

Line- Point Intercept: A Way to Measure Cover

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Data collection in the field is one piece of the puzzle. Equally critical (and time consuming) are processing and interpreting data.

Pros of Line-point Intercept (LPI)

- Easy to determine trend (i.e., long-term changes that may affect how the plan community functions)
- Lots of information from one way of collecting data.
- Relatively fast in the field once you have a functioning team.
- Objective and repeatable with different observers (if people are properly trained).
- Robust and reliable - can be used in both research and management.

Cons of Line-point Intercept

- Processing data after field collection is slow. A tablet in the field accelerates this (see umbrella backpack above).
- Requires training and attention to detail.
- Much easier if you know most of the plants in an area.
- May not capture rare plants or invasive plants well. “Small” cover values for invasive plants may indicate problems. What a cover percentage means (i.e., does it indicate a problem?) must be calibrated against LPI values for that ecosystem.
- Managers need multiple years of data to fully understand how plants are changing over time.

Monitor for a Reason

The Latin root of “monitor” is “to warn.” Ideally, we monitor because we want to be warned, (so that we can change behavior), before something bad happens.

Data cannot warn unless it is interpreted. Lots of people are familiar with what collecting data looks like (transect, field), but raw data alone doesn’t have inherent meaning.

Cover, observed via line-point intercept, is one way to collect information that tells us about trends in plant abundance, composition, and ecosystem function.

Who Uses Line-point intercept?

- Colorado Resource Monitoring Initiative (CCA)
- Bureau of Land Management through the Assessment, Inventory and Monitoring Program (AIM)
- Some CCAA agreements with Fish and Wildlife Service
- Researchers

Line-point Intercept Measures Cover (%)

- Cover (%) is the amount of the ground that is covered by a plant. Imagine you are a rain drop. Cover refers to if you hit a leaf, a piece of litter, a plant base, etc., on your way to the ground. As the name suggests, the basic question we are answering with cover is, “*is the ground covered*”.
- Other methods, including ocular macroplot and Daubenmire also measure cover.
- Cover is different than production, which is the *amount* of biomass produced. Biomass is correlated to cover, but not a good proxy measurement. Biomass often reflects the amount of moisture in a given year, whereas cover is less sensitive to year-to-year changes and therefore more reflective of trends. Some people describe measuring biomass as “a really expensive way to measure that it rained.” Cover tells us about trends.

Data from line-point intercept requires post-processing and ideally input into a database. We use the Database for Inventory and Monitoring, available online for free.

Line-Point Intercept is Objective, Repeatable, and Tells Us about Trend

	Average Value for Indicator	State/ Community			
		Diverse Shrubland	Needle-and-thread shrubland	Native Grassland	Crested Wheatgrass
Percent Cover (%)	Sagebrush	22	18	0	14
	Perennial Forb	6	5	6	2
	Annual Exotic Forb Exotic	12	2	8	6
	Cheatgrass	15	15	4	5
	Perennial Grass	47	44	70	45
	Basal cover (% of soil surface covered by plant bases)	16	13	22	16
	Bare soil	7	9	6	14
	Litter	70	72	66	65

Despite drawbacks, line-point intercept can yield useful data in terms of species abundance, resistance to erosion, and invasion by undesirable species.

- Yields a lot of information using a single method.
- Cover can tell you about the types of plants that grow (is it cheatgrass? Desirable cool season grasses? Sagebrush?) and their abundance. You can also tell if plant composition starts to shift.
- Indicators derived from cover can tell you about how the land captures energy via photosynthesis, resistance to erosion, and nutrient cycling. Ecologists refer to these attributes as “function.”

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