

# Learning from livestock producers: Coping with environmental and economic uncertainty

*Summary of findings from listening sessions hosted by the SageCon Partnership*



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Katie Wollstein, Ph.D.

Rangeland Fire Regional Specialist  
Oregon State University Extension Service

Anya Tyson

Sage-steppe Conservation Specialist  
The Nature Conservancy



## Executive summary

To better understand eastern Oregon livestock producers' experiences living with environmental and economic uncertainty, five listening sessions were hosted in 2021 and 2022 by the SageCon Partnership's Grazing Flexibility for Range Resilience Workgroup. The sessions consisted of facilitated conversations focused on the challenges livestock producers associate with fluctuating forage production and tools, information, and resources that may improve operations' abilities to adapt.

Common challenges participants associated with livestock production and forage availability included:

- Rapidly responding to emergent environmental conditions is logistically difficult for an operation
- Effects of multiple below-average productivity years compound over time; multiple successive years makes it more and more difficult for an operation to “make it work”
- Livestock water availability limits forage use and creates significant costs related to hauling water (labor and fuel expenditures)
- Forage shortages are regional; demand for forage in an area is highest when availability is lowest (e.g., following particularly dry years or wildfire events)
- Social uncertainty, including social change and pressures from the non-ranching public, threatens the long-term viability of ranching for future generations

Producers were also asked to share how they adapt to these challenges. In below-average years, tactics included shorter grazing rotations, earlier weaning, using forage stockpiles or hay stores, dormant season grazing, and downsizing herds. Producers seek to take advantage of above-average years by stockpiling forage or hay, resting pastures, growing additional hay, and investing in rangeland improvements.

Listening session participants also reflected on current information sources and tools or programs that have been useful in planning for their operations. A majority of producers reported basing plans on the preceding year's productivity and then adjusting as the growing season progresses using environmental indicators. A variety of insurance and/or assistance programs were also reportedly used by participants. Notably, participants preferred to receive information about program offerings or planning tools from family, neighbors, or other trusted sources.

Producers were also asked about tools, resources, or information that would help them better adapt to environmental and economic uncertainty. Some of these were:

- Operational changes to improve forage use such as water development or additional fencing to improve livestock distribution
- Consistent, long-term funding for rangeland improvements that often require multiple years of investment or inputs
- Alternative forage sources, such as grass banks, as a fallback for below-average productivity years or for use following wildfire

On the whole, listening sessions revealed an overall need for enhanced ecological and social resilience so operations can withstand uncertainty into the future. This report thus concludes with the following recommendations to SageCon and other similar organizations: (1) Increase awareness of existing programs or tools and the circumstances under which they are beneficial, (2) Provide long-term funding for rangeland improvements and shared learning, (3) Use existing collaborative infrastructure for efforts such as forage sourcing, and (4) Tell the story of ranching and healthy rangelands.

## **Introduction**

Ranchers make decisions in contexts characterized by both environmental and economic uncertainty. In eastern Oregon, drought conditions persist and wildfires are more frequent and severe; availability of forage for livestock production is unpredictable. As a result, some years many ranchers face tough tactical and operational decisions, which can have long-term consequences for rangeland resilience and rural economies.

The SageCon Partnership recognizes the multiple benefits of ranchers on the landscape practicing sustainable rangeland management and implementing conservation measures. Specifically, SageCon's Grazing Flexibility for Range Resilience Workgroup (active in 2021) was interested in ranchers' options for responding to fluctuations in forage availability related to drought, wildfire, and pasture closures for rehabilitation. The Grazing Flexibility Workgroup recognized a need for state-level organizations, such as SageCon, to better understand the on-the-ground experiences of the people whose livelihoods are dependent upon healthy and productive rangelands. What tools, information, and resources can help Oregon ranchers better adapt to uncertainty?

## **Objectives**

The Grazing Flexibility Workgroup sought to learn about technologies, information, or policy changes that would improve eastern Oregon livestock producers' abilities to adapt to interannual uncertainty in forage availability. To address these needs, three objectives were developed:

1. Understand rancher perspectives on the conditions that contribute to fluctuating forage availability.
2. Explore how ranchers adapt to these conditions and identify options for improved responses.
3. Inform SageCon's efforts to develop and advance tools or programs to increase livestock producers' abilities to adapt to changing conditions and improve overall social and ecological resilience.

## **Approach**

To understand the local perspectives surrounding this regional issue, the Grazing Flexibility Workgroup hosted five listening sessions between December 2021 and August 2022 with 19 participants in five eastern Oregon ranching communities in Harney, Lake, Crook, and Baker Counties. Using contact lists provided by local partners such as the Sage-grouse Local Implementation Teams and Rangeland Fire Protection Associations, participants were invited to attend a local listening session via telephone or email.

The listening sessions were guided conversations that offered opportunities for discussion among participants and included open-ended questions to allow facilitators to capture information in-context (see Appendix A for the facilitation guide). Participants were invited to share their knowledge and experiences in livestock production on eastern Oregon rangelands and discuss options for responding to drought, wildfire, and pasture closures. These discussions aimed to provide an opportunity for ranchers to describe in their own words the challenges—and potential solutions—they associate with fluctuating forage availability.

## **Summary of findings**

Listening sessions aimed to provide SageCon with information on shared challenges and solutions, as well as capture on-the-ground perspectives with nuance and specificity. Of the 19 participants, most run cow-calf operations, some additionally run yearlings; one producer has sheep. All participants use a combination of private landholdings and federal or state grazing allotments to fulfill their annual forage needs. Of the federal allotments, these were largely administered by the Bureau of Land Management (BLM) with some permits administered by the USDA Forest Service (FS). The five listening sessions

were located in the Prineville, Lakeview, Burns, and Vale BLM Districts. A majority of participants also grow hay on private landholdings to support their livestock operations and/or for additional income through sales.

The configuration of each operation is different and the challenges each face may take different forms. Therefore, the findings presented below are those that were generalizable and identified by multiple participants. They are organized around four topical areas: (1) Commonly identified challenges, (2) Operational planning, (3) Adaptation tactics for below- and above-average forage productivity, and (4) Producer recommendations for improving their ability to adapt.

### ***Commonly identified challenges***

Listening session participants identified a suite of challenges they associate with ranching and environmental and economic uncertainty. Below, we summarize the logistical challenges identified with regards to variable environmental conditions as well as some administrative ones accompanying the use of federal grazing allotments. Participants also identified challenges that they associate with the non-ranching public's interests in eastern Oregon rangelands.

#### Logistical challenges constrain producer responses to environmental variability

Widely varying interannual precipitation yields widely varying forage quantities from year to year in eastern Oregon. Most listening session participants reported basing their grazing plans on conditions they observed in the previous year.

Yet all listening sessions revealed that, for most ranchers, it is financially and/or logistically difficult to modify the structure of a livestock operation (e.g., changes in type, herd numbers, or rotation) in response to one or two years that depart from average conditions—regardless of whether it is below- or above-average production. Thus, there was nearly unanimous agreement among participants that the following summary statements were true about livestock operations and interannual conditions:

**In a below-average production year** (i.e., less-than-average rainfall yields below-average grass growth in a given pasture): operations must absorb the costs of, for example, supplemental feed or lower livestock weight gains.

**In a wet, above-average year** (i.e., abundant forage is available): operations may be unable to quickly capitalize on abundant forage, e.g., by increasing herd size or installing infrastructure to improve utilization in novel areas.

All participants described finding ways to “make it work” within the bounds of their operation’s existing configuration in a below-average year. Significantly, the effects of below-average production years compound over time for an operation; multiple successive years further limit management options. For example, one producer in Crook County shared that for their operation, three or more “bad years” in a row leads them to integrate less rest in their grazing rotation, which they find negatively affects rangeland condition.

When multiple low-production years compound, participants discussed facing difficult questions about using “stockpiled” or reserved forage, “Do I need this forage now or will I *really* need it next year?” (Harney County participant). At the same time, producers believed an unused stockpile or pasture rested for multiple years declines in nutritional quality, and the cost is borne elsewhere in the operation. Several participants shared that in dry and low-productivity years, they may rely more heavily on forage grown on

their private pastures. These producers voiced concerns about overgrazing in these years, thereby negatively affecting long-term ecological health. For example, Lake County ranchers estimated that it takes two to three years for their operations to “bounce back” from below-average years.

Following particularly active fire years in which multiple producers within an area lose stored hay or grazing access, producers reported one of the most challenging consequences is regional competition for other pasture and hay, “Every blade of grass is spoken for,” (Lake County participant). Closures of pastures on federal allotments typically last two growing seasons following fire; this further exacerbates producers’ needs for alternative forage. Several participants reported that this has meant more heavily using pastures on their private property, potentially adversely affecting rangeland health.

#### Livestock water availability limits use of available forage

Water availability was the most commonly cited limitation to responding to variable forage production across listening sessions. That is, water is more limiting than forage in this system. In years in which forage production is above average, producers described not necessarily being able to use the grass because of limitations related to water. One Lake County listening session participant summarized, “We’ve had to cut [livestock] numbers because of water availability—as opposed to forage.”

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More than half of participants reported hauling water daily or twice daily, requiring dedicated time and personnel and potentially large expenditures for fuel and mechanical failures. Of these producers, several pointed to poorly maintained roads limiting forage utilization on federal allotments because they limit options for hauling water to locations that may improve livestock distribution. On federal grazing allotments, several producers described regularly not being able to use all of their authorized Animal Unit Months (AUMs; the amount of forage needed to sustain one cow or five sheep for one month) because the distribution of existing troughs limits how far livestock will roam and use forage.

#### Mismatch between environmental conditions and administrative processes

Participants described interactions with federal land management agencies in which they have experienced lags between environmental conditions requiring administrative review or update and agency staff completing necessary procedures. For instance, producers who reported not fully using their authorized AUMs due to water distribution believed that additional troughs will improve livestock distribution and forage utilization. Placement of new troughs or repositioning existing ones requires federal approval of the proposed locations under the National Environmental Policy Act (NEPA), which producers acknowledged can be time consuming and is not necessarily an administrative priority for limited agency staff. Similarly, participants in the area of the 2012 Buzzard Complex Fire expressed that it would have been helpful if the BLM was ready to treat invasive annual grasses and reseed burned pastures immediately following the fire. They recognized that this would require the agency sourcing their seed and securing administrative approval, but felt that the delay resulted in annual grasses invading some burned areas.

In many of the listening sessions, participants pointed to turnover within their local agency offices as a barrier to the continuity of local knowledge, trust building, and relationship maintenance. One Baker

County producer reflected that some agreements or contracts that may guide aspects of their grazing on federal or private lands can be interpreted differently depending on staffing within their local office.

### Social uncertainty

These challenges were distinct from others discussed in the listening sessions, encompassing uncertainties beyond forage availability which participants linked to broader social dynamics. In particular, concerns were voiced about long-term trends in the loss of the ranching way of life. All listening sessions included at least one reference to pressures participants perceive from groups opposed to livestock grazing on rangelands. Several producers also referenced cuts in AUMs they associate with BLM facing legal pressure from some interest groups. Some producers also expressed the desire to have greater control over the cattle market to overcome recent challenges stemming from “cheap food policies” (Baker County participant) and large meat-processing conglomerates dominating the industry.

In Baker and Crook Counties, in particular, there were concerns about ranch succession—that is, the viability of an operation for future generations—and the subsequent loss of values associated with ranching (e.g., open space, wildlife habitat). These concerns affected present-day management decisions, as one Baker County producer asked, “Why would I make the investment to treat whitetop [an invasive species] if I don’t even know if my ranch will be here in 10 years?” Other pressures such as loss of water rights and elk impacting haystacks, standing forage, and fencing were also cited by producers in making the futures of their operations uncertain.

### ***Operational planning***

Many producers described planning for their operations based on the prior year’s productivity and/or starting with the assumption of average forage productivity. They then adjust these plans using environmental indicators as the growing season progresses, largely determined by the timing of precipitation and plant phenology. In Harney County, producers agreed April and May precipitation and spring growth are critical timeframes for getting a picture of forage productivity for the year, which determines the “track” of their grazing management plans. One Harney County participant estimated he makes six grazing plans for a year, while other participants described their decision points throughout a year based on observed conditions.

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Few producers reported using formal decision support tools to forecast forage production or inform their operational planning or adaptation tactics. While some said this was because computers are difficult to use, a majority of participants stated that they prefer to receive information through word-of-mouth from family, neighbors, or other trusted sources such as the Eastern Oregon Agricultural Research Center. Significantly, all producers primarily rely on experiential knowledge in making management decisions. This is typically done by comparing current conditions to previous years and following strategies from analogue years.

All listening session participants agreed that they principally rely experiential knowledge, comparing current conditions to their experiences in other years, “Deviation from normal in either direction means my costs will either go up or down,” (Harney County participant). To make these assessments, all producers described evaluating conditions daily and being prepared to be flexible. A Lake County

participant shared that, in particularly dry years, he is especially vigilant in assessing conditions and reevaluating his plans, “When things get bad, surveillance [of range condition] is critical.” Because water is also limiting to livestock grazing, some producers described weight gain as a better indicator of when it’s time to leave a pasture than forage utilization.

### *Adaptation tactics*

Across all listening sessions, there were a suite of commonly mentioned tactics producers use to respond to below- or above-average forage production, summarized in Table 1 and in the sections below. A majority of participants describe relying on a combination of tactics.

<b>Forage productivity</b>	<b>Adaptation tactic</b>	<b>Description and limitations</b>
Below average	Shorter grazing rotation	Livestock graze pastures for shorter durations; at end of grazing rotation, livestock remain on private pasture longer and/or require more hay
	Earlier weaning	Separate calves from cows because dry cows require less feed; limited forage may last longer but calves are lighter
	Use forage stockpile or feed hay	Feed hay or ungrazed pasture from previous year; may take longer to reach or recover good body condition, may require supplementation. Hay may be difficult to source; expensive
	Dormant season grazing	Graze pasture in fall/winter (i.e., perennial grasses are dormant, less susceptible to harm); potentially useful for controlling invasive annual grasses. Requires supplementation, must be authorized, not logistically feasible for all operations.
	Cull or destock	Reduce herd numbers (e.g., yearlings); compounds losses over time, takes time to rebuild
Above average	Rest pastures/ stockpile standing forage	Save forage for below-average years and improve rangeland health; potentially decreases forage quality, increases fire risk
	Conserve hay	Feed less hay, store for future use
	Additional hay cutting	Grow and harvest another hay crop; increases operational expenses (e.g., equipment, labor)
	Range improvements	Seeding, spraying, juniper thinning; expensive, may require regular treatments

Table 1. Summary of tactics and perceived limitations commonly described by listening session participants in responding to above- or below-average forage production.

#### Below average-production years: Shorter rotations, earlier weaning, number adjustments, use forage stockpiles

In dryer than average years resulting in lower forage production, nearly all producers reported remaining for shorter periods on each pasture than they would if they followed their usual grazing rotation (i.e., “shorter rotations”). This is in an effort to protect rangeland health as well as maintain body condition of livestock. This tactic is logistically feasible when producers have smaller or privately-owned pastures because they have more control over utilization and timing of grazing, respectively. As a result of shorter

rotations, livestock will arrive at winter pastures earlier than normal after the rotation has concluded. This means livestock will either remain on a private pasture longer than in an average year or they must be fed hay much earlier than usual (and, therefore, use more hay). Because 2021 was characterized as particularly dry and unproductive, producers in Harney County reported feeding hay approximately four weeks earlier than they normally would. Sourcing hay can be especially challenging in such years.

Adjusting livestock numbers was another tactic identified by participants for responding to below-average production. This included weaning calves earlier in the year than usual because dry cows consume less feed than mother cows and can stay in a pasture longer (i.e., because they are not lactating). However, weaning calves early can result in lighter calves. Some producers considered potentially calving later in March or April so to rely less heavily on hay at the end of the year. Other producers described culling more deeply in drought years, that is, selling mother cows with undesirable calving rates or other characteristics. Destocking was viewed as an option of last resort, although one Crook County producer with a comparatively large operation discussed a “disposable” portion of their herd or ceasing to run yearlings in difficult years. Producers shared that rebuilding an operation after destocking can take several years.

Below-average production years mean producers need to find additional feed; participants described options for fulfilling this need. Most producers use “stockpiled” forage during such years, that is, either grazing a pasture they had not entirely used or rested in a previous year or feeding hay they had stored. Grazing a stockpile can sustain an operation in the short-term but it can take longer to reach or recover good body condition. Several producers were also interested in receiving authorization for fall or winter grazing on federal allotments (“dormant season grazing”) so to rely less on hay in winter months. This tactic would require nutritional supplementation and approval from the managing agency, and is typically only feasible on allotments that do not include creeks or riparian areas and are easily accessible for producers to check on livestock and water during winter months.

Above average-production years: Stockpile forage, incorporate rest, improve range condition, maximize authorized grazing use

In response to above-average production years, participants described opportunistically “stockpiling” forage by leaving standing forage in a pasture, resting a pasture, and/or conserving hay stores by grazing pastures more of the year. When asked about the disadvantages of these tactics, participants believed pastures of ungrazed forage are less productive and contribute to elevated fire risk.

Producers in Lake and Harney Counties, in particular, described in years with above-average precipitation, they prefer to first use pastures that are either normally without water or are known to be without water later in the season to reduce expenses related to hauling water (“Use it while you’ve got it,”). Likewise, several producers stated that they prefer to take advantage of productive years by using their full allocations of AUMs on their grazing allotments before using their private pastures. The utility of this tactic depends on the ability of producers to encourage uniform livestock use using water distribution.

Nearly all participants agreed that productive years are an opportunity to improve rangeland health, viewed as an investment in their operation to withstand future uncertainties. Activities they associate with rangeland improvement included resting pastures, seeding, spraying or brush beating, or conifer removal to increase grass growth and/or increase water quantity on private pastures. Participants reflected on the expense of these activities and acknowledged that they must be maintained over multiple seasons.



### ***Tools and programs in use***

A variety of programs were reportedly used by participants, such as Pasture, Rangeland and Forage (PRF) insurance, alternatively called “drought insurance.” All Lake County participants mentioned use of PRF insurance, referring to favorable experiences and how the program “paid for itself” multiple years. Baker and Crook County producers also described their use of PRF insurance, but this was less widespread among Harney County participants. Those with forage insurance reflected that it helps provide stability for their operations, but there also was some uncertainty on how losses are assessed. Notably, not all producers were certain of the agency or organization through which they are insured, and many characterized them as confusing and “not user-friendly.” Participants expressed some skepticism about how losses are triggered and the validity of inputs used by the agency such as “the grid” for the Rainfall Index. A few producers also mentioned using relief programs offered by the USDA Farm Service Agency (e.g., Livestock Forage Disaster Program, Emergency Livestock Assistance Program.)

Producers also referenced instances in which they participated in cost-share provided by Natural Resource Conservation Service (NRCS) programs. For example, for post-fire rehabilitation, Crook County NRCS purchased native seed mix for 33,000 acres of burned private rangeland and the producer paid for aerial application. Other participants have participated in USDA Conservation Reserve Programs (CRP) administered by the Farm Service Agency (FSA) such as the Conservation Reserve Enhancement Program (CREP). Of these producers, some expressed frustration with the timeframes or perceived restrictiveness of the programs such as exclusion of grazing for 10-15 years, “You’d better read every last detail and study the contract,” (Baker County producer). Other producers have no interest in receiving federal funds for their operations.

Importantly, whether a trusted individual administered the program or if a neighbor had previously had a positive experience were what producers said determined their enrollment or participation in program offerings. Additionally, some participants reflected that field days with agency partners have been helpful for building relationships and developing shared understanding of site conditions and effective management.

### ***Producer recommendations***

Producers were lastly asked to reflect on tools, resources, or information that they believed would help them better adapt to uncertainty. Producers’ recommendations emerged in four areas: (1) operational changes to improve forage use, (2) investments in rangeland improvements, (3) sourcing alternative forage, and (4) administrative changes.

#### **Operational improvements**

Producers described various operational improvements that they believed would enhance their ability to respond to dynamic conditions and their effects that compound over time. Proposed improvements included water development to improve rest-rotation programs or livestock distribution, additional fencing to fully utilize authorized or available forage (on public and private lands, respectively), and road maintenance to create more options for water hauling and wildfire response.

Because water availability in pastures was one of the most common challenges producers identified in responding to fluctuating forage availability, digging wells or placing pipelines to divert water were frequently pointed to as a means to improve producers’ operations and ability to adapt. Water development was described as an opportunity to improve rest-rotation or address logistical barriers to changing their grazing season of use (e.g., graze annual grasses in fall or winter, rather than the growing

season). Producers believed that digging wells and, thereby, increasing water availability would improve the ability to have livestock remain in pastures longer and more uniformly utilize the range. These producers also acknowledged that developing or improving water infrastructure takes planning, time for securing approval, logistical challenges, and capital.

Many producers were also interested in constructing additional fencing within their existing allotments to create smaller pastures to improve livestock distribution and increased control over utilization of available forage. In a Harney County Listening session, one producer described how the BLM erected a temporary fence to exclude grazing after Miller Homestead fire. They reflected that it improved their grazing management and utilization of the pasture in which they were permitted to graze and they would have liked for it to be a permanent fence. It was broadly perceived that authorizing additional fencing is not a priority for most BLM offices and participants would like the BLM to view such proposals as a means to improve rangeland condition and reduce fine fuels through grazing.

Other operational improvements included upgrading equipment and diversifying ranch income streams. For the producers who expressed interest, these investments were important for them to pursue because they are viewed as a means to ensure that the ranch will continue to be economically viable for future generations. One Crook County participant described wanting to upgrade to solar-powered wells to reduce fuel costs for gas generators for water pumping. For diversifying ranch income, a Harney County participant wished to invest in solar energy production. Some producers were also interested in other technologies such as drones, which were viewed as potentially useful for monitoring annual grass infestations, troughs, fencing, and wells. Lastly, improving road condition and access routes would help producers with water hauling as well as facilitate safe and effective wildfire response.

#### Investments in rangeland health

Producers emphasized a desire to invest in rangeland health because they view it as an investment in the stability of their operations into the future. Some of the practices described included brush management, wider use of prescribed fire to address juniper encroachment, reduce burn severity, and increase forage. Producers were also interested in seedings to improve plant communities and forage quality and treating invasive annual grasses. There was a general desire to undertake long-term projects that will require sustained funding.

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Producers in Baker and Crook counties, in particular, expressed interest in using prescribed fire to manage juniper and improve forage. One Crook County producer felt NRCS contracts for juniper cuts for which they received cost-share limited their ability to pile burn, which fed anxieties about fuels and hazards during the fire season. Other producers were also interested in broadcast burning, though felt they could not implement the practice due to concerns about liability and insurance should a fire escape their property. These producers agreed a state program to affordably insure landowners practicing prescribed fire would be ideal.

Some producers also expressed a desire to engage in research partnerships to explore options for enhancing rangeland health. One Harney County was interested in beaver reintroduction or use of beaver dam analogues on private pastures to increase water availability and enhance fire resilience.

### Sourcing alternative forage

A particularly dry year or large wildfire event means multiple producers in a region are simultaneously searching for forage; options for sourcing forage during such instances are limited. Some producers' suggestions to address this need included grass banks owned by a private individual or non-governmental organization or vacant allotment. Most producers were not interested in a formal forage-finding platform ("Forage Exchange"), as they believe they already do this informally through existing informal networks.

Producers reflected on the utility of a grassbank or forage reserve, in which a vacant allotment or private pasture is used as needed (e.g., following a large wildfire). Several producers stated it would need to be regularly used to reduce fire risk and maintain forage quality. There were also concerns about how useful it would be for easing regional forage shortages, given the extensiveness of the need following major events such as wildfires. In Lake and Baker Counties, producers suggested flexibility in how they used enrolled CRP lands aided by fencing and stockwater development would allow them to use forage in times of need.

The Grazing Flexibility Workgroup also sought to gather producers' perspectives on a proposed Forage Exchange Platform to aid producers in sharing or locating forage during times of need. With a few exceptions, there was general agreement among producers that such a platform would be unnecessary and challenging to moderate. First, they pointed to their informal networks for locating or sharing forage already in existence within ranching communities and between trusted neighbors; an online platform would be redundant and impractical, "We help people around us because they will help us when we need it," (Harney County participant). Additionally, several producers reflected that hauling cows to new pastures would be expensive and stressful for animals. Second, rules for those using the platform would be essential because producers believed that there would not necessarily be shared expectations, standards for rangeland health and infrastructure upkeep (e.g., fence maintenance), and high potential for disease and invasive species transmission. Some producers stated that screening processes would be essential to address weed and animal health concerns; producers pointed to the benefits of "screening" that informally occurs when they choose to offer forage to neighbors, friends, and family members. Third, there were concerns that such a platform would increase the ability of large and/or non-local operations to acquire forage and expand their operations. Lastly, most producers find themselves regionally competing for other pasture and hay when conditions occur that affect forage availability (e.g., drought or wildfire). As a result, demand for forage in an area is likely highest when availability is lowest.

### Administrative changes

Several producers in all listening sessions reflected on the extensive timeframes of federal land management agencies to undertake administrative processes required to make any requested changes, such as those producers desired for improved livestock distribution via placement of new troughs or fencing or dormant season grazing (i.e., a change to the season of use on a grazing permit). There was also a widespread desire articulated for longer-term funding for stewardship practices such as invasive annual grass management. Some producers agreed that three years of funding should be a minimum, with substantial inputs in the first year and funding for follow up monitoring and treatments as needed. In general, producers agreed that more consistency and stability in funding sources is necessary because improving rangeland health takes multiple decades. Some producers highlighted that sustained funding opportunities and/or research partnerships allows them to pursue long-term learning. There's also a desire for funding for weed treatment and restoration to explore other options than cattle exclusion; e.g. seed multiple years or double the seeding density.

## Summary and implications

Listening session participants described the challenges they associate with fluctuating forage availability and some of the tactics they use to respond. Underlying these conversations was a general recognition that investing in rangeland health is an investment in their operation and their ability to withstand uncertainty. Thus, the following recommendations are focused on enhancing ranchers' abilities to enhance both ecological and social resilience:

- Increase awareness of existing programs and the circumstances under which they are beneficial: While several producers have participated in programs or hold insurance, there was general confusion about the benefits and limitations of different programs or insurance offerings. Importantly, some participants were less skeptical if a neighbor had enrolled or if the administrator was a known and trusted individual. (A non-exhaustive list of relevant resources is provided in Appendix B).
- Provide long-term funding for rangeland improvements: Several participants reflected that rangeland improvements are incremental and accumulate over long time horizons. While enhancing rangeland resilience enhances an operation's ability to adapt to uncertainty, these time horizons are not reflected in most funding opportunities. More consistency and stability to pursue long-term improvements would also enhance learning.
- Forage sourcing should use existing collaborative infrastructure: Rather than creating new organizations or networks to improve sourcing of forage or hay when regions are affected, existing organizations and entities, such as Rural Fire Protection Associations or Sage-grouse Local Implementation Teams, could provide a venue for networking and/or pursuing the establishment of local grass banks.
- Tell the story of ranching and healthy rangelands: Ranching can provide for multiple values such as open space and wildlife habitat. Loss of working ranches and transition to other land uses risks losing these values. Public outreach to highlight the values safeguarded by working ranchlands may diffuse some public opposition to grazing uses.

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## Appendix A

### Guiding questions (revised 1/26/2022)

1. To begin, we'd like to hear about your experiences planning for livestock forage for your operations.
  - We know this region has experienced drought, wildfire. Sometimes pastures are closed for restoration. Have any of these affected your operations? In what ways?
  - Tell us about an instance when you lacked access to sufficient forage. What were the circumstances? How did you handle this situation? Have others here had a similar experience?
  - Have you used forage insurance to address forage gaps? If so, what's been your experience?
  - Looking forward, what is your biggest concern regarding forage availability?
2. We'd also like to hear about how you handle particularly productive years.
  - Tell me about a year where you've had more forage than expected? Does this tend to be on your private ground or allotments?
  - What kinds of adjustments do you make to be able to take advantage of a good year?
3. We know it's challenging to plan when annual (or even within-year!) conditions are so variable. We'd like to hear a little about how you all handle this (or would like to be handling it).
  - What kinds of tools or information do you currently use to plan your annual operation?
  - To help you better adapt, what kinds of efforts/initiatives would help? Is there something you'd like to see Extension (or other entities) doing?
  - Are there things you'd like to be doing differently or you think would help you better adapt to variability in forage production? What is standing in the way of you making these changes? (e.g., Financial, knowledge, logistical, policy, social barriers?)
4. Lastly, we'd like to explore how you all respond to forage losses within this community.
  - Do you currently work with your neighbors or a co-op when you have excess/insufficient forage? How does this typically work?
  - Have you ever sub/leased your grass? What do you consider when subleasing?
  - One tool that's been discussed (especially following large wildfires) is a forage exchange platform. Other places have developed tools like this. A forage exchange platform is a free, online platform that facilitates connections between potential buyers and sellers of forage and pasture. It can take the shape of a listserv, a Facebook group, or an interactive map. Could you imagine doing something like this to find forage outside your network of neighbors/friends? What would make this work for you (e.g., friend of a friend, "approved" provider, agreements)?
5. Is there anything else you'd like to share with us about adapting your operation to annual variability or unexpected events?

## Appendix B

### Relevant Resources for Producers (updated 11/28/2022)

Below is a list of resources potentially relevant to producers given the needs identified in the listening sessions. These were collected from platforms aimed to provide information to ranchers in support of adaptation to climate variability, such as [Society for Range Management's Good Grazing Makes Cents](#) newsletters. The following list is a handful of existing programs and tools and is not intended to be prescriptive or exhaustive.

- [“A Systems Thinking Approach to Ranching: Finding Leverage to Mitigate Drought”](#) article by Ryan Rhoades, Kimberly McCuiston and Clay Mathis
- [Case studies to increase resilience among farmers and ranchers in the Pacific Northwest](#) by Washington State University Extension
- [Drought Decision Support Tool for Ranchers](#) by University of California Agriculture and Natural Resources
- [Livestock Assistance / Emergency Assistance for Livestock](#), Honeybees and Farm-Raised Fish Program by US Department of Agriculture
- [Livestock Forage Disaster Program](#) by US Department of Agriculture
- [Long-range Climate Forecasts](#) by Oregon Department of Agriculture
- [Noninsured Crop Disaster Assistance Program Factsheet](#) by US Department of Agriculture
- [Pasture Range and Forage Insurance - Frequently Asked Questions](#) by US Department of Agriculture
- [“SRM addresses ranching decisions amid drought”](#) article by Western Livestock Journal
- [“When in Drought... Real Talk with Ranchers” Presentation](#) by SRM's Good Grazing Makes Cents