

Elk Hoof Disease in Southwest Washington



**WDFW Hoof Disease
Public Working Group Meeting
21 May 2014**

Agenda

- 8:30am – 12:00pm
 - Vegetation exclosure tour

- 1:00pm – 4:00pm
 - Welcome
 - WDFW Hoof Disease Investigations Update
 - Management Approach
 - Funding
 - Next Steps
 - Public Testimony

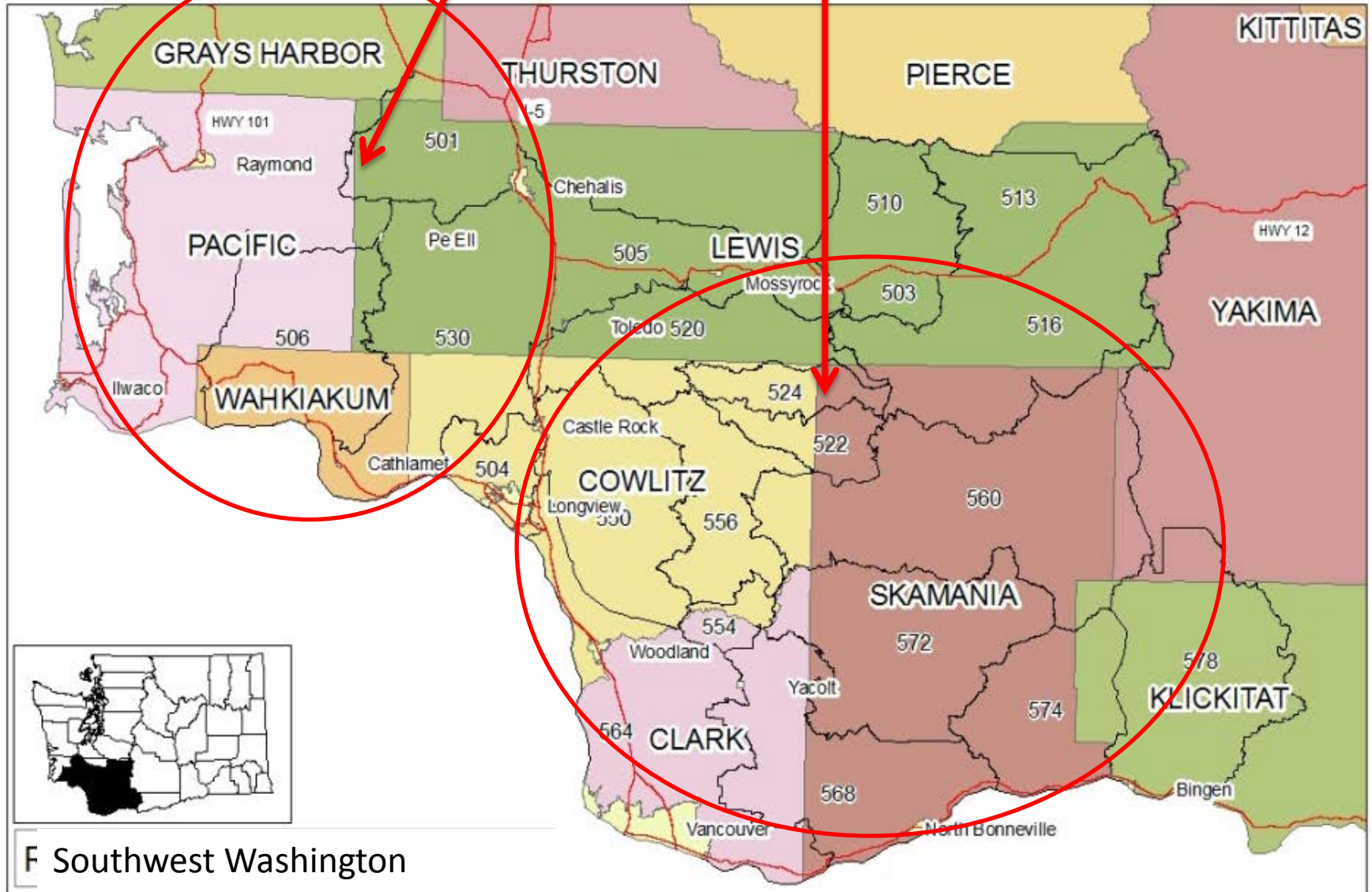
Hoof Disease Public Working Group

- Understanding hoof disease in elk is a priority and WDFW is committed to the sound management of these important resources
- WDFW established the Public Working Group as we believe it is important to work together as we try to better understand and address this issue
- The purpose of this Working Group is to provide the opportunity to:
 - share information about the hoof disease phenomenon and WDFW activities,
 - discuss research and management questions with regard to hoof disease and solicit feedback, and
 - public outreach

WDFW Hoof Disease Investigations Update



Willapa Hills and MSH Elk Herds



Collections

- Four collections from affected and unaffected areas:
 - March 2009 : Adult elk
 - March 2013: 9-10 month elk
 - August 2013: 3-4 month calf elk
 - January 2014: 7-8 month calf elk
- Summary: 43 elk examined from March 2009 - Jan 2014
 - 27 from affected area
 - 10 from presumed unaffected area (westside controls)
 - 6 from unaffected area (east of Cascades)

Sampling and Testing

- Gross necropsy
- Radiology
- Histopathology
 - Disease limited to hooves: Other tissues, including meat, are not affected
 - *Disease is infectious: no evidence for toxic, immune, or cancerous causes*
- Virology - lesions similar - were all negative
- Toxicology (=trace minerals) - low selenium and copper, as expected
- Bacteriology
- Parasitology
- Serology
- Molecular Diagnostics



Specialized Microbiology

Current diagnostic efforts are focused on specialized bacteriology testing to rule out known infectious hoof disease organisms

Including bacterium in:

- *Treponema* sp.
- *Dichelobacter nodosus*
- *Fusobacterium necrophorum*
- *Gugenheimia bovis*

Specialized Microbiology

- Specialized microbiology conducted at:
 - University of Liverpool, Washington State University veterinary diagnostic lab, USDA National Animal Disease Center, and Colorado State University
- Exhaustive pathological work has been conducted:
 - Treponema sp. detected (“genetic fingerprinting”) in diseased samples from multiple collections in four independent labs
 - Showing that bacteria in the genus Treponema are present in affected hooves of elk with the disease

Specialized Microbiology

- Additional results from samples collected in January 2014 support the association between presence of *Treponema* and diseased hooves
- *Treponema* are known to be highly associated with hoof disease in both cattle and sheep
 - The infection in sheep results in hoof abnormalities that are similar to the elk hoof disease
 - The rapid appearance and spread of the disease in elk is similar to the situation when *Treponema* first appeared in cattle in the United States in the early 1990s

Pending Analyses

- *Samples will be submitted to the UC Davis veterinary diagnostic lab for immuno-histochemistry tests for spirochetes known to cause hoof disease in cattle*
 - Results pending
- *Slides will be sent to one of the world's top bovine hoof disease experts in New Zealand for his opinion(s)*
 - Results pending



Pending Analyses

- All analyses to date point to this being an infectious disease
 - No evidence for toxic, immune, or cancerous causes
 - Additional analyses will continue by various veterinary researchers and work will add to the scientific knowledge of infectious hoof diseases in animals
 - Looked at management options to address this infectious agent

Additional Information

- The herds are influenced by a variety of issues: winter severity, nutrition/forage availability, land management practices, hunting, etc.
- **Nutrition**
 - Body condition similar to other areas in western WA – no connection to date
- **Timber practices have changed over the past 30 years**
 - Open landscape, increased canopy cover, burning, clear cuts (private), reduced timber harvest (federal), herbicides, etc.
 - Many questions about the role herbicides play in broader elk herd management issue; to date no evidence it is associated with hoof disease
 - NCASI Research: Relations among habitat characteristics, plant succession, and nutrition of foraging elk during summer and autumn in temperate Pacific Northwest forests
 - University of Alberta study: effects of herbicides and herbivory on elk forage abundance
 - Herbicide/Herbivory interaction
 - WDFW Black Tailed deer study: effects of forest management on BT deer ecology
 - WSU study – Availability of forage and affect on BTD body condition on treated and untreated sites with the same post-timber-harvest age

Management Approach



Management Challenge

- Once HD in a herd & landscape, extremely difficult to eliminate
- The challenge is to manage the disease
- Management Options and Research Questions
 - Reduce density, containment, treatment, let disease run its course, prevalence/distribution, survival, etc.



Compilation of Information

- Compiled and assessed all HDPWG, HDTAG, and WDFW staff input and developed the following management approach



Completed

- Developed WAC to leave hooves on site from elk harvested in SW Washington
- Two citizen and two WDFW public meetings
- Reviewed and approved joint Department of Health and WDFW Game Meat Safety flyer
 - Pending posting on-line
- Developed management approach from multiple input

Need

- The current needs are to:
 - Continue to identify/understand the causative agents
 - Determine the prevalence and distribution of the disease in the population
 - Document the effects on elk population dynamics (survival, reproduction), and
 - Where feasible, manage the disease

Need

- Identify/understand the causative agents:
 - Technical Advisory Group will meet to review latest results and will be asked to develop a consensus statement about the likely cause(s) of the disease

Prevalence and Distribution

- Determine the prevalence of the disease in the population:
- Accomplished by:
 - Hiring a Coordinator and
 - Working closely with a cadre of citizen science volunteers to collect prevalence and distribution information
 - Protocol being developed

Survival and Reproduction

- Determine the effects of HD on elk population dynamics:
 - Accomplish by an extensive, new effort by existing biological staff to radio-collar afflicted animals and monitor survival, reproduction, and movements relative to non-afflicted animals
 - Study design is being developed;
 - Coordinated by Elk Specialist in concert with both Regions and HD Coordinator

Infectious Hoof Disease Management

INDIVIDUAL ANIMALS/HERDS

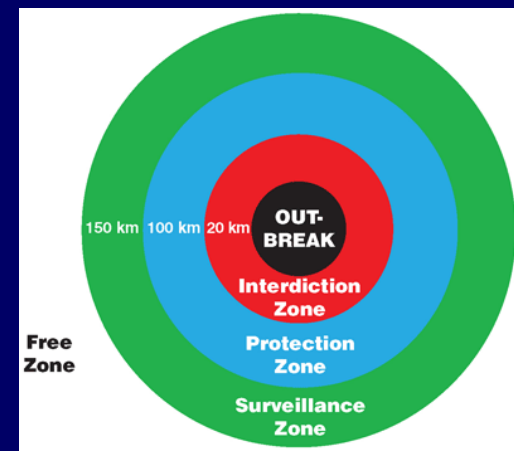
- Good biosecurity
 - ~~quarantine new animals~~
 - isolate newly infected animals from the rest of the herd?
- ~~Aggressive treatment (clean and pare out hoof, apply topical antibiotics, bandage, injectable antibiotics)~~
- ~~Regular footbaths~~
- ~~Keep on clean dry ground~~
- ~~Rotate pastures~~
- ~~Vaccinate if effective vaccine available~~
- Select for genetically resistant animals?
- Cull individuals that are severely affected or fail to respond to treatment?

Animal Disease Eradication

- Requires the following:
 - Ability to identify all infected animals, even if they are not showing signs of disease yet
 - Ability to locate and remove all infected animals
 - Ability to prevent movement of infected animals
 - Access to property inhabited by animals
- Difficult to do on a large scale without extensive resources
 - Try to approximate it

Animal Disease Eradication

- **Concept:**
 - Core animal removal and disinfection area
 - Remove all animals in core
 - Buffer control zone surrounding core disease area
 - Remove only affected animals, quarantine the rest
 - Perimeter surveillance area
 - Enhanced disease surveillance outside infected area



Manage

- Work with landowners on possible fencing options:
 - pro-actively reduce possible risk of transmission
 - address elk crop damage
- Coordinate staff and others to respond to sightings of elk with severe clinical symptoms to cull them from the population
 - with a focus:
 - in core areas of disease to reduce prevalence and
 - in the observed perimeter of the disease to attempt to reduce spread of the disease

Manage

- It is very important to acknowledge up front that any approaches that have successfully been used to manage disease in domestic animals will be entirely experimental when applied to free-ranging elk



Current Funding

- Coordinator:
 - Primary responsibilities will include:
 - coordinating Department response to hoof disease;
 - conducting citizen science prevalence and distribution study;
 - management options implementation, etc.
 - Funding from the 2014 \$200,000 supplemental budget
- Survival study
 - \$180,00 prioritized from Pittman Robertson funds
- Rocky Mountain elk Foundation
 - \$8,000 sample analyses

Future Funding

- 2015-17 Budget Request is in development
 - Understanding cause, prevalence/distribution study, survival study, protocol development, management implementation, statistical input/analyses, GIS support for citizen science effort, veterinary assistance, etc.

Next Steps

- Developing position recruitment to coordinate implementation of management and research
- Implement prevalence & removal/containment effort
 - Develop core and perimeter map, prevalence transects, plan removal logistics
- Develop survival study
- Develop policy to no longer translocate elk outside of SW Washington

Next Steps

- Continue working with HDPWG and HDTAG as moving forward
- Assess monitoring of live animals with hoof disease
- Reach out to National/Washington Academy of Science on guidance and assistance to look at questions regarding herbicide
- Landowner and hunter outreach on HD information

Public Testimony

- Members of the public are requested to fill out a Public Testimony Form
- Members of the public will be requested to provide their public testimony to the HDPWG in the order the Public Testimony Forms were received
- Each member of the public wishing to relay their comments will have 3 minutes each to do so
 - This time frame is provided to allow the opportunity for all members of the public to provide their testimony to the HDPWG

Thank you
....any questions....

