Conserve what we have, restore what we can

A Conservation Strategy for the Shrub Steppe/Rangelands of South Central Washington
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A Conservation Strategy for the Shrub Steppe / Rangelands of South Central Washington

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Cover page photo credits

Shrub steppe- Mike Livingston; female greater sage-grouse, loggerhead shrike- Bill Schmoker; dunes- Alan Bauer; basalt daisy- Richard Ramsden; Townsend’s ground squirrel- Ryan Shaw. Other contributors included Lisa Dunham, JBLM YTC; S Morril; Gary Kramer, USFWS; Matt Davies, UW Fires ALE project; PRBP Conservation Science, Yakama Nation Wildlife Resource Management, and Julie Conley. The authors should be consulted regarding any future use of these photos.

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Introduction

The South Central Washington Shrub Steppe/Rangeland Partnership is a group of government agencies, non-profits and individual cooperators that have come together for the mutual purpose of conserving and restoring the shrub steppe/rangeland landscape in Benton, Yakima, Grant, and Kittitas Counties. The group’s first 11 formal members signed a memorandum of understanding in 2006. Members include all major public land holders in the region as well as the Yakama Nation, NRCS, conservation districts, and others. The group developed this strategy document to improve coordination among entities and focus financial and technical resources on mutually identified objectives at the ecosystem scale (see page 13 for a description of the process used). The strategy identifies key elements of biodiversity, challenges to their successful conservation, and actions needed to ensure the viability of shrub steppe ecosystems into the future.

Site Description

The focal area for the Partnership is a dramatic landscape of 2.7 million acres that extends from the eastern foothills of the Cascade Mountains to the Columbia River, continuing to the edge of intensively cultivated and developed lands further east. Geologically the focal area encompasses the Yakima Fold Belts and portions of adjacent Pleistocene lake beds. It includes shrub steppe in portions of the Yakama Reservation and Ceded Lands, The Joint Base Lewis–McChord Yakima Training Center, Hanford Reach National Monument, and other state and federal lands. It also includes private and other government–owned lands that surround and connect these areas. In aggregate, it is the largest contiguous area of sagebrush country left in the state of Washington (Figure 1).

Figure 1. GAP Ecological Systems (NatureServe Classification) and the Shrub Steppe/Rangeland Partnership Focal Area
What We Want to Conserve

The Partnership seeks to maintain large contiguous patches of native shrub and grasslands. We want to ensure that within this landscape, military training activities remain sustainable, agricultural lands remain intact and profitable, fish and wildlife related recreational opportunities abound, and indigenous food resources are preserved. Achieving these goals will enhance the quality of life of the region’s residents for generations to come.

Shrub–steppe vegetation types cover over 1.86 million acres in the focal area and are often adjacent to pastures and agricultural fields. Within this arid landscape, unique ecological communities are found in riparian areas, wetlands, sand dunes, and other micro-environments. Twenty-one high-quality examples of different plant community types and 47 species of rare plants have been documented in our focal area (WA NHP 2009). These lands of sage and grass support rare shrub-steppe wildlife, including one of the two remaining populations of greater sage-grouse in Washington and 30 species in greatest need of conservation action by the Washington State Department of Fish and Wildlife (WDFW 2005).

What is Shrub Steppe?

Shrub steppe refers to lands supporting medium to low shrubs over a layer of perennial bunchgrasses. In South Central Washington the most common shrub is Wyoming big sagebrush. The primary bunchgrass is bluebunch wheatgrass. Shallow soil sites support species such as stiff sagebrush and shrubby buckwheats interspersed with Sandberg bluegrass, balsamroot, and many other forbs. Some steppe areas are grasslands maintained by fire or factors such as soils where bluebunch wheatgrass and Idaho fescue are the dominant natives. All of these areas are also often referred to more generally as rangeland. The shrub steppe is a diverse and beautiful landscape that erupts in greenery and colorful wildflowers each spring.

Wyoming big sagebrush bluebunch wheatgrass (left).

Buckwheat – Julie Conley

Thymeleaf buckwheat blooming in shallow soil (right).

Buckwheat – Julie Conley

Conservation Targets

Shrub Steppe Landscape
- Shrub–steppe ecological systems
- Open space
- Sustainable rangelands
- Yakama biological resources (game, roots, herbs, etc.)
- Sustainable military training

Rare Ecological Systems and Communities
- Natural Heritage high quality ecosystems
- Semi–desert scrub
- Deep–soil sagebrush communities
- Late–seral shrub steppe

Riparian Areas and Wetlands
- Seeps and springs
- Tributary streams

Rare & Declining Animals
- Sage grouse
- Other sagebrush obligate birds
- Jackrabbits
- Ground squirrels
Critical Threats
South Central Washington’s shrub steppe faces immediate threats. The Partnership reviewed existing resource management plans and consulted its experts to rank the main sources of stress for each conservation target. The highest ranking stressors ("critical threats") across all targets were: Fire, invasives, development / conversion, and unsustainable grazing.

Fire and Invasive Species
Frequent large wildfires are removing large areas of sagebrush in South Central Washington faster than it can be replaced. These fires also take an economic toll on the forage supply of ranching operations and threaten human life and property. Fires ranging from 34,000 to over 160,000 acres have occurred in the focal area every 2 to 4 of the last 15 years (LandFire 2007, US Army 2009, USFWS 2008). Historically, natural fires occurred in Wyoming big sagebrush communities once every 30 to 100+ years (LandFire 2005). Today, cheatgrass and other invasive plants provide fuel for fires which in turn promote further weed spread and create favorable conditions for future fires, especially in areas of lower elevation and southerly aspect. Climate change is expected to further facilitate this burning cycle (Chambers & Pellant 2008). Most of these fires are human caused, particularly those occurring in proximity to roads, military training ranges, and residential developments near wildlands (NYCD 2009, Benton County 2005).

Unsustainable Grazing (wild, feral, and domestic animals)
In some areas the expansion of cheatgrass is further aided by poor grazing practices that weaken bunchgrasses and create disturbance voids where weeds can thrive (D’Antonio & Vitousek 1992). Overstocking or repeated grazing when perennial grasses are most vulnerable take the heaviest toll (USDA 1994). Once these systems have been severely altered they become very difficult to restore. Their value as wildlife habitat and as grazing land is diminished. Though many areas were altered in this way at the turn of the century when livestock numbers were much higher on rangelands than they currently are today, the problem is ongoing in specific locations. On the Yakama Reservation, the problem is complicated by a large and growing horse population that subjects the range to year-round grazing at levels that exceed the ability of the vegetation to recover. The lack of demand for these horses limits the options for their management.

<table>
<thead>
<tr>
<th>Year</th>
<th>Acres</th>
<th>Fire</th>
</tr>
</thead>
<tbody>
<tr>
<td>1984</td>
<td>27,921</td>
<td>YTC</td>
</tr>
<tr>
<td>1987</td>
<td>28,070</td>
<td>YTC</td>
</tr>
<tr>
<td>1996</td>
<td>63,296</td>
<td>YTC less 15,000 acres</td>
</tr>
<tr>
<td>2000</td>
<td>162,313</td>
<td>24 Command-Hanford</td>
</tr>
<tr>
<td>2000</td>
<td>90,182</td>
<td>Mule Dry</td>
</tr>
<tr>
<td>2002</td>
<td>10,762</td>
<td>Rumphouse-Yakama</td>
</tr>
<tr>
<td>2003</td>
<td>34,827</td>
<td>YTC</td>
</tr>
<tr>
<td>2007</td>
<td>67,302</td>
<td>Wautoma-Hanford</td>
</tr>
<tr>
<td>2007</td>
<td>19,360</td>
<td>Overlook</td>
</tr>
<tr>
<td>2009</td>
<td>48,910</td>
<td>Dry Creek Complex</td>
</tr>
<tr>
<td>2009</td>
<td>10,000</td>
<td>YTC</td>
</tr>
</tbody>
</table>

Sources: YTC 2009; NYCD 2009; LANDFIRE 2007
Development/Conversion

In Washington over half the shrub steppe has been converted to agriculture, urban development, or water storage (Dobler et al. 1996, Welch 2005). Areas with deep, loamy soils and gentle slopes have been especially prone to conversion (Vander Haegen et al. 2000). Largely due to ownership and absence of irrigation water, only about 30% of the focal area has been converted to other land uses. Habitat conversion has greatly reduced shrub–steppe wildlife in eastern Washington including greater sage–grouse, ground squirrels, and jackrabbits. Large raptors such as ferruginous hawks and golden eagles that depend upon a small mammal prey base that once inhabited the deep soils have also been impacted (Richardson et al. 1999).

The size of the remaining large patches of shrub steppe in South Central Washington and the connections between them continue to be diminished and fragmented by various forms of development. The human population of Washington has doubled in the past 40 years and is slated to grow by 8 million in the next 20. High land values and poor economic conditions put pressure on farmers to sell to developers (WA Biodiversity Council 2007). Between 2000 and 2008 Yakima County added 27,000 new residents; Benton County added 20,000 and Kittitas County grew nearly 17% adding 5,500 people (US Census Bureau 2010). Some of this growth is spilling in to wildlands where it can disrupt agricultural operations, diminish wildlife habitat quality, and constrain military training activities. Important wildlife corridors within the focal area are predominantly in private ownership and are vulnerable to future conversion (Figure 2).

Figure 2. Focal Area ownership of shrub steppe. Private shrub steppe depicted in brown. Public or tribal shrub steppe in darker shades of color. Blue arrows depict wildlife movement corridors between the largest areas of remaining shrub steppe.

Important wildlife movement corridors within the focal area are predominantly in private ownership and are vulnerable to future conversion.
As new irrigation water becomes available there is also pressure to convert remaining shrub steppe in some locations to high value crops such as wine grapes. Recent expansion of vineyards in the Red Mountain area of Benton County is a case in point. Expansion of the Columbia Basin Irrigation Project could lead to further conversions (Department of Ecology 2008).

While the shallow rocky soils of the Yakima Fold Belts may be poor for most agriculture, they are prime sites for wind power and other forms of energy development. Strong wind, existing transmission lines and generous financial incentives make this a lucrative venture for counties and landowners (Renewable Northwest 2007). State-wide most wind farms have been located in areas of relatively low known risk to biodiversity (existing converted land), but as competition intensifies facilities in the focal area continue to be sited in native shrub steppe landscapes where the infrastructure could be detrimental to sage grouse and other shrub–steppe wildlife. Forty-eight percent of the focal area has potential for wind power development (Conley et al. 2009). Several exploratory natural gas wells have also been drilled or are under evaluation in the focal area.

**Status of the Yakima Population of Greater Sage–grouse**
The Washington Fish and Wildlife Commission listed the greater sage–grouse as a threatened species in 1998. The USFWS designated greater sage–grouse in Washington State as a candidate for listing in 2001. In March 2010 federal candidate status was extended to the entire range of the species. Habitat fragmentation and conversion across much of the species’ range are the primary contributors to population declines. Sage–grouse occupy less than 8% of their historical range in Washington (Stinson et al. 2004). Loss and fragmentation of sagebrush is the most critical threat within the focal area. Other related threats to the sage–grouse in Washington include genetic loss, disturbance to breeding and nesting sites, mortality from vehicles, fences, and structures, disease, and predation. Future federal listing of the greater sage–grouse as threatened or endangered would have significant ramifications for both public and private landowners, particularly the Joint Base Lewis–McChord Yakima Training Center, the only federal holding in Washington where an existing population is known to occur.
These four critical threats to shrub steppe—fire, invasive plants, development/ conversion, and unsustainable grazing practices—are leading to the decline in condition and further fragmentation of the shrub–steppe landscape throughout the focal area. Left unaddressed these threats will likely contribute to the extirpation of the Yakima Training Center population of greater sage-grouse, and the further decline of other shrub–steppe species. The overall productivity of the regions rangelands will diminish, and the beauty and diversity of the regions wildlands will be compromised.

Horse overpopulation threatens the shrub steppe of the Yakama Nation—Yakama Nation Wildlife Resource Management

Conservation Goals

Our conservation goals for the shrub steppe landscape of South Central Washington are to:

1. Conserve what remains of large areas of shrub steppe.
2. Maintain areas for species to move within and between habitat patches.
3. Improve the condition of and/or restore degraded areas where feasible.
4. Recover the greater sage-grouse and decrease the likelihood of future federal listing of this and other shrub–steppe species

Our focus will be on reducing the four critical threats and improving the viability of our ecologic and socio-economic conservation targets (see box on page 3 and strategy development process description on page 13). Achieving our desired outcomes will require concerted effort and focus. The primary role of the Partnership is to 1) provide a forum for the identification and communication of mutual conservation priorities, 2) serve as a catalyst for strategic action and 3) leverage funds and resources to affect conservation at a broader scale through collective synergism. The following objectives and strategic actions will guide our efforts:
Conservation Objectives and Strategic Actions

Priority 1 Objective: Reduce the Amount of wildfire in key habitat areas and buffers

**Strategic Action 1:** Establish priority areas for fire suppression and prevention in cooperation with rural fire districts, and state, tribal, and federal wildfire managers (YSBPB 2004).

**Strategic Action 2:** Support the elimination of voids in fire protection and improved coordination and response time of fire protection services throughout the focal area.

**Strategic Action 3:** Research/support actions that can be taken to reduce the spread of fires that start from roadways, which are the predominant ignition source in the focal area.

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Priority 2 Objective: Prevent the loss of shrub steppe and connecting agricultural lands to development/conversion

**Strategic Action 1:** Work with willing landowners to secure priority areas from the threat of development/conversion through the use of easements, fee title acquisition, farm bill programs or other strategies that ensure long term conservation (see Soll 1999, YBSBP 2004 for preliminary priority areas).

**Strategic Action 2:** Work proactively at multiple scales to steer development (energy, new cultivation, infrastructure, residential) away from key habitats and wildlife movement corridors or seek the maximum benefit possible for conservation (minimization, restoration, or mitigation of impact).
Priority 3 Objective: Improve where needed the condition of focal area grazed lands and riparian areas

**Strategic Action 1**: Assist landowners in implementing incentive programs available for habitat protection, restoration, and maintaining functional ecosystems.

**Strategic Action 2**: Facilitate incorporation of wildlife concerns in farm bill programs. Support practices that retain and improve natural shrub steppe and riparian area production while meeting habitat objectives (Connelly et al. 2000).

**Strategic Action 3**: Help the Yakama Nation locate resources and build public support for a cost-efficient and sustainable long-term management program for its shrub steppe/rangelands and associated horse population.

**Strategic Action 4**: Work across boundaries to ensure that big game populations are managed for sustainable shrub steppe/rangelands and recreation.

Residential development on edge of shrub steppe – Mike Livingston
Additional Objectives:

‣ Greater Sage–Grouse related actions


– Assist in applying state and federal tools that land owners and managers can use to ensure protection of sage grouse and other at–risk species while reducing the threat of additional regulation in the future (e.g. Candidate Conservation Agreements).

‣ Prevent the spread of invasives plants and restore degraded areas where feasible

– Develop a regional restoration strategy based on research and Partnership practical experience. Pool resources (plant materials, expertise, funding) to address issues that hinder restoration and ensure rapid post–fire reseeding/planting of areas with reasonable restoration potential on public and private lands.

– Support efforts to study and design techniques to restore shrub steppe grass and forb components necessary for functional shrub–steppe ecosystems under ecological conditions predicted by climate change.

– Assist state and county noxious weed boards, coordinated weed management areas, and other efforts to prevent and control the spread of noxious weeds.

‣ Ensure that rare plant communities and rare species in the focal area are conserved

– Recover rare plants and support the efforts of the Washington Natural Heritage program to inventory, monitor, and protect rare plant communities and species in the focal area.

– Promote the efforts of the Washington Native Plant Society, the Audubon Society and other educational groups to increase public awareness and investment in shrub–steppe plant communities and species.
Strategy Implementation

This strategy document identifies key conservation targets in south central Washington (what we want to conserve), challenges to their successful conservation (critical threats), and actions needed to ensure their viability into the future (objectives and strategic actions). The Partnership’s next steps will be to broaden its participation to include more representatives of working lands; probe deeply into the feasibility of needed actions and opportunities; identify key players and the tasks they are committed to assisting in or completing; and seek funding for specific projects to facilitate our strategic goals. We will employ all available voluntary tools in support of our efforts. These tools include, but are not limited to Farm Bill programs, Partners for Fish and Wildlife Program, Army Compatible Use Buffer Program, Inter–Mountain West Joint Venture, and Washington Wildlife and Recreation Program (WWRP).

Priority of Actions

Broad consensus exists within the Partnership on the need to encourage a more natural fire regime in shrub steppe and reduce the cumulative loss of shrub steppe/ rangelands to incremental development/conversion. Where opportunities exist to accomplish these two objectives, they will be pursued as first priority. A third important priority is to improve the condition of grazed lands and riparian areas where needed within the focal area and reduce their susceptibility to cheatgrass dominance. These three habitat–based priorities address the most pressing threats to all conservation targets. Additional objectives listed on page 10 reflect the ongoing efforts of individual partners that may need our support and could be areas of future focus for the Partnership.

The Partnership will employ existing spatial and non–spatial tools to inform its actions. These include the partnership’s own evaluation criteria, the Columbia Plateau Ecoregional Assessment (TNC 1999), Biodiversity Council conservation opportunity areas (WA Biodiversity Council 2007), The Nature Conservancy biodiversity assessment of The Yakima Training Center and adjacent lands (Soll 1999), Yakima Subbasin Plan (YSFWB 2004), Washington State Recovery Plan for the Greater Sage–grouse (Stinson et al. 2004), The Coordinated Implementation Plan for Bird Conservation in Eastern Washington (IWJV 2005), and The WDFW Comprehensive Wildlife Conservation Strategy (WDFW 2005).

When new plans and data become available, the partnership will also use guidance and tools from the WDFW wildlife action plan for the Columbia Plateau, the YTC Army Compatible Use Buffer Feasibility Study, the Wildlife Habitat Connectivity Working Group, the Arid Lands Initiative, The Bureau of Land Management Land and Resource Management Plan, the JBLM Integrated Resource Management Plan, the Western Governors’ Association Critical Habitats and Corridors Initiative, and the Great Northern Landscape Conservation Cooperative. All of these efforts will bring resources to future decision making within the partnership focal area.
Partnership Membership

Membership as outlined in the Memorandum of Understanding (2006) is open to anyone who shares the Partnership’s interest in shrub steppe/rangeland conservation, agrees with the Partnership responsibilities as outlined in the MOU, and signs an addendum to the existing MOU. Non-signatories may be cooperators. The Partnership welcomes new members and input regarding its stated priorities or best means to achieve them. This strategy is intended to be a living and changing document.

Current MOU Signatories:

- Washington Department of Fish and Wildlife, Wildlife Program
- Joint Base Lewis–McChord Yakima Training Center
- US Fish and Wildlife Service, Ecological Services
- Natural Resources Conservation Service
- Kittitas County Conservation District
- Bureau of Land Management
- Cascade Land Conservancy
- Yakima Valley Audubon
- The Nature Conservancy
- Grant Conservation District
- Cowiche Canyon Conservancy
- North Yakima Conservation District
- Washington State University Extension
- Kittitas Environmental Education Network
- Confederated Tribes and Bands of the Yakama Nation
- USFWS, Mid–Columbia National Wildlife Refuge Complex

Cooperators:

- Washington Department of Natural Resources/Natural Heritage
- U.S Department of Energy/Pacific Northwest National Laboratory
The Strategy Development Process

The Partnership developed this strategy document using the Conservation Action Planning framework (The Nature Conservancy 2010). Workshops were held November 2009 thru March 2010 with participants from WDFW, WA DNR/Heritage, TNC, Army, NRCS, BLM, USFWS, DOE, Yakama Nation, North Yakima Conservation District, and Kittitas County Conservation District in attendance. The group identified a suite of targets including ecological systems, plant communities, and plant and animal species (See page 3) to be the focus of conservation efforts. The group also identified socio-economic nested targets including sustainable rangelands, sustainable military training/open space, and Yakama biological resources of cultural significance to consider throughout the process. Small meetings were held at NRCS in Ellensburg and North Yakima Conservation District to seek input from a small number of private rangeland owners. A core technical team of representatives from NRCS, USFWS, DOE/PNNL, WDFW, Yakama Nation, and WA DNR/Heritage completed a viability assessment and threats analysis that was presented to the larger group at a strategy session in early March 2010. The Partnership coordinator then developed multiple drafts of this document for Partnership review and input.

Viability Analysis

We used expert knowledge and literature review to assign each target scores for landscape context (environmental regimes/processes and connectivity), condition (structure, composition, and biotic interactions), and size (area or abundance) where applicable (Table 1).

<table>
<thead>
<tr>
<th>Targets</th>
<th>Landscape Context</th>
<th>Condition</th>
<th>Size</th>
<th>Viability Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shrubsteppe Landscape</td>
<td>Good</td>
<td>Fair</td>
<td>Good</td>
<td>Good</td>
</tr>
<tr>
<td>Sage Grouse</td>
<td>Fair</td>
<td>Fair</td>
<td>Poor</td>
<td>Fair</td>
</tr>
<tr>
<td>Jackrabbits and Ground Squirrels</td>
<td>Good</td>
<td>Fair</td>
<td>Fair</td>
<td>Fair</td>
</tr>
<tr>
<td>Rare Ecological Systems and Communities</td>
<td>Fair</td>
<td>Fair</td>
<td>Fair</td>
<td>Fair</td>
</tr>
<tr>
<td>Riparian Areas and Wetlands</td>
<td>Fair</td>
<td>Poor</td>
<td>Fair</td>
<td>Fair</td>
</tr>
<tr>
<td>Rare and Endemic Plant Species</td>
<td>Fair</td>
<td>Fair</td>
<td>Fair</td>
<td>Fair</td>
</tr>
</tbody>
</table>

**Very Good**
Functioning at its ecologically desirable status. Requires little human intervention.

**Good**
Functioning within its range of acceptable variation. May require human intervention to maintain this status.

**Fair**
Outside range of acceptable variation. Requires human intervention. Vulnerable to serious degradation if left unchecked.

**Poor**
If condition remains for extended period, restoration or prevention of extirpation will be practically impossible.
Threats Ranking

The partnership assigned each conservation target a list of primary stresses. Stresses were rated according to their severity and scope. Then for each target the group listed and rated the sources (or proximate causes) of stress according to their contribution and irreversibility (The Nature Conservancy 2010). These scores were combined to form an overall threat ranking for each source of stress for each conservation target. Threats were then scored across targets to obtain a list of primary “critical threats” (Table 2).

Table 2. Summary of Sources of Stress (Threats) Across Conservation Targets

<table>
<thead>
<tr>
<th>Sources of Stress (Threats)</th>
<th>Shrubsteppe landscape</th>
<th>Sage Grouse</th>
<th>Jackrabbits and ground squirrels</th>
<th>Rare systems and communities</th>
<th>Riparian areas and wetlands</th>
<th>Rare and Endemic Plants</th>
<th>Overall threat rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human ignition</td>
<td>Very High</td>
<td>Very High</td>
<td>High</td>
<td>Medium</td>
<td>High</td>
<td>Medium</td>
<td>Very High</td>
</tr>
<tr>
<td>Inadequate fire suppression</td>
<td>Very High</td>
<td>Very High</td>
<td>High</td>
<td>Medium</td>
<td>Medium</td>
<td>High</td>
<td>Very High</td>
</tr>
<tr>
<td>Invasive plants</td>
<td>Very High</td>
<td>High</td>
<td>Medium</td>
<td>High</td>
<td>Medium</td>
<td>Medium</td>
<td>Very High</td>
</tr>
<tr>
<td>Infrastructure development</td>
<td>Very High</td>
<td>High</td>
<td>Medium</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Unsustainable Grazing</td>
<td>Very High</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Residential development</td>
<td>Very High</td>
<td>High</td>
<td>Medium</td>
<td>Medium</td>
<td>Low</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Energy development</td>
<td>Very High</td>
<td>High</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>New agricultural development</td>
<td>High</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
<td>High</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Climate Change</td>
<td>High</td>
<td>Medium</td>
<td>Low</td>
<td>Medium</td>
<td>Low</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>Fire suppression activities</td>
<td>High</td>
<td>Medium</td>
<td>Low</td>
<td>Medium</td>
<td>Low</td>
<td>Low</td>
<td>Medium</td>
</tr>
<tr>
<td>Dams and diversions</td>
<td>Medium</td>
<td>Medium</td>
<td>Low</td>
<td>Low</td>
<td>High</td>
<td>Low</td>
<td>Medium</td>
</tr>
<tr>
<td>Offroad veh. (ATV, military, etc.)</td>
<td>Medium</td>
<td>Medium</td>
<td>Low</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>Predation</td>
<td>High</td>
<td>Medium</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disease</td>
<td>High</td>
<td>Low</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ground water pumping</td>
<td>Low</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor irrigation water mgmt.</td>
<td>Medium</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Threat status- project and targets</td>
<td>Very High</td>
<td>Very High</td>
<td>Very High</td>
<td>Medium</td>
<td>Very High</td>
<td>Medium</td>
<td>Very High</td>
</tr>
</tbody>
</table>

**Very High:** Likely to destroy or eliminate the conservation target over some portion of the target’s occurrence at the site.

**High:** Likely to seriously degrade the conservation target over some portion of the target’s occurrence at the site.

**Medium:** Moderately degrade the conservation target over some portion of the target’s occurrence at the site.

**Low:** Slightly impair the conservation target over some portion of the target’s occurrence at the site.
Monitoring

Multiple indicators were identified that define the status of conservation targets. These indicators will serve as preliminary recommendations for monitoring progress toward strategy objectives. Future work is needed to define socio-economic indicators.

Table 3. Draft list of indicators and data gaps

<table>
<thead>
<tr>
<th>Shrub steppe, rare communities, and plant indicators</th>
<th>Status</th>
<th>Current Data Source</th>
<th>Monitoring Objective</th>
<th>Data Gaps</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of land cover in shrub steppe</td>
<td>Good</td>
<td>NWGAP 1999-2000</td>
<td>Track amount of shrub steppe and rangeland over time.</td>
<td>Update land cover and create detailed agricultural classes.</td>
</tr>
<tr>
<td>Shrub cover</td>
<td>Fair</td>
<td>Inferred from large fires</td>
<td>Track shrub cover in the focal area. Track fires.</td>
<td>Update land cover. Map fires across boundaries</td>
</tr>
<tr>
<td>Connectivity and patch size</td>
<td>Fair</td>
<td>NWGAP Soil (1999), YSSPB (2004)</td>
<td>Determine if wildlife corridors and habitat are being maintained</td>
<td>Need habitats and key corridors mapped.</td>
</tr>
<tr>
<td>Rare Plants</td>
<td>Fair</td>
<td>WA Natural Heritage</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>TBD</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Wildlife and riparian indicators</th>
<th>Status</th>
<th>Data Gaps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Habitat for all key life stages of sage-grouse</td>
<td>Fair</td>
<td>Need to map sage-grouse habitat across ownerships</td>
</tr>
<tr>
<td>Juxtaposition of sagebrush for grouse</td>
<td>Poor</td>
<td>Update land cover. Map fires across boundaries</td>
</tr>
<tr>
<td>Habitat for all key life stages - jackrabbits / ground squirrels</td>
<td>Fair</td>
<td>Need to map habitat suitability</td>
</tr>
<tr>
<td>Riparian and wetland comp similarity to HPC</td>
<td>Poor</td>
<td>Track trends in riparian condition TBD</td>
</tr>
<tr>
<td>Floodplain connectivity</td>
<td>Fair</td>
<td>TBD</td>
</tr>
<tr>
<td>Hydrologic Alteration</td>
<td>Fair</td>
<td>TBD</td>
</tr>
</tbody>
</table>
Resources Cited:


North Yakima Conservation District 2009. Yakima County community wildfire protection plan.


FOR MORE INFORMATION about the Shrub Steppe/Rangeland Partnership and how to get involved please contact:

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509-546-1221
32 N. 3rd St., Suite 412
Yakima, WA 98901

Stiff sage Sandberg bluegrass and balsam root community