

International Scientists' Call for Action to Protect Endangered Temperate Rainforests of British Columbia, Canada

The world's remaining primary (unlogged) and intact forest landscapes support an exceptional confluence of globally significant environmental values. These include imperilled biodiversity, exceptional forest biomass¹, climate resilience², and diverse ecosystem and cultural services such as carbon sequestration and storage, water provision, Indigenous Peoples' cultures and maintenance of human health.³

Few of the Earth's forest ecosystems are rarer and hold more ecological value than temperate rainforests. They constitute only about 2.5 percent of the earth's forests but are exceptionally important. British Columbia's coastal temperate rainforests represent over one quarter of this total⁴, and its inland rainforests are one of only two such areas world-wide⁵. Maintaining older forests as carbon sinks in British Columbia would contribute to Canada's overall commitments to the Paris Climate Change Agreement while providing additional ecosystem benefits in the form of clean water, recreation, First Nations cultural values, and biodiversity⁶. In fact, temperate rainforests in British Columbia contain substantial stores of carbon at the landscape and regional scales.⁷

As scientists, we therefore urge the British Columbia government to recognize the global significance of the remaining primary and intact coastal and inland temperate rainforests of the province by protecting their unique global attributes from industrial logging and development.

In contrast to the Great Bear Rainforest and Haida Gwaii, where ecological integrity of rainforest ecosystems is being maintained through protected areas and Ecosystem-Based Management, the level of conservation for BC rainforest ecosystems is inadequate across the remainder of the province. Through most of the province, primary and intact forest landscapes have been reduced to a fraction of their original extent and are being logged at a rapid pace particularly on Vancouver Island, the South Coast, and the inland rainforest region⁸.

Ongoing logging of old-growth, currently more than 10,000 hectares per year on Vancouver Island alone⁹, is resulting in even higher ecological risk for flora and fauna, now exacerbated by increasingly

¹Luyssaert, S. et al. 2008. Old-growth forests as global carbon sinks. *Nature* 455:213-215. Lindenmayer et al. 2012. Global decline in large old trees *Science* 338:1305-1306. Lutz, J.A. et al. 2018. Global importance of large-diameter trees. *Global Ecology and Biogeography* <https://doi.org/10.1111/geb.12747>

²Johnstone, J.R., et al. 2016. Changing disturbance regimes, ecological memory, and forest resilience. *Frontiers Ecology & Environ.* 14:369-378.

³Schoennagel, T. et al. 2017. Adapt to more wildfire in western North American forests as climate changes. *PNAS* 114:4582-4590.

⁴Mackey B., et al. 2014. Policy options for the world's primary forests in multilateral environmental agreements. *Conservation Letters* 8:139-147

DOI: 10.1111/conl.12120. Watson, J. E M et al. 2018. The exceptional value of intact forest ecosystems. *Nature Ecology & Evolution*, 2 4: 1-12.

⁵DellaSala, D. A. 2011 (ed.). *Temperate and boreal rainforests of the world: ecology and conservation*. Island Press, Washington, D.C. Mori, A.S. et al.

2017. Biodiversity and ecosystem services in forest ecosystems: a research agenda for applied forest ecology. *J. Applied Ecology* 54:12-17.

⁶DellaSala, D.A., et al. 2011. Temperate and boreal rainforests of inland northwestern North America. Pp. 82-110 in D.A. DellaSala, *Temperate and Boreal Rainforests of the World: Ecology and Conservation*. Island Press: Washington D.C.

⁷Brandt, P., et al. 2014. Multifunctionality and biodiversity: Ecosystem services in temperate rainforests of the Pacific Northwest, USA. *Biological Conservation* 169: 362-371

⁸Fredeen, A.L.2005. Comparison of coniferous forest carbon stocks between old-growth and young second-growth forests on two soil types in central British Columbia, Canada. *Can. J. For. Res.* 35:1411-1421. Trofymow, J.A. et al. 2008. Derivation of a spatially explicit 86-year retrospective carbon budget for a landscape undergoing conversion from old-growth to managed forests on Vancouver Island, BC. *For. Ecol. Manage.* 256:1677-1691.

⁹https://sierraclub.bc.ca/wp-content/uploads/2015/08/South-Coast-Backgrounder_March-2016.pdf

⁹<https://sierraclub.bc.ca/vancouver-island-old-growth-logging-increased-more-than-10-per-cent-in-2016/>

severe climate change impacts such as extended drought conditions, extreme rainfall and stronger storms. Only a small portion of productive old-growth forest remains on Vancouver Island and the majority is still unprotected.¹⁰ The conversion of old-growth temperate rainforests to plantations results in release of a substantial amount of the stored carbon¹¹, as well as a reduction in the overall carbon stored over the long term because managed forests are only grown to rotation age¹².

The rapid pace of logging and the threat of climate change means that our generation has a historic responsibility to make a difference for the fate of the remaining primary rainforests of BC and their irreplaceable values. Furthermore, old-growth forests, late seral climate refugia, and undeveloped landscapes have critical roles to play in developing strategies for enhancing ecosystem resilience in a changing climate.

Importantly, in 2016, the BC government and First Nations inspired the world by implementing the Great Bear Rainforest Agreements.¹³ However, given the global importance of British Columbia's rainforest biodiversity and the imminent threats posed to the highly endangered remaining primary and intact forest landscapes, we urge the BC government to follow through with its promise to modernize land-use plans in partnership with First Nations and communities, and protect BC's primary forests, taking an evidence-based scientific approach including protection for critical areas imminently threatened from logging¹⁴. We hope the province will once again show leadership and seek conservation solutions for all of BC's globally rare and endangered primary and intact forest landscapes, combined with support for First Nations land use planning, compatible economic activities and long-term forestry jobs in improved second-growth forest management.

¹⁰ <https://sierraclub.bc.ca/white-rhino-map-shows-vancouver-islands-most-endangered-old-growth-rainforests/>

¹¹ Matsuzaki E. et al. 2013. Carbon stocks in managed and unmanaged old-growth western redcedar and western hemlock stands of Canada's inland temperate rainforests. *Forest Ecology & Management* 297:108-119.

¹² James, J., & R. Harrison. 2016. The effect of harvest on forest soil carbon: A meta-analysis. *Forests*, 7(12), p.308. Mackey, B. 2014. Counting trees, carbon and climate change. *The Royal Statistical Society* Feb. 2014:19-23.

¹³ A vision realized, Rainforest Solutions Project, 2016 http://www.savethegreatbear.org/images/uploads/RSP_GBRBackgrounderFebruary2016.pdf

¹⁴ 2017 NDP Platform, page 61: "In partnership with First Nations and communities, we will modernize land-use planning to effectively and sustainably manage BC's ecosystems, rivers, lakes, watersheds, forests and old growth, while accounting for cumulative effects. We will take an evidence-based scientific approach and use the ecosystem-based management of the Great Bear Rainforest as a model." <https://www.bcdp.ca/sites/default/files/platform-book-v2-updated.pdf>

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