

Cougar Conflict Science Review team

What is the Cougar Conflict Science Review team?

WDFW has established a Cougar Safety Team where a variety of topics surrounding cougar management and public safety (and including property damage caused by cougars) are being discussed. In addition, there is a heightened interest in the same topics by the Fish and Wildlife Commission. For both entities, there is a need to clearly understand the strengths and weaknesses of existing scientific literature and its applicability to cougar-human interactions in Washington State. To address this need, the Cougar Conflict Science Review team (herein science team) was tasked with evaluating the current state of knowledge and scientific rigor of the literature for addressing questions about human-cougar interactions and the variables around them.

The science team will develop a report that will focus on what is known about the factors that affect the risk of human-cougar conflict and the effects of cougar removals due to human-cougar interactions. The report will not cover all aspects of cougar management.

What's in and out of scope?

In Scope:

1. Assemble the peer-reviewed literature and agency professional reports that speak to cougar conflict and its relationship to:
 - Cougar harvest (e.g., hunting seasons, agency removals)
 - Cougar harvest rates (or magnitude),
 - Cougar population density,
 - Mitigative measures employed to reduce conflict,
 - Cougar population demography,
 - Cougar prey richness and availability,
 - Human activity and distribution on the landscape (while paying attention to rural, suburban, livestock production, hobby farms, wildlife feeding, etc.),
 - Experiments or population treatments that address any of the above.
2. With no attempt to diminish the value of previous peer review, the team will:
 - Assess what questions authors attempted to address in their study and how well they accomplished the task,
 - Assess the scientific rigor (data, experimental design, analysis, and interpretation) of collected publications,
 - Identify when authors speculate (without data) on topics the project was not designed to address.
3. Identify questions of interest that haven't been adequately addressed to-date with formal research.

Out of Scope:

1. Analyzing data not presented in existing literature
2. Making management strategy recommendations

Who are the Science Team members?

- Chuck Anderson – Mammal Research Lead – Colorado Parks and Wildlife
- Anis Aoude – Game Division Manager – WDFW
- Rich Beausoleil – Bear and Cougar Specialist – WDFW
- Mark Hurley – Wildlife Research Manager – Idaho Fish and Game
- Brian Kertson – Wildlife Research Scientist – WDFW
- Bruce Johnson – Wildlife Research Scientist – Oregon Department of Fish and Wildlife (ret.)
- Donny Martorello – Wildlife Science Division Manager – WDFW
- Scott McCorquodale – Wildlife Regional Program Manager – WDFW
- Glen Sargeant – Research Wildlife Biologist – US Geological Survey
- Stephanie Simek – Carnivore Section Manager – WDFW
- Mick Cope – Wildlife Program Deputy Director – WDFW (facilitator)

What questions will the Science Team review focus on?

The science team is investigating the current state of knowledge related to the following questions. It's likely the literature will not provide input to all these questions; however, it is important that the team recognize the breadth of questions and ensure the available literature is evaluated.

1. Do cougar removals through recreational hunting and/or agency conflict response affect the number of cougar-human interactions?
2. Does the size (N or density) or trajectory of the cougar population affect cougar-human interaction levels?
3. Does the abundance, diversity, and/or distribution of prey affect cougar-human interaction levels?
4. Do preventative measures, such as nonlethal deterrence, quality husbandry, and outreach/education/information sharing affect the frequency of cougar interactions with people?
5. Do landscape characteristics (e.g., residential development levels and/or patterns, habitat type, connectivity) affect cougar-human interaction levels?
6. Does the number of people living, working, or recreating in cougar habitat affect the number of cougar-human interactions?
7. Is the number of conflict reports/complaints correlated with actual frequency of conflicts (i.e., is there published evidence that, with no change in real conflict, complaints may increase because of social tolerance or change in human perceptions [e.g., trail or doorbell camera use, news reports, etc.]?)
8. Does the presence of other large carnivores, notably wolves, affect cougar proximity to, or the frequency of interactions with, people?
 - Via interspecific conflict between cougars and wolves
 - Via indirect effects of wolves on cougars because of wolf predation effects on natural prey abundance

What literature was considered and how were articles selected for review?

As a first step in the process, the science team identified potentially relevant articles in both the peer-reviewed and gray literature using a combination of personally maintained lists of cougar literature and keyword searches in the academic databases, “Web of Science”, “Wildlife and Ecology Studies Worldwide”, and “Google Scholar”. Academic databases were queried using various combinations of the key words, “Puma concolor”, “cougar”, “mountain lion”, “puma”, “interaction”, “conflict”, “depredation”, “residential”, “urban”, and “wildland-urban interface”. The science team identified additional papers for consideration from citations provided within the literature obtained via the database searches. This combined effort yielded 90 potential papers (82 ecological, 8 human dimensions) for further consideration. To sort the initial list and ascertain the most pertinent articles for review, the science team categorized each paper using the following criteria:

1. Do the objectives, hypotheses, methods, and results allow for direct inferences into the frequency/patterns of, or factors contributing to, cougar-human interactions?

Yes: Include in Category 1 for potential full review.

No: Continue to Criteria 2.

2. Do the objectives, hypotheses, methods, and results allow for direct inferences on factors that contribute to cougar use of residential areas or proximity to/overlap with people?

Yes: Include in Category 1 for potential full review.

No: Continue to Criteria 3.

3. Do the objectives, hypotheses, methods, and results allow for inferences on changes in population characteristics, ecological patterns, or behavior in response to anthropogenic factors (e.g., residential development, recreation) with potential implications for cougar-human interaction or proximity to people?

Yes: Include in Category 2 for additional assessment.

No: Continue to Criteria 4:

4. Do the objectives, hypotheses, methods, and results allow for inferences on the impacts of hunting on cougar population characteristics with potential inferences for cougar-human interaction or proximity to people?

Yes: Include in Category 3 for additional assessment.

No: Include in Category 4 – exclude from future consideration.

Additional criteria:

5. When source materials use all or some of the same data set (independent of direct rebuttal), preeminence for further review will default to the effort that uses a larger data set, quantitative methods, is peer-reviewed, and newer. If the alternative work contains only descriptive data, it will be assigned to Category 4 and is unlikely to be evaluated further.

What are the milestones?

Task

Team Membership and charter finalized
Science team review completed
Final report

Due date

March 25, 2021
October 1, 2021
TBD

Update

Completed
Ongoing
NA