreements. (Cosper 1940: 9)

Several such killings occurred in the first decade of the 20th century – with no one brought to justice.

A leading rancher, Fred Fritz Jr., later summed up the tragedy:

> During the severe drought which began in about 1899 and lasted until about 1903. . . Water dried up and cattle died in great numbers . . . and all ranchers took a great loss. . . . [T]here was no way to protect your range from over grazing by others, consequently there was no effort made on the part of the rancher to reduce numbers. A low estimate would be 15 cattle [then] to one now (1964). . . . We all had too many cattle on the range back in those days. There was no incentive to try and save forage, you couldn't, other cattle moved in on you, consequently the range, especially around permanent waters, was abused. . . .
>
> In addition to the large number of cattle on the range at the turn of the century there were also thousands of goats and large numbers of horses and wild burros. On our particular range there were nine different goat outfits. Most of the goats were gone by 1910 but the scars they made are still here. *It was in those early years that the country was hurt.* [Italics in original]
>
> (Coor 1987: 224)

Fritz, whose father was one of the first settlers on the Blue, had a ranch on the lower Blue, grazed over by goats as well as cattle. The goat herds seem to have been owned primarily by Mexicans and Spaniards. Mexicans and others with burros were also involved on the lower Blue in cutting wood to serve the needs of Clifton, Arizona and surrounding towns. During the same years the Blue River was being settled, downstream on the San Francisco River the area around Clifton had blossomed into one of the biggest mining districts of the Southwest – principally of copper, still mined there today. Wood was needed for the mineshafts, for firewood and for general construction, and the cutting of timber extended up the lower parts of the Blue River and its watershed, as will be seen.

Droughts were bad enough, but disaster was compounded when the drought was ended by heavy rains. A series of unprecedented floods tore down the Blue and

San Francisco Rivers, in December 1904 and January 1905, and again a year later in December 1905. Ranchers James ("Little Jim") Cosper, and his father Toles were in Clifton not long before Christmas 1904, delivering cattle and buying groceries and "Christmas things," when it started raining. They loaded their mules and headed towards the Blue overland, camping out, for the San Francisco River had flooded out the wagon road to the Blue. When they reached Pigeon Creek, normally a small stream, they found it was a river they couldn't cross.

> We walked on down toward the mouth of the canyon and looked off in the Blue, and you could see lots of cottonwood trees and sycamore and all kinds of trees – great big old trees – going down end over end. There was a lot of timber on this creek then. We stayed there three days. It rained day and night. [After two more days walking and camping out] the next day we packed up and went into the [Cosper] ranch. It didn't look like the same place, at all. Out in front of the creek was a big bottom with timber on it – a pretty stream down there. There wasn't a tree left on that flat; it took them all. Dad had some big corrals there – there was no sign of a corral or nothing. . . .
>
> Q: That changed the character of Blue River forever, I guess?
>
> A: Yes, it did. It will never be the same again. It was a good road all the way down there. . . . My dad would hook up the buggy and leave the ranch up there and trot down to Clifton in forty-five minutes or an hour. The only place you slowed down was going off the bank, crossing that creek channel (Cosper 1982: 139-40)

The wagon road from Clifton up the San Francisco and Blue Rivers, that went as far as Alpine and Luna, and connected all the Blue watershed, was wiped out. It was rebuilt during the summer, but was totally destroyed again by the floods of December 1905. It was never afterwards rebuilt.

A report by W.W.R. Hunt, a Forest Service agent who surveyed the area right after the December 1905 flood, says that the earlier floods destroyed "75% of the little farms along the San Francisco and the Blue." They washed away the northern end of the town of Clifton, and damaged the plant of the Arizona Copper Company. But the flood of December 1905 was worse, and "completed the ruin of the agricultural lands along the rivers" (Hunt: 1905).

Floods recurred in 1906 and 1907. Fred Fritz, Jr., recounts:

> [T]he flood of 1906 washed the barns away and came up to the door of Uncle Dick and Aunt Theresa's house. They became disgusted and

> father bought their interest in the ranch and they moved back to Fredericksburg [Texas] with their five children. . . .
>
> After the high floods of 1905-06 and 07, many people left Blue River. Many of the small farms were washed away. The Blue River Road, north and south in Eastern Arizona between Safford and Duncan Valleys to Alpine and Springerville, was gone. The post office at Benton . . . closed. Mr. Balke was the postmaster. . . . After the big floods, the Balke and McKeen families moved to Alma, New Mexico and the school at Benton ceased to exist. Also in those early days there was a post office, store , saloon and school at the mouth of the Blue. The post office was called Boyles. Today, no one lives there. (Fritz 1978: 68, 71)

## II.

When Aldo Leopold arrived on the Blue in 1908, memories of these events were fresh in the minds of the settlers there, as well as the Forest Service personnel. In response to the floods, the whole of the Blue watershed had been added to the Black Mesa Forest Reserve, out of which the Apache National Forest was created the year before Leopold's arrival. The rationale for this addition had been to mitigate the conditions that created the flooding (Hunt 1905).

Leopold spent only two years on the Apache, but the impressions he formed there certainly remained with him. Ten years after leaving, as Assistant District Forester based in Albuquerque, Leopold had developed a strong interest in the problem of erosion he had witnessed around the Southwest – probably first on the Blue. He would cite the Blue in talks and a paper in 1921 and 1922. The paper was read at a meeting of the New Mexico Association for Science in 1922, but was not published until 1946 (Leopold 1946). Entitled "Erosion as a Menace to the Social and Economic Future of the Southwest," the paper leads off by using the Blue as what Leopold termed "an extreme example" of the disastrous cost of erosion.

From his knowledge of conditions in 30 different valleys in Arizona and New Mexico National Forests, Leopold could cite only three where there was no erosion, six where it was "slight," nine "started," eight "partly ruined," and four "ruined." The Blue River he placed in the "ruined" category. He cites some data for Blue River:

| | Original [1900] | Present [1922] | Loss through Erosion |
|---|---|---|---|
| Cultivable land | 4052 acres | 472 acres | 3580 acres |
| Est. value [per acre] | $100 | $150 | |
| | $395,200 [sic] | $70,800 | $324,400 |
| No. homes | 45 (1900) | 21 (1920) | 34 |
| No. people | 300 (1900) | 95 (1920) | 205 |

-- paper presented by Aldo Leopold in1922 (Leopold 1946: 628)

He goes on in sad detail:

> But after all, a cash value cannot express the loss actually incurred. Not only were 34 established homes destroyed, but the land carried away was a "key" resource, necessary for the proper utilization of the range, timber and recreational values on half-a-million acres of adjacent mountains. There is no other land, generally speaking, suitable for homes, stock-ranches, mills, roads, and schools. . .
>
> Take, for instance, the adjacent range. This lost land was where the stockmen lived and had their little alfalfa fields, grain fields, gardens, and orchards. With no fields, all feed for saddle and work horses and weak range stock must be dispensed with or packed in 60 miles from the railroad at great cost. This may make the difference between a profitable and an unprofitable stock-raising operation. . . . Moreover a stock ranch deprived of its garden patch, orchard, milk cows, and poultry is no fit place to establish a home and raise a family. Regardless of the profit of the business, it is an unsocial institution.
>
> But this is not all. The destruction of the bottomlands along Blue River destroyed the only feasible location for a road, connecting the ranches with each other, with schools and with the outside world, and enabling timber and minerals to be put on the market. . . .
> The U.S. Forest Service and the counties are now actually spending half-a-million dollars on a road through this country but it cannot tap the remains of the Blue River community. It must clamber over the rocks and hills at huge expense. (Leopold 1946: 628-629)

After still another devastating flood of the Blue in 1916, authorities ruled out a route down the Blue River valley for the highway needed to transport timber from Alpine and Springerville, in the high mountains of the Apache Forest, down to the towns, mills, copper mines and rail head around Clifton and Morenci. Leopold is referring to the twisting and turning "Coronado Trail" (U.S. Highway 666 ) which was

"clambering over the rocks and hills" at the western edge of the Blue watershed as Leopold ruefully spoke (Meine 1988: 93, 190).

After conceding the need to build this road, Leopold closed his remarks about the Blue with angry sarcasm:

> To sum it all up, we the community, have "developed" Blue River by overgrazing the range, washing out half-a-million in land, taking the profits out of the livestock industry, cutting the ranch homes by two-thirds, destroying conditions necessary for keeping families in the other third, leaving the timber without an outlet to the place where it is needed, and now we are spending half-a-million to build a road around this place of desolation which we have created. And to replace this smiling valley which nature gave us free, we are spending another half-a-million to reclaim an equal acreage of desert in some place where we do not need it nearly as badly nor can use it nearly so well. This, fellow-citizens, is Nordic genius for reducing to possession the wilderness.
>
> -- Aldo Leopold in1922 (Leopold 1949: 627)

He went on to the question, "What Causes Accelerated Erosion?" He had one answer to this question: overgrazing.

> History and experience have shown . . . that to graze the range at all usually means to overgraze the watercourses and bottomlands. Some concentration of stock at these points is unavoidable, even under careful management. History and experience have shown that this unavoidable overgrazing of the watercourses and bottomlands causes the first flood to begin tearing them out, starting a cumulative process of destruction that ultimately results in ruin. Even though the watershed as a whole be covered with grass, brush or timber in vigorous condition, the overgrazing of the bottoms will destroy the bottoms. Floods occur anyhow, and always have occurred. When they encountered a watercourse full of vigorous trees, willows, vines, weeds, and grass, they may have swept and scoured it pretty severely, but the living roots remained, to spring up and recover the land, and cause the next more moderate flood to heal the scars instead of enlarging them. But when the floods encounter a watercourse of bare fields, timber grazed clear of all undergrowth, and earth scars like roads, trails, and ditches already built parallel with the stream, the gouges left by one flood are enlarged by the next flood, an unprotected channel is excavated, . . . and in the long run our "improved" valley becomes a desolation of sandbars, rockpiles, and driftwood, a scar on the face of nature, a sad monument to the unintelligence and mis-spent energy of us, the pioneers . (Leopold 1946: 629; see also Leopold 1979).

Stating that "nobody advocates that we cease grazing," Leopold argued in favor of "a proper system of grazing control*, supplemented by artificial erosion control works*"

(italics in original; Leopold 1921: 267). He suggested fencing the bottoms and keeping them lightly grazed, restoring willows by planting cuttings along the banks of the stream, checking gullies with logs, stones or brush – plus more research into erosion control by the Forest Service. In keeping with his later thinking about a "land ethic," he wanted landowners to share the responsibility: "While public agencies must develop and demonstrate the technical methods and perform certain actual work on rivers and reservoirs, the real control work must be done by the landowner" (Leopold 1946: 631).

Although records are spotty, certainly some of Leopold's recommendations were carried out by the Forest Service. By the time he spoke, grazing was being brought under control by the Forest Service permit system. The open range was ended. Fencing had been introduced. Cattle numbers were substantially and constantly reduced over the years, and goats and burros disappeared. Yet floods, small and large, still occur sporadically down to the present – the last really destructive one in 1983 inundated much of Clifton.

## III.

Aldo Leopold had declared the Blue valley "ruined." True enough, from an ecological viewpoint, the watershed and especially the riverbed had been damaged in ways that could not soon be healed (see NRST 2001: 9). However, the Blue was not at all "ruined" for the people there. The floods were a tragedy, and caused a number of settlers to leave. Some farming came to an end, for lack of topsoil. But in some locations farming continued, and plenty of forage remained for ranching. The people who stayed on the Blue went on with their lives over the rest of the century, still loving their "smiling valley."

Leopold did not specify the sources for the figures he cites in his 1922 paper to show the extent of the "ruin"; presumably they came from Forest Service data. I would like to compare his numbers with my own analysis of the U.S. Census rolls of the period [1]. Leopold's figure of 45 homes and 300 people in the Blue River Valley in 1900 corresponds closely to my reading of the 1900 Census rolls (U.S. Census Bureau 1900). The 1910 Census, unfortunately, does not allow the identification of a discrete Blue population. But the1920 Census contains an enumeration district, number 66, labeled

"Blue Precinct" (Arizona, admitted to the Union, had started to vote) (U.S. Census Bureau 1920).

"Blue Precinct" lists 270 people, with 50 men claiming to be owners of farms or ranches. However, a portion of the district – probably along the San Francisco near Clifton -- may be excluded from the Blue valley proper on the basis of city professions cited ("barber," "miner," "city engineer") and by surnames not among ones known for settlers on the Blue. Deducting these, one arrives at 167 people definitely living in 1920 within the Blue watershed, in 37 ranch or farm family households there. These numbers differ significantly from the 95 people and 21 homes cited by Leopold in 1922.

What accounts for this discrepancy? Perhaps Leopold was counting only families living along the river, and not those living up the smaller tributaries of the watershed. Or perhaps he was looking only at data from the lower Blue, which was much more devastated by the floods than the upper watershed. Whatever the case, the 1920 Census figures temper Leopold's tale of economic ruin: instead of a fall in population of 68%, the Census would indicate only a 44% drop. In terms of households, instead of a 53% loss, only 18%.

The ranch family population of the Blue would continue to shrink over the 20th century, primarily due to the economics of ranching and the trend towards smaller families, as school enrollments show. Even if no flooding had occurred, it is difficult to imagine that the Blue would have been an exception to the relative depopulation of rural America during the past century.

While never agreeing with Leopold that their valley had been "ruined," the people living on the Blue have recognized in oral and written histories that the land and river had been sadly damaged by erosion. Ranchers themselves acknowledged that the Blue country was heavily overgrazed at the turn of the 20th century. But given recent campaigns to eliminate cattle from public lands for ecological reasons, and the virtual achievement of this goal over the largest portion of the Blue watershed, the question is worth asking: has cattle grazing been the sole, or even the major culprit, in the erosion that has occurred on the Blue?

In general, studies of erosion in the Southwest rarely single out only one factor. Many forces are simultaneously at work (for an analysis of the Gila River, see Dobyns 1978, especially p. 23). Yet Leopold's 1922 paper focuses entirely on "overgrazing" as

the sole source of the erosion he decries – and lumps together the cattle, goat and burro grazing which occurred on the Blue at the turn of the century.

Let us turn to other analyses of the problem of erosion on the Blue.

IV

The previously mentioned W.W.R. Hunt, a Forest Agent for the Forest Service, had surveyed the area right after the 1905 flood. His report, entitled "The Clifton Addition to Black Mesa Forest Reserve of Arizona" (Hunt 1905) argues for the necessity of this "Addition" in order to check erosion. The northern, higher, more thickly forested area of the Blue was already part of the Reserve; the "lower Blue," however, and the San Francisco River in Arizona were not at the time – but were soon to be added on Hunt's recommendation.

In his report, Mr. Hunt primarily blames the lack of forest cover for the erosion and flooding.

> The biggest proportion of water of course comes from the upper portions of the Blue and San Francisco Rivers, within the Black Mesa and Gila Forest Reserves. The principle damage, however, is usually done by the first rush of high water, which comes from this proposed Addition. The upper portions of those rivers have a much better forest cover to hold back the water, and also much of the precipitation is snow."

Why does the "Addition"(the lower Blue) lack adequate forest cover? Hunt blames not cattle, but woodcutting and goats.

> The industry of woodcutting to supply the adjacent mining camps with fuel, and carried on by Mexicans, is of course entirely dependent on this Addition. . . A strong protest may be expected from the people living in the towns of Clifton, Morenci and Metcalf, if the recommendation of this Report to forbid the cutting of pinyon and juniper is adopted. This will raise the price of wood in these towns. However, there seems to be no alternative.

He wants the cutting of living pinyon, oak and juniper to be forbidden, as well as the cutting of any species of tree along the watercourses. He recommends two rangers in the area, one east of the Blue, one west. "It is almost necessary that these rangers be

able to speak the Mexican language, as the principle feature of the work here at first will be dealing with the Mexican woodcutters." The woodcutters used burros to transport their loads, and the burros' grazing also contributed to erosion.

Goats are the other main problem cited by Hunt. The goats were herded and usually owned by Mexicans and immigrants from northern Spain.

> The goats, owned in bands of up to a thousand head, are scattered over nearly all of the proposed Addition. The great quantities of shrub live oak browse makes this excellent goat country. There are large areas on which the only cover is this live oak, and in these areas the goats are very destructive. They strip the foliage from the bushes, usually causing their death, and this is followed by a rapid drying out of the soil, making reproduction of the timber trees impossible.
>
> Goats should certainly be excluded from this area, just as they already are from the adjoining portion of the Black Mesa Reserve. To exclude them all immediately would work a hardship on the owners. It is recommended that for the first season, whatever goats are found on the Addition be permitted to remain during that year, and then a reduction of 20% of the original total be made each year, so as to give the goat man an opportunity either to sell out without loss or to seek a new location. *It is recommended that the present number of cattle and horses be permitted to remain the entire year*. [My emphasis.]

Hunt reports that the cattlemen in the area are "strongly in favor of the Addition. . . Their attitude, of course, is due primarily to hope for relief from the goats." Also, the Arizona legislature, at the request of the cattlemen, had passed a resolution asking for the creation of the Addition. Included in Hunt's report is the text of a petition of the cattlemen supporting the extension of the Forest Reserves.

A copy of this petition, as a letter, is found with W.W.R. Hunt's report in the files of the Clifton Ranger District. It was posted from the short-lived town of Benton on the lower Blue in early 1905 to the "Chief, Bureau of Forestry" in Washington D.C., and was signed by about twenty ranchers from the San Francisco and the lower Blue. It supported "the proposition to extend the southern boundaries of the Black Mesa Reserve" and

> [W]e respectfully assure the Department that the majority of settlers here, in fact all but those who are interested in goats, are heartily in favor of such an extension of the Forest Reserves. . . .
>
> Now there are about 20 persons owning or controlling about 7,000 head of goats, value about $25,000, employed by them around 10 persons, average wages about $20 per month. . . .

> If the Reserve is not extended, all cattle and horses in this region who have not died or already been removed, will be crowded or starved out by the goats within two years, if the destruction of range and underbrush and the consequent drying up of the springs continues.
>
> There are about 9,000 head of cattle, value $125,000, and about 1,000 head of horses, value about $20,000, controlled and owned by about 22 persons. Value of improvements, at least $8,000. Taxes paid by them last year, about $2,500. Employed by them, about 60 men, average wages $30 per month. One half of them cultivate more or less land aggregating about 150 acres. To this may be added that many small farmers who depend mostly on those cattlemen for support, will have to leave with them; and further, that it seems only a question of four or five years, when after driving the cattlemen out, the goat raisers will, by overstocking the range, starve each other out, and will have to be removed anyhow, leaving behind them a desert.

Goats were eventually removed, though "goat men" with Hispanic surnames are still recorded on the Blue in the 1910 census. It would be easy to speculate on possible ethnic or political bias in the Forest Service favoring the cattle ranchers over the Spanish-speaking "goat men." However, prejudice against goats (and sheep) in the early Forest Service widely prevailed on two other, more justifiable grounds. One, the conservationist opinion that goat and sheep grazing were potentially much more destructive of the forest than cattle. And second, that goat and sheep herding were often "tramp" operations, moving through different ranges, using transient camps; while cattle raising seemed more compatible with homesteading and permanent settlement, which it was U.S. government policy to promote (Barnes 1979:213-216; Barnes 1982: 198; Merrill 2002: 47).

That the cattlemen would petition to be taken into the Forest Reserve indicates they recognized that maintaining a truly open range was no longer workable; they accepted Forest Service regulation as a necessary antidote to overgrazing.

## V

Throughout most of the 20th Century, ranchers with permits were able to run enough cattle to support their family enterprises, this being an implicit Forest Service principle. Relatively few conflicts on this score before the late 1980's appear in the Forest Service records on the Blue. But the agency was determined to reduce grazing

numbers, and succeeded over time. "Squatters" without homestead papers or deeded land were early excluded, as were their cattle; "tramp" herds and outsider operations were also banned, all in favor of the local ranchers.

The Blue ranchers who had run such large herds at the turn of the 20th Century, came to operate much more modestly. The Fritz ranch, which once had 2500 cattle, was permitted for only 255 in 1912 (USFS 1964). Toles Cosper had been another pioneer rancher with thousands of cattle; by the time he received his homestead patent in 1909, "he had sold off a lot of his cattle. . . . and now had only a small herd of breed stock, just about enough to furnish him a shipment of 250 head each season" (Cosper 1940: 11). Other allotment data from the first few decades of the 20th century surviving in the agency files indicate permittees running cattle in the few hundreds, in numbers not greatly higher than later allotment "preferences."

Except for the World War I period, the Forest Service maintained a long-term policy of gradually reducing the stocking rate. Opinion in the agency in the 1930's still held that the Western range was generally overgrazed (Voigt 1976: 54, 109). The developing science of range management provided the basis for analyses and studies that could be used to provide the rationale for reducing livestock numbers. The official history of the Forest Service in the Southwest states that

> Range research and reconnaissance led to downward revisions in grazing capacity, both reducing the animal numbers allowed and the number of months in which the ranges of the region should be grazed. The needed reductions were not accomplished on most national forest ranges by eliminating grazing entirely, but by gradually reducing grazing intensity while at the same time using common sense and tact in building up a region-wide system of sound range management (USFS 1988: 96).

The Forest Service had learned to avoid issuing general mandates which would lead to political clashes with the stockmen's associations. The preferred approach was to adjust stock numbers downward "on a case by case basis." That this method worked, without any great uproar, can be seen in the falling numbers for all permitted animals in the Southwestern Region:

1909: 1,449,538
1919: 1,397,618
1931: 830, 485 (USFS 1988: 96)

Although totals are lacking, numbers of cattle on the Blue followed the same downward trajectory. Periodic droughts and difficult market conditions in the 1920's and 1930's also helped reduce herds. Since a family ranching operation would need a minimum of 200-300 cows then, as now, for economic viability, what occurred gradually over the century was the consolidation of allotments and permits into fewer operations. The typical herd utilized more range, thus reducing grazing pressure and lowering the total number of cattle on the Blue.

Key to the Forest Service efforts to manage and reduce herds was the fencing and individualization of allotments, which was at last feasible economically in the 1930's using the cheap labor of the Civilian Conservation Corps, the New Deal program to employ young men on public works. With fenced allotments, the Forest Service controlled and regularized the transhumance many Blue ranchers had previously practiced of "going on the Mountain" in the summer. In other words, Blue ranchers were given allotments in the higher ranges of the Apache-Sitgreaves Forest for their summer pastures –in areas often outside the Blue watershed. This allowed pastures lower on the Blue to be "rested" for use as winter pasture only. The availability of motor transport aided this process.

The Forest Service continued after the 1930's to reduce overgrazing but the emphasis shifted away from reducing stock numbers to relying more on range improvements that would boost carrying capacity. Still more fences were built to provide smaller and more workable pastures, which could be rested and rotated according to a plan worked out between the permittee and the agency. Roads and corrals were built to aid in trucking cattle. New watering sites were developed – windmills, stock tanks, piping from streams or springs to water troughs – so that stock could be spread over wider areas and removed from riparian areas. Salt blocks were used to lure animals away from congregating by the water. Efforts were made to remove harmful or useless vegetation, to control brush, to reseed pastures.

## VI

Did these patient efforts of the Forest Service and permittees decrease erosion on the Blue? Did the radical reduction of number of livestock make a difference?

Unfortunately, records available in the Alpine and Clifton Ranger districts, and Forest headquarters in Springerville, do not provide any conclusive or general answer to the question of grazing and erosion. Analyses of soil conditions on allotments began only in the 1930's and were conducted only sporadically over the subsequent decades up to the present. These analyses often did not have past baselines against which to measure – certainly none from earlier in the century. Carried out by different persons at different times – usually by range technicians, rarely by soil experts -- the studies may reflect subjective differences in judgment in rating soil conditions, and may therefore be difficult to compare or evaluate. In any case, what one finds in the records is a plethora of small verdicts which add up to no single overall picture.

On the upper Blue, with a few exceptions, allotments tended to have soil conditions rated "Fair," "Good" or "Excellent," and "stable" or trending upward, from the 1930's up through the 1990's. A series of "Erosion Problem Area Reports" done in late 1939 on some upper Blue allotments found some erosion which it connected with overgrazing, but put most erosion in "Class I"— the least serious. Some of the reports emphasized the steep nature of the country and that "an important cause of erosion here is geology." "Much of [the erosion] is normal geologic erosion" (USFS 1939a). "The principal cause of erosion in this area is geologic" (USFS 1939b).

A Forest Ranger in 1970 commented on an allotment analysis,

> Soils in the Blue area are quite unstable, as evidenced by the tremendous floods which occur periodically on the Blue River. . . . In some areas the poor soil condition is a geological phenomenon over which man has little control. In other areas, the soils are deep and fertile, and overlying vegetation will respond to proper range management practices, thus stabilizing the soil. (USFS 1969, Introduction.)

In the rugged country of the Blue, such areas might alternate within the same allotment. And though many reports recognized the "erosive" character of much of the land, there were few recommendations for reduced grazing on particular pastures

If erosion conditions on the upper Blue for the most part looked tolerable to the Forest Service in the second half of the 20th century, evaluations of allotments on the lower Blue often were much more critical. Whether this difference reflects varying geological conditions is unclear. Certainly it might reflect alterations in climate and vegetation, due to falling altitude and less rainfall on the lower Blue. Another factor

which may have made a difference is that most of the lower Blue is part of the Clifton Ranger District, while the upper Blue is under the Alpine District.

Evaluations were especially harsh regarding the soil conditions of five allotments that fell mainly within the boundaries of the "Blue Range Primitive Area." This Primitive Area had been created by the Forest Service in 1933, together with other areas over the West, as part of a policy to preserve wilderness that had been originally advocated by none other than Aldo Leopold in the early 1920's (Meine 1988: 194-197). His ideas had returned to the Blue. Leopold had envisaged roadless areas as the main criterion for wilderness, but on the Blue as in other "primitive areas" roads did penetrate portions of the designated area. Boundaries simply were gerrymandered around them and the private "inholdings" where some ranch families lived virtually surrounded by the official "wilderness." Also as elsewhere, ranchers on the Blue were allowed to continue grazing the lands they had traditionally used within the "Primitive Area," which incorporated parts of 19 different allotments .

Today, the Blue Range Primitive Area has the odd distinction of being the only designated "primitive area" left in the U.S. Forest Service system. Following the passing of the Wilderness Act of 1964, all other primitive areas were converted to official "wilderness" and became the core of the U.S. wilderness system. Why the Blue remained in its anomalous position of a primitive area was due to political opposition to wilderness designation within the Arizona Congressional delegation. This opposition was fueled by the lobbying of the Phelps Dodge Copper Company, with its interests in present and future water and mining rights in the lower Blue; and also by the ranchers of the Blue, concerned over what "wilderness" designation might portend for their grazing rights. Though these efforts succeeded in preventing the Blue Primitive Area from acceding to "Wilderness," the Forest Service decided in any case to administer the area as if it were virtually an official wilderness area.

Local ranchers believe that motives concerning the would-be wilderness area might partly explain the Forest Service drive since the 1960's to reduce stocking numbers, retire permits and buy out private holdings within or bordering the Primitive Area. The Forest Service confirms it has a policy of buying out inholdings and reducing grazing where necessary, but denies any direct connection between these decisions and the wilderness issue (Bedell 2000).

VII

The Forest Service had tried for years to obtain the "XXX" Ranch in the heart of the Primitive Area -- the first ranch established on the Blue, in 1884. Freddy Fritz Jr., son of the pioneer rancher, was owner and operator of the XXX and also an influential political figure in the Arizona legislature. But childless and in his 70's, it was clear he would have to sell to someone; and like other ranchers on the Blue, he preferred that his ranch go to another rancher, and not to the Forest Service (Goodwin 2000).

In 1974, the Clifton District Ranger, "alarmed at the extent of the deteriorating range and watershed conditions, notified Mr. Fritz . . . that he would not be in a position to recommend transfer of the [allotment] permit in the event of a ranch sale or transfer" (USFS 1979). Fritz contested this threat, and in 1977 sold his ranch and transferred his permit, which had six years to run, to a neighboring rancher.

Later in 1977, Gary A. Davis, a wildlife biologist for the Forest Service, surveyed the large Sandrock grazing allotment that went with the XXX ranch. The conclusions he conveyed to the District Ranger were unusually indignant and pointed for a Forest Service memo. He deplored the erosion he found and the condition of the riparian habitat. "In my opinion . . . we are violating our own laws by allowing the continued degradation of the land. The problem of overgrazing by domestic livestock on the Sandrock Allotment has been recognized for many years." He goes on to cite excerpts from agency documents on the allotment from 1929, 1933, 1934 the 1960's, critical of range conditions and blaming over-grazing. He accuses the Forest Service of having ignored its own data and failing its own commitment to protect the land by acceding to demands for too much livestock. It is his "personal opinion that in order to alleviate the deplorable conditions existing on this allotment, we need to eliminate grazing by domestic livestock" – six years in the future when the permit would be up for renewal (USFS 1977).

Over the next six years the Clifton District did in fact engage in contentious negotiations with the new owner, a veteran rancher named Sewall Goodwin. Goodwin thought the land was in much better shape than the Forest Service was claiming – otherwise he would not have bought the ranch -- and he resisted reducing his herd. In 1983, the issue came to a head. The Greenlee County Supervisors held a special meeting

to discuss the "problem allotments" on the Blue, and Arizona Congressmen and environmental organizations became involved.

The National Forest Supervisor Nick W. McDonough issued a "Sandrock and AD Bar Allotment Fact Sheet" (the AD Bar being Goodwin's other allotment). McDonough conceded that the big stock reductions the Forest Service wanted "remove or very nearly remove these allotments from any serious consideration for further grazing," but justified the agency's position as based on soil, water and range analysis. His memo covered the whole history of overgrazing and flooding early in the century, and quoted the same documentary evidence the wildlife biologist Davis had cited in 1977 pointing to overstocking and erosion. He concluded:

> It is my belief that the bulk of the flooding occurring on the Blue River at this time, is occurring within the depleted portions of the Sand Rock, AD Bar, Strayhorse, Alma Mesa, and Raspberry-KP allotments. Other allotments, though contributing initially to this problem, have now been corrected with stocking and management adjustments.
>
> (USFS 1983a)

All five "problem allotments" were within the Primitive Area on the lower Blue.

Other ranchers on the Blue rallied in solidarity with Goodwin. To them it was unprecedented for the Forest Service to propose permit cuts drastic enough to force a ranch out of business. The retired Freddy Fritz commented to the County Supervisors that his former allotment had been called "sandrock" for a reason: for his lifetime it had been bare in many places, with no vegetation – "it'll never have much production." He attributed whatever damage to have been done prior to his taking over the ranch in 1917, during the days of the open range. But he thought it could still run 300 cattle, as he had been doing the years before he sold out (Greenlee County 1983).

A story in the Clifton *Copper Era* newspaper on May 25, 1983, noted: "One veteran rancher seemed to sum up the cattlemen's view of the situation, when he stated at the meeting, 'Anyone that's got enough guts to live up there and ranch in that rugged country, well, we should just leave him alone and let him do it."

But the Forest Service was determined not to leave the situation alone. Goodwin comments:

> The contract showed that there was a balloon payment [an extra large payment] on the sixth year. They knew about the payments, and the sixth year was when we started having trouble with the Forest Service. They cut our allotment from 300 to 120 head, and they said they were going to cut the 6K6 [his other, neighboring ranch] from 200 to 50. I've got that in writing. . . . We could see the handwriting on the wall, and it's kind of hard to fight the government. . . .
>
> I feel they used the cuts as a tool to get us out and to acquire that patented land. They were going to cut us so bad we couldn't stay. . . . When you get one cow to the section [one square mile], that's what it amounted to.
>
> So for some time there has been a Government program to buy up the Primitive Area. We didn't sell the Three X's to the government. We sold it to some investors, and they turned around and traded it to the Forest Service for some land in Show Low. And we took the cattle off. . . It's cute the way they do things, but they just squeeze you out.
>
> (Goodwin 2000)

On December 20, 1983, a news release from the Apache-Sitgreaves National Forest office announced that the Sandrock allotment would be closed to livestock grazing for an "indeterminate period" in order "to allow the watershed to recover through the natural increase of vegetation" (USFS 1983b).

But the pressure on permittees did not end with Sewall Goodwin. In the fall of 1988, officials from the Southwest Region offices of the Forest Service in Albuquerque took a field trip with Clifton District personnel over the allotments of the lower Blue. The field trip report, prepared by the Regional Ecologist, Reggie Fletcher found the erosion problems "immense" and trending downward in condition.

> Much of the District is extremely steep and rugged. . . . Soils are generally shallow. . . Such soils are extremely difficult to improve when degraded. Erosion rates are extremely high with bedrock exposed in many areas. . . . The fragility of the range ecosystem in its ability to sustain livestock has been underestimated in virtually all of our actions. The permittees are now generally fearful the Forest Service will completely remove livestock from many allotments in the District . . . .
>
> For the remote and rugged ecosystems such as cover most of the Clifton Ranger District, productivity is low and erosion has been extreme.
>
> (USFS 1989a)

The report recommends that the Forest service follow the example of the Sandrock allotment, and "modify existing livestock use."

> Much of the District is to be considered in the no capacity category and most of the rest will be difficult to manage for livestock. However, during the field trip all present agreed it was imperative we avoid talk of closing allotments to grazing. Our objective should be to balance capacity with permitted, and leave it to the permittee to decide on the economic suitability of permitted AUM numbers [animal units per month]."
>
> (USFS 1989a)

In other words, instead of stopping grazing completely, the number of cattle permitted could be reduced so low as to make a ranch economically unviable – as had happened in the Sandrock case.

In the 1990's this strategy was indeed followed, on selected allotments in the Clifton District, but wholesale in the Blue portion of the Alpine District. The rationale in that District, however, had little or nothing to do with erosion, but instead with other ecological issues. In an ironic way, Aldo Leopold's vision of a Blue Valley "ruined" economically had belatedly come true -- "ruined" at least for the ranchers settled there. Their ruin had come not from floods or from trying to "possess" the wilderness, as Leopold had thought, but from a political and cultural climate radically changed from that of Leopold's day. The Forest Service was now less interested in protecting the livelihood of the ranchers who depended on it, and more interested in attempting to restore the land, changed by man as it was, to some state closer to a wilderness ideal, ironically an ideal pioneered by Leopold. Overgrazing – or any grazing – was seen as an obstacle to this wilderness goal.

## VIII

But overgrazing has not ended. In another irony which Aldo Leopold would certainly appreciate, a new ecological threat on the Blue Range emerged in the 1990's just when cattle numbers were being drastically reduced: an explosion in the number of elk.

The native Merriam elk had been eliminated from the Southwest through hunting or perhaps disease by the early 20th Century. Another sub-species, the Rocky Mountain elk, was introduced from Yellowstone National Park in 1913 for its value to hunters. Over most of the century, elk numbers remained low enough in the region

that no problem was perceived, despite the fact that elk and cattle compete for the same forage. But as early as 1989, a complaint from a Blue rancher, Charles Coleman, appears in a letter in the Forest Service files:

> I have observed pastures of the Lazy YJ, the VM and the WY-Bar ranches. Some have had no cattle for two years, many not for one year, and two private land places which have had no cattle for several years. These places all show extremely heavy use and very little difference in available feed. I see willow stands hedged down less than two feet high. I see alder stands with the bark eaten off of many trees. All of these areas above show 70% to 100% of all available food having been already removed as of May 7. All of this use is by big game species. This has been the pattern of use in the spring, summer and fall for the past several years. The hundreds of thousands of dollars spent by the FS and the permittees on fences, waters and good, sound management practices over the last 30 years is being thrown out the window. We've been producing an adequate and ever increasing amount of forage for both wildlife and livestock until the last 4 or 5 years. The gradual buildup of wildlife and livestock had gone hand in hand. Suddenly, because of a lack of sound management judgement by the FS, a population explosion of certain big game species was allowed to occur. Now we are approaching a crisis situation. . . .
>
> (USFS 1989b)

The same rancher the next year followed with another letter protesting in even stronger language the reduction of cattle numbers as elk populations were allowed to expand:

> The drought has very little to do with the lack of forage on our high country. The management practices that were in place would have provided an ample amount of all feed to accommodate livestock and a reasonable number of wildlife through several years of dry weather; in fact, had done so in the 1970's.
>
> The livestock industry made its share of mistakes in early days, and we have never lived it down. We are constantly beat over the head with reminders by the Forest Service and every radical group in the country. We will probably make more mistakes, because we're working people and people who do something sometimes make mistakes. However, this mistake is not ours, and we are not going to take the blame. This mistake clearly belongs squarely upon the shoulders of the Forest Service. Now we will see if the Forest Service will stand up and correct its errors, and admit its errors as the livestock industry had to do.
>
> We at the VM Ranch will voluntarily remove 20% of our cattle from the summer range for the 1990 grazing year. These cattle are being removed because we care about the habitat and are trying to be responsive, not because of the drought but because of the elk. Perhaps the range and the wildlife staffs of the Apache-Sitgreaves [National Forest] should voluntarily forfeit 20% of their gross income into a fund. This fund could either be used for habitat improvement or perhaps further education.
>
> (USFS 1990)

Records from the region did indicate a rapid growth of elk populations and increasing livestock-elk conflicts (Hess 1998:1-4). The "mistake," however, that the rancher wants to place "squarely upon the shoulders of the Forest Service," could not suitably be placed there, because the federal agency lacks jurisdiction over wild game species. By law, this power is reserved to the states and their game commissions. New Mexico had passed legislation to recompense affected ranchers with valuable elk hunting permits that could be sold, if the rancher could prove elk "depredation" of his privately owned pastures. But Arizona has no such legislation: one Blue rancher had to build a fence 8 feet high for $50,000 to protect from elk his 85 acres of hay fields (Luce 1998). And in any case, ranchers had no rights of compensation for allotment pastures they did not own.

The Forest Service can limit and manage grazing by domestic ungulates by specifying how many livestock are permitted on which pastures during which seasons. They cannot manage grazing by wild ungulates like elk in this way, since elk cannot be herded and can easily jump the fences built for cattle. The only way to control overgrazing by elk is to reduce their numbers by hunting. But here the Forest Service lacks jurisdiction; only the Arizona Game and Fish Department can issue hunting permits.

This Department positively advertises the abundance of elk in Blue country:

> Elk are widely distributed throughout the northern half of Unit 27 [the Blue watershed and nearby mountain allotments]. The opportunistic elk is thriving in habitats ranging from pinyon-juniper woodlands in lower elevations to spruce-fir forests at higher elevations. Hunters pursuing elk during September and October should have no problem finding plenty of animals, both bulls and cows, on high elevation summer range located above the Mogollon Rim. Late season hunters will have to brave the rugged, winter range country located below the Mogollon Rim, in the Blue River and Eagle Creek watersheds, if they hope to harvest a mature bull. . . . (AZGFD 2004)

However, Arizona Game and Fish has been resistant to reducing the number of elk, which generate large amounts of revenue for them through the sale of hunting permits, and also for the state generally through the elk-hunting industry. Hunters' lobbies have wanted as much forage as possible for to the elk, as have environmentalist groups, which in their many lawsuits against the Forest Service have usually asked for all of the resource to go to the elk and other wild species, and none to cattle. But what if elk are indeed overpopulating, overgrazing and harming the environment?

Environmentalists, drawing on the writings and the spirit of Aldo Leopold, long advocated the restoration of the Mexican gray wolf in the Southwest. They succeeded in January 1998 when Secretary of Interior Bruce Babbitt, saying he was on a mission to "erase the sins of the past," oversaw the first release of Mexican wolves on the allotment of a Blue ranch family (Kenworthy 1998). One of the rationales for wolf reintroduction was to restore ecological balance to the natural systems of the Southwest, including providing a predator for the expanding elk herds. At present, however, the wolf reintroduction program is still small and struggling; and although it has succeeded in mightily antagonizing the ranchers whose domestic animals are sometimes victims, the wolves have not made any discernible impact on the elk.

Arizona Game and Fish remains locked in discussions with the Forest Service over the question of reducing elk numbers. The de facto strategy of the Forest Service has been to use its cattle reductions to gather data to make the case against elk overgrazing. The Supervisor of the Apache-Sitgreaves National Forest commented:

> We've been working with the Game Department for many, many years on reducing the herd size of elk. And until we've taken all the cows off, and there's still over-utilization, we now have come to realize . . . [we] have just as much damage to the riparian habitats on the Apache side as there was when there was a lot more domestic livestock. And the Fish and Wildlife Service is aware of that. And so they're now exerting similar pressure on the Game Department for the same reasons – listed species and utilization standards. Last year one of the reasons no cows went to the mountain [high altitude summer allotments] was the elk never came off of the mountain. They consumed all the forage and there was no forage the cows could use, even as late as July. . . .
>
> (Bedell 2001)

Part of the Forest Service strategy is to have the U.S. Fish and Wildlife Service issue biological opinions that could be used together with the Endangered Species Act to pressure the Arizona Game and Fish into action. The Alpine District Ranger comments:

> [Elk] now can be looked at under the ESA. That's what we'll be looking at. They're destroying the riparian habitat just like livestock are. We've excluded the livestock now; now we're looking at the elk. It's now up to Game and Fish to manage the numbers, give more permits. . . .

> This is the first time in the history of the Alpine allotment [an allotment on the upper Blue], last year, that we held the permitted livestock off because the elk had used it too much. It's documented. The grazing permittee was upset with me doing it, but I said, "Wait a minute – you need to be thanking me for doing this. I just brought to a head the issue you've been trying to deal with for the last 20 years. Now you can turn around and thank me. . . . Because it's documented: the elk used all the forage up before the livestock. People [ranchers] have been running down the Alpine District for the last couple, three years about what we're doing. Well, I think they're going to find out that they're going to be thanking us here in the very near future for what we've done.
>
> (Settles 2001)

At present it is unclear whether elk herds will be substantially reduced, and even if this happens, whether enough cattle will ever be permitted back on the Blue allotments to make ranching again an economically viable proposition. One wonders whether the ranchers who have lost their livelihoods demonstrating, by default, the effects of elk overgrazing, will really be as thankful as the District Ranger imagines.

## IX

Nearly a century after the first big floods on the Blue, when erosion first came to the interest of the Forest Service, the agency commissioned outside experts to do a scientific assessment of the problem on the Blue River watershed. They called on the National Riparian Service Team (NRST), which gives advice and technical assistance to the Forest Service, the Bureau of Land Management and other government agencies interested in natural resources conservation. The Team did an onsite investigation in October/November of 2000, and submitted their Final Report at the end of May 2001 to the Forest Supervisor of the Apache-Sitgreaves (NRST 2001).

The Team found that "vegetation and site characteristics, along the entire length of the Blue River, appear to have been severely altered by a number of major impacts." One exception is an area on the upper Blue "above Blue Camp" which "still appears to have many of the characteristics expected at potential."

Although "recovery to pre-disturbance conditions will necessarily take centuries if not millennia," the NRST finds that "despite the near complete de-stabilization of the Blue River, there is remarkable evidence of recovery" (NRST 2001: 3).

The NRST were well aware of Leopold's analysis of erosion on the Blue, and agree that overgrazing has been a factor.

> Continuous year long grazing was the historical norm in this area, as was common throughout most of the Southwest. Continuous year long grazing would have limited recruitment of bank stabilizing vegetation and future supplies of large wood. (NRST 2001: 2)

> Overgrazing to the point of severely reducing upland vegetative cover further aggravates this by radically altering the hydrograph. The ability of the watershed to store and slowly release precipitation which falls on it is greatly reduced. (NRST 2001: 8)

The Team makes some of the same recommendations that Leopold did, years before. Where possible, cattle should be kept from concentrating on the river; off-stream water should be substituted; seasonal grazing strategies might be used. Different management techniques are discussed. Like Leopold in the 1920's, the Team believes that cattle are not incompatible with watershed restoration.

> We understand that there has been elimination of livestock grazing in some allotments on the Blue River and significant reductions or changes in seasonal livestock use in others. Much of the current upward trends is undoubtedly due to these changes. However, there may be additional opportunities to enhance both resource conditions and livestock production. (NRST 2001: 14)

However, the National Riparian Service Team does not agree with Leopold's view that livestock have been wholly responsible for the erosion on the Blue. Though they refuse to rank them in importance, the Team points to a number of other historical and ongoing causes of erosion, including road construction and maintenance, as well as channelization and diking "probably associated with agricultural development" (NRST 2001: 3, 15-22). Also the team recognizes the problem that "excess browsing by big game may be inhibiting new recruitment of woody species" in meadow sites in the upper elevations of the Blue, where elk by 2000 indeed greatly outnumbered the few cattle (NRST 2001: 12-13).

The "negative impact" of the cause cited first in their report by the NRST is a factor never mentioned by Leopold and Hunt, although it was occurring on the Blue during their stays there, literally before their eyes.

> Removal of large wood. Discussions on-site and early photographs (no date) confirm that the Blue River was used for log transport down river. These logs were later used as charcoal for mining operations. Undoubtedly, the Blue River channel was "cleared" for transport. The removal of anchored trees, combined with the log floats, typically destabilize banks and scour any new regeneration of vegetation (NRST 2001: 3). . . .
>
> In the case of the Blue River, the river and its watershed have been severely altered. Much of this alteration had already occurred by the early part of the twentieth century. Aldo Leopold went so far as to describe it in 1922 as "ruined." He attributed this to overgrazing. However, the historic photograph [displaying logs floating on the Blue River] of a log drive, taken in 1909, suggests that a substantial amount of timber harvest had also occurred in the watershed.
>
> The fact that the Blue River was subjected to log drives is important to any discussion of watershed restoration in that streams used for log drives were typically cleared and snagged to remove obstructions. In addition to the destabilizing effect of clearing and snagging, the log drives themselves did tremendous damage to the stream channel and banks. (NRST 2001: 6-7).

If the NRST is correct, we are presented with another striking irony. Aldo Leopold, who denounced the ruination of the Blue river valley, was himself an unintentional agent of its ruin. His first assignment on the Apache Forest was leading a team doing a timber inventory to be used in logging the Blue. More than that, however, his biographer writes,

> Three weeks into the reconnaissance, Leopold received orders to join two "expert lumbermen" on a four-day inspection of the Blue River. The Forest Service was trying to decide how to deliver the pine of the upper Blue to the towns, mills, and copper mines fifty miles downriver. It was the wildest piece of country Leopold had yet seen, and it was about to be opened up, either by driving the logs down the river or by building a new road up from Clifton. He waxed enthusiastic about moving the timber. "With 15 million a year consumption down at Clifton and the Copper Mines, there will be something doing on this forest before long or I'm mistaken. I am lucky to be here in advance of the big works" (Meine 1988: 92-93).

Leopold and his crew "recommended strongly against construction of the proposed road over the top and argued instead for dams, shear booms, flumes, and other stream improvements to permit driving logs down Blue River" (Flader 1974: 41).

Clearly the Forest Service either helped introduce the log drives to the Blue, or looked for ways to make them more efficient. The practice may well have begun before Leopold arrived, especially on the lower Blue and the San Francisco River closer to Clifton. A "logger" and a "millman" are recorded as living on the Blue in the 1900 Census. The Forest Service photograph of a large log drive cited by the NRST was taken in 1909, the year Leopold arrived on the Forest. Grace Johnson, who came to the Blue in 1913, remembers

> There used to be a lot more water in the Blue than there is now. There was enough water that at one time the miners in Clifton floated their logs down the river to Clifton from the Blue. They cut the logs up above the Box and floated them clear to Clifton (Coor, 1987: 62).

The "Box," a narrow canyon half way down the Blue, between the upper and lower Blue, had a sawmill just up the river from it. So there is evidence that the log drives continued for some time.

Part of the mission of the Forest Service at that time was to promote timber harvests from the National Forests to develop the nation. It should not surprise us to find Aldo Leopold agreeing with this purpose. Throughout his career with the Forest Service, Aldo Leopold shared much of the utilitarian ethos championed by its founder, Gifford Pinchot. And despite his growing appreciation of wilderness values, and suspicion of many forms of development, Leopold never really broke with the "wise use" aspect of Pinchot's and Teddy Roosevelt's conservationist philosophy.

That said, it is impossible to imagine that Leopold would have been so enthusiastic about logging the Blue and driving the logs down a cleared and channeled river in 1909 if he had understood the consequences. What is striking, however, is that even by the early 1920's when he was agitated by the problem of erosion, he could not see its connection, in cases such as the Blue, to logging and log runs on the rivers. Perhaps this inability was a reflection of a larger institutional blindness.

If Aldo Leopold and the Forest Service did not understand the consequences of logging the river, they showed only the same lack of prescience as the settlers on the

Blue, the farmers and cattlemen whose home was the valley. The settlers' motivation was to build a good life for their families. They did not foresee how the cattle they herded and the irrigation ditches they dug might someday help cause the destruction of their fields and homes. The Forest Service had been established with the responsibility to protect natural resources, but similarly failed to foresee the impact of the timber harvesting and log driving it promoted on the Blue. Leopold had remarked about the erosion and floods, "The ranchman accepts his losses as an act of God. But foresters should not and need not so accept them" (Leopold 1921: 268). Just so; but what Leopold failed to see is that the foresters at the time had been just as blind as the cattlemen to the consequences of what they were doing.

If Leopold did not understand the specific irony of his work on the Blue, he was not unaware of what he was doing in a larger sense. His biographer remarks,

> The Apache had changed subtly but dramatically in the short two years he had spent there. Like his father before him who sold the barbed wire that subdued the plains, Aldo Leopold was part of a historical irony, taming the very wilderness he most loved. Escudilla was still there, of course, and the White Mountain plateau, and the Mogollon Rim, and the breaks of the Blue. Their absolute wildness, however, was gone: mapped, measured, confined to reservations, shot by a set-gun, rifled from a rimrock, broken and put to bit on a dusty street in Springerville (Meine 1988: 104-105).

## X

The future of the Blue is uncertain, and will be determined by large political and cultural forces that the settlers and the local Forest Service agents can probably only marginally affect. Certainly pressure will continue to restore the Blue to some ecologically ideal condition – whether compatible with livestock is the question. Environmentalists who want to replace ranchers and their cows with wolves and elk have waged a largely successful battle in the courts and in the government over the past two decades to implement their conception of "wilderness." And they continue to work on having the Blue Primitive Area, expanded perhaps, become an official Wilderness under the 1964 Wilderness Act.

This Act embodied the relatively recent and rather radical concept of Aldo Leopold and others that some lands' value lay in *not* being developed for human use.

The statute contained this definition: "A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and the community of life are untrammeled by man, where man himself is a visitor who does not remain." This would be an area which "retain[s] its primeval character and influence, without permanent improvements or human habitation. . ." (US Congress 1964).

Of course, this definition does not truly apply to the Blue. Men and women remain there, with their "improvements" and human habitations and roads to connect them, no matter what designation is given the gerrymandered area surrounding them, no matter if their cattle are reduced to a few or none. For the past 120 years the Blue has not been "untrammeled by man," as Aldo Leopold saw when he first arrived there in 1909. The Blue then had already been greatly transformed out of its "primeval" condition. That the Blue can still today be a desired candidate for "wilderness" status attests not only to the rugged beauty of the country itself, but also ranching's minimal impact on the landscape.

The final irony in this tale of the Blue River is that the movement to *create* a wilderness there relies on evidence – such as the presence of erosion and other human impacts – that would seem to disprove the notion that the Blue is the ideal embodied in the 1964 Wilderness Act. However this contradiction is resolved in other minds, the people who live on the Blue and who love its wild nature as much as any environmentalist, can never see themselves as mere visitors there, in the definition of wilderness. They see themselves more as members of what Aldo Leopold struggled to define as the "land-community" in his "land ethic": the Blue as a community binding together all the living creatures, including humans, on their common piece of earth, by their river.

## NOTES

1. A problem in analyzing the census rolls is that maps of enumeration districts have not been saved. Also, district boundaries apparently changed from 1900 to 1910 to 1920. However, knowledge of the names of the settler families and the roads connecting them, allows one to estimate with some confidence the population within the watershed, from the 1900 and 1920 and subsequent censuses.

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