Update on the Colockum Elk Herd and Colockum Roads Effects Modeling

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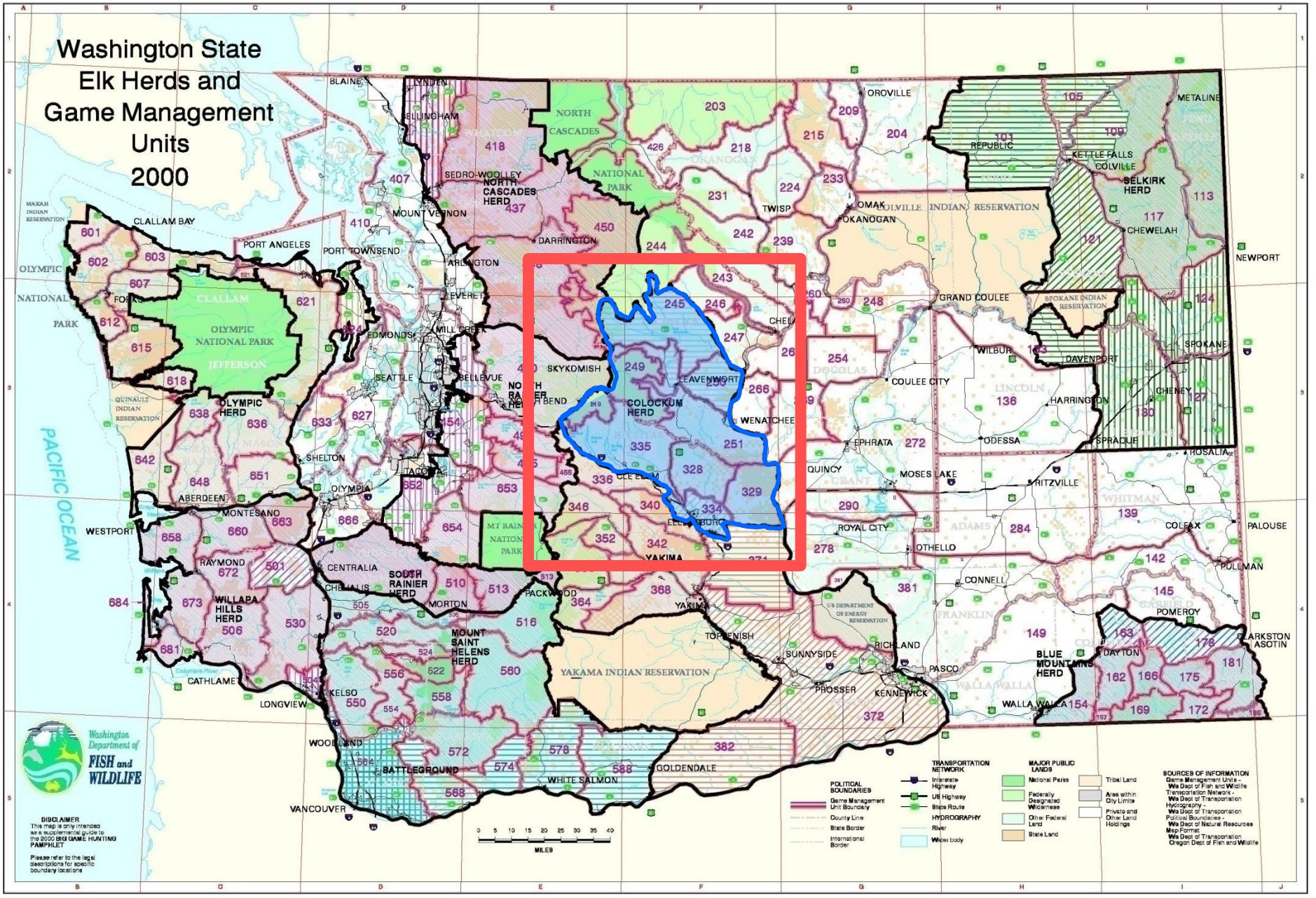
Presentation Objectives

- Review Colockum elk herd management basics
- Summarize recent efforts to improve Colockum elk herd management
- Identify ongoing management challenges
- Present a Colockum roads modeling exercise


Washington State
Elk Herds and
Game Management
Units
2000
COLOCKUM HERD
OLYMPIC HERD
NORTH CASCADES HERD
SOUTH RAINIER HERD
MOUNT SAINT HELENS HERD
WILLAPA HILLS HERD
SELKIRK HERD
BLUE MOUNTAINS HERD
YAKAMA INDIAN RESERVATION
OLYMPIC NATIONAL PARK
NORTH CASCADES NATIONAL PARK
PACIFIC OCEAN
Washington Department of FISH and WILDLIFE
DISCLAIMER
This map is only intended as a supplemental guide to the 2000 BIG GAME HUNTING PAMPHLET
Please refer to the legal descriptions for specific boundary locations
POLITICAL BOUNDARIES
Game Management Unit Boundary
County Line
State Border
International Border
TRANSPORTATION NETWORK
Interstate Highway
US Highway
State Route
HYDROGRAPHY
River
Water body
MAJOR PUBLIC LANDS
National Parks
Federally Designated Wilderness
Other Federal Land
State Land
Tribal Land
Area within City Limits
Private and Other Land Holdings
SOURCES OF INFORMATION
Game Management Units - Wa Dept of Fish and Wildlife
Transportation Network - Wa Dept of Transportation
Hydrography - Wa Dept of Transportation
Political Boundaries - Wa Dept of Natural Resources
Map Format - Wa Dept of Transportation
Oregon Dept of Fish and Wildlife
0 5 10 15 20 25 30 35 40
MILES

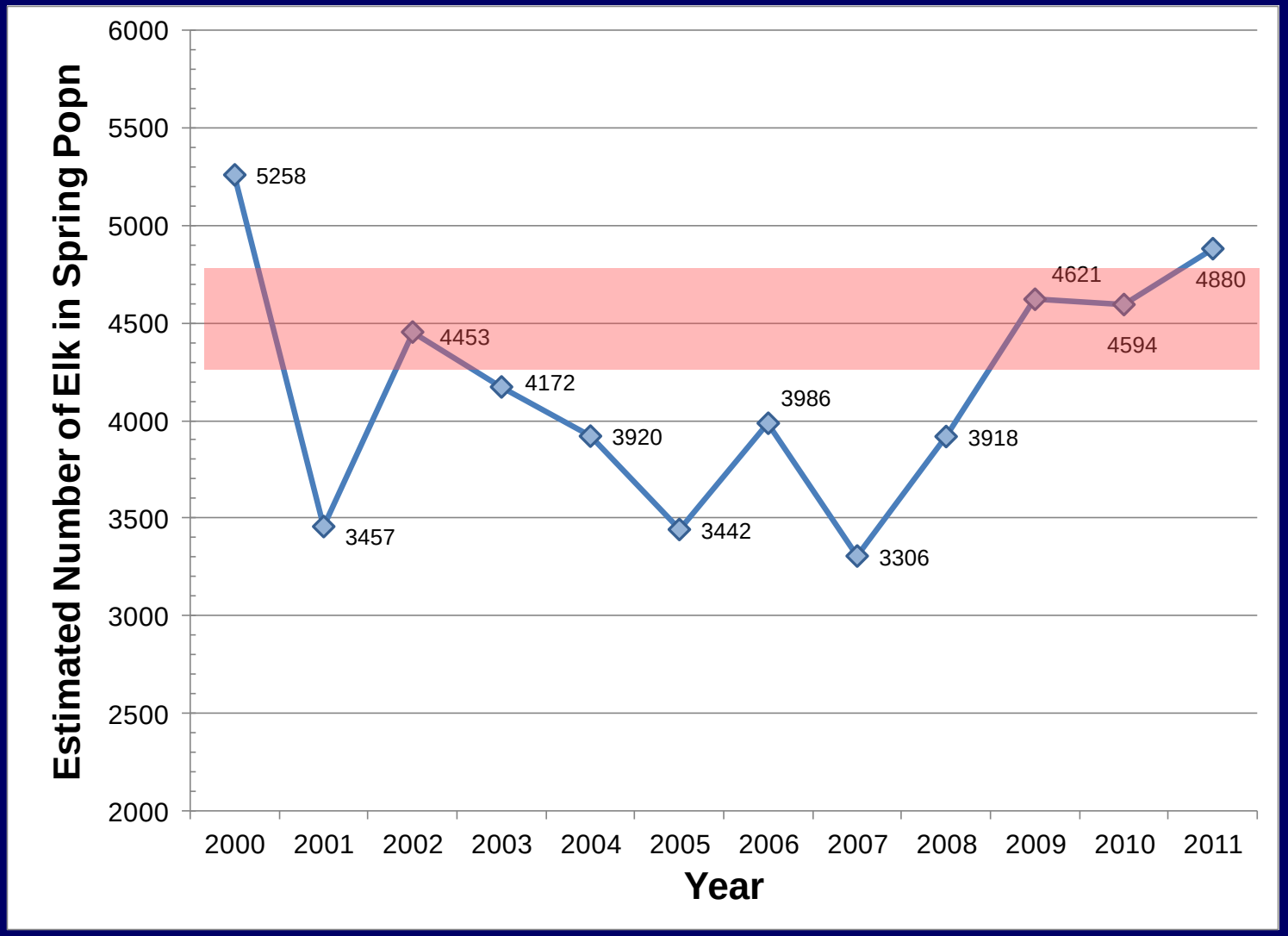
Herd Area Attributes

- Core area is relatively open landscape
- Well-roaded, highly accessible
- Multiple ownerships
- Elk movement scale modest relative to Yakima herd
- Very little wilderness, roadless country in core area
- Supports >40,000 elk hunter days per year

Herd Management Objectives

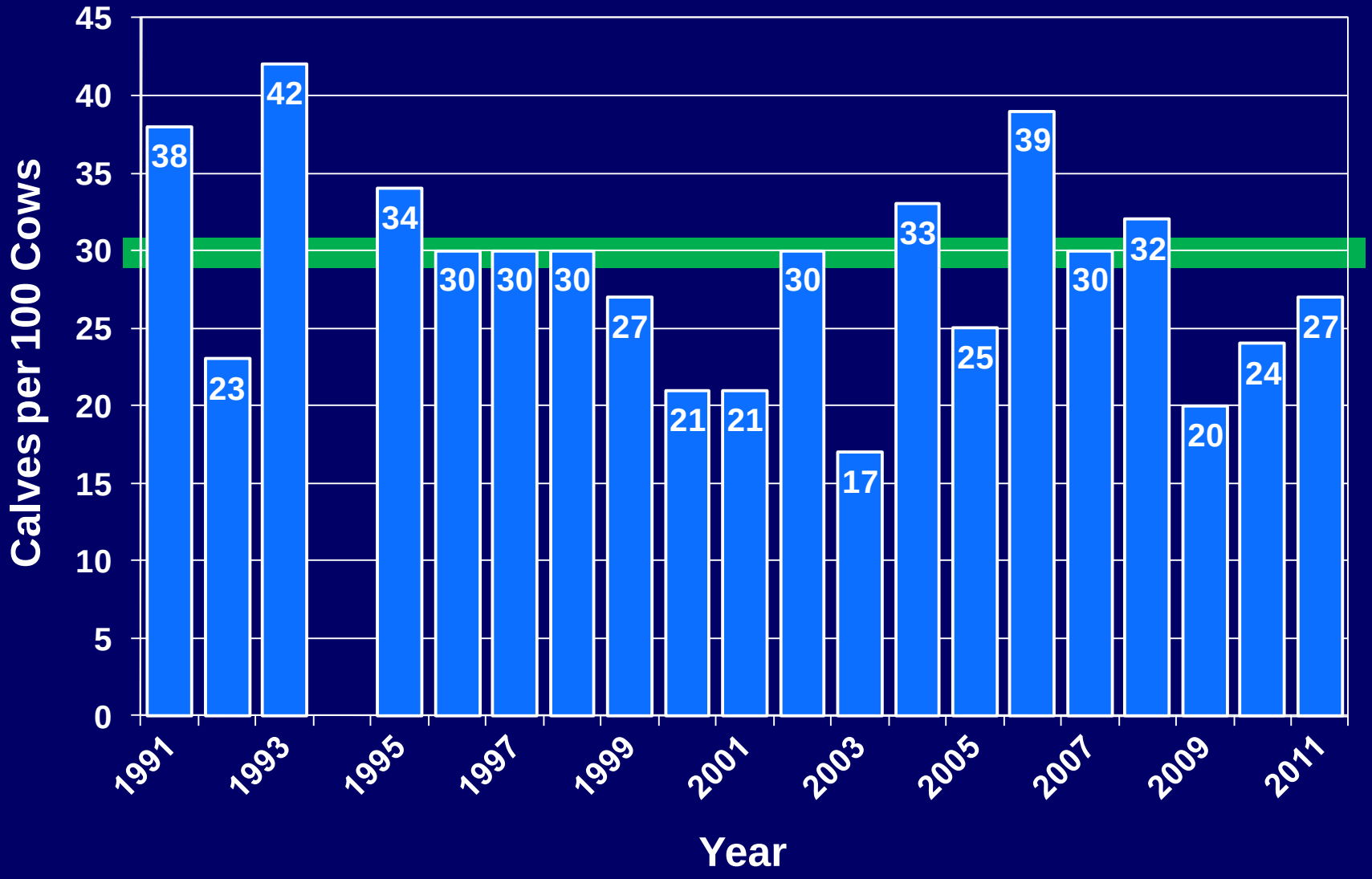
- Total population of 4,500 elk (± 5%) in surveyed portion of winter range (Feb-Mar)
- Post-hunt bull:cow ratio of 12-20 bulls: 100 cows
- Post-hunt, 2-10% of bull subpopulation is mature bulls
- Minimize damage (complaints) caused by elk
- Maintain / improve existing elk habitat on public land

Colockum Herd Size

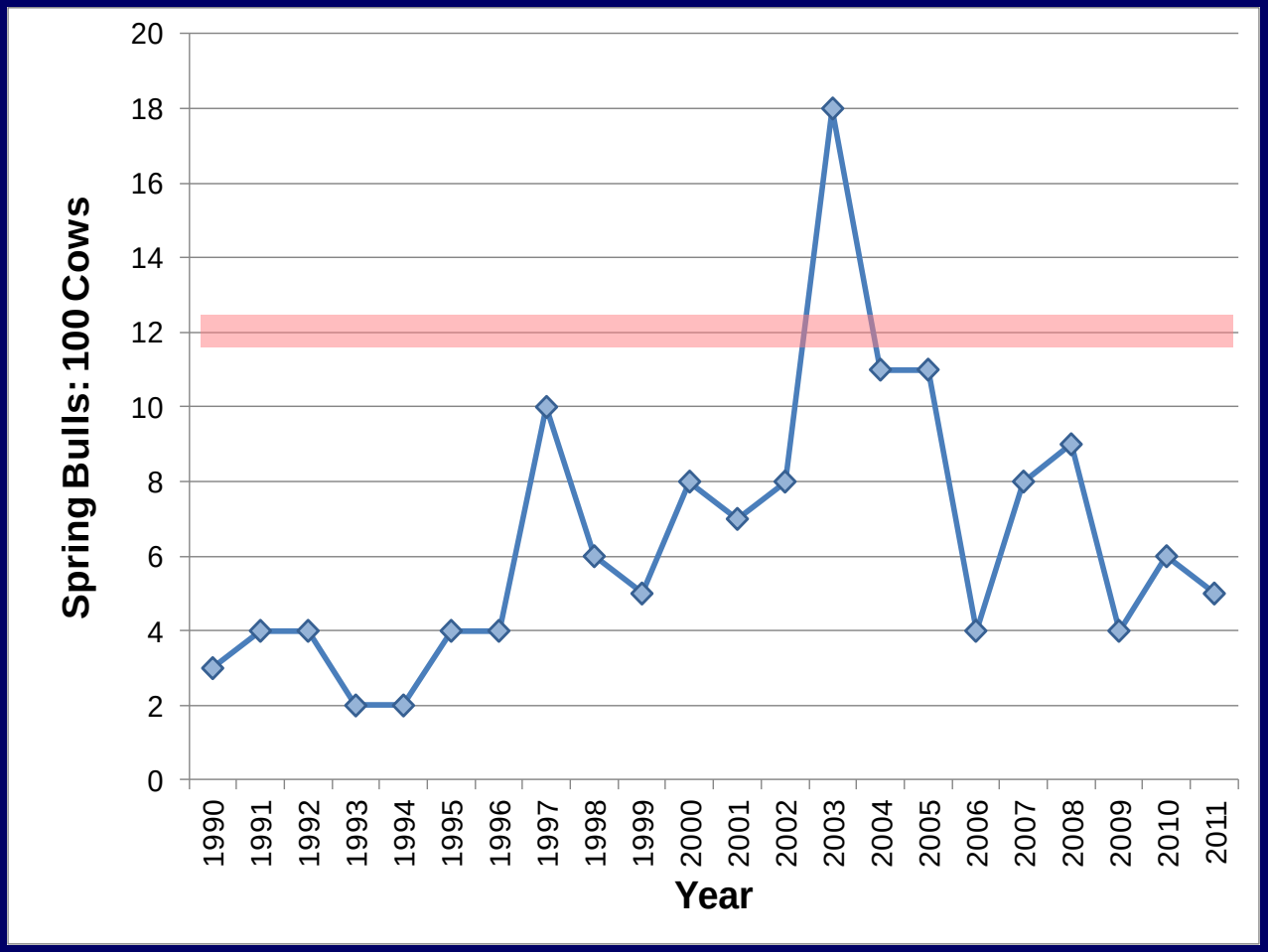


A typical large group of 441 elk

Spring Calf Recruitment



Colockum Bull Management



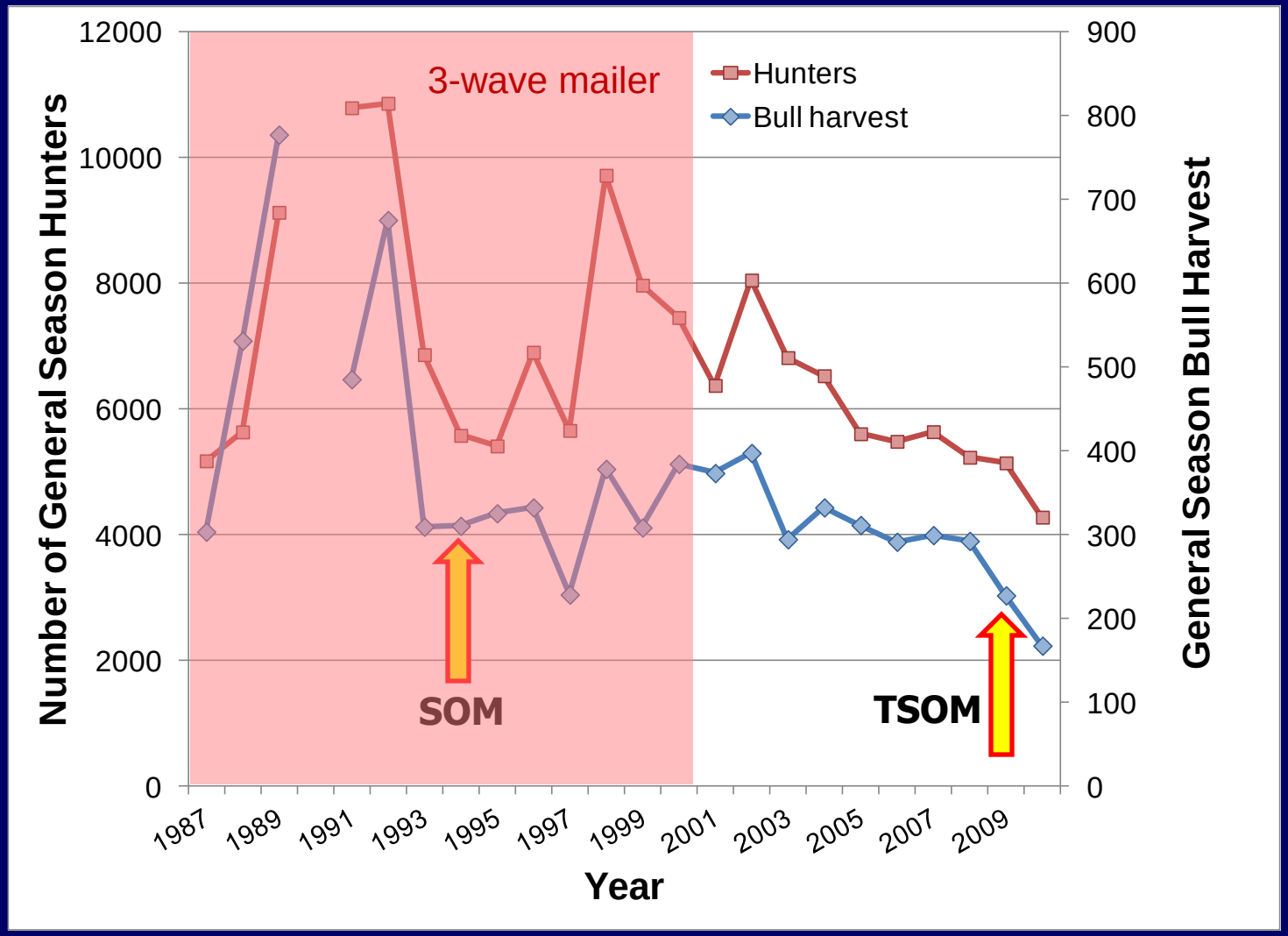
- Ratio chronically below objective
- Bull ratio underestimated?
- Harvest vulnerability
- Tribal kill uncertain
- Limited adult bull hunting by permit

Defining Legal Bulls

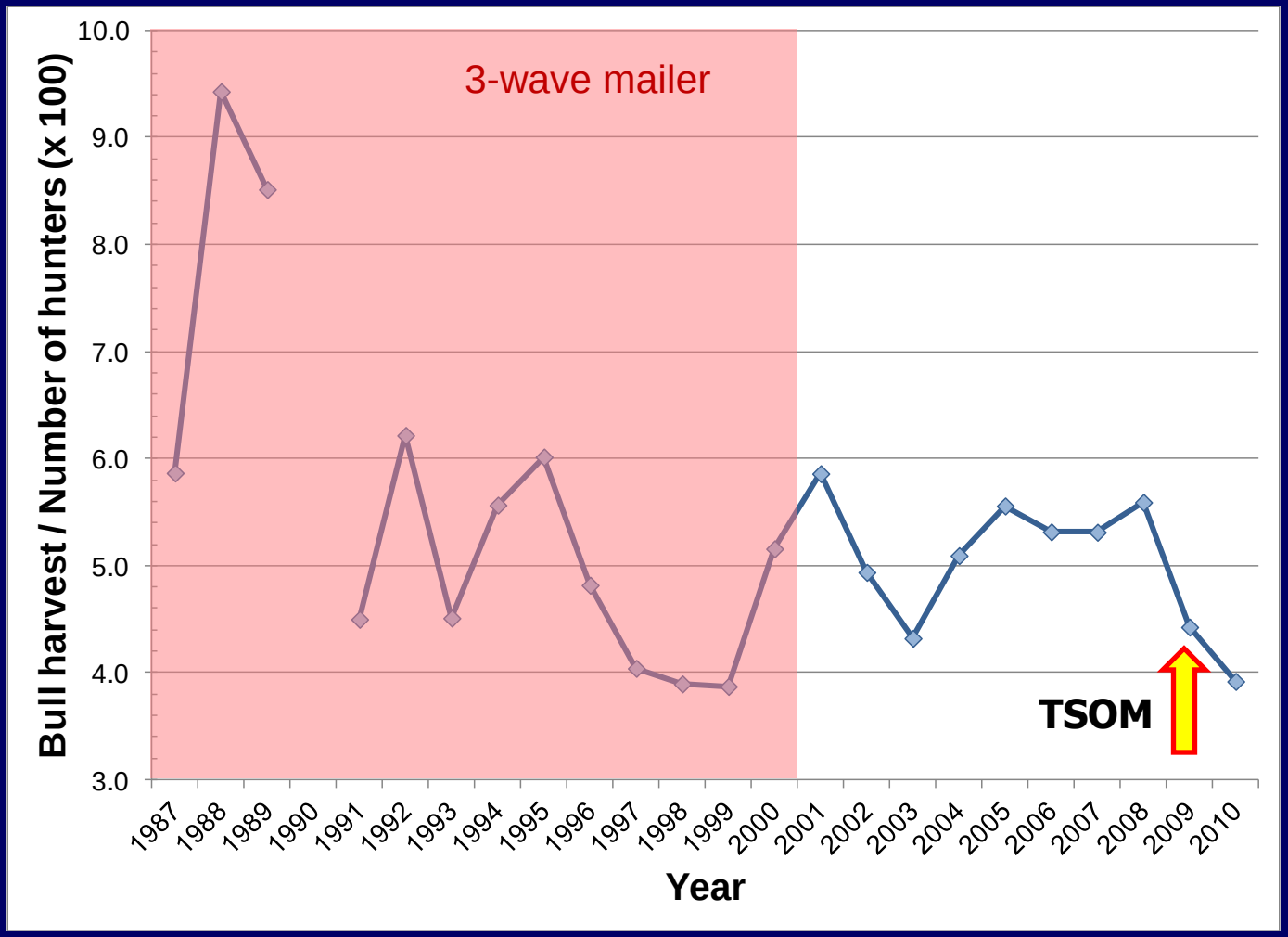
& Managing Vulnerability

1994-2008

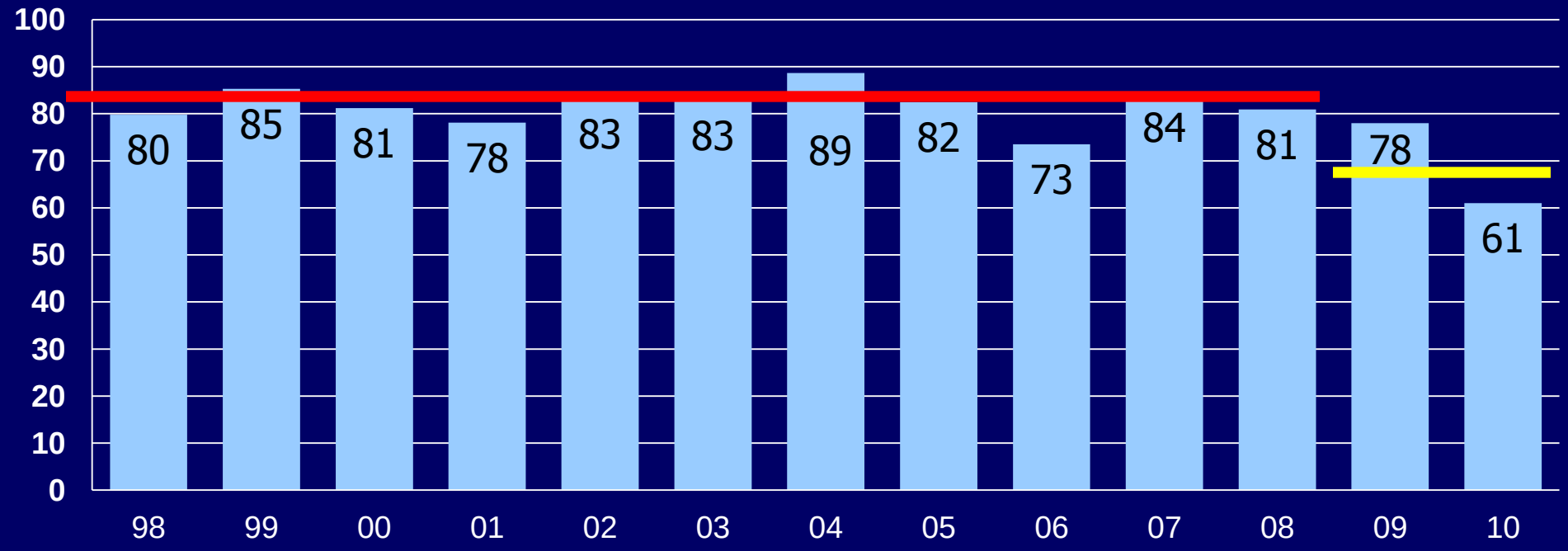
General Season Bull Harvests



General Season Bull Harvests



Percentage of Yearling Bulls Harvested



% of yg bulls harvested under **SOM**

- Colockum ~82%
- Yakima ~70%
- Blue Mtns. ~60%

Elk & Private Lands

- Colockum elk have unconstrained access to private land
- Damage complaints have been chronic, but variable
- Elk damage is a source of conflict and consumes public and private resources (time, $, elk)
- Divergent opinions on contributing factors

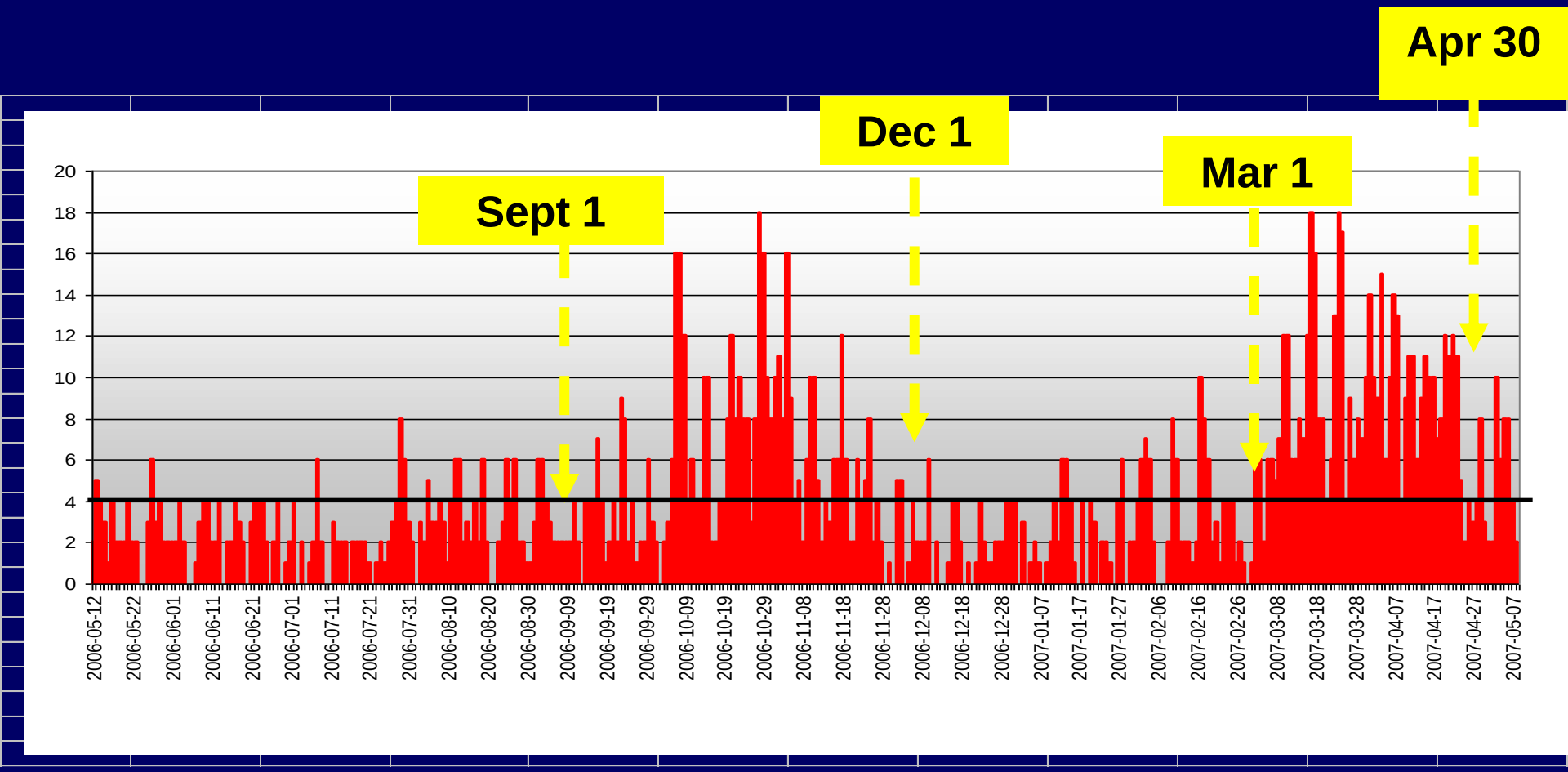
Disturbance as a Contributing Factor?

Elk and Roads Literature

- Well-studied landscape feature relative to effect on elk distribution and habitat use (vulnerability?)
- Results from landscapes where elk are hunted have been generally consistent… when they can, elk will select areas away from open roads (≠ elk are never near roads)
- Elk are predictably "***refuge-seekers***" when faced with high levels of disturbance

Quantifying Vehicle Activity

Example of Access at the "Corrals" Entrance



Colockum Winter Range Access Closure

- Implemented Feb 1, 2008 for experimental trial period
- 40,000 acres in area closed to all motorized vehicles
- Closure period is Feb 1- Apr 30
- Non-motorized access still allowed

CLOSED AREA

THE AREA BEHIND THIS SIGN IS CLOSED TO MOTORIZED ACCESS FEB 1 – APR 30

SEASONAL WINTER RANGE CLOSURE FOR MOTORIZED VEHICLES

ELK WINTER RANGE

0 0.5 1 2 Miles

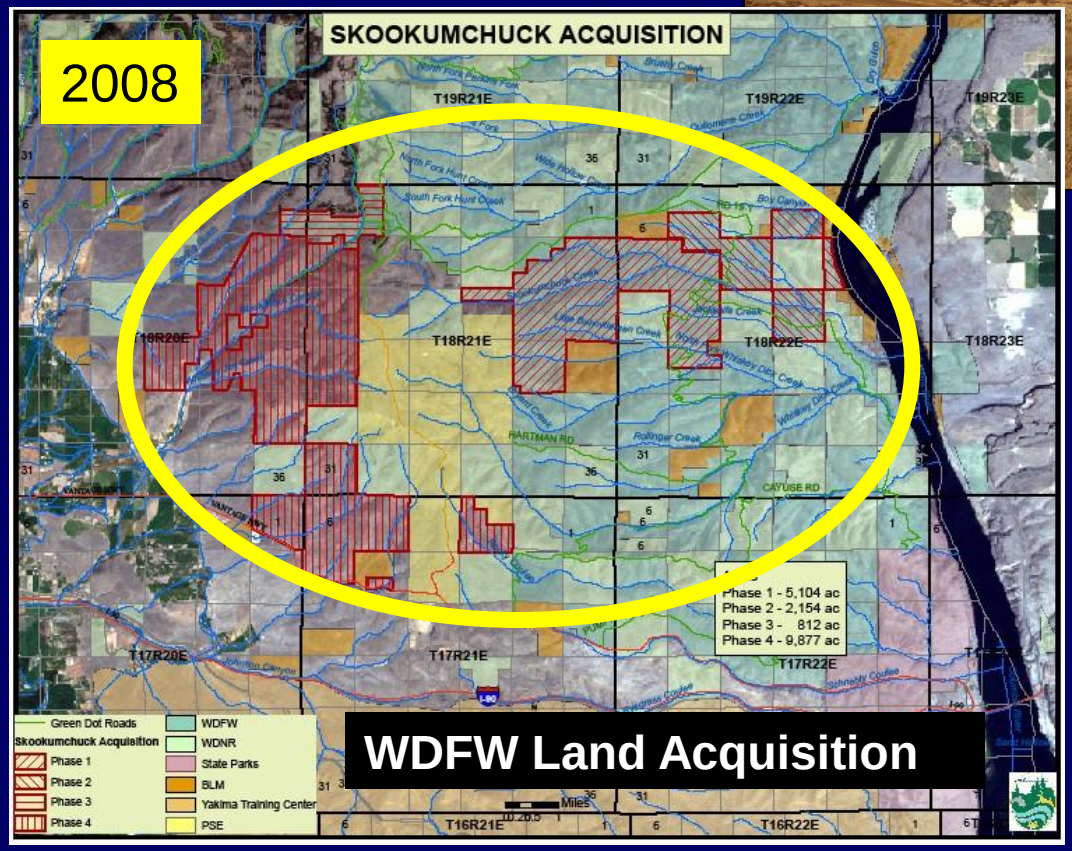
Experimental Winter Range Closure Area Enacted Feb 1, 2008

Major Land Use Changes Potentially Affecting Elk

2006

Wild Horse Wind Farm

2008



WDFW Land Acquisition

CLOSED AREA

AREA CLOSED TO MOTORIZED ACCESS FEB 1 – APR 30

2008

Winter Vehicle Access Closure

CRM

2011

Research

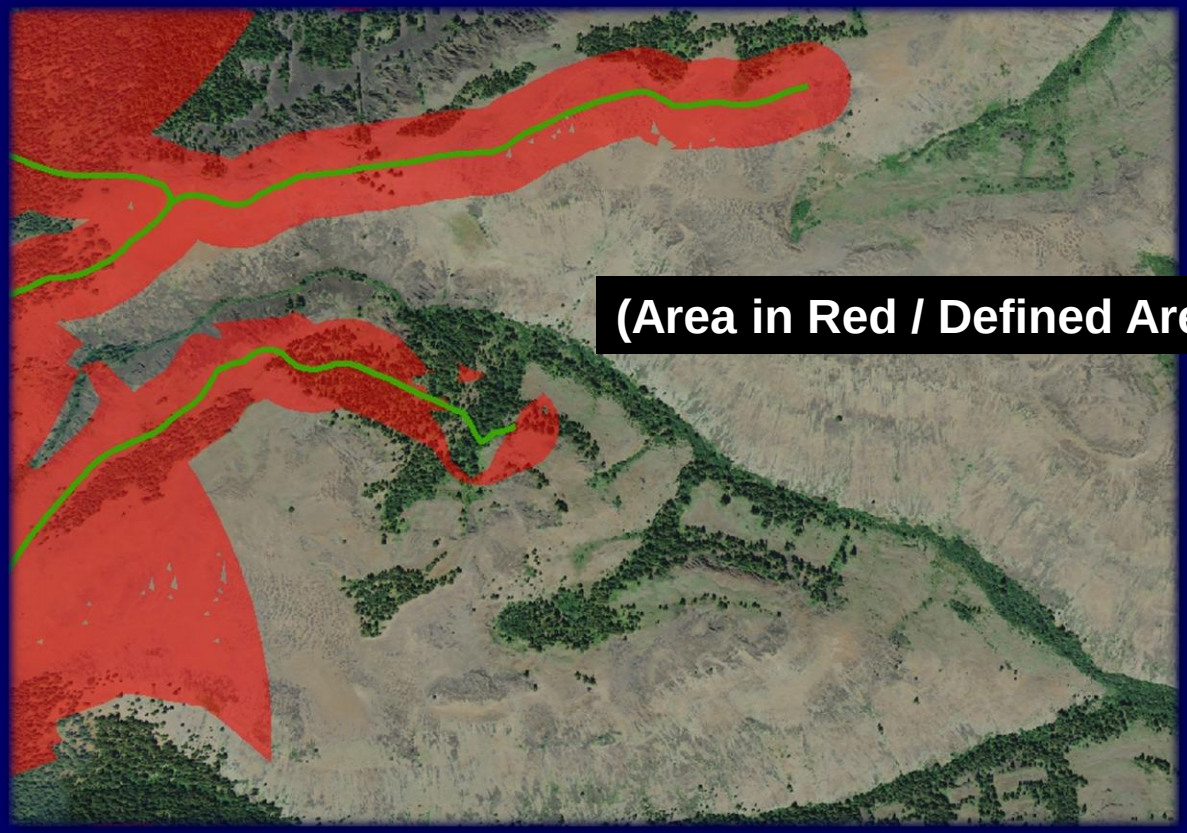
- **Need identified in Herd Plan**
- **Major Objectives**:
  - *Connectivity of core herd and E Kittitas Valley sub-herd*
  - *Effects of winter range closure and wind-farm on elk movements and distribution*
  - *Cow survival and productivity*
  - *Seasonal habitat selection*
- **3-yr study initiated in fall 2008**
- **~50 GPS collared cow elk / yr**
- **Data from 110 collared elk**
- **Currently in final year of initial study phase (≈ 700,000 elk fixes)**

Roads Modeling Objectives

- Develop a model to predict the influence of roads and trails on elk across the landscape
- Model needs to be based on the best available science
- Use the model to evaluate road management alternatives

Basics of the Model

- **Zone of Influence:** percentage of a landscape that is affected by human disturbance for a given species
  - Effects on elk by the human use of the road and trail system across the Colockum Herds range.

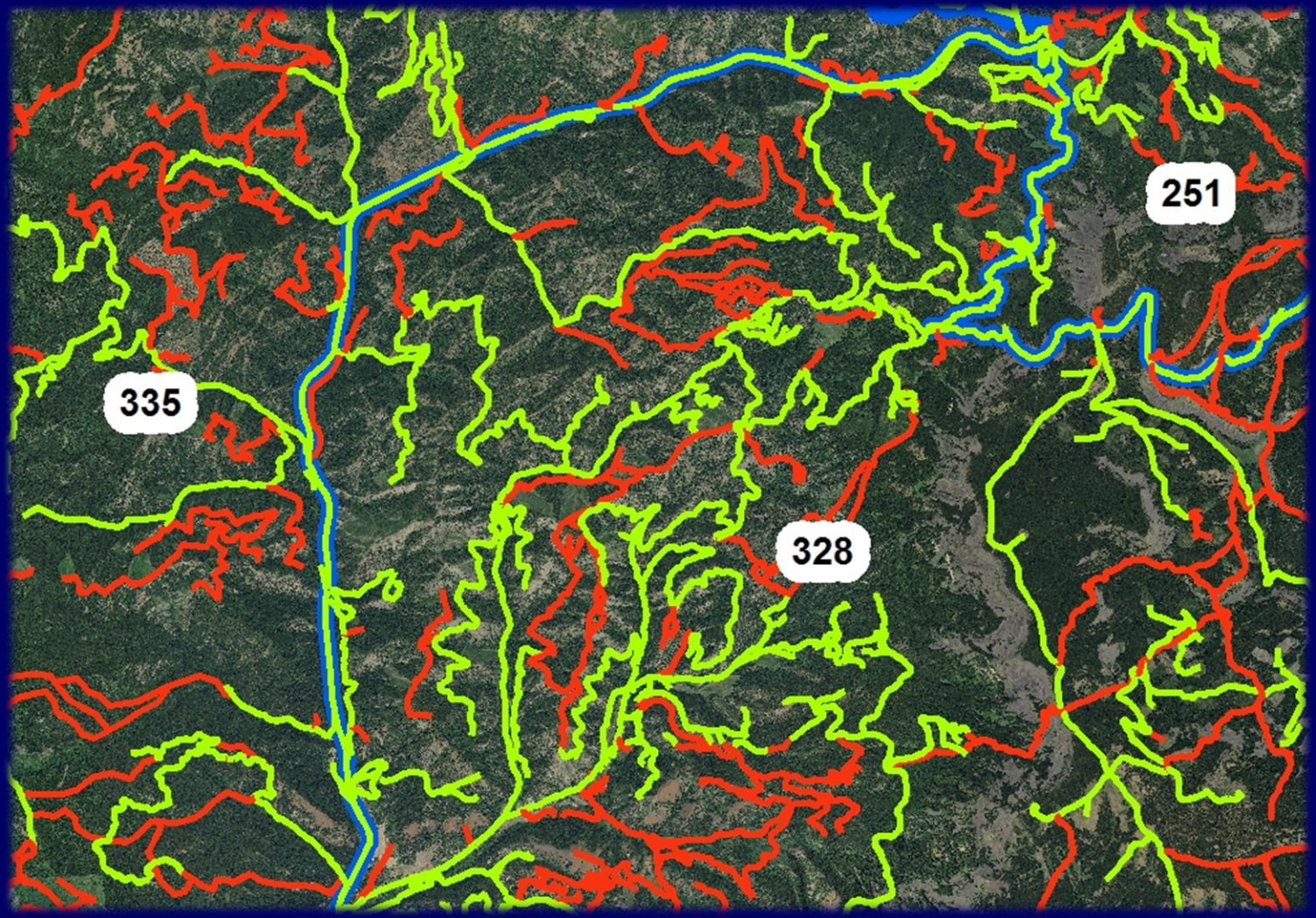


(Area in Red / Defined Area) x 100 = ZI Percentage

Steps in Developing the GIS Road Effects Model

1. Classifying the road layer
2. Visibility and buffers
3. Account for security cover
4. Metric of the model:
   Zone of Influence
5. Model results for the current condition
6. Model results for hypothetical road alternatives

Roads Data



= Open roads = Closed roads

Road Classes…

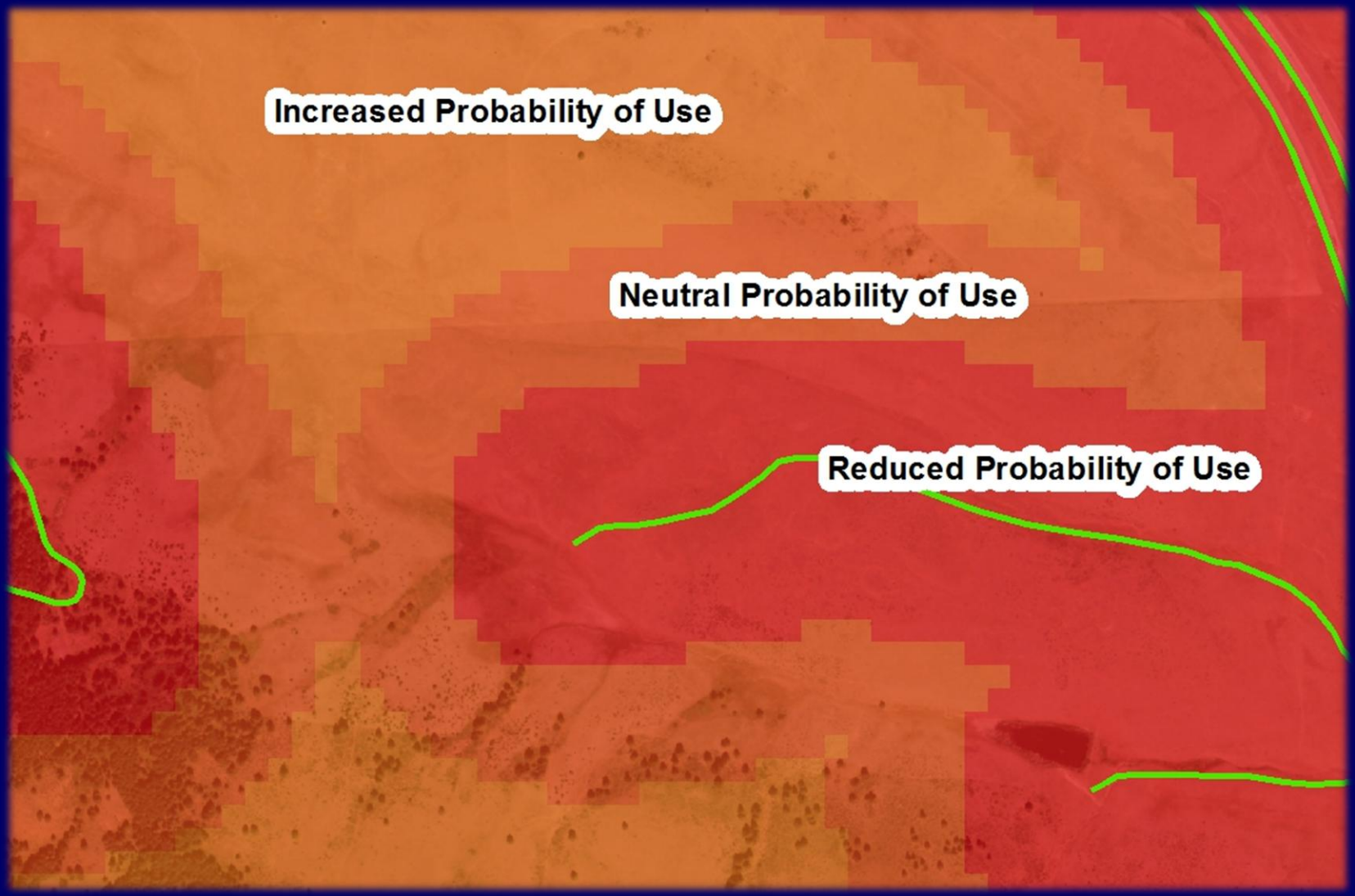
Open to public travel

Closed to public travel

Topographic Effects on Visibility

Topography will **reduce** the **Zone of Influence** and potentially increase the real world accuracy of the model

Defining Buffers



Buffer Distances

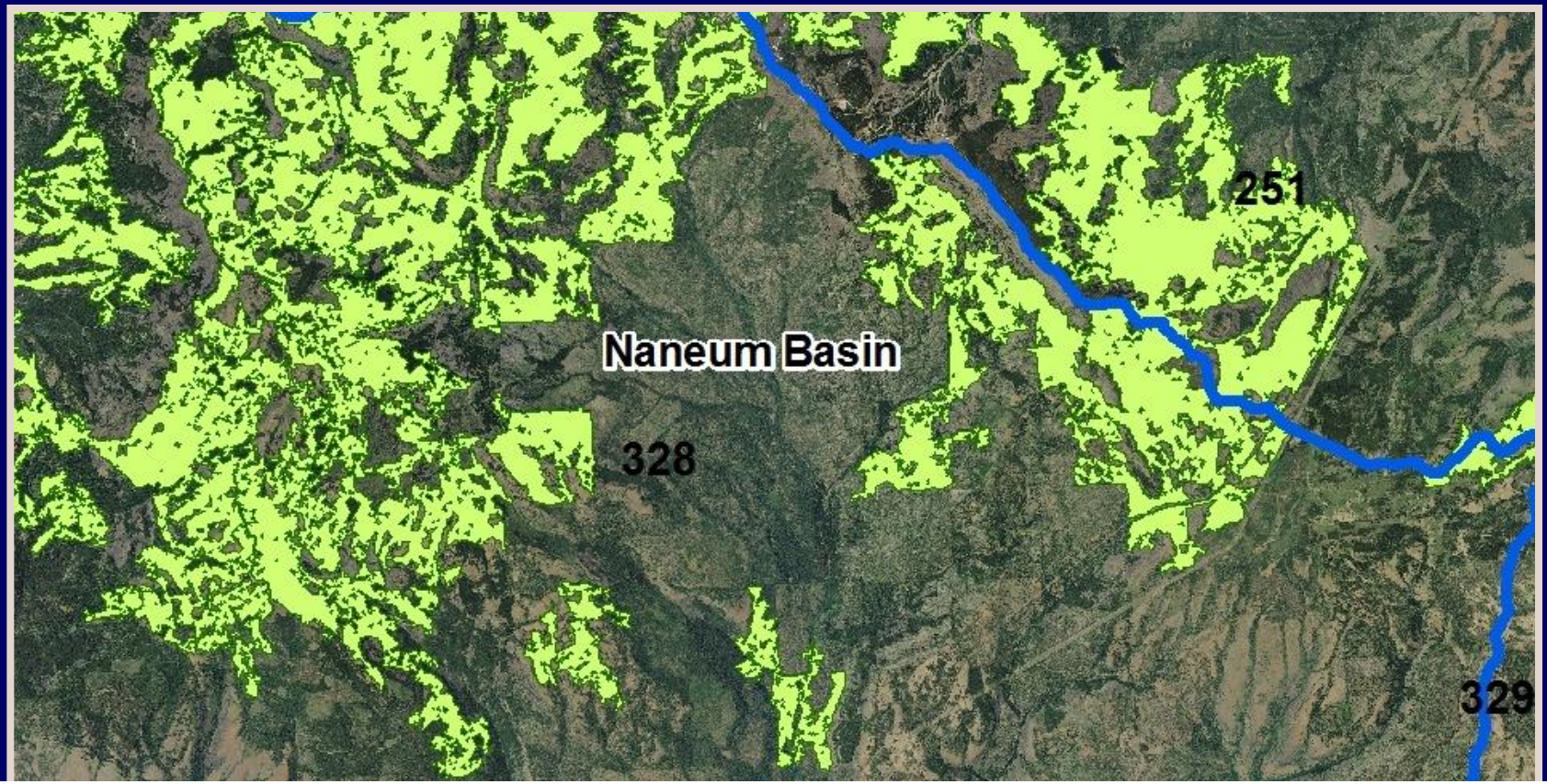
Shrub Steppe Habitats

- Open roads = 2000 m
- Closed roads = 100 m

Forested Habitats

- Open roads = 1000 m
- Closed roads = 100 m

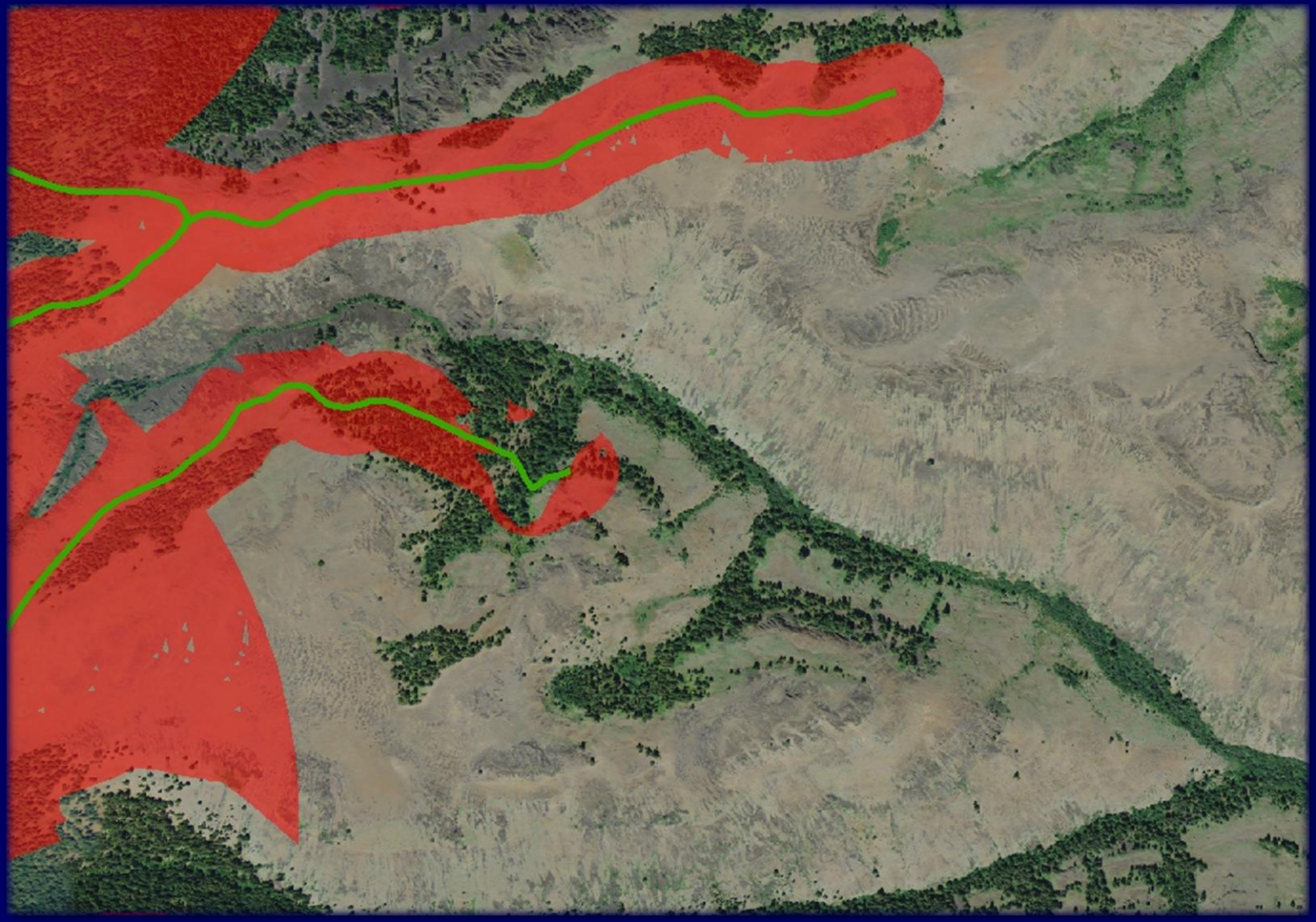
Visibility & Forest Cover



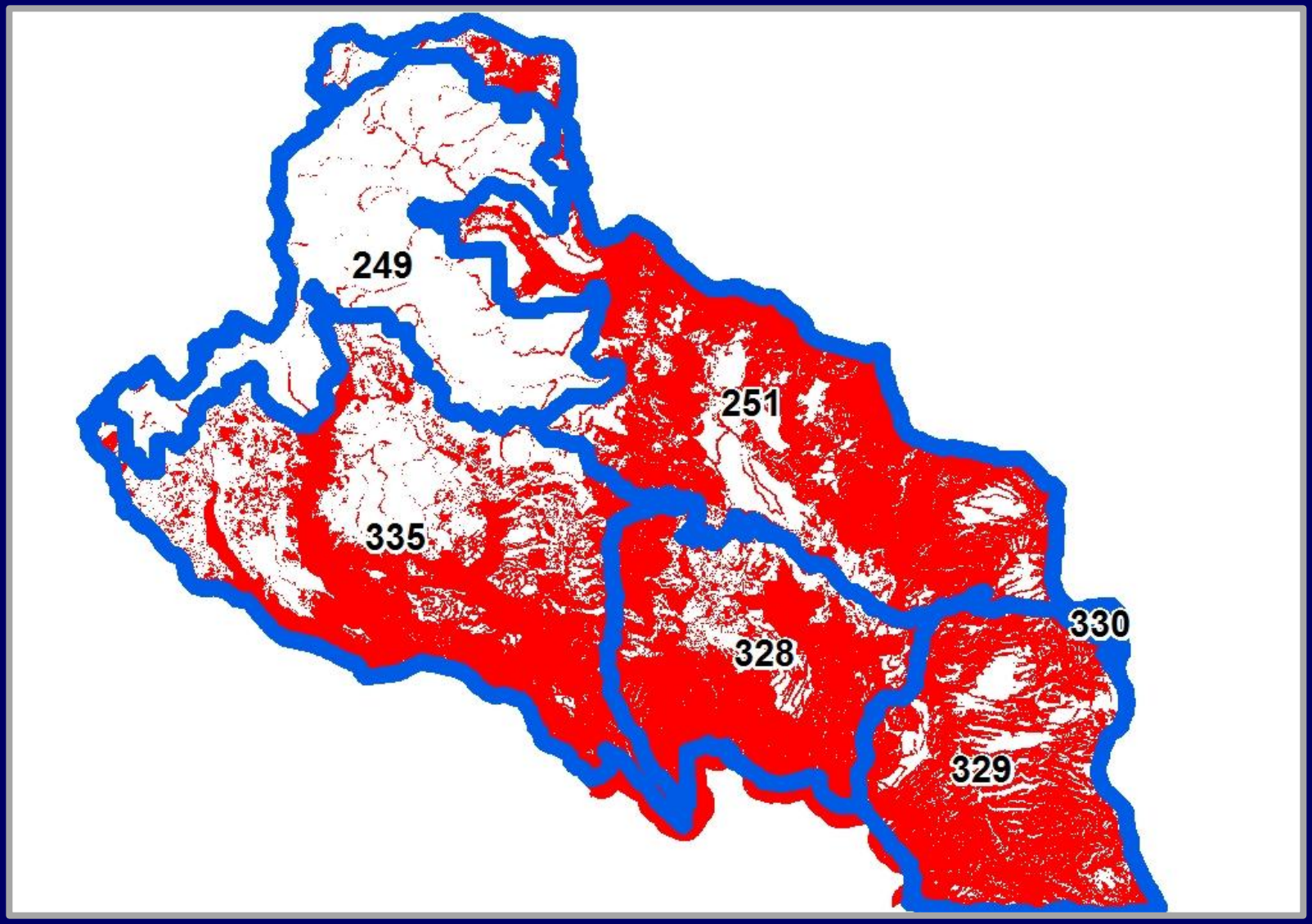
<u>Security Cover</u>:

All conifer stands of >70% canopy cover and > 250 acres were excluded from the zone of influence

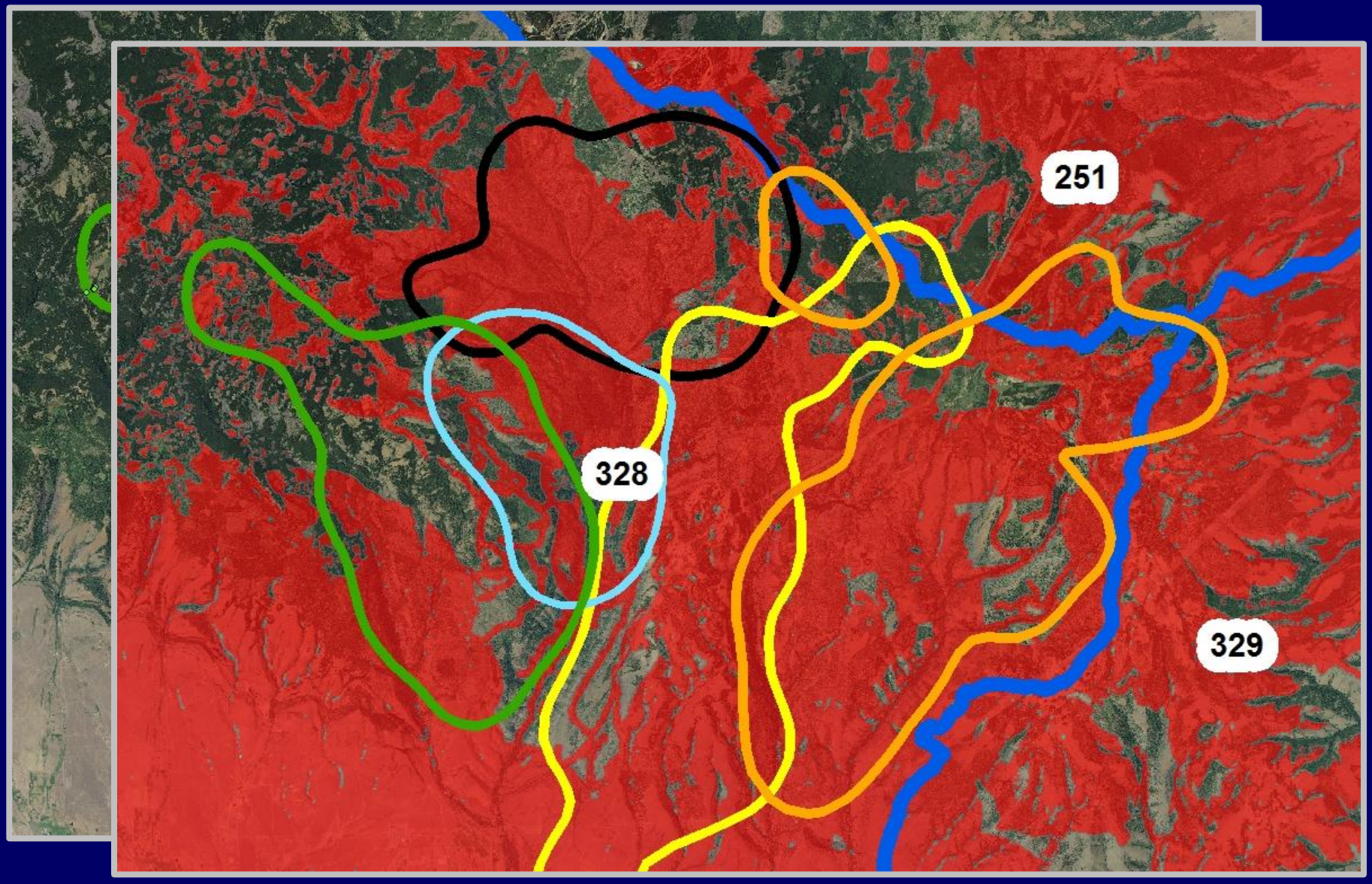
Relative Road Impact



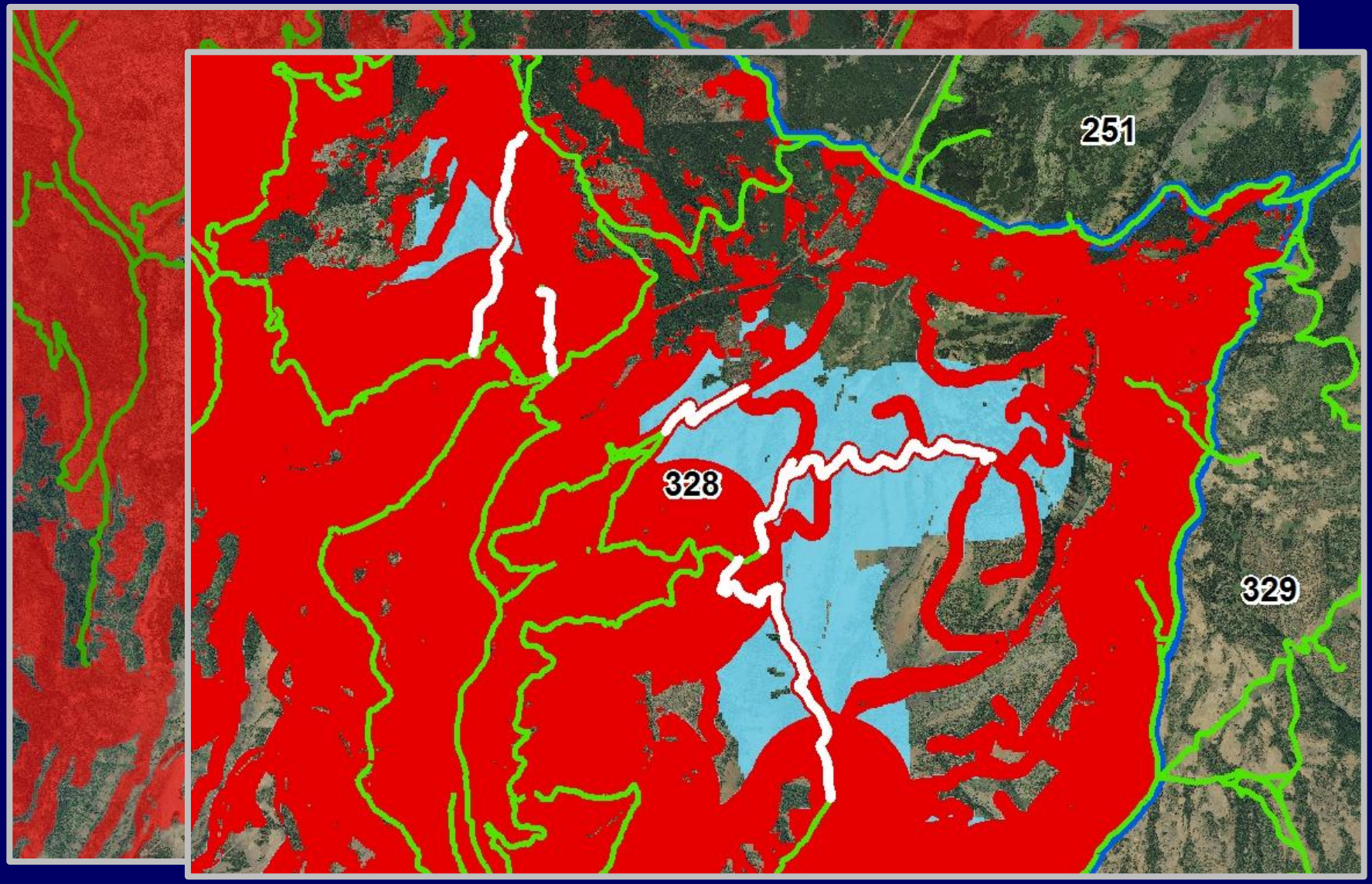
Zone of Influence: GMUs



Elk Home Ranges

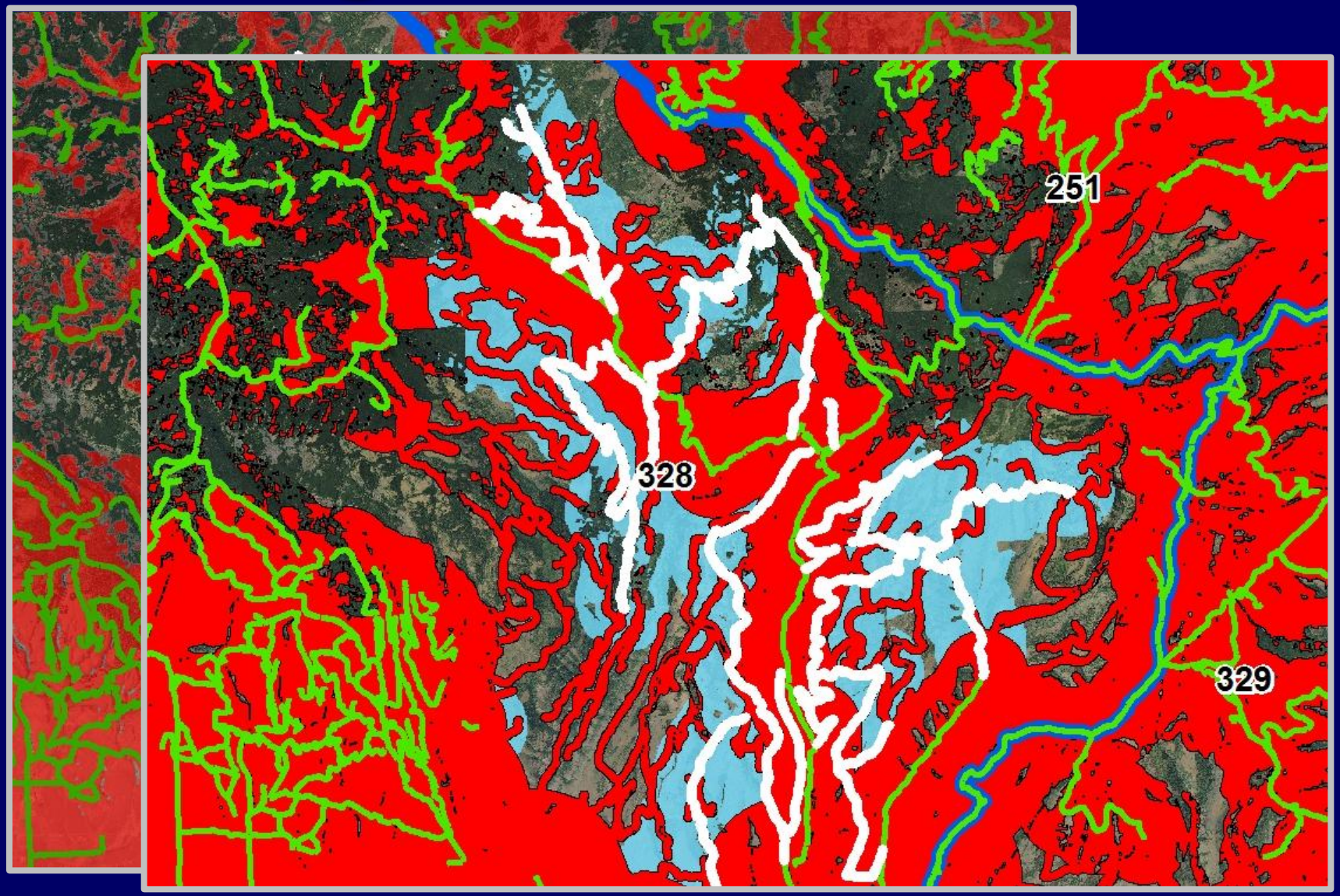


Small Road Closures



= Zone of Influence = Area Gained

Larger Road Closures



= Zone of Influence = Area Gained

Concluding Points

- The *consequences* of ZI effects are still being determined for Colockum elk, but would include effects on:
  - probability of elk use
  - increased energy expenditure
  - vulnerability to harvest
- Combining the model and research will allow us to evaluate "What ifs"
- Overall this will help us to balance road access and management gains for a variety of wildlife, including elk

Colockum Elk Herd Plan

- Herd Management, Objective #3
  - Improve elk habitat quality and reduce disturbance
    - Address road densities on the Colockum and Quilomene WA
    - Identify where on the landscape road densities needs to be addressed
    - Determine which roads should be targeted to benefit elk, given the limited funding available
- Spending Priority #4
  - Physically closing of roads to assist in enforcement

Management Challenges

- Consistently achieve escapement for yearling and older bulls to support management objectives, including more adult bull hunting opportunity
- Deal with uncertainty regarding tribal harvest
- Develop a road management strategy that increases elk security during critical seasons… and that has broad support by key landowners and the public
- Replace antlerless elk damage removals with recreational antlerless elk hunting opportunity
- Continue to refine elk monitoring strategy and survey data collection

Questions?