Wolf Conservation and Management
2018 Annual Wolf Update

Washington Department of
FISH and WILDLIFE

Wolf Plan Objectives

- Restore self-sustaining wolf populations
- Maintain healthy ungulate populations
- Manage wolf – livestock conflicts
- Develop public understanding and promote coexistence

Wolves are returning to Washington

Dispersers from adjacent states and provinces, as well as resident WA packs, are naturally recolonizing the state

Federal Status

- Western 2/3 – Endangered
- Eastern 1/3 - Delisted
  - Included in NRM DPS: 2007
  - Delisted in 2011
- No federal wolf recovery requirements
  - WA status not figured into NRM delisting
- Proposed Rule to Delist–

15 March 2019, public comment extended to July 2019

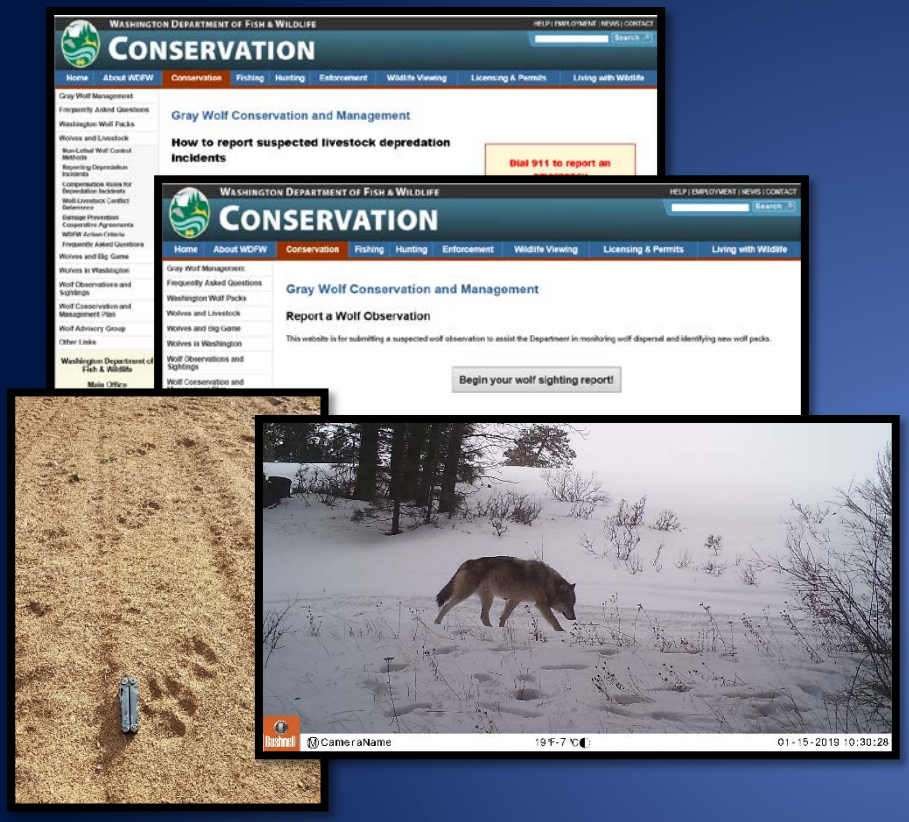
State Status

- Endangered species statewide
- Wolf Conservation and Management Plan: 2011
  - 3 recovery areas
  - Delisting requirements
- Federal, state, tribal management

Definitions

- Pack
  - Two or more wolves traveling together in a defined territory
- Successful breeding pair
  - Male and female raising two or more pups until Dec 31

Monitoring the Populations



- Follow-up surveys
  - Cameras
  - Tracks and other sign

- Reports from the Public
  - Sighting Reports
  - Depredations

- Attempt captures
  - Aerial captures - winter
    Radio collared packs
  - Ground Captures - summer

Capture and Monitoring
2018 Calendar Year

- Captured 9 wolves - From 8 different packs

- Monitored 20 wolves from 15 packs
  - Currently monitoring 18 collared wolves (14% of minimum number of known wolves) from 11 packs (41% of known packs) in Washington

Washington's Known Wolf Packs

As of December 31, 2018

Territoriality – Wolf Movements

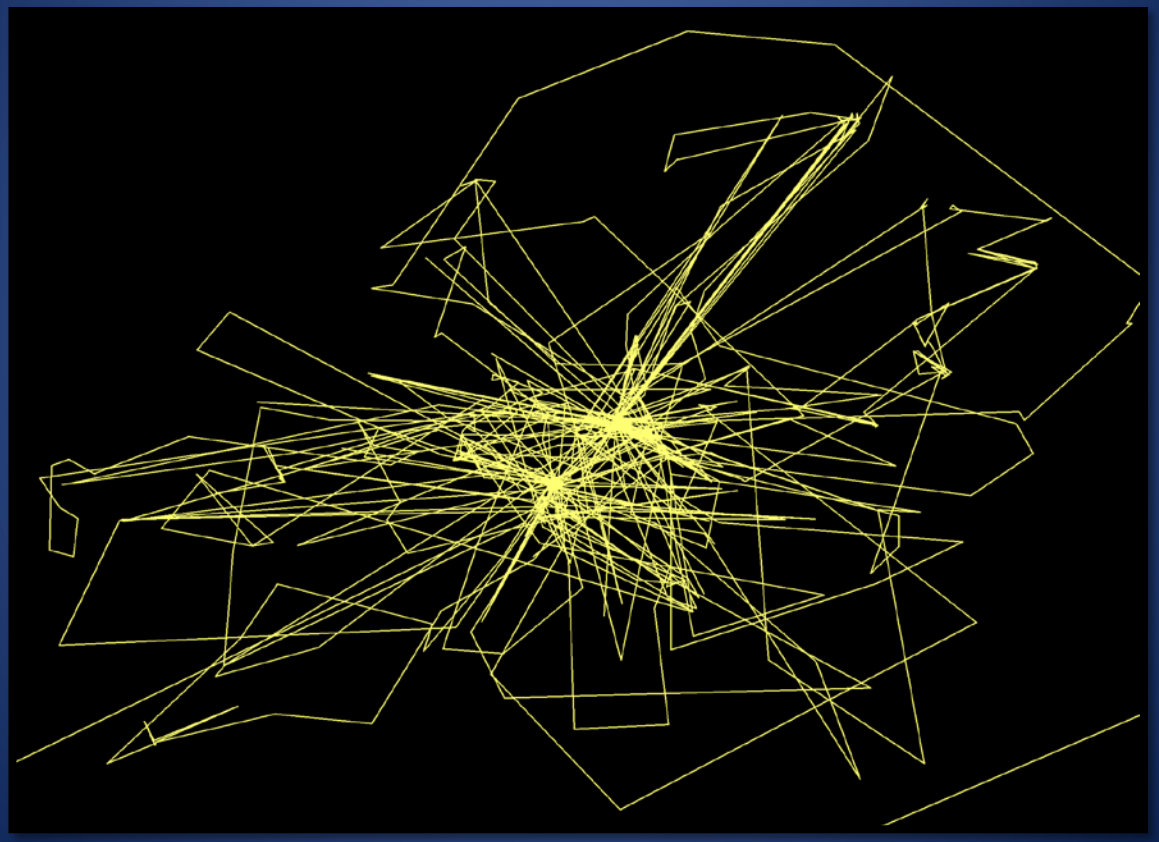
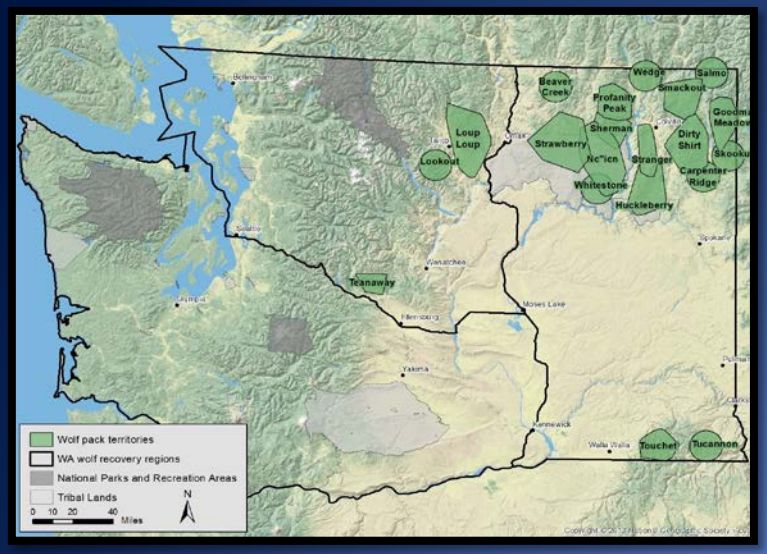


Photo: University of Washington (Sarah Bassing)

Wolf Packs – Last 3 Years



2016

2017

2018

Eastern Washington Recovery Area

Confirmed Pack	Successful Breeding Pair	Minimum Count	Known Mortality	Known Dispersal	Livestock Depredations
Beaver Creek	Yes	4			
Butte Creek	No	2			
Carpenter Ridge	Yes	11			
Dirtyshirt	No	3			
~~Five Sisters~~	No	0			
Frosty (CCT)	Yes	6	1		
Grouse Flats	Yes	8			2 (+1-Injured)
Goodman Meadows	Yes	4			
Huckleberry	Yes	6	3		
Leadpoint	No	2			
Nason (CCT)	Yes	6	1		
Nc'icn (CCT)	Yes	4	1		
OPT	Yes	4	2		3 (+13-Injured)
Salmo	No	3			
Sherman	No	2			
Smackout	No	2	2		4 (+1-Injured)
Stranger	Yes	4			
Strawberry (CCT)	Yes	7			
Togo	No	2	1		2 (+4-Injured)
Touchet	Yes	4		2	
Tucannon	No	2			
Wedge	No	3			
Whitestone (CCT)	No	3			
Misc/Lone Wolves		12			
Recovery Area Total	**12**	**104**	**11**	**2**	**11 (+19 Injured)**

North Cascades Recovery Area

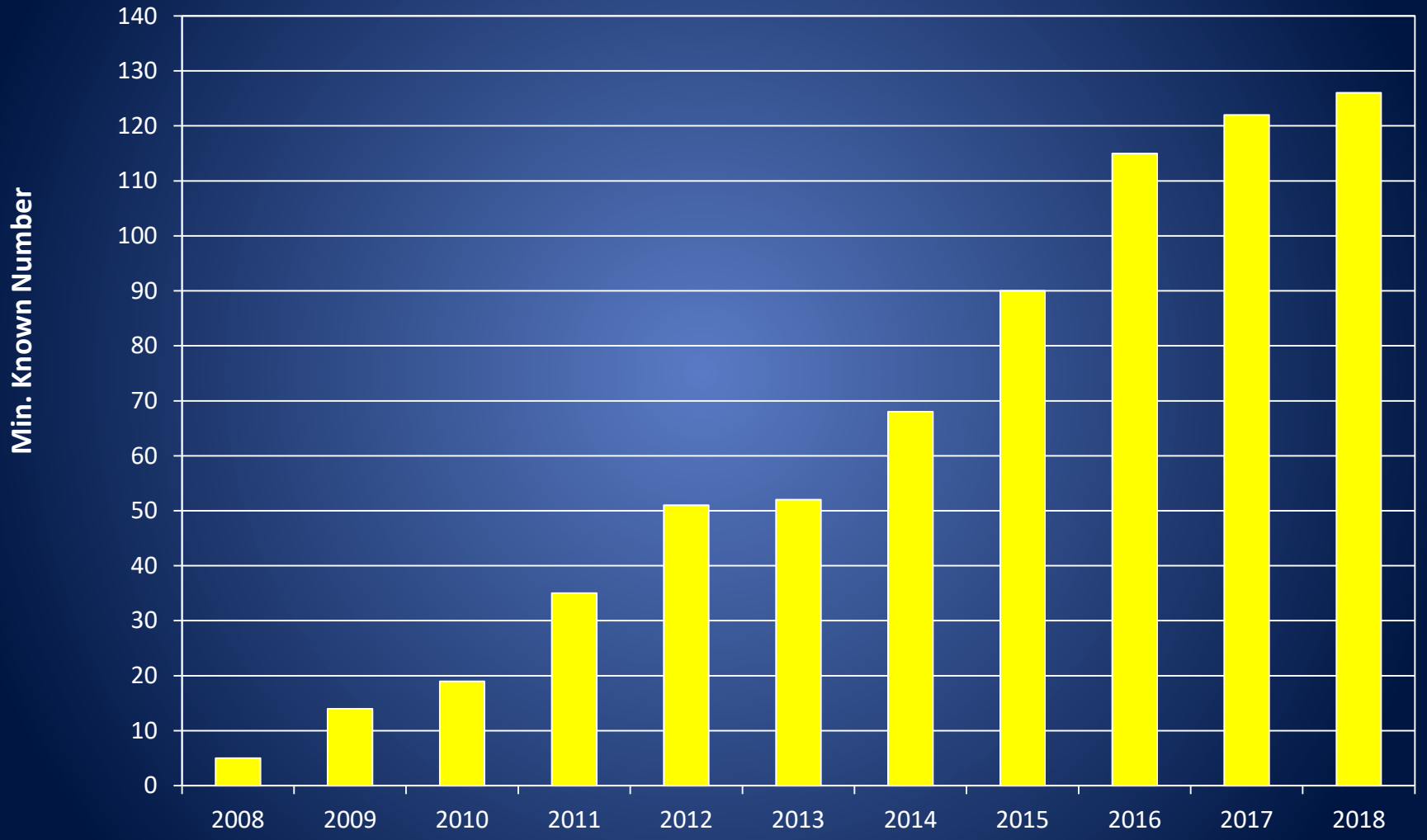
Confirmed Pack	Successful Breeding Pair	Minimum Count	Known Mortality	Known Dispersal	Livestock Depredations
~~Chiliwist~~	No	1			
Lookout	Yes	5			
Loup Loup	Yes	5			
Teanaway	Yes	5			1 (+3 Injured)
Diobsud Creek	No	2			
Naneum	No	2	1		
Misc/Lone Wolves		2			
Recovery Area Total	**3**	**22**	**1**	**0**	**1 (+3 Injured)**

Wolf Population Status

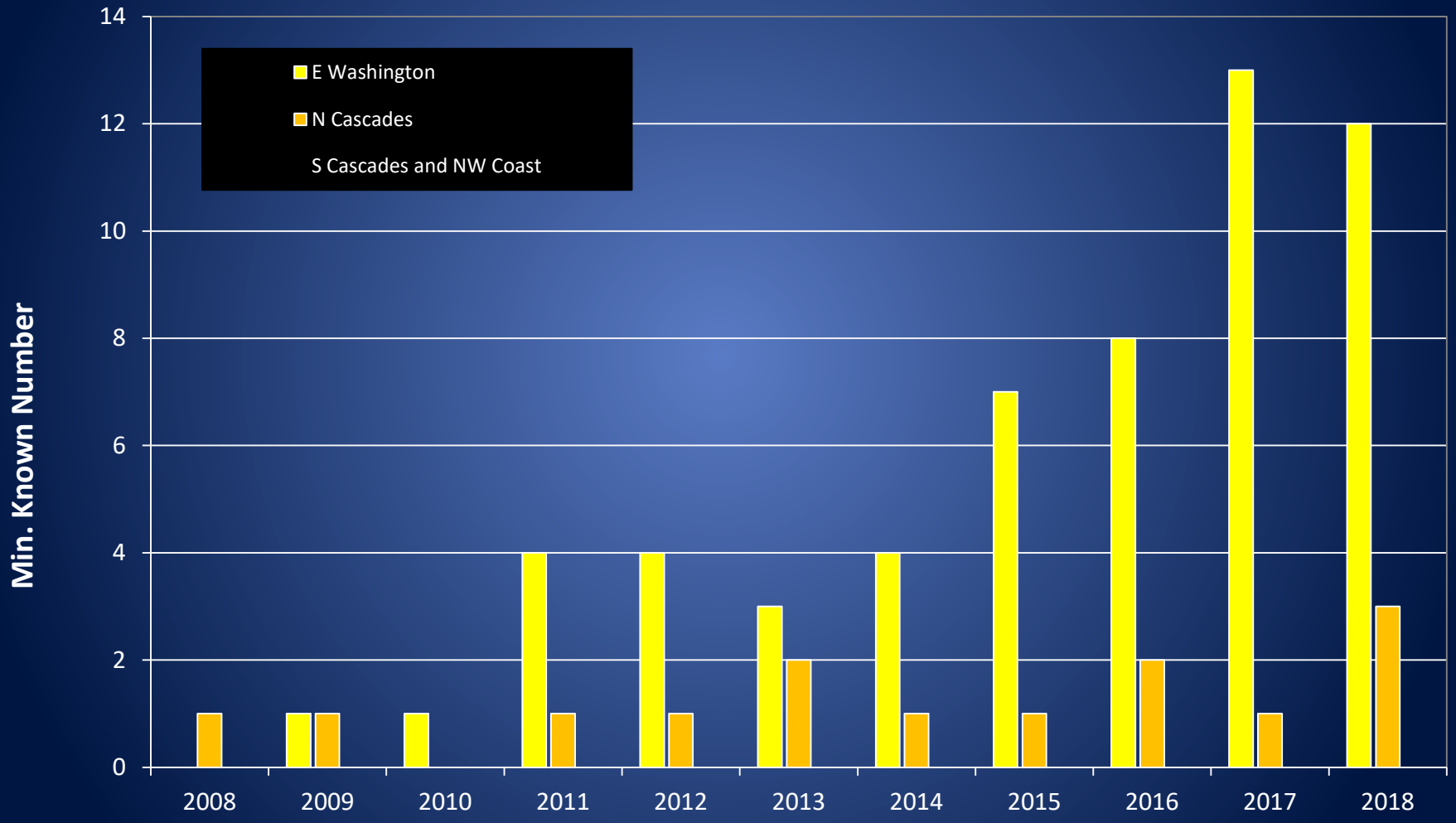
Recovery Region	Successful Breeding Pair	Minimum Count	Known Mortality	Known Dispersal	Livestock Depredations
Eastern	12	103	11	2	11
N. Cascades	3	23	1	0	1
S. Cascades/Coastal	0	0	0	0	0
Total	15	126	12	2	12

Photo: Spokane Tribal Wildlife Program (Savanah Walker)

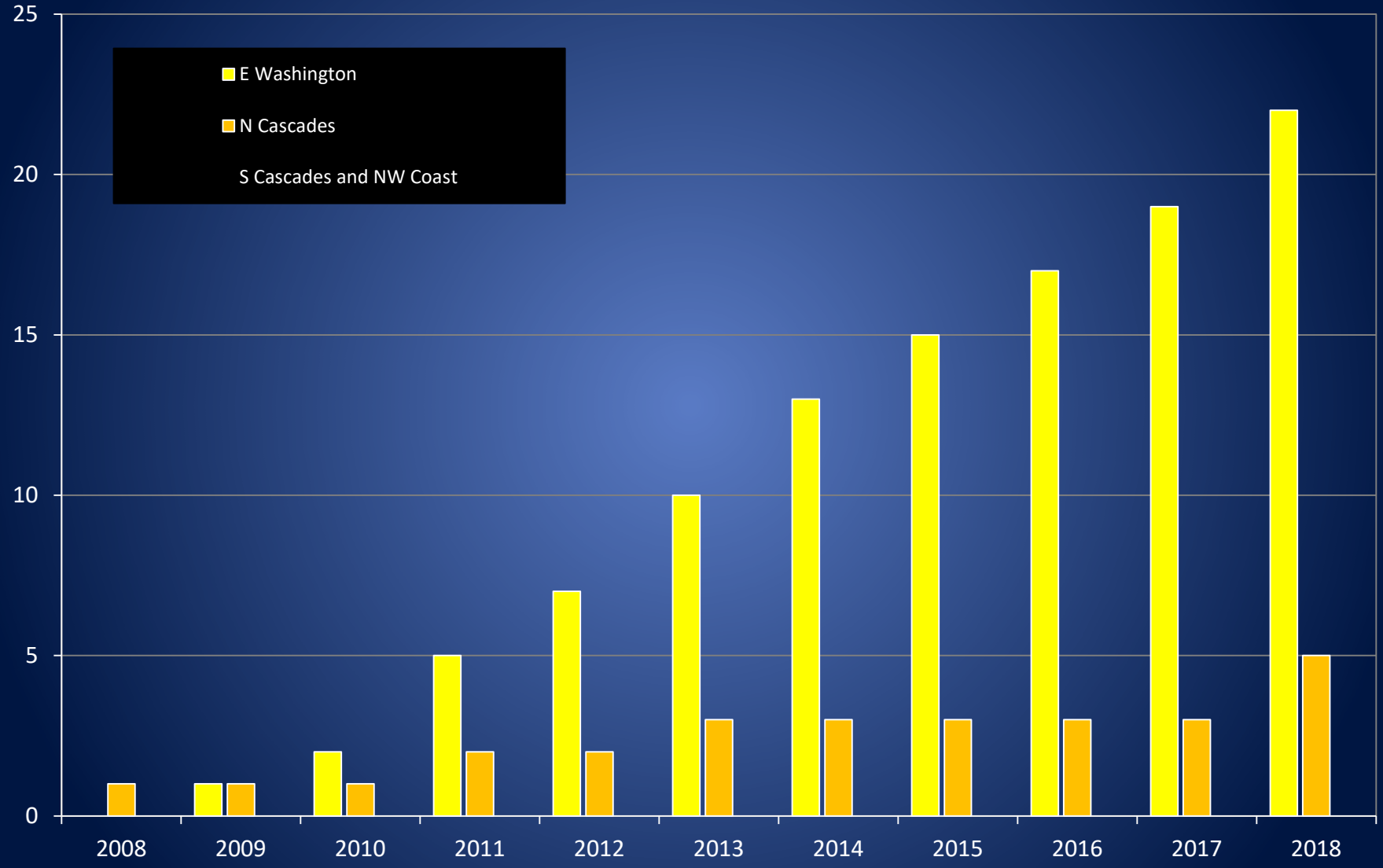
Trend in Minimum Number of Wolves



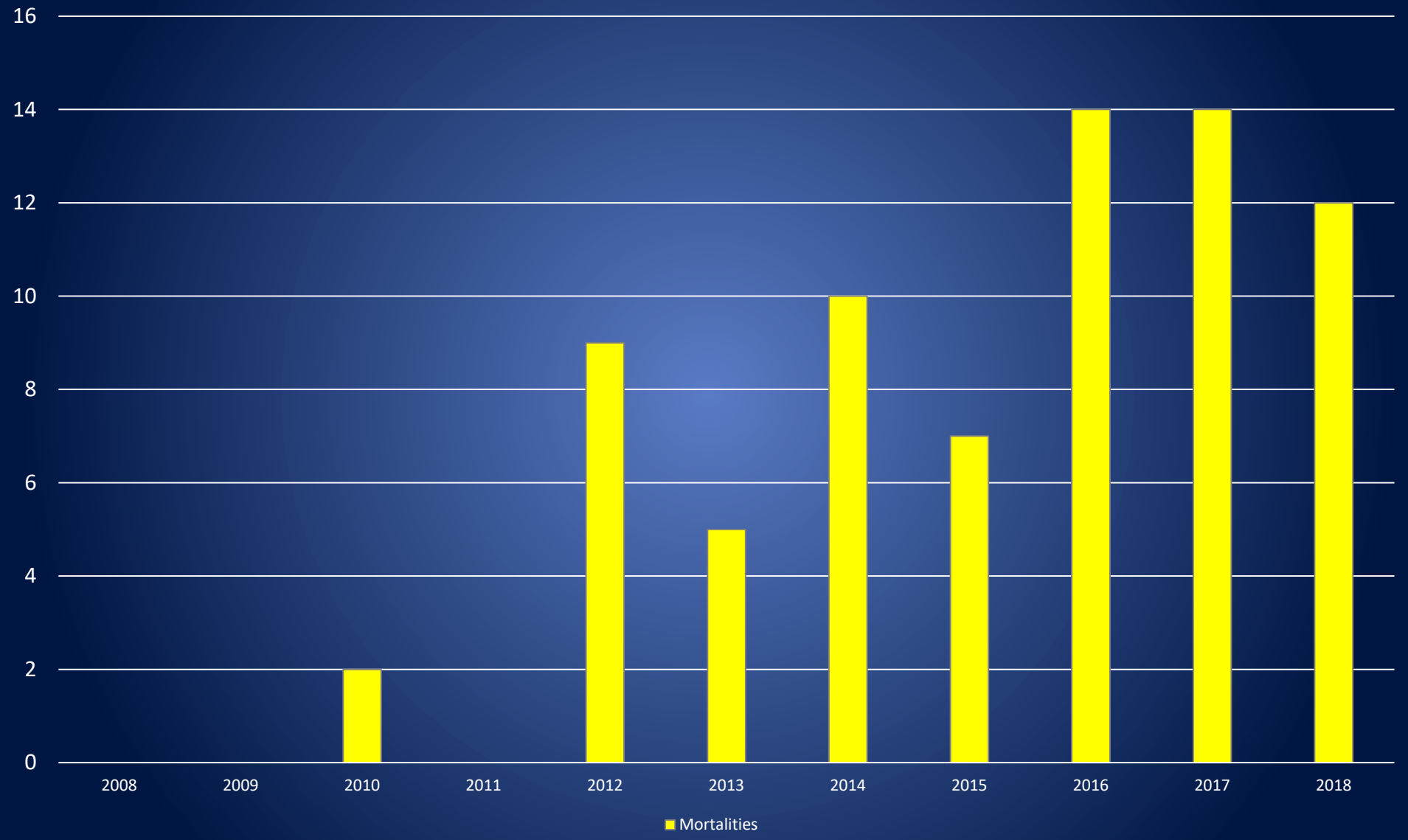
Trend in Number of Successful Breeding Pair



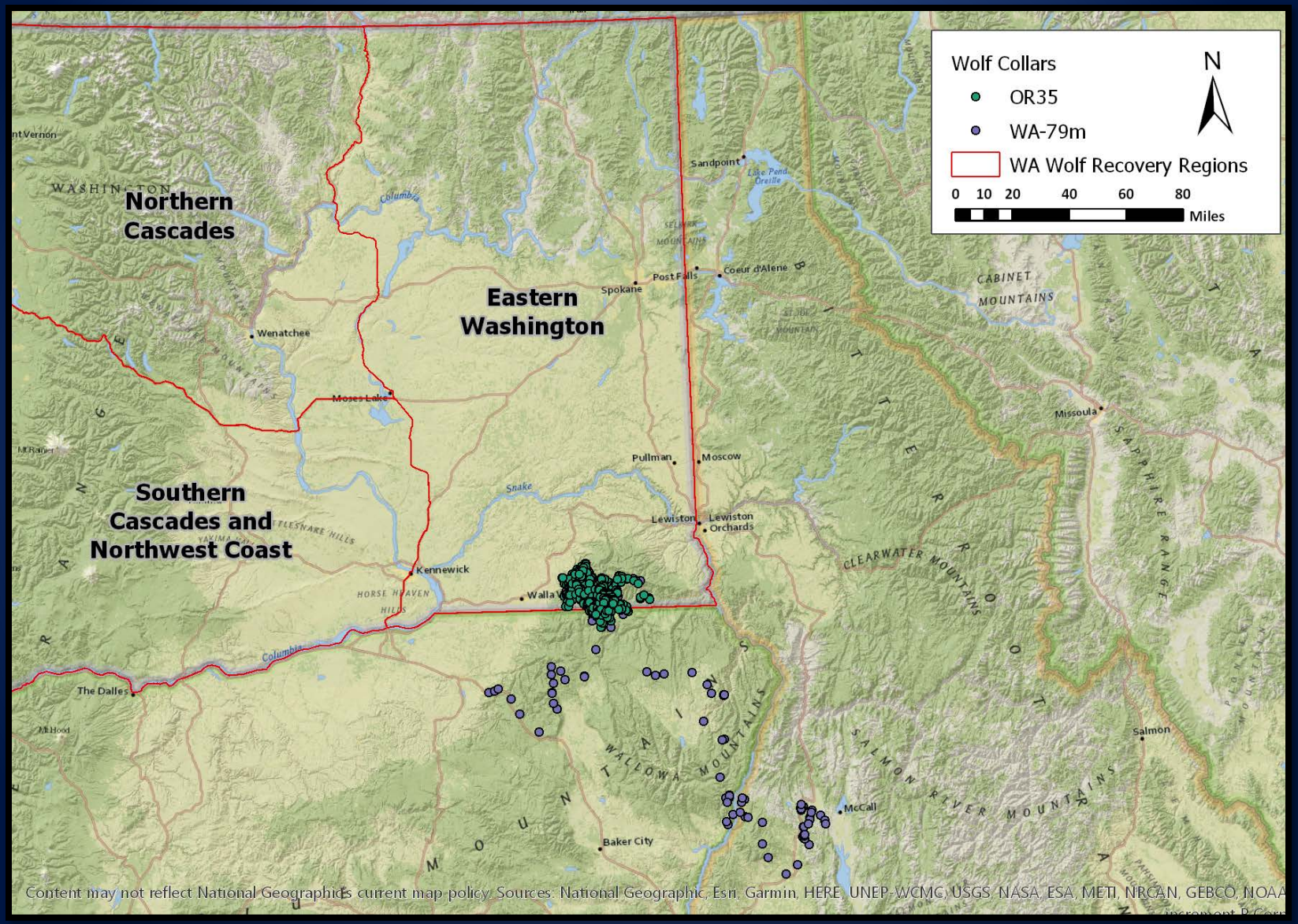
Trend in Number of Wolf Packs



Known Wolf Mortalities



2018 Known Wolf Dispersal

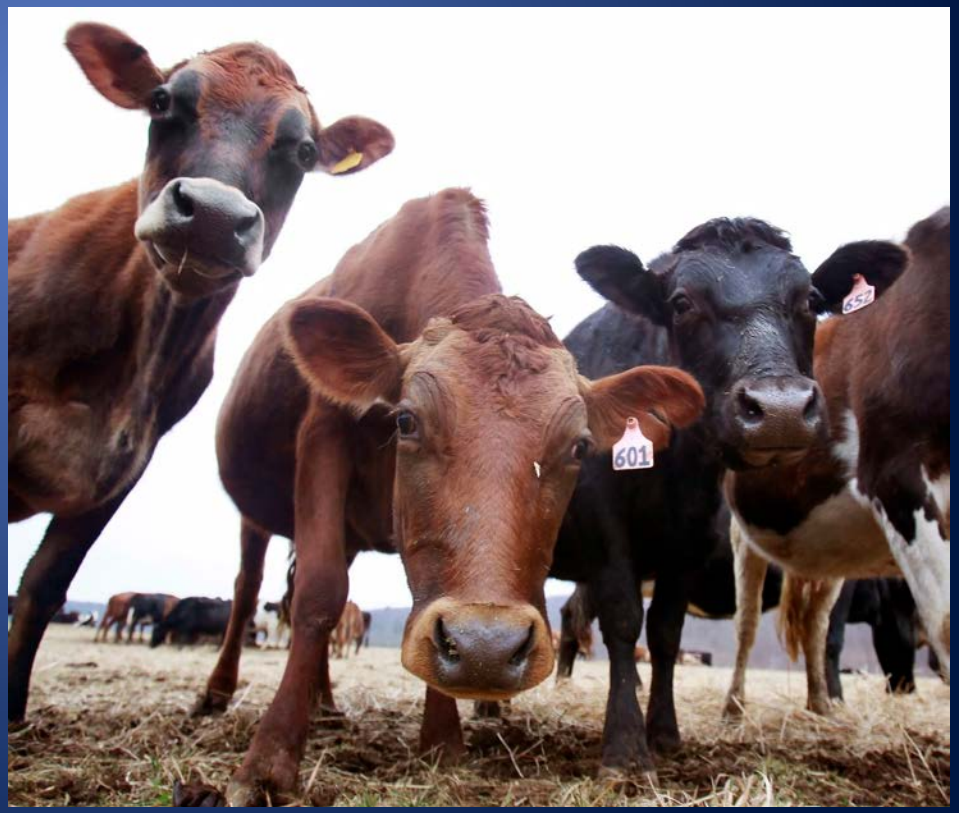


Washington Wolf Population Summary

Year	Min Count	Known No. of Packs	SBP	Growth Rate	Known Wolf Mortality	Depredating Packs (%)
2008	5	1	1	--	0	0%
2009	14	2	2	--	0	0%
2010	19	3	1	36%	2	0%
2011	35	7	5	84%	0	0%
2012	51	9	5	46%	9	33%
2013	52	13	5	2%	5	8%
2014	68	16	5	31%	10	13%
2015	90	18	8	32%	7	22%
2016	115	20	10	28%	14	20%
2017	122	22	14	6%	14	23%
2018	126	27	15	3%	12	19%
Ave				28%		13%

Wolf – Livestock Interactions

- Wildlife Conflict Specialists
  - Coordination w/ producers
  - DPCA-Ls
  - Contract Range Riders
  - Deterrence measures
- Lethal Removal
- Compensation

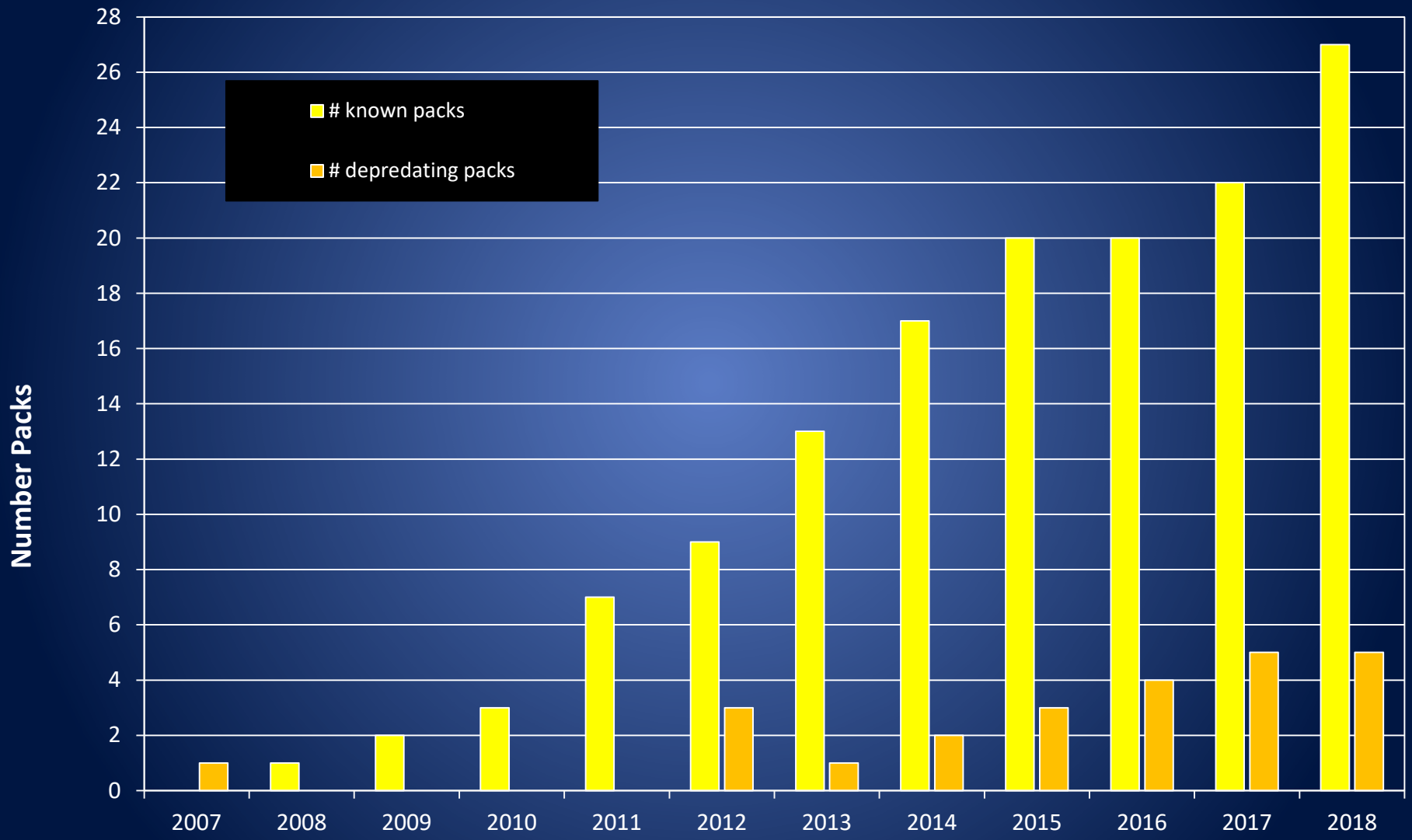


Contracted Range Riders

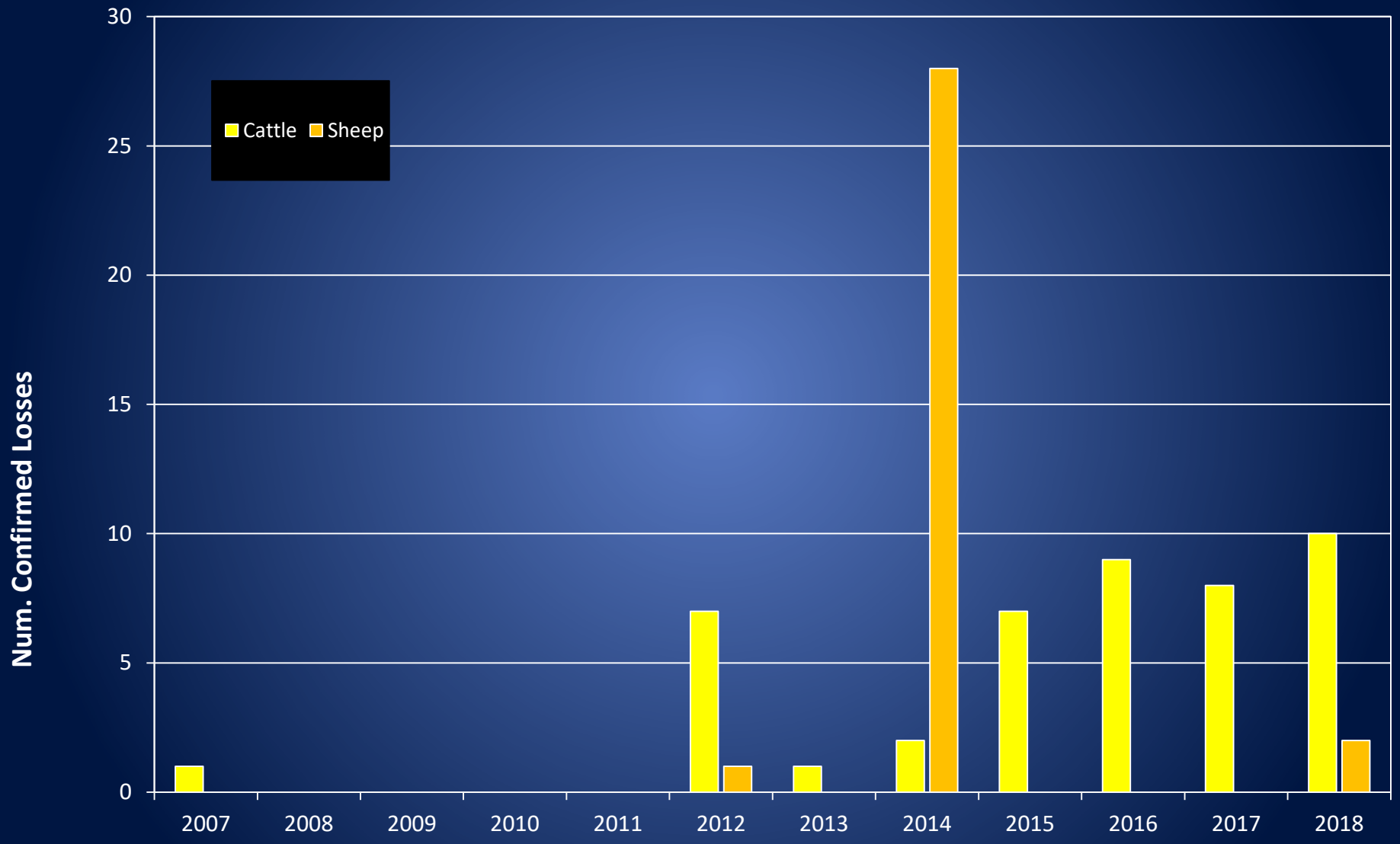
Cost – Share Agreements Promoting Deterrence Measures

- Sanitation
- Sick and injured livestock
- Calving and lambing areas
- Timing of Turnout
- RAG (radio activated guard)
- Range riders and sheepherders
- Fencing
- Fladry
- Foxlights
- Other techniques

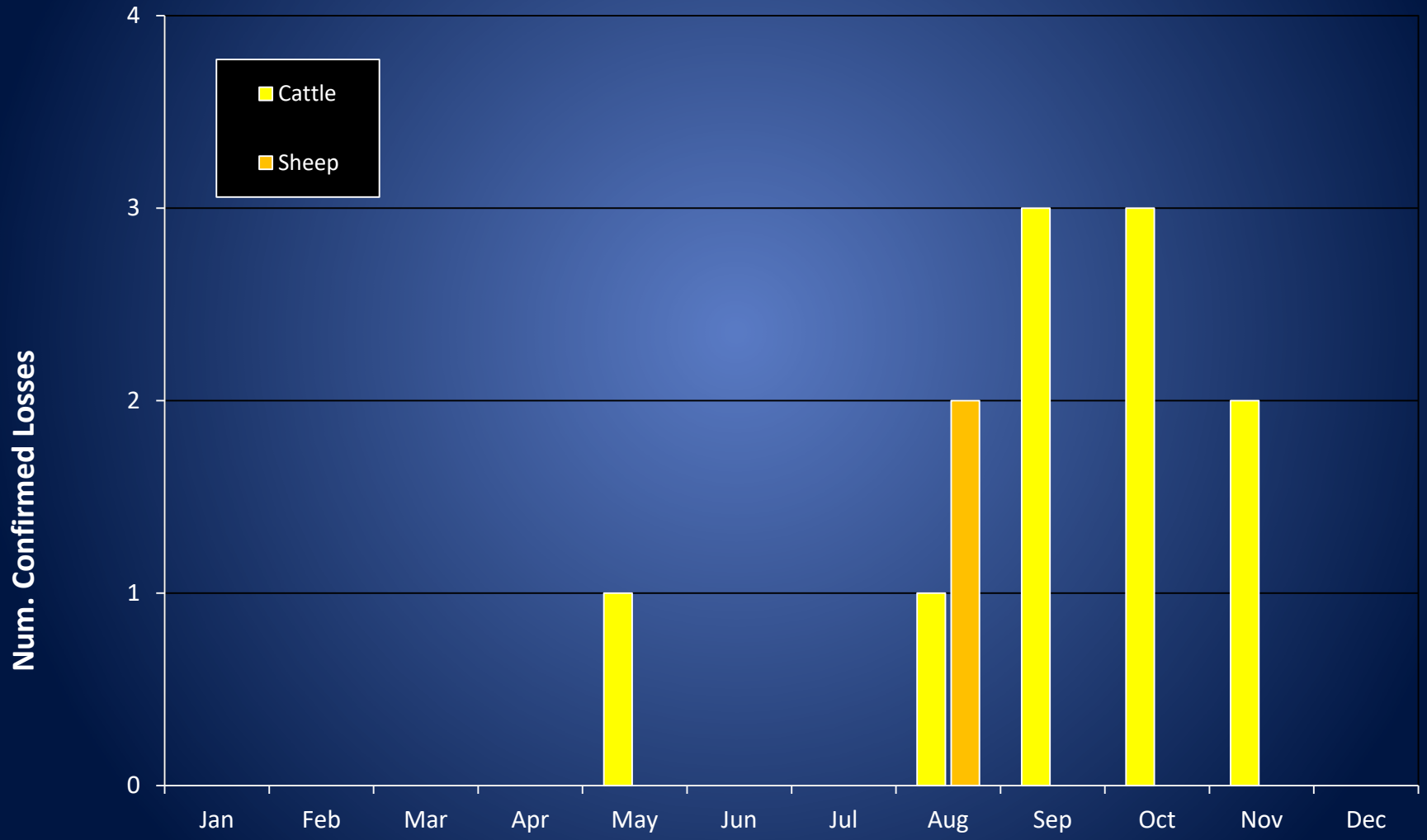
Packs Depredating on Livestock



Wolf Depredations in Washington



2018 Wolf-Caused Livestock Mortality By Month



Wolf – Livestock Interaction Protocol

WASHINGTON DEPARTMENT OF FISH AND WILDLIFE

Wolf-livestock interaction protocol
Revision date June 1, 2017

This protocol was jointly developed by the Washington Department of Fish and Wildlife (WDFW or Department) and its Wolf Advisory Group to guide the Department's efforts to reduce conflicts between wolves and livestock. The Wolf Advisory Group has expressed a strong value to reducing the likelihood of the loss of both wolves and livestock from adverse interactions. The protocol prescribes a variety of proactive measures livestock producers can take to reduce the probability of wolf-livestock conflicts and establishes a framework for WDFW's response when conflicts between wolves and livestock do occur.

The protocol draws on a diversity of perspectives expressed by people throughout the state for protecting wildlife populations as a public resource and livestock. These values include achieving a sustained recovered wolf population, supporting rural ways of life, and maintaining livestock production as part of the state's cultural and economic heritage. This protocol also serves to increase the transparency and accountability of the Department's activities and management actions related to wolves.

Section 1. Background and purpose of protocol

Gray wolves are listed as endangered under the federal Endangered Species Act (ESA) of 1973 in the western two-thirds of Washington, but are federally delisted in the eastern-third of the state (Fig. 1). Under Washington State rule, gray wolves as endangered statewide. Under the Federal listing status, the U.S. Fish and Wildlife Service (USFWS) is the lead agency for managing wolves in the western two-thirds of Washington, and WDFW has full management authority for wolves in the eastern third.

Figure 1. Federal classification of gray wolves in Washington State, 2017.

Research

- *Completed Projects:*
  - **A. Valerio (WSU)** - Stress-Mediated and Habitat-Mediated Risk Effects of Wolves on Free-Ranging Cattle in Washington
- *Ongoing Projects:*
  - **WDFW - Predator/Prey Project**
  - **T. Ganz (UW)** - Ungulate – Predator Dynamics in Northern WA
  - **L. Satterfield (UW)** - Interactions between wolves & cougars in eastern Washington State
  - **L. Prugh (UW)** - Interactions among large & small carnivores in WA
  - **S. Bassing (UW)** - Spatiotemporal dynamics of predator-prey interactions as wolves recolonize Washington
  - **T. Roussin (UW)** – Methods for long-term monitoring of wolf populations
  - **J. Goerz (UM)** - Effects of Summer Habitat Selection on Survival and Reproduction of Moose in Northeast Washington
  - **S. Wasser (UW)** - Monitoring impacts of wolf recovery in WA State
  - **S. Warren (UM)** - Influence of gray wolves on interspecies movement patterns in the Central Cascades

Wolf Advisory Group

- Met four times in 2018
- Guidance on wolf management
  - Expectations on preventative measures and potential agency management actions
- Restructure of WDFW participation
- Began discussing how wolf management might change after delisting

Outreach

- Updating WDFW Website
- Wolf Advisory Group
- Daily Interactions
- Formal Presentations

Questions?

Update on treponeme-associated hoof disease of elk in Washington | GMAC meeting June 8, 2019

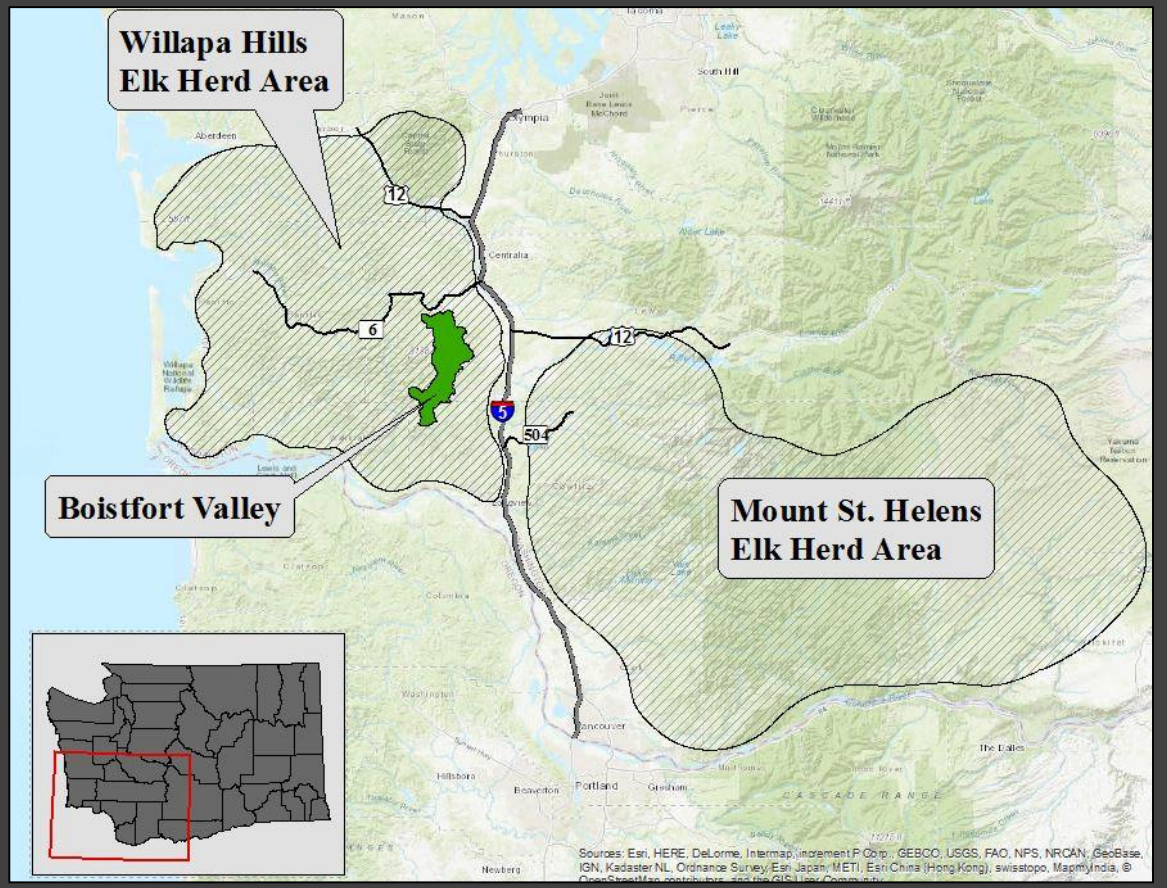
Kyle Garrison

Washington Department of Fish and Wildlife

Content

- Disease overview
- Updates
  - Prevalence estimation
  - Survival and productivity research
  - Future work
- Questions

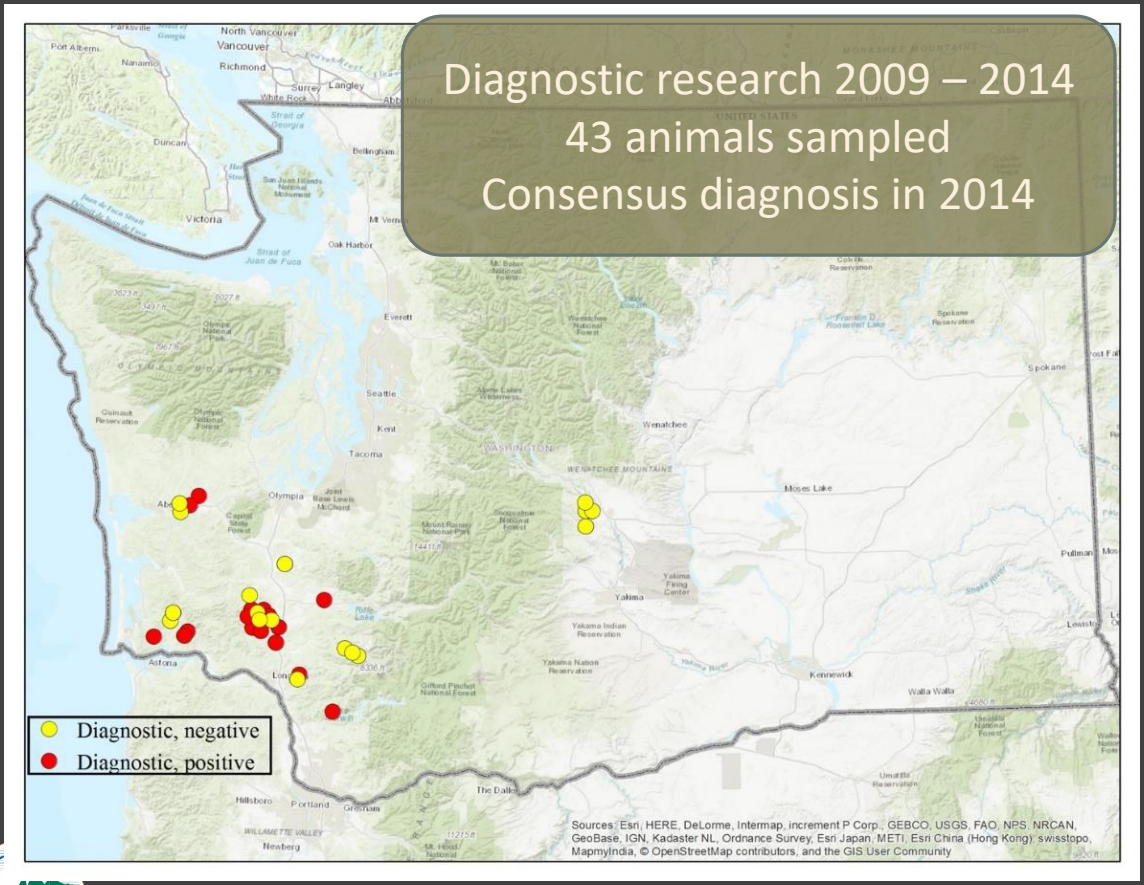
Disease overview

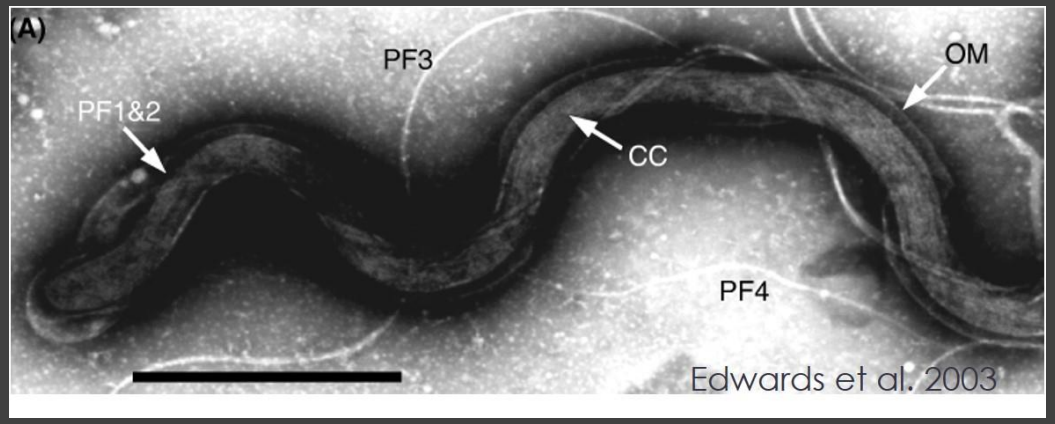


Disease overview

Disease overview

Disease overview





SEVERE HOOF DISEASE IN FREE-RANGING ROOSEVELT ELK (*CERVUS ELAPHUS ROOSEVELTI*) IN SOUTHWESTERN WASHINGTON, USA

Sushan Han[1,3,4] and Kristin G. Mansfield[2]

[1] Washing
7034, USA
[2] Washing
[3] Current
University
[4] Corresp

Isolation of Digital Dermatitis Treponemes from Hoof Lesions in Wild North American Elk (*Cervus elaphus*) in Washington State, U

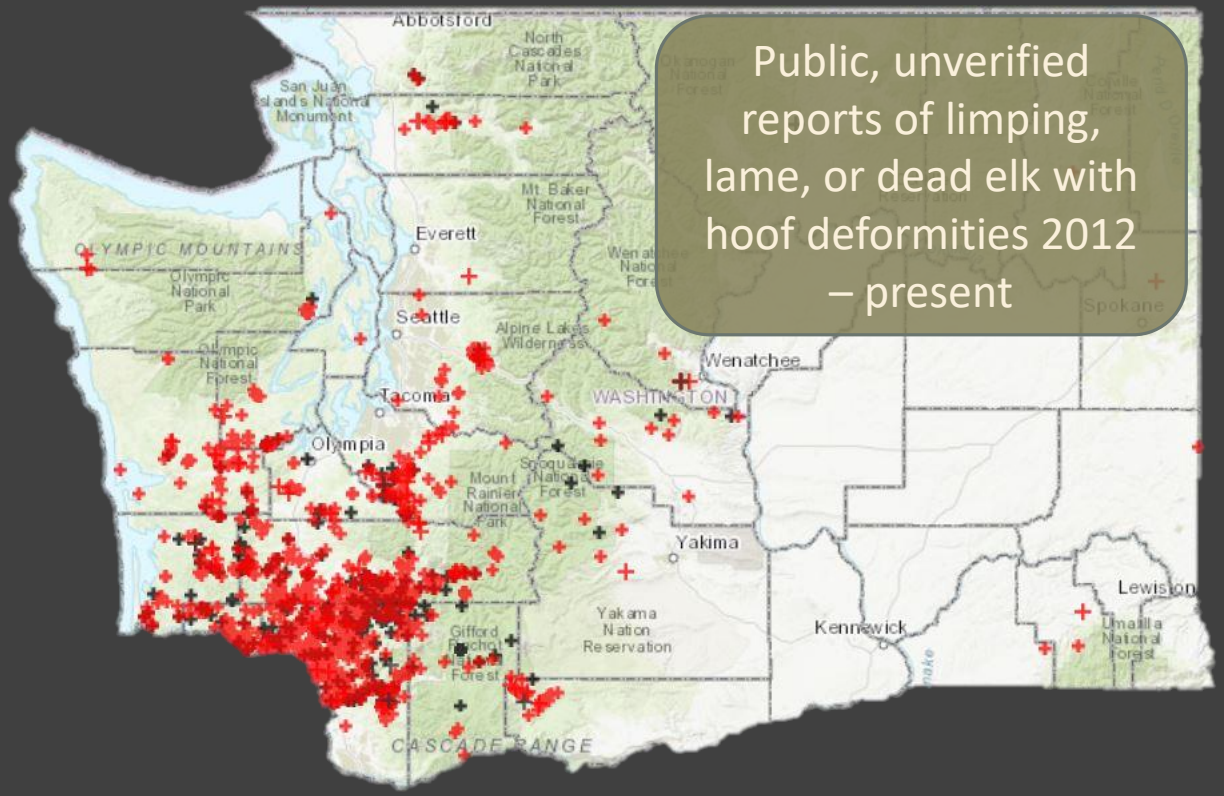
S. R. Clegg,[a] K. G. Mansfield,[b] K. Newbrook,[a] L. E. Sullivan,[a] R. W. Blowey,[c] S. D. Carter,[a] N. J. Evans[a]

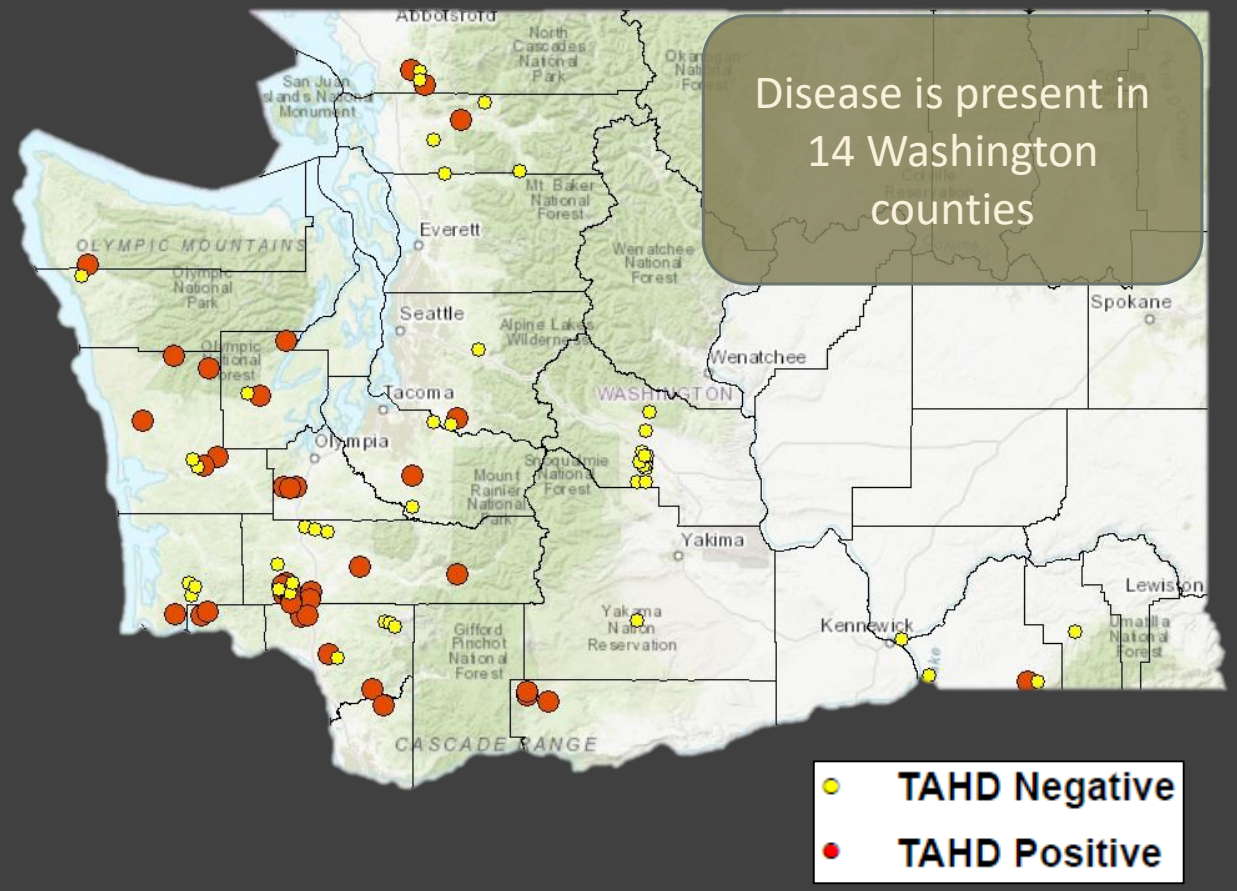
Department of Infection Biology, Institute of Infection and Global Health, School of Veterinary Science, University of Liverpool, Liverpool, United Kingdom[a]; Wash
Department of Fish and Wildlife, Spokane Valley, Washington, USA[b]; University of Liverpool and Wood Veterinary Group, Gloucester, Gloucestershire, United Kin

Disease overview (digital dermatitis)

- No effective vaccines, some treatments
- High recurrence rates
  - All domestic treatments impractical for elk
- Despite decades of research, many questions remain e.g., transmission and initiation
- Priority research for Washington State University program on TAHD

Disease overview





Prevalence

- Wildlife disease prevalence important for management, but difficult to estimate
- For TAHD, limping or abnormal hooves are generally a reliable indicator of infection
- Several approaches used since 2015; consistent results, considerable tradeoffs

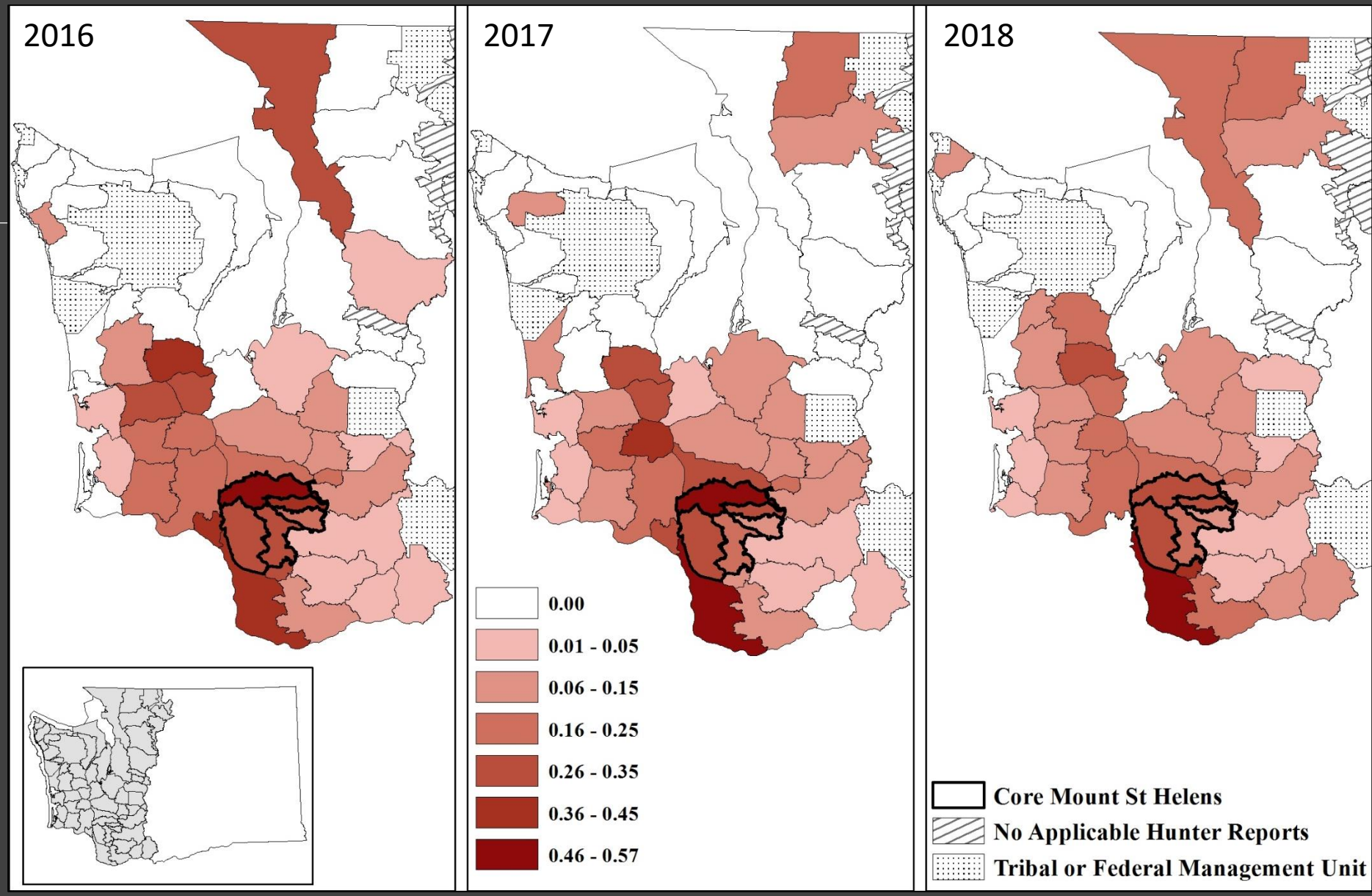
Hunter reporting

- Mandatory in WA; cheap, potentially reliable index
- Observation of hoof abnormalities used as an index of prevalence at management unit scale
- Subsample permit hunters to assess hunter bias and outreach efforts

W. WA	N	Estimate	95% CI
2016	2494	0.15	0.14-0.16
2017	2247	0.11	0.10-0.12
2018	2728	0.11	0.10-0.12

MSH Core	N	Estimate	95% CI
2016	447	0.40	0.36-0.45
2017	290	0.32	0.27-0.38
2018	324	0.27	0.22-0.32

	2016	2017
False Negative	0.48	0.31
False Positive	0.04	0.03



Disease impacts

Mount St Helens elk herd
2015 – 2019

Objectives:

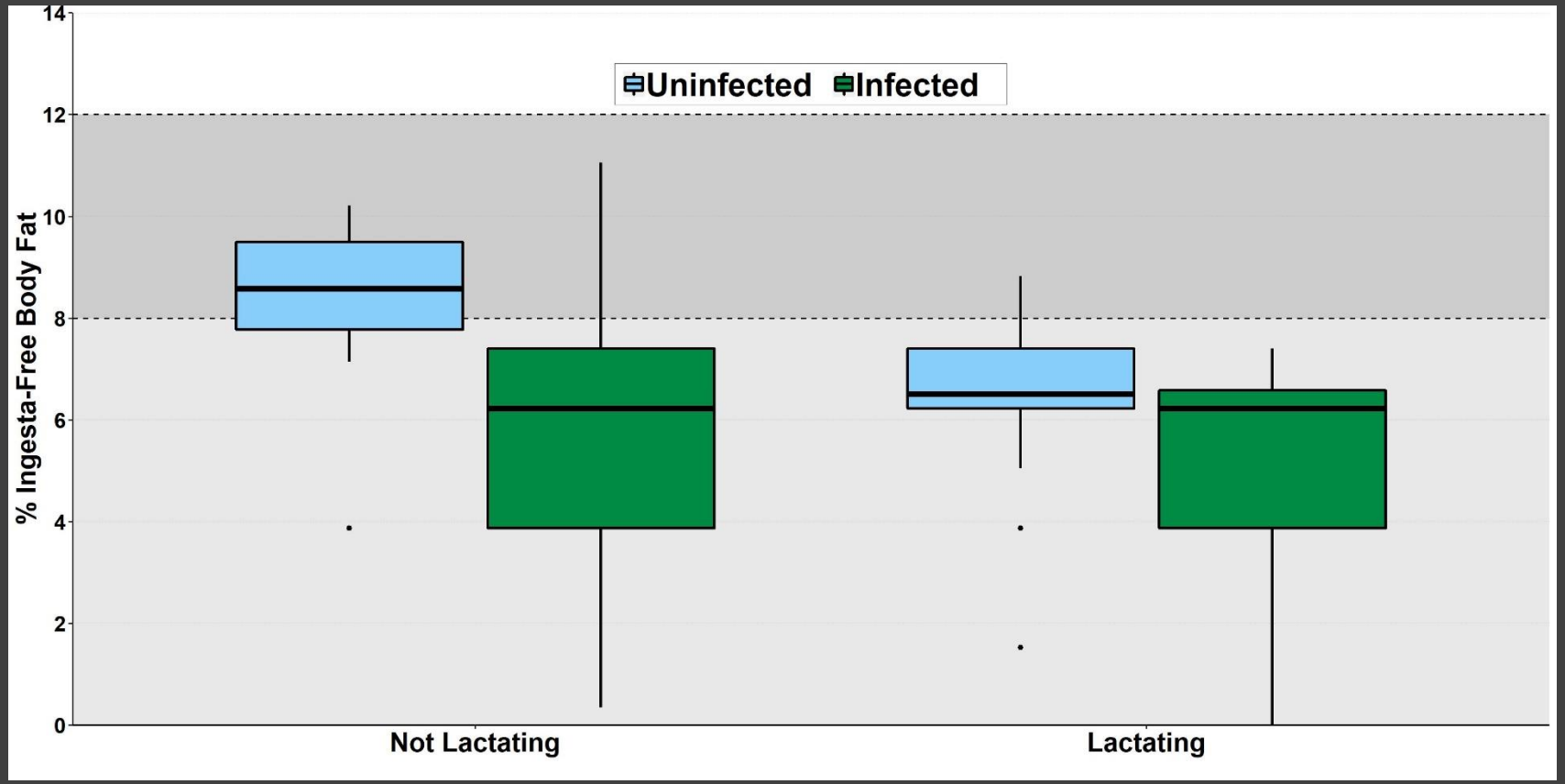
1. Estimate disease impacts on survival and productivity
2. Determine cause-specific mortality
3. Better understand disease progression

257 capture events; 180 individuals
77 recaptures
122 with TAHD, 55 healthy, 3 pending

Body condition

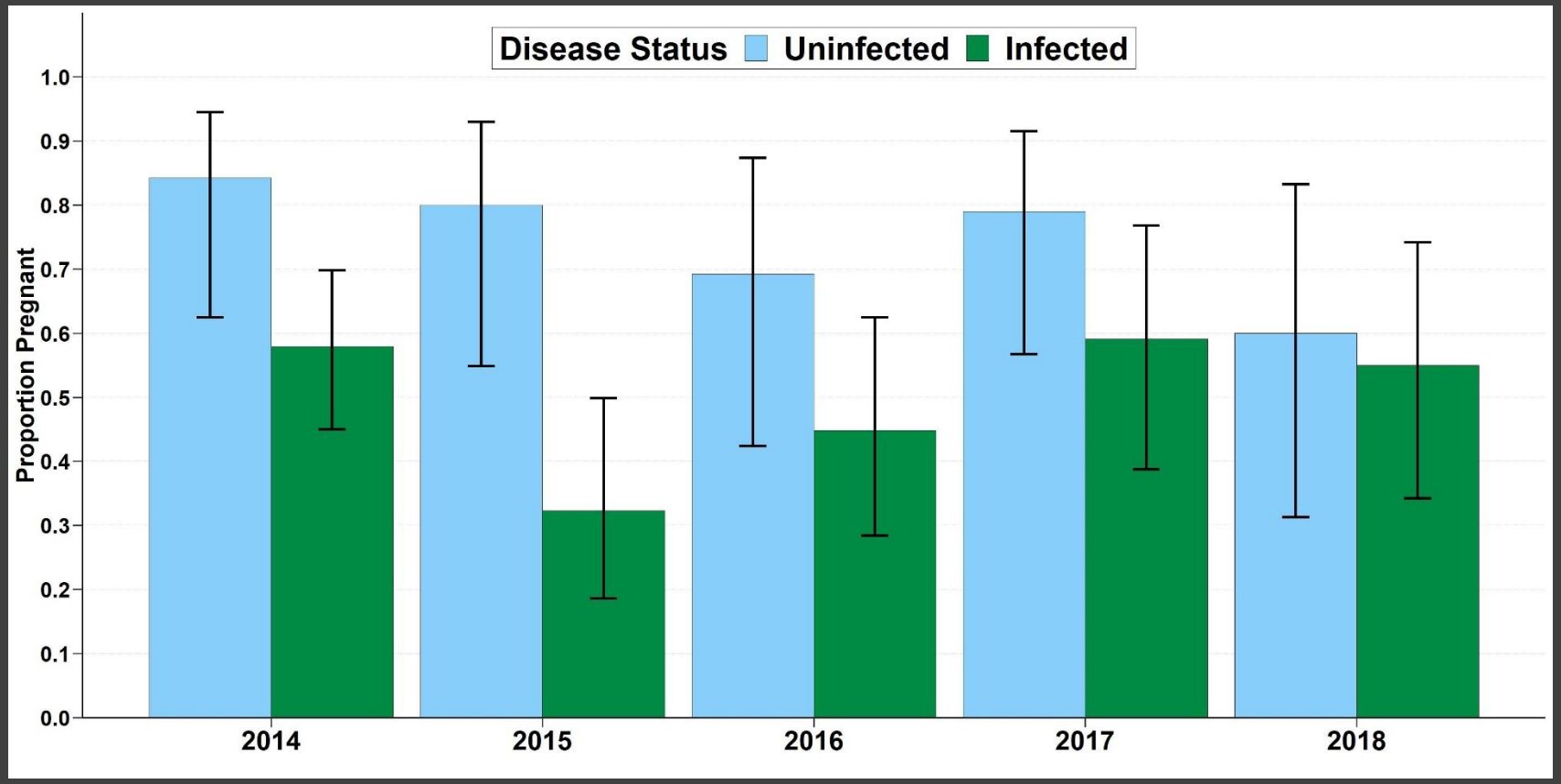
Marginal (8-12%)

Poor (<8%)

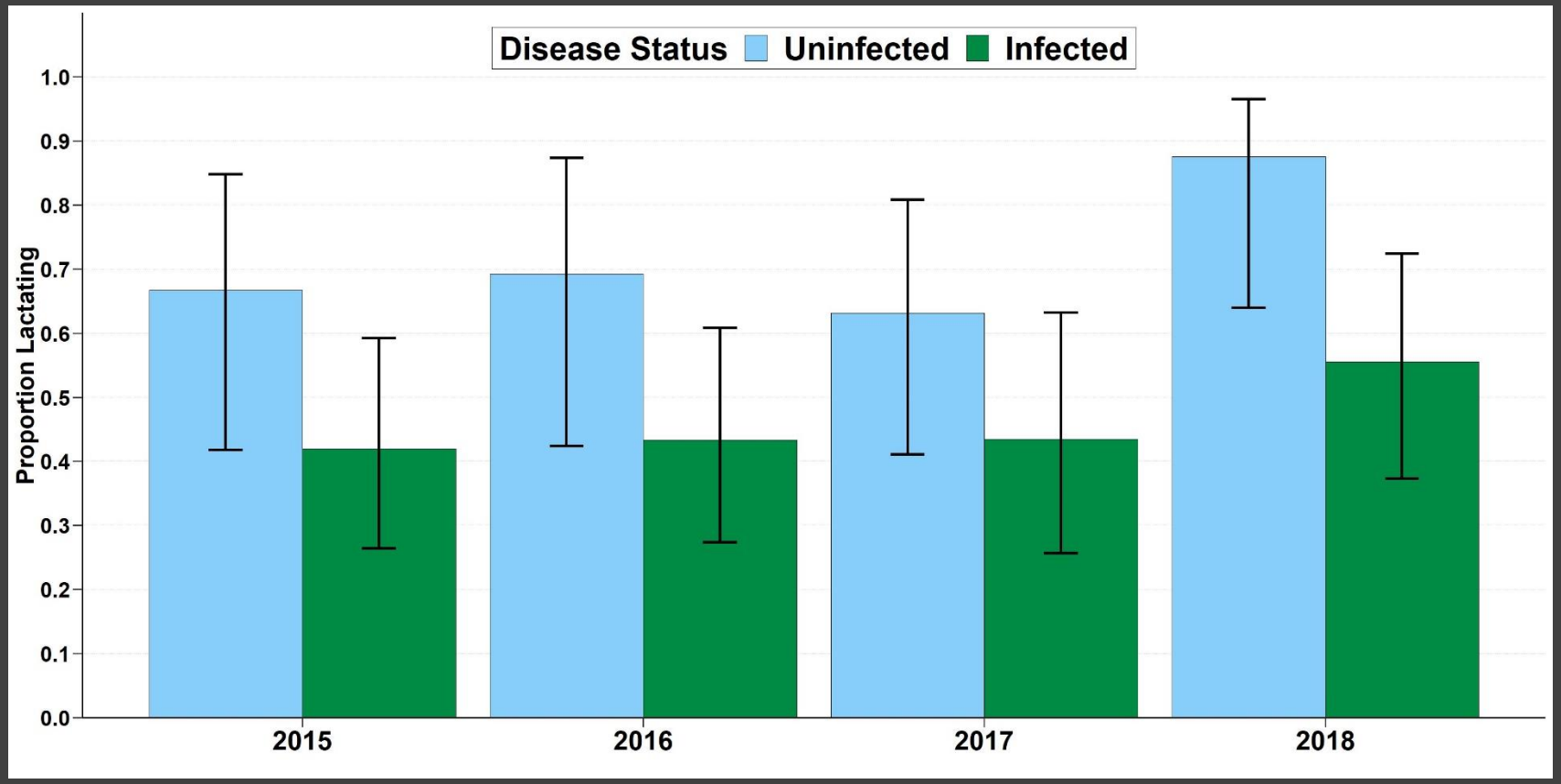


*Lactating adult females (3-12yrs) Cook et al. 2004

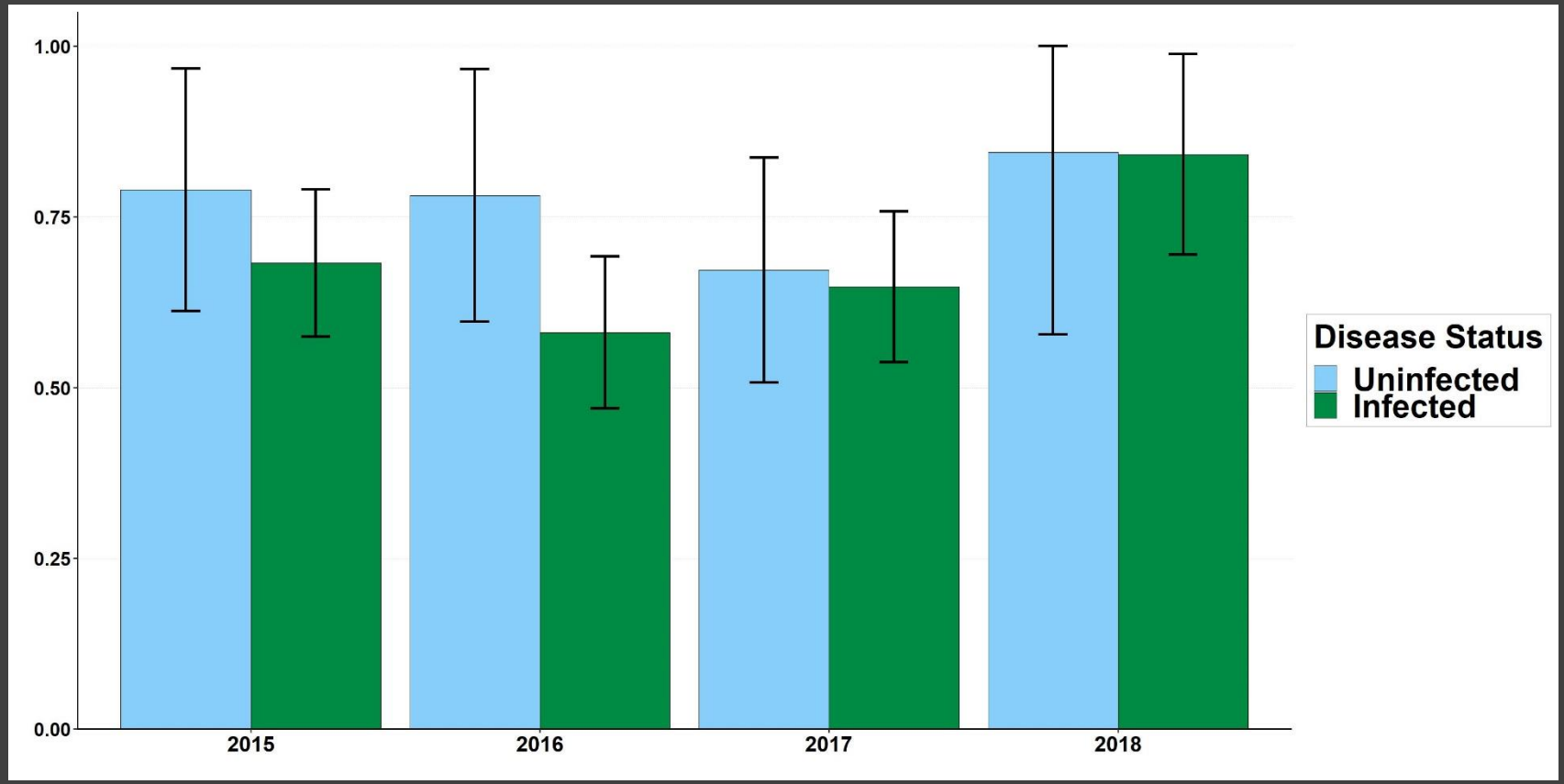
Pregnancy rates



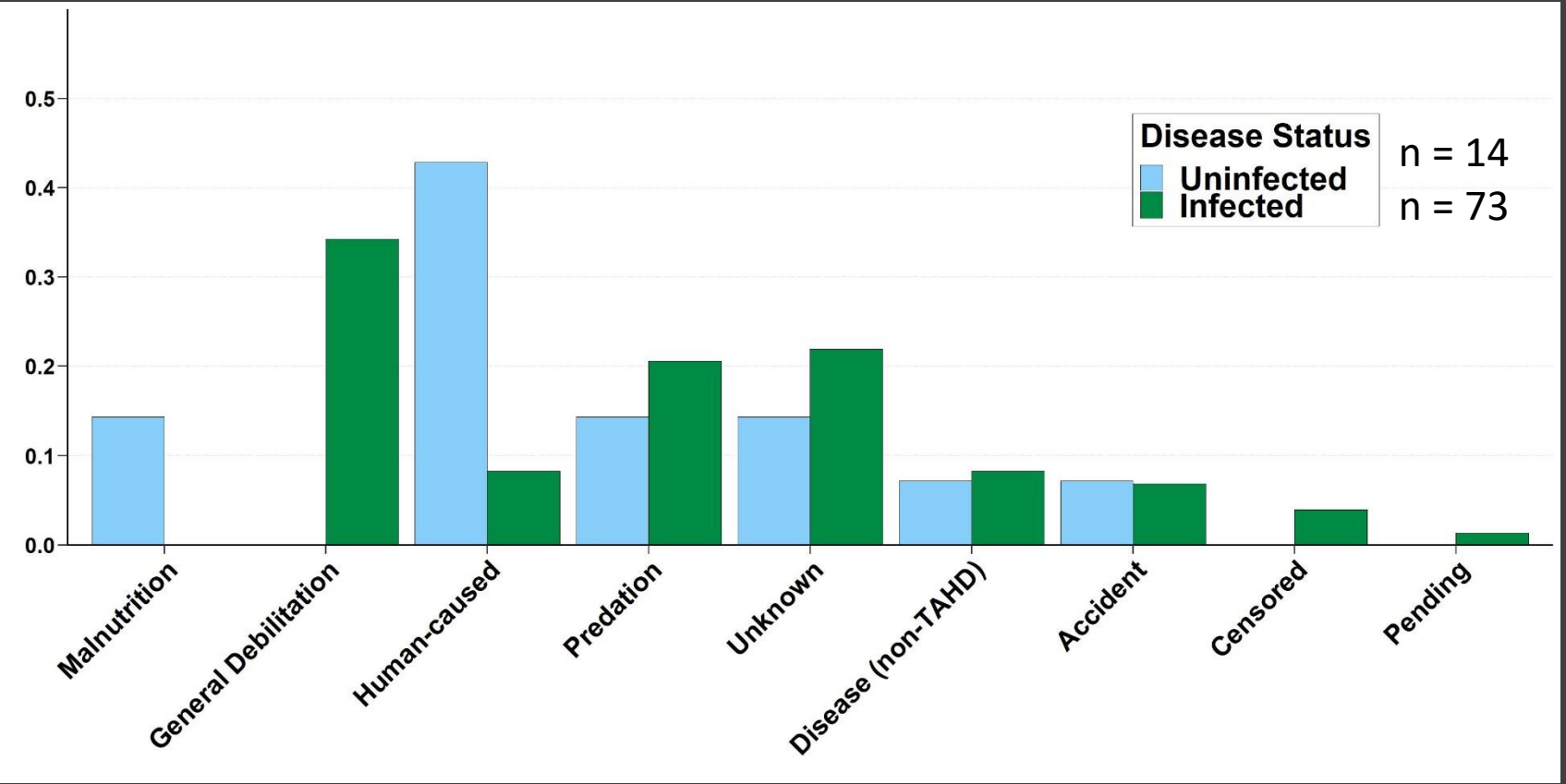
Lactation rates



Survival


1.00
0.75
0.50
0.25
0.00
2015
2016
2017
2018
Disease Status
Uninfected
Infected

Cause-specific mortality



Future work

- Continue refining and exploring prevalence estimation methods
- Finalize survival and productivity research
- Explore and evaluate management efforts to reduce prevalence

- Continue biomedical, epidemiological, and human dimensions collaborative research with Washington State University, USDA, others

Acknowledgements

- Brock Hoenes, Dr. Kristin Mansfield, Brooke George, Eric Holman, Nicholle Stephens, Bryan Murphie, Dr. Katie Haman, Sara Hansen, Dr. Ilai Keren, Dr. Sandra Jonker, Dr. Jerry Nelson, Dr. Treg Christopher, Brian Calkins, Dr. Scott McCorquodale (WDFW)

- Dr. Rachel Cook (NCASI)
- Jess Hagerman (Northwest Helicopters)
- Washington Dept. of Natural Resources
- US Forest Service
- Weyerhaeuser Company
- Port Blakely
- Pacificorp
- Cowlitz County Washington
- Rocky Mountain Elk Foundation
- Safari Club International
- Colorado State University Diagnostics Laboratory

Questions?

THE PREDATOR-PREY PROJECT: RESEARCH UPDATE JUNE 2019

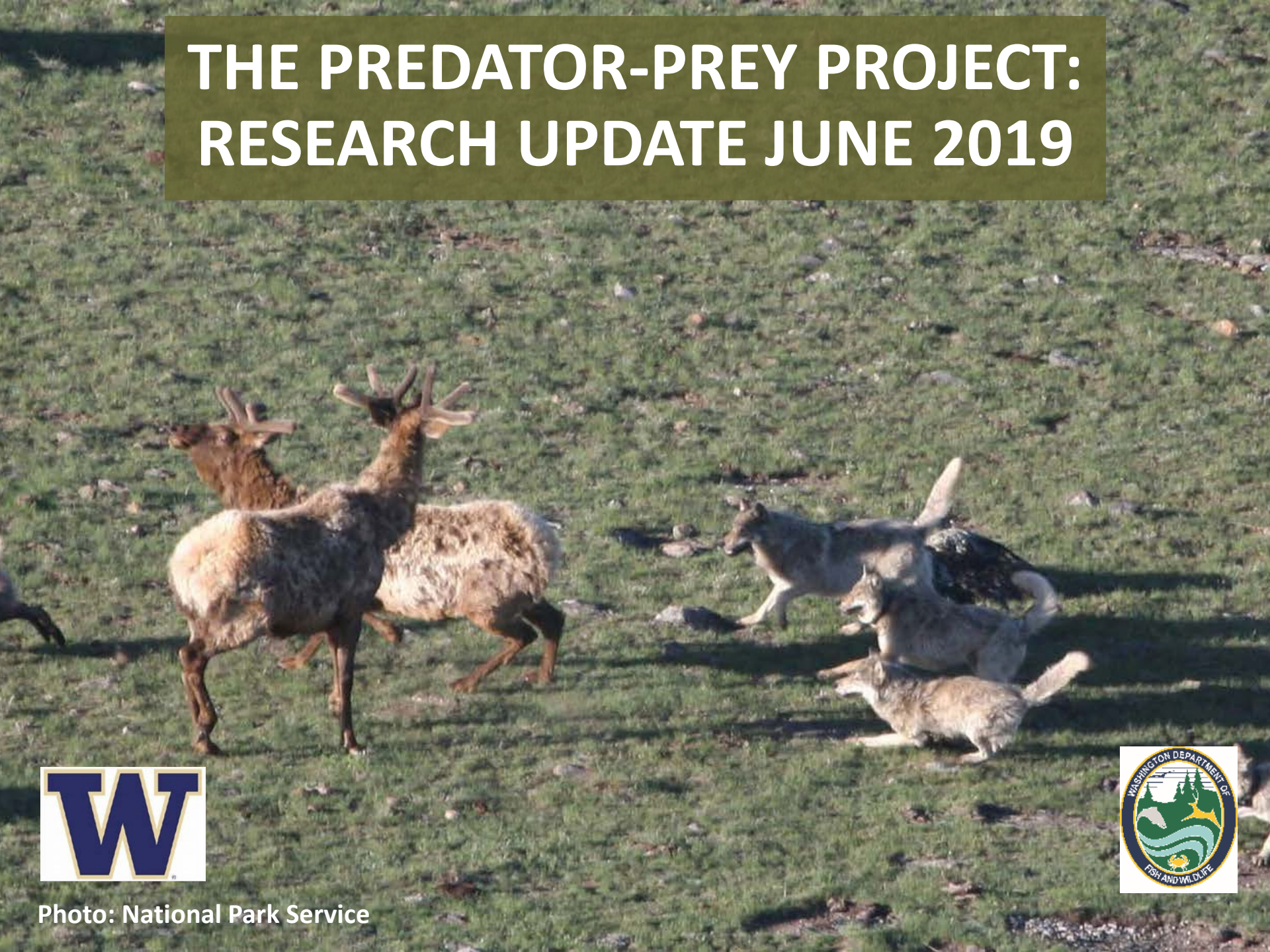


Photo: National Park Service

RESEARCH QUESTION

How is predation affecting Washington's ungulate populations in landscapes occupied by varying densities of wolves that are sympatric with other predators?

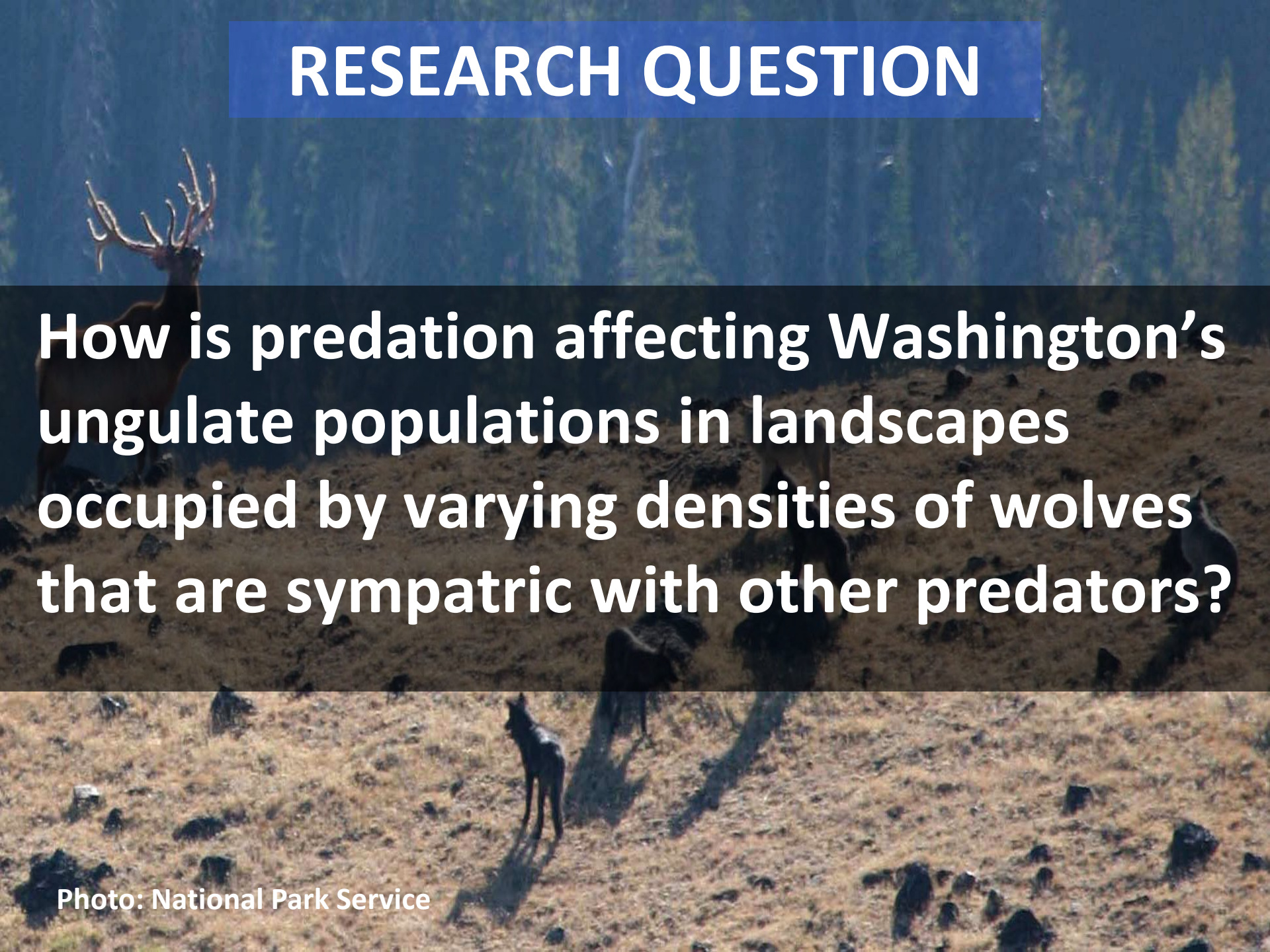


Photo: National Park Service

ADULT UNGULATE CAPTURES TO DATE

Led by WDFW (Melia DeVivo)

- **Mule Deer: 102**
  - Achieved target sample January 2018
  - Pregnancy was 100% and 94% in 2016/17 and 2017/18, respectively
  - Redeploy collars winter 2019/20 to account for annual attrition
- **Elk: 56**
  - Achieved target sample January 2018
  - Ages ranged from 1 – 14 years old, mean age 6 years old
  - Pregnancy was 85% and 91% in 2016/17 and 2017/18, respectively
  - Redeploy collars winter 2019/20 to account for annual attrition
- **White-tailed deer: 96**
  - Achieved target sample March 2019
  - Pregnancy was >90% during all three winter captures
  - Deployed 65 collars this past winter
    - New capture tools and methods
    - Greater knowledge and skill
    - Additional on the ground support

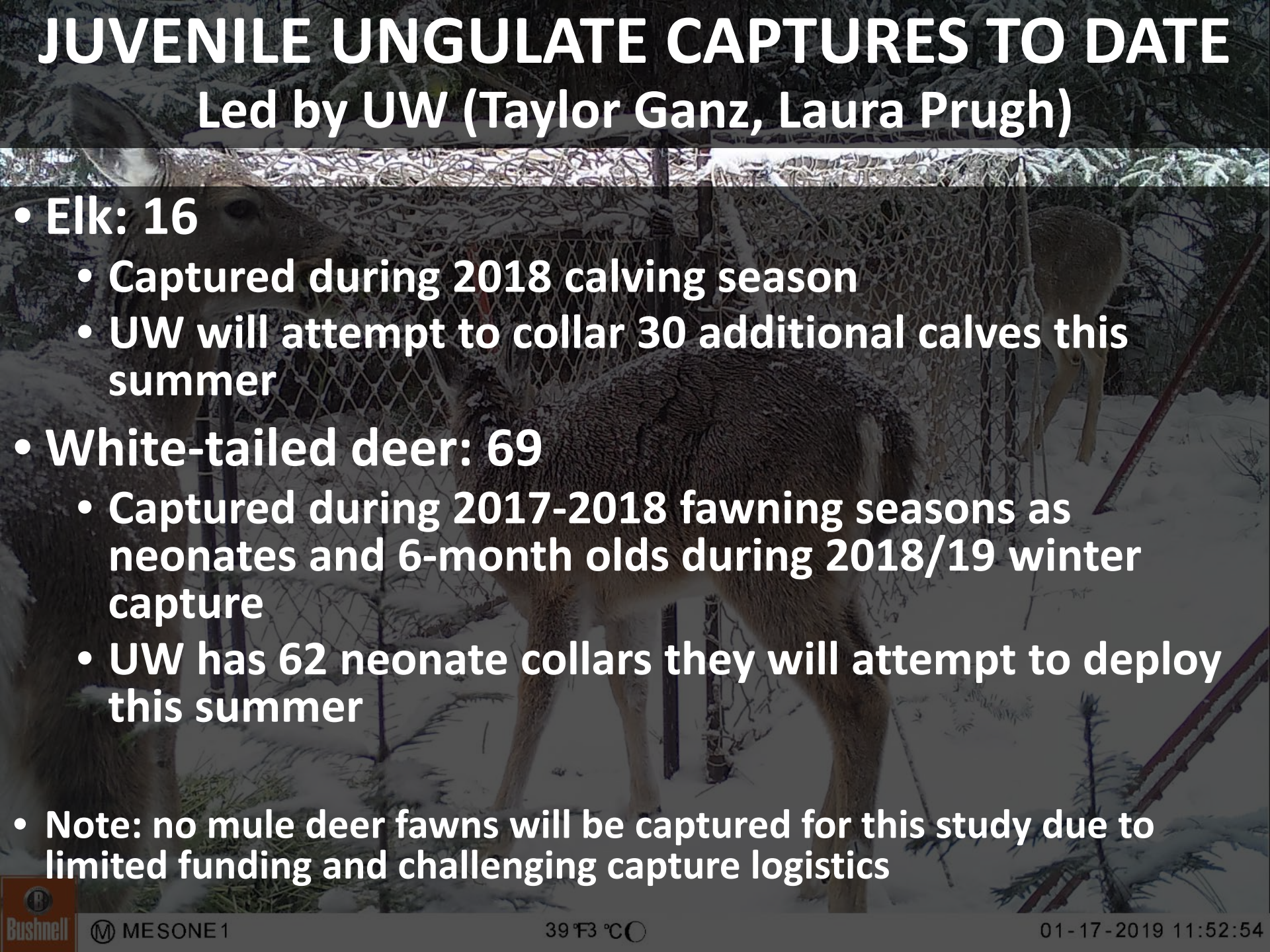
Bushnell 02-11-2019 11:59:41

JUVENILE UNGULATE CAPTURES TO DATE

Led by UW (Taylor Ganz, Laura Prugh)

- **Elk: 16**
  - **Captured during 2018 calving season**
  - **UW will attempt to collar 30 additional calves this summer**
- **White-tailed deer: 69**
  - **Captured during 2017-2018 fawning seasons as neonates and 6-month olds during 2018/19 winter capture**
  - **UW has 62 neonate collars they will attempt to deploy this summer**

- **Note: no mule deer fawns will be captured for this study due to limited funding and challenging capture logistics**

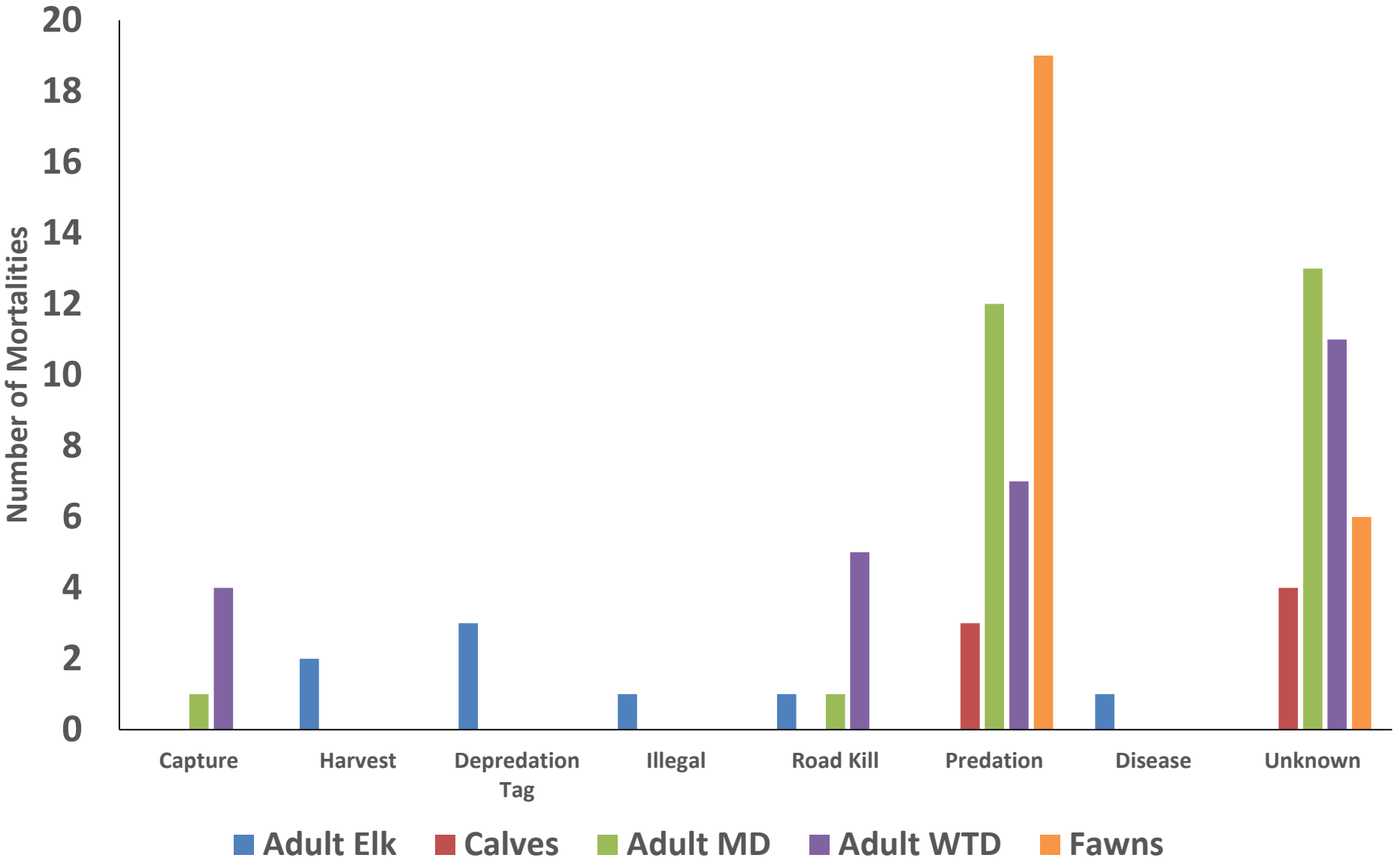


UNGULATE MONITORING
Since Winter 2016/2017

- Mule Deer: 70 active collars
  - Documented 27 mortalities
- Elk: 47 active collars (43 adults and 4 calves)
  - Documented 8 adult mortalities, 7 calf mortalities
- WTD: 61 active collars (57 adults and 4 fawns)
  - Documented 27 adult mortalities, 29 fawn mortalities

- Note: all neonate collars are designed to expand and drop off as the animal grows, which ideally occurs after 12 months of age. Sometimes collars prematurely fall off for various reasons and the fate of those animals is unknown.

PROXIMATE CAUSE OF MORTALITIES



COUGAR CAPTURES – NORTHEAST

- WDFW – Brian Kertson
- Captures began in December 2016
- 51 total, 29 adults and subadults collared:
  - 10 adult females
  - 9 adult males
  - 5 subadult females
  - 5 subadult males
- Remaining captures are kittens

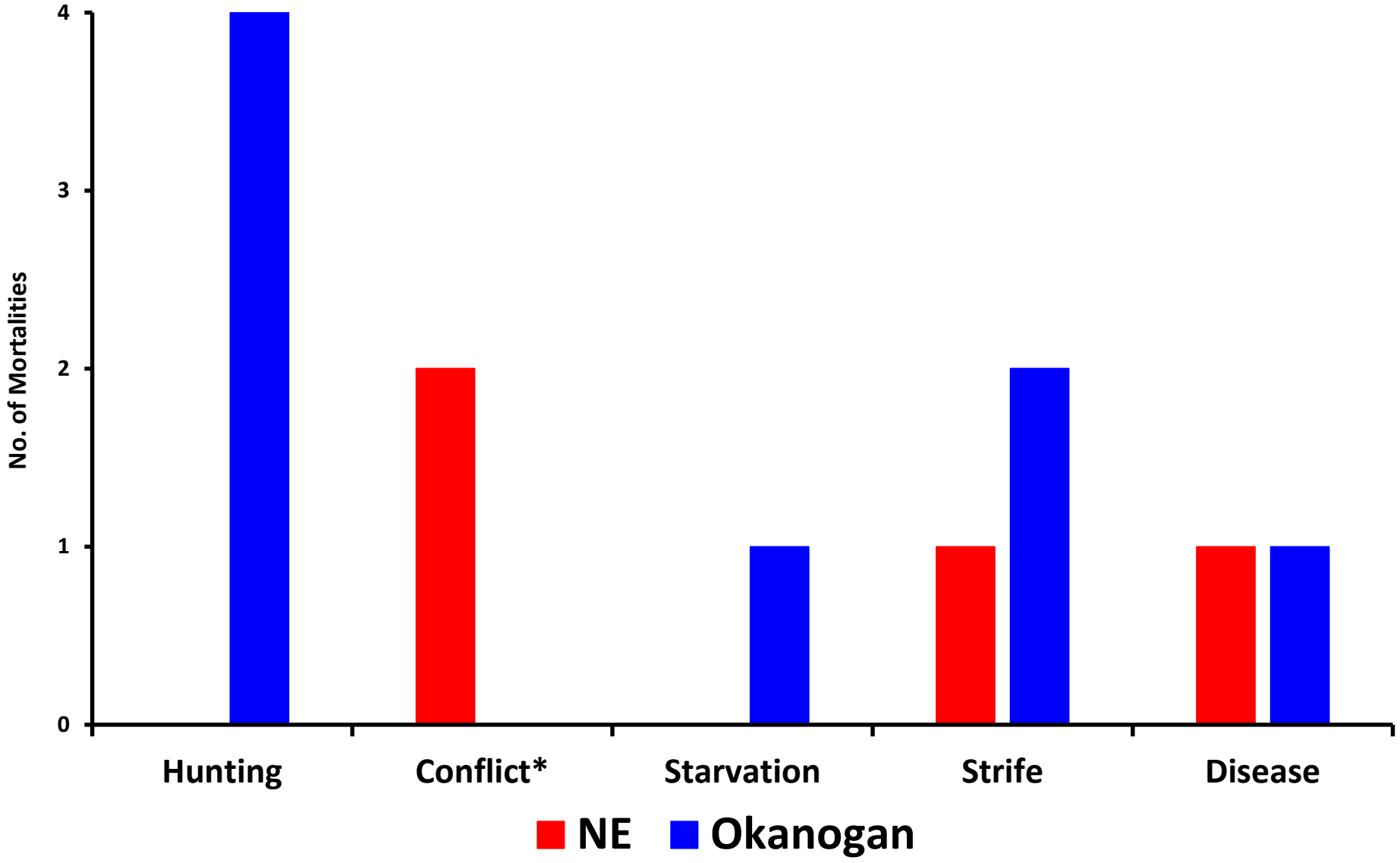
COUGAR CAPTURES - OKANOGAN

- UW – Lauren Satterfield (Ph.D. student)
- Captures began in December 2016
- 25 total, 21 adult and subadults collared
  - 10 adult females
  - 6 adult males
  - 4 subadult females
  - 1 subadult male
- Remaining captures are kittens

CURRENT COUGAR MONITORING

- **NE: 22 active collars**
  - 11 females, 11 males
  - 4 mortalities
  - 1 dispersal (Okanogan Valley in Canada)
  - 2 missing (collar malfunction, broken spacer)
- **Okanogan: 10 active collars**
  - 7 females, 3 males
  - 8 mortalities
  - 3 missing (collar malfunction)

COUGAR MORTALITIES – MAY 31, 2019



WOLF CAPTURES

- WDFW wolf bios
- Capture efforts began in January 2017
- 16 wolves collared in research packs:

  -Carpenter Ridge: 4 (2 adult m, adult f, subadult f)

  -Dirty Shirt: 2 (subadult f, adult f)

  -Huckleberry 1 (subadult f – Spokane Tribe)

  -Lookout: 2 (subadult m, adult m)

  -Loup Loup: 4 (adult f, subadult f, adult m, subadult m)

  -Stranger: 3 (adult f, subadult f, subadult m)

CURRENT WOLF MONITORING

- **Collars currently deployed:**

  -Carpenter Ridge: 3 GPS (1 missing – collar malfunction)

  -Dirty Shirt: 0 (1 dispersed, 1 poached)

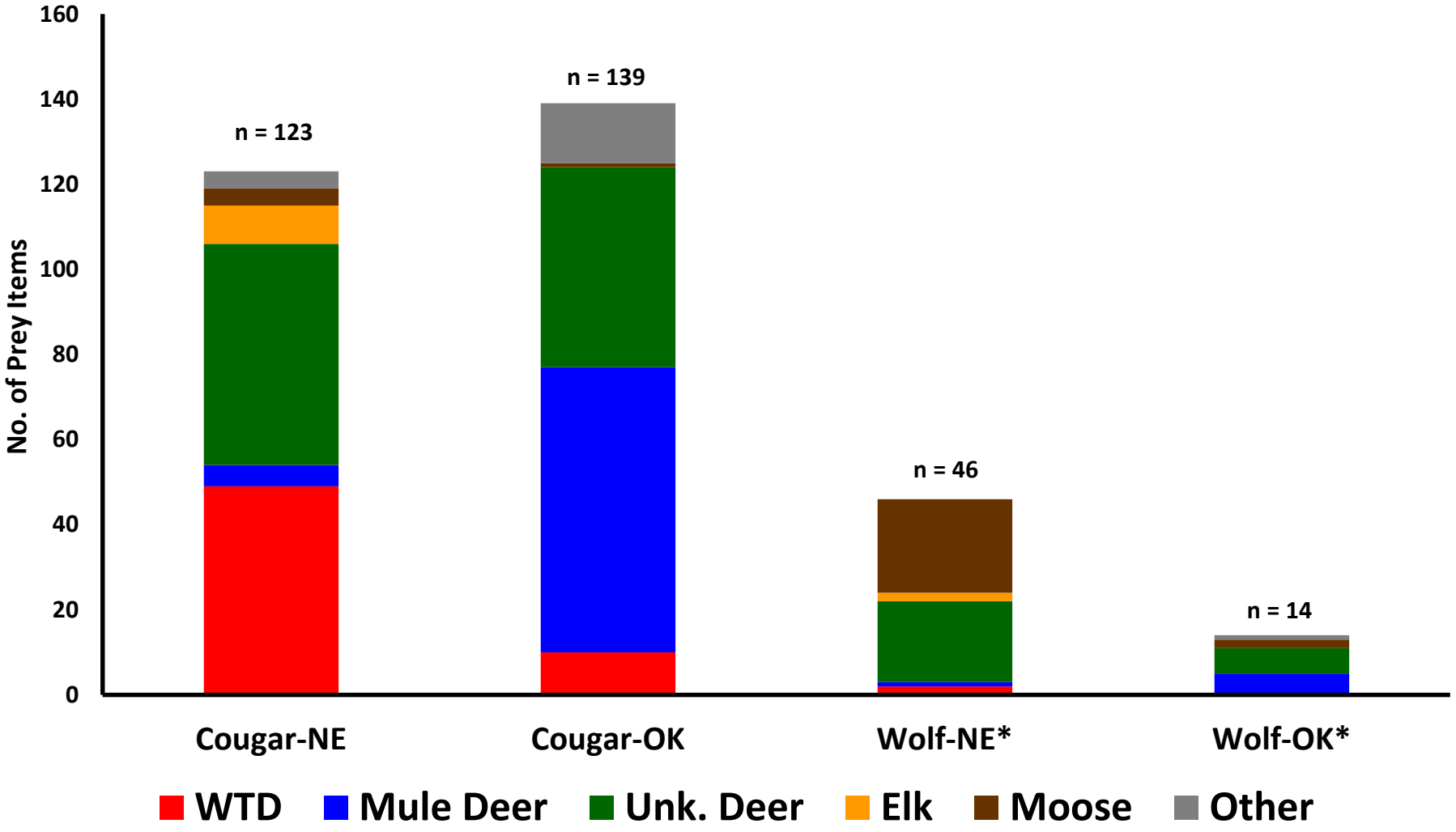
  -Huckleberry: 1 GPS (Spokane Tribe's collar)

  -Loup Loup: 1 GPS, 1 Vhf (2 dispersed)

  -Lookout: 2 GPS

  -Stranger: 1 GPS (1 dropped collar, 1 dispersed & killed)

CARNIVORE PREY USE – MAY 31, 2019



L. Satterfield, University of Washington, unpublished data

QUANTITATIVE INVESTIGATIONS

- Sarah Bassing (Beth Gardner) – UW
- Modeling predator-prey dynamics
- Maintain 60 active cameras in each study area
- One year of data collection completed
- Thousands of photos of target species already
- Currently redistributing cameras for the coming year

MESOCARNIVORES

- Becca Windell (Laura Prugh) – UW
- Independent NSF funding
- Impacts of large carnivores on coyotes and bobcats (facilitation vs. suppression)
- 17 bobcats collared (8 in NE, 9 in OK)
- 8 coyotes collared (6 in NE, 2 in OK)

UPCOMING ACTIVITIES

- Monitor collared individuals – WDFW/UW
- Fawn and calf captures (NE) – UW
- Ungulate habitat assessment (NE) – UW
- Wolf trapping - WDFW
- Carnivore cluster visits – UW
- Kitten captures (NE) – WDFW
- Maintain and deploy cameras – UW
- Coyote trapping - UW

TAKEAWAYS TO DATE

- No formal analyses have been completed
- No documented mortalities from wolves of radio-collared deer and elk
- All facets, up and running
  - -Hit sample size objectives for ungulates
  - -Need collars in Huckleberry and Lookout packs
- Collar issues have created some challenges

QUESTIONS?