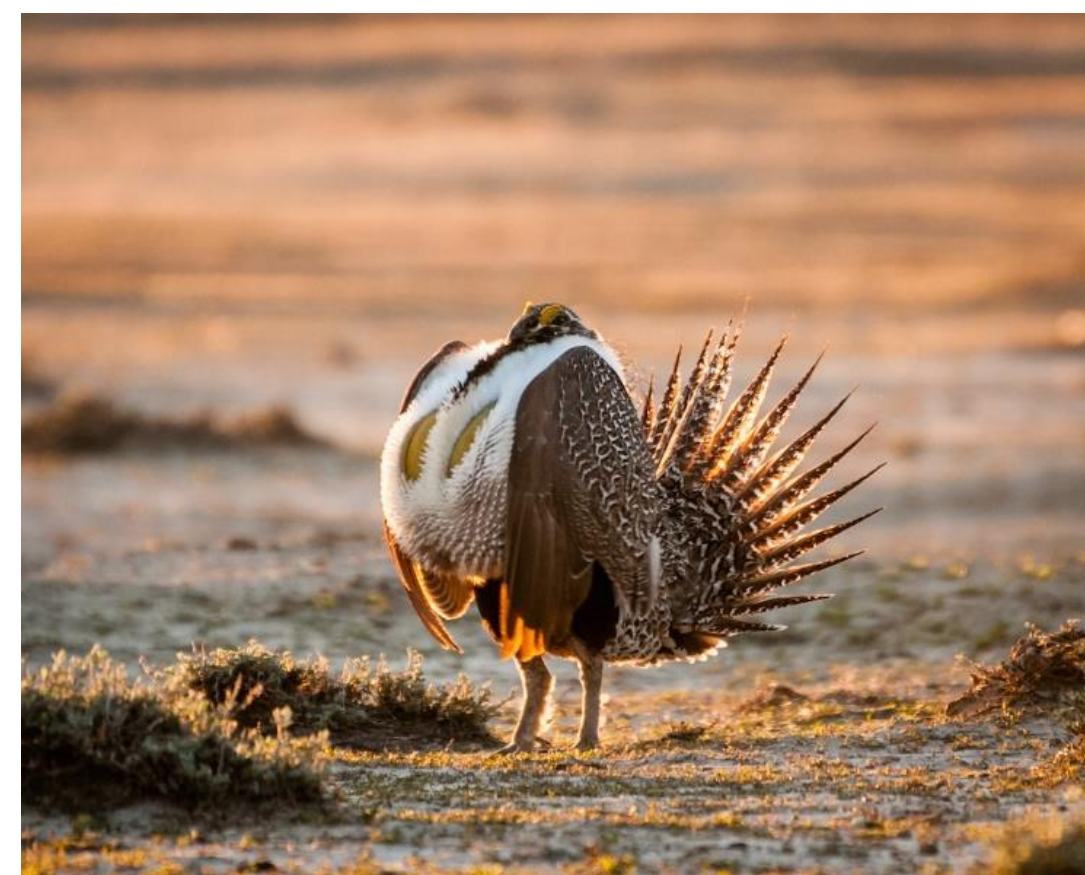


Background

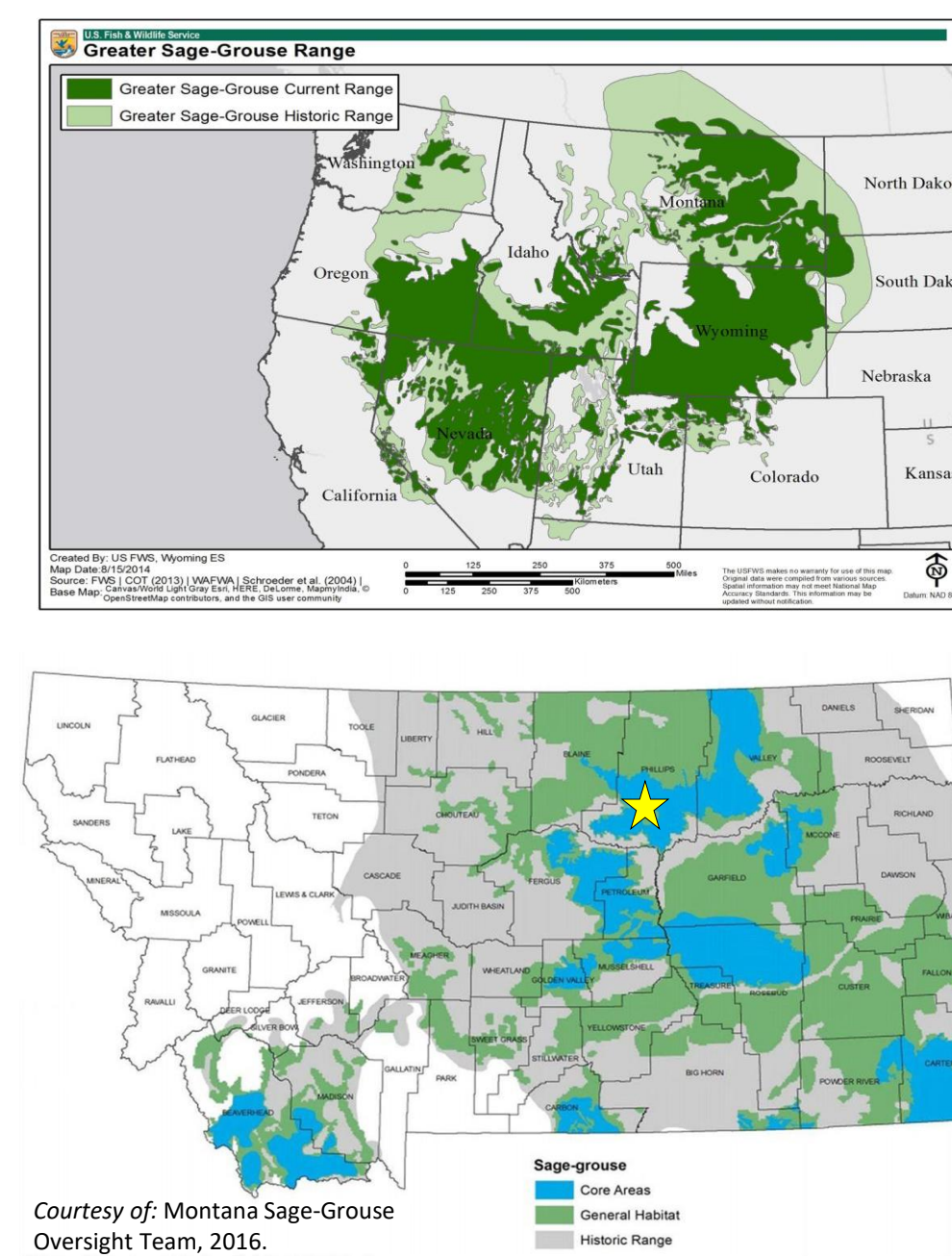
Decline of the Greater Sage-Grouse



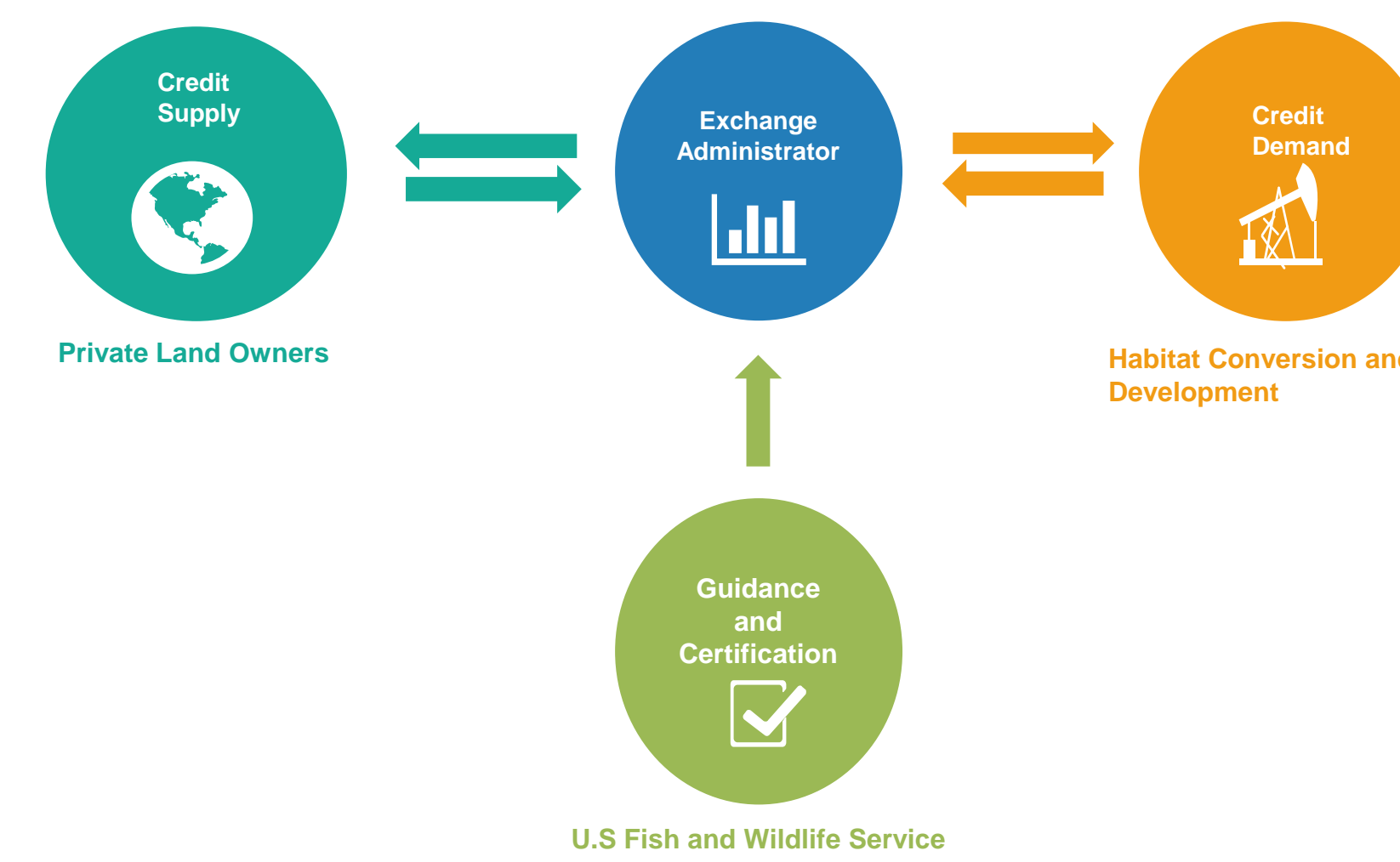
- Greater Sage-grouse (*Centrocercus urophasianus*) are large, ground-dwelling birds that reside in large expanses of sagebrush habitat in western North America and are an indicator of the overall health of these ecosystems
- Habitat has been reduced and fragmented due to land use changes including agriculture, energy development, transportation infrastructure, and residential development.
- Range currently encompasses 56% of its historical extent

Montana Conservation Strategy

- In 2015 the US Fish and Wildlife Service declined to list Sage-grouse as endangered due to ongoing state conservation actions
- Unlike other western states, the majority of Sage-grouse habitat in Montana is located on private property, making it crucial to engage private landowners in conservation
- Montana implemented a "core area" strategy which designates special requirements on development in critical habitat that includes 76% of Montana's Sage-grouse population
- Development within core areas will be required to assess, avoid, minimize, and offset any harm to Sage-grouse habitat
- One way to offset impacts is through the purchase of habitat mitigation "credits"
- Credits can be granted to private landowners who agree to legally protect sage-grouse habitat on their property



1. Conservation Banking



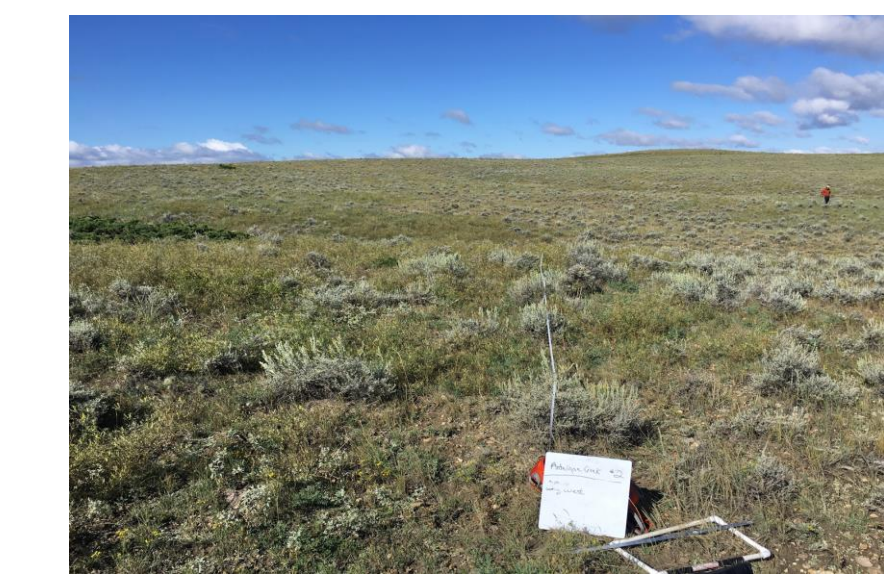
Banks encourage habitat conservation on private property by turning the presence of an at-risk species into an asset instead of a liability. Landowners that permanently protect high quality habitat can sell "credits" to developers who are required to offset their impacts in core habitat. Developers benefit from the one-time purchase of credits, instead of having to purchase land, certify credits, and perpetually manage properties on their own.

- Key Results of Literature Review on Effective Banks:**
- Use a consistent mechanism for quantifying protected or restored habitat into tradable credits
 - Provide an added benefit to the species
 - Ensure long-term protection and management
 - Can recoup initial investment and cover operating costs in perpetuity

2. Habitat Quantification

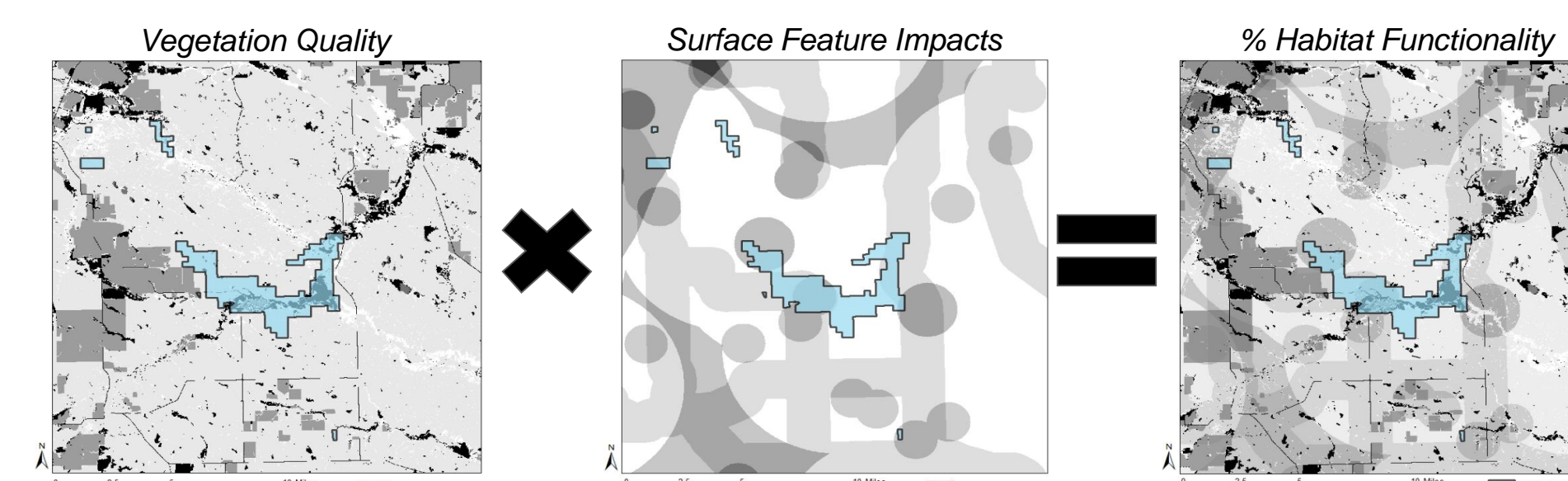
Vegetation

- Successful habitat quantification measures the quality of grouse habitat in specific categories
- Preferred breeding habitat attributes:
 - Sagebrush Cover: 15-45%
 - Sagebrush Height: 20-45 cm
 - Grass height: >12 cm
 - Grass cover: >9%
 - Forb cover: >5%
 - Distance to closest lek: 0-6 km

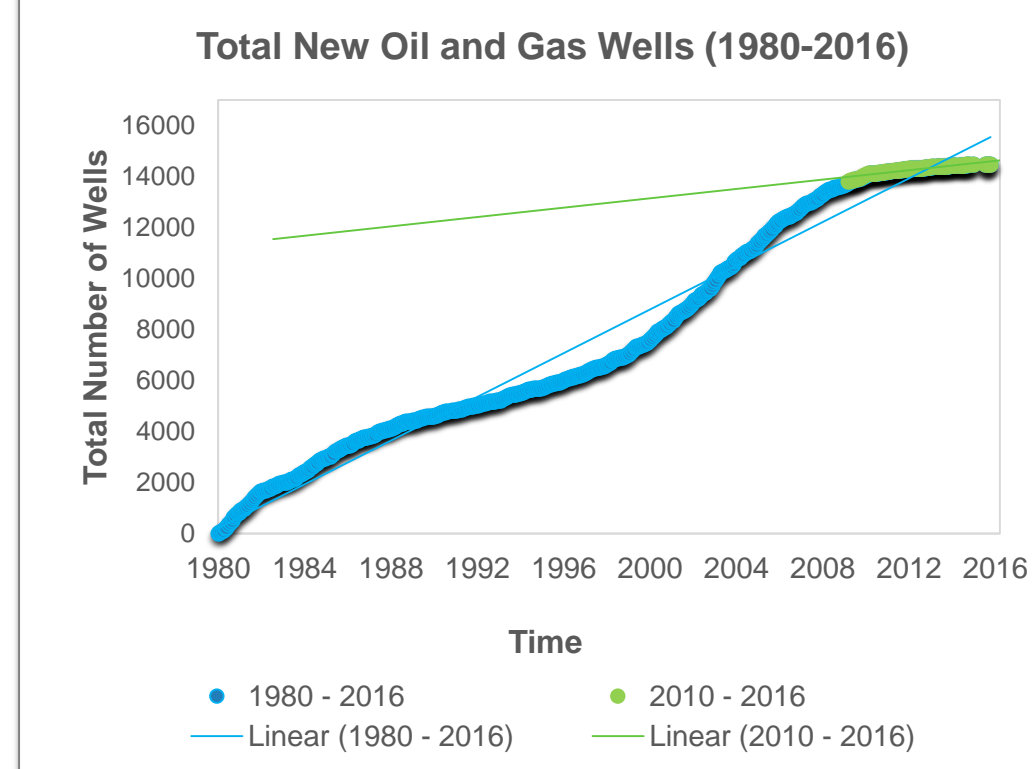


Threats

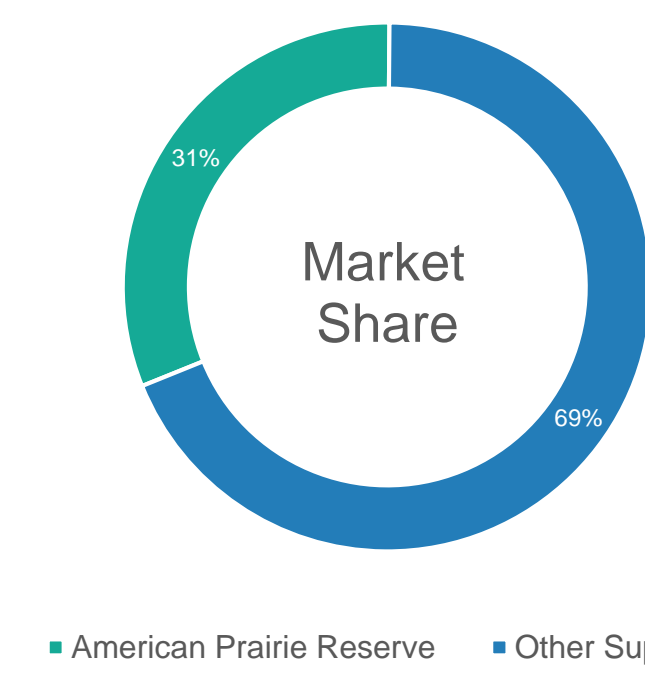
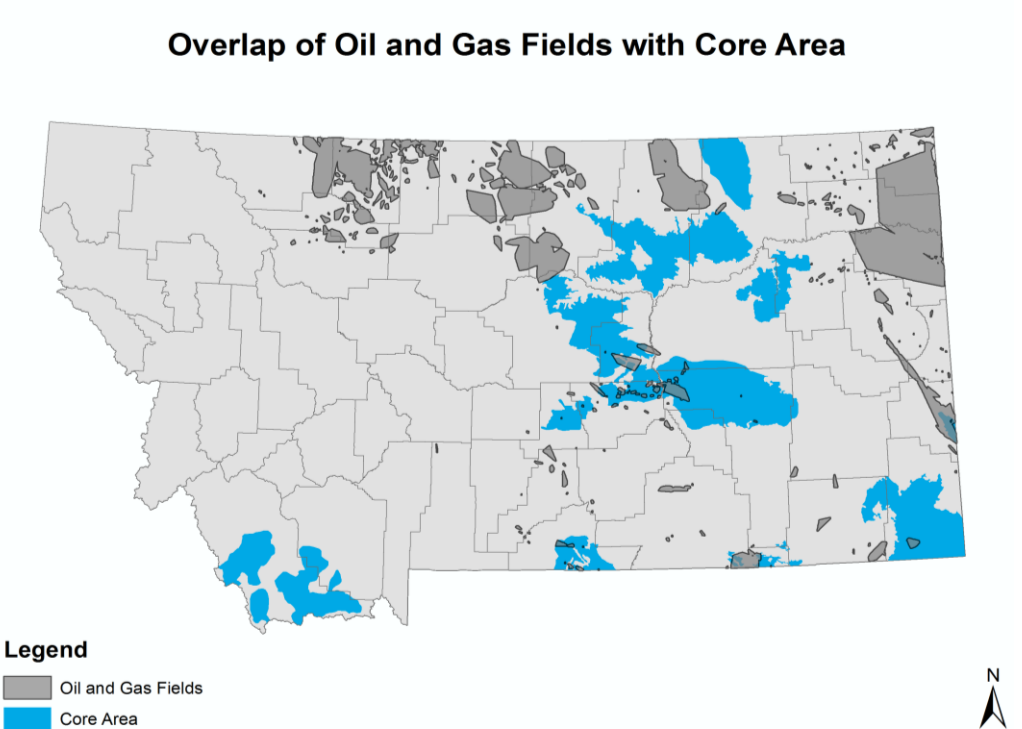
- Human structures create artificial perches for avian predators such as ravens, hawks, and eagles
- Noise from road traffic, construction, and energy development reduces lek attendance
- Direct mortality from fence and vehicle collisions



3. Market Analysis



Statewide Demand:
16,615 Credits Per Year

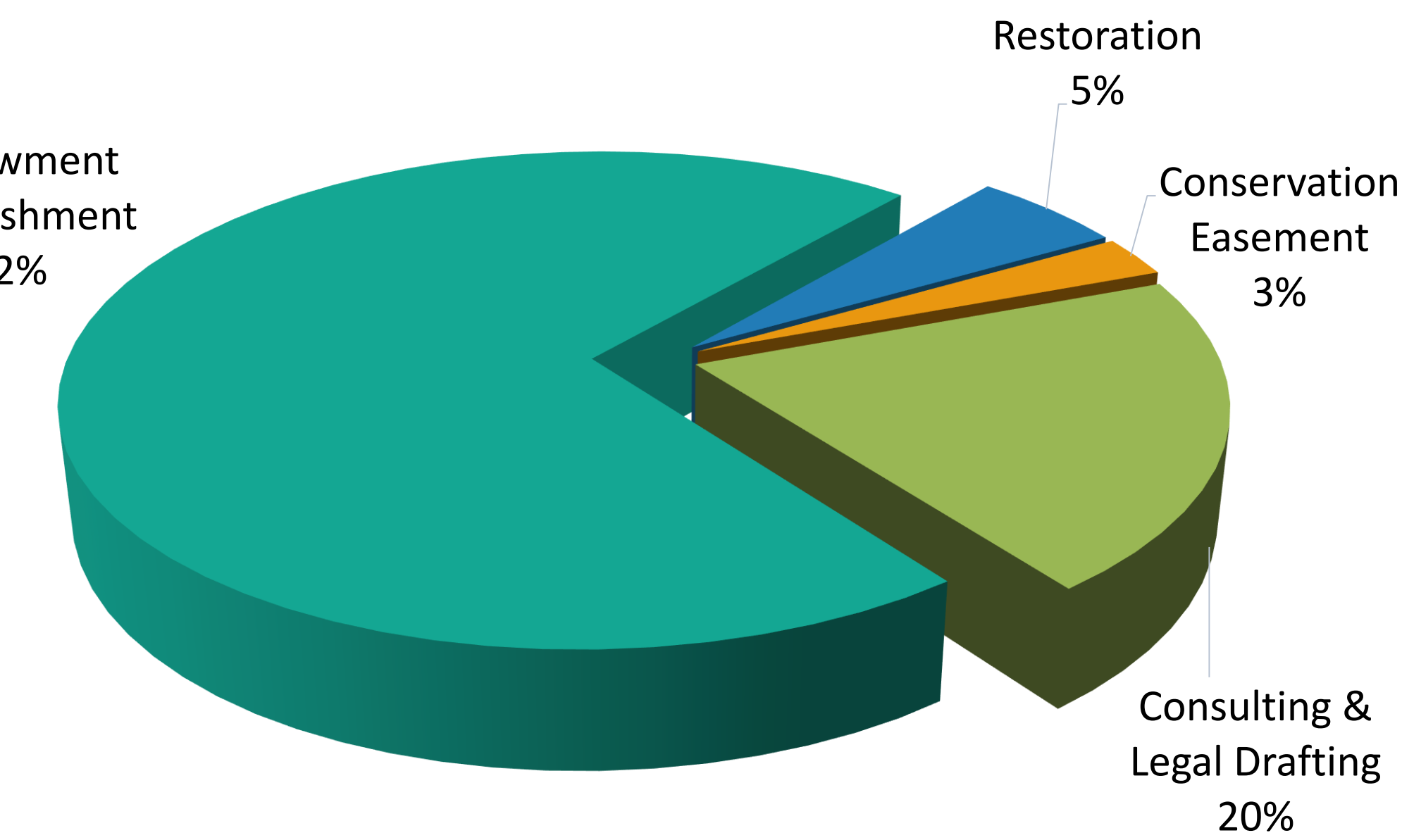


Clients Market Share:
31% of State Credit Supply

4. Financial Assessment

Direct Costs: \$1,017,292

- Annual Operating Costs:**
- Livestock Management
 - Fire Management
 - Noxious Weeds Management
 - Predator Management
 - West Nile Virus Prevention
 - Recreation
 - Sage Grouse Lek Counts
 - 5 Year Aerial Lek Surveys
 - Habitat Surveys
 - Annual Reporting



Revenue: \$1,275,522

Profit: \$258,230

Benefit/Cost Ratio: 1.25

All Credits Sold in 2 Years

Summary

- Efficacy of Banks** - Conservation banks can theoretically provide additional benefits to target species due to the permanent protection and management of large expanses of habitat, yet must be carefully regulated and managed
- Habitat Quantification** - Developed a habitat quantification method that translates habitat quality into tradable credits
- Market Assessment** - Projected oil and gas development will provide sufficient demand for credits in the state
- Financial Analysis**
 - Financially profitable in 2 years
 - Estimated credit price of \$236
 - Large upfront investment of roughly \$1 million, mainly from the establishment of an endowment fund to cover annual operating costs

Should the American Prairie Reserve Establish a Conservation Bank?

Objectives

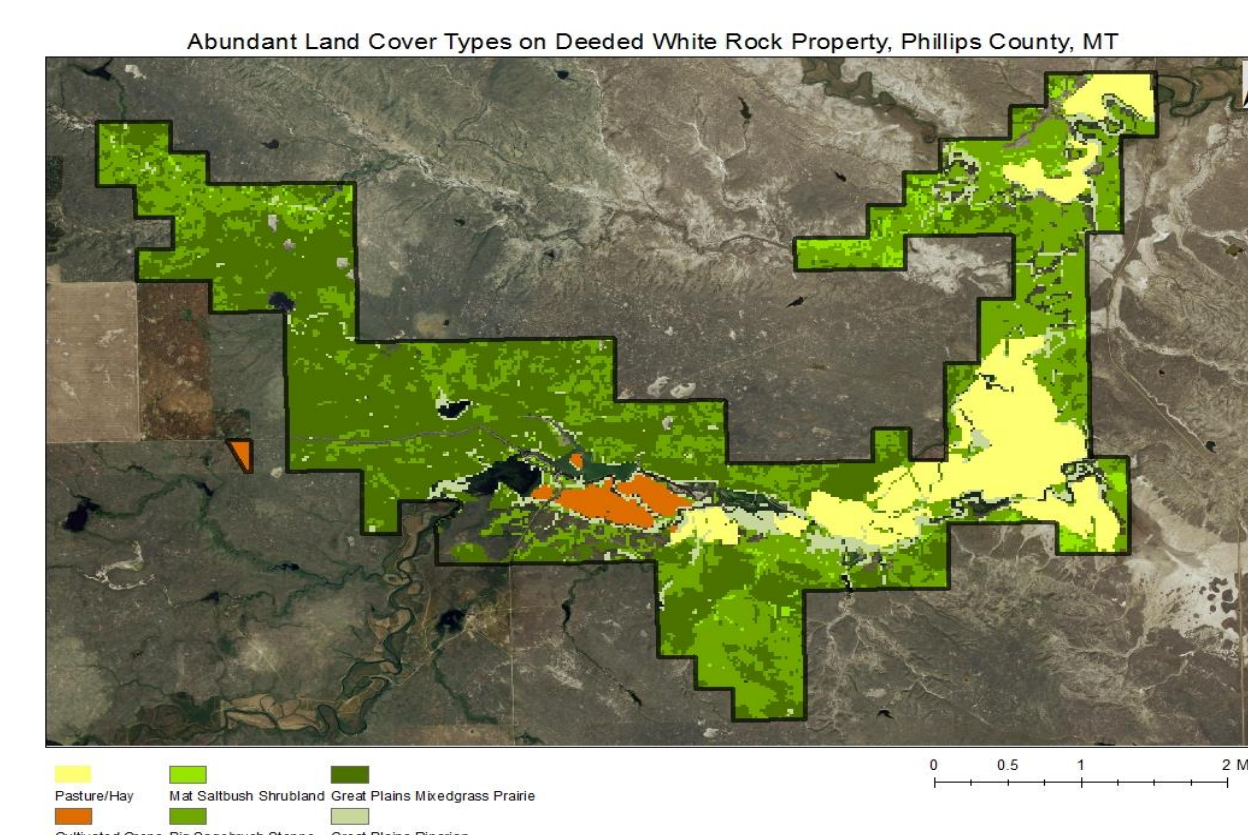
- Assess ability of conservation banks to benefit target species
- Translate habitat quality into currency
- Estimate market for credits
- Conduct financial assessment

Methods

- Conduct literature review
- Develop a tool to consistently quantify habitat for Greater Sage-grouse
- Project on-site supply of credits, statewide market share, and annual credit demand from oil and gas development
- Estimate cost of creating and managing a bank, expected annual returns, and profitability

Case Study: White Rock

- White Rock, spanning 8,803 acres, is one of American Prairie Reserve's properties in Phillips County, MT
- It currently has both high quality grouse habitat (green) as well as retired crop fields that could be targeted for restoration (yellow)
- There are 3 breeding areas (leks) on-site, and 10 within 4 miles
- Our habitat quantification method estimated a functionality of 63.3%
- 8,803 acres X 63.3% = 5,573 functional acres (available credits)**



Recommendations

We recommend that APR participate in a conservation bank **IF**:

- Montana regulatory framework for mitigation meets identified efficacy requirements
- Quantification method accurately captures habitat values
- There is no alternate, more beneficial use of client funds
- Ensures additional benefits to Greater Sage-grouse

Acknowledgements

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Montana Executive Order 12-2015. https://governor.mt.gov/Portals/16/docs/2015EOs/EO_12_2015_Sage_Grouse.pdf
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