

Northwest Rangelands in a Changing Climate

Rangelands provide many ecosystem services

Rangelands are a critical component of the Northwest economy and way of life. Rangeland ecosystem services include livestock production, cultural benefits, and wildlife habitat. Livestock graze on more than 47.3 million acres of rangeland and pasture in Idaho, Oregon, and Washington. Much of the grazed acres are public lands owned by the federal government.



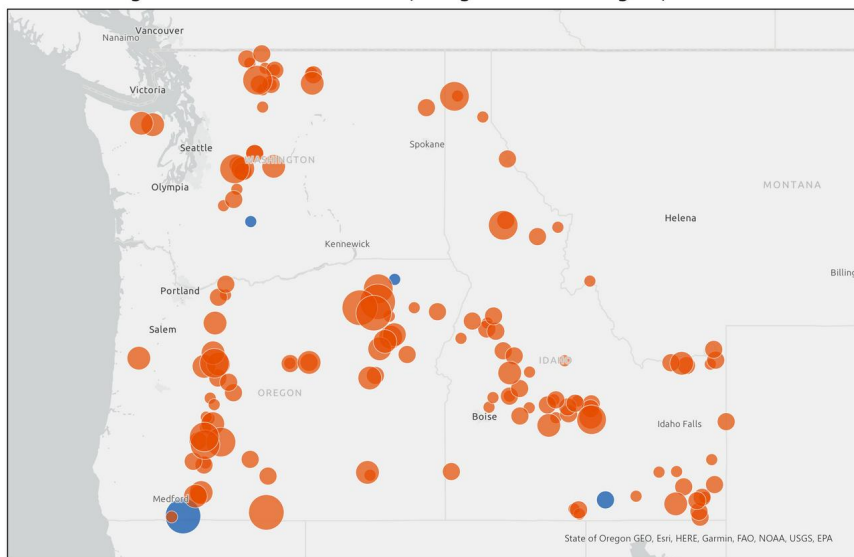
Changes in climate are affecting rangelands

Current and projected changes include:

- ⬇️ Snowpack
- ⬆️ Frequency of drought and intense heat
- ⬆️ Size and frequency of fires
- ⬆️ Precipitation falling as rain
- ⬆️ Variation and intensity of precipitation
- ⬆️ Winter and spring water runoff
- ⬇️ Streamflow in summer months
- ⬇️ Length of grazing season
- ⬆️ Expansion of invasive annual grasses, which increases fire frequency

The rate and magnitude of these changes depend upon future greenhouse gas emissions, location, and other factors.

Change in Total Snowfall in Idaho, Oregon and Washington, 1955-2020



Trends in April Snowpack in Idaho, Oregon, and Washington, 1955-2020, data source: EPA, map created by Janelle Christensen, USDA Northwest Climate Hub.

Interacting stressors will have more impact in the summer months.

Lower summer stream flows, earlier forage senescence, and more extreme and frequent dry times will create more competition for water and forage resources.

For example, livestock, feral horses, and wildlife go to streams during periods of extreme heat and drought. This higher demand on streams increases impacts to them and makes them more vulnerable to climate change effects



Management actions to help rangelands adapt to a changing climate

Assess and monitor plant community composition over time.

Address increased fire risk:

- Plan and prepare for greater burn area.
- Actively manage areas at risk for severe fire.
- Consider fuel treatments, especially after high fine-fuel production years.

Improve hydrologic function:

- Control pinyon-juniper expansion near streams.
- Maintain higher summer flows by protecting water resources, such as spring-fed streams.
- Reconnect floodplains and side channels.
- Restore riparian areas.

Manage for soil health and vegetation:

- Consider altering grazing timing, intensity, and duration to maximize productivity and minimize negative impacts.
- Facilitate rest from grazing (e.g., through forage reserve systems).
- Plant diverse, climate-adapted perennial species.
- Apply invasive grass treatments.
- Co-manage wildlife and domestic ungulates with wildlife specialists.
- Use multiple planting strategies over multiple years and the latest technologies, e.g., both broadcast seeding and seed pillows.

For increased preparedness, take these actions annually:

- Use online tools, local knowledge, and vegetation monitoring to inform livestock movement.
- Hold regular agency-producer meetings, moving livestock as needed.
- Coordinate with Rangeland Fire Protection Associations and other community partners.

Resources

- **Online tools to aid managers in planning and timely response to drought and fire:**
<https://www.climatehubs.usda.gov/hubs/northwest/topic/online-tools-northwest-federal-rangeland-managers>
- **Interpreting Indicators for Rangeland Health:**
https://www.nrcs.usda.gov/sites/default/files/2022-06/Interpreting_Indicators_1734-6_ver5_08272020%281%29.pdf
- **Climate change and adaptation opportunities for forest types in Oregon, Idaho, and Washington:**
<https://www.climatehubs.usda.gov/hubs/northwest/topic/northwest-forests-and-woodlands>
- **Additional region-specific climate change and adaptation information for many areas in Oregon, Idaho, and Washington:**
<https://www.climatehubs.usda.gov/hubs/northwest/topic/northwest-vulnerability-assessments>