

# **Ecosystem Services Provided by Public Land Ranchers in the Western United States: Survey Results**

*Sustainable Rangelands Roundtable  
University of Wyoming*

# Objectives

- Introduce Sustainable Rangelands Roundtable
- Review ecosystem services conceptual background
- Results of the regional Ecosystem Services survey
- Conclusions

# Sustainable Rangelands Roundtable



- Partnership process with a 16 year history
- Over 100 participants from more than 50 organizations
- Meetings, symposia, workshops, and projects conducted across the country
- Progress and products come from volunteer efforts; participants are not compensated.

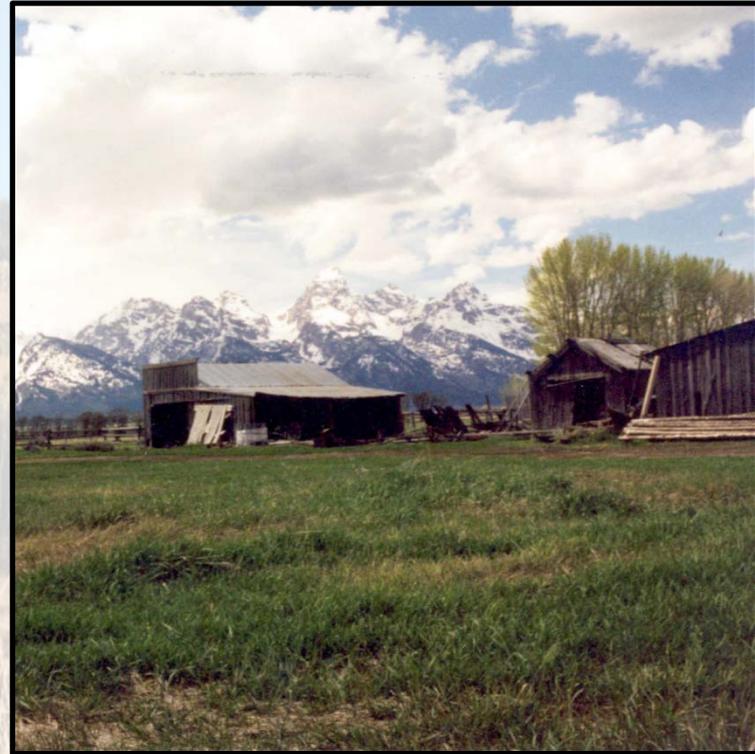
# SRR Mission



Promote social, economic, and ecological sustainability of rangelands through development and widespread use of criteria & indicators for rangeland assessments, and by providing a forum for dialogue on the sustainability of rangelands.

# Rangeland Sustainability

- o Balances social and economic aspects of human well-being with ecosystem integrity.
- o Reflects shifting social values and economic development priorities, geared toward resource conservation.



# SRR Timeline and Projects

2003 - 1st Approximation Report: Criteria & Indicators for Sustainable Rangelands

2007 - Ranch Sustainability Assessment Guidebook and Workshops

2008 – Rangeland Ecosystem Services Primer

2009 – Social, Ecological, & Economic Conceptual Framework

2010 – Climate change assessment and adaptation

2010 – Oregon Multi-Agency Pilot Project (MAPP)

2011 – Rangelands contributions to food security

2012 - Ecosystem impacts of energy development on rangelands

2013 – Social and economic survey of public lands ranchers

**2013 – Survey of rangeland ecosystem services provided by ranchers in the Western U.S.**

2014 – Future Directions of Usable Science for Sustainable Rangelands Workshop

2015 – Modeling Economics Benefits of Soil Health on Rangelands

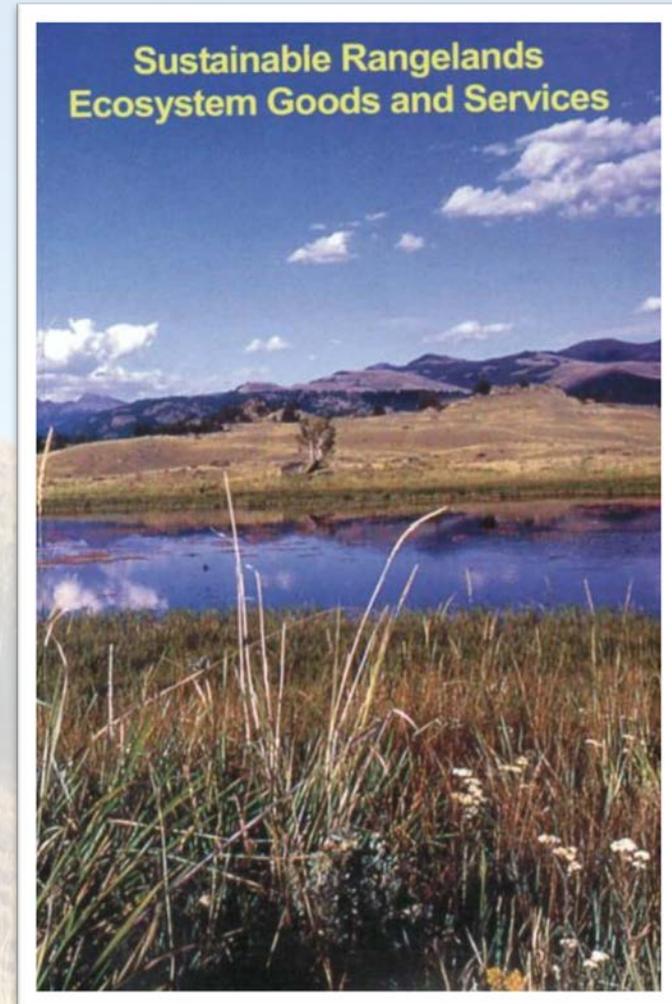
2015 – Motivations and Socio-Economics of Conservation Program Participants

# Why conduct this survey?

- ❖ Rangelands constitute approximately 770 million acres in the U.S. and provide commodity, amenity, and spiritual values that are vital to the well-being of our Nation.
- ❖ Ranchers make contributions on a daily basis to manage and maintain ecosystem goods and services on private and public lands, the Sustainable Rangelands Roundtable (SRR) recognized a need to understand ranchers' contributions to these goods and services.

# Ecosystem Goods and Services

- Ecosystem Goods: Tangible outputs resulting from human activities that begin with extraction
- Ecosystem Services: Tangible or intangible outputs from direct experiences or indirect opportunities



# Rangeland Ecosystem Services

Biological	Hydrological/Atmospheric	Miscellaneous
<p>Domestic Livestock Other Food for Human Consumption</p>	<p>Drinking Water Water for Economic Benefit</p>	<p>Views and Scenes Cultural and Spiritual Resources</p>
<p>Forage for Livestock</p>	<p>Floods for Channel and Riparian Area Rejuvenation</p>	<p>Historical/Archeological Sites</p>
<p>Fiber</p>	<p>Flood Mitigation</p>	<p>Scientifically Significant Sites</p>
<p>Biofuels</p>	<p>Water bodies for recreation /tourism</p>	<p>Recreation and Tourism Sites</p>
<p>Fishing, Hunting and Viewing Wildlife</p>	<p>Minimizes Contributions of Chemicals and Particulates (PM 10)</p>	<p>Ornamental Resources</p>
<p>Biochemicals</p>	<p>Contributes to Clean, Fresh Air</p>	<p>Ceremonial Resources</p>
<p>Genetic Material</p>	<p>Hydrologic Energy Potential  Solar Energy Potential Wind Energy Potential</p>	

# The Basic Assumption

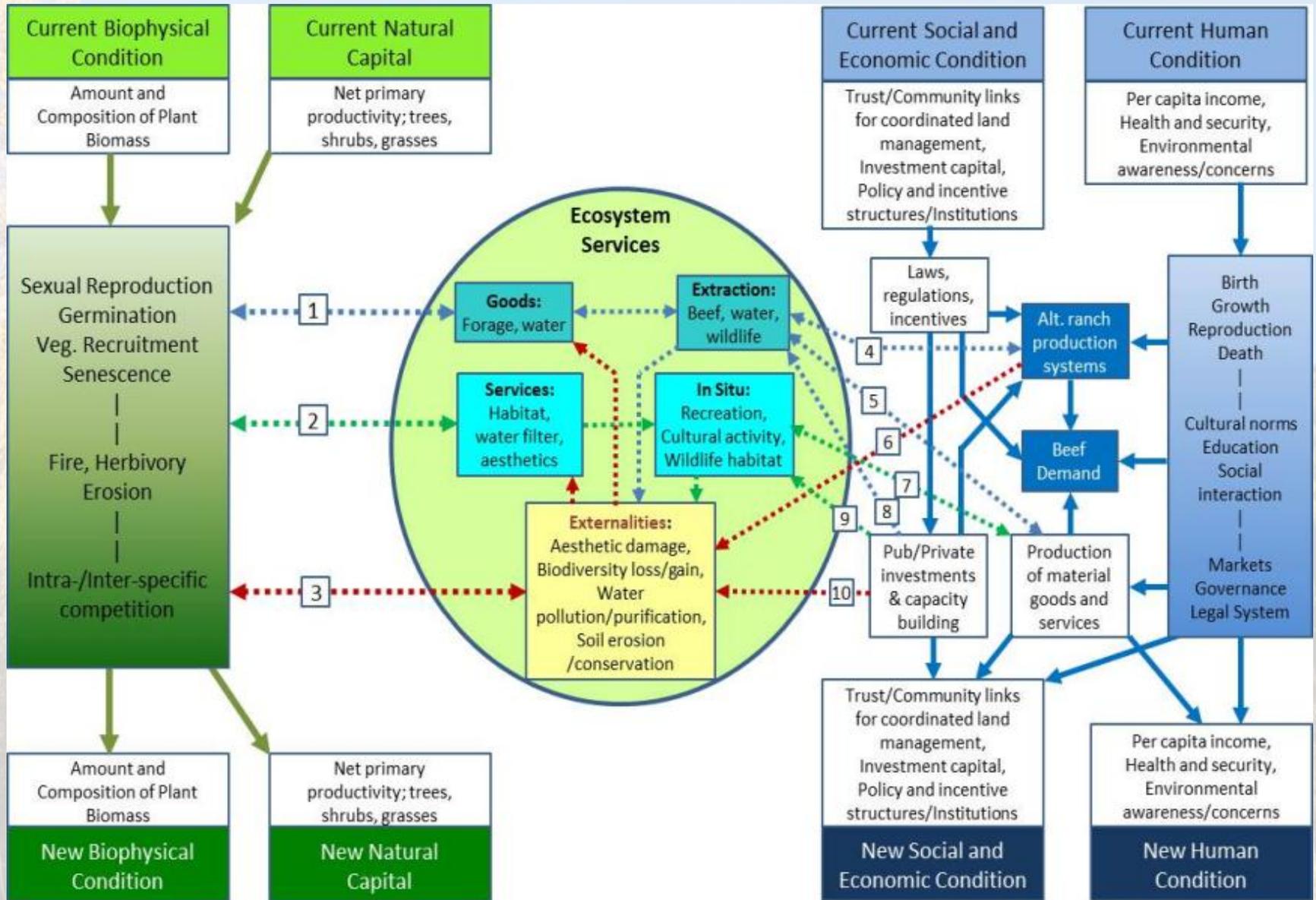


**Bio-physical  
Subsystem  
(Ecological)**

Ecosystem  
Services

**Human  
Subsystem  
(Social and  
Economic)**

# ISEEC Conceptual Framework



# Basic Research Questions

- What types of ecosystem services do ranchers think they provide?
- Are they profiting from provision of these services?
- Are there areas in which profits could potentially be increased?

# Survey Objectives

- To obtain statistically valid information at a regional scale, for the 4 regions selected for this survey
- To understand how ranchers are contributing to provision of ecosystem services
- To evaluate fee structures and rates

# Survey Development

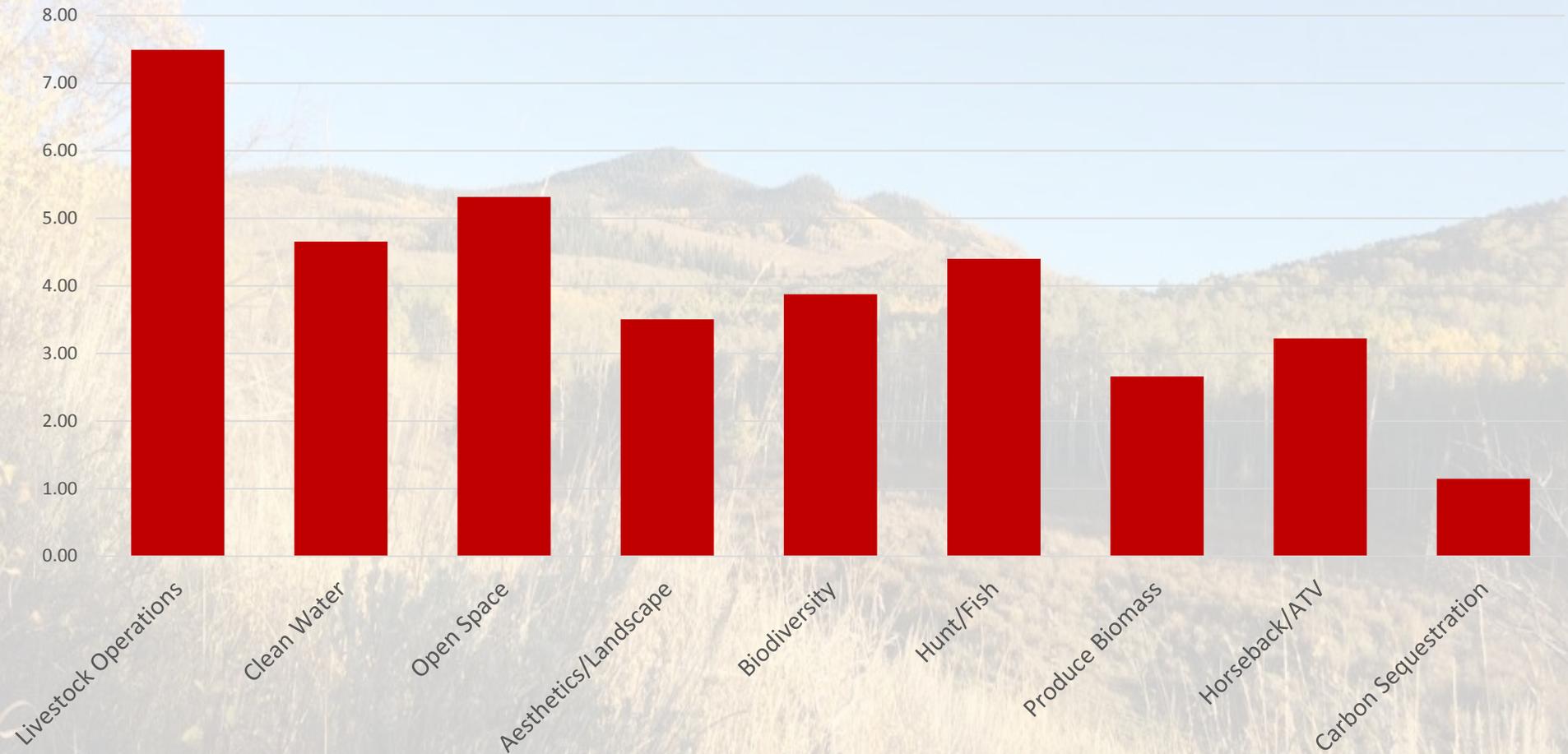
- Questions were developed using a focus group
- Respondent pool came from permittee lists provided by BLM and Forest Service
- Followed methods established in Dillman et al. 2009
- Institutional Review Board

# How Many Ranchers Participated?

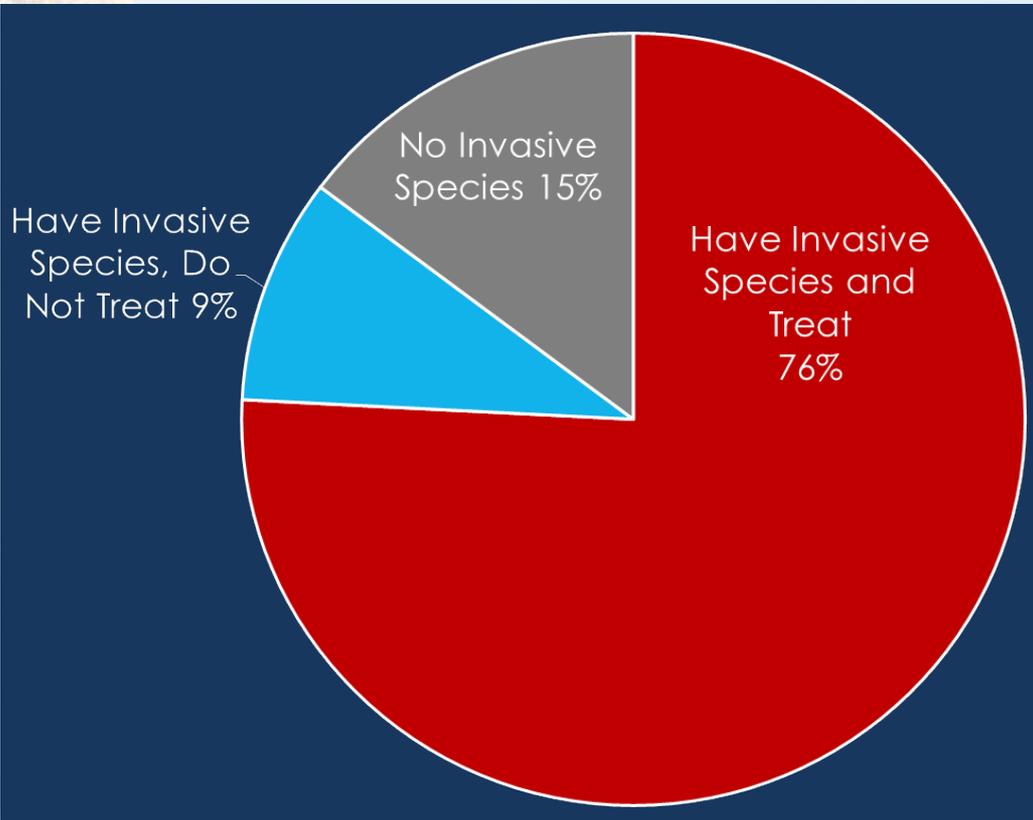
Ecological Region	Total Permittees	Sample Size
Colorado Plateau (AZ, NM, UT)	1,698	628
Central Rockies (CO, ID, WY)	4,059	704
Desert SW (AZ, NM, NV, TX)	2,281	658
Great Basin (ID, NV, UT)	1,233	588

- 25% response rate
- Accurate at +/- 7% at 95% confidence in 4 regions of the western U.S.

# Ecosystem Service Importance Ranking

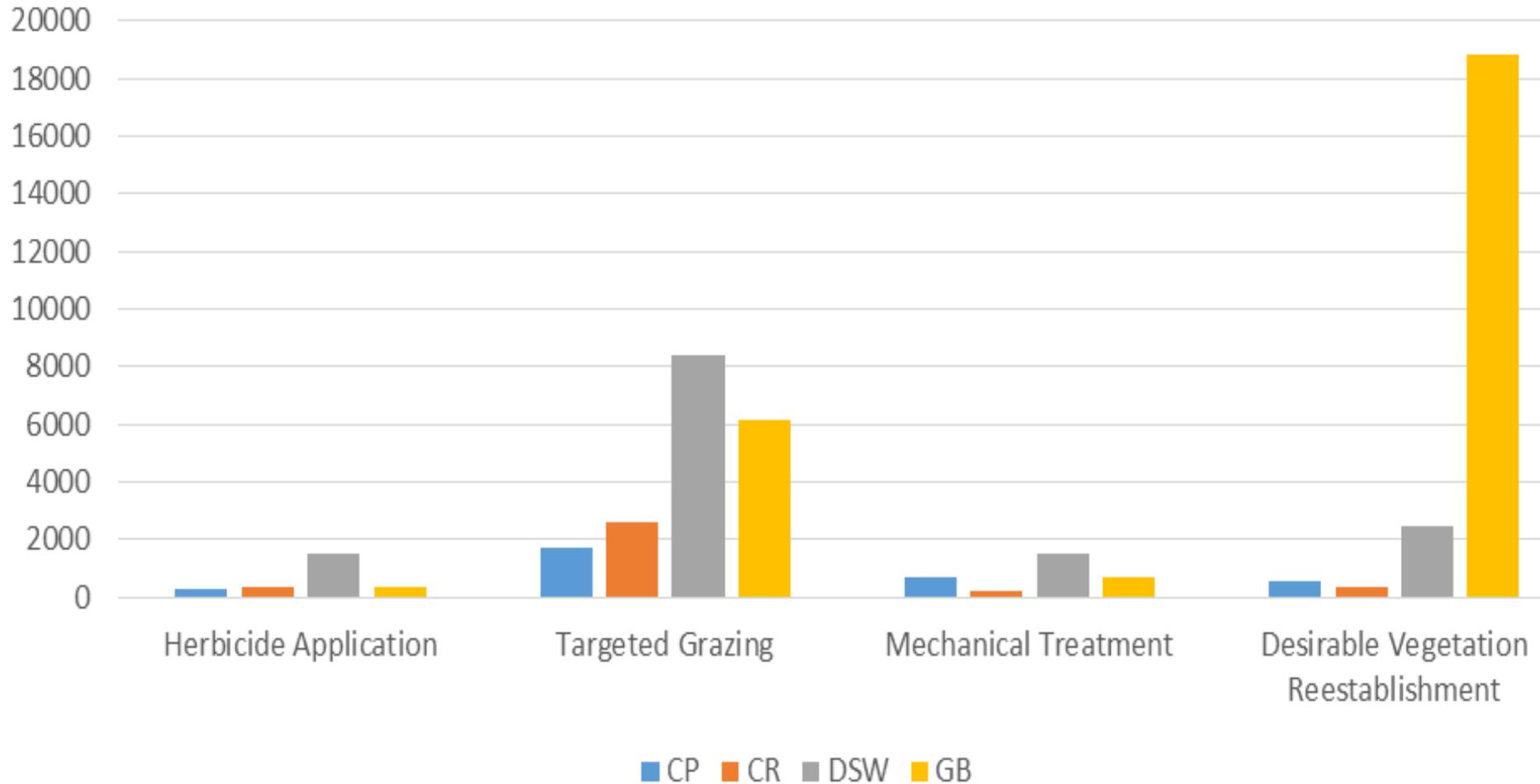


# Invasive Species



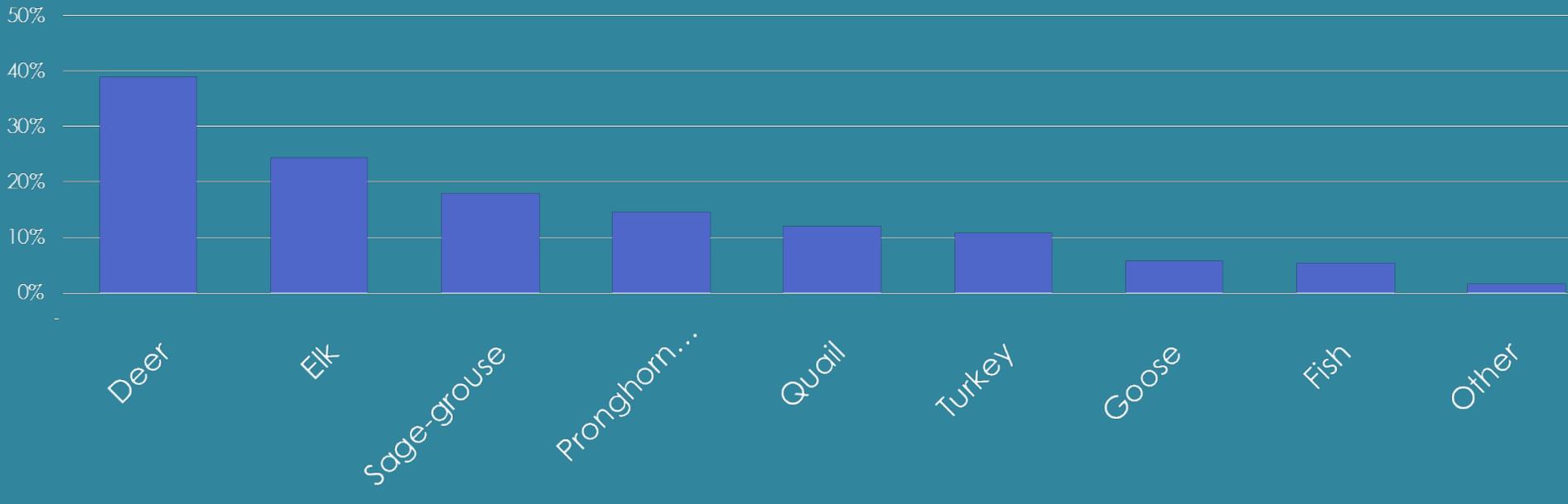
- Invasive plant species are a major concern on rangelands
- Ranchers were asked if they were treating invasive plants
- And, if so, how they were treating them.

# Treated Acres per Region by Method



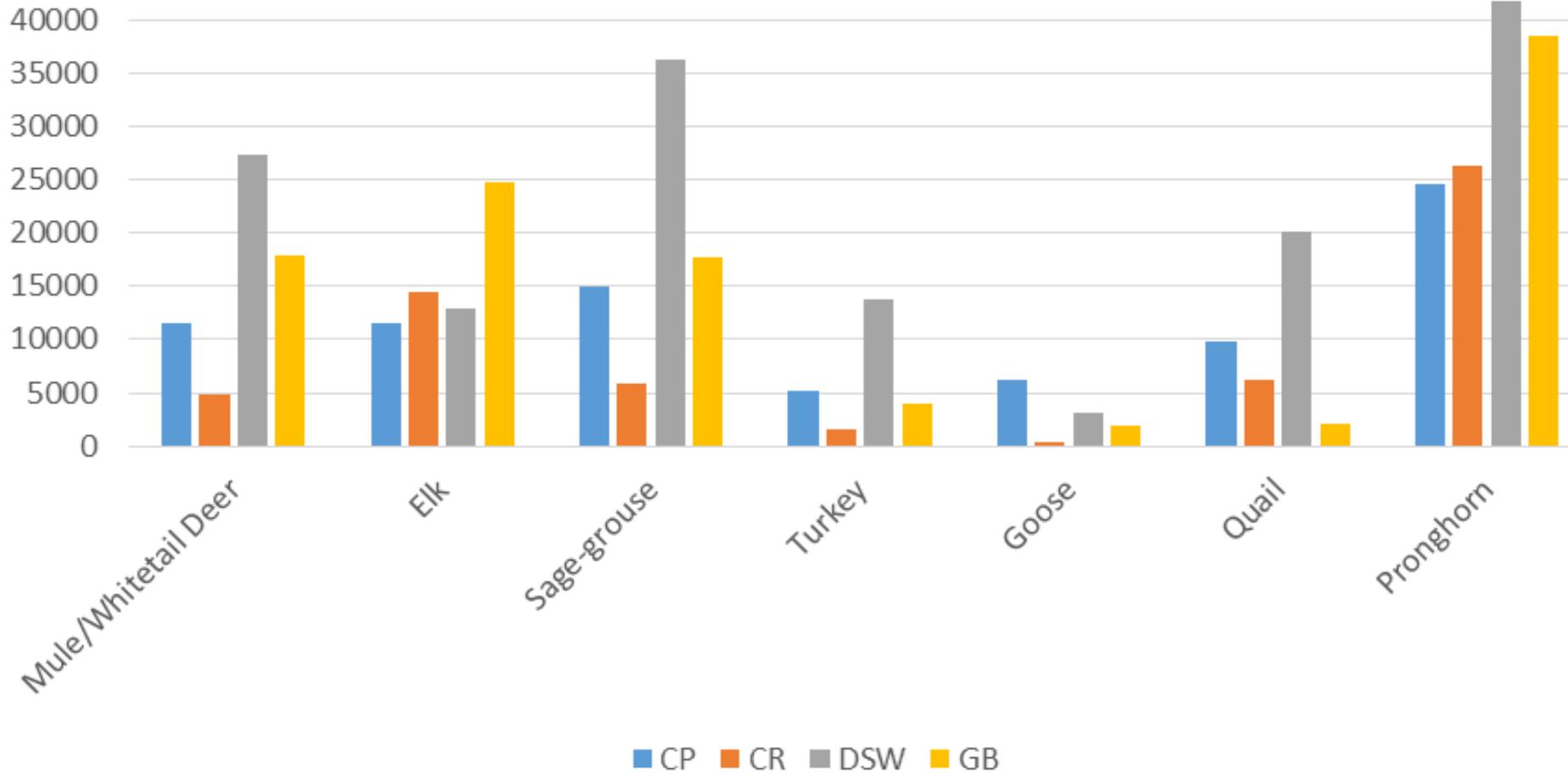
# Wildlife Habitat Improvements

% Participate

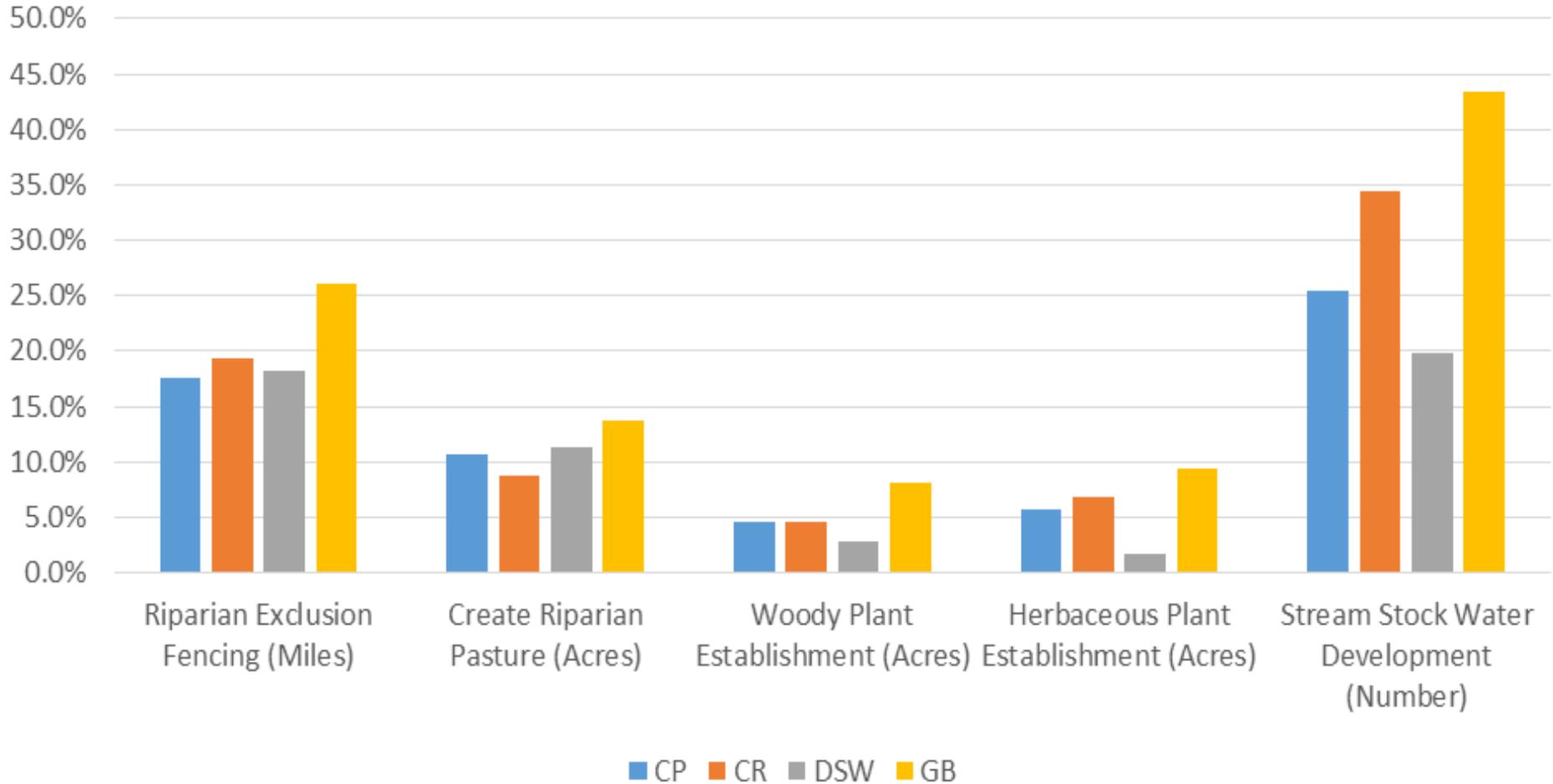


- Ranchers were asked if they managed to increase wildlife habitat
- and, if yes, how much it increased in acres.

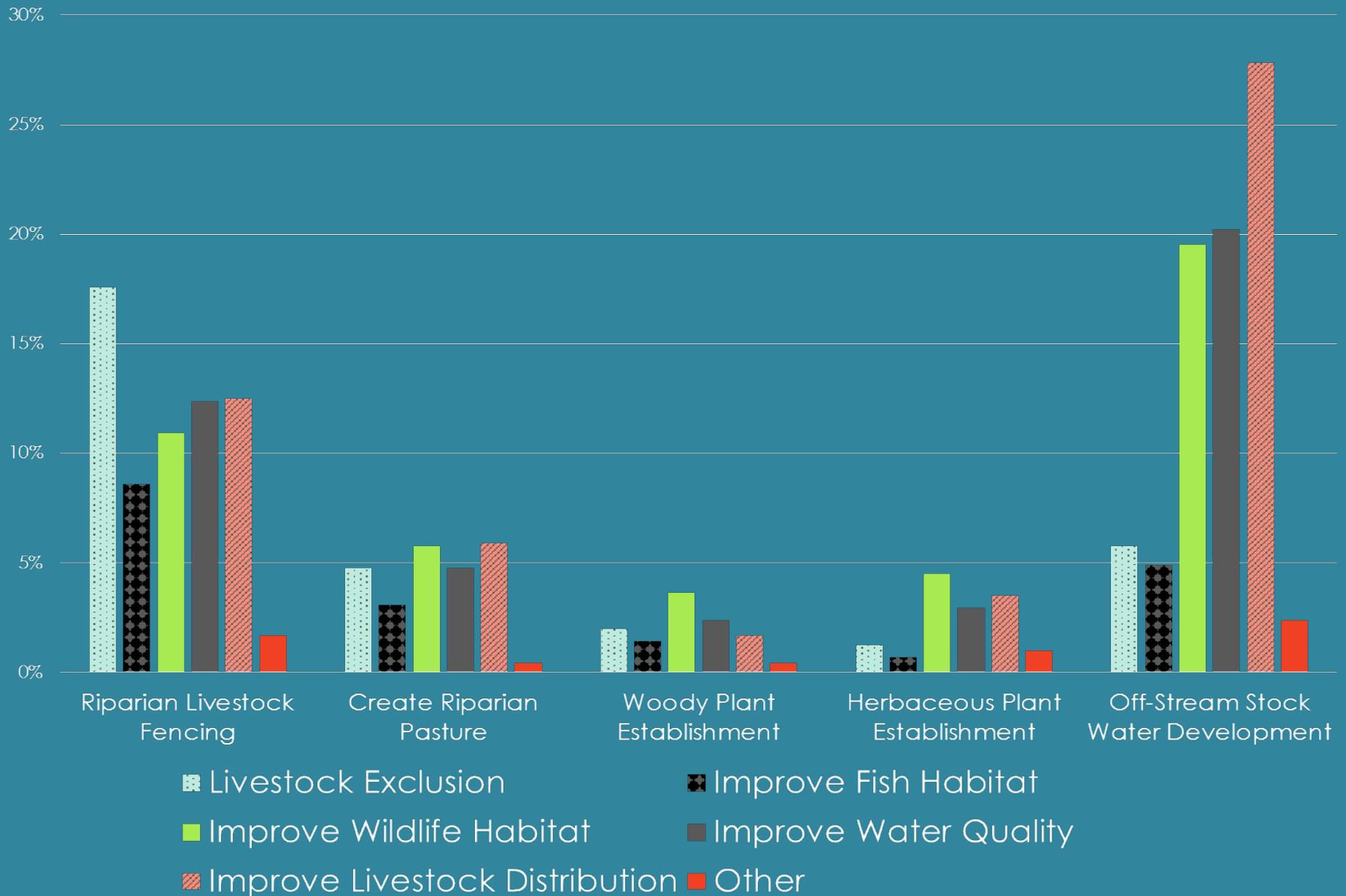
# Average number of acres managed for wildlife habitat by region



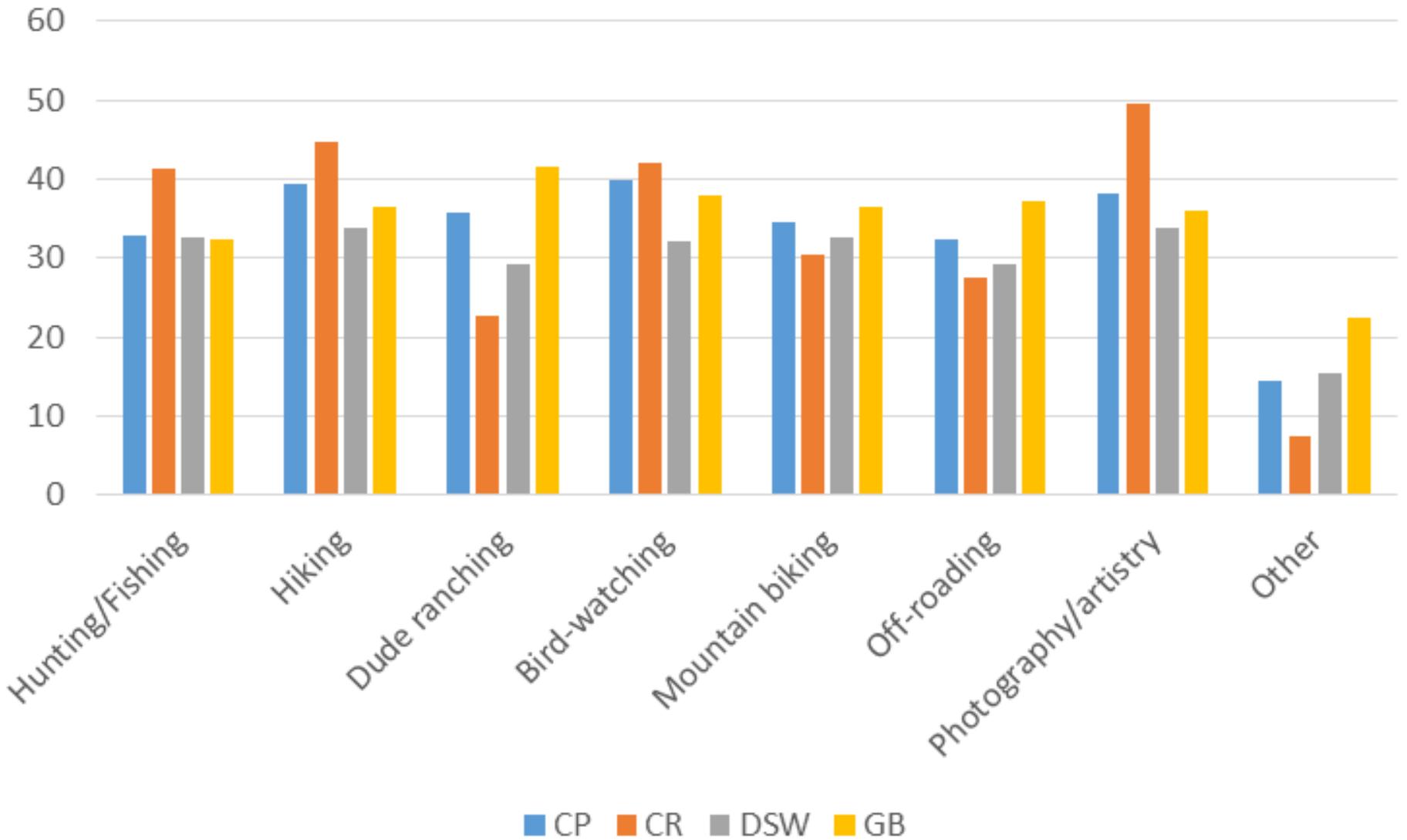
# Riparian Mgmt Participation by Region



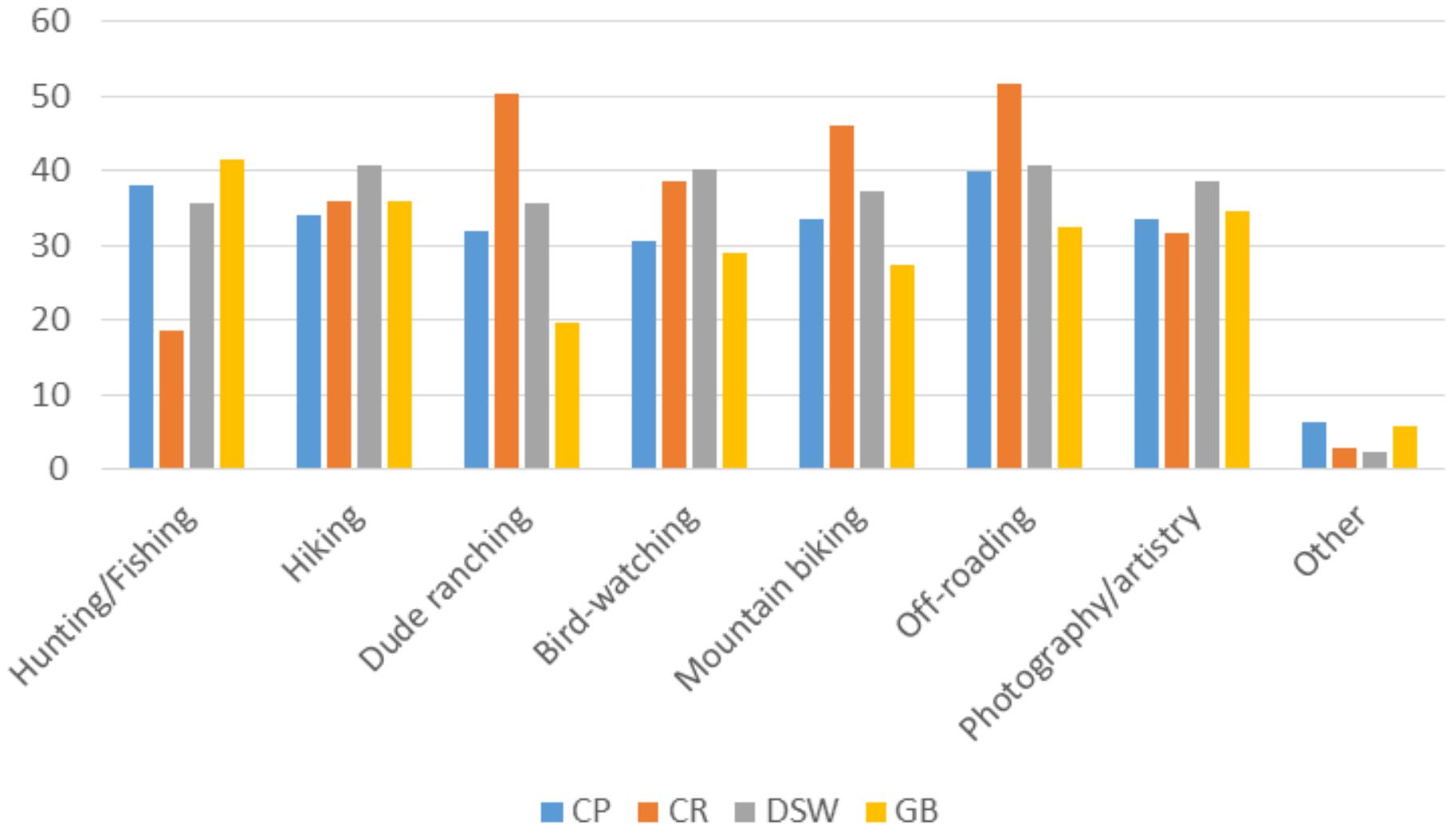
# Rationale for Riparian Mgmt Practices



# Recreation Access



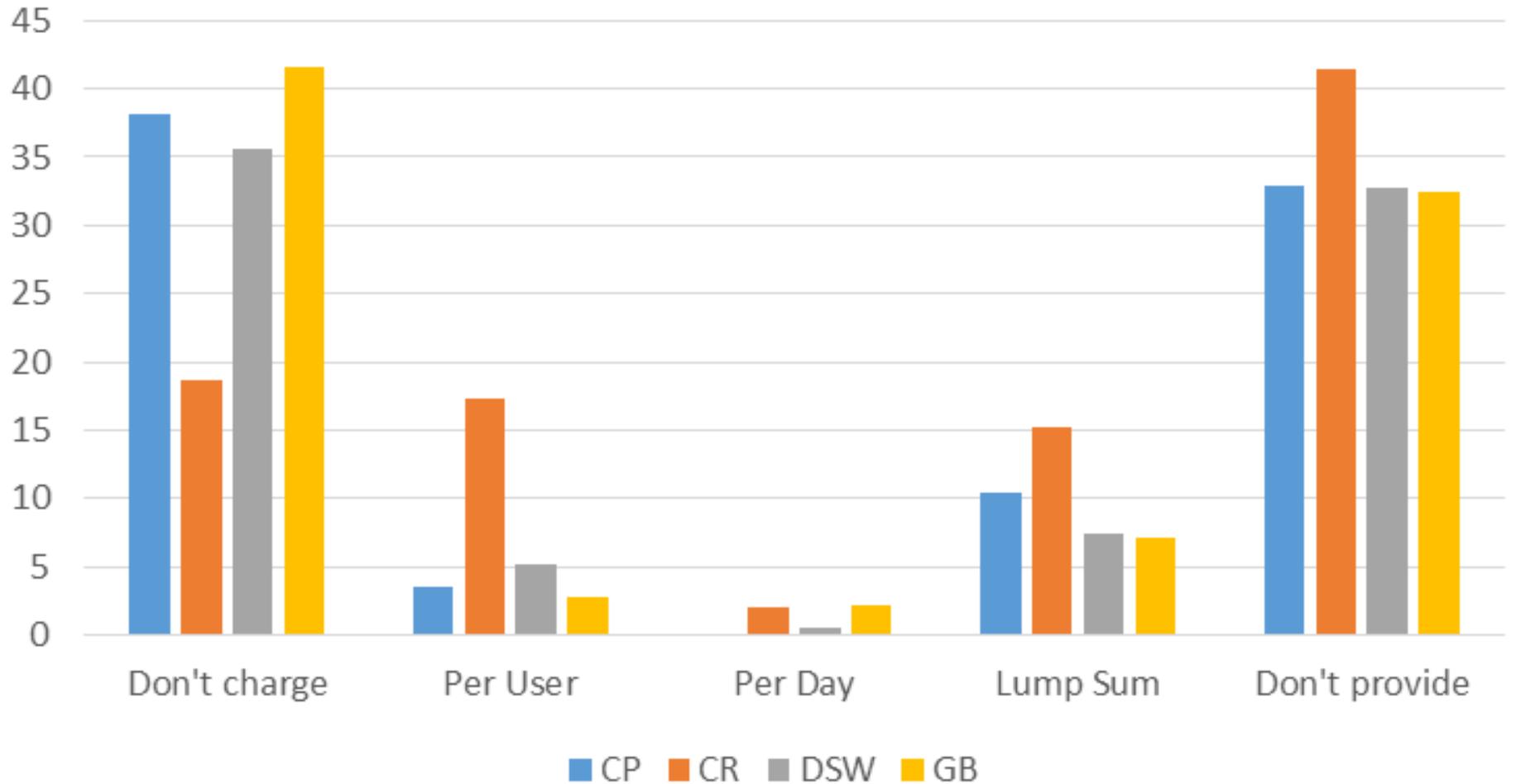
# Recreation on Ranches



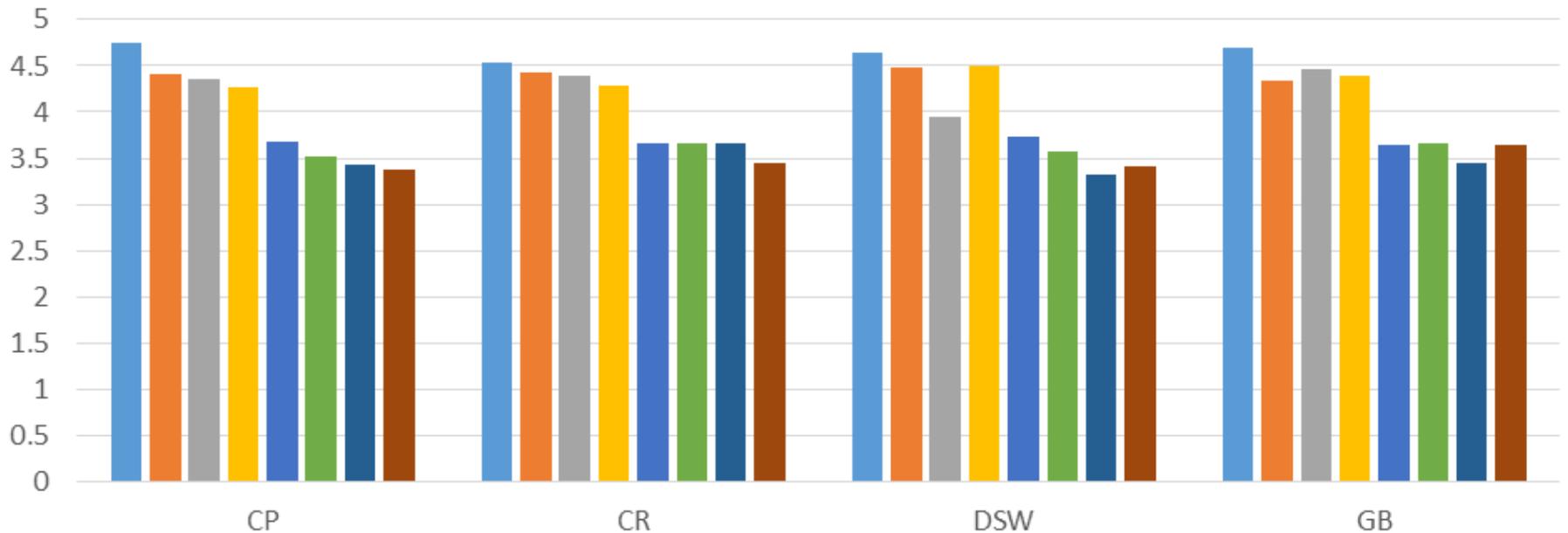
# Types of Activities and Fees

	Recreation Visitor Day	Charge/day
Mountain Biking	5,086	1.33
Snowmobiling	77	75.00
Horseback Riding	250	37.72
Livestock Herding	54	44.00
Ranch Work Experience	63	49.72
Hiking	276	0.00
Bird Watching	136	0.00
Non-Recreating Guests	52	21.92
Unguided Hunt	176	200.72
Guided Hunt	71	1040.96
Unguiding Fishing	481	22.63
Guided Fishing	190	70.00

# Hunting and Fishing

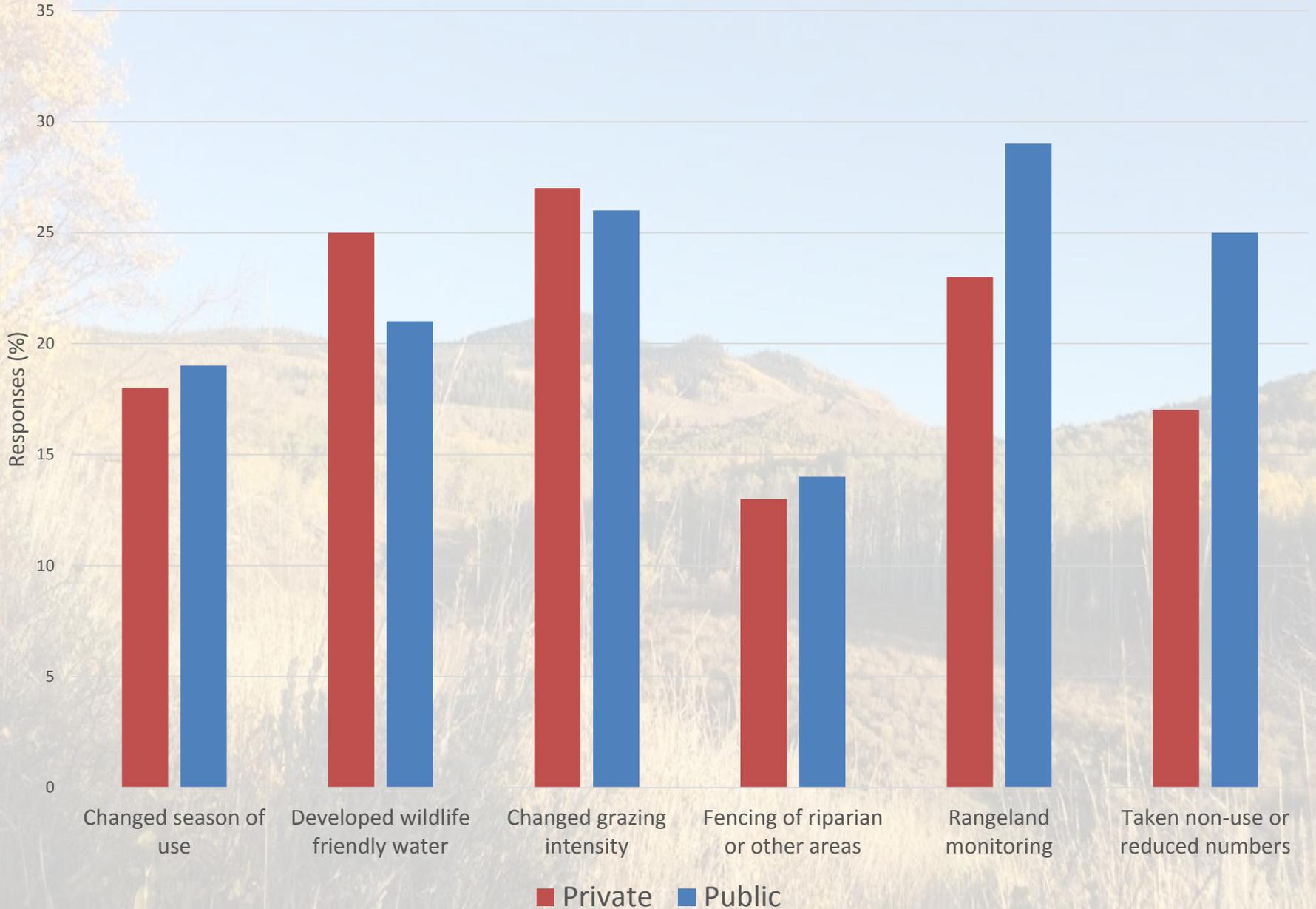


# Reasons for Ranching by Region

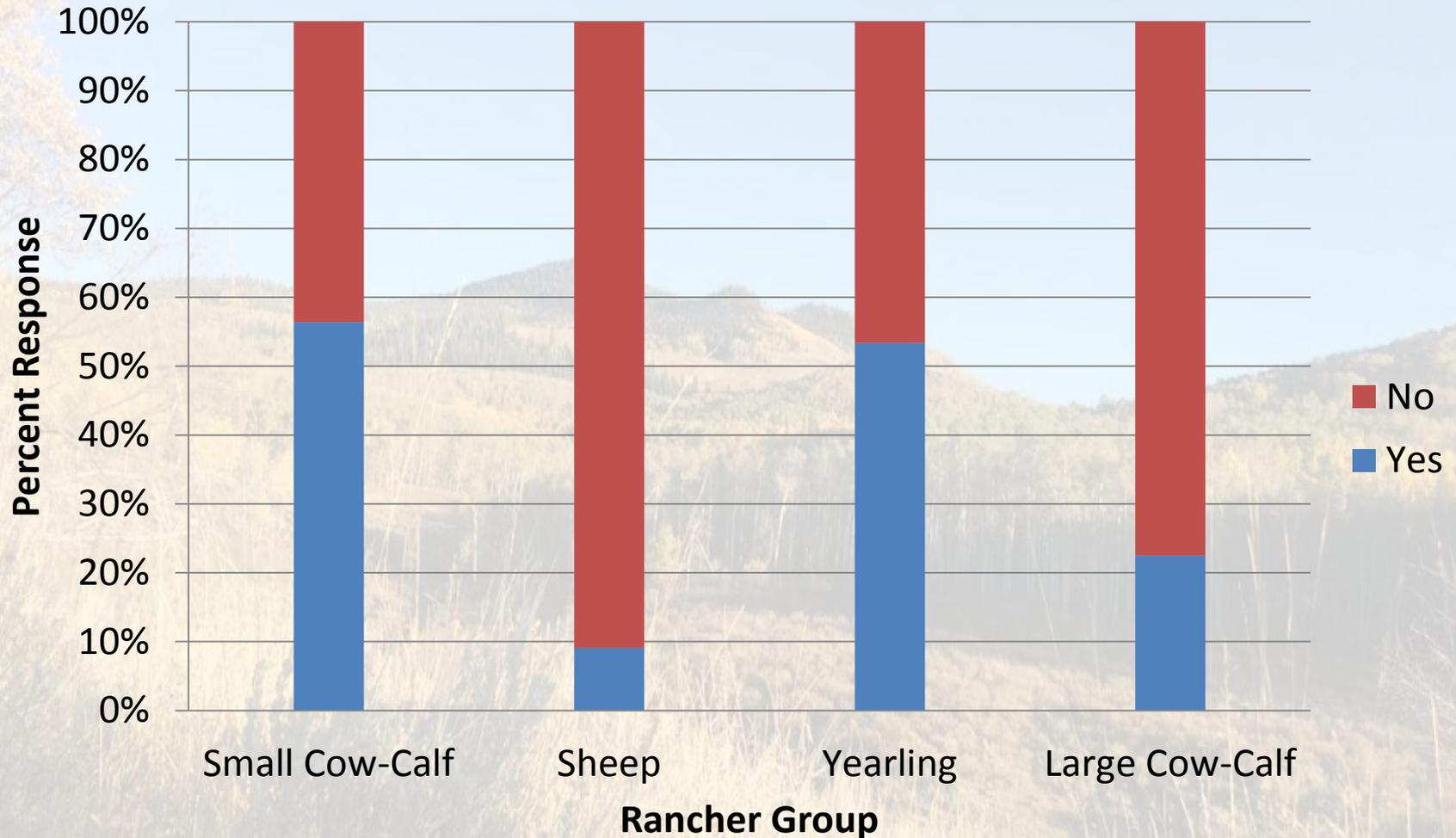


- Owning land and a ranch is consistent with my family's traditions, culture, and values
- Pass on the ranch and ranching lifestyle to future generations
- Raising a family on a ranch
- Maintaining the health and productivity of rangelands (stewardship)
- Providing food and fiber
- Contributing to the local economy
- Living on a ranch allows me to live closer to my friends and family
- Obtaining a good return on my ranch investment (profit)

# Management changes in past 5 years



# Ranch Viability



# Conclusions

- Ranchers are very active in controlling invasive plant species.
- Ranchers are investing in different methods to improve riparian areas to benefit a variety of ecosystem services.
- Ranchers appear willing (30-40%) to invest in mule or whitetail deer habitat improvement.
- Ranchers appear reluctant to capitalize on wildlife habitat improvements.
- Ranchers in all regions have an opportunity to financially gain from access fees for a variety of recreational opportunities.

# Questions

<http://sustainableangelands.org>

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