

The Bureau of Land Management's (BLM) Assessment, Inventory, and Monitoring (AIM) program provides a standardized monitoring strategy assessing and quantifying natural resource conditions on public lands administered by BLM. The AIM program operates under 5 principles: 1) Structured implementation to guide monitoring program development, implementation, and data use for decision makers; 2) Standardized field measurements to allow data comparisons through; 3) Appropriate sample designs to minimize bias and maximize inference of collected data; 4) Data management and stewardship to ensure data quality, accessibility, and use; and 5) Integration with remote sensing to optimize sampling and calibrate continuous map products when available. The standard terrestrial AIM monitoring protocol is comprised of four core methods: 1) Plot observation and characterization; 2) Line-point intercept for cover and height; 3) Canopy gap and species inventory; and 4) in-situ soil stability. It is highly recommended (soils data may be considered optional) that this sampling protocol be performed in accordance with the "Monitoring Manual for Grassland, Shrubland, and Savanna Ecosystems" Herrick et al. (2018).

At each monitoring plot, AIM crews will record plot coordinates, transect length (typically 25m), the azimuth of each transect (typically 0, 120, and 240°), elevation, aspect, slope, landscape unit/position, as well as take several photos to document the site. At the center of each plot, a 70cm pit is dug to delineate soil horizons including horizon depth, rock fragment content, texture, effervescence, and color. Line-point intercept is used to measure vegetation, soil, and litter cover at pre-determined intervals along each transect (typically 0.5m) as described in Elzinga et al. (2001) and the terrestrial AIM monitoring manual. Canopy gap is typically measured during the line-point intercept method at pre-determined intervals (typically 2.5m) also described in terrestrial AIM monitoring manual. Vegetation canopy gaps of 25 to 50, 51 to 100, 101 to 200, and greater than 200 cm are measured along each transect as described in terrestrial AIM monitoring manual. A field soil aggregate stability kit (Herrick et al. 2001; Herrick et al. 2018) is used to quantify the stability of soil peds at 18 randomly selected points along the transects used for the Line-point method. In addition to species recorded along the three transects, a comprehensive list is compiled for all species found within the plot area.

The data collected by crews in the field can then be used to identify the appropriate ecological site description, calculate cover and height values for all identified plant functional groups, and noxious/preferred/invasive species. The AIM protocol also allows the collection of supplementary indicators that may be of interest including (but not limited to) infiltration, compaction, soil pH/EC, soil C, sagebrush shape, and/or forage utilization.

The data collected by the AIM program is used to evaluate conformance with land health standards, post-fire rehabilitation efficacy, assessment of habitat for wildlife/aquatic species, distribution of invasive or undesired species, or help identify trends in landscape characteristics over time. External users have used AIM data for state/transition models, wind erosion modeling, climate change research, Pinyon Juniper encroachment studies, and fire risk modeling.

AIM resources are available on [BLM's website](#).

### **Citations/Recommended Reading**

Elzinga, C. L., D. W. Salzer, J. W. Willoughby, and J. P. Gibbs. 2001. *Monitoring Plant and Animal Populations*. Blackwell Science, Inc., Malden, MA.

Herrick, J. E., W. G. Whitford, A. G. de Soyza, J. W. Van Zee, K. M. Havstad, C. A. Seybold, and M. Walton. 2001. Field soil aggregate stability kit for soil quality and rangeland health evaluations. *CATENA* 44:27-35

Herrick, J., J.W. Van Zee, S.E. McCord, E.M. Courtright, J.W. Karl, and L.M. Burkett. 2017. *Monitoring Manual for Grassland, Shrubland, and Savanna Ecosystems, Volume I: Core Methods*. 2nd Edition. USDA-ARS Jornada Experimental Range, Las Cruces NM.