

Improving Riparian Habitats

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In many places in the West, riparian zones serve as focal points for the many traditional multiple uses of public lands: wildlife habitat, recreation, forage production, watershed protection, and wood production. Riparian zones are the intersections where demands for public land uses cross. The challenge to public land managers and researchers is to find successful management strategies to satisfy the varied demands of a diverse public.

Historically, in the Southwest, livestock production has been the dominant use of much of the public rangeland. The recent increase in public demand for recreation and wildlife habitat dictates more intensive management of livestock on public land to accommodate the other uses. By using grazing systems that enhance riparian habitats, stockmen can increase livestock forage and protect wildlife habitat. On the Tonto National Forest, rotational grazing systems are proving that enhanced livestock production and improved wildlife habitat are not mutually exclusive.

The management of livestock grazing on riparian areas is controversial. There is little agreement on the effect of live-

stock grazing in Southwestern riparian zones. There are numerous public opinions and research articles on this topic. Kauffman and Krueger (1984) list more than 100 articles and Skovlin (1984) lists over 300 references in discussions of riparian zone ecology and management. The failure of a 1986 House of Representatives Bill (HR 4811) which would have established a National Conservation Area along the San Pedro River in southern Arizona came at least partly because of disagreements over the exclusion of livestock.

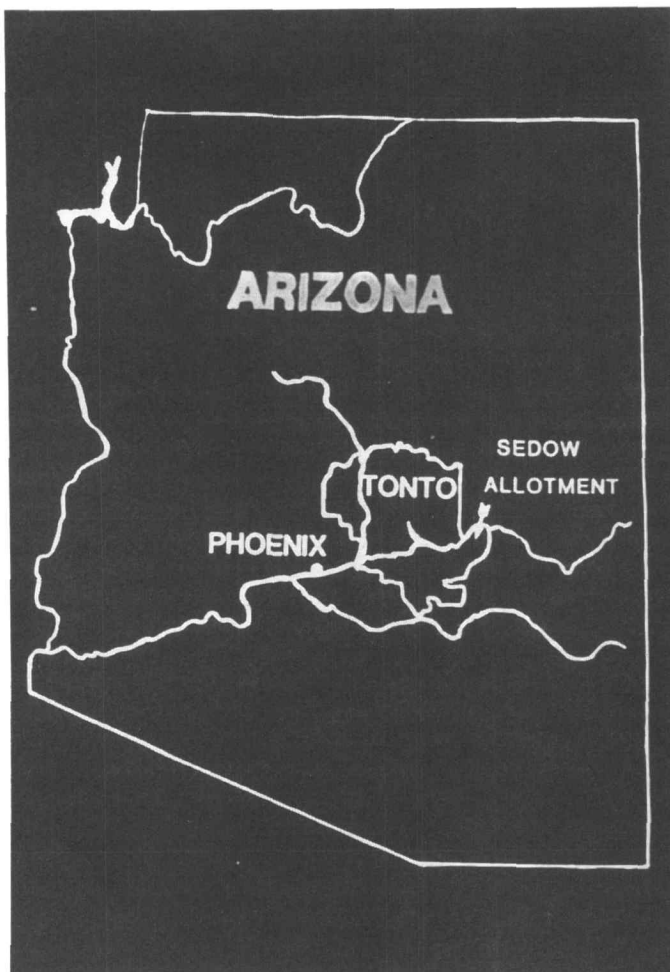
Exclusion of cattle is not always desirable or necessary. This point is illustrated by what happened the last few years on two allotments on the Tonto National Forest in central Arizona when permittees, agency managers, members of the environmental community and the Cooperative Extension Service cooperated for better riparian management (see map).

The Sedow allotment is located between Globe, Ariz., and the Salt River, about 100 miles east of Phoenix. The vegetation in this area is a mixture of chaparral, grassland, and Upper Sonoran desert shrubs. Rainfall averages between 12 and 18 inches per year with about 40 percent falling in the autumn and winter. The remaining moisture comes mostly from summer thunderstorms.

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The Common Black Hawk, an endangered species dependent upon riparian habitats. (Arizona Game & Fish Dept. photo)



Map of Arizona showing Tonto National Forest and the Sedow Allotment.

Typical upland species include turbinella oak, mountain mahogany, squawbush, and desert ceanothus. Grasses include sideoats; hairy, blue, and black gramas; curly mesquite; sand dropseed; and squirreltail. There is often a large spring annual component including filaree and red brome.

In the riparian areas, Fremont cottonwood, Arizona sycamore, Arizona walnut, willow, false indigo, baccharis, pinyon pine, and juniper are common. These species are particularly important as nesting habitat for birds and hawks including the Common Black Hawk, which is endangered in Arizona.

The Sedow allotment encompasses almost 14,000 acres divided into six pastures for 430 head of cattle. Management includes a rotational grazing system started in 1978 (a rotational system was initiated in 1966). The riparian pasture evaluated is approximately 7,000 acres and since 1978 has been used mostly in winter.

Data were gathered on the distribution of diameter classes of Fremont cottonwood between 1978 and 1984. Additional data were collected in 1986 on the cottonwoods. Since 1978, the estimates of the total number of cottonwoods on the Sedow allotment has increased from 17 to 439 trees per acre (Table 1). There is a good distribution of age classes with more than 25 percent of the stems in the two inch or greater classes. This is important because defoliation of the seed-

Trees per acre by diameter class, Fremont cottonwood, Sedow allotment, Tonto National Forest.

Diameter Class	1978	1980	1982	1984	1986
20"+	8	8	8	8	2
4-10"	9	9	9	70	81
2-4"	0	55	70	130	32
.1-2"	0	214	190	220	324
Total	17	286	277	428	439

lings had limited the number of trees reaching the sapling stage.

In addition to increased density in the cottonwood, the adjacent uplands are also responding to better management. Monitoring of nearby slopes and hilltops indicates that the frequency of sideoats grama (regarded as the key species) has increased from 29 percent of all plots in 1981 to 36 percent of all plots 1985. While not statistically significant, the change indicates an improving trend in this nutritious grass that provides forage for both livestock and wildlife in the critical late spring months after the annuals are no longer palatable.

Because of the improvement in the riparian habitats and adjacent uplands, the Forest Service has recently restored 100 animal units of grazing that was in non-use. In addition, another 100 animal units will be gradually added to the allotment pending monitoring results.

On the Roosevelt allotment about 50 miles east of the Sedow, rancher Dwight Cooper manages Upper Sonoran shrub lands dominated by saguaros, mesquite, cholla, prickly pear, and jojoba. The allotment is divided into four pastures in a flexible rotation grazing system. Each pasture is grazed from six to 12 months and then receives from 18 to 24 months rest. Approximately 170 cattle grazed this allotment in 1978.



Rancher Jimmy Griffin and U of A Extension range specialist Phil Ogden monitor uplands using plant frequency.

Because of a positive response of the vegetation to intensive management programs, the Forest Service increased the permit to about 230 head.

Cooper says the key to managing cattle in the Roosevelt

allotment is the distribution of water through an extensive pumping and gravity system to tanks and troughs on the uplands away from the riparian zones. By providing additional watering sites, the heavy utilization of forage in the riparian areas was reduced as utilization on uplands was increased. Previously the uplands were used only lightly by livestock. Developing water away from the fragile riparian

zones may be a key to improving wildlife habitat without reducing cattle numbers.

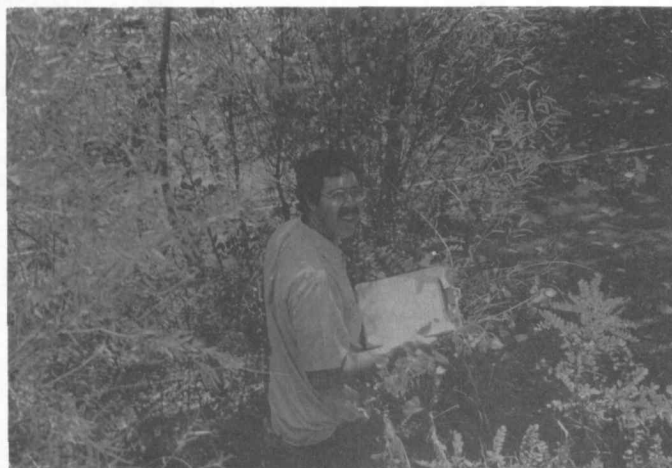
On both allotments, the riparian zones were formerly used as places to gather and trail livestock because there was little vegetation there. Now the density of the riparian vegetation is so thick that this is no longer practical. The area of the canyon bottoms actively supporting cottonwood and sycamore trees has increased. In late spring and early summer these green belts of brush, trees, and running water attract nesting hawks, songbirds, quail, and small mammals. A hiking club has "adopted" the trail that leads through the Roosevelt allotment, providing maintenance and periodically picking up litter.

Both of these allotments demonstrate what can happen when diverse public land user groups work together. Riparian and upland wildlife habitat has been improved through better control of livestock in the creek bottoms and development of additional upland watering points. The additional forage that has resulted means a larger herd and better profitability for the livestock producers.

Literature Cited

Kauffman, J.B., and W.C. Krueger. 1984. Livestock impacts on riparian ecosystems and streamside management implications. A review. *J. of Range Manage.* 37:430-438.

Skovlin, J.M. 1984. Impacts of grazing on wetlands and riparian habitat: A review of our knowledge. p. 10011103. *In: Cncl./Nat. Acad. of Sci.* Westview Press. Boulder.



Dr. Bruce Roundy measures riparian vegetation on the Roosevelt Allotment, Tonto National Forest.

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