

## Prioritizing Limited Resources in Landscape-Scale Management Projects

Authors: Smith, Brenda S., Unfried, Julie K., Hall Defrees, Dallas K., and Wood, Debbie J.

Source: Rangelands, 44(3) : 235-241

Published By: Society for Range Management

URL: <https://doi.org/10.1016/j.rala.2022.02.005>

---

The BioOne Digital Library (<https://bioone.org/>) provides worldwide distribution for more than 580 journals and eBooks from BioOne's community of over 150 nonprofit societies, research institutions, and university presses in the biological, ecological, and environmental sciences. The BioOne Digital Library encompasses the flagship aggregation BioOne Complete (<https://bioone.org/subscribe>), the BioOne Complete Archive (<https://bioone.org/archive>), and the BioOne eBooks program offerings ESA eBook Collection (<https://bioone.org/esa-ebooks>) and CSIRO Publishing BioSelect Collection (<https://bioone.org/csiro-ebooks>).

Your use of this PDF, the BioOne Digital Library, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at [www.bioone.org/terms-of-use](http://www.bioone.org/terms-of-use).

Usage of BioOne Digital Library content is strictly limited to personal, educational, and non-commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

---

BioOne is an innovative nonprofit that sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

# Prioritizing limited resources in landscape-scale management projects

By Brenda S. Smith, Julie K. Unfried, Dallas K. Hall Defrees, and Debbie J. Wood

## On the Ground

- Bringing diverse groups together in collaboration to solve complex landscape-scale issues presents opportunities and challenges.
- Collaborating at the planning stage of restoration projects can be slow. It takes time to build relationships, and meeting people “where they are at” is often the accomplishment.
- Success in collaboration comes from gathering the local knowledge to move forward with implementing projects.
- Long-standing collaborative groups often face challenges with keeping stakeholders and partners involved particularly when tracking past projects. Finding continued funding to maintain the projects implemented years earlier takes effort usually on behalf of the convening organization.

**Keywords:** landscape-scale management, local implementation teams, greater sage grouse, invasive annual grasses, collaboration.

*Rangelands* 44(3):235–241

doi 10.1016/j.rala.2022.02.005

© 2022 The Author(s). Published by Elsevier Inc. on behalf of The Society for Range Management. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>)

## Introduction

Landscape-scale action is needed in sagebrush steppe rangelands

Major factors threatening ecological functions in northern Great Basin sagebrush rangeland include invasive annual grasses, wildfire, and their interactions that promote frequent dangerous and harmful fires (See Boyd).<sup>1–3</sup> Wide interannual weather variation contributes to seasonal variability in rangeland production and plant recovery capacities. This presents

challenges to achieving desired outcomes in the face of ecosystem altering threats, as this variability requires consistently applying adaptive management (an iterative process where decisions and hypotheses can be tested and adjusted based the outcome of treatment options). There is also significant variability in ecosystem resilience to wildfire and resistance to invasion of annual grasses across these rangelands.<sup>4</sup> Invasive annual grasses and wildfires occur at the landscape scale, therefore management needs to address these threats by planning and implementing at the landscape scale.<sup>5,6</sup> Siloed acts of smaller-scale conservation have proven ineffective for addressing these threats, even when science based.<sup>7</sup>

Successful landscape-scale management requires adding the human dimension because many people work across multiple boundaries and jurisdictions.<sup>8</sup> It is in this situation when collaboration comes into the picture and can be advantageous for implementing landscape-scale projects. Collaboration can result in integrated goals and strategies among diverse management partners within multiownership landscapes, often including public lands.<sup>6</sup> Successful collaboration can be elusive but some common themes to achieving positive outcomes include they are grassroots, locally led, relationship-based, and importantly, often require substantial facilitation and coordination capacity.<sup>9–11</sup> Successful collaboration fosters a shared vision and ongoing adaptive decision-making related to management priorities and actions among diverse stakeholders.<sup>12</sup> In this paper, we present case studies highlighting examples where collaborative landscape-scale management is occurring and offer insights on how different groups approach collaboration with its inherent challenges and opportunities. Lessons learned from these different groups are presented to help advance future collaborative landscape-scale efforts.

## Collaboration to deliver landscape-scale results

### Opportunities of collaboration

Partners in groups working together to find common ground to prioritize projects at a landscape-scale, know trust

can be difficult to build and can be easily lost.<sup>13</sup> Many working in collaborative spaces know it is critically important to pay close attention to the human dimension of the complex natural resource issues such as invasive annual grasses that are impacting the sagebrush steppe and species such as the greater sage grouse (*Centrocercus urophasianus*).<sup>14</sup> In our experiences leading collaborative groups, collaboration is about helping participants identify and assess the tradeoffs associated with different management options, including ecological, economic, and social.<sup>2,11</sup>

The social science component of natural resource collaborations helps inform appropriate decisions for those affected and provides the context to understand the variety of human interests and implications of management.<sup>15,16</sup> When community members and stakeholders are invited and participate in the process of collaboration, the science and research become shared information and helps in understanding complex issues and demystifying the science around these issues.<sup>11,17</sup> Building trust among participants takes time and happens at different speeds, and that pace is different for every group. Trust can occur sooner and can be enhanced when an organization provides support for the collaborative process.<sup>18</sup> Targeted communications strategies that reach intended audiences are helpful in building support for collaborative work. Collaboration can be viewed as the foundation for building the adaptive capacity (Maestas et al.<sup>19</sup>) of communities to address persistent and complex problems like invasive annual grasses.

## Challenges of collaboration

With landscape-scale problems, groups need landscape-scale funding. In a survey of SageCon partners conducted in 2020, participants noted a need for funding long-term management, including funding for re-treatment and ongoing maintenance.<sup>20</sup> Significant resources are also needed to apply for and manage grant funding received by organizations, such as facilitators and coordinators to help manage the collaborative process, project coordination, implementation and monitoring, fiscal management, and reporting required by the granting agency. Investment metrics are needed for long term funding and must be collected to assess impacts across communities. It is not enough to only report the hectares treated. Tracking metrics beyond areas treated tells the story of the collaborative process and communicates the need for the collaborative work. Data, including number of engaged partners, number of meetings that result in collaborative decisions, number of projects implemented, change in community awareness through communication channels, and number of jobs created are needed. These are examples of metrics that can tell the story of successful collaboration.

Funders, understandably, want timelines for deliverables and while generally supportive of collaboration, there is a lack of understanding that collaboration does not have a set timeline. If funders are to support collaboration, they need to support the decision space of collaborative groups to use an adap-

tive management framework from which the partners can engage and learn through shared science.<sup>6</sup>

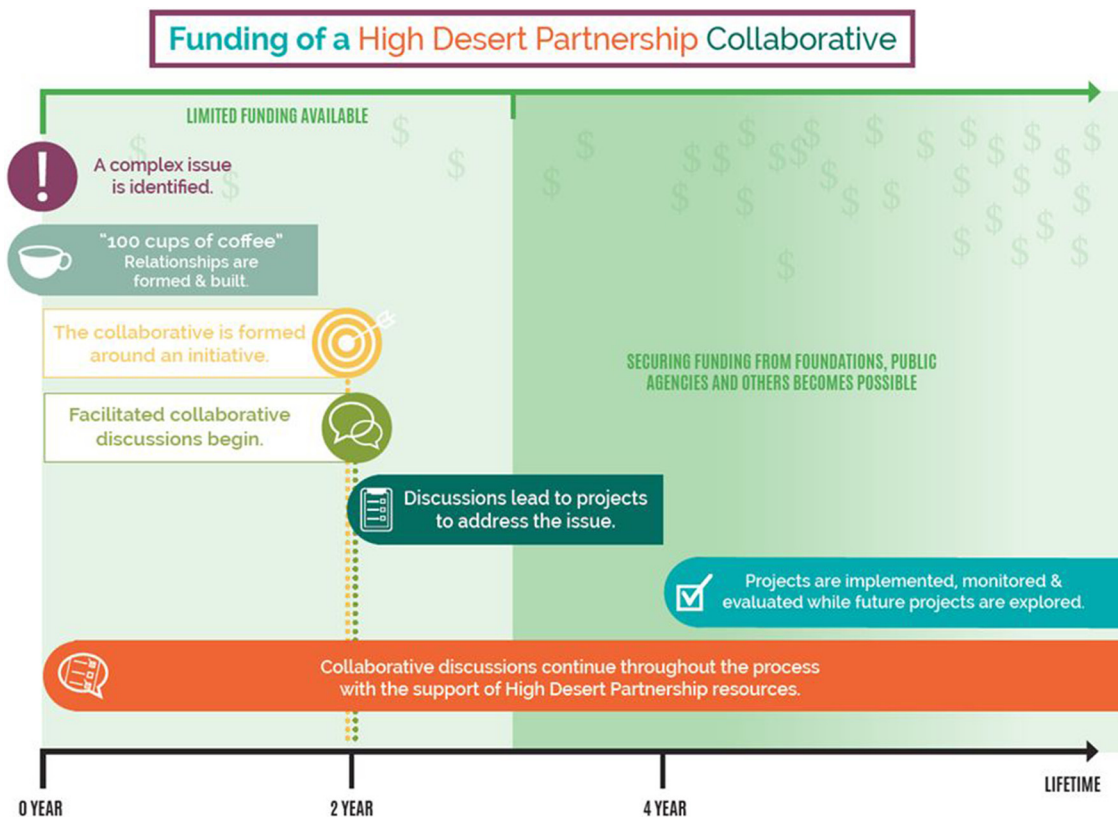
A funding partner plays a principal role in constraining or advancing the progress of collaborative groups. This plays out in how funding is allocated for specific projects over a defined timeline. There are time-consuming processes in collaboration, such as planning, implementing, budgeting, contracting, and hiring that often do not align with the timelines of funders. Often, limited funding is available to support the time and work needed to develop relationships, trust, and seek common ground in collaborative groups for successful implementation. Once collaborative groups have work plans, funding is often available for implementation, yet each collaborative group needs a regular “care and feeding” to be successful in solving complex problems over the long-term.<sup>21</sup>

In addition, complex problems surrounding invasive annual grasses and wildfires are rarely solved with a single management action. Iterative treatments carried out with an adaptive management framework are needed to achieve success. Therefore, funding specific actions or projects is often not helpful, which leads to frustration among funders and practitioners. Funders are beginning to recognize this issue (e.g., Oregon Watershed Enhancement Board Focused Investment Partnership [OWEB FIP] and Natural Resource Conservation Service Regional Conservation Partnership Program)<sup>22,23</sup> and are funding partners to work at larger scales over longer time periods. Funders offering a collaborative partnership flexibility to prioritize follow-up treatments within an adaptive management framework rather than awarding funds project by project offer the opportunity for the best use of their resources. While throughout the timeline there are desired outcomes and milestones, the collaborative work is perpetual in nature, requiring continued support for progress to be made (Fig. 1).

Along with funding issues, organizations, especially nonprofits in rural Oregon, face staffing challenges, simply due to not having enough people that live and work in the communities to carry out this type of work.<sup>24</sup> Building sustainability in an organization is about building sustainability in staff, particularly in an organization dependent on building deep, abiding relationships to solve complex issues in collaboration. Nonprofit organizations funded with grants often need to be creative to attract high quality employees. It is difficult to offer benefits within an organization with a small number of staff and who may not qualify for small group retirement and health benefits. Building multiyear funded positions with benefits to attract the quality of staff needed for collaborative building is a constant challenge.

## Case study 1: Prioritizing for win-win: Harney County Wildfire Collaborative

In Harney County Oregon, the Harney County Wildfire Collaborative (HCWC) has adopted a framework where diverse partners with different values can gather together for



**Figure 1.** Timeline and milestones to developing a collaborative working group at High Desert Partnership. There is a long period of relationship building and discussions to bring diverse groups together to begin collaborating and often obtaining funding to support this period is challenging (0-2 years). Once groups begin making decisions on projects to be implemented, funding is more easily secured from granting agencies wanting to see positive outcomes to restoring landscapes.

win-win decisions for all. This is time consuming work and usually people are not willing to express their values until relationships and trust are built. The High Desert Partnership (HDP) supports the HCWC and the process of collaboration. Issues that have been identified with turnover with trusted partners, specifically agency personnel, can often be overcome by championing the collaborative process and bringing stakeholders together.<sup>25</sup> The High Desert Partnership supports the process of collaboration and stewards the information of the collaborative so partners remain grounded in the planning process when new agency personnel are appointed and begin collaborating with an ongoing group.

HCWC came together to prevent and suppress megafires (i.e., large-scale wildfires of more than 40,469 ha [100,000 acres]) and restore lands impacted by megafires in the sagebrush steppe in southeastern Oregon. Although not specifically focused on greater sage grouse, HCWC's purpose resonates with the "defend the core, grow the core and mitigate impacts" framework featured at the 2020 Invasive Annual Grass Workshop organized by HDP, the SageCon Partnership, and Oregon State University and described in this Special Issue of *Rangelands* (see Maestas et al.<sup>19</sup>).

Currently, HCWC focuses on collaborating on >120,000-hectare (296,526 acre) landscape-scale project in the Stinkingwater Mountains in eastern Harney County of Oregon.

HCWC is building a common language for diverse partners to view and value different aspects of landscapes this size. If common language can be translated between fire personnel and land managers, this helps find common ground in values and uses of this important landscape. Potential Operational Delineations (PODs) is a framework used for structured decision-making pertaining to integrated fire management (see Wollstein et al.<sup>26</sup>). Recently HCWC started using PODs to put different stakeholders' values into quantitative decision-making to build consensus. Using this framework is prioritizing projects to implement on the ground while keeping the diverse partners vested in collaborating and finding those win-win projects. The PODs framework helps partners decide and prioritize restoration projects that can be developed and implemented while providing the management latitude to adjust for changing conditions. Through collaboration, the core values of individual partners are translated into large-scale management actions that would be challenging for a single group to accomplish. PODs are a clear example of collaboration at its best but has not been tested in rangelands. Wollstein et al.<sup>26</sup> discusses how the POD framework might be applied within rangelands using the Stinkingwater Mountains project in Harney County of Oregon through the HCWC. Helping partners to collaborate on a common goal means there is a win for everyone working together.



## Case study 2: Planning stages of collaboration Prineville and Vale Local Implementation Teams

Oregon's Local Implementation Teams (LITs) are voluntary, locally led collaboratives of diverse interest groups such as landowners, local, state, and federal governments, Tribes, conservation organizations, and others with an interest and/or investment in sagebrush conservation. Convened by Oregon Department of Fish and Wildlife in 2005, partners at all levels across the state agreed collaboration at the local level through LITs would be the most effective method to address long-term threats to greater sage grouse.<sup>27</sup> The issues impacting sage grouse are complex across time and space; sage grouse habitat requirements typically involve large areas and multiple land ownerships.<sup>28</sup> Developing collaborative groups at the grassroot level where people who are benefitting are interested in investing in wildlife habitat, ranching, living off the land, or recreating on it through their time or money seemed like the best approach. Oregon Department of Fish and Wildlife established five LITs (Baker, Burns, Lakeview, Prineville, and Vale) with each currently at various stages of development. We describe how two of the five LITs (Prineville and Vale) are developing lessons learned, particularly those related to collaborating with people having diverse perspectives and interests.

Coordination capacity for these two LITs was secured in 2019 and since then, each team has progressed in different ways based on unique local interests, needs, and social dynamics. Relevant interest groups within the Prineville LIT community were eager to collaborate from the get-go. However, due to turnover within key organizations, this LIT realized progress would not be possible without creating a clear set of roles, responsibilities, and expectations.<sup>29</sup> These parameters were set at various relevant levels (e.g., each interest group, all subgroups, and/or working groups created for the LIT). Members of the Prineville LIT are now collaborating and using relevant tools to write a local greater sage grouse conservation strategy outlining spatially explicit actions and associated costs or resources required to address local threats to greater sage grouse.

Vale LIT is starting from a different place than the Prineville LIT. A long history of litigation within this community has strained relationships between interest groups resulting in a loss of trust. A low level of trust between stakeholders (especially rangeland managers and governmental agencies) usually means coordination and/or collaboration processes often fail.<sup>13</sup> Trust needs to be rebuilt before progress can be made. Since 2019, the focus with this LIT has been to help relevant interest groups to feel safe and welcome at the collaborative table. Relationship building takes time and capacity, especially given a history of conflicts. The list of interest groups for the Vale LIT is long, which demonstrates a level of support. However, expectations about what success looks like and how quickly this LIT can achieve success must be tempered to foster successful collaboration. Relevant interest groups within the Vale LIT area are faced with nu-



**Figure 2.** Example of collaborative partners touring the Vale Local Implementation Team Indian Creek Fire to delineate core areas for invasive annual grass treatment. Both Vale and Prineville groups are working to find ways to collaborate and meeting in the field can benefit in coming to agreement on issues. Photo courtesy of Julie Unfried.

merous barriers toward developing a long-term collaborative workspace.

The Geographic Strategy developed through the SageCon Invasives Initiative enables users to identify areas to prioritize invasive annual grass management efforts (see Creutzberg et al.<sup>30</sup>) and has proved a valuable communication tool, as these LITs develop their local conservation strategy. For example, Prineville LIT members have identified local priority threats to greater sage grouse such as invasive annual grasses and used the Geographic Strategy to delineate core areas to defend against future spread of invasive annual grasses (Fig. 2). Prineville and Vale LITs are both in the early stages of collaboration and emphasis must be placed on there is no one-size-fits-all approach to collaboration. Progress made by both LITs, however, suggests that over the long term members from each community will effectively find ways to collaborate and prioritize common interests to address landscape level issues across ownership boundaries.

## Case study 3: Project implementation from Baker Landscape Implementation Team

The Baker LIT received an OWEB FIP grant that allows them to implement coordinated landscape-scale restoration as opposed to disjointed individual projects. This group, located in Baker County, Oregon began their collaborative process in 2016 with the goal of reducing greater sage grouse threats throughout their habitat in Baker and Union Counties and continues to use threat reduction for their decision-making. As the LIT moved beyond conceptualization, they narrowed in on what is possible and used different tools at each level of decision-making. For instance, when prioritizing projects partners have prioritized areas for treatment using the Invasives Initiative Geographic Strategy to “defend and grow the core” in areas with intact and more fire-resilient native vegetation (See Maestas et al.<sup>19</sup>). This strategy controls fu-



**Figure 3.** Two male greater sage grouse (*Centrocercus urophasianus*) displaying during mating season in Baker County, Oregon. Greater sage grouse is the focal species of the Baker Local Implementation Team in Baker County, Oregon. Photo courtesy of Mark Penninger.

els from invasive annual grasses in areas where treatments are most likely to succeed and connect across intact landscapes by focusing treatments largely in areas of transitioning vegetation adjacent to core areas.<sup>19</sup> This strategy maximizes treatment success and landscape-level outcomes while minimizing treatment costs. The LIT continues to prioritize work using the local expertise of partners. Local knowledge is an important factor in research and modeling for conservation planning,<sup>31</sup> improving the accuracy of models, and building positive and trusting relationships with local stakeholders when local knowledge pertaining to ecosystem processes and dynamics was included in the scientific process.

In Baker County, 70% of greater sage grouse habitat occurs on private land, therefore the LIT does a lot of collaboration with private landowners (Fig. 3).<sup>32</sup> Strong landowner relationships are important for long-term success and the ability to follow-up with landowners year after year. The OWEB FIP grant has provided the Baker LIT the ability to have a long-term investment where projects can be phased in, ensuring success through adaptive management. By starting with regional tools and expertise and continuing to hone their objectives and goals with local knowledge, the Baker LIT went from a big idea to implementing on-the-ground projects. The Baker LIT continually communicates with stakeholders and stays up with the latest technology to ensure more effective project implementation. The key ingredients for collaboration success are to be awarded the OWEB FIP funding and to implement those funds in a meaningful way, which has made the Baker LIT a strong and engaged local group. The Baker LIT partners are passionate about their vision and are able to make decisions to get projects on the ground. This process really is community driven; the partners understand that what is best for the greater sage grouse and also promote economic and environmental sustainability for the landowners, and this aligns with what Duvall et al.<sup>11</sup> discusses. Through supporting projects at a local level, the Baker LIT can act at a landscape scale. Local practitioners possess extensive knowledge, thus more partner involvement means greater opportunities for collaboration and greater chances of project success.

## Case study 4: Post-implementation and long-term maintenance at Crooked River Weed Management Area

The Crooked River Weed Management Area (CRWMA) has completed numerous projects and is facing challenges of how to prioritize project maintenance. From 2015 to 2019 the CRWMA worked with private landowners in rural central Oregon near the towns of Post, Paulina, and Izee—all within the habitat of greater sage grouse and mule deer (*Odocoileus hemionus*).<sup>28,33</sup> Funding was awarded for 5 years, yet each year the CRWMA had to reapply for the next year's funds through the Oregon State Weed Board. Treating invasive annual grasses is not a one-shot solution. Landowners need to be proactive and involved in managing invasive annual grasses. Many of the landowners in the CRWMA treated extra areas on their own and many contributed more than the required 50-50 match to be awarded funding. Initial management priorities for treating invasive annual grasses follows the defend the core, grow the core, and mitigate impacts framework (Fig. 4).

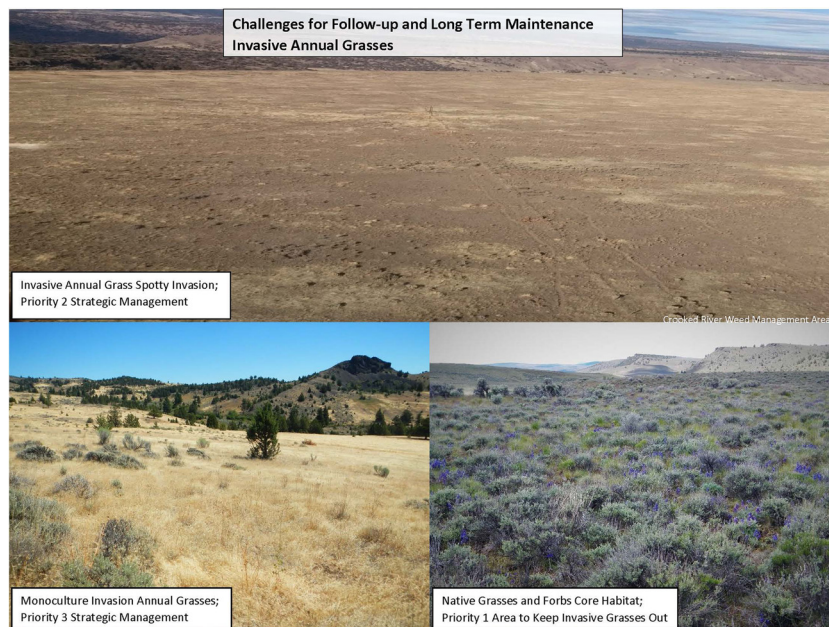
Long-term maintenance is often not part of a funding or granting agency's finance package, especially when working to manage invasive species. Funding for monitoring that puts adaptive management into motion will determine areas needing retreatment are all necessary for success. Due to lack of monitoring funds, the CRWMA relied on landowners to continue monitoring. Another challenge for CRWMA is the lack of funds for medusahead (*Taeniatherum caput-medusae*) and ventenata (*Ventenata dubia*) from grants because they are not listed as noxious weeds in Oregon.<sup>34,35</sup>

Relying on landowners to assist with monitoring has kept costs down and stretched the grant funds further for treating invasive annual grasses. CRWMA's education and outreach efforts with landowners helped to maintain the long-term maintenance, which is important because efforts to address invasive annual grasses is a continuous effort. As part of the outreach CRWMA staff worked with landowners on weed management plans and also collaborated with neighboring landowners interested in treating land jointly (either public or private lands). This is all part of the continued relationship building that keeps partners engaged in the long-term maintenance that is crucial to reducing populations of invasive annual grasses with monitoring and retreatments of herbicide when needed.

## Conclusion - lessons learned

Collaboration should not be considered a perpetual planning exercise. Reliable resources are needed to support the adaptive capacity of communities to engage in an iterative cycle of planning, implementing, and learning. Shared learning and shared science within this process is greatly enhanced by integrating science with management when scientists are partners at the collaboration table with land managers. Having multidisciplinary science and scientists participating in the collaborative landscape-scale adaptive manage-





**Figure 4.** Areas within Crooked River Weed Management Area in Crook County Oregon where treatments and long-term maintenance are prioritized for strategic management for invasive annual grass control. Priority 1 areas are intact sagebrush steppe, core habitat for greater sage grouse. Priority 2 areas still have native bunchgrass that could recover with invasive annual grass management, and Priority 3 areas are monocultures of invasive annual grasses requiring extensive restoration of the ecosystem. Photo courtesy of Crooked River Weed Management Area.

ment is critical when designing collaborative projects.<sup>36</sup> Collaboration leads to shared learning where a diversity of partners brings a multitude of experiences to the collaborative table. A collaborative group offers the opportunity to communicate progress, outcomes, lessons learned, and associated future management implications more broadly as part of the shared learning and a commitment to outreach among partners. Although collaborative landscape-scale adaptive management is not free from the threat of litigation, risk is greatly reduced within a framework of shared responsibility for actions and outcomes. For example, implementing flexibility in public land grazing permits is required to achieve desired outcomes in a widely varying forage and fine fuels production environment. Objectives that are derived in a collaborative group within a particular geography are often more attainable and implementable at this scale. Each case study we profiled has five key threads demonstrated across all these collaborative groups:

1. Collaboration requires time for intentional relationship building that is fundamental to building trust and is a prerequisite for planning, implementing, and learning.
2. Collaboration has specific benefits when working on complex, landscape-scale management because as relationships are forged, partners are able to come to a consensus on “the how, why, where, and when” for directing and prioritizing limited resources across vast rangelands.
3. Funding for the collaborative process can be difficult to secure, as can funding to maintain projects once implemented.
4. Frameworks capturing diverse partners’ values help prioritize projects and implementation when resources are limited but valuable to the process of collaboration.

5. Capacity to support ongoing effective communication is key. None of this collaborative work is easy to fund over the long-term. Although time consuming with limited resources, the collaborative work in all these groups shows the promise of collaboration to enhance and restore sagebrush steppe rangelands in the face of invasive annual grasses.

## Declaration of Competing Interest

The authors declare the following financial interests/personal relationships, which may be considered as potential competing interests. B.S.S. is an employee of High Desert Partnership and a Guest Editor for this Special Issue but was not involved with the review or decision process for this manuscript. The content of sponsored issues of *Rangelands* is handled with the same editorial independence and single-blind peer review as that of regular issues.

## References

1. BOYD CS. Managing for resilient sagebrush plant communities in the modern era: we’re not in 1850 anymore. *Rangelands*. 2022; 44(3):167–172.
2. CHAMBERS JC, MAESTAS JD, PYKE DA, BOYD CS, PELLANT M, WUENSCHER A. Using resilience and resistance concepts to manage persistent threats to sagebrush ecosystems and greater sagegrouse. *Rangel Ecol Manag*. 2017; 70(2):149–164. doi:10.1016/j.rama.2016.08.005.
3. DAVIES KW, BOYD CS, BECK JL, BATES JD, SVEJCAR TJ, GREGG MA. Saving the sagebrush sea: an ecosystem conservation plan for big sagebrush plant communities. *Biol Conserv*. 2011; 144(11):2573–2584. doi:10.1016/j.biocon.2011.07.016.

4. ROUNDY BA, CHAMBERS JC, PYKE DA, ET AL. Resilience and resistance in sagebrush ecosystems are associated with seasonal soil temperature and water availability. *Ecosphere*. 2018; 9(9):e02417. doi:10.1002/ecs2.2417.
5. JOHNSON DD, CAHILL M, BOYD CS, ET AL. *Threat-based land management in the northern Great Basin: a manager's guide*. Pacific Northwest Extension Publishing; 2019 <https://catalog.extension.oregonstate.edu/sites/catalog/files/project/pdf/pnw722.pdf>.
6. MEREDITH GR, BRUNSON MW, HARDEGREE SP. Management innovations for resilient public rangelands: adoption constraints and considerations for interagency diffusion. *Rangel Ecol Manag*. 2021; 75:152–160. doi:10.1016/j.rama.2021.01.002.
7. PILLIOD DS, JEFFRIES MA, WELTY JL, ARKLE RS. Protecting restoration investments from the cheatgrass–fire cycle in sagebrush steppe. *Conserv Sci Pract*. 2021; 3(10):1–12.
8. HRUSKA T, HUNTSINGER L, BRUNSON M, ET AL. Rangelands as Social-Ecological Systems. In: Briske, D. (eds) *Rangeland Systems*. Springer Series on Environmental Management. Springer, Cham. doi:10.1007/978-3-319-46709-2\_8
9. HIGH DESERT PARTNERSHIP. Harney County Wildfire Collaborative. Published 2021. Accessed August 27, 2021. <https://highdesertpartnership.org/collaboratives/harney-county-wildfirecollaborative/overview.html>
10. HIGH DESERT PARTNERSHIP. 2021. Accessed August 27, 2021. [highdesertpartnership.org](https://highdesertpartnership.org)
11. DUVAL AL, METCALF AL, COATES PS. Conserving the greater sage-grouse: a social-ecological systems case study from the California-nevada region. *Rangel Ecol Manag*. 2017; 70(1):129–140. doi:10.1016/j.rama.2016.08.001.
12. MURPHY T, NAUGLE DE, EARDLEY R, ET AL. Trial by fire: improving our ability to reduce wildfire impacts to sage-grouse and sagebrush ecosystems through accelerated partner collaboration. *Rangelands*. 2013; 35(3):2–10. doi:10.2111/RANGELANDS-D-13-00009.1.
13. GHORBANI M, AZADI H. A social-relational approach for analyzing trust and collaboration networks as preconditions for rangeland comanagement. *Rangel Ecol Manag*. 2021; 75(1):170–184. doi:10.1016/j.rama.2020.10.008.
14. COATES PS, RICCA MA, PROCHAZKA BG, ET AL. Wildfire, climate, and invasive grass interactions negatively impact an indicator species by reshaping sagebrush ecosystems. *Proc Natl Acad Sci*. 2016; 113(45):12745–12750. doi:10.1073/pnas.1606898113.
15. DAVIS EJ. Collaborative Processes and Connection to Community Wellbeing. *Ecosystem Workforce Program*. 2021:23 Fact Sheet.
16. MEREDITH BG, BEAN A, BRYMER AB, FRIEDRICHSEN C, HURST Z. Integrating human dimensions within the LTAR network to achieve agroecological system transformation. *Rangelands*. 2021 Published online July 3. doi:10.1016/j.rala.2021.05.002.
17. BELTON LR, JACKSON-SMITH D. Factors influencing success among collaborative sage-grouse management groups in the western United States. *Environ Conserv*. 2010; 37(3):250–260. doi:10.1017/S0376892910000615.
18. ALLEN JH, OZAWA CP, BABCOCK J. Strengthening Your Community by Tackling Challenges Together: Lessons from the High Desert Partnership. *National Policy Consensus Center Publications and Reports*. 2019; 11. <https://archives.pdx.edu/ds/psu/30861>.
19. MAESTAS JD, PORTER M, CAHILL M, TWIDWELL D. Defend the core: maintaining intact rangelands by reducing vulnerability to invasive annual grasses. *Rangelands*. 2022 Published online January 7. doi:10.1016/j.rala.2021.12.008.
20. CREUTZBURG MK. Barriers to management of invasive annual grasses in Oregon. 2021. Accessed August 27, 2021. [https://oe.oregonexplorer.info/externalcontent/sagecon/SageCon invasive management interview results.pdf](https://oe.oregonexplorer.info/externalcontent/sagecon/SageCon%20invasive%20management%20interview%20results.pdf)
21. BOYD CS, SVEJCAR TJ. Managing complex problems in rangeland ecosystems. *Rangel Ecol Manag*. 2009; 62:491–499.
22. USDA NATURAL RESOURCES CONSERVATION SERVICE. Regional Conservation Partnership Program. Accessed January 23, 2022. <https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/rcpp/>
23. OREGON WATERSHED ENHANCEMENT BOARD. Focused Investment Partnerships (FIPs). Accessed January 23, 2022. <https://www.oregon.gov/oweb/grants/Pages/fips.aspx>
24. OREGON BY THE NUMBERS: KEY MEASURES FOR OREGON AND ITS COUNTIES. 2020. Accessed January 23, 2022. [https://www.tff.org/sites/default/files/OBTN\\_2020\\_060321.pdf](https://www.tff.org/sites/default/files/OBTN_2020_060321.pdf)
25. BOIES R. Confessions of a collaborator: Shoesole and Stewardship Alliance of Northeast Elko County, Nevada. *Human-Wildlife Interact*. 2017; 11(3):327–338. doi:10.26077/02vr-r566.
26. WOLLSTEIN KL, CREUTZBURG MK, DUNN C, JOHNSON DD, O'CONNOR C, BOYD CS. Toward integrated fire management to promote ecosystem resilience. *Rangelands*. 2022; 44(3):227–234.
27. HAGEN CA. *Greater Sage-Grouse Conservation Assessment and Strategy for Oregon: A Plan to Maintain and Enhance Populations and Habitat*; 2011. [https://ir.library.oregonstate.edu/concern/technical\\_reports/5999n853x?msclid=93519125affd11ec8bb7b17ec2c70040](https://ir.library.oregonstate.edu/concern/technical_reports/5999n853x?msclid=93519125affd11ec8bb7b17ec2c70040).
28. SAGE-GROUSE CONSERVATION PARTNERSHIP. The Oregon Sage-Grouse Action Plan. 2015. Accessed August 27, 2021. <https://oregonexplorer.info/content/oregon-sage-grouse-action-plan?topic=203&ptopic=179>
29. SAGE-GROUSE LOCAL IMPLEMENTATION TEAMS: PRINEVILLE LIT. Accessed August 27, 2021. <https://www.dfw.state.or.us/wildlife/sagegrouse/lit/prineville.asp>
30. CREUTZBURG MK, OLSEN AC, ANTHONY M, ET AL. A geographic strategy for cross-jurisdictional, proactive management of invasive annual grasses in Oregon. *Rangelands*. 2022 Published online January 7. doi:10.1016/j.rala.2021.12.007.
31. BEALL A, ZEOLI L. Participatory modeling of endangered wildlife systems: simulating the sage-grouse and land use in Central Washington. *Ecol Econ*. 2008; 68(1–2):24–33.
32. BAKER SAGE-GROUSE LOCAL IMPLEMENTATION TEAM FIP STRATEGIC ACTION PLAN. 2018. Accessed August 27, 2021. [https://www.bakercounty.org/commissioners/pdfs/FIP\\_Strategic\\_Action\\_Plan\\_FINAL.pdf](https://www.bakercounty.org/commissioners/pdfs/FIP_Strategic_Action_Plan_FINAL.pdf)
33. OREGON DEPARTMENT OF FISH AND WILDLIFE. *Oregon Mule Deer Initiative Plan*; 2011. [https://www.dfw.state.or.us/resources/hunting/big\\_game/mule\\_deer/docs/Mule\\_Deer\\_Mgmt\\_Plan\\_Final.pdf](https://www.dfw.state.or.us/resources/hunting/big_game/mule_deer/docs/Mule_Deer_Mgmt_Plan_Final.pdf).
34. ODA NOXIOUS WEED GRANT ONLINE GRANT APPLICATION GUIDANCE. 2021. Accessed January 23, 2022. [https://www.oregon.gov/oda/programs/Weeds/Documents/ODA Weed Grant Online Guidance.pdf](https://www.oregon.gov/oda/programs/Weeds/Documents/ODA_Weed_Grant_Online_Guidance.pdf).
35. NOXIOUS WEED CONTROL PROGRAM. Noxious Weed Policy and Classification System. 2020. Accessed January 23, 2022. [www.oregon.gov/ODA/programs/Weeds/Pages/AboutWeeds.aspx](http://www.oregon.gov/ODA/programs/Weeds/Pages/AboutWeeds.aspx)
36. BESTELMEYER BT, BURKETT LM, LISTER L, BROWN JR, SCHOOLEY RL. Collaborative approaches to strengthen the role of science in rangeland conservation. *Rangelands*. 2019; 41(5):218–226. doi:10.1016/j.rala.2019.08.001.

Authors are from: High Desert Partnership, Burns, OR, 97720, USA; Pheasants Forever c/o Oregon Department of Fish and Wildlife, Hines, OR, 97738, USA; Oregon Department of Fish and Wildlife, Baker City, OR, 97814, USA; Crooked River Weed Management Area, Prineville, OR, 97754, USA