Blue Mountain Forest Plan Elk Standards and Guidelines Discussion

7/20/2017
Overview of Presentation

- History of FS elk habitat management
- Background on research related to elk security
- Overview of ODFW policy and tools for managing elk populations and distribution
- Overview of new plan direction regard elk and elk habitat
- Questions/Discussion
Blue Mountains Elk Initiative

- Was formally established in 1990 with the Oregon and Washington Departments of Fish and Wildlife, Rocky Mountain Elk Foundation and US Forest Service partnering to fund projects in the Blue Mountains that benefited elk habitat.

- Original signatories to the charter include both states, Confederated Tribe of Umatilla, Confederated Tribe of Warm Springs, Nez Perce Tribe, BLM, FS, Boise Cascade, Oregon Cattleman’s Association, Oregon Department of Forestry, Oregon Hunters Association, Rocky Mountain Elk Foundation among others.

- The BMEI was established to improve the management of elk habitat on public, private and Indian Trust lands in the Blue Mountains with an emphasis on cooperation, coordination and partnerships.
The BMEI celebrated its 25th anniversary in 2015, and the charter was renewed.

Today the BMEI operations committee consists of ODFW, WDFW, FS, BLM, RMEF and CTUIR representatives.

The BMEI operations committee has agreed to focus its next 10 years of funding on improving elk security in the priority areas identified as part of the Blue Mountain Plan Revision Process.
1990 Malheur NF Land and Resource Management Plan

- Elk were identified as a Management Indicator Species for their importance as a species commonly hunted.
- Winter Range (MA 4A) and three wildlife emphasis areas were identified and have elk specific management direction emphasizing managing for elk habitat by balancing cover quality, cover spacing, forage and open road densities.
- Road management densities were part of this plan for winter range (2.2 miles per square mile was the desired condition to be achieved by 1999) and summer range (3.2 miles per square mile).
1990 Malheur NF Land and Resource Management Plan

- Concern over lack of road management policy for forest and concern over high road densities across both summer and winter range were identified by ODFW and the public in comments received for the 1990 plan.

- The 1990 Forest Plan responded by developing goals, objectives and standards to meet needs of all resources, and stated that future access management planning, along with big game management areas would work to address the concerns over high road densities (P. III-15-16)
1990 Malheur NF LRMP – Winter Range S&G’s (summarized)

- Seasonal restriction on motorized recreation vehicles from 12/1-4/1 except for designated routes.
- Manage elk and mule deer winter range for 25% cover and elk habitat effectiveness index (HEI) of 0.5.
- Coordinate with ODFW in developing population goals and in studies of big game movements to achieve elk objectives.
- Open road densities of 2.2 miles/square mile by 1999, monitor progress on a watershed basis.
- Close roads as necessary to reduce harassment of wintering elk and deer
Background on Sciences Related to Elk and Roads

✧ Provide a high level overview of studies on effects of roads on elk
  ✧ Stress/Energetic effects
  ✧ Distribution and habitat use
  ✧ Vulnerability to harvest
  ✧ Local effects

✧ Multiple factors that effects how elk select habitat and may not cover everything.
  ✧ Slope
  ✧ Forage
Elk

- Elk life history strategy
  - Social animals with hierarchy “Lead cow”
  - Fairly long lived, cow elk can live 20+ years
  - Intelligent, have very good memories
  - Highly adaptive the their surroundings
Elk Stress response to Human Activity

- Ward and Cupal (1979) used radio transmitters that provided heart rate data to monitor elk activity levels.
  - Elk heart rates were elevated in all or most trials when the elk were exposed to gunshot noise, human disembarking from stopped vehicles, vehicles on secondary roads, and motorcycles.
  - Elk heart rate response to perceptible highway traffic were minimal in most cases, as were response to airplane noise.
- Millspaugh et al. (2001) quantified glucocorticoids, stress hormones produces by adrenal gland, which can be detected in fecal samples.
  - They found that the density and use of primary roads were 2 of the 3 best predictors of fecal glucocorticoids levels, indicating elk perceive regular vehicle activity as a psychological stressor.
Distance of disturbance

- Perry and Overly (1977) estimated that roads reduced elk use up to ½ mile from the actual road in the Blue Mts. of Washington; elk avoided habitat in proximity to main forest roads the most and habitat near primitive roads the least.
  - In some cases, elk use near roads was reduced by 95% relative to adjacent similar habitats.

- Rowland et al. (2005) at Starkey found a strong linear increase in selection ratios for elk as distance to roads increased.
  - Magnitude of avoidance is related to traffic volume.
  - Distance to road- rather than road density- better predicts elk distribution.
Mean Distance of Elk from ATV Routes

CATV - is a control, so the is how elk select habitat in the absence of ATV’s
ATV - is how elk select habitat in the presence of ATV’s
Cover selection

- Lyon (1979) found that elk use based on pellet groups was consistently lower near open roads than in habitats further from roads.
  - In areas with less than 25% tree cover, predicted elk use declined by approximately 50% at open road densities as low as 1 mile of road per square mile.
- In northeast Oregon, Johnson et al. (2004) found elk moved away from roads as hunter density and traffic levels increase.
  - Elk appear to predictably respond to hunting season by selection habitat providing additional security, moving away from roads or selecting dense cover in the presence of roads.
Probability of Flight Response

- Wisdom et al. (2005) found that the estimated probability of elk flight response from human disturbance was highly dependent on distance.
  - When elk and humans were close to one another, the maximum probability of a flight response was \(\sim 0.65\) during ATV, mountain bike, and hiking activity, and 0.55 during horseback riding.
  - Probability of flight response declined most rapidly during hiking, with little effect when hikers were beyond 500m from elk.
  - Higher probabilities of elk flight continued beyond 750m from horseback riders and 1500 m from mountain bike and ATV riders.
- Not all animals avoid roads \(\sim 20\%\) stay nearby.
Elk Probability of Disturbance

Figure 3. Estimated probability (solid line encompassed by dashed lines of the approximate 95 percent pointwise confidence interval) of a flight response by elk during 2002 in relation to distance (meters) from humans riding ATVs, mountain bikes, horses, or hiking. A flight response is defined as an animal movement with a speed exceeding the 95th percentile of speeds observed during periods of no human activity (control period). The horizontal dashed line at the bottom of each graph is the probability of a flight response by elk during periods of no human activity, and this line represents the background or “null” condition, above which significant elk response to the off-road activities exists.
Figure 5. Estimated probability (solid line encompassed by dashed lines of the approximate 95 percent pointwise confidence interval) of a flight response by mule deer during 2002 in relation to distance (meters) from humans riding ATVs, mountain bikes, horses, or hiking. A flight response is defined as an animal movement with a speed exceeding the 95th percentile of speeds observed during periods of no human activity (control period). The horizontal dashed line at the bottom of each graph is the probability of a flight response by deer during periods of no human activity, and this line represents the background or “null” condition, above which significant deer response to the off-road activities exists.
Hunting Seasons

- Rumble et al. (2005) demonstrated that elk moved away from roads during firearm seasons, relative to other times.
  - Elk also moved more during periods centered on hunting season than just prior to or just after these seasons associated with increase traffic levels.
These figures show probability of use (red is increased use) for successful vs. unsuccessful rifle elk hunters. This is using hunter location information and doesn’t include any information about actual elk locations. The biggest difference is successful hunters used ATV routes less and used the closed road system in the north end of Starkey to increase harvest success.
Backed up by other studies

- In Montana, Ranglack et al. used GPS location on 325 elk to determine resource selection during hunting seasons.
- They found that elk selected for areas that were not known to be publically accessible for hunting, higher canopy cover, were further from motorized routes, and had lower hunter effort during hunting season.
- Also stated “In areas that include a matrix of publicly accessible and inaccessible lands, elk may decrease their use of security areas on public lands and increase their use of areas that restrict public hunter access during hunting season.”
Continued...

- If female elk are not available to public hunter in sufficient numbers due to a distribution shift from publicly accessible to inaccessible lands, then harvest is not an effective tool to reduce adult female survival and overall elk population growth.
- May cause challenges to maintain elk population as a socially acceptable level while meeting public demand for hunting.
- Likely seeing similar movements in Grant County.
  - No collared elk to just anecdotal information
Murderers Creek Unit Example

Elk Counted vs. Harvested in the Murderers Cr Unit
Murderers Cr. cont…

Tag #, Hunters, Total Elk Harvest Murderers Creek Unit

- Tag #'s
- Total harvest
- Hunters
Murderers Cr. Cont..

% success Murderers Cow Hunt

## Damage Tags

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Malheur Forest Roads
Distance Bands

- Rowland et al. weighted band to reflect linear increase in elk selection ratios as distance from roads increased.
  - Five bands 360 m wide with the sixth band containing and area greater than 1800 m from an open road.
  - The bands indicate the predicted use of elk up to 1800m away from an open road.
  - Past 1800 m the little measurable effect on elk.
Disturbance Bands

Legend

- Roads

Disturbance Bands
- 360 meters
- 720 meters
- 1,080 meters
- 1,440 meters
- 1,800 meters
Disturbance Bands

Legend

WMU Boundary

Disturbance Bands

1
2
3
4
5

½ Mile
How Elk Perceive Roads

Legend
- WMU Boundary
- USFS Boundary
Disturbance Bands
1 2 3 4 5

Damage Areas

- HEARNER
- DESOLATION
- SUMPTER
- OCHOCO
- BEULAH
- MALHEUR RIVER
- MURDOCK CREEK
- NORTHSIDE
Hillis Paradigm

- Elk Security Areas better metric than road density
- Hillis Paradigm is a way to define security areas for elk
  - Is a combination of
    - distance to motorized route \( \geq 0.5 \) miles
    - security block of \( \geq 250 \) acres
Rowland et al. (2000) Clumped road distribution leads to areas where human disturbance is minimal, whereas road spread evenly across the landscape cause greater reduction in elk habitat effectiveness.

**Diagram:**

- **Elk Security Area**
- Southeastern half of area is far enough from roads to function as security habitat for elk.
- No area is far enough from a road to provide security habitat for elk.

- **Legend:**
  - Roads
  - Sections
Summary

- Elk have a negative response to human activity on roads
- Elk will away for human activity to find security
- They may have a response up to 1800 m from a road
- May cause elk to move off the forest
- May be able to keep elk on the forest by having security areas
A Brief Review of the Scientific Literature on Elk, Roads, & Traffic

March 2013

Scott M. McCorquodale, Ph.D.
Wildlife Research Scientist
Washington Department of Fish and Wildlife
Elk Distribution

- Highest Priority Concern for ODFW
- Problem Across Most Wildlife Management Units
- Above Management Objective but Less Public Hunting Opportunity
- Need for Landscape Scale Approach
- Why Have Things Changed
  - Private land has become more appealing
    - Less hunting, less disturbance, more irrigated fields
  - Federal forest management has become less appealing
    - Less active forest management = less groceries
    - More motorized use = more disturbance
What is ODFW Doing

- Working on Private Land Issues via Liberal Controlled Hunts, Damage Tags, etc.
- Building Support from Landowner and Ag Producers
- Long-term Solution – Make Public Land More Appealing
  - Improving forage conditions through active forest management
  - Improving elk security
    - Vegetative cover
    - Security from disturbance
- Balanced Approach to Motorized Access – focus on priority areas
- Working with USFS, WDFW, and Tribes to Address Elk Management Needs in the Blue Mountain Forest Plans
Revised Blue Mountain Forest Plan – Changes from Draft to Final

- Elk are identified as a Focal Species in the plan revision planning process as they are important both socially and economically across the Blue Mountains.

- The DEIS did not include Standards for elk management, and elk were not identified as a Focal Species for the Malheur, mule deer were.

- There were many comments about the lack of specific standards for elk in the plan, and concern from ODFW, WDFW, CTUIR, Nez Perce, Warm Springs Tribes, RMEF among others on how the plan dealt with elk and elk habitat.
Revised Blue Mountain Forest Plan – Changes from Draft to Final

- The Regional Forester asked that staff from the Regional Office, Forest biologists and planners work cooperatively with our State and Tribal partners to better address elk and elk habitat in the final version of the plan.

- A series of meetings were held with state and tribal biologists in late 2016 and early 2017 to work toward some mutually acceptable plan components that address elk habitat and distribution across all three Forests.

- After much negotiation and discussion with our partners, the Blue Mountain Forest Supervisors and Regional Forester we came to some mutually acceptable agreements on plan components dealing with elk for all three Forests that will be in the FEIS and final plans.
Changes from Draft to Final

- Elk are a focal species on the Umatilla and Wallowa Whitman but not the Malheur. However all elk related plan components apply to all Forests.

- Vegetation management standards and guidelines were not changed to limit the rippling effects of changing those sections would have on other resources, and because a management for more historic and predicted stand structure is generally favorable for elk forage and the current scientific understanding of the importance of elk cover.

- Based upon selection of elk as a socially and economically important species, emphasis was made to address improving year round retention of elk on NFS lands

- Additional standards and guidelines were developed to address elk security needs, along with time based objectives to increase amounts of elk security on all three forests over the life of the plan.
Elk Security Definition

- Security = non-linear areas that are greater than 1/2 mile from open motorized routes and at least 250 acres in size (Hillis et al. 1991).
- Vegetative cover and topography have mitigating effects.
- This definition served as the baseline security analysis for Forest Plan.
Standards and Guidelines

**Guideline:** Motor vehicle use on designated routes and areas should not be authorized within elk winter range between December 1 and April 14. Federal and state highways and major forest roads (such as arterials) are exempt to provide reasonable public access. These dates may be modified by as much as, but not exceed two weeks (e.g. March 31st, April 30th) as appropriate in consultation with State wildlife agencies.

The intent is to minimize disturbance to elk while occupying winter range and encourage elk use of public land. ODFW and WDFW winter range maps should be used as the basis for identifying winter range.

**Standard:** There shall be no net loss of elk security measured within watersheds (5th field HUC) through building of new motorized routes or re-opening of old motorized routes for public travel.
Standards and Guidelines

Guideline: Encourage elk use of Forest Service lands. Management activities that fall within identified elk priority areas should increase security by a minimum of 15%, to reach 30% or greater at the subwatershed (6th Field HUC) scale. This guideline applies to projects that affect security and/or treat greater than 500 acres of forested vegetation (prescribed fire is exempt).

The intent is to improve distribution of elk across all seasonal ranges on Forest Service lands by moving toward and/or within the desired condition range of 30-100 percent elk security. Project effect analyses should identify and consider elk security, elk forage/nutrition, elk hiding cover, and elk habitat selection and distribution across all of Forest Service lands.
Mapping of Priority Areas

August DDE Values
- Poor
- Marginal
- Good

07.09.2011
Mapping of Priority Areas was done cooperatively with State, FS and Tribal Biologists

- Overall intent was to identify areas best suited for improving elk distribution on NFS lands year round.

- Intent was to capture areas of current elk use, and areas of potential elk use if security was improved (e.g. areas with potential for high nutrition availability but with road densities that are too high currently to support elk use).

- No more than 30% of the proposed general forest management areas on any one Forest was mapped as priority areas.

- Areas could include roadless/wilderness areas.

- In general 6 field watershed boundaries were used as units to clip to for priority area identification.

- Priority areas were generally not smaller than three 6th field watersheds, or a single 5th field watershed.

- Proximity to land owners experiencing depredation or damage on their lands as well land owners who are harboring elk was considered as well.
Considerations for Mapping of Priority Areas

Mapping efforts considered the following information:

- Areas of high concentrations of elk on private land (BMEI draft maps)
- Mapped elk herd use of FS lands across all seasons (if known)
- Identify areas with potential to retain elk on NF lands across all seasons
- Areas mapped as Inventoried Roadless Areas, Wilderness areas and private lands
- If possible, consider other variables such as forage/nutrition, cover, and topography when assessing existing and potential security areas.
- Existing (baseline) security analyses by 6th and 5th field HUC
- Consider aquatic priority watersheds
- Roads, OHV play areas (as areas to avoid)
- Winter range maps
- Existing green dot road systems
Use of Mapped Priority Areas

- Maps will be used:
  - In Forest Plan Revision in association with the security guideline and objectives for UMA, MAL, and WW
  - To help the Forests in planning and implementing projects and inform future landscape level assessments and prioritizations
  - To inform the Blue Mountain Elk Initiative proposal selection process
  - Potentially used in future travel management planning on the Malheur and Wallowa Whitman NF’s
Malheur elk priority areas
Malheur elk priority areas overlaid on current and planned project areas
Plan Objectives

- Within 7 years of plan approval, improve elk security to within Desired Condition range (30-100%) throughout 50% of the subwatersheds identified as priority for improvement.
- Within 15 years of plan approval, improve elk security to within Desired Condition range (30-100%) throughout 100% of the subwatersheds identified as priority for improvement.
- Within the life of the plan, improve elk security throughout 50% of General Forest MA – 4A.
QUESTIONS?
REST OF SLIDES ARE ONLY IF FOLKS HAVE QUESTIONS ON HOW SECURITY STANDARDS WOULD BE APPLIED AT PROJECT LEVEL
Wallowa Whitman Elk Security Examples

Mill Creek

Rush Creek
Example of implementing Guideline 1

Mill Creek (HUC 12)
Wallowa-Whitman NF
Mill Creek Example

5,660 acres
Mill Creek Example

No Action

Existing conditions =

0% security

62 miles of open motorized routes
Action Alternative

Post implementation conditions = 10% security

4.5 miles of road closures

57.5 miles of open motorized routes

To get to 30% Elk Security we would need to close >20 miles of road in watershed
Rush Creek Example

5,660 acres
Rush Creek Example

No Action

Existing conditions =

26% security

24 miles of open motorized routes
Action Alternative

Post implementation conditions = 30% security

.8 miles of road closures

23.3 miles of open motorized routes