

FINAL REPORT

Multi-species Habitat Supply in the Quesnel Timber Supply Area, British Columbia: Large-scale Maps

R. MCCANN¹, R.S. MCNAY¹, V. BRUMOVSKY¹, I. MOSS², M. FENGER³, J. VOLLER¹, R. SULYMA¹, AND M. SNIVELY¹

MARCH 29, 2011

¹Wildlife Infometrics Inc., PO Box 308, Mackenzie, BC, V0J 2C0, <u>wild info@wildlifeinfometrics.com</u> ²Tesera Systems Inc., Victoria, BC, <u>ian.moss@tesera.com</u>

Prepared for the Quesnel Mitigation Committee, under agreement for FIRS project numbers: 8162001

CITATION: McCann, R.K., R.S. McNay, V. Brumovsky, I. Moss, M. Fenger, J. Voller, R. Sulyma, and M. Snively. 2011. Multi-species habitat supply in the Quesnel Timber Supply Area, British Columbia: Large-scale maps. Wildlife Infometrics Inc. Report No. 372c. Wildlife Infometrics Inc., Mackenzie, British Columbia, Canada.

³Mike Fenger and Assoc., 511 Foul Bay Road, Victoria, BC, V8S 4G9, mfenger@pacificcoast.net

ABSTRACT

Large-scale maps provided as results from a project on habitat supply modeling for multiple, terrestrial wildlife species in the Quesnel Timber Supply Area (TSA) in British Columbia.

ACKNOWLEDGMENTS

We acknowledge the support, insight, and continued encouragement to pursue new applications for habitat supply modeling provided by Glenn Sutherland. In particular, some of the introductory material and other sections of this report were collaborations with Glenn and were rewritten with his permission. In addition, Ann-Chan McLeod (Univ. of BC) contributed a thoughtful perspective and her advice on the selection of species to be modeled; she also contributed to some of the writing in Appendix A on species selection. We would like to thank Julie Steciw, Michelle Arcand, and Rick Dawson for their review comments and improvements made to the species selection and for their improvements to the modeling project rational as a result. Gordon Nienaber (Forest Analysis and Inventory Branch in Victoria) went out of his way during a busy schedule to provide answers to our many questions regarding the Timber Supply data. Thanks to Gordon for being there when we needed him. Our pursuit of stand structure data was facilitated by Ian Moss (ForestTree Consulting Ltd.). We've only scratched the surface on what these data can do for habitat supply modeling so I know we'll continue to tap lan's input to our work. We'd also like to thank Jonathan Armstrong (Forest Ecosystems Solutions) for his help in providing clarity about many aspects of the Quesnel data set.

A huge thank-you and enormous respect go to Phil Winkle for his masterful management of the project logistics and funding. A well managed project is fun to be engaged in and this was fun. Finally, we thank the entire QMC for their support of this work: Shawn Meisner (Tolko), Michelle Arcand (BC Min. of Environ.), Michael Pelchat (BC Min. For. and Range), Earl Speilman (West Fraser), Jon Erickson (Canadian Forest Products), Julie Steciw (BC Min. of Environ.), Bev Frittenburg (Integrated Land Management Bureau), and John Stace-Smithand. Funding came from our three clients in the forest industry; C & C Wood Products Ltd., Canadian Forest Products Ltd., and Pioneer Family Timber Partnership Ltd..

TABLE OF CONTENTS

ABSTRACT	I
A CUNIOWILED CAMENTER	
ACKNOWLEDGMEN 15	
LIST OF FIGURES	III

LIST OF FIGURES

Figure 1. An example map resultant from the application of a habitat supply model for	
wolverine in the Quesnel Timber Supply Area (A) showing increasing probability of	
occupancy (B) in deeper shades of green. The models were also used to compare current	
(2009) habitat levels with those in the future under scenarios of managed timber supply,	
landscape potential, and natural disturbance (C)	6

northern caribou low elevation winter range in the Quesnel Timber Supply Area (A) showing increasing probability of occupancy (B) in deeper shades of green. The models were also used to compare current (2009) habitat levels with those in the future under scenarios of managed timber supply, landscape potential, and natural disturbance (C)	12
Figure 8. An example map resultant from the application of a habitat supply model for mountain caribou late winter range in the Quesnel Timber Supply Area (A) showing increasing probability of occupancy (B) in deeper shades of green. The models were also used to compare current (2009) habitat levels with those in the future under scenarios of managed timber supply, landscape potential, and natural disturbance (C)	13
Figure 9. An example map resultant from the application of a habitat supply model for Barrow's goldeneye in the Quesnel Timber Supply Area (A) showing increasing probability of occupancy (B) in deeper shades of green. The models were also used to compare current (2009) habitat levels with those in the future under scenarios of managed timber supply, landscape potential, and natural disturbance (C).	14
Figure 10. An example map resultant from the application of a habitat supply model for black-backed woodpecker in the Quesnel Timber Supply Area (A) showing increasing probability of occupancy (B) in deeper shades of green. The models were also used to compare current (2009) habitat levels with those in the future under scenarios of managed timber supply, landscape potential, and natural disturbance (C)	15
Figure 11. An example map resultant from the application of a habitat supply model for great blue heron in the Quesnel Timber Supply Area (A) showing increasing probability of occupancy (B) in deeper shades of green. The models were also used to compare current (2009) habitat levels with those in the future under scenarios of managed timber supply, landscape potential, and natural disturbance (C)	16
Figure 12. An example map resultant from the application of a habitat supply model for northern flicker in the Quesnel Timber Supply Area (A) showing increasing probability of occupancy (B) in deeper shades of green. The models were also used to compare current (2009) habitat levels with those in the future under scenarios of managed timber supply, landscape potential, and natural disturbance (C)	17
Figure 13. An example map resultant from the application of a habitat supply model for northern goshawk in the Quesnel Timber Supply Area (A) showing increasing probability of occupancy (B) in deeper shades of green. The models were also used to compare current (2009) habitat levels with those in the future under scenarios of managed timber supply, landscape potential, and natural disturbance (C)	18
Figure 14. An example map resultant from the application of a habitat supply model for rusty blackbird in the Quesnel Timber Supply Area (A) showing increasing probability of occupancy (B) in deeper shades of green. The models were also used to compare current (2009) habitat levels with those in the future under scenarios of managed timber supply, landscape potential, and natural disturbance (C)	19
Figure 15. An example map resultant from the application of a habitat supply model for three-toed woodpecker in the Quesnel Timber Supply Area (A) showing increasing probability of occupancy (B) in deeper shades of green. The models were also used to	

compare current (2009) habitat levels with those in the future under scenarios of managed timber supply, landscape potential, and natural disturbance (C)......20

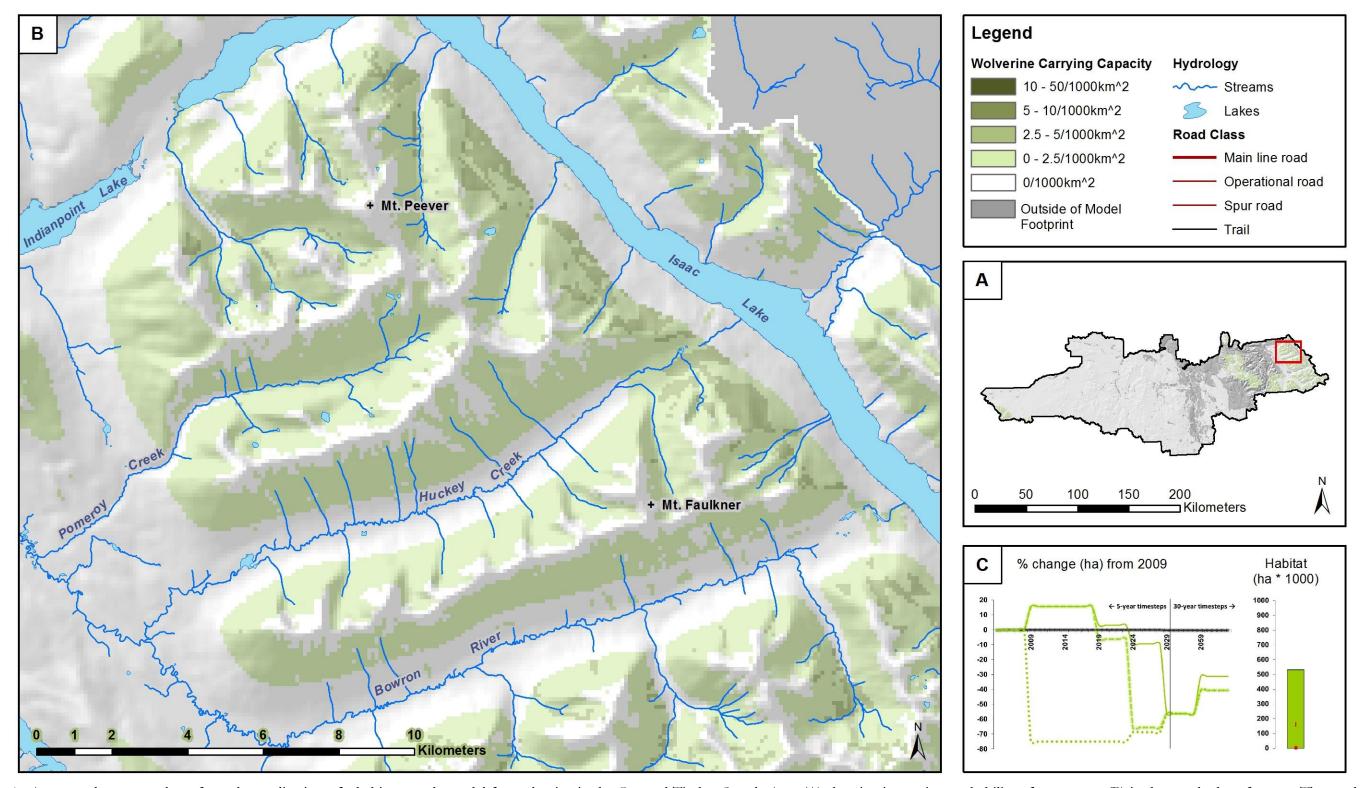


Figure 1. An example map resultant from the application of a habitat supply model for wolverine in the Quesnel Timber Supply Area (A) showing increasing probability of occupancy (B) in deeper shades of green. The models were also used to compare current (2009) habitat levels with those in the future under scenarios of managed timber supply, landscape potential, and natural disturbance (C).

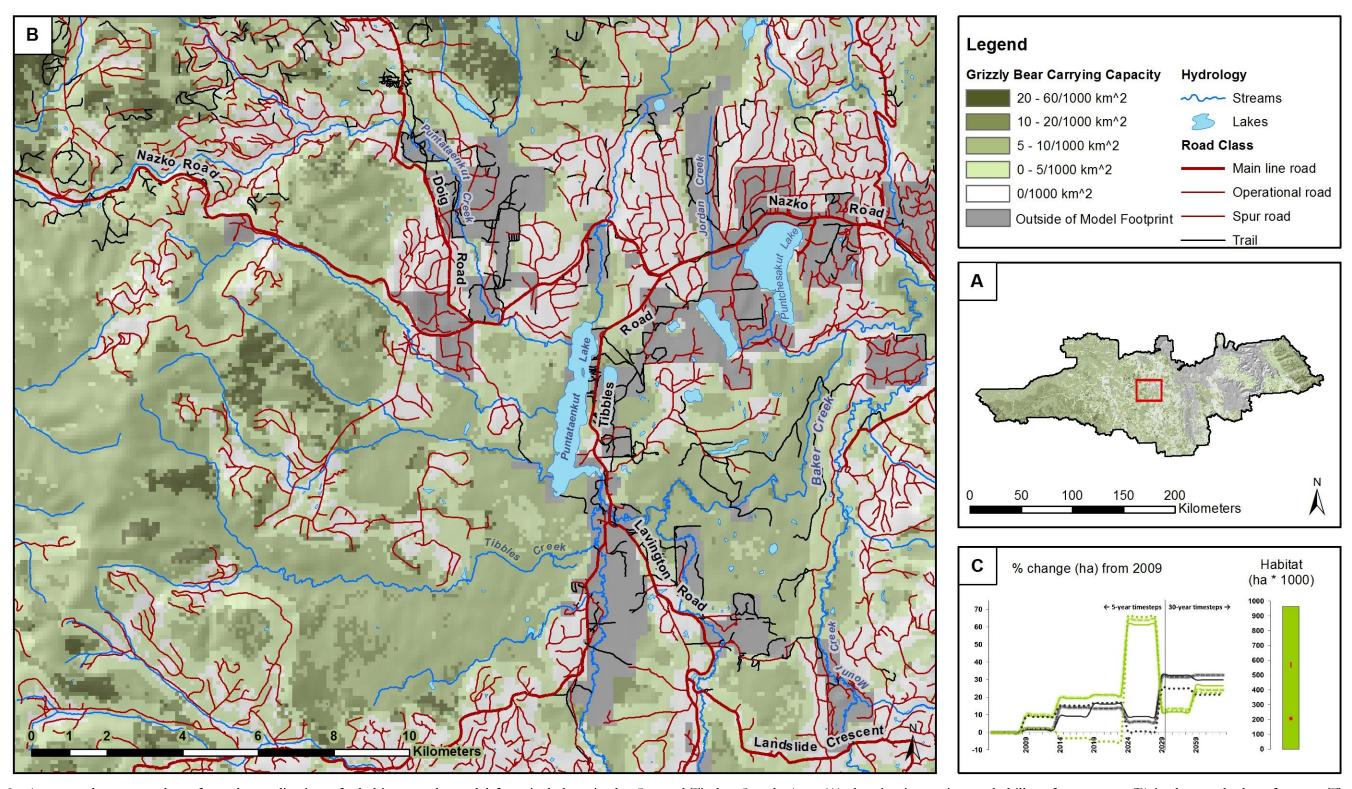


Figure 2. An example map resultant from the application of a habitat supply model for grizzly bear in the Quesnel Timber Supply Area (A) showing increasing probability of occupancy (B) in deeper shades of green. The models were also used to compare current (2009) habitat levels with those in the future under scenarios of managed timber supply, landscape potential, and natural disturbance (C).

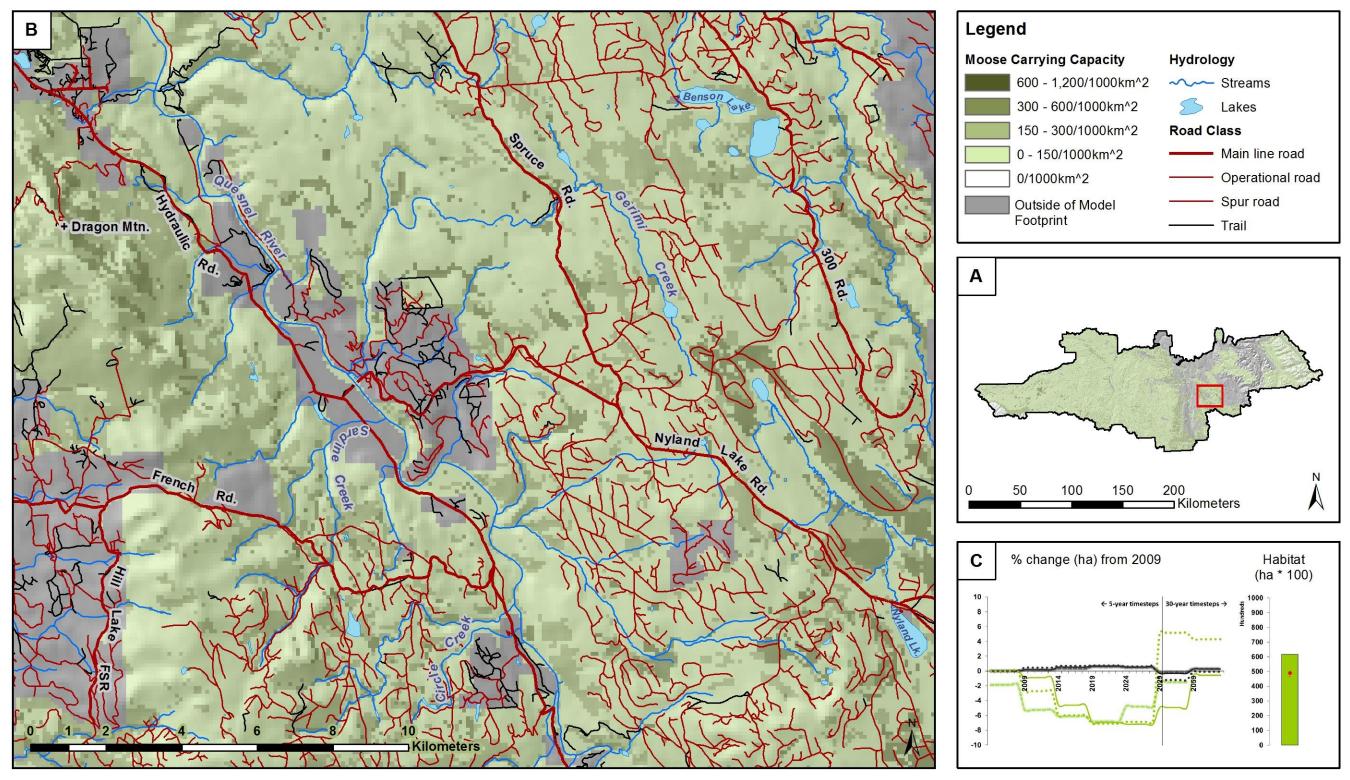


Figure 3. An example map resultant from the application of a habitat supply model for moose in the Quesnel Timber Supply Area (A) showing increasing probability of occupancy (B) in deeper shades of green. The models were also used to compare current (2009) habitat levels with those in the future under scenarios of managed timber supply, landscape potential, and natural disturbance (C).

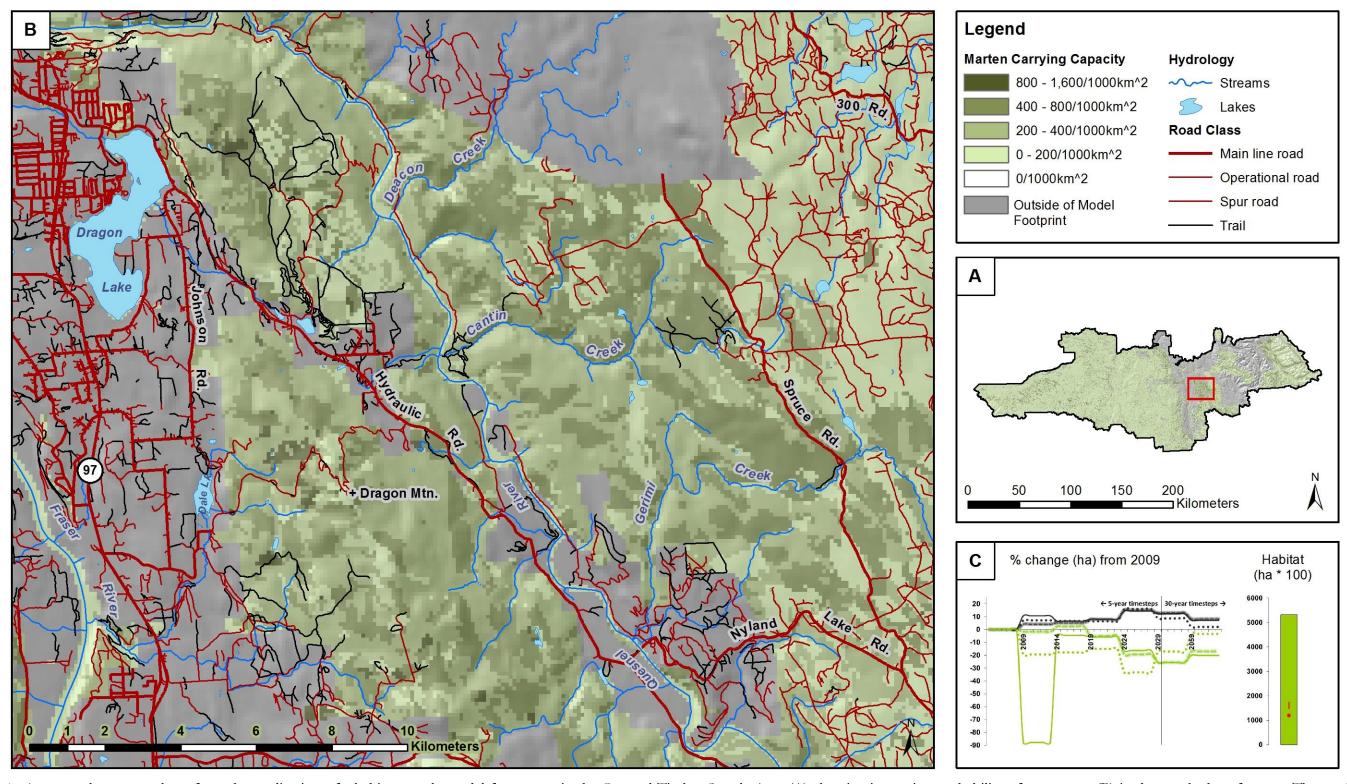


Figure 4. An example map resultant from the application of a habitat supply model for marten in the Quesnel Timber Supply Area (A) showing increasing probability of occupancy (B) in deeper shades of green. The models were also used to compare current (2009) habitat levels with those in the future under scenarios of managed timber supply, landscape potential, and natural disturbance (C).

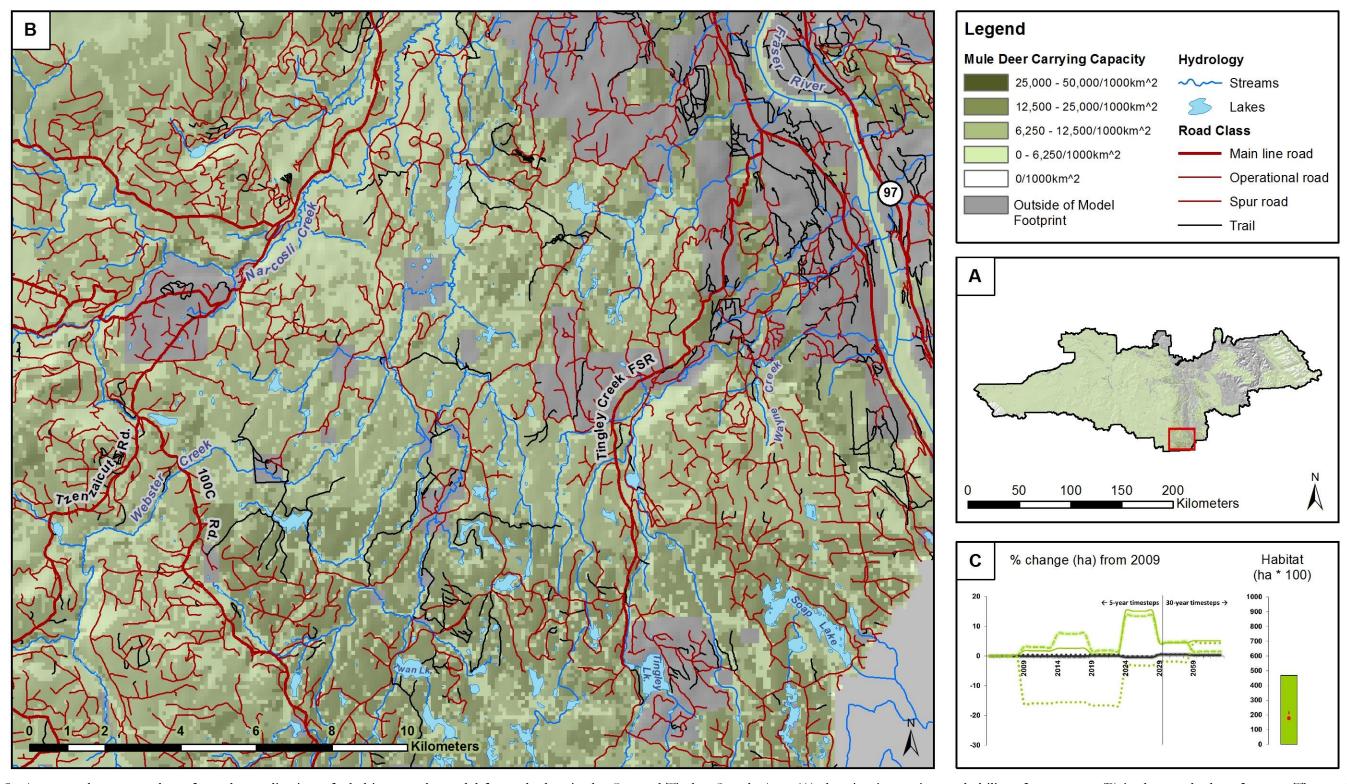


Figure 5. An example map resultant from the application of a habitat supply model for mule deer in the Quesnel Timber Supply Area (A) showing increasing probability of occupancy (B) in deeper shades of green. The models were also used to compare current (2009) habitat levels with those in the future under scenarios of managed timber supply, landscape potential, and natural disturbance (C).

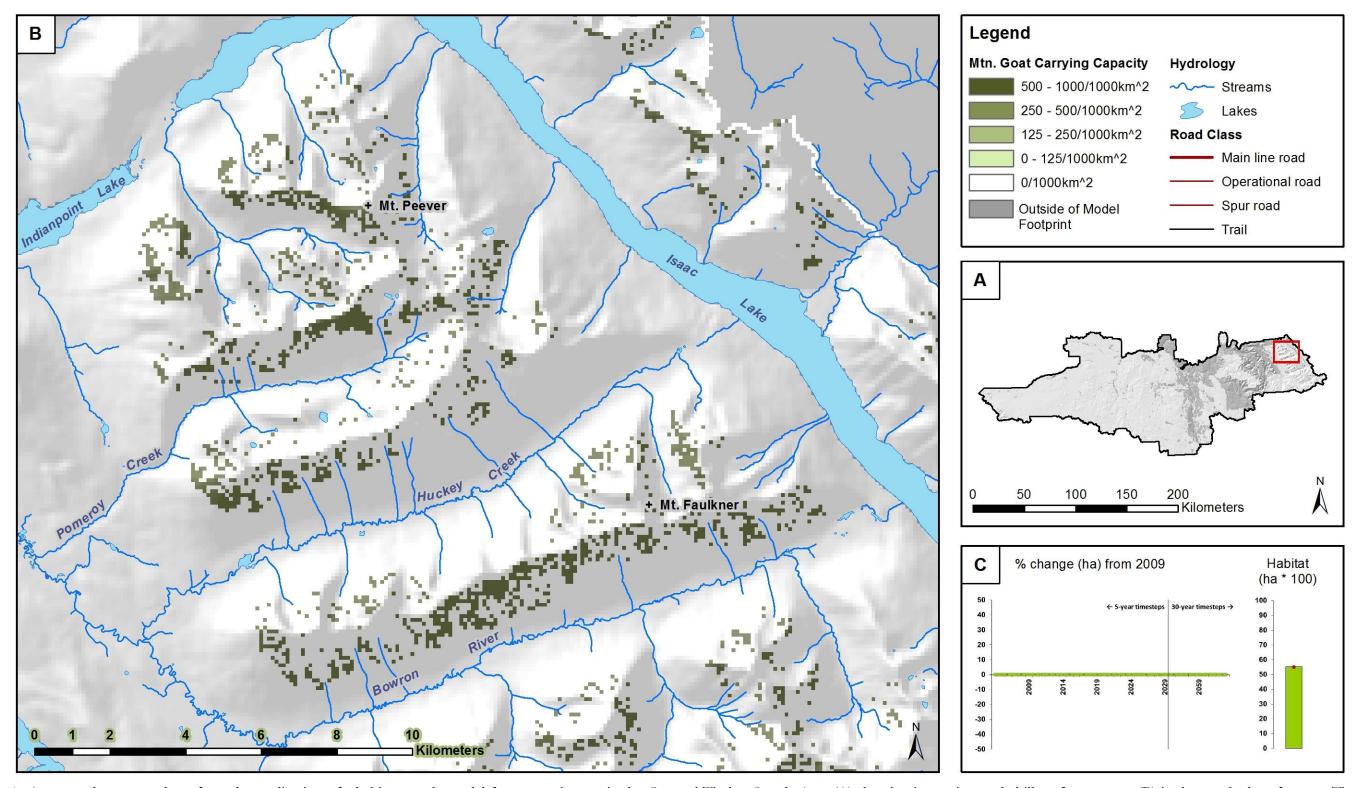


Figure 6. An example map resultant from the application of a habitat supply model for mountain goat in the Quesnel Timber Supply Area (A) showing increasing probability of occupancy (B) in deeper shades of green. The models were also used to compare current (2009) habitat levels with those in the future under scenarios of managed timber supply, landscape potential, and natural disturbance (C).

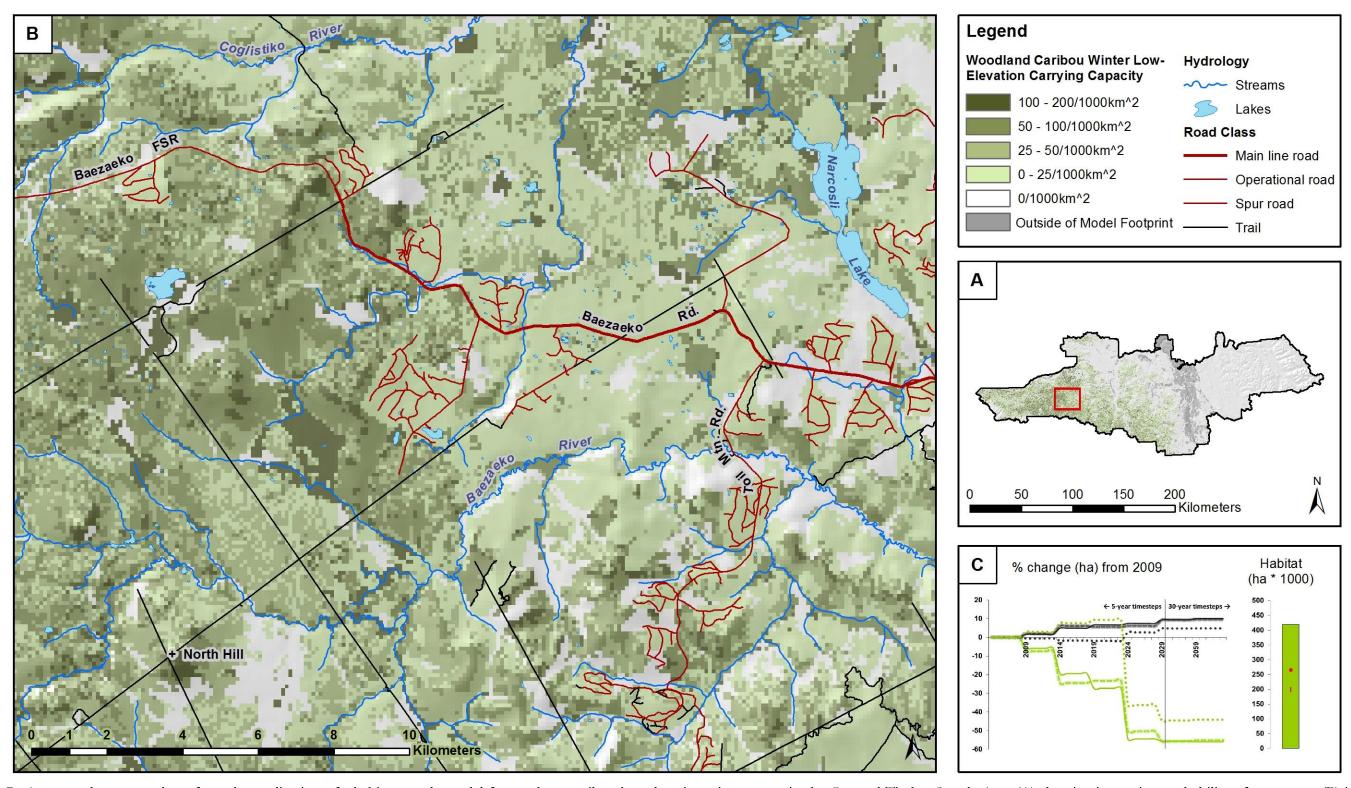


Figure 7. An example map resultant from the application of a habitat supply model for northern caribou low elevation winter range in the Quesnel Timber Supply Area (A) showing increasing probability of occupancy (B) in deeper shades of green. The models were also used to compare current (2009) habitat levels with those in the future under scenarios of managed timber supply, landscape potential, and natural disturbance (C).

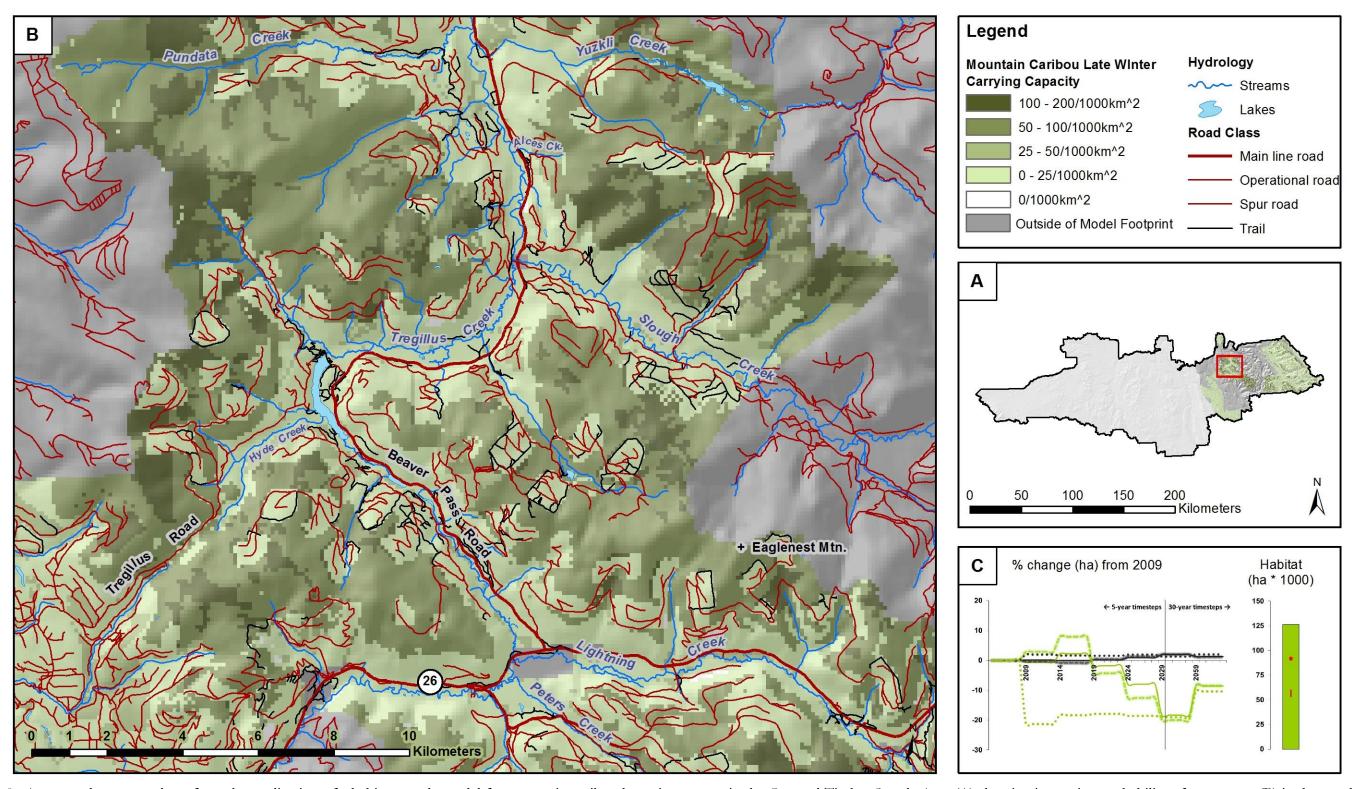


Figure 8. An example map resultant from the application of a habitat supply model for mountain caribou late winter range in the Quesnel Timber Supply Area (A) showing increasing probability of occupancy (B) in deeper shades of green. The models were also used to compare current (2009) habitat levels with those in the future under scenarios of managed timber supply, landscape potential, and natural disturbance (C).

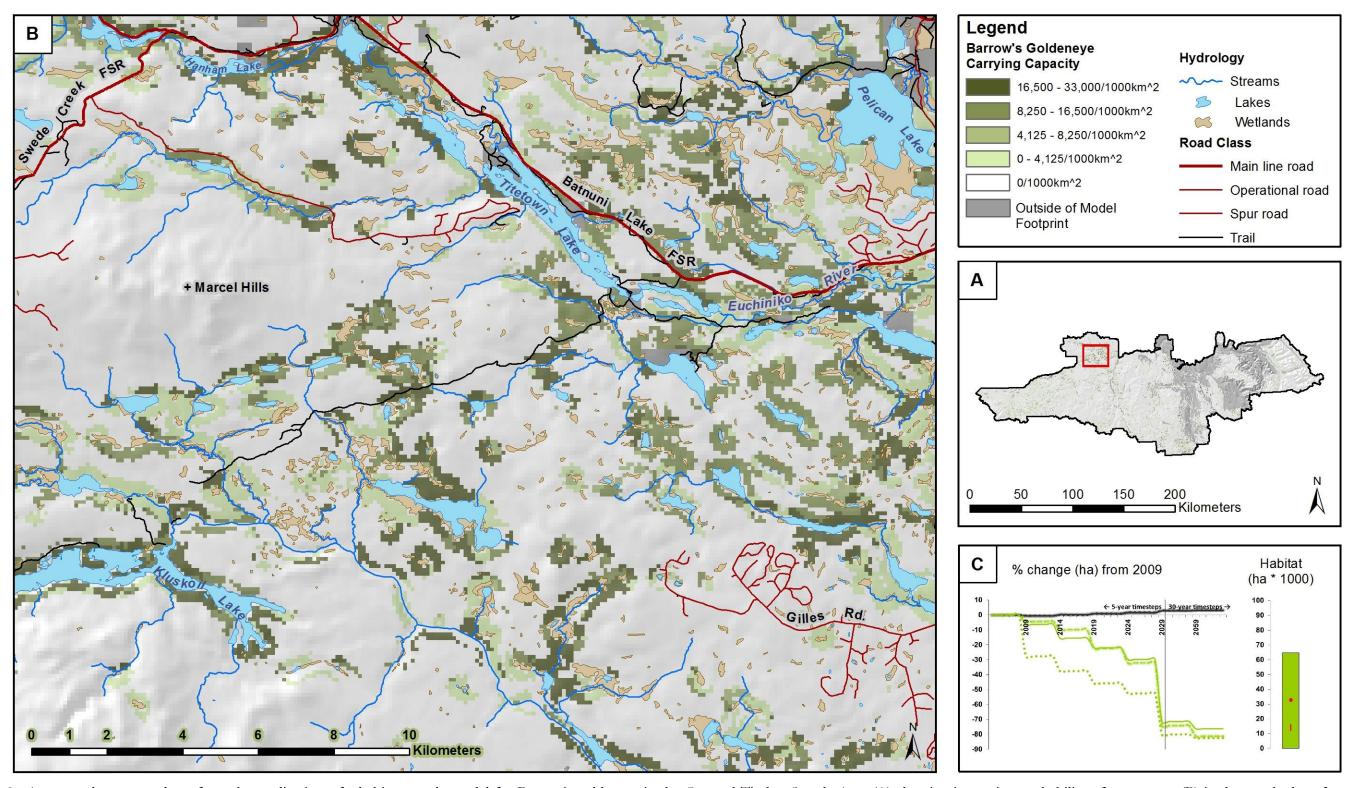


Figure 9. An example map resultant from the application of a habitat supply model for Barrow's goldeneye in the Quesnel Timber Supply Area (A) showing increasing probability of occupancy (B) in deeper shades of green. The models were also used to compare current (2009) habitat levels with those in the future under scenarios of managed timber supply, landscape potential, and natural disturbance (C).

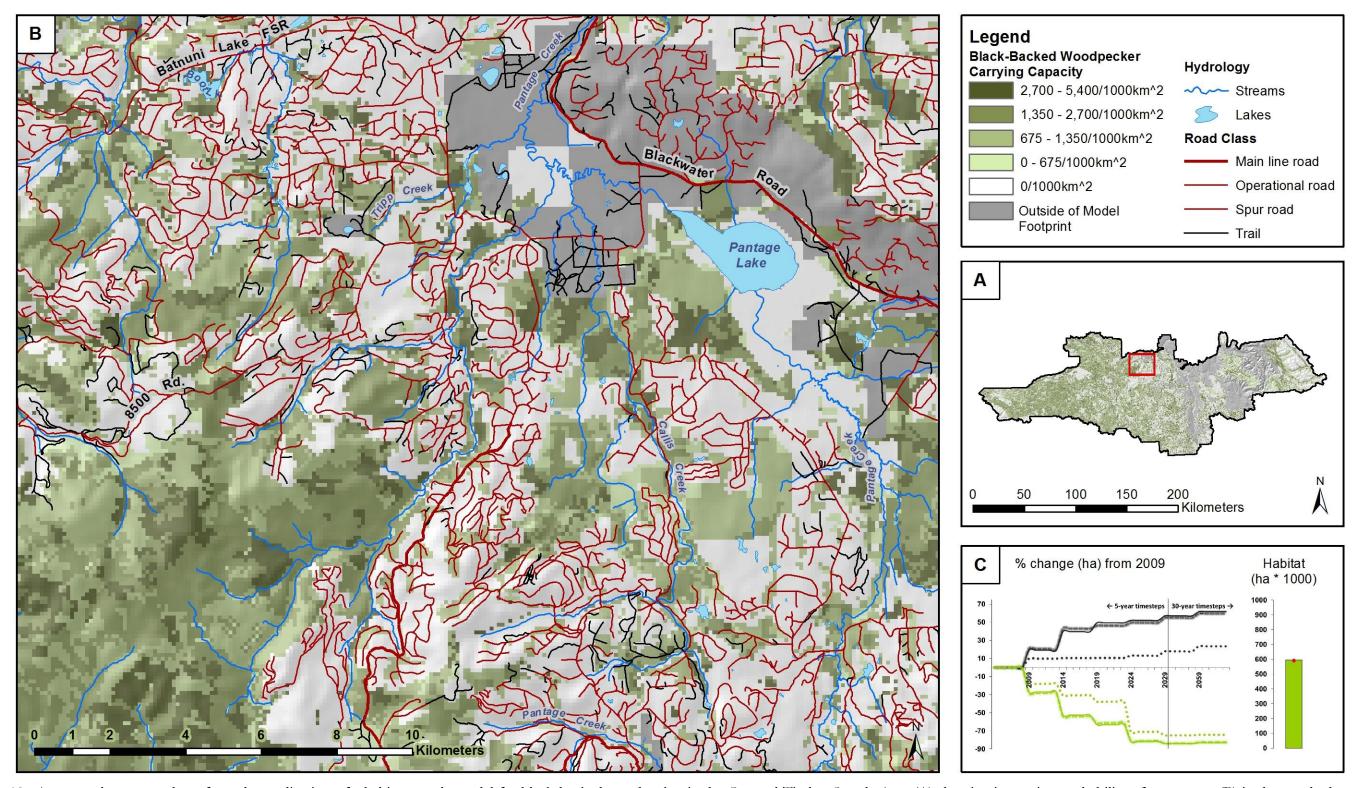


Figure 10. An example map resultant from the application of a habitat supply model for black-backed woodpecker in the Quesnel Timber Supply Area (A) showing increasing probability of occupancy (B) in deeper shades of green. The models were also used to compare current (2009) habitat levels with those in the future under scenarios of managed timber supply, landscape potential, and natural disturbance (C).

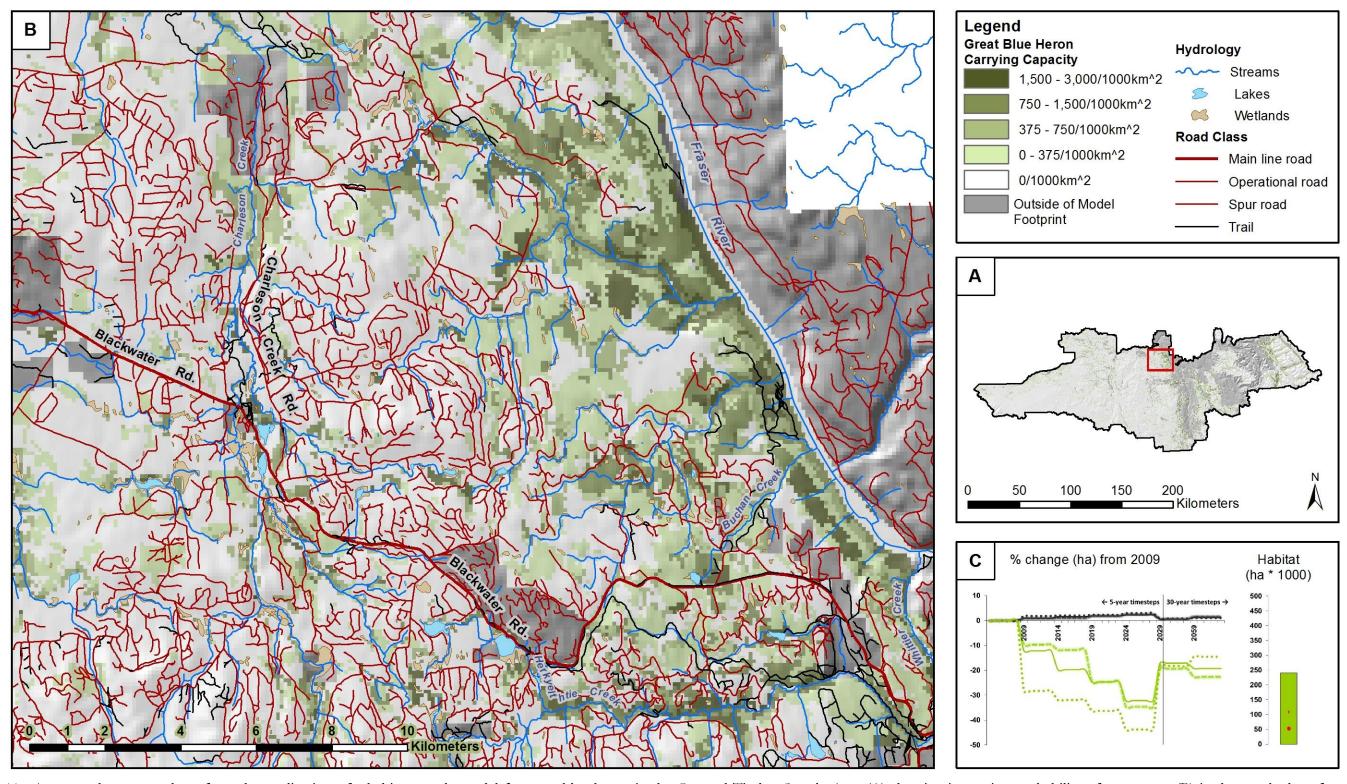


Figure 11. An example map resultant from the application of a habitat supply model for great blue heron in the Quesnel Timber Supply Area (A) showing increasing probability of occupancy (B) in deeper shades of green. The models were also used to compare current (2009) habitat levels with those in the future under scenarios of managed timber supply, landscape potential, and natural disturbance (C).

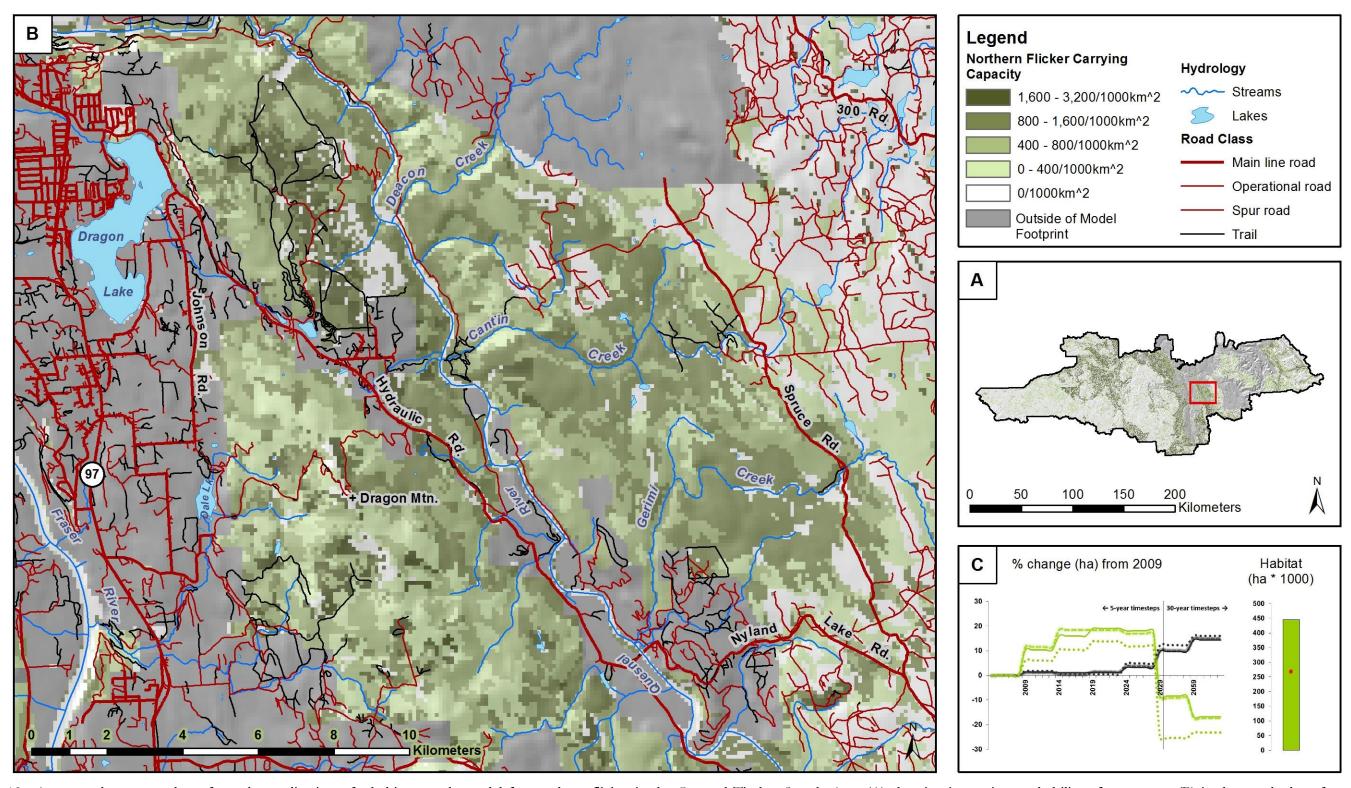


Figure 12. An example map resultant from the application of a habitat supply model for northern flicker in the Quesnel Timber Supply Area (A) showing increasing probability of occupancy (B) in deeper shades of green. The models were also used to compare current (2009) habitat levels with those in the future under scenarios of managed timber supply, landscape potential, and natural disturbance (C).

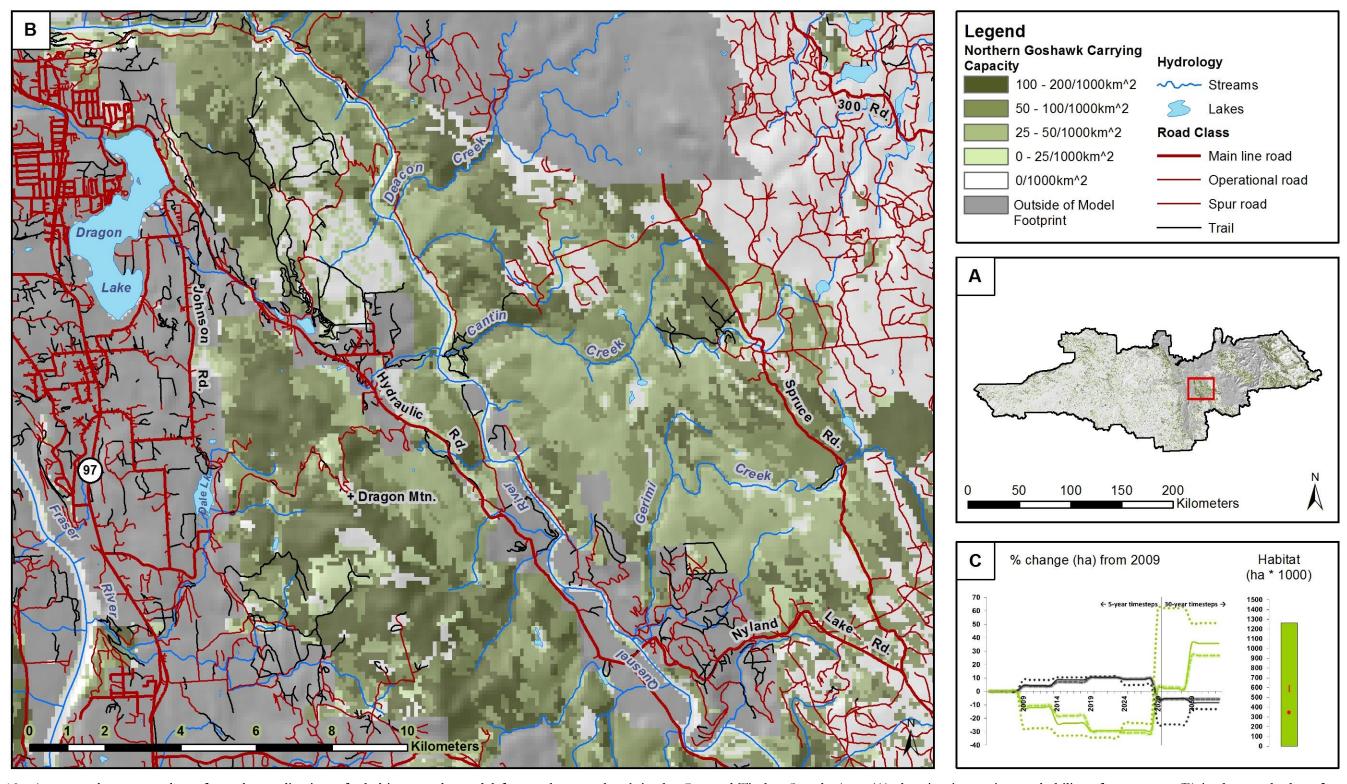


Figure 13. An example map resultant from the application of a habitat supply model for northern goshawk in the Quesnel Timber Supply Area (A) showing increasing probability of occupancy (B) in deeper shades of green. The models were also used to compare current (2009) habitat levels with those in the future under scenarios of managed timber supply, landscape potential, and natural disturbance (C).

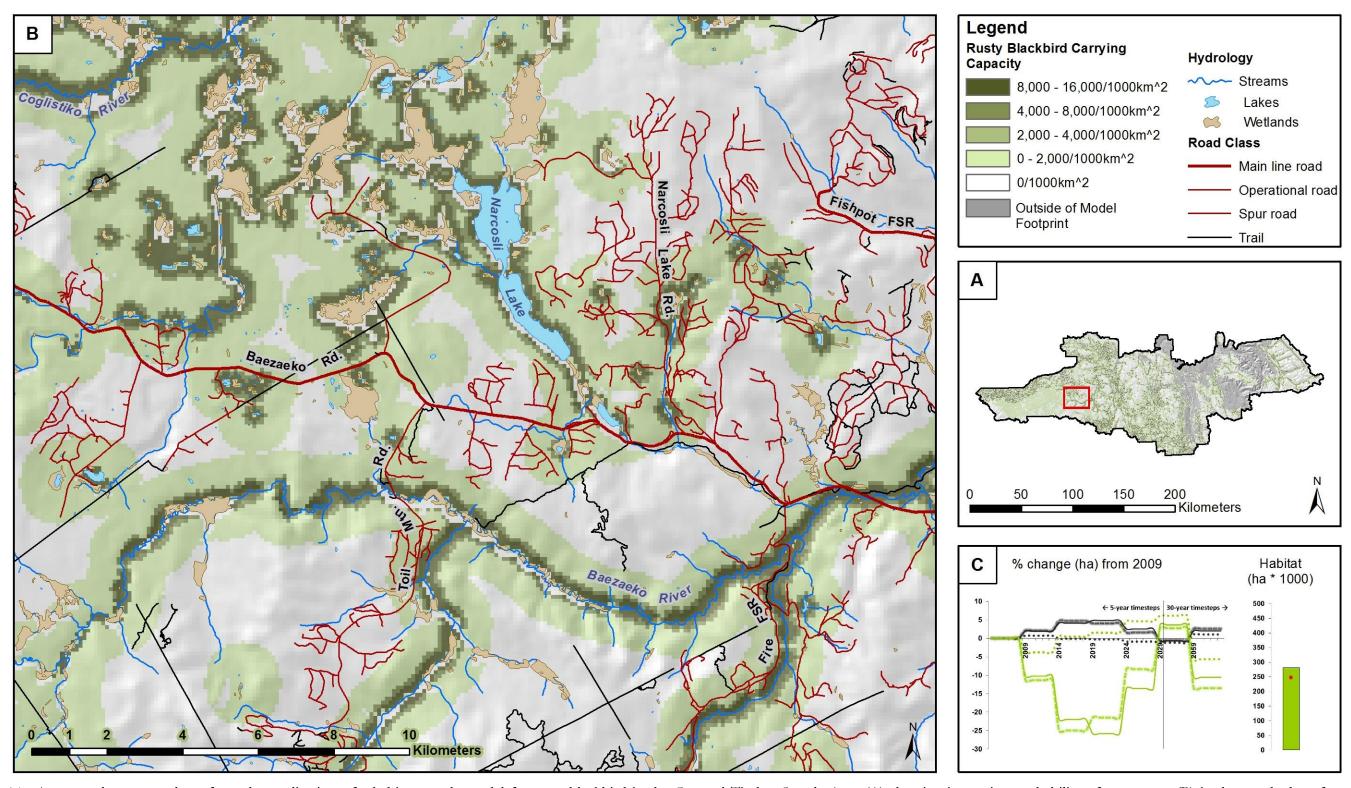


Figure 14. An example map resultant from the application of a habitat supply model for rusty blackbird in the Quesnel Timber Supply Area (A) showing increasing probability of occupancy (B) in deeper shades of green. The models were also used to compare current (2009) habitat levels with those in the future under scenarios of managed timber supply, landscape potential, and natural disturbance (C).

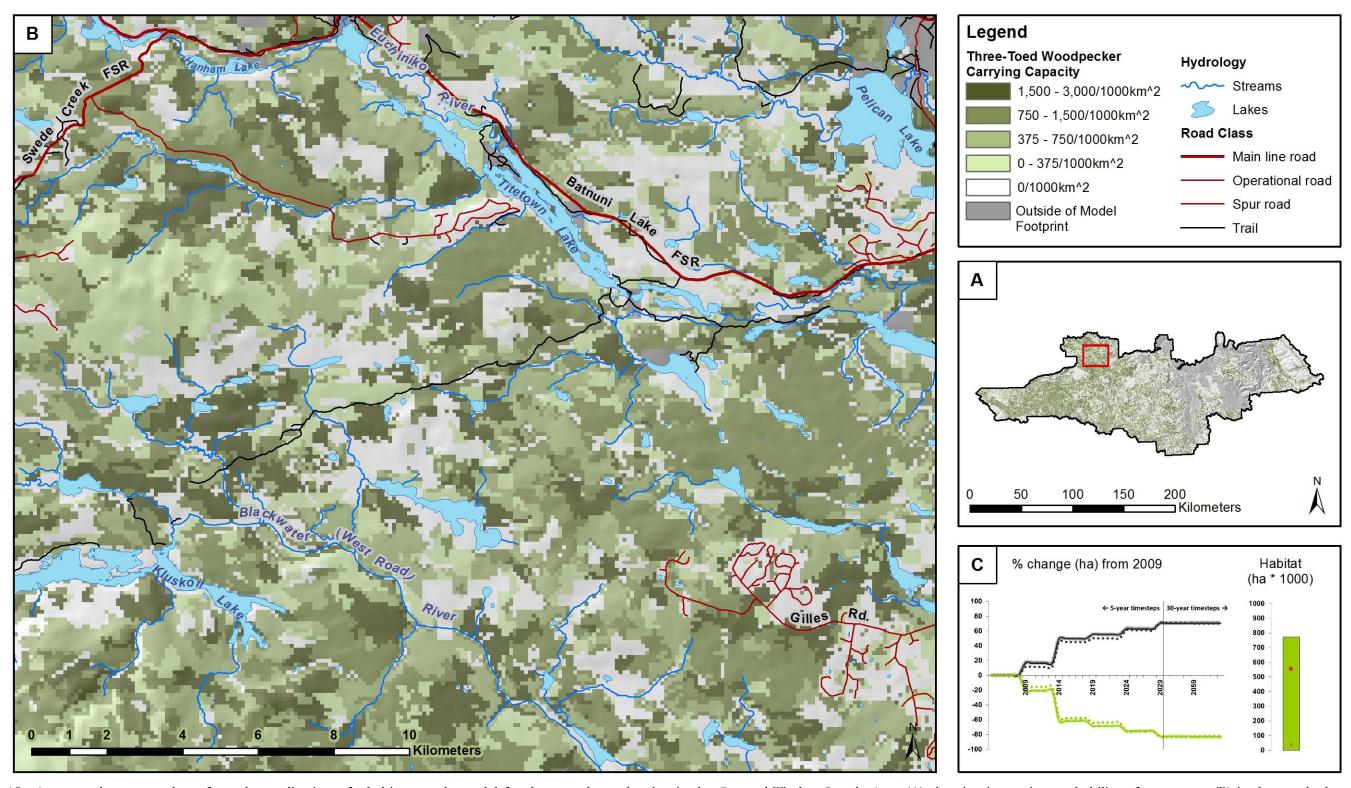


Figure 15. An example map resultant from the application of a habitat supply model for three-toed woodpecker in the Quesnel Timber Supply Area (A) showing increasing probability of occupancy (B) in deeper shades of green. The models were also used to compare current (2009) habitat levels with those in the future under scenarios of managed timber supply, landscape potential, and natural disturbance (C).