

Protecting Roadless Areas: Our Best Shot at Protecting Ecological Integrity

By Jackie Ho and Peter Quinby

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Wetland and Old-growth Forest, Catchacoma, Ontario

Driving along a rural road in central Ontario, it's easy to feel immersed in the forests of the Canadian Shield. Surrounded by tall pines, one could forget that you're on a road, built by humans to get between destinations, winding and connecting our towns across the landscape.

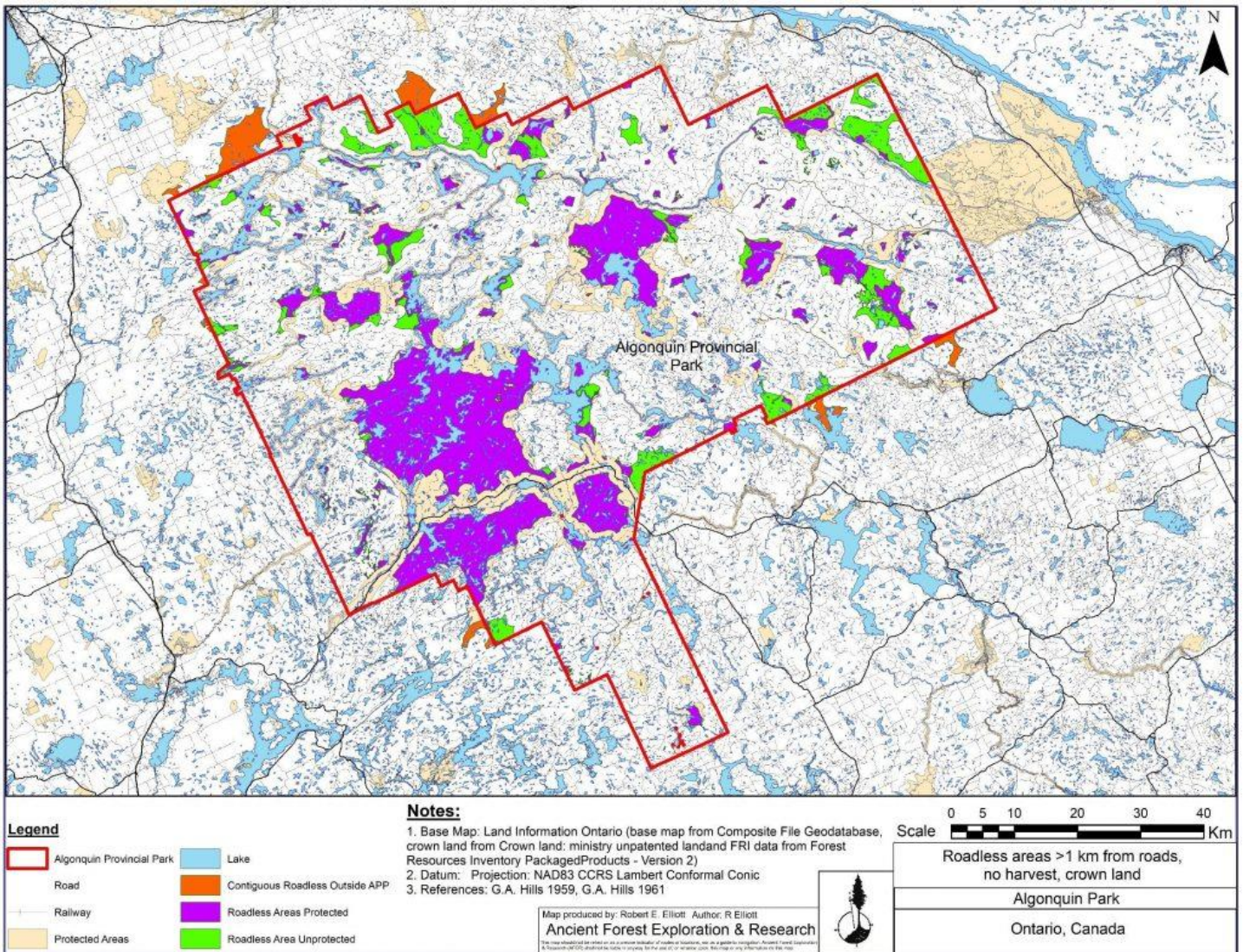
Roads are incredibly useful, but as industrial activities and development progress, we may be missing what we can't see ourselves – the value of intact ecosystems or “roadless areas” that harbour thriving forests, waters and wildlife at a safe distance from human disturbances.

Roadless areas are of global and local importance. Roads fragment landscapes and lead to further human developments and environmental impacts, usually to the detriment of biodiversity and ecosystem functions such as carbon storage and sequestration. A [2016 study](#) found that only about 7% of lands globally remain in patches larger than 10,000 hectares. More attention is needed to limit road expansion in our efforts to combat biodiversity loss and achieve landscape sustainability.



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According to **Ancient Forest Exploration & Research (AFER)**, roadless areas in Ontario decreased by 3.1 million hectares between 2005 and 2020, or an annual loss of roughly 207,000 hectares/year. The vast majority of our roadless areas are given no protection on unceded Crown lands, where logging or mining exploration activities are facilitated by new road development. In the case of logging, these roads are subsidized with public funds at a cost of about **\$60 million per year**. Even in the iconic Algonquin Park, **of which 18% is roadless** (i.e., areas that are over 1 km from a road), 40,000 hectares remain unprotected from logging.



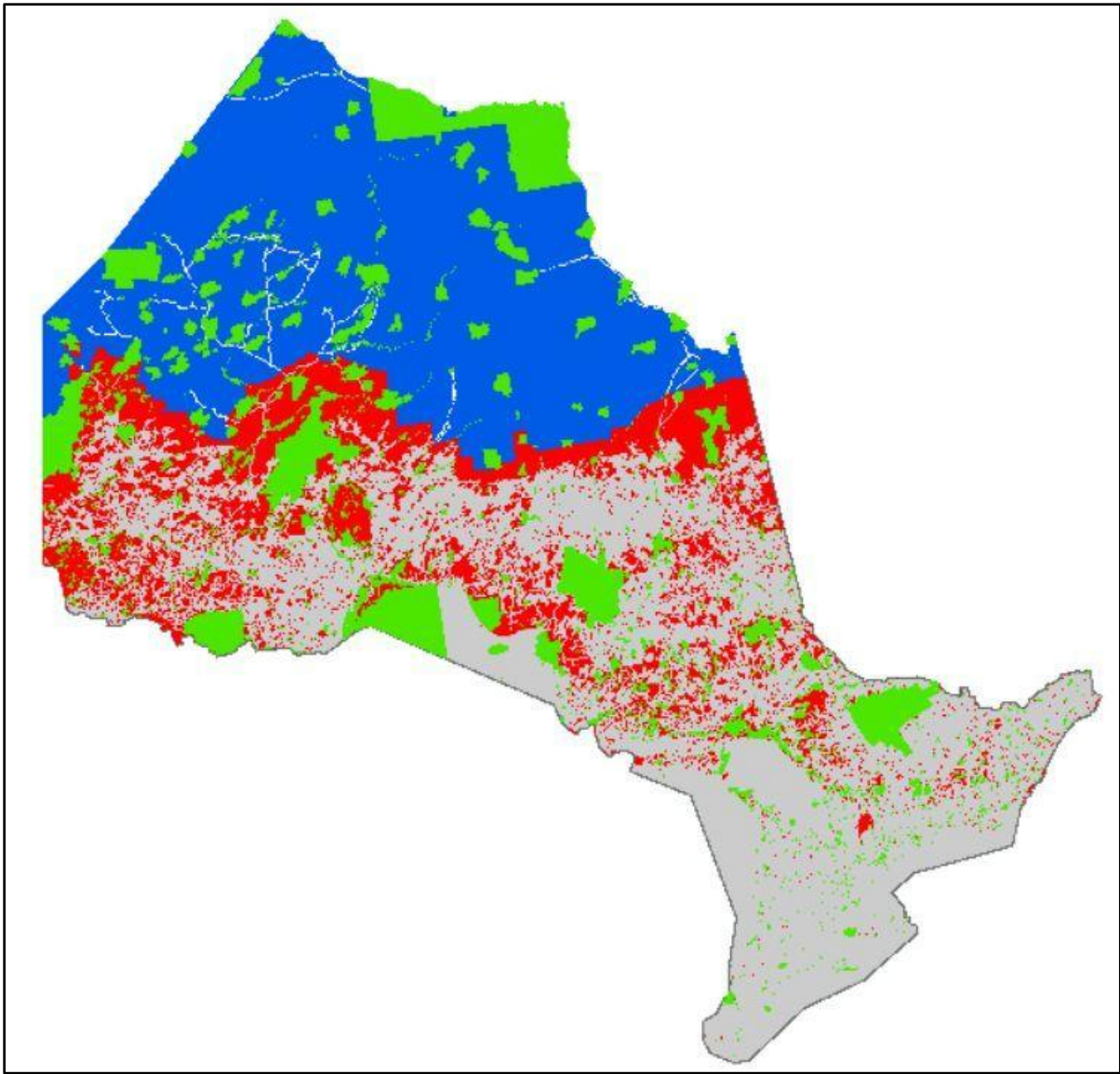
(Algonquin Roadless Areas © Robert Elliott, AFER)

Roadless areas are an important indicator of ecological integrity and are associated with other ecosystem benefits such as wildlife refugia, carbon storage and carbon sequestration. AFER has further found that there are more old-growth forests left in roadless areas than in fragmented landscapes (e.g., old-growth forests cover approximately 20% more area within roadless areas than outside of them in one forest management unit in central Ontario).



Measuring an old growth tree © AFER

AFER is currently working on a provincial dataset of roadless areas to build a comprehensive inventory for the province. “Parks legislation in Ontario identifies ‘ecological integrity’ as the most important criterion for selecting and maintaining protected areas. Roadless areas represent the portions of the province with the highest degree of ecological integrity and therefore could provide the foundation or source for many of the new protected areas that are required to meet federal land protection goals”, says Dr. Peter Quinby, chief scientist at AFER and forest ecologist of 40 years. As Canada, and hopefully Ontario, continues the work to **achieve 25% of protected lands and waters by 2025**, roadless areas are a prime opportunity for further protection and conservation.



(Preliminary Map of Roadless Areas in Ontario © Robert Elliott, AFER)

Some actions are irreversible, and fragmenting a pristine forested landscape is one of them. We need to think long and hard about how we treat our remaining natural intact ecosystems, particularly in the face of global biodiversity loss and climate change crises.

Authors:



Jackie Ho started with Ontario Nature in 2012 as a member of the Youth Council and rejoined in 2020 in her current role. She graduated in 2019 with a B.A. in integrative biology from Harvard College, where she divided her time between tree-ring research and recruiting students into conservation work. She has worked on several conservation initiatives abroad, from teaching in Uganda to mangrove restoration in Suriname, and has volunteered with the Toronto Zoo and Toronto Wildlife Centre. Growing up in Toronto, Jackie's love for nature grew from frequent visits to the zoo and family road trips around Southern Ontario. Her hobbies include skating, baking, exploring trails, and spending too much time on public transit.

Dr. Peter Quinby is the founding executive director of Ancient Forest Exploration & Research (created in 1992). Since 2004, he has been Chair of the Board of Directors and Chief Scientist and has studied landscape ecology and conservation since 1980. As a graduate student at Yale University, he was involved in watershed-ecosystem studies at the Hubbard Brook Experimental Forest in New Hampshire. For his Ph.D. project at the University of Toronto, he studied the influence of habitat conditions on forest vegetation composition in the upland landscapes of Algonquin Park, Ontario. For three years starting in 1988, he was Director of Conservation Science and Research Ecologist with the Temagami Wilderness Society. Between 1987 and 1991, Dr. Quinby was Assistant Professor of Natural Resource Management at Wilfrid Laurier University; from 1994 to 2000, he was Assistant Professor of Conservation Biology at the University of Pittsburgh; from 2000 to 2003, Dr. Quinby was Dean of Natural Resources, Sciences and Liberal Arts at Paul Smith's College; and from 2003 to 2007, he was Director of the Pymatuning Laboratory of Ecology at the University of Pittsburgh. In 2007, he became a senior scientist with Knight Piesold Consulting in North Bay, Ontario until he returned to working as a consulting ecologist in 2014. Dr. Quinby is certified as a Senior Ecologist through the Ecological Society of America and has produced numerous scientific articles and technical reports addressing the topics of forest landscape ecology and conservation, species at risk, wildlife habitat assessment and suitability, and natural areas management.