

Wolf Advisory Group

MEETING SUMMARY¹, JUNE 22-23, 2022

WAG members present: Bill Kemp, Caitlin Scarano, Dan Paul, Diane Gallegos, Jess Kayser, Jessica Kelley (Day 1), Lisa Stone, Lynn Okita, Nick Martinez, Paula Swedeen, Samee Charriere, and Todd Holmdahl.

Washington Department of Fish & Wildlife (WDFW, Department) staff members present: Andrew Kolb, Annemarie Prince, Ben Maletzke, Candace Bennett, Jeff Wade, Jim Brown, Joey McCanna, Julia Smith, Kevin Robinette, Kyla West, Kyle Garrison, Grant Samsill, Maci Todd, Scott McCorquodale, Steve Pozzanghera, and Trent Roussin.

Facilitation team: Susan Hayman and Tristan Marquez

Presenters: Dr. Arthur Middleton, and Dr. John Vucetich, Dr. Matthew Metz

Meeting Action Items

Responsible Party	Action Item	Target Date
Facilitation Team	Edit and distribute recorded June WAG meeting presentations.	July 7
WDFW	Post June WAG meeting presentations to the WDFW website.	July 8
Facilitation Team	Distribute a doodle poll to identify the next WAG meeting date	July 11
Wolf-Ungulate Interaction Task Group	Synthesize the information needs for continued wolf-ungulate interactions discussions.	July 31

June 22, 2022

Opening

Susan Hayman, Ross Strategic facilitator, opened the Wolf Advisory Group (WAG) meeting by welcoming members, WDFW staff, and meeting observers, and providing an overview of the meeting objectives and agenda.

The purpose of the meeting was to 1) receive an update from WDFW on WAG member recruitment, wolf management, proposed rulemaking, and other activities since the April 2022 WAG meeting; 2) create a shared understanding of what is known and not known about the interactions among different species of ungulates, wolves, and other predators; and discuss factors/tools that may indicate if/when wolves are adversely impacting ungulate populations. Lastly, the group was encouraged to continue to identify initial, potential opportunities for common ground/collaboration that may address limiting factors for ungulate populations.

¹ This summary is a synthesis of the meeting discussion June 22-23, 2022. The meeting summary will be publicly available following finalization of the meeting documentation package.

WDFW Updates

Recruitment Update

The WAG Facilitation team provided an update on the status of the WAG recruitment process. The team received 99 applications by the closing of the application period and 92 individuals had been invited to participate in an interview. The team had conducted 43 interviews with four additional interviews scheduled for the coming Friday. The composition of the interviewed candidates' primary interests so far was 15 at-large, 5 conservationists, 16 hunters, and 7 producers. The facilitation team informed the group that they would be completing the interviews Friday, June 24 and submitting their recommendations for second-round interviews to WDFW by June 30th. WDFW will then review the recommendations and decide how to proceed with the second round of interviews. Hayman noted the team was pleased with the amount and diversity of applicants and interviews. Several candidates represented hunting and livestock organizations, and many applicants came from parts of Washington not currently represented in the WAG's roster. Julia Smith, WDFW Wolf Policy Lead, clarified that the recruitment process is seeking to fill the current five vacancies on the WAG, but that the WAG is not required to have a full roster of 18 members to operate.

Trapping Season Updates

Smith introduced Ben Maletzke, WDFW Statewide Wolf Specialist, and Trent Roussin, WDFW Wildlife Biologist, who provided an update on the 2022 trapping season. Maletzke informed the group that the particularly wet Spring had made trapping season a little more difficult, but it was still successful. The Department was able to collar three wolves in the Shady Pass pack and one wolf each in the Navarre, Dominion, and Tucannon packs, respectively. WDFW needed to adjust their trapping strategy because of the limited access to certain areas due to weather events. Maletzke noted that several wolves had dispersed from Washington to British Columbia and down to Oregon. The Department currently is tracking 20 packs with a total of 29 collars and there are 33 packs in total as of the 2021 winter surveys. The focus for the future is to get collars in some of the remaining packs without collared wolves. However, the number of packs and wolves with collars will likely shift by next winter.

Maletzke clarified that the Department had collared three wolves in Shady Pass pack due to an opportunity that presented itself and an availability of collars, though WDFW generally strives to have two collars per pack. Maletzke reported that WDFW had been surveying for wolf activity on West side of the North Cascades. Tribal partners have roughly 30 cameras in the area and the Department has some as well, but has only observed one wolf recently. WDFW is monitoring one collared wolf in the South Cascades and has picked up one uncollared wolf on a trail camera in the area.

Status of Conflict Mitigation Plans and coordination with livestock producers/range riders

Smith introduced Jim Brown, Wildlife Conflict Section Manager for WDFW, and Kyla West, WDFW Statewide Human-Wildlife Conflict Analyst in Spokane, to provide an update on the status of range rider contracts. West informed the group that there are a total of nine active range rider contracts in the state, with a total of 12 riders including main rider and sub-riders. The Department also has two pending contracts state-wide. There are currently eight riders and one pending contract in Region 1, two riders in Region 2, and two riders and one pending contract in Region Three. Conflict specialists are speaking with producers in Region 5, where there has been wolf activity, and exploring the option of hiring more

riders. Wildlife Conflict Specialist, Andrew Kolb, added that the individual with the pending contract in Region 1 is still working to satisfy the business requirements of the contract, and WDFW is confident the contract will be finalized soon.

West clarified that WDFW was not specifically looking for nine riders in Region 1, but that they were focused more on retention of competent riders and training of new ones. WDFW Human-Wildlife Conflict Analyst, Maci Todd, added that the Department had approved twenty Damage Prevention Cooperative Agreement for Livestock (DPCAL) contracts so far this year. A WAG member informed the group that Northeast Washington Wolf Cattle Collaborative (NEWCC) had around 20 riders operating in the previous year, primarily around Stevens County. Smith noted that the Department has very high standards for the range riders they hire in the state and that they are limited by the number of qualified applicants. The Department is assessing the future of range riding and how to set up sustainable funding that producers can use. Not all producers want to go through the Department to get range riders. Many more riders could potentially be hired, but there are several limitations that need to be considered. Brown explained that a grant to provide more Department funding for range riders was in progress but would not be ready until the next grazing season. WDFW can meet the current needs of the requests from producers that want range riders, except in southeast Washington. Requests from producers for WDFW contracted range riders are decreasing; however, it would be difficult to meet the needs if demand were to increase.

Grant Samsill, WDFW Wildlife Conflict Specialist, clarified there are no large gaps in range rider availability in the state, but that it is difficult to quantify specific regional needs. Most of the state is covered between NEWCC, Cattle Producers of Washington (CPoW), independent contractors, and the state. Candace Bennett, WDFW Wildlife Conflict Specialist, added that there are some locations without range riders yet, but the Department is prioritizing working with producers to find riders to fill those gaps. Brown noted that the Southeast is a major priority for rider placement. The Department is reviewing all applications to see if they could fill that gap. Brown agreed that range riders from Oregon could potentially apply to fill the gap. Two applicants have applied so far, but one had withdrawn their application. A WAG member noted that they had been told by several people that the application process was very cumbersome and deterred people from applying as a result. Samsill added that the Department met with NEWCC and CPoW prior to the grazing season to coordinate range riders and identify priority locations based on known wolf activity and instances of depredations.

Brown reiterated that finding a rider for the Southeast is a priority for the Department. Statewide applicants are always asked if they are willing to go down to the Southeast. Potential riders need to be the right fit for the area and need to work well with the producers in the area. Local wildlife specialists have been very involved in the process, but the Department is very limited by number of applications they are receiving. Even when potentially strong applicants are found, they need to be cleared with the producers, which adds another layer of complexity. A WAG member added that producers need to put a lot of trust into range riders, and it is reasonable for them to reject a potential rider that they are uncomfortable with. Smith noted that Washington is fortunate enough to have money to fund range riding, but the money needs to go to people who are willing to use it. The difficulty in finding appropriate range riders is not unique to wolf conflicts. Other wildlife conflict issues face similar barriers in finding enough applicants and finding applicants that the community accepts.

A WAG member asked about the possibility for local communities to form their own non-profits to hire range riders directly with state funding. Some suggested that establishing such a non-profit would be difficult for local communities. Brown added that the main barrier in finding appropriate range riders has been the state contract's requirement for insurance. The Department is working with a local insurance company to address this issue and it likely will not be a limiting factor in the future.

Smith informed the group that range riding is a relatively new activity, and that there is very little literature available that analyzes its impact and effectiveness. However, a team at the Department is currently studying these gaps in knowledge. Hayman noted that it may be useful to discuss the range riding experience, effectiveness, and opportunities for improvement at future WAG meetings. Smith and Brown clarified that changes in the range rider program and contract from what was originally in the protocol are always published on the WDFW website and the public is notified of the changes. West added that the only change to the DPCAL contract has been the reimbursement section, and that an internal committee meets to discuss changes based on feedback it receives from range riders and producers. Hayman noted that the WAG could potentially discuss how changes are made in the contracts and how the effectiveness of range riders is measured at a future meeting.

Rulemaking

Smith reported the Washington Fish and Game Commission (Commission) met on May 13, 2022 and discussed the proposed wolf-livestock conflict deterrence rule (the meeting was recorded and can be found online). The Commission postponed a decision on the rule at this meeting, deciding to hold additional discussions on the topic on June 24. The final environmental impact statement for the proposed rule is expected to be published by July 1. The Commission is expected to decide whether to adopt a new rule (as proposed or amended) at their July 8, 2022 meeting.

Wolf-livestock activity since the April 2022 meeting

Kolb provided an update on Region 1 District 3. Livestock are transitioning to summer pastures. One producer decided to delay turn out time due to wolf activity and is clearing brush to improve visibility. Another producer in the same vicinity has asked for an alternative pasture site, however there are no alternative Department pasture sites at present. There has been an increase in damage prevention cooperative agreements with producers, which offer reimbursement for the purchase of non-lethal tools. The Department is also currently able to offer additional funding through DPCAL contracts.

Bennett provided an update on range rider coverage and DPCALS in Region 1 District 1. The Department is trying to distribute the money as quickly as possible. There are currently five WDFW contracted range riders that the Department wants to keep in the priority areas. WDFW has begun hosting regular update calls with range riders, law enforcement, and producers in District 1. The Department is also looking for ways to share collar data with riders. Bennett clarified that WDFW leaves it up to producer when they turn cattle out onto pastures, and some have chosen to delay turnout due to wolf presence.

Jeff Wade, Conflict Specialist, provided an update on the Eastside of the Blue Mountains. Cattle have been turned out to grazing pastures, and producers are working with their contracted range riders to monitor for conflict. There are currently ten DPCALS and the Department is pushing to get all those contracts paid out.

Samsill provided an update for Northeast Washington. The Department is communicating and working with producers affected by depredations. They are still recruiting for new range raiders and onboarding newly contracted ones. There are four contracted range riders and five DPCAL riders working in the region, and WDFW now has two full time resource specialists working to increase the use of non-lethal deterrents in the region. Samsill informed the group that WDFW had responded to 10 instances of depredations, including five confirmed wolf depredations and three mortalities. The Department has arranged for conflict staff to be available during the weekends to respond to instances of depredations. They are ramping up communication and coordination with producers to adapt to the depredation issues. Samsill reported that the Togo, Sherman, and Stranger packs are the most active in the area. He added that Vulcan pack activity and depredations occurred on the East side of the Kettle River. Maletzke added that there is now only one active collar in the Togo pack because the second collar in the pack no longer functions.

Smith noted that the WAG has previously tried to work on the conflict mitigation plan and noted that it is different from rulemaking. However, the CR-102 was built around what was discussed in the WAG. The Department is working to assess whether the practices identified in the conflict mitigation plan are effective. The drafting of the plan was a very long process that included the involvement of many producers and other stakeholders. Smith clarified that the Department has a limited toolbox and is focused on how to use those tools more effectively. The conflict mitigation plan has a lot of history with a lot of responsibility for both producers and the Department. Cooperative producers in northeast region are facing pressure from both the Vulcan and Togo packs on either side of the Kettle River. Depredations started almost as soon as the draft conflict mitigation plan was shared with producers in May. Several producers voiced their concerns that the draft plan was not collaboratively developed. The Department considered what was in the draft plan and producer non-lethal activities when they placed the lethal removal orders in June.

A WAG member noted that range riding works well when it is coordinated and conducted properly, but there are a lot of variables that can affect the success of range riding. The May depredations occurred on federal grazing pastures and there was not enough communication for coordinating appropriate coverage between the producer and the Department. Gaps in communication and organization need to be the focus for future grazing seasons. Steve Pozzanghera, WDFW Region 1 Director, clarified that the livestock interaction protocol contains language about the conflict specialists needing to work with producers to identify the best suited tools. Range riding has been identified as one of the best suited tools. Smith noted that the Department prioritizes the use of non-lethal tools over lethal removal and stated that producers were justifiably frustrated with the recent wolf livestock conflicts. The Department only considered the lethal removal after it was clear that the non-lethal tools were not doing enough to change wolf behavior.

A WAG member stated that the lethal removal of two wolves seemed like “an eye for an eye,” and not a fair response to the number of depredations that occurred--wolf populations are very small compared to cattle populations. Maletzke clarified that lethal removals are used as means of sufficiently affecting wolf pack behavior to reduce future depredations, and that the goal is not to reduce population. The Department targets animals that they believe will have an actual impact on pack behavior. It is not an exact science. Consistent range riding is very useful, but is not always enough to affect wolf behavior. Several WAG members acknowledged the amount of effort WDFW puts into working with producers

and recognized the cooperation on the part of the producers in reducing conflict. Hayman noted that conflict mitigation discussions are always very difficult for everyone, and that the conversations would continue at future WAG meetings.

Roussin clarified that the Vulcan and Togo packs are distinguished by their separate territories despite their general proximity to each other. The Department has been investing and working to respond to the recent depredation in the Vulcan pack territory. There is a contracted range rider monitoring the area for wolf activity. Several WAG members thanked the Department for the conversation and updates on conflict mitigation. Smith reiterated that most producers are cooperative, and they are reasonably sharing their frustrations with the Department.

Following the discussion of wolf-livestock activity, two persons provided public comment, as documented in Appendix A.

At the conclusion of the public comment period, Hayman invited WAG members and WDFW staff to share any reflections from the day. The meeting adjourned, and was followed by an informal dialogue session between WDFW and interested public.

June 23, 2022

Opening

Hayman opened the second day of the meeting by reviewing the meeting agenda and objectives. She then invited WAG members and WDFW staff to check in with each other via round robin.

Pozzanghera provided an update on recent incidences of wolf mortalities in Northeast Washington. The Department is conducting a thorough investigation of the mortalities and taking the issue very seriously. More information about the mortalities and investigation will be forthcoming.

WAG members and WDFW staff shared their memories and expressions of appreciation to Scott McCorquodale, Regional Wildlife Program Manager, who is retiring from WDFW at the end of June.

State of knowledge about the interactions of wolves, other predators, and different ungulate species/communities

Hayman introduced presenters Dr. John Vucetich, Dr. Arthur Middleton, and Dr. Matthew Metz who were invited to speak on the state of knowledge about the interactions of wolves, other predators, and different ungulate species/communities. The presentations were recorded and are posted on the [WDFW WAG online calendar](#). Presentation slides may also be viewed from the [calendar link](#). The following captures key presentation points, and points raised during the question and response portion of the presentations.

Some Thoughts on the Relationship between Wolves and their Prey: Dr. John Vucetich²

Key Presentation Points

- “Bottom up” and “top-down” influences are a way to frame the relationship between wolves/cougar (predators), deer/elk (prey), vegetation (food). These influences can be seen (and anticipated) when tracking populations across time with incidences of weather/food availability, disease, and other population factors. They can be expressed over time as predation rate.
- Metaphor: Bottom up--deer and elk are using comparatively little of the vegetation, essentially “living off the interest rate of the principle of the vegetation.” In a top-down system, deer and elk are using more of the vegetation, essentially “eating into the principle” of the vegetation. The same metaphor holds for predators and prey.
- In any one place, the relative balance of top-down and bottom-up influences are likely to vary over time. A study of elk populations in Yellowstone National Park prior to and following the reintroduction of wolves resulted in the finding that the decline in elk populations over time was very likely caused by human harvest of elk and drought, rather than predation.
- With the best data, one is unlikely to know the relative balance of top-down and bottom-up influences until long after the fact. This is because prey abundance is simultaneously influence by predation, hunting, habitat quality, and weather.
- The question of whether wolf hunting can improve hunters’ satisfaction with elk hunting is subject to uncertainties from the multi-causality/complexity of the system, and relies more on a weighty consideration of the value of possible actions and outcomes.

Q&A:

In response to a question regarding the models referenced in his presentation, Dr. Vucetich clarified that models can only show what is plausible, and cannot always prove things. However, the models shown in the presentation could potentially indicate the direct causality and negative impact that wolves could have on elk populations. The models presented on elk population impacts mostly show correlations rather than causations. Models are usually a combination of facts and how those facts should be assembled. Population models track how many wolves and elk are in a space, and can be used to see if losses are great enough to reduce the overall elk population. Dr. Vucetich said the predation rate of elk by wolves in the study shown in the presentation is likely no more than 3% and that human harvest rates could be as high as 16%.

A WAG member noted that the presentation’s conclusion makes it difficult to assess the multiple factors affecting ungulate populations, and therefore difficult to base policy decisions on this information due to the complexity of the system. Dr. Vucetich agreed that it is appropriate to hope for having clarity on how an ecosystem behaves based on data but it cannot always be relied upon. Another WAG member questioned if such a perspective implies that the data is of no value, and that historical models should

² References for Dr. Vucetich’s presentation include:

Peterson, R. O., Vucetich, J. A., Bump, J. M., & Smith, D. W. (2014). [Trophic cascades in a multicausal world: Isle Royale and Yellowstone](#). *Annual Review of Ecology, Evolution, and Systematics*, 45, 325-345;

Vucetich, J. A., Smith, D. W., & Stahler, D. R. (2005). Influence of harvest, climate and wolf predation on Yellowstone elk, 1961-2004. *Oikos*, 111(2), 259-270.

be used to find out whether ungulate population decrease is caused by wolves or hunters and use this to inform policy. Dr. Vucetich specified that ecosystems cannot be finessed and that there is a difference between making a forecast and a hind cast. The validated models that scientists use are always hind casts and not forecasts. Ecologists are not good at forecasts, and the difference between the types of models is not always easy to communicate to an audience. Dr. Vucetich added that reducing predator numbers could possibly be used to help ungulate populations. However, the costs and liabilities need to be measured as the decision to do so will not necessarily help ungulate populations recover.

Some Insights from Predator-Prey Research in the Greater Yellowstone Ecosystem: Dr. Arthur Middleton

Key Presentation Points

- Study of the Elk populations in the Greater Yellowstone Ecosystem (GYE)
 - The Northern Elk Herd is one of many large elk herds in the Greater Yellowstone Ecosystem (GYE), albeit a particularly important one which has received much study
 - The Northern Herd was largely considered outsized at the time of the study, with a management objective to reduce the elk population, primarily through hunting.
 - Intense hunter harvest augmented by episodes of severe drought, plus some effects of predation, together drove a long-term population decline and a reduction in elk harvest opportunity when elk from the Northern Herd migrated out of the park to winter range.
 - When we zoom out and look across more than a dozen herds in the GYE, even with multiple packs of wolves per herd, the Greater Yellowstone Ecosystem (GYE) still has tens of thousands of elk. Many have not declined since reintroduction, though the distribution of elk has changed and may affect hunter opportunity.
 - There is not a single GYE wolf-elk relationship—there are many different GYE wolf-elk relationships.
- When wolves recolonized, scientists, managers, and the public wanted to single out their effects, but in a multi-predator system this was very misleading.
- When scientists treat prey as “just prey,” we may overlook critical life history information that shapes predator-prey interactions, such as large body sizes that make prey harder to kill, or seasonal migrations that expose prey to very different numbers and combinations of predators in summer versus winter.
- Reasonable hypotheses about predator-prey interactions can really fall apart in a vast, complex landscape with resilient prey.
- Because attributes of landscapes, weather, and prey shape wolf-prey interactions, how wolves’ impact ungulate abundance and harvest depends on where scientists look—and they (and the public) often look where the effects of wolves are largest.
- Important to inform/manage stakeholder and public expectations about the outcomes of wolf hunting/control—e.g., hunting of wolf packs in Clarks Fork elk herds has had relatively little effect on elk productivity and harvest.
- Rules or conditions that seem to generate/predict different outcomes for elk populations include the amount of closed terrain, deep snow, presence of multiple predators, etc.

Q&A:

In response to a question, Dr. Middleton said he has no concrete knowledge of how wolves are affecting mule deer and white tail deer populations in Northeast Washington.

In response to another question about elk grouping behavior, he added that some research has shown elk herds under wolf hunting pressure are generally intermediately sized. Individuals in big groups are too easily detected and those in small groups are too susceptible to predation. The optimal herd size in these studies tended to be between 50 and 150 elk. However, there are notable examples of much larger elk populations. The population sizes are variable depending on factors such as geography.

Middleton noted that scientists have not found instances of increased stress hormones such as cortisol in elk populations that face predation, like has been measured in domestic cattle. This may be a function of elk evolving with these predators, where cattle have not. However, the science is still being developed and it cannot be said with certainty that such hormone responses do not occur.

**Density-dependent Changes in Wolf Predation within the Complex System of Northern Yellowstone:
Dr. Matthew Metz**

Key Presentation Points:

- Inside Yellowstone (northern range), predators have become a more important force on the NR elk population as the elk population declined.
- Hunters: Hunter opportunities (and harvest) are often density dependent. The age distribution of adult female elk harvested by hunters often mirrors what is available in the population. Adult females are not typically killed in proportion to their availability within the population, but the precise strategy is dependent on what outcome a wildlife manager desires.
- Wolves: Predation patterns are generally driven by prey characteristics related to nutritional condition and age (prey killed by wolves, excluding very young prey, are more likely to be older). Wolves are a lethal but low-success predator.
- Cougars: Lethal and high-success predator. Among adult prey, vulnerability associated with age or nutritional condition is less influential.
- Bears: Great variation in diet. Elk are the primary ungulate bears kill in Yellowstone. They are a dominant scavenger at other predator's kills. They are a lethal predator on neonates.
- In Yellowstone, human harvest and weather seemed to have the greatest effect on elk populations early in the study period. Later, the cumulative effect of predators (wolves, cougars, bear) seem to be driving elk abundance, and it seems to have stabilized.
- The impact of predators on elk is more complex than a simple 1:1 relationship between wolves and elk. Not all elk equally contribute to future elk population growth rate, therefore not each wolf (or any other consumer) kill has the same effect on the potential for elk population growth rate.

Q&A:

Dr. Metz confirmed that the number of bears shown in the presentation were broken up by species-- the number of grizzly bears was about 1.5 times the number of black bears.

He clarified that wolf kill rate is influenced by prey and pack size. Large wolf packs kill more frequently, but it is difficult to estimate kill rate throughout the year. He referred to a slide in his presentation that showed the number of prey killed by wolves and explained that it is complicated to synthesize the data in multiple prey systems. The data suggests that kill rates are higher in the summer as wolves take advantage of calves. However, wolves consume more elk in biomass in the winter and spring when they are more successfully hunting adult elk than when they kill calves in the summer. The yearly average of elk kills per wolf is about 1.5 -2 per wolf per 30 days, however, this data is not clear and there is uncertainty in that number.

Dr. Metz confirmed that scientists are looking into all the factors that influence wolf populations including human harvesting and disease. However, a lot of these variables are very difficult to measure and the process of understanding them is very slow. Dr. Metz said there is a very narrow set of conditions needed for wolves to successfully kill bison. It depends on wolf pack size, bison group size, and the presence of calves. Wolves generally have much easier prey options, so they typically do not attack bison.

Panel

After thanking the presenters, Hayman invited them, Roussin, Maletzke, and WDFW Ungulate Specialist Kyle Garrison, to answer questions about wolf-ungulate interactions as a panel.

A WAG member asked for clarity on the number of deer a pack of wolves would eat per year. The numbers in the presentations suggested that a pack of ten wolves could eat as many as 480 deer per year, which seems like it would have an impact on deer populations. Dr. Metz clarified that two elk per month per wolf is the highest observed kill rate and that the midpoint of the range is 1.75 – again noting, however, how there is much uncertainty in those numbers. Dr. Vucetich added that wolves tend to kill different types of animals at different times of year. For example, wolves hardly kill any adult moose in the summer but more frequently kill adult moose during the winter. Different kinds of animals also have different types of importance--not all animals are equally important to the prey population. When some types of animals die, it can greatly impact the prey population, whereas others do not. The simple arithmetic does not really tell a useful story for what wolves do to ungulate populations. There is a relationship between predation rate and growth rate that biologists look at to understand the correlation between predation and ungulate populations. However, the correlation is not very clear and requires a lot of estimation.

Roussin added that most wolf packs in Washington are smaller than ten wolves and that they have different prey bases across the state. Prey bases influence the size of wolf packs which in turn influence predation rates. The WAG member noted that the impact on ungulate populations still seem quite large considering all predators in the state as well as hunters. Garrison added that there are many ungulate populations in Washington and that predation rate is very important to understanding the populations. However, predators often take from the extreme ends of the bell curve of ungulate populations (young animals and elderly). When measuring ungulate populations, scientists are most concerned with sexually mature female ungulates that can bear calves. The type of the animal that is being harvested by predators and humans is very important to consider because not all harvest has the same impact on a population.

Dr. Middleton added that wolves certainly do have an impact but the observed top-down effects that wolves have on ungulates vary throughout the year and across populations. While models are very useful for looking at data, they should be looked at cautiously because they do not always contain the complete picture. Data can also not be taken from one population, location, and period and applied to another without caution.

Another WAG member asked for more clarification around possible top-down pressure from wolf populations on ungulates as they go after diseased and old animals. Roussin clarified that there is currently not enough information on the rates of disease to assess such effects. However, it is possible that wolves may help control the spread of disease, such as hoof disease, in elk populations.

A WAG member noted that while it is very hard to fully understand the impact that wolves have on ungulate populations, the WAG needs to consider when the impact becomes too much. The member also asked if there are ways to change the factors other than wolves that influence the ungulate populations. Maletzke clarified that it takes a lot of money, time, and research to understand all of the factors that affect ungulate populations to really answer that. Dr. Vucetich added that there are wolves in other parts of the world that also have very vibrant ungulate hunting. Therefore, the primary expectation should not be that wolves decrease ungulate populations. It is the bottom-up pressures that primarily affect the overall ungulate populations. Dr. Middleton added that while wolves do have an impact, their overall impact is much smaller than many think. Wolves are not the main objective when biologists consider ungulate populations and harvesting wolves will not necessarily help ungulate populations recover.

A WAG member stated that predators will always prey on cattle as long as they are available, and asked if that availability of cattle could possibly change the natural carrying capacity of a wolf populations. Dr. Middleton shared his experience studying predation on livestock in relation to wolf-ungulate interactions and explained that the answer to the question has been rather mixed. Wolves will try to find ways to exploit the system, but cases around the world vary. Roussin noted that if cattle and livestock were important to wolves carrying capacity, it would be expected that they would kill a lot more. Cattle are a very small percentage of a wolf's diet and more like a secondary food source. Maletzke added that there is a relatively short period in which wolves prey on cattle during the summer, and their predation of cattle is likely much more opportunistic. Another WAG member mentioned a Washington study that analyzed wolf scat and found that cattle made up a very small proportion of the scat. The study was very extensive across the state and may present another data point that could be considered.

Hayman thanked the presenters, panelists, and WAG members for an excellent and engaged discussion. The WAG/WDFW task group helping frame the wolf-ungulate discussions will discuss where to go next with this topic.

Predator Prey Study Update

Roussin provided the group with a brief update on the Predator Prey Project. The field work portion of the project ended last summer, and the students are currently in the process of writing their papers. A lot of the analysis of the data is still getting started. Students have collared hundreds of ungulates across the state and are reviewing the data to inform understanding of predation on ungulates. Some students

collared several cougars to gather data on their predation behavior while others are focusing on community interactions and monitoring data through trail cameras. Another student focused on gathering data on the predation of cattle. There will be much more information ready to be shared by the fall. The goal is to gather all the data and analysis and create one larger publication at the end of the project.

Roussin clarified that wolves are currently mostly monitored using collars, but it is very expensive and not very effective. Researchers are exploring alternative methods of monitoring and discovering wolf packs by focusing on cameras and acoustics. This method helps give a better sense of wolf pack sizes and wolf behavior.

Addressing the remaining item in the meeting “bin,” Smith noted that the Department could gather some of the published papers from the Predator-Prey study and distribute to WAG members for review.

Work Planning

Hayman invited WAG members to engage in a work planning session to identify potential future meeting topics.

In addition to the predator-prey study noted in the meeting “bin,” Hayman noted the follow-up concepts from the range riding discussion:

- Performance objectives/metrics?
- Contracting process—opportunities for “continuous improvement”
- Process recommendations (contracting, operations, evaluation)?

She also used a flipchart with sticky notes to capture potential future topics (some were carried over from discussion at previous meetings). The group added to this list, and did not complete a discussion of prioritizing these topics for the next meeting:

- Post-recovery plan topics and how it fits with wolf-ungulate interactions topic
- Outreach and education
- Predator-Prey study outcomes
- Primer on wolf-livestock protocol
- Range rider “101”
- Non-lethal control innovations
- WDFW priorities/needs for advice
- How the WAG provides advice to WDFW
- How to reduce livestock losses to wolves
- What additional wolf-ungulate information is needed and where can it be found?
- How can the WAG collaborate with other groups on wolf-ungulate interactions?
- Conservation Conflict Transformation (CCT) training - most likely after the next meeting, due to Francine Madden’s limited availability and timing of welcoming new members

Regarding future wolf-ungulate interaction discussions, the results from the predator prey project would likely inform future discussions, though it may not answer all the WAG’s questions. There is still an opportunity to address what could be done to help promote healthy ungulate populations, and the

opportunities for WAG members to collaborate on a project that would help address the factors affecting ungulate populations. It was noted that the WAG has not yet addressed what information on wolf-ungulate interactions is missing and how that information can be acquired. Hayman noted the topics of interest, and said the wolf-ungulate task group would discuss how to best address them.

Hayman encouraged members to identify additional topics for the next meeting. A WAG member encouraged the group not to lose sight of the need to address wolf-livestock conflict and stated that discussions on how to reduce livestock losses to wolves should be considered as a future meeting topic. Smith noted that the Department does have research on wolf-livestock conflict and could invite speakers to speak on the subject, similar to the wolf-ungulate presentations. Smith added that the Commission is the sole authority in making many decisions, though they may consider WAG recommendations.

Several members also expressed an interest in using additional small task groups to frame up topics of interest. One example offered might be to use a task group to discuss outreach and education capacity (an effort previously undertaken by WAG). Such framing might apply to other topics, too. WAG members expressed an interest in more clearly defining the role and purpose of WAG subgroups and committees.

Hayman thanked everyone for the productive conversations around future meeting topics and said the facilitation team would work with WAG members and WDFW staff to identify the next meeting date and narrow down topics.

Following the discussion of future meeting planning, three persons provided public comment, as documented in Appendix A.

Closing

Hayman invited WAG members and WDFW staff to provide final reflections. Most expressed appreciation for returning to an in-person format.

Hayman thanked members and WDFW staff for their participation and closed the meeting.

Appendix A: Public Comment

Public comment received at the end of each meeting day is paraphrased below:

June 22, 2022

- Wayne Johnson, Co-Founder, Project Wolf USA:
 - This Friday I will be interviewed for the WAG. I think I meet all the criteria for the WAG. I am respectful and I actively listen to people. People know I am respectful, combative and a good listener. There was a lot of laughter at the meeting today, which is important, but I am surprised that there was not a memorial service for the Togo pack wolves that were killed by WDFW. How can the conservationist members of the WAG support decisions of the WDFW to kill these wolves?

- Rachel Bjork:
 - Thank you for being responsive to our requests to speak louder. I am disappointed that this WAG meeting overlapped with another with WDFW. I hope they are not scheduled to overlap in the future. The Department spends far too much time and money on helping producers, who represent a very small percentage of businesses in the state and bring tens of thousands of non-native animals to the area. I was disappointed to hear that a yearling female wolf was killed, I understand that identifying the animals is not always easy, but too much time and money is spent on lethal removal. Individual wolves should matter as much as individual cows seems to matter to the Department.

June 23, 2022

- Jana:
 - I appreciate that you are keeping these hybrid meetings. It feels to me like several of you want a static view of wolf-ungulate interactions. My takeaway is that we can understand things better in hindsight than in the future and factors affecting populations can change very quickly and are complex. The takeaway is how do we inform the public so that we can play an advisory role? Livestock conflict will always exist, but it is a relatively small percentage. How can all of us humans in different capacities coexist in harmony with wolves. We will not be able to just make one set of recommendations.

- Rachel Bjork:
 - I appreciated the presentations. Wolf depredations are a small percentage of unintentional livestock deaths. Producers should look at the climate change issues that affect unintended livestock deaths.

- Amaroq Weiss:
 - Thank you for giving me the opportunity to weigh in. The presentations today were fantastic. The presenters are some of the foremost wolf/ungulate researchers in the United States. My only regret is that it took so long to begin having these discussions. Even though the commission makes the decision, the WAG can still discuss it. There are strong concerns about the use and non-use of hard science when it comes to rulemaking. WDFW does not just represent the WAG but all of Washington. I would hope that they would be respectful of what other people have to say.