Water Tanks Protect Streambanks

By David J. Chamberlain and Mark S. Doverspike

Solar powered off-site watering systems offer an economical option for diverting livestock away from riparian areas.

Riparian zones account for only about two percent of the land in Eastern Oregon but they tend to receive a disproportionate use by grazing livestock and wildlife. Readily available water, highly palatable forage, shade and relatively level ground make these areas especially attractive.

Livestock grazing in these riparian zones is a highly controversial issue of both real and perceived conflicts. Current emphasis on riparian management and rehabilitation is focused on controlling cattle use in these highly visible areas. Currently, construction of riparian corridor fencing and/or significant reductions of allowed livestock numbers are most often suggested solutions.

Reductions of livestock numbers have a large negative effect on the profitability of ranching operations. Corridor fences can provide the livestock control and management flexibility to achieve many riparian zone improvement goals. However, fences are expensive to build and maintain and can impede wildlife and recreational use of these areas. Fences may be inconsistent with the natural visual appeal of riparian zones.

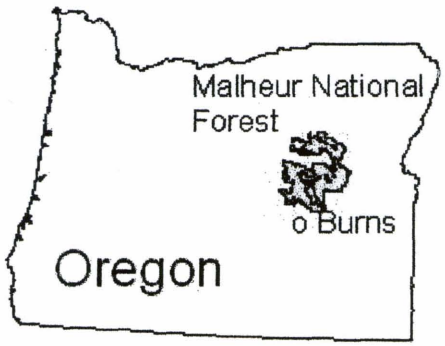
It has been our experience that livestock use tends to be focused on a relatively small portion of the total riparian area. This is especially true in pastures that are well managed and otherwise in good condition. These "hot spots" may be in fence corners or out in the middle of a pasture. Regardless of where they are located, cattle tend to "camp" in an area, regrazing the most palatable forage plants and often grazing even the most unpalatable plants beyond their capacity to recover. How can we prevent overuse of a very small portion of a grazing unit while making responsible use of the entire unit?

Historic research and experience has shown that stock water developments do divert livestock use, improving grazing distribution and forage management flexibility. Clawson (1993) found that cattle watered at a trough over 73 percent of the time even though they had unlimited access to both a live stream and a spring pond nearby. Miner, et.al. (1992) showed that stock water tanks placed near streams will divert up to 90 percent of the cow use of the stream during the winter feeding period.

University of Nevada, Reno researchers and the Utah Energy Office have reported the potential of solar powered livestock watering systems in terms of costs competitiveness, technical feasibility, and field practicality. Solar powered water pumping equipment is readily available from a wide variety of commercial sources.

Oregon Case Study

Sawtooth Creek is located about thirty miles north of Burns, Oregon, on the Malheur National Forest. The area is characterized as a dry open Ponderosa pine site with elevations from just over 5000 feet to about 4400 feet where it joins Emigrant Creek. The Sawtooth Creek allotment consists of over 17,000 acres, which includes Forest Service,



Bureau of Land Management and private lands. The current AMP permits 218 cow-calf pairs from June to October.

To improve grazing management, several relatively small areas were identified as problems. Appropriate changes had been made to the grazing system and upland water developments had been installed to improve livestock distribution. Yet, the cows still tended to congregate on at least one site in each pasture unit. For several years, the cooperator had resorted to riding and herding in an effort to move cattle off sensitive riparian sites. This effort resulted in the expenditure of significant time and money and was only partially successful, resulting in strained relations with agency range management personnel. Reduction in cow numbers and corridor fencing of the problem areas were suggested but were unacceptable alternatives.

We undertook to show that a mobile solar powered livestock water system and temporary electric fence could achieve the necessary protection to the riparian zone. We wanted to evaluate the practicality and effectiveness of an off stream water source in diverting livestock use from the riparian zone. It also offered the advantage of the educational opportunities generated by the demonstration to deliver programs on riparian habitat and watershed improvement implementation.

A solar powered livestock water-pumping system was constructed on a small trailer. The system consists of a solar array of six 33-watt panels wired in parallel and a 12-Volt submersible pump. Two 8 foot-round cattle troughs and 1,500 feet of high-pressure hose allow siting stockwater away from the riparian zone. As assembled, the entire system cost approximately $3,000.

The electric fence consisted of a solar-powered energizer, a mix of steel and plastic posts and half-inch "poly-tape" wire. The system was installed at strategic locations on the creek in each of the pastures, with or without temporary electric fence. The water system and the electric fence were moved along with the cooperator's cattle through each successive pasture during June to October of 1994 through 2000.

The water system is placed at those sites where the cattle traditionally congregate. The temporary electric fence is used to protect small areas of the riparian area but is also designed to direct cattle movement away from problem areas.

Sawtooth Creek October 1976.

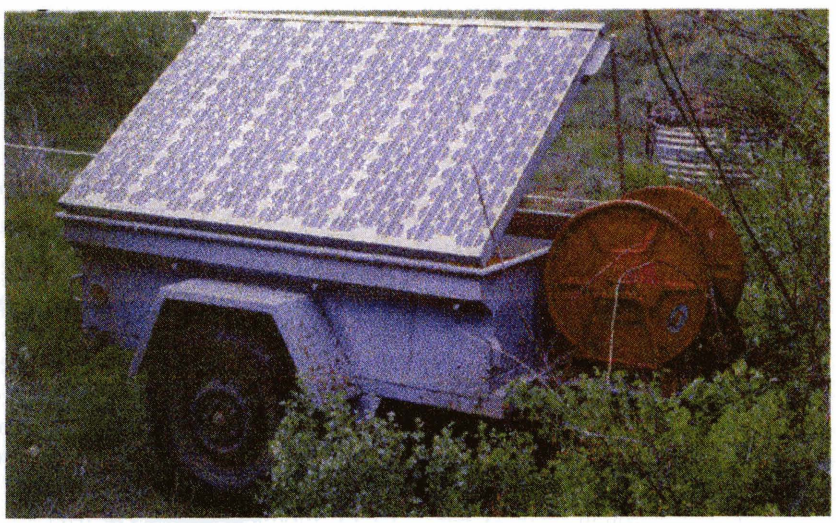
Sawtooth Creek September 1997.

Forage production, utilization and trends were documented along with an extensive photographic record at all watering sites and at permanent points on the riparian areas. Less than a half-mile of temporary electric fence was used at any site.

Off-Stream Sites Work

The system does work and does actually divert cattle use in the riparian zones. In conjunction with strategically located temporary electric fence, the off stream water has proven very effective in protecting riparian areas that have historically been heavily used by cattle. At several sites, the water system and electric fence reduced the cooperator's labor costs significantly. Cost savings from reduced riding and other livestock management tasks were estimated by the cooperating rancher to exceed $2000 per season. The system will pay for itself halfway through the second year.

In 1992, several reaches of Sawtooth Creek were rated in unsatisfactory/fair condition with a static to downward trend. Re-evaluation in 1996 found Sawtooth



Trailer set up near Sawtooth Creek. Six 33-watt panels provided 198 watts of 12 volt power.

Creek to be in satisfactory/good condition with a definite upward trend.

Even at those sites where a temporary electric fence was not used to protect the riparian area, having clean water available at 50 to 100 yards from the stream diverted a lot of the cow use. As long as the grass was green on the uplands, the majority of the cows stayed on the hillsides and came down only to water and loaf. After the upland grass dried, use of the riparian areas increased, as expected, but the cows still used the water tanks and loafed near the tanks, away from the riparian area. Any use of off site water is use that does not occur in the riparian area.

Additionally, because these pastures are on public land, BLM and Forest Service and on a major recreational visual corridor, the overall effort and visual improvements have significantly reduced conflicts. Public and agency interest has been very positive. The riparian area improved, the cost to the producer has been reduced and the reduction of "hassle" has been a large but unmeasurable benefit to everyone.

References:

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