

TREEVIA Canada's Forests & Climate Change Quiz ANSWER KEY

1. Canada's forests are classified in what four main ways?
 - a. Ecozones, Forest Regions, Forest Types, Soil Types
 - b. Climate Zones, Forest Regions, Forest Types, Soil Types
 - c. Boreal Zones, Deciduous Zones, Tree Families, Water Basins
 - d. **Ecozones, Forest Regions, Forest Composition, Plant Hardiness Zones**

More info: Canada's forests are classified based on ecozones (broad ecological areas), forest regions (large forested zones with similar traits—for example, boreal), forest composition (species grouped by genus), and plant hardiness zones (based on climate data—for example, the monthly mean of the daily maximum temperatures of the warmest month).

Source: <https://natural-resources.canada.ca/forest-forestry/sustainable-forest-management/forest-classification>

2. Which of the following greenhouse gases do trees absorb from the atmosphere?
 - a. Sulphur hexafluoride
 - b. **Carbon Dioxide**
 - c. Nitrous Oxide
 - d. Methane

More info: Trees absorb carbon dioxide from the atmosphere, storing the carbon in their biomass through photosynthesis. At the same time they release oxygen—making trees vital for the air we breathe and for reducing greenhouse gases that drive climate change.

Source: <https://www.nationalforests.org/blog/a-breath-of-fresh-air-how-trees-help-mitigate-climate-change>

3. What is the process called when forests store carbon?
 - a. Pollution
 - b. **Carbon sequestration**
 - c. Combustion
 - d. Decomposition

More info: Carbon sequestration is the process where forests absorb carbon dioxide from the atmosphere and store it as carbon in trees, soil and other vegetation, making forests an essential natural climate solution.

Source: <https://natural-resources.canada.ca/climate-change/forest-carbon>

4. What does it mean when a forest acts as a carbon sink?
 - a. **It absorbs more carbon than it releases**
 - b. It blocks sunlight to reduce warming
 - c. It releases more carbon than it absorbs
 - d. It stores water underground to trap carbon

More info: A forest is considered a carbon sink when it removes more carbon dioxide from the atmosphere through photosynthesis than it emits through natural processes like decay, fire, or deforestation.

Source: <https://natural-resources.canada.ca/climate-change/forest-carbon>

5. Along with 11 other countries, Canada is a member of the Montreal Process, a working group of northern and southern hemisphere nations committed to _____?
- Promoting trade of global forest products
 - Protecting endangered species
 - Promoting sustainable forest management**
 - Promoting tourism in national parks

More info: The Montreal Process, established in 1994, brings together 12 countries from five of the world's seven continents that together hold over 90% of the world's temperate and boreal forests. Its main goal is to promote sustainable forest management through criteria and indicators that measure and monitor the health, conservation, and responsible use of forests.

Source: <https://www.montreal-process.org/>

6. True or False? Planting only one species of trees makes forests more resilient to climate change. **False**

More info: Mixed-species forests, whether urban, peri-urban or rural, are more climate resilient because they support greater biodiversity, which improves pest resistance, disease control, and adaptability to changing climate conditions. This also makes them more effective long-term carbon sinks helping to mitigate the impacts of climate change.

Sources: <https://greenmunicipalfund.ca/resources/factsheet-role-tree-diversity-strengthening-urban-forests>,
<https://phys.org/news/2023-11-forests-multiple-tree-species-effective.html>

7. What is the projected impact of climate change on forest zones in Canada?
- Forest zones will merge
 - Tree species ranges will shift northward or upslope**
 - Tree species ranges will shift southward or downslope
 - Forest zones will remain unchanged

More info: As temperatures rise, many tree species in Canada are expected to gradually move northward or to higher elevations, as they seek suitable climate conditions for continued survival. This shift could alter forest composition and affect wildlife habitats.

Source: <https://natural-resources.canada.ca/climate-change/climate-change-impacts-forests/distribution-tree-species>

8. The Canadian Forest Service uses NFCMARS. What does it stand for?
- National Forest Carbon Monitoring, Accounting and Reporting System**
 - National Forest Climate Mitigation and Assessment Reporting System
 - National Forest Carbon Management and Assessment Reporting System
 - National Forest Classification and Mapping Analysis Resource System

More info: NFCMARS is a system developed by the Canadian Forest Service to measure and report on forest carbon stocks, changes in carbon stocks, and emissions of non-CO2 greenhouse gases in Canada's managed forests. Canada's forests, to help support Canada's climate change mitigation and reporting commitments.

Source: <https://natural-resources.canada.ca/climate-change/forest-carbon/canada-s-forest-carbon-reporting-system>

9. What is the main goal of Canada's 2 Billion Trees Program?
- Create more green jobs in the forestry sector
 - Increase timber supply for trade and commercial use
 - Plant trees to fight climate change and biodiversity loss, and restore ecosystems**
 - Create more shade within large cities

More info: Launched in 2021, the 2 Billion Trees Program aims to plant two billion trees across Canada by 2031, with a focus on restoring and protecting biodiversity, restoring degraded ecosystems, and capturing carbon to mitigate climate change.

Source: <https://www.canada.ca/en/campaign/2-billion-trees/2-billion-trees-program.html>

10. What is the practice of deliberately moving and planting trees outside their natural range to areas projected to be more climatically suitable called?
- Climate-based forestry
 - Tree zone shifting
 - Assisted migration**
 - Forest replanting

More info: Assisted migration is the practice of planting tree species in (or moving animal species to) areas where they are expected to thrive under future climate conditions, with the goal of helping forests adapt to warming temperatures and shifting habitats.

Source: <https://natural-resources.canada.ca/climate-change/climate-change-adaptation/assisted-migration>

11. How does climate change influence insect outbreaks in Canada's forests?
- Makes outbreaks less likely
 - No impact
 - Make outbreaks more likely**
 - Eliminates them entirely

More info: Warmer cold seasons and longer warm seasons caused by climate change allow more insects, such as the mountain pine beetle and spruce budworm, to expand their populations, leading to more frequent and severe outbreaks that damage forest ecosystems.

Source: <https://climateatlas.ca/forest-pests-and-climate-change>

12. True or False? Dead trees in forests have no value. **False**

More info: Dead trees continue to provide habitat for wildlife, recycle nutrients back into the soil, and store carbon, making them an important part of healthy forest ecosystems.

Source: <https://www.canr.msu.edu/news/dead-trees-have-value-too>

13. How do afforestation and reforestation efforts help in the fight against climate change?
- Increases the absorption of carbon
 - Increases biodiversity
 - Improves resilience to climate stressors
 - All of the above**

More info: Afforestation is the creation of new forest where there was none before, while reforestation is the restoration of a damaged or destroyed forest back to its former state. Both processes are critical to mitigating the impacts of climate change.

Source: <https://www.canada.ca/en/campaign/2-billion-trees/2-billion-trees-program.html>

14. The largest source of greenhouse gas emissions stemming from Canadian forests is _____.
- Commercial logging
 - Deforestation for land use
 - Decomposition of dead trees

d. **Wildfires**

More info: In recent years, wildfires have become the leading source of greenhouse gas emissions from Canada's forests, releasing large amounts of carbon dioxide into the atmosphere thereby reducing their ability to act as carbon sinks.

Source: <https://natural-resources.canada.ca/forest-forestry/wildland-fires/wildland-fire-forest-carbon-understanding-impacts-climate-change>

15. True or False? Climate change is expected to increase the frequency and intensity of wildfires in Canada's boreal forests. **True**

More info: Rising temperatures and drier conditions caused by climate change are projected to increase both the frequency and severity of wildfires, especially in boreal forests, leading to increased greenhouse gas emissions, loss of biodiversity, increased soil erosion and poorer air quality.

Source: <https://natural-resources.canada.ca/forest-forestry/insects-disturbances/climate-change-fire>,
<https://www.wri.org/insights/global-trends-forest-fires>

Bonus Question: How many metric tonnes of carbon did extreme wildfires in Canada release into the atmosphere in 2023?

- a. 280 million
- b. 460 million
- c. 640 million**
- d. 1 billion

More info: In 2023, wildfires in Canada burned more than seven times the average annual area compared to the previous four decades, accounting for about 4% of Canada's forests and an area more than 15 times the size of Ontario's Golden Horseshoe region! And experts agree that the dramatic increase in the occurrence and severity is directly linked to climate change, which is leading to increased frequency of both hotter and drier days, and also increased frequency of lightning strikes.

Sources: <https://www.nature.com/articles/s41586-024-07878-z>, <https://climateinstitute.ca/jasper-los-angeles-wildfires-preparation-canada/>, <https://www.greenpeace.org/canada/en/story/60675/how-is-climate-change-fuelling-forest-fires-in-canada/>