management to the big sagebrush plant communities. Bringing the shrub-grass ratio closer towards the potential plant community concept will allow use of the big sagebrush sites while improving soil stability and watershed protection.

## Literature Cited

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# Psy"cow"logy—
# an 'Art' in Range Management

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Without question, the major challenge facing range managers today involves the conflicts and opportunities inherent in managing our riparian areas. Numerous articles, endless speeches, and interminable discussions have informed us that many of our riparian zones are in a less than desirable condition. However, there are far fewer sources of information available to assist the on-the-ground manager in analyzing and correcting or even in defining the "Problems." Relatively little research is available concerning the effects of various grazing systems, fencing schemes, other structural improvements, nonstructural improvements, or operator management on the condition and trend of riparian areas.

In addition, the manager is also faced with the problem of being unable to properly identify and measure the riparian plant community. Frequently, the riparian communities have not been studied in enough detail to allow the development of a suitable classification system. If the manager cannot define the community in terms of what currently exists in relation to what can potentially exist, it is almost impossible to determine what "condition" the area is in. The same situation makes it equally difficult to determine the trend with any degree of accuracy.

The resource manager is faced with a demand to improve a resource that he cannot define, to an "acceptable" condition that he cannot measure, using methods that have little scientific backing, while remaining cost effective and politically sensitive. But then if the job was easy, everyone would want to do it.

**It is obvious that the riparian problem** is highly complex and there is no simple answer (and probably not even a single complex answer). As things now stand, each land manager is operating under conditions where reliable information is scarce. He must try to devise new ideas and methods based on what little information is available, combined with whatever his imagination can dream up. The manager will need to try to devise grazing systems or management practices that meet the physiological needs of the riparian ecosystems. In order to achieve this objective, he will need to continue to be innovative in the application of existing grazing systems and management techniques. But in addition to modifying known techniques, perhaps we need to go beyond the normal bounds of the **science** of range management and into the **Art** of range management.

One possible example of an "Art" that could be explored further would be an increased application of the knowledge of inherited and learned characteristics. This would involve use of the existing knowledge in the field of animal genetics and breeding as well as the essentially undeveloped field dealing with how animals learn and pass on these learned characteristics.

While much work has been done in the area of genetic improvement of livestock for the purposes of increasing production, relatively little has been done in the way of developing traits that are useful in better matching the animal to its environment. There are some specific examples where breeding has provided livestock that are more in tune with the environment. An example is the use of Brahman breeds in the Southwest to improve the ability of the animals to withstand the hot dry conditions. A side benefit has been an improved ability of the crossbred stock to cover the rough broken country better than could purebred English or European stock. There are other examples of similar genetic improvement from other portions of the country too. Usually, these improvements have been based on improving the productive ability of the animals. Any improvement in the ability to better utilize the range has usually been simply a positive side benefit.

**Very little has been done in the area** of understanding and using learned traits to improve management. Although livestock operators have long understood that a calf will frequently show behavior characteristics similar to those shown by the mother, this information has not been put to use. For example, livestock operators have known that certain cattle tend to become "located" in certain areas within a given pasture. By "located", this
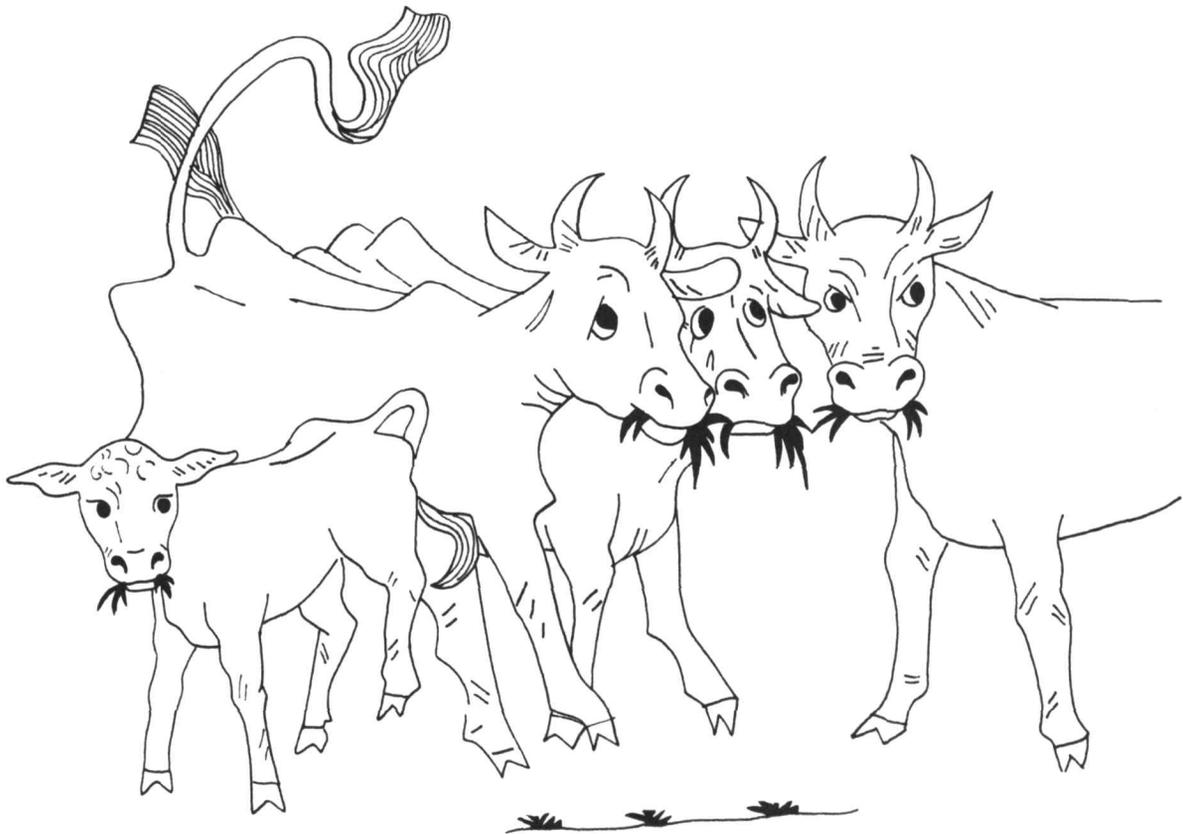
means that given free choice and assuming that the needs can be met, the animal will tend to return to the same areas of the pasture each time it enters the unit.

Researchers have occasionally noted this occurrence but have usually attached little significance to it. A few researchers have noted that certain cattle tended to become located in the uplands and seldom visit the bottom lands except when necessary to obtain water.

If this occurrence is in fact true, it may indicate a potential means of lessening livestock use of the riparian areas through an understanding of how and why this "location" (or territory) selection process occurs. As an example, if in fact certain cows tend to select territories that were predominately upland in nature, then from a strictly riparian viewpoint, they would be much preferred over cows that select from bottom lands. To carry the process a step further, would the "upland" cow pass the preference for uplands

on to her offspring? Based on the little knowledge that we have, it would be reasonable to assume that our mother cow would tend to impress an upland preference on her offspring. If this offspring was carried over as a replacement, it just might continue to show a preference for uplands over the riparian areas.

Thus, with nothing more than a little knowledge of which part of the pasture the mother cow works and a little manipulation of the culling and replacement process, we have potentially aided our riparian management. The use of genetic manipulation and manipulation of the learned characteristics (a little applied Psy"cow"logy) of the livestock has the potential to significantly improve the management of our ranges. Although this will never be a total answer, we need to be aware of and make use of the arts that are associated with the sciences of range management.