Photo and Other Ways to Monitor Rangelands

Monitoring is a question that often comes up. What to monitor, how to monitor, how much do I need to monitor? What skills do I need to monitor? What is the cost? These are all common questions when one is considering monitoring.

There are many kinds of monitoring, including written observations about ranch conditions, photo monitoring, monitoring forage species composition (trees, shrubs, grasses, forbs), monitoring wildlife and birds. Many techniques can be used. The most important consideration is to monitor in a way that is quick, easy, and cost-effective and repeatable.

Photo Monitoring

We recommend photo monitoring as a quick and cost-effective way that is repeatable and provides useful information. For example, taking photos over time can show changes in landscape, shrubs, trees, and other areas of interest like roads or riparian areas. Figure 1 shows an example of the kind of information you can get by taking photos over several years. There are other techniques that may be of interest. Please see publications listed below.

Photo taken in 2008 **Photo taken in 2019**

Figure 1. Contrasting these two photos, one from 2008 and one from 2019, taken from the same location shows how the trees have increased in size.

More Information on "How To" Accomplish Photo Monitoring

Photo-Monitoring for Better Land Use Planning and Assessment by N. McDougald et al 2003.

There are many ways to monitor change on the landscape, but none is simpler than photo-monitoring and recording observations. This publication will help landowners develop a photo-monitoring program for their property. Photo monitoring is a valuable tool for documenting your management as well as conditions or events that affect your management. Photo points are easily established. You may already have old family pictures that illustrate how the property, a stream, or facilities looked in the past. New

photographs of the scenes in these old photos provide one good way to get started with your photo monitoring program. If you have no old ranch photos, now is a good time to start developing a photographic record for your own benefit and for the benefit of those who follow you as ranch managers or owners. https://anrcatalog.ucanr.edu/pdf/8067.pdf

Other Methods for Quick and Easy Ways to Monitor

Guidelines for Describing Grazing Management and Utilization when Conducting Botanical Surveys by S. Barry 1997.

Botanical surveys are often used to guide stewardship on conservation lands. This paper gives practical, feasible guidance to help botanists collect key grazing data as part of their surveys. This would give important information to help managers track and assess the connection between grazing practices and botanical results, and make data-driven recommendations for grazing adjustments.
https://ucanr.edu/sites/BayAreaRangeland/files/253125.pdf

Guidelines for Residual Dry Matter on Coastal and Foothill Rangelands in California by J. Bartolome et al 2006.

Residual dry matter (RDM) is a standard used by land management agencies for assessing the level of grazing use on annual rangeland and associated savannas and woodlands. RDM is the old herbaceous plant material left standing or on the ground at the beginning of a new growing season. It indicates the combined effects of the previous season's forage production, breakdown over summer, and its consumption by grazing animals of all types. Properly managed RDM protects soil health and promotes forage production and biodiversity. These guidelines provide the current standard for RDM minimums for different grassland types, slopes, and tree canopy cover.
https://ucanr.edu/sites/BayAreaRangeland/files/253127.pdf

Developing a Monitoring Project for Riparian Revegetation Projects by D. Lewis et al 2009.

Increasing native vegetation along the banks of streams and rivers is one of the principal stewardship tools land use managers have to conserve, restore, and protect soil and water resources. UC Cooperative Extension has developed this publication to assist you in developing a riparian restoration monitoring program that addresses both planted vegetation and the resulting ecological functions. Our recommendations are applicable at either the initial stage of project design, after project implementation or, ideally, at both stages and into the future to document project result trajectories.
https://ucanr.edu/sites/BayAreaRangeland/files/253128.pdf

Visual Assessment of Riparian Health by T.Ward et al. 2003. Read Paper

There are numerous ways to document a riparian area, ranging from simple photographs to more in-depth, cross-sectional surveys. Visual assessments can be a straight-forward and simple method for rangeland managers in making a rough evaluation of the overall health of riparian areas. Visual assessments are not intended to be comprehensive, data-driven evaluations, nor are they intended to be monitoring tools for the long-term documentation of riparian health. The power of a visual assessment is that it provides a simple and rapid tool that allows a local manager to make a timely and cost-effective evaluation of the overall health of the riparian area(s). If the initial visual assessment indicates a problem, a more detailed analysis can be performed to identify the likely cause(s), the possible linkage of the problem to management (current, past, or upstream) or natural disturbances (floods, fires, etc.), the possible change in management to correct the problem, and the type of monitoring needed to document that the problem has been corrected or needs additional management effort. In a minimal amount of time, managers can be trained in the prudent use of visual assessment methods, thus greatly increasing the number of California's rangeland riparian areas being assessed and managed.
https://ucanr.edu/sites/BayAreaRangeland/files/255455.pdf

More Data Intensive Methods for Monitoring

These methods were developed to obtain meaningful information from monitoring, while trying to keep it easy, quick, and repeatable. But there are many other ways to monitor. Some other methods may result in much more data, that can be used to compare changes over time. But many other methods will also require much more time, require scientific instruments, or have the need for lab space. Though some of these may be useful, especially if research is being done, we don't suggest that it is always needed. But we have listed a couple of references that you can look at to study for different methods and ideas of parameters that can be measured. If you have an interest, we have listed a couple of references that would go over these methods.

Sampling Vegetation Attributes Interagency Technical Reference

This is a 164-page manual put together by Cooperative Extension Service, U.S. Department of Agriculture — Forest Service — Natural Resource Conservation Service, Grazing Land Technology Institute, U.S. Department of the Interior — Bureau of Land Management — that goes through many different methods, concepts, aspects of monitoring.

https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1044175.pdf

Monitoring Manual for Grassland, Shrubland and Savanna Ecosystems Volume I: Quick Start

This is a 42-page document to provide an overview of various methods and ways to monitor. This volume is provided by Jeffrey E. Herrick, Justin W. Van Zee, Kris M. Havstad, Laura M.

Burkett and Walter G. Whitford with contributions from Brandon T. Bestelmeyer, Alicia Melgoza C., Mike Pellant, David A. Pyke, Marta D. Remmenga, Patrick L. Shaver, Amrita G. de Soyza, Arlene J. Tugel and Robert S. Unnasch. https://jornada.nmsu.edu/files/Core_Methods.pdf

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