



# Management Guide for the SageCon Invasives Initiative Geographic Strategy

## The Problem

Invasive annual grasses in Oregon rangelands negatively affect wildlife, rangeland health, and ranching communities across public and private lands, and have fueled large wildfires that are destructive to both wildlife habitat and property. The scale of the problem is vast, and in order to successfully protect and restore rangeland ecosystems the response must cross large, multi-jurisdictional landscapes. Many agency programs already exist to address the invasive grass threat in Oregon rangelands, but our collective efforts are often applied at small scales and tend to be reactive, expensive, and have high failure rates due to the arid climate and unpredictable conditions. The [SageCon Invasives Initiative](#) takes a strategic approach to invasive annual grasses in Oregon through a collaborative, multi-stakeholder group coordinated by the [SageCon Partnership](#). This document provides **information for local managers and collaborative groups** to aid in identifying areas for coordinated investments to reduce the annual grass threat.

## The Geographic Strategy

A key component of the Invasives Initiative is a shared geographic strategy for proactive, landscape-scale management of invasive annual grasses across jurisdictional boundaries in southeastern Oregon. The strategy is informed by remotely sensed maps that provide landscape context and integrate multiple types and sources of information across broad spatial scales. This geographic strategy follows similar efforts across the sagebrush biome, including the Western Governors' Association [Toolkit for Invasive Annual Grass Management in the West](#) and the Idaho [Cheatgrass Challenge](#). These collaborative strategies provide a unified conceptual model of "Defend the Core, Grow the Core, Mitigate Impacts", consisting of three components:

1. **Defend the Core:** Prevent annual grass encroachment and promote a healthy perennial ecosystem in **core** areas where the problem is currently minimal.
2. **Grow the Core:** Work adjacent to core into the **transition zone**, containing intermediate levels of annual grass invasion, to strategically increase the amount of core across the landscape.
3. **Mitigate Impacts:** In addition to the proactive approaches of defending and growing the core, management in the highly invaded **degraded areas** may be required to mitigate the most severe impacts of invasive species and wildfire on life and property.



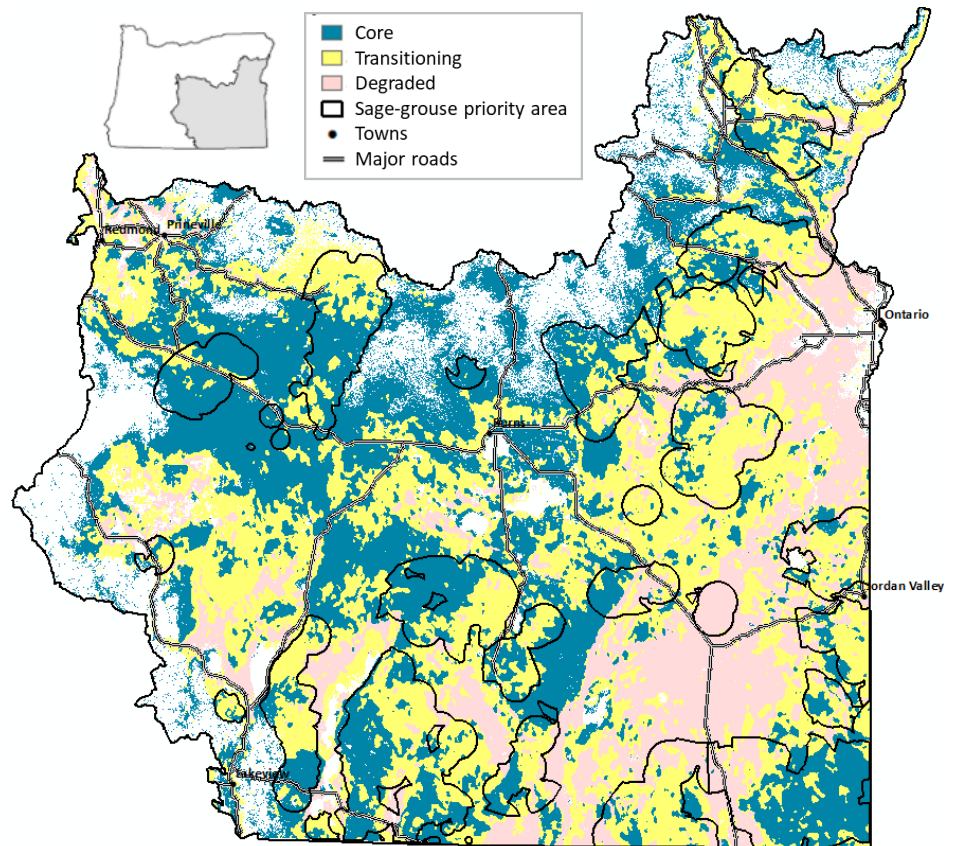
Diverse rangeland plant communities (left) can become invaded by annual grasses (center), which are at risk of conversion to annual grass monocultures after wildfire (right). This conversion displaces native sagebrush, grasses and forbs and increases the risk of repeated wildfires due to the continuous, dry fuel bed provided by the invasive grasses. Photos: US Fish & Wildlife Service.

## The Geographic Strategy Maps

The geographic strategy maps follow the principles of “Defend the Core, Grow the Core, Mitigate Impacts”, but differs from other mapping efforts across the West by incorporating both biotic (herbaceous composition) and abiotic (resilience and resistance) components.

**Herbaceous composition** is characterized by both annual (undesirable) and perennial (desirable) herbaceous cover - and emphasizes the key role of perennial grasses in stabilizing sites and lowering restoration costs. **Resilience and resistance (R&R)** maps identify soils and climatic conditions that influence recovery potential after disturbance, informing the level restoration intervention that may be needed. Combining information on biotic and abiotic condition allows managers and policymakers to identify areas with the greatest management need and restoration potential.

The geographic strategy consists of multiple components for use at different scales:



The Generalized Strategy map identifies core, transitioning, and degraded areas in southeastern Oregon. Spatial patterns have been simplified for use at broad spatial

1. The **Generalized Strategy Map** (above) is a simple communication tool to be used at broad scales. Identifying large blocks of core (blue) to maintain and grow across the landscape is a key first step toward the strategy of defending and growing the core.
2. The **Management Strategy Map** (pages 3-6) provides finer-scale and more detailed information to help guide collaborative teams working at local scales toward landscape-scale outcomes. This map helps identify shared management objectives, particularly within the transition zone where targeted opportunities exist to grow the core while mitigating risk.

This is **version 1** of the geographic strategy, released in October 2020, which may be revised based on field use. See the [SageCon Invasives Initiative](#) webpage for more information, including spatial data, technical documentation, and a short 2-page overview document for policymakers and the public.

This geographic strategy was created collaboratively by SageCon partners in Oregon and is designed to be used in concert with other planning efforts, such as the Natural Resources Conservation Service Sage Grouse Initiative and the Bureau of Land Management Integrated Program of Work. The geographic strategy can be used at multiple scales, but this document is targeted toward local groups coordinating investments and identifying opportunities to work across boundaries. Some examples of using this strategy for landscape-scale management are provided on pages 5-6.

## The Management Strategy Map

The Management Strategy Map can be used in locally led planning for: 1) setting a landscape-scale strategy to identify shared priorities and implement coordinated treatments, 2) facilitating discussion of desired management outcomes, and 3) evaluating patterns in biotic and abiotic condition across the landscape.

In the matrix shown here, combinations of herbaceous composition (perennial-dominated to annual-dominated from left to right) and R&R (high to low from top to bottom) are grouped into five **management categories**, shown as unique colors and described further below.

		Herbaceous Composition			
		High	Moderate	Fair	Low
Resilience and Resistance (R&R)	High				
	Moderate				
	Low				

### Management Categories

**Core\***: Communities with healthy bunchgrasses, limited annual invasion, and high potential for low cost interventions to keep weeds out. Large blocks of core can serve as an anchor to grow areas with minimal invasion across the landscape into the adjacent transition zone.

*Primary management objectives:* Maintain condition and prevent an increase in invasive annual grasses; Identify and restore patches of lower condition sites within areas of predominantly core. Note that some of the mapped “core” at higher elevations contains encroachment by trees, which should be considered along with management intervention to address invasive annual grasses.

**Transitioning - high restoration potential:** Areas with moderate invasion but adequate perennial bunchgrasses and relatively high site resilience. These areas require relatively low management intervention and includes some of the most cost-effective areas for growing the core.

*Primary management objectives:* Maintain and increase perennial grasses, especially adjacent to core.

**Transitioning - low R&R:** Areas with moderate invasion and low resilience. These sites are difficult to restore, requiring more intensive management intervention and often sustaining higher treatment failure rates.

*Primary management objectives:* Prevent disturbance due to low potential for recovery; Maintain remaining perennial grasses; Reduce invasive annual grass cover to reduce fine fuel continuity.

**Transitioning - low perennials:** Areas with moderate invasion and low perennial grass cover, but with higher site resilience. These areas require high management intervention to restore adequate perennial bunchgrass cover along with reducing invasive annual grasses, and high risk of replacing one weed species with another.

*Primary management objectives:* Reduce invasive annual grass cover while simultaneously increasing perennial grass cover; Prevent disturbance. Some of these sites contain high shrub cover, limiting proactive management options and increasing the risk of perennial grass mortality during a fire.

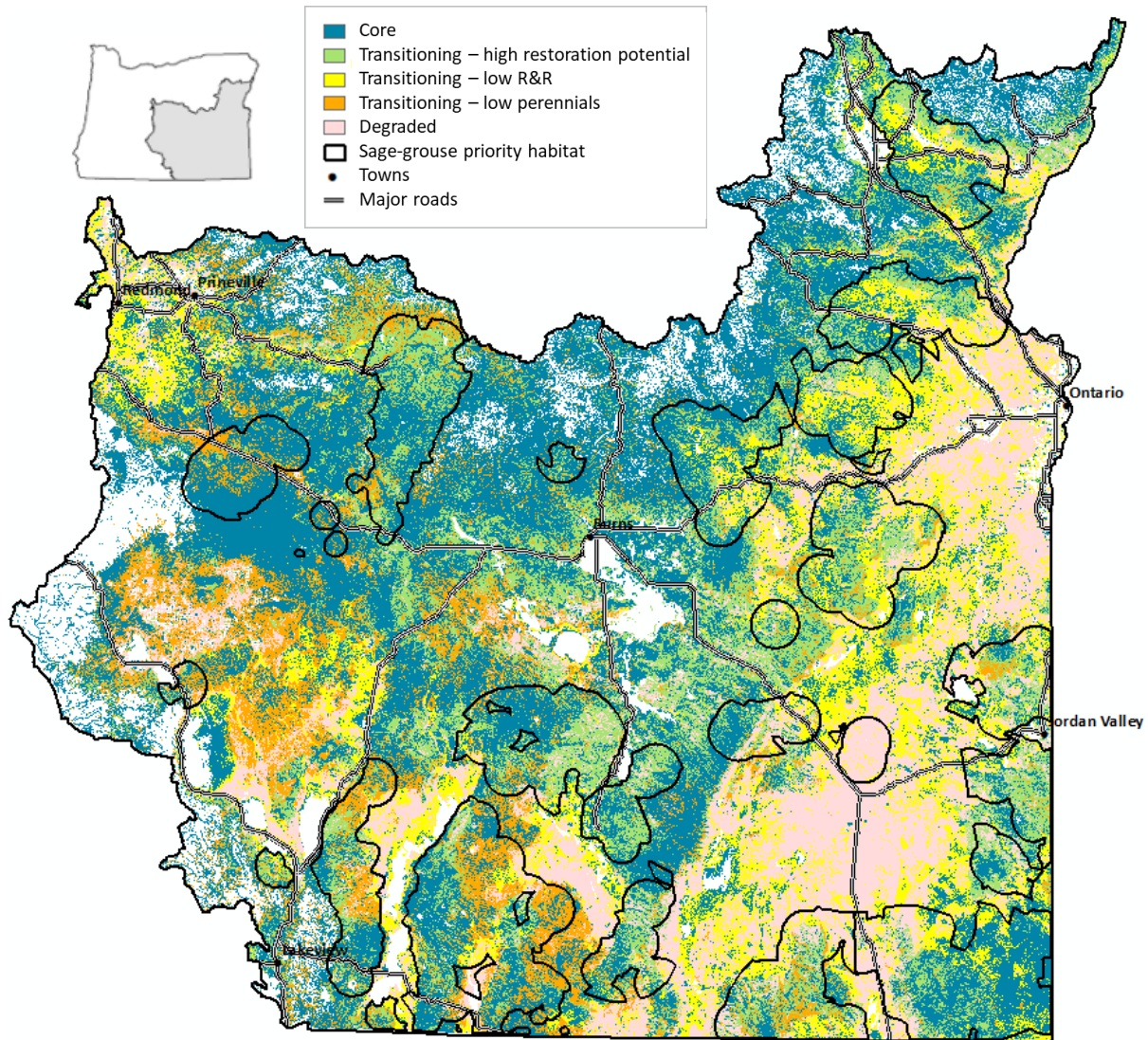
**Degraded:** Invasive annual grasses are dominant and site resilience is relatively low. Management for restoration is unlikely to succeed, and these areas will likely need continual maintenance.

*Primary management objectives:* Mitigate fire risk by managing fuels; Contain invasive annual grasses.

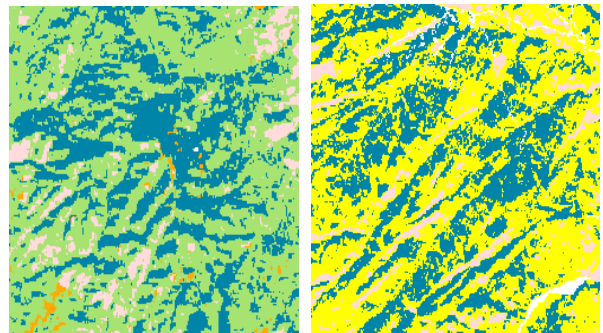
These management categories provide a small number of groupings that may be helpful in setting landscape-scale management objectives. Field users may also find specific combinations of herbaceous composition and R&R to be useful to be in determining a management approach; for instance, intact core can occur across high, moderate and low R&R sites, with different implications for management (e.g., Example 1 on page 5). The spatial data includes multiple attributes and supplemental data layers to aid in management planning. See the [technical documentation](#) for more information on specific category definitions and thresholds.

\* Note that “core” in this strategy is not related to sage-grouse core or priority habitat.

The Management Strategy Map (below) depicts spatial patterns in the five management categories described above. This map incorporates both annual and perennial herbaceous vegetation (grasses and forbs) from the [Rangeland Analysis Platform](#), along with site resilience and resistance. It does not account for shrub or tree cover, which were omitted for simplicity but will be an important consideration in determining management interventions.



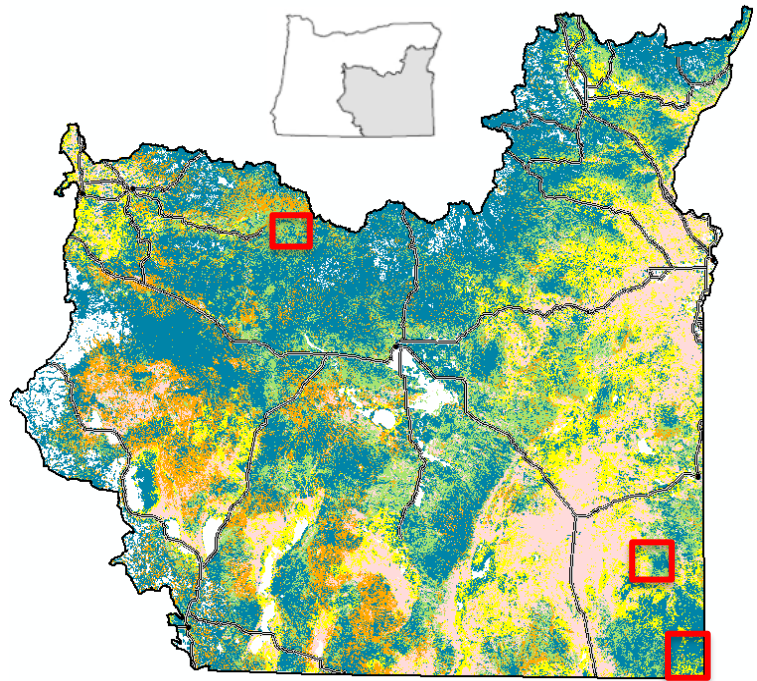
In the examples shown to the right, patches of core (blue) occur in very different spatial contexts – with the left map showing an area with higher potential for improving condition at a landscape scale, and the right map depicting islands of core among sites with low restoration potential. The strategy does not prescribe exactly where to conduct work but provides information about landscape context and shared management objectives based on biotic and abiotic condition.



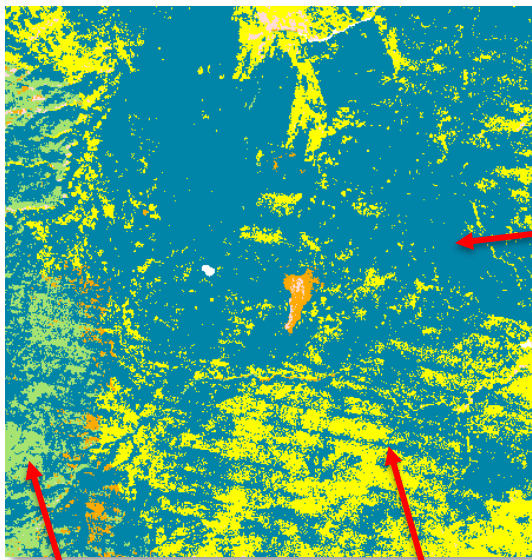
## Examples of Putting the Geographic Strategy into Practice

The examples below highlight how the Management Strategy Map may be used to support the strategy of “Defend the Core, Grow the Core, Mitigate Impacts” in three different areas in southeastern Oregon (boxes in the map to the right). Each example highlights one or more of these concepts by capturing landscape-level patterns of herbaceous composition and site potential to facilitate discussions among local managers and stakeholders in identifying management objectives and actions.

The geographic strategy maps should always be used alongside other sources of information, and maps do not substitute for on-the-ground knowledge and site-specific project implementation planning.



### Example 1. **Defend the core** in an area vulnerable to fire



The far southeastern corner of the state contains core that is highly vulnerable to fire and subsequent invasion, although current annual herbaceous cover is low.

There are large expanses of core, but R&R across most of this area is low.

Patches of yellow show areas with **low perennial grass cover** and low R&R, limiting restoration options.

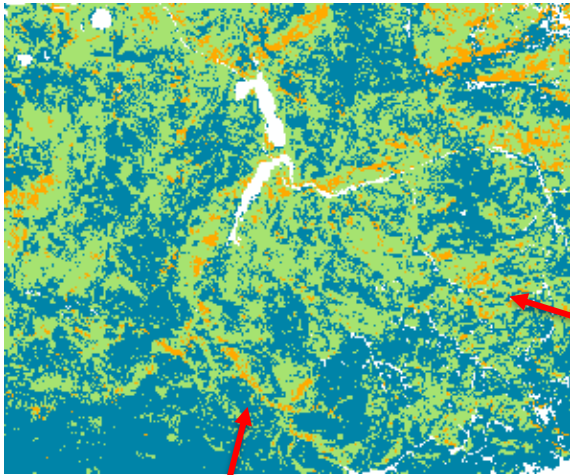
Higher resilience sites to the west show a matrix of blue and green, with lower vulnerability and higher restoration potential.

Some areas in the map may have visual artifacts from satellite imagery such as striping patterns. These can largely be ignored and do not affect the conclusions drawn from the map.

In this area, proactive management may be needed to support an objective of **maintaining current condition by preventing disturbance**.

Proactive management options could include fuel breaks and low-impact fuels management. Low site resilience and low perennial grass cover limit effective management options post-fire, and high shrub cover throughout much of the area increases the risk of bunchgrass mortality. Shrub cover is not shown here but is provided with the geographic strategy spatial data.

Example 2. **Grow the core** in an area with high restoration potential



In the Paulina area of central Oregon, most of the landscape has low to moderate annual invasion, adequate perennial bunchgrass cover, and high R&R – presenting opportunities for proactive management to grow the core.

Much of the landscape has moderate invasion but high restoration potential.

Management objectives in this area may focus on **expanding the core across ownership boundaries**. Relatively low-cost management options such as herbicide treatment may be effective in reducing annual grass cover and maintaining or increasing perennial grass cover.

Core is common but discontinuous, and could be connected through coordinated implementation across jurisdictional boundaries.

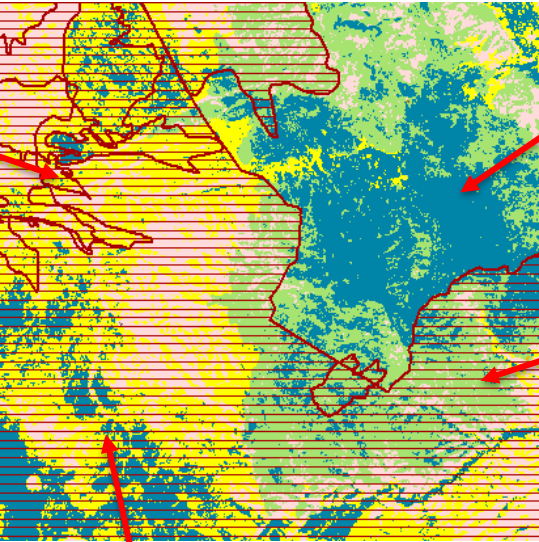
This area contains a patchwork of public and private land and will require coordinated implementation to achieve landscape-scale benefits.

Much of the Paulina area also contains juniper encroachment; on these sites, encroaching juniper and annual grasses should be addressed simultaneously. Tree cover is not included in this map but is provided with the geographic strategy spatial data.

Example 3. **Mitigate impacts** in an area adjacent to core

In the Soldier Creek area, poor condition sites to the west have repeatedly burned in wildfires, while sites to the east present the opportunity to defend and grow the core.

This area has experienced many wildfires over the last few decades, shown with red crosshatching.



Continuous blocks of core can be defended and grown into adjacent areas.

Management objectives in low resilience sites to the west may focus on **fuels management** to prevent more repeated burning **and containment** of invasives from encroaching to the east.

In the higher resilience areas to the east, management objectives may focus on **maintaining perennial bunchgrass cover** and **reducing encroachment of annuals** from the more degraded western sites.

Previously burned areas with low shrub cover but persisting perennial grasses may present opportunities for large-scale herbicide treatment.

Pockets of core exist in low R&R sites but with limited potential to grow outward.