

Ecosystem Services Provided by Western Ranchers

JOHN TANAKA AND KRISTIE MACZKO

UNIVERSITY OF WYOMING, SUSTAINABLE RANGELANDS ROUNDTABLE

-  National Forest
-  National Grassland
-  BLM Land
-  Indian Reservation
-  Wildlife Refuge
-  National Park
-  Military Reservation



- ▶ Rangelands comprise about 770 million acres in the U.S.
- ▶ 1/3 public : 2/3 private land
- ▶ Grasslands, savannas, deserts, shrublands, alpine meadows, wetlands, and tundra
- ▶ Managed by ecological principles versus agronomic principles

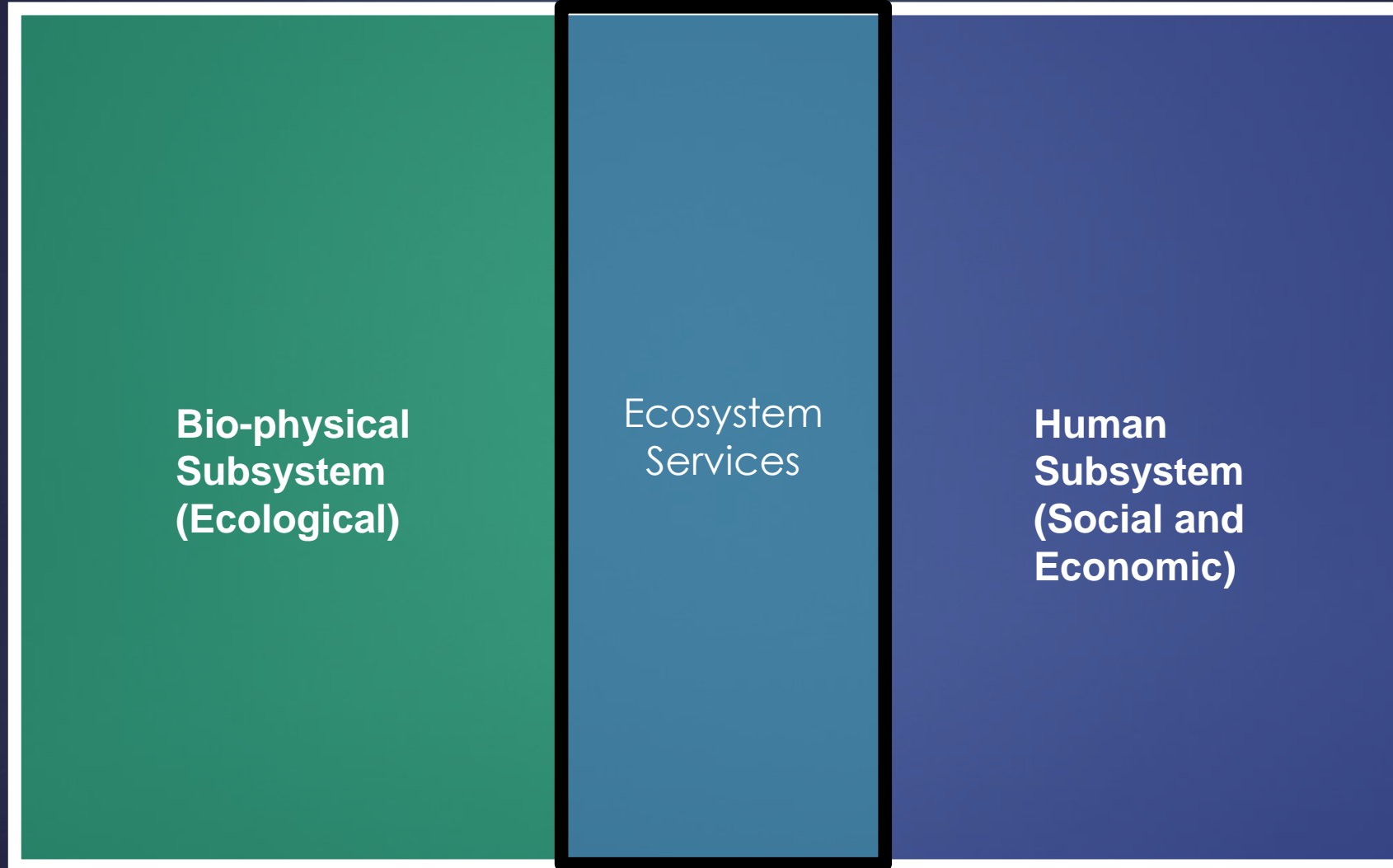
Map Source:
 Federal Lands in the Fifty States
 National Geographic Society
 Cartographic Division
 October 1996



Sustainable Rangelands Roundtable

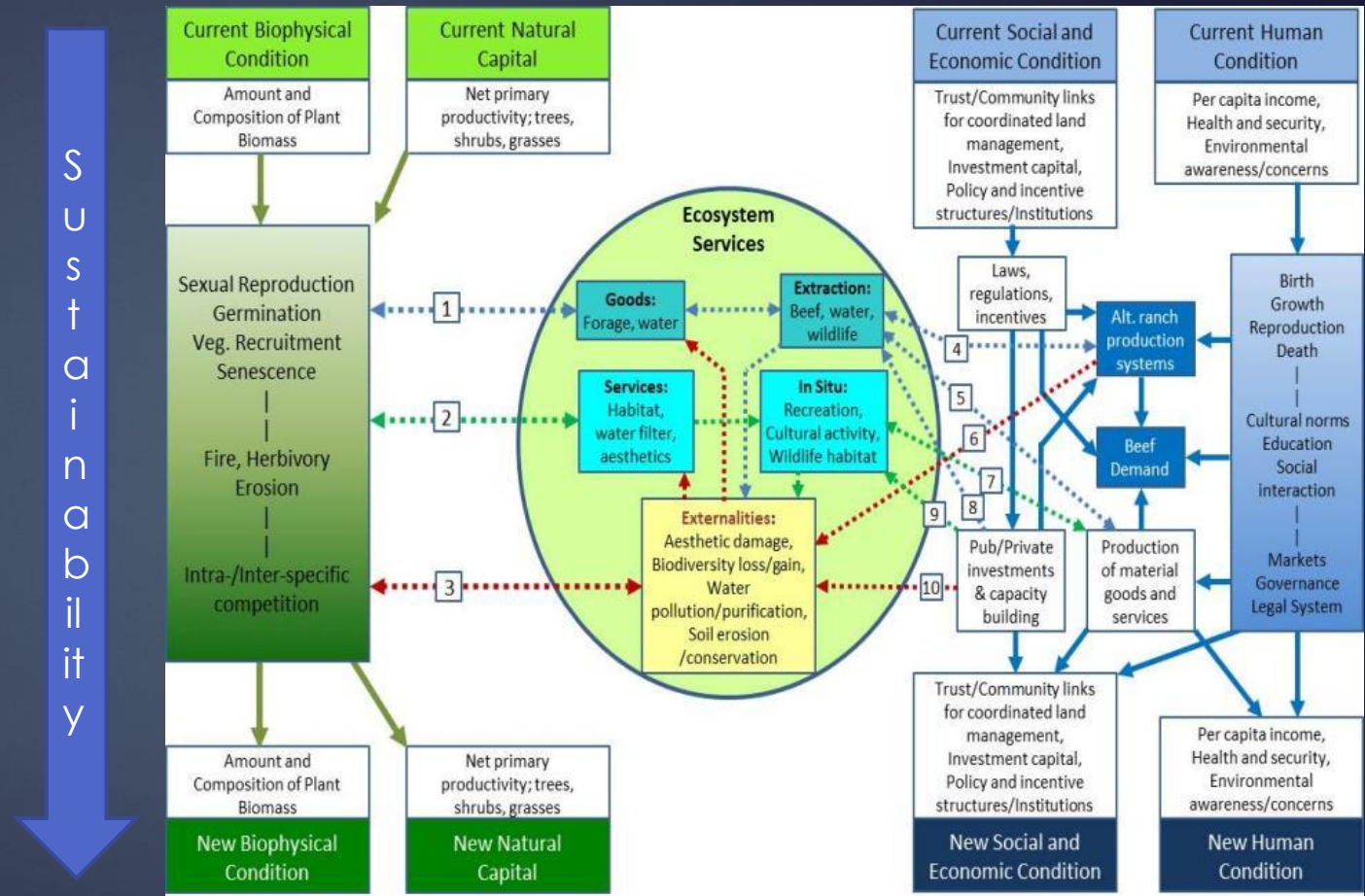
- ▶ Partnership
- ▶ Established 2001
- ▶ Develop social, economic, and ecological criteria and indicators for aspects sustainable rangeland management
- ▶ 5 Criteria and 64 Indicators
- ▶ Conceptual Framework

THE BASIC ASSUMPTION



ISEEC Framework for Sustainability

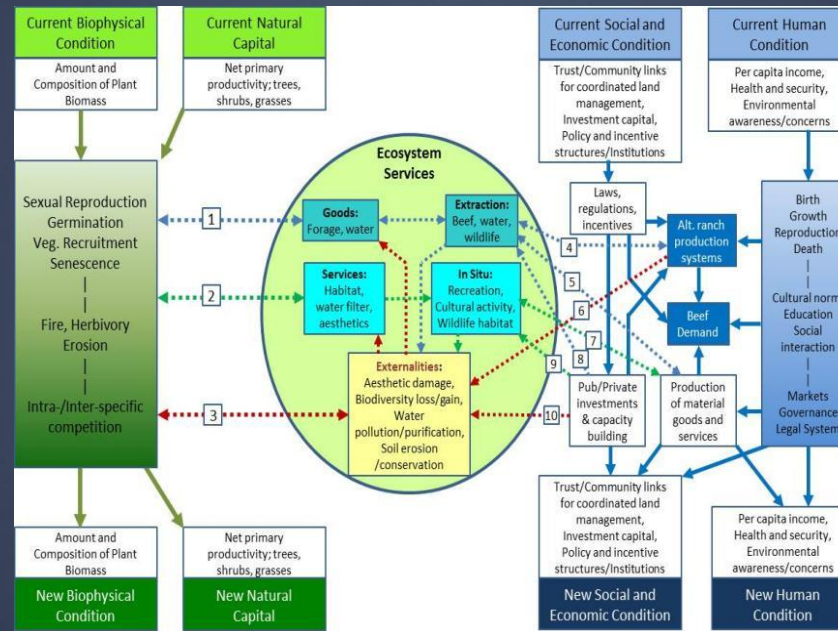
- ▶ Time
- ▶ Nexus
- ▶ Wants and needs have value



Conditions and Capital

Ecological Processes

- ▶ Succession
- ▶ Migration
- ▶ Adaptation
- ▶ Competition
- ▶ Disturbance
- ▶ Soil formation and erosion
- ▶ Nutrient, water, and carbon cycling



Social and Economic Processes

- ▶ Population
- ▶ Cultural
- ▶ Education
- ▶ Governance
- ▶ Markets
- ▶ Legal
- ▶ Social interactions
- ▶ Families

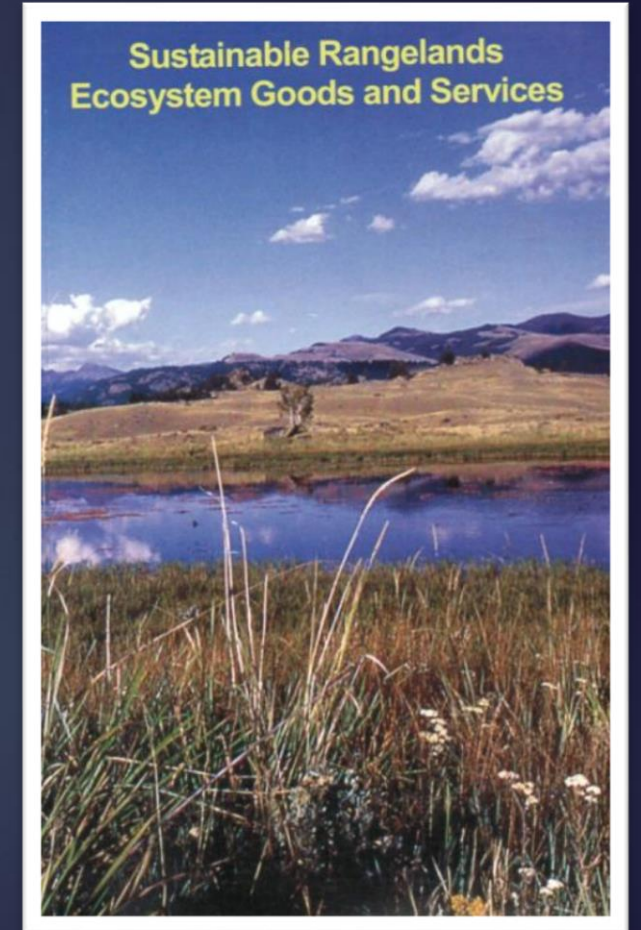
Produced by the Environment



Environment

Ecosystem Goods and Services

- ▶ Ecosystem Goods: Tangible outputs provided to humans through human activities that begin with extraction
- ▶ Ecosystem Services: Tangible or intangible outputs with value to humans that arises from direct experiences or indirect opportunities rather than through extraction and processing



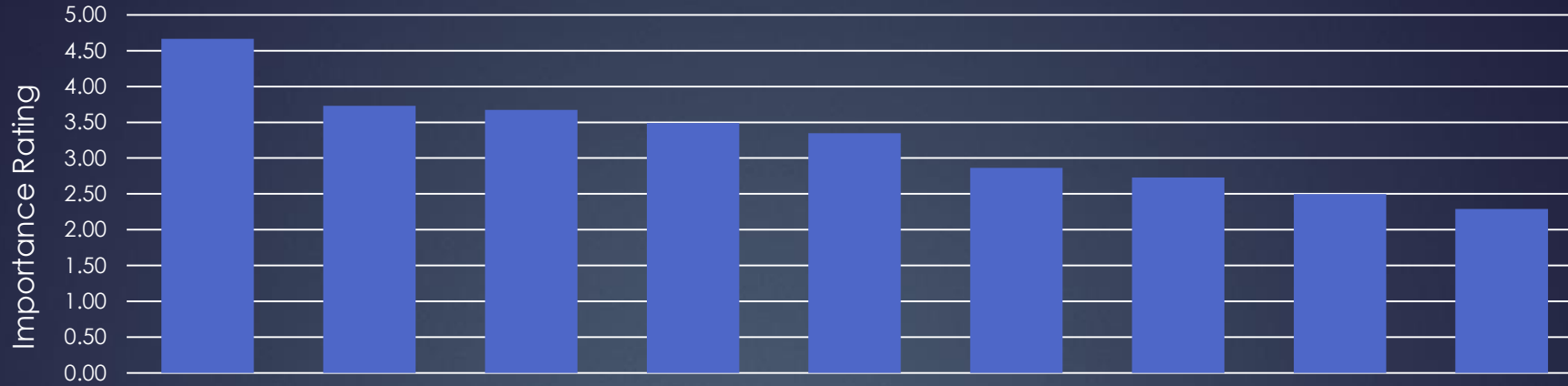
Rangeland Ecosystem Services

- ▶ Conceptually know
- ▶ How much of what is being produced on public and private rangelands?
- ▶ Survey public land ranchers
- ▶ Aim is +/- 4% at 95% confidence in 4 regions of western U.S.
 - ▶ Great Basin
 - ▶ Colorado Plateau
 - ▶ Southwest
 - ▶ Central Rockies

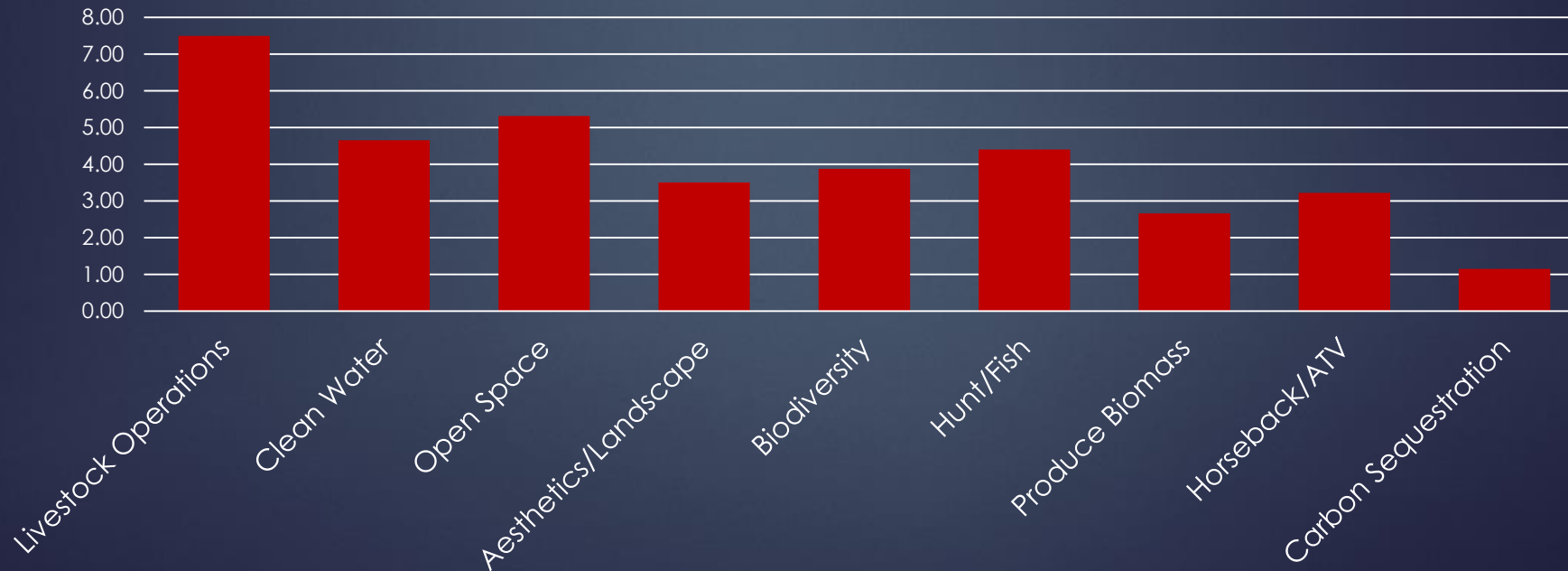
Survey Approach

- ▶ Added on to the national survey by Lind
- ▶ Drew additional ranches in each region
- ▶ Mail survey done last spring-summer
- ▶ Still analyzing results
- ▶ Preliminary results, still lots to do

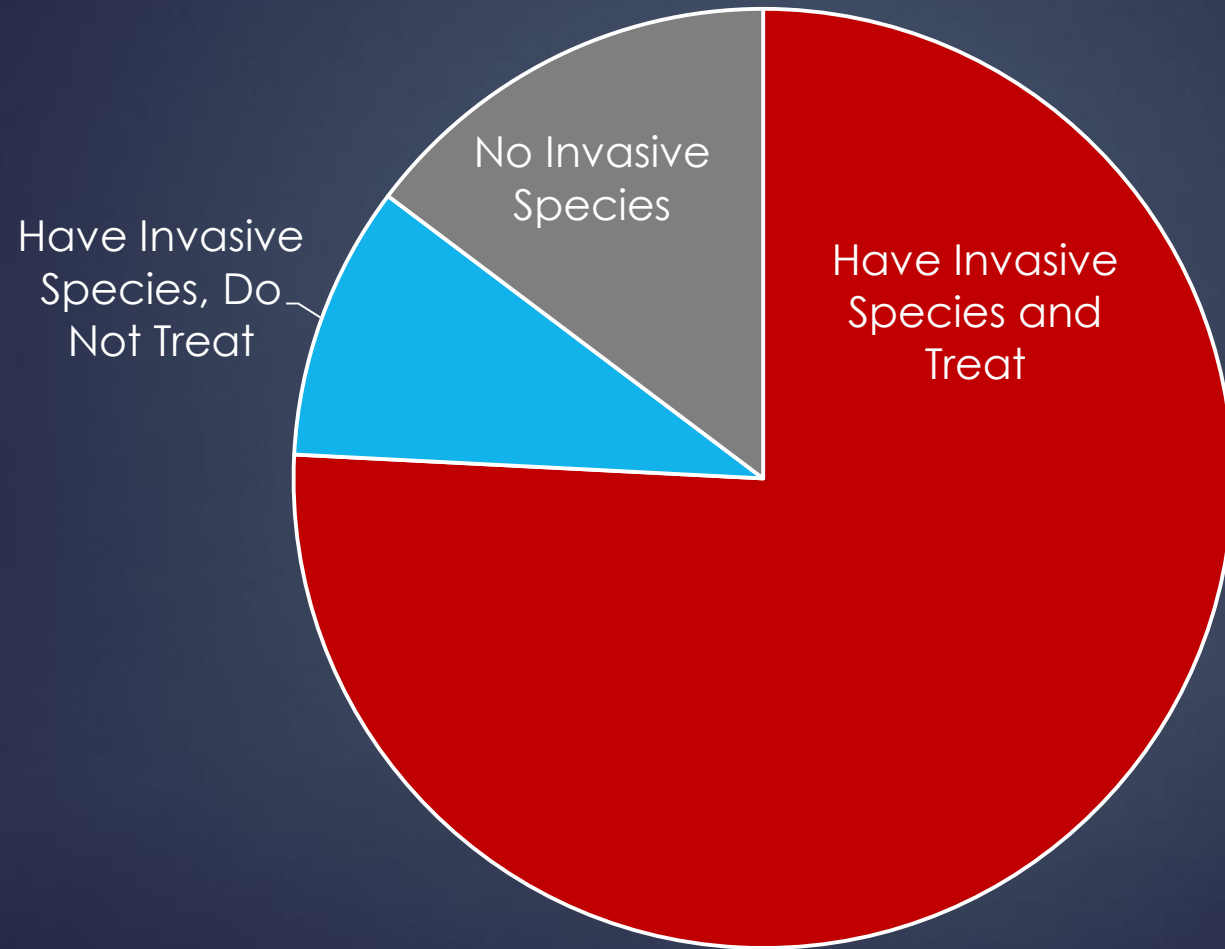
Value of the following activities/use of resources on your ranch



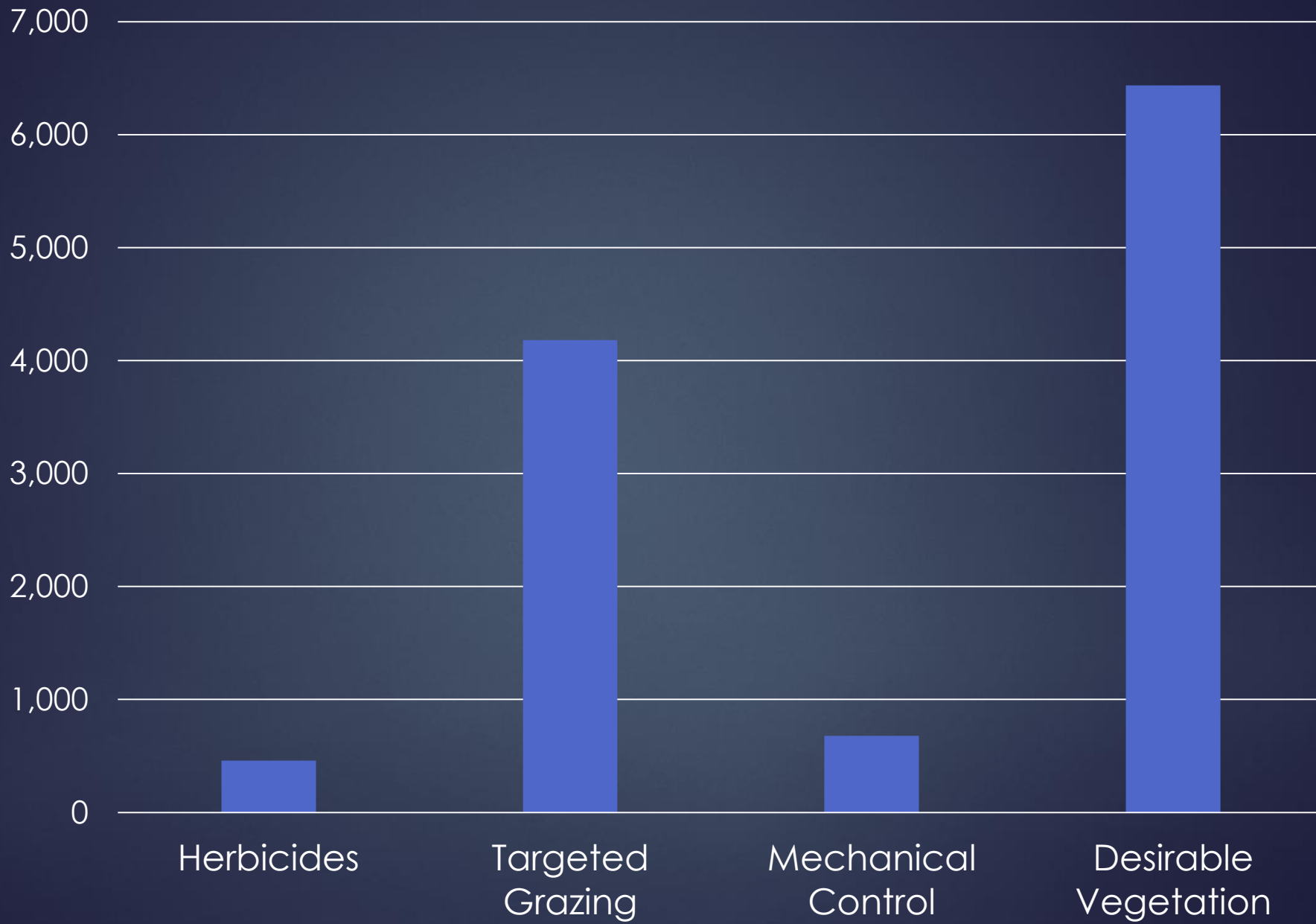
Rank of importance to your ranching operation



Invasive Species

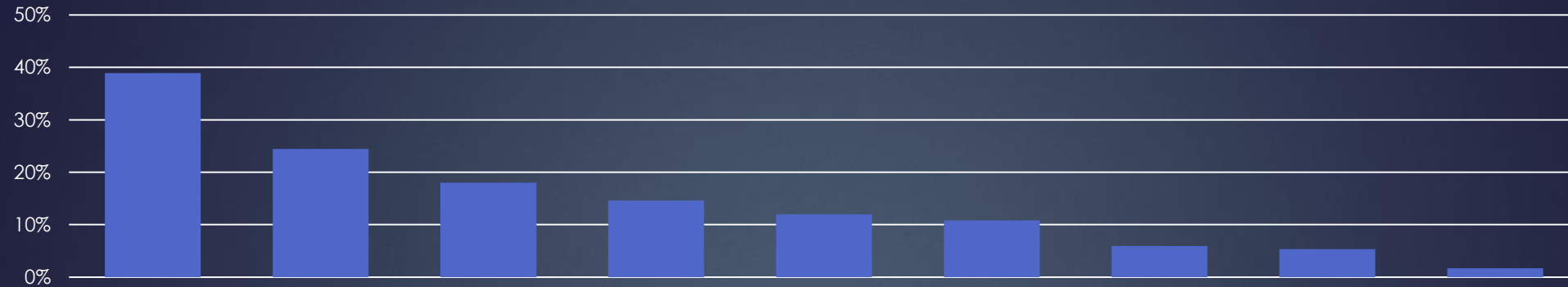


If Treat for Invasives, Average of How Many Acres

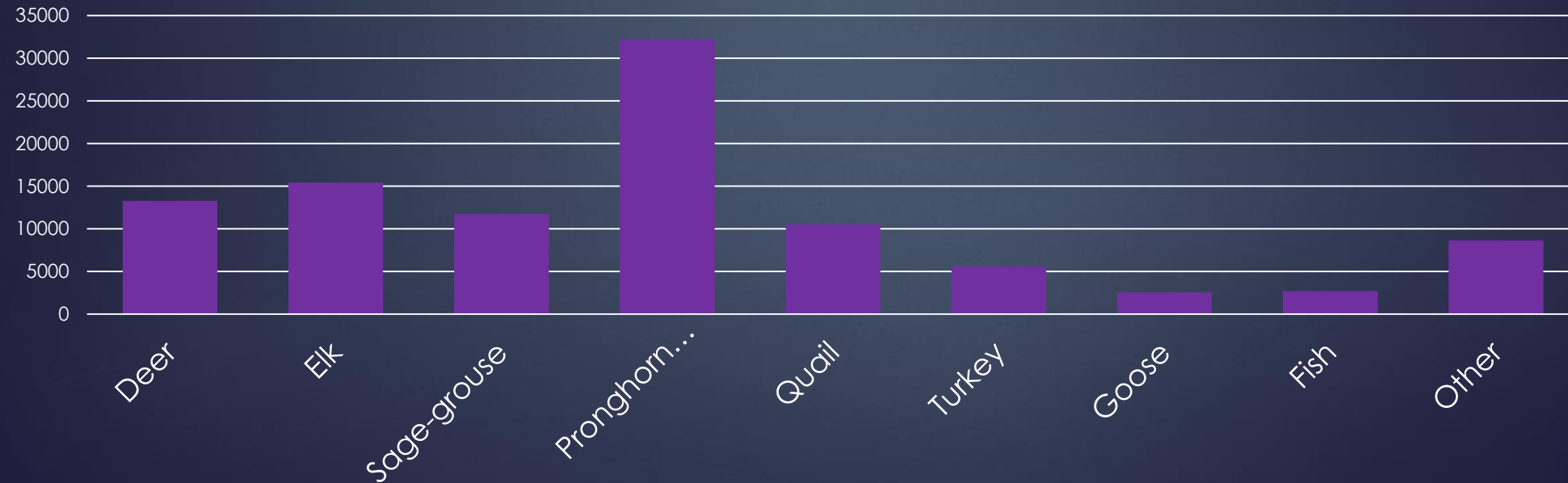


Increase Wildlife Habitat

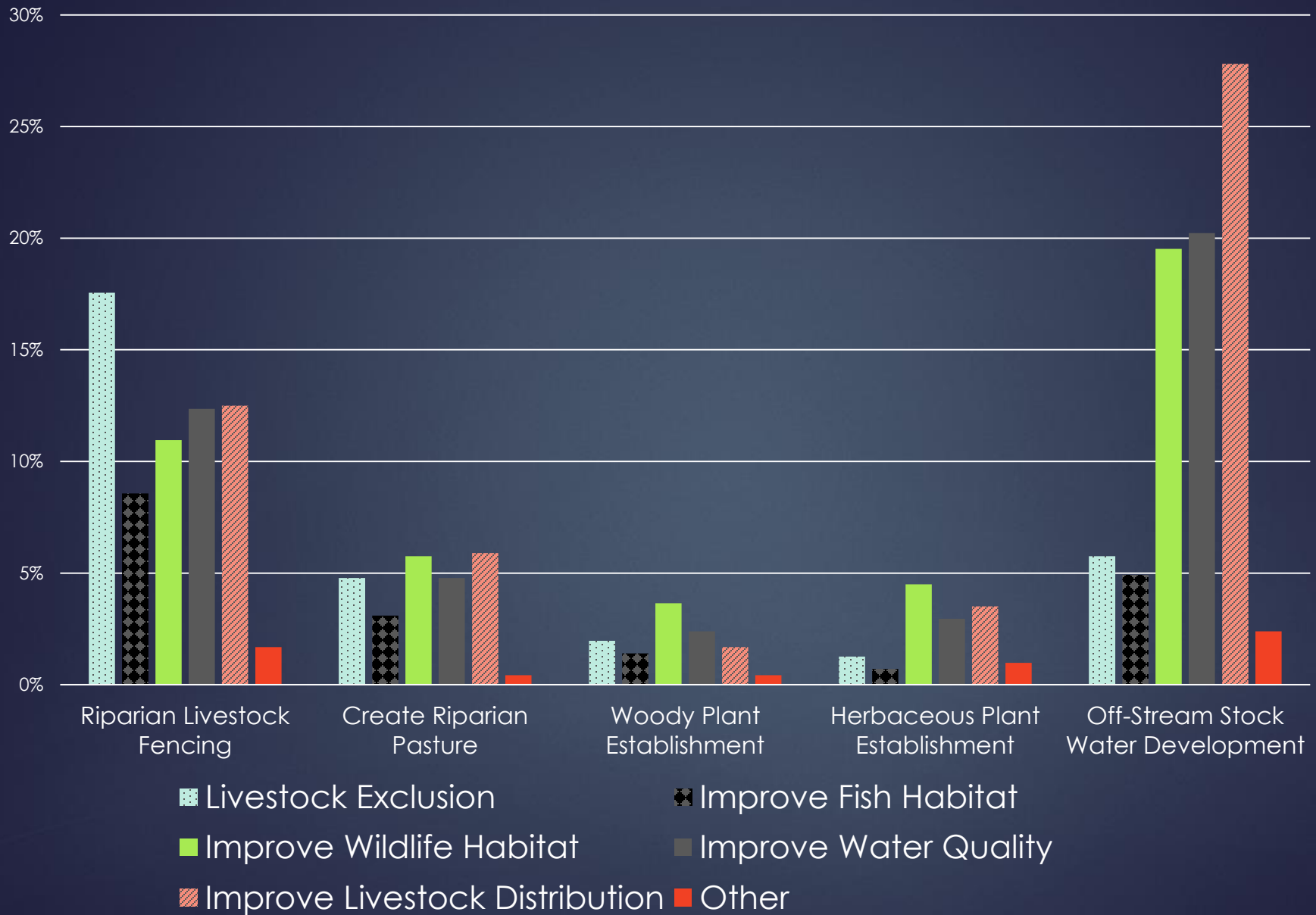
% Participate



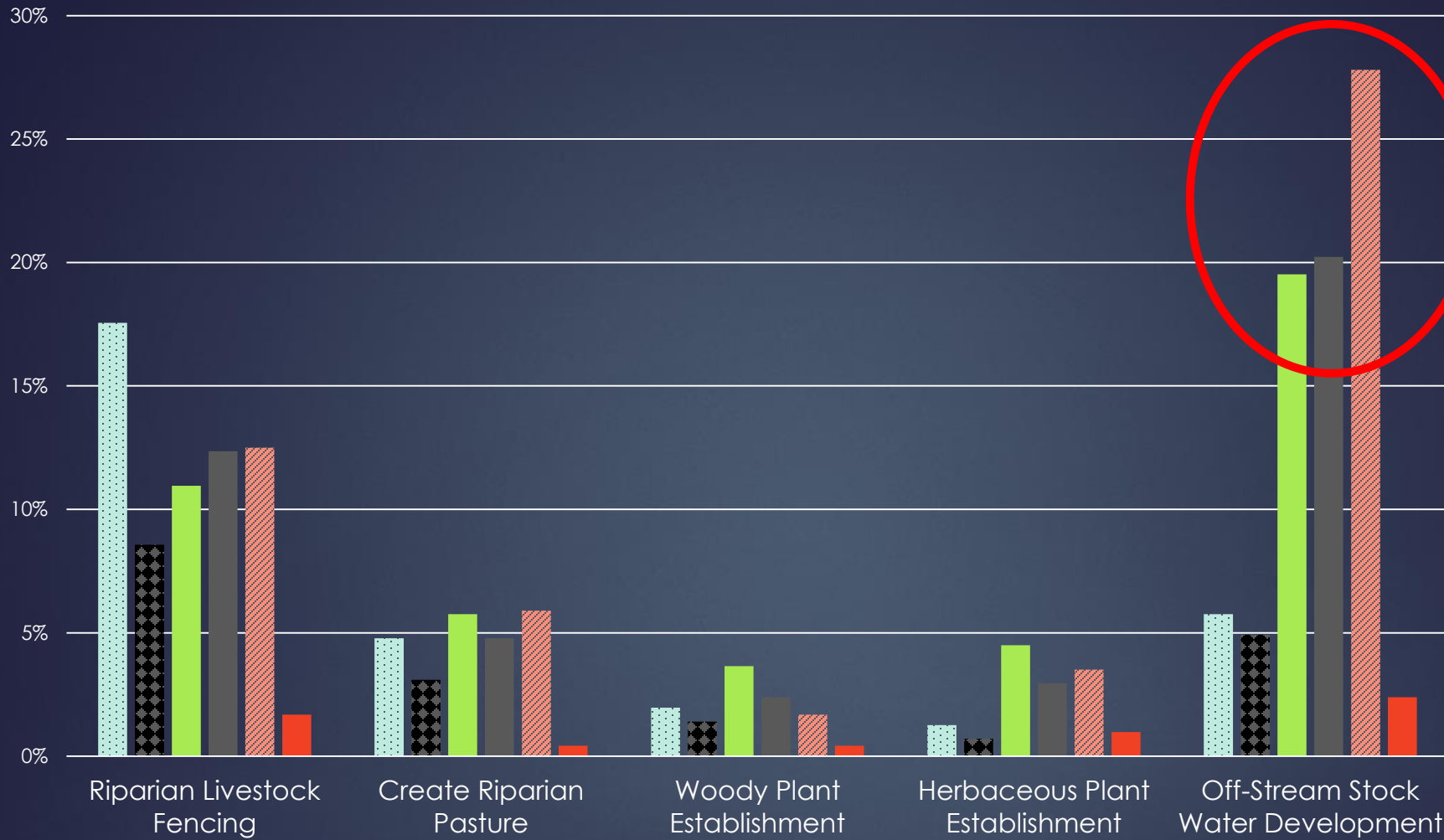
Average Acres Treated



% Ranchers doing each practice by reason



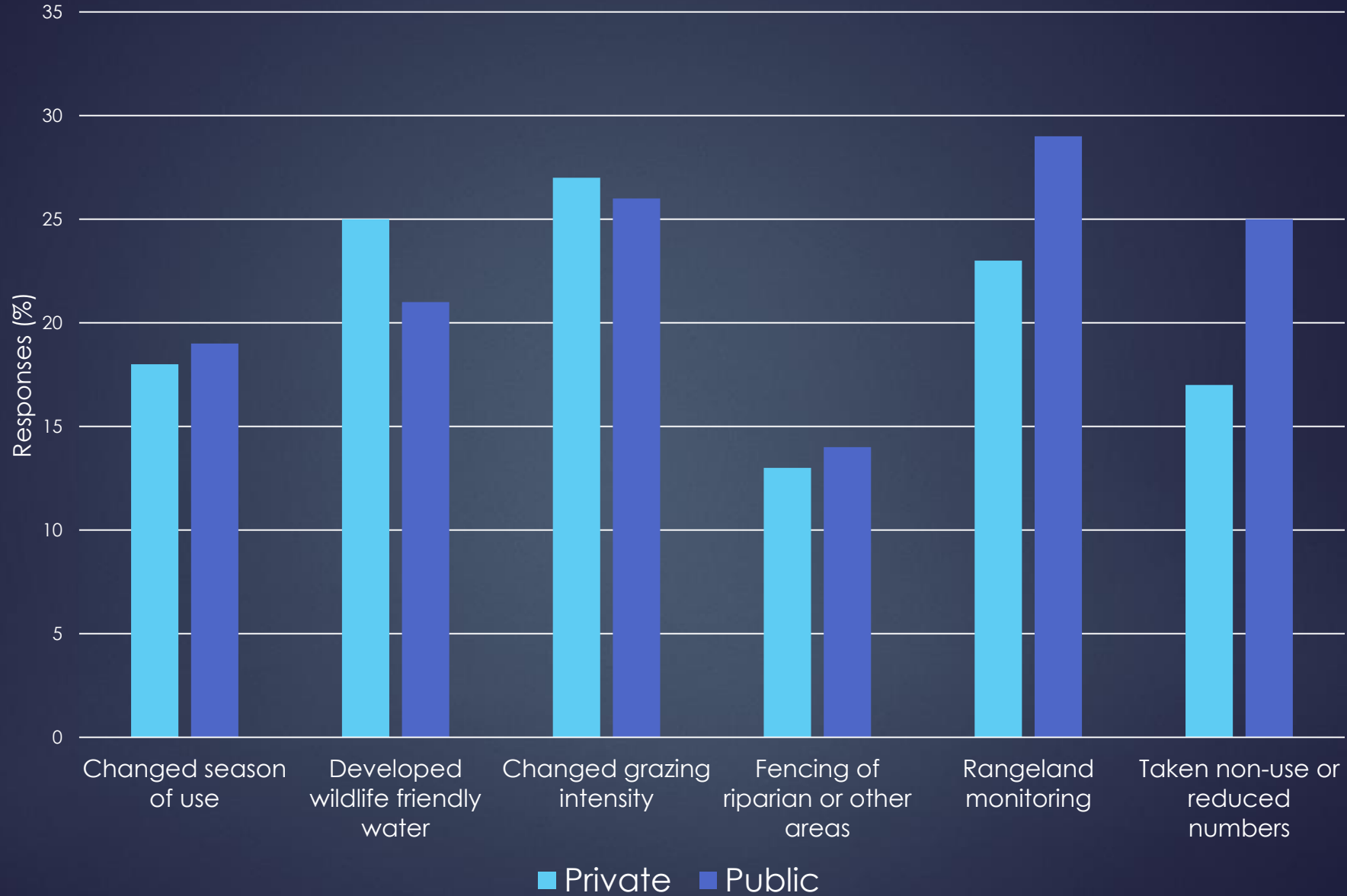
% Ranchers doing each practice by reason



Off-Stream Water for Livestock Distribution, Water Quality, and Wildlife Habitat

- Livestock Exclusion
- Improve Fish Habitat
- Improve Wildlife Habitat
- Improve Water Quality
- Improve Livestock Distribution
- Other

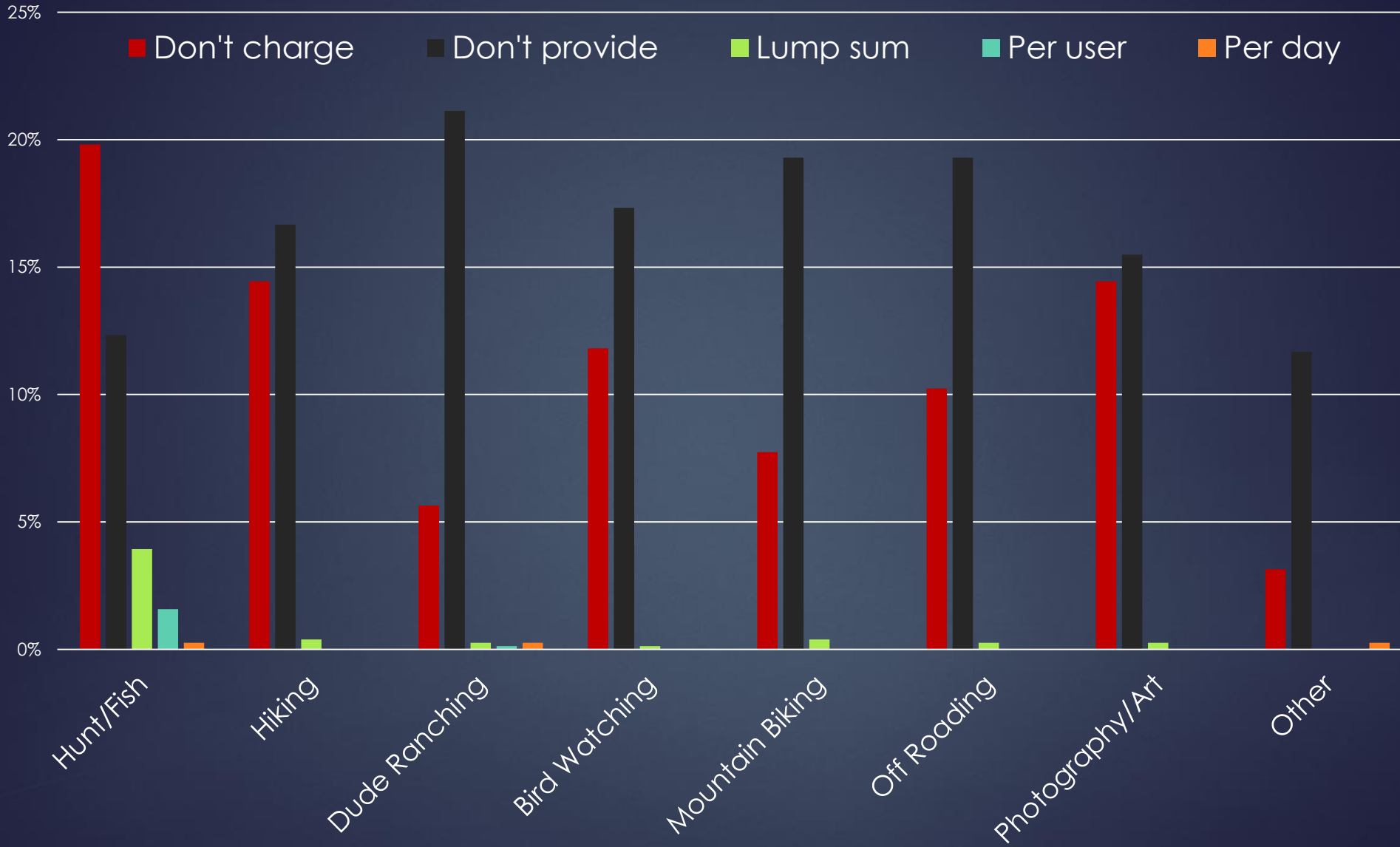
Changes in Last 5 Years



Management Practice Changes

	Private	Public
Wildlife Habitat Improvement (Ac)	2,122	20,596
Riparian Area Habitat (Mi)	101	10
Fish Production Stream (Mi)	11	11

Ranchers Charge by Method on Private Land(N=762)



Recreation on Ranches

	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

Conclusions

- ▶ Ranchers in the region are providing a variety of ecosystem services
- ▶ Both public and private lands
- ▶ Making management changes to enhance
- ▶ Don't always charge