

Final Activity Report: Yukon Fish and Wildlife Enhancement Fund September 7, 2017

**HEALTH STATUS OF REINTRODUCED WOOD BISON (*BISON BISON*
ATHABASCAE): ASSESSING THE CONSERVATION VALUE OF AN ISOLATED
POPULATION IN NORTHWESTERN CANADA**

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PROJECT ACTIVITIES

What activities did you complete during your project?

Health monitoring data collected from 31 wood bison (*Bison bison athabascae*) that were harvested and sampled between 2014 and 2017 for Environment Yukon's bison health monitoring project were used for this project. From July 5 – August 16, 2017 (~229 hours), Cassandra Andrew, the student contractor, completed an extensive literature review on wood bison health and management. A thorough literature review on bovine pathogens, bovine brucellosis and tuberculosis in bison, fecal parasitology, bovine serum biochemistry, histopathology, and the history of wood bison management in Canada was completed. We used the statistical software Analyse-It, an Excel Add-On, to complete statistical analyses on the data. I used existing scientific literature to interpret the results of the analyses and comparisons completed, and to summarize these results in a manuscript that will be submitted to the *Journal of Wildlife Diseases* October 2017. Dr. Jane Harms and Thomas Jung provided invaluable expertise throughout the project.

How did your activities contribute to your goals and objectives?

Overall, our objectives for the project were met. At the completion of this project, we have a final draft of a manuscript that is ready for submission to our chosen journal. The manuscript is also necessary to update the Yukon Bison Technical Team, which is working to manage the Aishihik wood bison herd. Thus, this publication will contribute to the national recovery strategy of the species.

While the majority of the results obtained from the analysis of the data from the Aishihik herd were not surprising from a health standpoint, it was important to confirm and report that bison in Yukon are free of the main pathogens of concern (*Mycobacterium tuberculosis* which causes bovine tuberculosis and *Brucella abortus* which causes bovine brucellosis). There were several interesting results in both viral serology and serum biochemistry parameters that will provide valuable insight to wildlife health professionals in North America. In addition, we reported baseline values for many biological parameters, which will serve as valuable references for the health and management of the species into the future.

The project provided a valuable experience in formulating research questions, gathering background information, data analysis and scientific reporting for a Yukon-raised veterinary

student with a demonstrated interest in wildlife health, conservation and research. I also learned about self-direction, time-management, and collaborating with contributors across various diagnostic labs. This project has strengthened my keen interest in applied wildlife health research, particularly with respect to northern wildlife and disease ecology.

Note any variances to your goals, objectives or work plan and explain why they occurred.

- Funding was not used to support testing of remaining biological samples, but was used solely for salary for Cassandra.
- We decided to report only on data from the harvested bison that were harvested 2014-2017 as a part of the Yukon wood bison health monitoring project in this manuscript, rather than including additional reporting from live capture bison that have been sampled since 2011. This decision was made as we had a large amount of data to report on from 31 bison alone, and analyzing this data on its own controlled for as many confounding variables as possible.

Explain how the results of your work contributed to the protection, enhancement or restoration of fish, wildlife or their habitat.

The results of this project indicate that the Aishihik wood bison herd has a valuable conservation role in the recovery strategy of the species nationally, and because of the funding provided by the trust, we are able to share these results extensively in a peer-review journal as well as completing a comprehensive report for the Yukon Bison Technical Team. Our results and analysis also provide reference intervals for many biological parameters which had not been reported in free-ranging bison in northern Canada. Our results will enhance current management strategies for Yukon wood bison by providing novel information about the health of the herd.

If you were to do the project again what would you do differently

The main challenge we faced was a tight time-frame in terms of my availability, as we were still waiting for some of the test results from our samples. Ideally, all data would be available prior to the start of a projects' timeline, but this is not always possible. Overall, all contributors were content with the process and completion of the project.

COMMUNICATIONS

What did you do to ensure your results were shared with the appropriate groups, people or governments?

When the manuscript is approved for publication in the *Journal of Wildlife Diseases*, it will be provided as a report to the Yukon Bison Technical Team, the Champagne and Aishihik First Nations, Kluane First Nation, Little Salmon / Carmacks First Nation, and the Alsek Renewable Resource Council, in addition to the Yukon Fish and Wildlife Management Board and the Director of the Fish and Wildlife Enhancement Trust.

Describe how you recognized the Enhancement Trust and/or its mandate. Identify any communication materials, strategies or techniques that you used to promote your project and its objectives.

The Yukon Fish and Wildlife Enhancement Trust was recognized in the 'Acknowledgments' section of the manuscript.

FINAL REPORT BUDGET

Expenditure Category	Item	Projected Cost	Requested Funds from YFWET	Actual Cost to YFWET	Receipts Included
Wages and Contract Services	Wages for Cassandra Andrew	\$4400 ^a	\$1400	\$4400 ^b	NA
Other expenses	Sample testing (serum, feces, tissue)	\$8000	\$4000	\$0	NA
	TOTAL	\$12400	\$5400	\$4400	

^a Estimated contract wages based on the current Yukon government standard for the wages of a student with 4 or more years of post-secondary education (\$19.14/hour) for 229 hours.
<http://www.education.gov.yk.ca/step-students.html>

^bThe YFWET has already paid the amount of \$4300 to Cassandra Andrew. Thus, the remaining amount to be paid upon completion of the project is equal to \$100.

I would like to thank Dr. J. Harms and T. Jung for giving me the opportunity to complete this project, for their patience, as well for their thoughtful edits and suggestions throughout the writing and data analysis process. I am also thankful to the YFWET for the opportunity to contribute to the scientific community and to wildlife population and health managers, while learning a great deal and also earning an income to go towards my education.