

Together for Wildlife - Interior Universities Research Coalition Student Research Grant - Interim Reports

Investigating competition between feral horses and native ungulates in the Chilcotin Plateau of BC

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Question 1. What activities have been completed on this project to date?

Fieldwork trips were completed in June and October 2022 to do maintenance of and collect data from the 30 remote sensing cameras (i.e., camera traps) deployed near Puntzi Lake, BC. These cameras were deployed in October 2021 to expand an existing camera grid for the wider Itcha-Ilgachuz Camera Trapping Project for the purpose of collecting data on feral horses and other species in the large mammal community that they may be interacting with. Feral horses do not occur in the other areas surveyed in this project, so it was important to perform an additional October check of these cameras after their first check in early summer to retrieve data from the full first year of activity. The October fieldwork trip required the recruitment and coordination of a field team, equipment, food and lodging, and travel. Fieldwork efforts were very successful, with all 30 camera traps checked in both trips (assessed for damage and replaced if necessary, batteries and SD cards replaced, any obstructions removed) and 162,915 total images retrieved.

Image classification in the Puntzi camera grid and other camera grids for the project has been completed. Along with a PhD student working on the broader project, I prepared data for classification, oversaw classification by a research assistant, and have completed quality control checks on image classifications from the Puntzi cameras and 60 other camera sites. 5044 independent events of wildlife and humans (excluding staff servicing the cameras) were identified in the Puntzi camera grid, including 346 detections of feral horses, 92 detections of moose, and 99 detections of mule deer, the 3 focal species of my proposed analysis.

To determine the feasibility of my proposed analyses, I performed data simulations to determine statistical power, given the approximate numbers of detections of my focal species and reasonable effect sizes. I determined that habitat use models for focal species to compare the selection of different habitat features and evaluate spatial avoidance of feral horses are feasible, as well as comparing daily activity patterns between species to determine if moose or mule deer are shifting daily activity peaks away from those of horses. However, using Attraction Avoidance Ratios to determine if native ungulates are avoiding feral horses in space and time will not be possible with the frequency of detections that I have. This process of data simulation also allowed me to gain a deeper understanding of my modelling frameworks, predictions, and study system.



Following data simulation, I have begun to work on preliminary data analysis of habitat use by feral horses, moose, and mule deer, and daily activity patterns of moose compared to feral horses. I have shared these preliminary results in an annual project report for the wider Itcha-Ilgachuz Camera Trapping Project and in a 5-minute oral presentation at the BC Chapter and Canadian Section of The Wildlife Society Joint Conference in Victoria at the end of March.

Question 2. Is the project progressing as planned? If not, why not and what are you doing to mitigate or adjust?

Yes, overall the project is progressing as planned, with data collection and processing complete for the 2021-2022 year, data analysis in the preliminary stage, and knowledge mobilization beginning. Managing time effectively across projects and other responsibilities has proven to be more challenging than I anticipated, but several milestones such as an internal presentation on the data simulation process for the WildCo Lab, the annual project report for the wider project, and the conference presentation have provided goals for reaching progress milestones.

Question 3. How have you been working with your research partners, including Indigenous communities, to ensure meaningful collaboration and participation?

I engaged with project partners to recruit a field team for the October 2022 camera checks. Project partners from the BC Government Ministry of Water Land and Resource Stewardship, BC Parks, and the Ulkatcho First Nation Natural Resources Department were able to join me in the field to help check cameras. I was immensely grateful to have these research partners come out and help myself and Sunny Tseng, a visiting PhD student in the WildCo Lab from UNBC, check all the cameras. This also provided an opportunity to build relationships, chat about the project more informally, and get perspectives on feral horse ecosystem dynamics from people who live and work in and around the study area. We are also currently in the process of hiring youth interns from local communities to assist with camera checks in our upcoming summer field season.

To share preliminary results and solicit feedback, I have presented objectives, methods, data summaries, and preliminary results for this feral horse-native ungulate competition project in the annual project report for the wider Itcha-Ilgachuz project. This report will be circulated to the Itcha-Ilgachuz project advisory committee, which has a high degree of overlap with the T4W project team and will be followed up with an advisory committee meeting where I will share updates in a presentation and there will be an opportunity for group discussion. I will also be having a masters committee meeting in late Spring and sharing updates with that group, which includes the other members of the project team.

Question 4. Tell us about one success, one challenge or difficulty and one thing you would do differently if you could go back?

A major success of the project thus far has been the number of feral horse detections we have been able to collect. Going into the summer 2022 and proposing this research project, the Puntzi camera grid had not yet been checked, so I didn't know how many feral horses we had captured on the camera traps and if any of my proposed analyses would be possible. Our placement of the camera grid was based on the location of a feral horse density hotspot from limited literature, and this turned out to be a great location to detect horses. Feral horses were the third most frequently detected wildlife species with 346



independent detections and were detected at 18 of the 30 cameras. Cameras also had very low failure rates, with only one camera needing to be replaced due to wildlife damage in the summer checks and one camera whose lens had been obscured by insects in the fall check. The additional camera check in the fall was key to getting enough data to begin preliminary analysis this term, since July, August, and September are the busiest months for wildlife in this area.

One challenge that I am dealing with is that despite collecting many horse detections, I still do not have a high enough density of feral horse, moose, and mule deer detections to pursue my proposed analysis of spatiotemporal avoidance of horses by moose and mule deer. Attraction Avoidance Ratios are typically used with data containing multiple detections of each focal species on the order of days, rather than weeks or months like I have in my data. Instead, I will have to focus on avoidance in space through habitat selection and time through daily activity patterns and will be looking into other potential methods to investigate avoidance in both space and time that don't require such dense species detection data.

While the fall fieldwork trip ended up being a success, if I could go back, I would have started planning it further in advance. I was able to pull together a field team and organize the trip even after unexpected circumstances prevented my usual fieldwork partner from joining, but this would have been less stressful and not required last-minute requests of collaborators if I had begun the planning process further in advance. I was also fortunate to find rental ATVs after an unanticipated issue with our usual supplier, but booking further in advance may have prevented that issue altogether.