

Grazing Allotment Administration along Streams Supporting Cutthroat Trout in Montana

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Within Montana there remain relict populations of native westslope cutthroat trout and Yellowstone cutthroat trout. The distribution and abundance of both subspecies of cutthroat trout in Montana, and throughout their original range, have drastically declined in the last 100 years due to genetic contamination, habitat perturbations and exploitation (Liknes 1984; Hadley 1984; Behnke 1979).

Livestock grazing may impact stream channels by increasing sedimentation rates, changing stream channel morphology, increasing water temperatures, and increasing bacterial counts (Platts 1981, Kaufman and Krueger 1984, Warren et al. 1986, Armour et al. 1991). Grazing may also break down stream banks and reduce or alter the streamside vegetation community. Impacts on fish abundance and distribution probably occur but are less understood (Johnson et al. 1977, Platts 1981). To evaluate how livestock grazing allotments were being administered, especially in riparian areas, by federal

land managers in the state of Montana the Montana Chapter of the American Fisheries Society's Land Management Committee (LMC) conducted a mail survey of FS and BLM units and which administered lands adjacent to streams supporting cutthroat trout.

Methods

A total of 575 stream reaches which supported westslope or Yellowstone cutthroat within federal lands in Montana were identified by querying the Montana Interagency Fisheries database (Holton et al. 1981). A survey form was developed which asked respondents to document the following:

- 1) standards and/or guidelines (nomenclature for either is "standards" for the rest of this report) used to regulate grazing of riparian and upland areas;
- 2) size of allotments and pastures;
- 3) number and type of animals;
- 4) capacity of allotments;
- 5) seasons of use scheduled and actually used during 1986, 1987, and 1988;

6) results of range monitoring of riparian and upland areas; and

7) the methods used to monitor range condition.

Survey forms were mailed either during the spring or fall of 1989.

A dBase III+ (Ashton Tate 1985) database file on an AT class personal computer was used to summarize the data. Actual use was considered different from scheduled use if there was a difference of five days or more. When respondents reported a range of values for range monitoring results, the mid-point (median) of the range was used.

Results

A total of 527 survey forms were sent out to 42 Ranger Districts in 10

National Forests (FS) and 48 were sent to three BLM Resource Areas in the state. The FS and BLM returned 479 and six forms, respectively. Twelve of the returned forms were not filled out because they had been sent to the wrong unit or had no federal land adjacent to them. Of the 473 forms completed, 365 reported that grazing occurred along the stream. Data analyses were based on these 365 reaches.

Riparian standards to reduce impacts of livestock grazing were reported for 347 (95%) of the 365 stream reaches with grazing. Upland standards existed for 284 (78%) of the reaches. Riparian and upland standards were usually Forest-wide or BLM-wide standards and were described in large-scale land planning documents. Few site specific standards were reported for individual allotments. Most Forest-wide or BLM area-wide planning documents contained general statements about protecting riparian and fishery values. Some plans included recommendations to resolve conflicts of use in riparian areas on the side of preserving riparian values. Not all units had specific standards by which to measure unacceptable use of riparian areas by livestock. In Forest Service documents where standards were identified, forage utilization standards ranged from 15 to 70% and recommended residual stubble height ranged from one to three inches depending upon range condition and type of system.

Forage use in riparian areas along 66 (18%) of the stream reaches were monitored during all three years, and forage use was monitored along 142 (39%) of the reaches at least one year out of three. Uplands were monitored less frequently, with 61 (17%) monitored all three years and 129 (35%) monitored at least one year.

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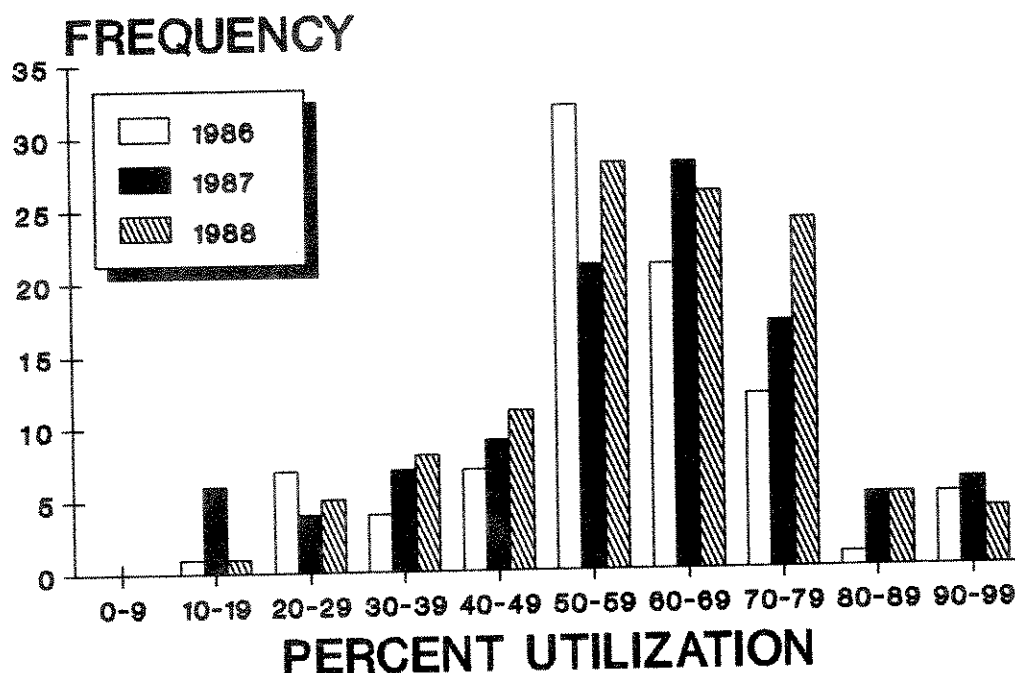


Fig. 1. Estimated forage use in riparian areas on grazing allotments adjacent to cutthroat trout stream reaches in 1986, 1987, and 1988.

Where riparian monitoring was done, forage utilization was high, averaging 55 to 58% per year for the three years (Figure 1). There were 39 to 59 stream reaches (43 to 54%) where utilization exceeded 60%.

Cattle were the most common livestock grazing public lands, occurring on 326 (89%) of the stream reaches grazed. Relative stocking densities could not be directly compared because several different measurement units were used to express the animal capacity and animal use. Season long grazing was used along 136 reaches (37%). Other grazing systems used included some type of deferred system along 112 reaches (30%), rest rotation systems along 70 reaches (19%), non-use along 18 reaches (5%), and continuous grazing along 13 reaches (4%). Pastures along the remaining stream reaches were either inactive or had some other type of system.

A total of 158 reaches (43%) had allotments which were not stocked at the projected capacity. Within these 158 reaches, 20 (13%) were overstocked, 91 (58%) were understocked, and the projected capacity was unknown along 43 reaches (27%). Common reasons given for overstocking

were: (1) sagebrush and/or timber encroachment with no re-adjustment of stocking levels; (2) poor initial estimates of primary and secondary range; and (3) that it was known that the allotment was overstocked, but difficult to reduce stocking levels. Common reasons given for understocked allotments included: (1) voluntary reductions by permittees; (2) allotments left vacant or in non-use; and (3) reductions to lessen observed impacts to other resources.

Actual use (days livestock used a pasture) generally matched scheduled use (days livestock were scheduled to use a pasture based on the allotment management plan) to within five days all three years (range: 78 to 83%). Actual use was not reported for 20 (5%) of the reaches. Actual use was less than scheduled use at six to nine percent of the reaches. Actual use was more than scheduled use at three to seven percent of the reaches.

Of the 70 reaches where rest rotation grazing systems were used, 50 (71%) had a rest pasture scheduled along the stream during at least one of the three years, while 62 (89%) had the riparian pasture actually rested during at least one of the three years. Reasons for more pastures rested

than scheduled were non-use by some permittees and field decisions by range administrators due to weather and range conditions.

Discussion

Since we received only six surveys from BLM units, the following comments apply more directly to the Forest Service. The responses from individuals illustrated a range of professional opinion and frustration in administering range programs on our public lands. Range professionals usually believed that adjustments were needed in their allotment management, particularly in riparian areas, if riparian areas were to receive the level of protection recently identified within their planning documents. Some of these units apparently modified scheduled use in response to monitoring as indicated by the higher number of pastures rested than scheduled for rest during some years.

Units which had little or no information did not report any problems. This lack of information does not necessarily mean that riparian/fisheries habitat is not being impacted; instead it may reflect a lack of funding or desire to accurately assess the condition of riparian habitats.

In some cases the presence of

standards to protect riparian and fisheries values was superficial because there was no quantitative means to document if standards were met. The lack of monitoring, even where quantifiable standards were available, also limited our ability to determine whether range management plans were being implemented, and if desired riparian protection goals were achieved.

Forage utilization standards ranged from 15 to 70% depending upon the condition of the riparian area and type of system. Many units allowed utilization in the 45 to 60% range. The number of reaches where estimated utilization rates were above 60% was relatively high (43 to 54% of reaches) all three years (Figure 1). The potential for reaches with utilization levels higher than 60% to impact stream banks is very high. Many researchers have shown that stream channel and/or stream bank alterations occur at utilization levels about 60% (Hayes 1978, Platts 1982, Platts and Nelson 1985). Clary and Webster (1989) recommended varying utilization rates with season. They recommended forage use rates up to 65% in spring, 40 to 50% in summer, and 30% or less in fall. They also recommended that the height of herbaceous stubble be at least four to six inches in the fall after grazing. Where stubble height standards existed, they were less than this six-inch recommendation.

While most of Montana was in a severe drought during 1988, scheduled use and actual use were the same for the majority of sites. The fact that actual use was the same as scheduled use, even when utilization was high, indicates that some range managers may not be responding to monitoring results. This suggests that over-use is likely occurring in some riparian areas. To some range conservationists' credit, the year when most reaches had a difference between scheduled time of use and actual use was 1988 (58 reaches versus 36 in 1986 and 35 in 1987), the drought year. Unfortunately, 54% of the stream reach pastures had high levels of forage use (60% and higher) in 1988.

Riparian areas were monitored during at least one of the three years along 39% of the reaches. I am unsure how monitoring sites were selected. Range managers may have monitored only those reaches which were either most likely to be impacted or least likely to be impacted. If monitoring was not done randomly, the percentage of reaches estimated as being impacted from monitoring information could be either an over or under estimate. The actual percentage of reaches being negatively impacted is unknown.

I am unsure why there was no "rest" scheduled during any one of the three years along 20 of the reaches managed under rest rotation grazing systems. It is possible that some of these allotments contained more than three pastures and the pasture containing the stream reach was not rested due to random chance. However, this discrepancy may raise a question as to whether these allotments were actually being managed as rest rotation systems. It was interesting to note that 12 pastures along stream reaches were rested when they were not scheduled for rest. Apparently, some field range conservationists managed for conditions observed on the ground and rested pastures when unacceptable impacts were observed.

The number of allotments which had season long use was disturbing since season long use usually leads to a decline in riparian condition and stream habitat quality (Platts 1989). While many of these allotments were located on Forests where grazing was a minor component of their management and numbers of animals were relatively low, forage in these areas is generally limited to small riparian meadows ("stringer meadows").

The BLM's apparent limited level of monitoring in response to our survey appears to be consistent with the status of monitoring statewide. The BLM reported that of the estimated 73,000 acres of riparian wetlands in Montana and North and South Dakota, the current status for 65,000 of these acres (89%) was unknown (USDI

BLM 1990). This lack of knowledge about the current status and trend of riparian wetlands on BLM lands is very disturbing. While conversations with Resource Area personnel on one unit discovered that monitoring was being conducted, this monitoring was frequently not used to modify management. The staff felt it was "hard to plug into management." Other problems in applying monitoring results to management, such as reluctance of permittees to change, still need to be addressed. The BLM needs to respond to field monitoring results by modifying allotment management to protect and enhance riparian and aquatic habitats.

What are the likely impacts of livestock grazing on the two native cutthroat trout subspecies in Montana? Based on an evaluation of the Forest Service's "COWFISH" model (Shepard 1989), impacts to channel morphology, streamside vegetation, and streambed composition will directly impact cutthroat populations. The level of impact on these habitat components directly affects the stream's ability to support cutthroat trout. Benke and Zarn (1976) listed livestock grazing as a contributing factor to the decline of cutthroat trout stocks in the West.

This survey indicates that present grazing management on federal lands in Montana is negatively impacting riparian areas and aquatic habitat. The level of impact was difficult to quantify from this survey, but based on riparian forage utilization information, up to 40 to 50 of the stream reaches surveyed may be experiencing impacts. The FS appears to be reacting to public concerns about impacts of livestock grazing on their lands by monitoring use and trying to adjust stocking rates and/or altering grazing strategies. The BLM appears to be making a commitment at the national level. Unfortunately, that commitment does not appear to have yet been transferred to all field units in Montana. It was apparent that livestock grazing managers on federal lands do not have the personnel or funding required to adequately administer livestock grazing to the

benefit of all resources.

All units should develop reasonable and quantifiable standards which would ensure protection or enhancement for riparian and aquatic habitats. These standards should enhance riparian habitats which are presently degraded and maintain those riparian habitats which are in good to excellent condition. A monitoring program to evaluate the present allotment management plans must be implemented and allotment management plans must be updated based on results of monitoring. Monitoring should also be designed to ensure that standards accomplish the desired level of riparian protection and enhancement. An attempt should be made to prioritize the adoption of these stricter standards for riparian and aquatic habitats which support native fishes such as Yellowstone and westslope cutthroat trout.



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