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Monitoring: A Tool for Effective Rangeland Management

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Monitoring is the systematic measurement of short-term grazing utilization targets and longer-term resource condition objectives that may indicate the success of rangeland managers in their management of grazing. Interpretations include grazing use levels and changes in rangeland vegetation in response to growing conditions and the kind and amount of grazing and/or other impacts. Effective monitoring is always evaluated in relation to planned resource-use levels and objectives for the desired characteristics of a resource.

Rangeland livestock operators and other users are generally concerned about vegetation resources. The degree of forage use or the residual forage amount can be a trigger for moving livestock to other areas. Long-term resource objectives usually describe the desired composition or structure of key plant species in upland or riparian plant communities.

Monitoring is a valuable tool in the management of private and public rangelands to evaluate and improve grazing strategies and provide communication venues with agency managers and the public. Monitoring on private lands is primarily important to the owners and managers, but concepts and issues described below may apply to their operation. Livestock operators, other users of public rangelands, and agency managers have an additional accountability to the public. The monitoring of resources is required of federal land managers.

Public land grazing permittees should view monitoring as a tool for effectively managing livestock or other grazing animals, for communicating with their agency rangeland manager, and for defending themselves from the negative assertions about the effects of grazing on public lands.

To be most useful, monitoring locations and objectives should be developed jointly by permittees and agency rangeland specialists. Utilization percents or residual stubble heights are standards commonly used by agencies to specify and limit the amount of grazing use on allotments. For the ranchers to meet these standards, they must be able to systematically measure the degree of grazing use on appropriate plants during the grazing season and move livestock accordingly.

Resource conditions such as plant species composition, willow abundance and height, and stream-bank stability are often objectives of grazing management

programs. Trend monitoring is used to determine if these resources are moving toward objectives. The combination of annual use and long-term trend monitoring provides permittees and agency managers with early indications of the effectiveness of grazing strategies and indicate the need for timely midcourse corrections. Results will reveal the compliance of a rancher with the terms and conditions of his or her permit, which is a frequent source of public concern.

Permittees are encouraged to monitor because agency managers usually have a large number of permits to supervise and little time to devote to any one permit. In addition, producers are most frequently on the allotments and to meet annual use standards should be motivated to provide timely monitoring.

The Wyoming Range Service Team, which is comprised of rangeland managers from federal agencies, a Wyoming Department of Agriculture representative, and University of Wyoming rangeland extension specialists, has developed the *Wyoming Rangeland Monitoring Guide*. Endorsed by federal land-management agencies, the Wyoming section of Society for Range Management, and Wyoming livestock producer organizations, the guide is designed to provide permittees with the monitoring tools they need to collect credible data that will satisfy their needs and those of the federal land-management agencies.

The *Wyoming Rangeland Monitoring Guide* describes how to measure vegetation composition and use with methods that meet standards for objectivity, reliability, and consistency among observers. Forms are provided in the guide.

Statistical tests have verified the ability of cover-by-life form transects described in the booklet to detect change on a grazing permit. Its methods are derived from those in multi-agency technical manuals.

As described in the publication, long-term trend methods include taking photographs, creating on-the-ground cover-by-life form transects, and noting stream bank green-line stability. Annual-use monitoring methods include studying landscape appearance, mapping grazing use, and measuring plant residual stubble height. The recommendation to use these methods does not preclude the acceptance of other methods that may be familiar to the user or already implemented. The grazing response index is a tool included in the guide to assess, either before or after grazing, the probability of a particular grazing strategy resulting in positive change in plant communities.

Developing a positive, trusting relationship between grazing permittees and their rangeland management specialists will be greatly enhanced by the adoption of effective monitoring by the ranchers and the communication between the two groups in setting objectives, locating sampling points, and discussing annual use and trends on an equal footing. This helps permittees understand agency objectives and the impacts of grazing on reaching these objectives, and it allows them to ensure that progress is being made toward meeting the objectives. Simultaneously, an agency manager will have data indicating the compliance of a permittee with agency standards. The public will have the assurance of proper use of its rangeland resources. Training in monitoring needs and procedures can be obtained through the University of Wyoming's Cooperative Extension Service.