

Introduction to Rangeland Resources

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Key concepts, components, and management considerations

1. What Is a Rangeland?

Aspect	Description
Definition	Land dominated by native vegetation (grasses, forbs, shrubs, trees) that is primarily used for grazing livestock, wildlife, and other ecosystem services.
Typical Climate	Semi-arid to arid; precipitation 200–800 mm/yr ¹ , with high variability.
Geographic Examples	Great Plains (USA), Patagonian steppe (Argentina), Australian outback, African savannas, Mongolian steppes.
Primary Uses	Livestock production, wildlife habitat, recreation, carbon sequestration, watershed protection, cultural values.

2. Major Rangeland Resources

Resource	Main Attributes	Ecological Role	Economic/Social Value
Vegetation	- Grasses, forbs, shrubs, occasional trees - Seasonal growth patterns	Primary producers; provide forage, soil stabilization, habitat structure	Source of livestock feed; forage for wildlife; raw material for honey, medicinal plants
Soil	- Often shallow, low organic matter - Susceptible to erosion & compaction	Nutrient cycling, water infiltration, root anchorage	Supports plant productivity; influences water quality downstream
Water	- Surface water (streams, ponds) - Subsurface water (aquifers, perched water tables)	Regulates plant growth, wildlife drinking, microbial activity	Critical for livestock watering points; affects land value

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Resource	Main Attributes	Ecological Role	Economic/Social Value
Wildlife	• Large herbivores (elk, antelope), predators (coyotes, wolves), birds, insects	Maintains biodiversity, pollination, seed dispersal, pest regulation	Hunting, ecotourism, cultural significance
Landscape Features	• Ridges, valleys, dunes, riparian corridors	Provide microclimates, refuge areas, migration pathways	Recreational trails, scenic value, cultural heritage sites
Cultural & Social Assets	• Indigenous knowledge, historic sites, grazing rights	Shape land?use practices, stewardship ethic	Community identity, tourism, education

3. Ecological Processes that Sustain Rangelands

1. **Primary Production** – Seasonal growth of grasses and forbs driven by precipitation pulses.
2. **Nutrient Cycling** – Decomposition of plant litter returns nitrogen, phosphorus, and micronutrients to the soil.
3. **Water Balance** – Infiltration, runoff, and evapotranspiration regulate soil moisture and downstream flow.
4. **Disturbance Regimes**
 - **Fire** – Reduces woody encroachment, recycles nutrients, stimulates germination of fire ?adapted species.
 - **Grazing** – Removes biomass, influences plant community composition, can enhance heterogeneity when properly managed.
5. **Succession & Encroachment** – Without disturbance, shrubs/trees may invade, reducing forage quality and altering habitat.

4. Rangeland Classification Systems

System	Basis of Classification	Typical Classes
U.S. Soil Conservation Service (SCS) Land Capability	Soil depth, texture, slope, climate, erosion potential	Classes I–VIII (I = highest capability).
FAO Global Ecological Zones (GEZ)	Climate, vegetation, landform	Desert, semi?desert, steppe, savanna, montane rangeland.

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System

Basis of Classification

Typical Classes

National Resources Inventory
(USDA)

Land cover