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Why are Ancient and Endangered Forests Irreplaceable?

Ancient and Endangered Forests perform essential functions that literally make life on earth liveable for us – and they do it at a scope, scale and efficiency that cannot be replicated by technology nor even by newly planted forests.

This document addresses some common misconceptions about the functionality of planted (or younger, re-grown) forests that are often communicated as fact but that are not supported by science. It also illustrates some of the invaluable services supplied by healthy forests. The body of scientific evidence tells us that Ancient and Endangered Forests are indeed irreplaceable.

Ancient and Endangered Forests are essential to the health of the Earth's species, climate and biodiversity. Yet they are being logged at an alarming pace. This year, 3 billion trees will be logged for packaging alone, and 150 million trees will be cut down to make viscose for this season's fashion apparel.¹

WHERE ARE ALL THESE TREES COMING FROM?

Some of these forests are from areas that were previously deforested, logged in plantations converted from natural forests decades ago, others are from responsibly managed second growth forests, certified by the Forest Stewardship Council.

Other trees are logged in intact forests landscapes, primary forests, forests with high species richness and forests with high carbon value. These ecosystems, and others, are part of what are called Ancient and Endangered Forests. To find out their definition and location, consult Canopy's [Quick Guide to Ancient and Endangered Forests and ForestMapper](#).

As we look to replace unsustainable products such as plastics, we must make sure that they are not traded in for products made with trees from the world's Ancient and Endangered Forests. The reason is simple: these forests are irreplaceable and we need them to sustain life on earth.

Forests Grow Back, But They're Never the Same



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Trees grow back, but trees are not a forest. Once a forest is industrially disturbed, it is fundamentally changed. Water and nutrient cycles are altered, the ability of the soil to store carbon will be reduced, and there are changes to tree species and wildlife.

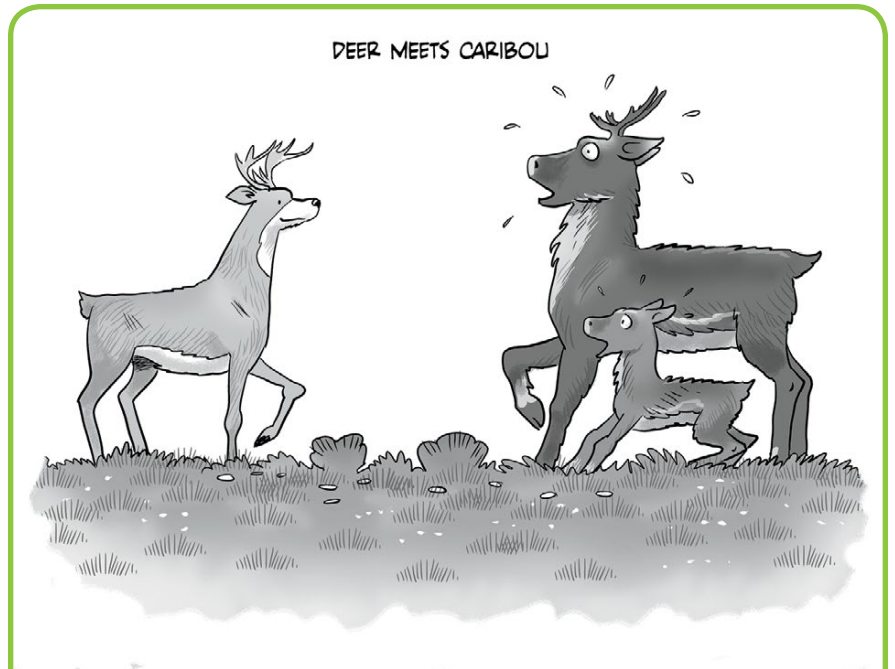
Systems that have been in place for hundreds or thousands of years are disrupted and this causes a ripple effect that impacts flora and fauna, and even the mineral content in the soil and the flow of rivers and streams. In some cases, it can lead to a dramatic loss of biodiversity and abundance of wildlife, and even to the local extinction of threatened species. It can also displace people who call the forest home and depend on its plants and animals for sustenance and livelihoods.



“Of the world’s remaining forests, as much as 82% is now degraded to some extent as a result of direct human actions such as industrial logging, urbanization, agriculture and infrastructure”²

Industrial logging usually requires the construction of roads. These roads open up previously un-accessed areas of forests to new species and motor vehicles, which bring a cascade of changes to the forest. Roads bring in more people, which can mean additional hunting and poaching, and more land cleared for agriculture and additional forms of resource extraction, such as mining. Once this cycle starts, it's difficult—and sometimes impossible—to ever truly replace the forest or bring it back to its original condition.

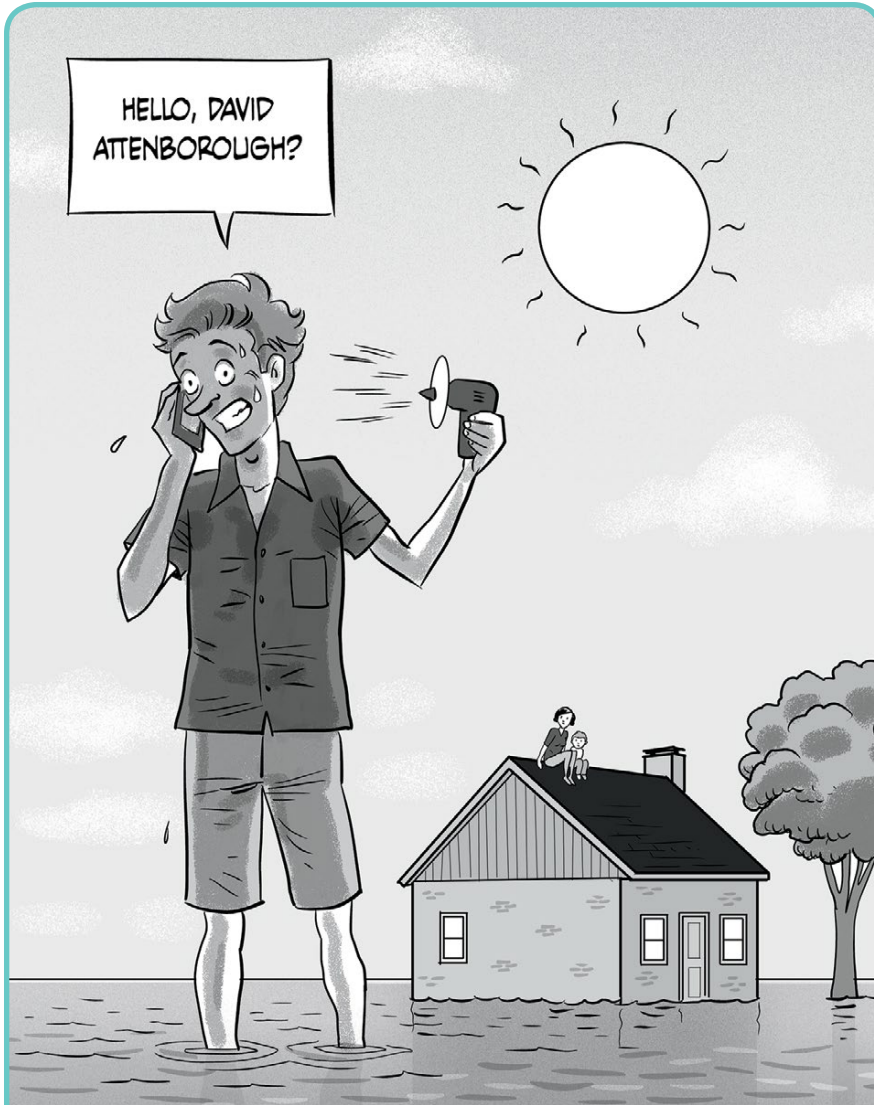
This is why Ancient and Endangered Forests are irreplaceable. Even best practices for forest management cannot preserve the character of an intact Ancient and Endangered Forest that has never seen industrial development. It is for this reason that Canopy believes that responsible industrial forest management, as certified by FSC, should occur in second-growth forests, and plantations that aren't the product of deforestation. In Ancient and Endangered Forests, careful planning must occur before logging to ensure that what is #irreplaceable stays standing.



In the Canadian Boreal, when a previously intact forest is fragmented by roads and/or clearing, it clears the path for species such as deer, who attract predators like wolves. The iconic woodland caribou – who live in intact Boreal forests – are not adapted to the higher predator density brought about by the deer population, and their populations decline as a consequence.



As Living Organisms, We Need a Few Basic Things to Survive, such as:



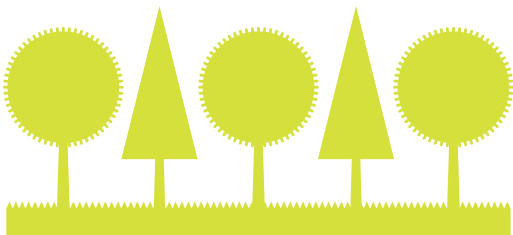
Ancient and Endangered Forests are carbon-storing power houses and protecting them is an effective way to mitigate the effects of climate change, like hot summers, floods and fires. Supporting conservation initiatives is one way citizens and businesses can contribute.

1 A STABLE CLIMATE

Forests are carbon-storing powerhouses, with 45 percent of the carbon stored on land tied up in forests.⁴ Most Ancient and Endangered Forests have superior carbon storage capability. For example, intact forests in the tropics store 40 percent of above-ground carbon despite representing only 20 percent of tropical forest cover.⁵ Protecting these forests is a smart and effective way to help mitigate the effects of climate change.

Contrary to popular belief, trees that are left to decompose in the forest do a better job at storing carbon than wood products do.⁶ This is partly due to the fact that trees are not fully utilized when turned into wood products. Studies in the Scandinavian Boreal Forest, show that only 50% of a harvested log are used for lumber (which stores carbon). The rest (log surfaces, sawdust) is used for pulp, or as biomass for energy.⁷ The pulp is turned into short-lived paper, or cellulosic products (such as viscose), that often eventually ends up in a landfill where they decompose and release methane gas, with the rest burnt as biomass. Overall, an average of only 20% of the full, large tree is transformed into a sawn wood product, such as lumber, which has the ability to store carbon over a long period of time.⁸

“Industrial-scale logging directly reduces carbon stocks through a combination of tree removal, collateral damage to [not harvested] trees, decomposition of logging waste and wood fibre products, and the depletion of soil and peatland carbon stocks.”³





Canada's extensive Boreal Forest is sometimes called a "forest of blue,"—its vast network of pristine lakes and rivers make it the largest source of unfrozen fresh water on Earth⁹

2 CLEAN WATER

As we lose more forests every year, we're just starting to fully understand the role that they have in filtering our water from pollution, regulating rainfall and controlling erosion. One third of the world's biggest cities, such as New York, Singapore, Jakarta, Rio de Janeiro, Madrid and Cape Town draw a significant portion of their drinking-water from forest watersheds.¹⁰ Ancient and Endangered Forests are very important in this context. Studies have shown that when intact forests are cleared or degraded, there is a reduction in cloud cover and rainfall.¹¹ In fact, air that passes over intact tropical landscapes produces at least twice as much rain as air that passes over degraded or non-forest areas.¹²

*"Loss of habitat has been a key driver behind the precipitous decline in species during the past 50 years – there has been a 60% drop in wildlife populations since the 1970s."*¹⁵



Contributing to regenerating future generation of plants that will absorb CO₂

3 BIODIVERSITY

Many species, including bees, bats, plankton, fungi and primates are irreplaceable. Forest-dwelling primates disperse seeds after eating fruit, contributing to regenerating future generations of plants. Forests need primates and other large mammals to stay vibrant. Healthy forests will then absorb CO₂ from the atmosphere to maintain a climate in which we all can thrive.

Life on this planet simply needs undisturbed temperate, boreal and tropical forest regions. According to a recent study "the loss of large contiguous tracts of forest has meant wide-ranging forest-dependent species have either retreated to the last remaining intact forest systems or are extinct".¹³ In fact, a letter written by scientists and published in the science journal *Nature* declares: "primary forests are 'irreplaceable' for sustaining tropical biodiversity."¹⁴

Saving oceans, protecting forests, reducing our impact



Paper or plastic? Fair Trade or organic? Doing the right thing can feel overwhelming. What is clear though is that humanity needs to have a lighter footprint on our planet. We need – urgently – to curb our consumption of plastics to save the oceans, shift from fossil fuels to renewables and conserve Ancient and Endangered Forests.

While tree fibre is indeed “natural” fibre, it isn’t automatically sustainable – especially if it comes from Ancient and Endangered Forests.

Ancient and Endangered are #irreplaceable and as such, it is a global imperative to protect them.

Fibre from verifiably well-managed second growth forests such as plantations that are Forest Stewardship Council certified, will continue to be part of the products in our lives. And alternative materials will play an increasingly important role.

Supporting next generation solutions is vital to alleviating the stress off Ancient and Endangered Forests and our climate. Burgeoning technologies such as microbial cellulose and recycled clothing for viscose production and agricultural residue and recycled fibres for paper and packaging provide alternative material to virgin forest fibre.

And of course, “reducing, reusing and recycling” are still the bronze, silver and bronze for sustainability.”

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Intact Forest: © Gordon Welters
Umbrella species: © Ted Simonett;
and Above-ground: © steve p2008

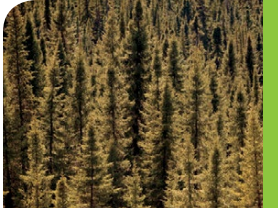
DEFINITIONS:



Second Growth

Forest:

Forest that covers an area after the removal of the original trees by cutting or fire.



Intact forest landscapes:

Unbroken expanses of forest greater than 50,000 ha (5000 square kilometer) in area.



Umbrella species:

Species that are an indicator of the ecosystem's health: when these species have enough habitat to maintain healthy populations, it indicates that the broader ecosystem is healthy.



Above-ground carbon:

The name says it all. It means carbon that is found above the forest ground. This includes trees, its branches and leaves and other plants, both dead and alive. Another term often used is carbon from forest biomass.



Carbon stock:

When speaking of forests, it refers to the amount of carbon stored in an ecosystem, in biomass and soil.



FOOTNOTES

1. Environmental impact estimates were made using the Environmental Paper Network Paper Calculator Version 4.0. For more information visit www.papercalculator.org.
2. Potapov, P. et al. the last frontiers of wilderness: tracking loss of intact forest landscapes from 2000 to 2013. *Sci. Adv.* 3, e1600821 (2017) and Venter, O. et al. Sixteen years of change in the global terrestrial human footprint and implications for biodiversity conservation. *Nat. Commun.* 7, 12558 (2016). In Watson et al, 2018.
3. Watson, J. E M. et al. 2018. *The exceptional Value of Intact Forest Ecosystems*. Nature Ecology and Evolution. <https://www.nature.com/articles/s41559-018-0490-x>
4. Accessed online March 2019: <https://earthobservatory.nasa.gov/features/ForestCarbon>
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6. This is particularly the case for slow growing and long-lived trees. Calculations also depend on how long-lived the wood product is. Pukkala et al. 2018. Carbon forestry is surprising. *Forest Ecosystems*. 5:11.
7. *Idem*.
8. *Idem*.
9. Wells, J., D. Roberts, P. Lee, R. Cheng and M. Darveau. 2010. *A Forest of Blue – Canada's Boreal Forest: the World's Waterkeeper*. International Boreal Conservation Campaign, Seattle. 74 p.
10. Accessed online January 2019. FAO 2011. <http://www.fao.org/news/story/en/item/53391/icode/>
11. Sheil, D. & Murdiyarsa, D. 2009. How forests attract rain: an examination of a new hypothesis. *Bioscience* 59, 341 – 347.
12. *Ibid*. Sheil, D. & Murdiyarsa, D. 2009.
13. *Ibid*. Watson, J. E M. et al. 2018.
14. Gibson et al. 2011. Primary forests are irreplaceable for sustaining tropical biodiversity. *Nature*. Vol. 478. pp. 378 – 383
15. wwf. Living Planet Report 2018. Accessed online March 2019: http://www.wwf.ca/about_us/living_planet_2018/?_ga=2.50441390.688397009.1540822746-1410155172.1521488156

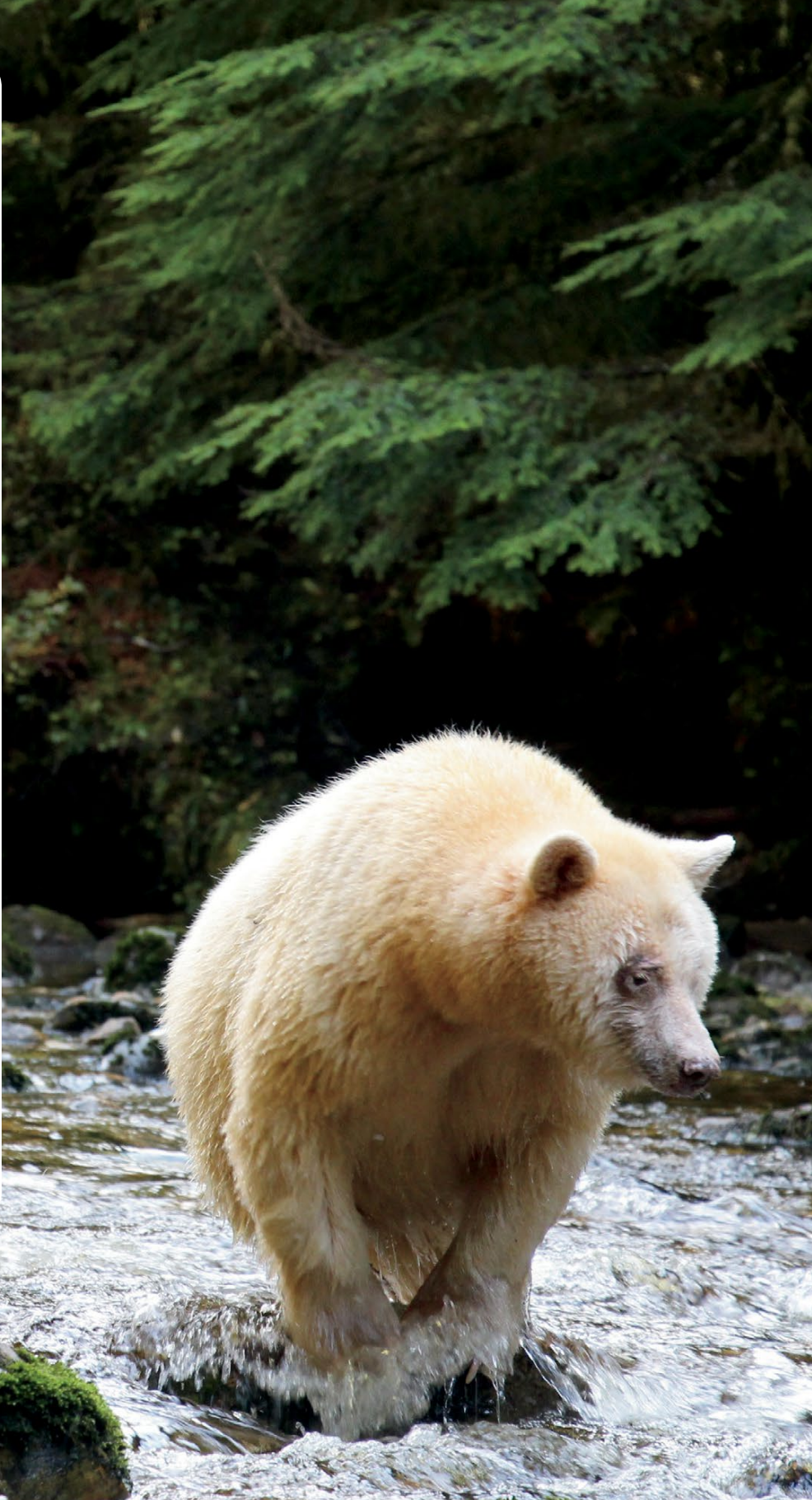


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