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Prepared by the University of Idaho through a Western SARE Professional Development Grant (project EW18-018)

LandPKS

LandPKS is a mobile app with a suite of modules for collecting, storing, and visualizing monitoring and land management data. The LandPKS techniques were designed to be quick to implement with minimal equipment and training and to be compatible with quantitative protocols like the AIM Core Methods.

What does it measure?

- The LandInfo Module records data on soil characteristics and provides information on ecological site, soil infiltration, and water holding capacity.
- The Vegetation Module records information on plant cover, composition, dominant species, and vegetation height using a simplified monitoring protocol that is compatible with the AIM Core methods.
- The LandManagement module records management-related information (stocking rates, grazing dates), precipitation, and utilization measurements.

Who is it for?

- Land managers use LandPKS to understand land potential and to collect rapid monitoring data.
- Scientists use LandPKS to crowd-source information on land potential and vegetation conditions over large areas.
- Ranchers use LandPKS to understand the potential of their land, track management actions, and monitor conditions.

Fast Facts

Suitability for:

Long-term Trend	MED
Point-in Time Assessment	MED
Short-term Management	HIGH*

Implementation:

Time needed to collect data	MED
Training need	LOW
Difficulty of data use/access	LOW

Keep in mind

- LandPKS requires an Android or iOS mobile device to collect and view the data.

Find out more

- <https://landpotential.org>
- <https://landpotential.org/use/rangeland-managers/>

*When used in combination with another use-based monitoring method



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AIM Core Methods

The AIM Core Methods are the standardized, quantitative monitoring techniques used by the Bureau of Land Management's Assessment, Inventory, and Monitoring (AIM) program to track the condition and trend of rangelands.

What does it measure?

- The 5 AIM Core Methods measure:
 - Vegetation cover and composition
 - Vegetation height
 - Plant species richness
 - Bare ground
 - Size of gaps between plant canopy
 - Soil stability
- AIM Core Methods data is used in assessments of Sage-grouse habitat condition and Rangeland Health assessments.
- AIM Core Methods data is used to determine long-term trends on BLM lands
- *The AIM Core Methods do not directly measure short-term monitoring indicators (like grazing use levels).*

Fast Facts

Suitability for:

Long-term Trend	HIGH
Point-in Time Assessment	HIGH
Short-term Management	LOW

Implementation:

Time needed to collect data	HIGH
Training need	HIGH
Difficulty of data use/access	HIGH

Who is it for?

- BLM Resource Staff use AIM Core Methods data to inform management decisions.
- Scientists use AIM Core Methods data for research projects
- Ranchers can use summaries of AIM data to look at rangeland condition and trend

Keep in mind

- Training and calibration are needed to collect the AIM Core Methods data.

Find out more

- <https://aim.landscapetoolbox.org/>
- <https://youtu.be/LciTBPG2-Ss>
- <https://www.blm.gov/about/how-we-manage/assessment-inventory-and-monitoring-strategy>



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Height-weight Utilization

Utilization is the consumption or destruction of plant material by grazing animals. Because grazing management often includes target utilization levels, measurement of utilization can be a good short-term indicator of management objectives.

What does it measure?

- The height-weight method estimates utilization (the percentage of a plant that was removed) for key forage species by comparing the average height of grazed plants to the average height of ungrazed plants.
- The biomass of a grass plant is concentrated at the bottom of the plant, and height-weight curves that are based on previously-collected data can be used to convert measurements of height to estimates of weight.
- A “Utilization Wheel” is used to translate the height of a grazed grass plant to an estimate of the percentage of the plant that was removed.



Fast Facts

Suitability for:

Long-term Trend	LOW
Point-in Time Assessment	LOW
Short-term Management	HIGH

Implementation:

Time needed to collect data	MED
Training needed	MED
Difficulty of data use/access	MED

Who is it for?

- BLM Resource Staff use end-of-season utilization measurements to ensure that operators are grazing within the terms of their permit.
- Ranchers can use utilization measurements to help decide when to move cattle or to check that end-of-season use levels met management goals.

Keep in mind

- Utilization “Wheel” Gauges can be purchased from the Colorado State University Bookstore

Find out more

- BLM Utilization Studies Technical Reference. <https://www.blm.gov/documents/national-office/blm-library/technical-reference/utilization-studies-and-residual>



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Photo Monitoring

Photo monitoring is a quick, easy to implement method for documenting conditions and for observing changes over time. Photo monitoring is a qualitative technique but can be valuable for seeing how sites change or stay the same.

What does it measure?

- Photo monitoring records the appearance of a site or landscape at a point in time.
- Basic vegetation type and significant site features can be determined from the photos.
- Large changes in vegetation type, structure, or amount can be seen from repeat photos of the same site.

ISDA Cooperative Photo Monitoring Program

In Idaho, ranchers with grazing permits on BLM land can use the ISDA Photo Monitoring app to collect photos and submit them to the BLM for inclusion as monitoring data on their allotments.



Fast Facts

Suitability for:

Long-term Trend	MED
Point-in Time Assessment	LOW
Short-term Management	LOW

Implementation:

Time needed to collect data	LOW
Training needed	LOW
Difficulty of data use/access	LOW

Who is it for?

- BLM Resource Staff use photo monitoring as a quick indicator of conditions and to confirm conditions or trends seen in other datasets.
- Ranchers can use photo monitoring to document conditions or track changes in the type, structure, or amount of vegetation in an area.

Keep in mind

- Most monitoring programs (like the AIM Core Methods) also include photo monitoring protocols.

Find out more

- <https://agri.idaho.gov/main/animals/range-management-program/cooperative-photo-monitoring/>
- <https://www.youtube.com/channel/UCPCUoSLrncOFZlwfO4F-5qw>