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Current science examines BC's old-growth forests and their contribution to battling climate change[1]

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Nowadays, forest managers and policy makers throughout BC are faced with numerous challenges when it comes to examining the science behind old-growth forests and their contribution to battling climate change.

Most tend to recognize old-growth forests as part of the global warming reversal solution because of their ability to remove more carbon dioxide from the atmosphere than what they emit, otherwise known as a net **carbon sink** phenomenon. Through **photosynthesis**, the carbon is absorbed from the atmosphere. Later it ends up in forest biomass, dead organic matter and soils. That soil, and even wood products made from these forests, can store carbon for decades and even centuries.

However, what is not as commonly known is the opposite can also be true of old-growth forests. Any forest that releases more carbon than it absorbs is considered to be a **carbon source**. An example of this would be forests that have been **harvested**. Science now shows they tend to be classified as net sources of carbon because of the decay of woody material, forest floor and soil carbon.

Harvested stands and their status as a carbon sink or source are also influenced by the type of wood products they are used for. With short-lived products such as pellets, current science shows they will end up creating more immediate emissions than long-lived wood products like houses.

A review of old-growth forest scientific studies showed that some forests cannot be classified as carbon sources or sinks. Broken down by continent, highlighted results from those studies included:

- North America was the only continent home to forests classified as either carbon sources or forests that would not fit into either category,
- Asia, Australia and Europe's old-growth forests captured in the review were classified as carbon sinks.

The debate becomes even more complicated as science shows the **carbon balance** of any old growth stand is **impacted by environmental factors** such as the growth rate of trees and any natural disasters that may occur.

[1] This is a summary of an article originally published in the BC Forest Professional https://abcfp.ca/WEB/ABCFP/Publications/Back_Issues.aspx

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Add to that equation, **growth rates** and **natural disturbance intensity and frequency** are **changing due to climate change**, it becomes clear the old-growth forest carbon value debate is complex.

Finally, one also needs to consider carbon balances vary from one year to the next and a **consistent definition** of **old-growth forest** does not currently exist in science. Meaning, it becomes very difficult to say with any accuracy, which old-growth forests can be classified as net sinks or sources.

Ultimately, in-order-for forest managers and policy makers to determine best practices when it comes to assessing old-growth forests for carbon storage value, they need to be able to pull from additional research. Future research activities will look at these forests' management history, **natural disturbances** that have happened over time, their age classes and vulnerability to future disturbances and **future climatic changes**.