

91429R



Mana Tohu Mātauranga o Aotearoa
New Zealand Qualifications Authority

Level 3 Geography 2024

91429 Demonstrate understanding of a given environment(s) through selection and application of geographic concepts and skills

Credits: Four

RESOURCE BOOKLET

Refer to this booklet to answer the questions for Geography 91429.

Check that this booklet has pages 2–16 in the correct order and that none of these pages is blank.

YOU MAY KEEP THIS BOOKLET AT THE END OF THE EXAMINATION.

Relevant geographic concepts

Environments

May be natural and / or cultural. They have particular characteristics and features, which can be the result of natural and / or cultural processes. The particular characteristics of an environment may be similar to and / or different from another. A cultural environment includes people and / or the built environment.

Perspectives

Ways of seeing the world that help explain differences in decisions about, responses to, and interactions with environments. Perspectives are bodies of thought, theories, or world views that shape people's values and have built up over time. They involve people's *perceptions* (how they view and interpret environments) and *viewpoints* (what they think) about geographic issues. Perceptions and viewpoints are influenced by people's *values* (deeply held beliefs about what is important or desirable).

Processes

A sequence of actions, natural and / or cultural, that shape and change environments, places, and societies. Examples of geographic processes include erosion, migration, desertification, and globalisation.

Patterns

May be spatial (the arrangement of features on the Earth's surface) or temporal (how characteristics differ over time in recognisable ways).

Interaction

Involves elements of an environment affecting each other and being linked together. Interaction incorporates movement, flows, connections, links, and interrelationships, which work together and may be one- or two-way interactions. Landscapes are the visible outcome of interactions. Interaction can bring about environmental change.

Change

Involves any alteration to the natural or cultural environment. Change can be spatial and / or temporal. Change is a normal process in both natural and cultural environments. It occurs at varying rates, at different times, and in different places. Some changes are predictable, recurrent, or cyclic, while others are unpredictable or erratic. Change can bring about further change.

Sustainability

Involves adopting ways of thinking and behaving that allow individuals, groups, and societies to meet their needs and aspirations without preventing future generations from meeting theirs. Sustainable interaction with the environment may be achieved by preventing, limiting, minimising, or correcting environmental damage to water, air, and soil, as well as considering ecosystems and problems related to waste, noise, and visual pollution.

WILDFIRES IN CANADA

RESOURCE A: Introduction

Canada has about 9% of the world's forests. Each year over the last 25 years, about 7,300 forest fires have occurred.



Wildfires burn in British Columbia, Canada, in June 2023.



RESOURCE B: Canadian boreal forests

Boreal forest is forest that grows in northern hemisphere regions with cold temperatures. The boreal forest is the largest forested habitat in the world, making up one third of the Earth's total forested area. In North America, the boreal forest spreads from Alaska, across Canada, and into the Great Lakes region of the United States. Mature boreal forests often have a thick organic forest floor mat made up of moss and partially decaying dead moss and litter.



Figure 1: Climate change – forest fire feedback loop.

RESOURCE C: Distribution and patterns of Canadian wildfires

Figure 2: North American boreal forest fires since 1960.



Figure 3: Area of forest burned, Canada 1986–2015.



Figure 4: Number of fires and area burned, Canada 1980–2021.



Figure 5: Average monthly seasonally burned area and number of fires, Canada 2002–2019.

RESOURCE D: Perspectives on wildfires

Political perspective

The first crisis of Justin Trudeau's time as prime minister of Canada was a wildfire near Fort McMurray in May 2016. At the time, when asked whether climate change had caused the disaster, he cautioned against trying to make "a political argument out of one particular disaster."

Justin Trudeau

Republican New York state Senator Joe Griffo, in a letter to United States President Joe Biden in July 2023, urged his administration to take further steps to address the Canadian wildfires that created smoke-filled skies across large swaths of the USA, including much of New York, in the summer of 2023.

Figure 6: Hourly air quality across New York City, 2023.

Indigenous perspective

With Canada in the throes of a record-breaking early wildfire season, the country's Indigenous communities, which include First Nations, Métis, and Inuit peoples, say it is time for them to be given a more prominent role in shaping the country's approach to fire and forest management.

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Figure 7: How Indigenous 'cultural burns' can replenish forests.

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Scientific perspective

A report from scientists at the Intergovernmental Panel on Climate Change (IPCC) in 2021 found that fire weather – dry, hot, windy conditions that make it more likely for fires to take hold – was already a growing problem in many parts of the world and will become more common in some regions if climate change gets worse.





Figure 8: Projected number of >25°C days, 2051–2080.

RESOURCE E: The impacts of wildfires

The natural environment

Forest fires are a natural and essential part of the cycle for many ecosystems, and in certain areas plants and animals have adapted to depend on wildfires for ecological balance.

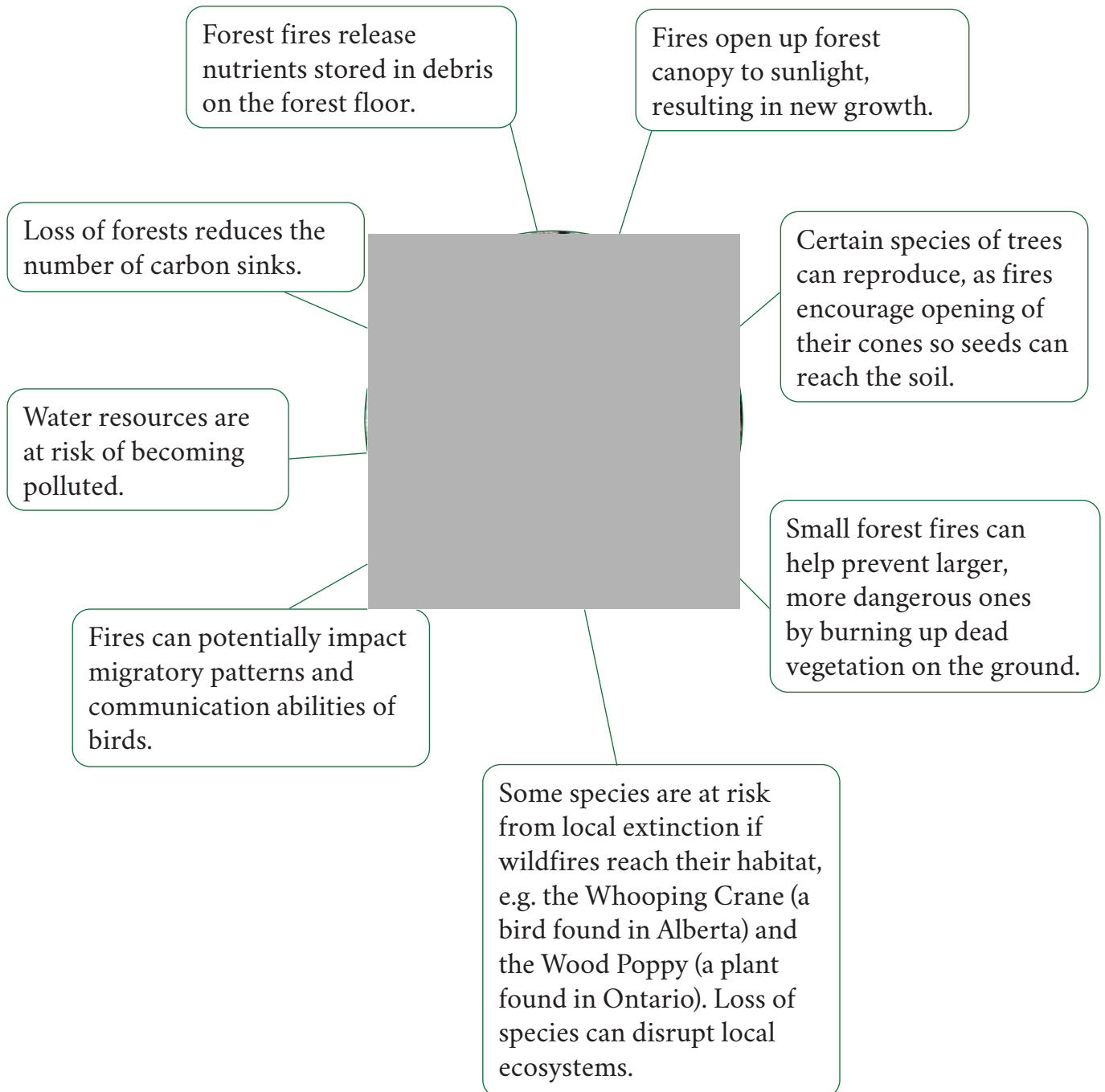


Figure 9: The impacts of wildfires on the natural environment.

Indigenous rights

More than 10% of Canadians are living in homes that are increasingly threatened by wildfires, with on-reserve First Nations (Indigenous Canadian) communities being disproportionately affected.

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Sylvia McKenzie, one of the teachers at Stanley Mission's cultural education camp.

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Disruption to services and infrastructure

Wildfires are capable of disrupting transportation services, communications, energy, and water supplies. During the 2023 wildfires in the east coast of Canada, the smoke disrupted air travel as far south as New York.

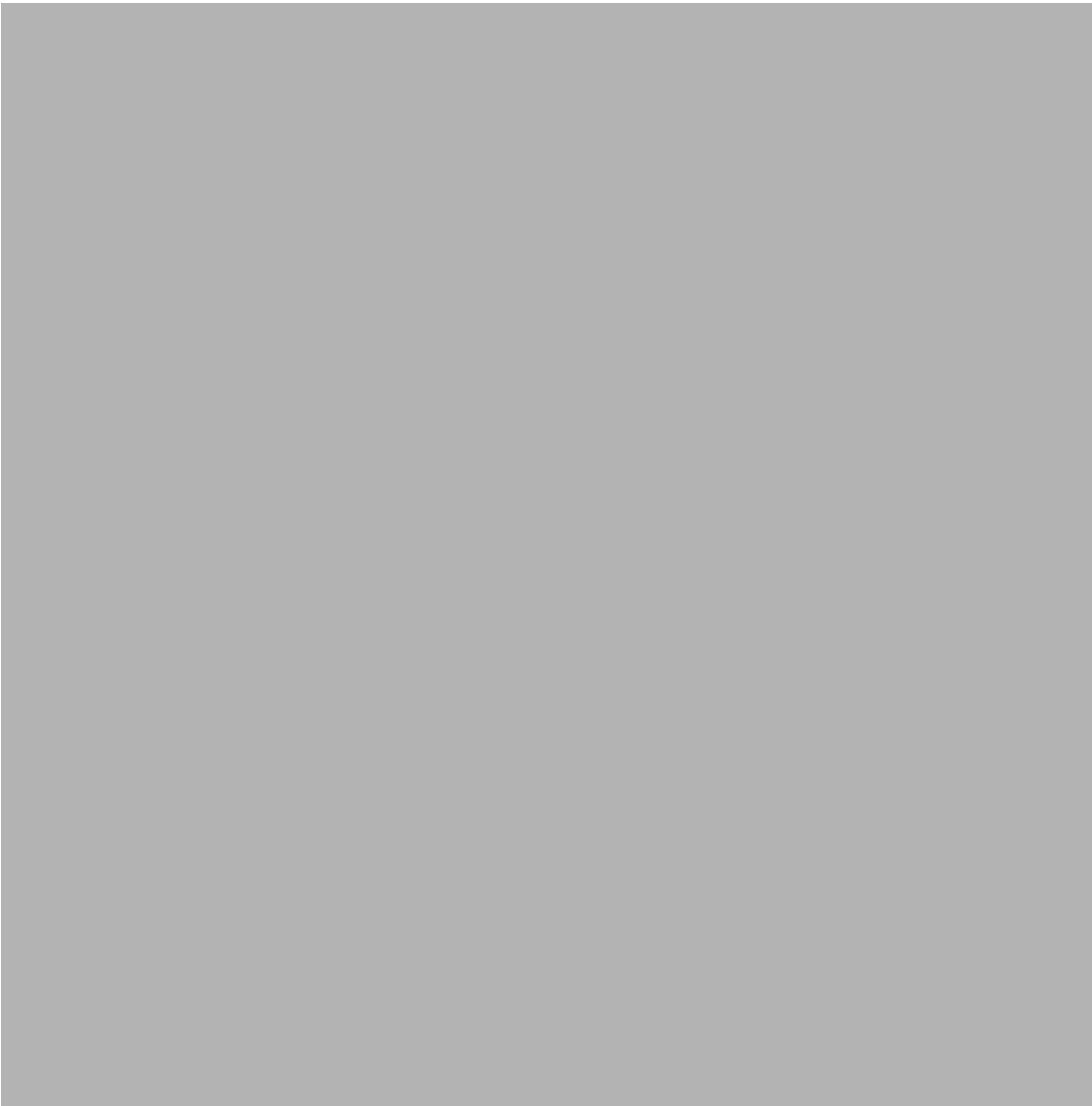




Figure 10: Location of oil pipelines, fire hotspots and fire danger, May 2023.

Air pollution

In June 2023, the United States' National Weather Service issued air quality alerts for virtually the entire east coast of the United States, due to Canadian wildfires. Private forecasting service AccuWeather said thick haze and soot extending from high elevations to ground level marked the worst outbreak of wildfire smoke to blanket the north-eastern United States in more than 20 years.

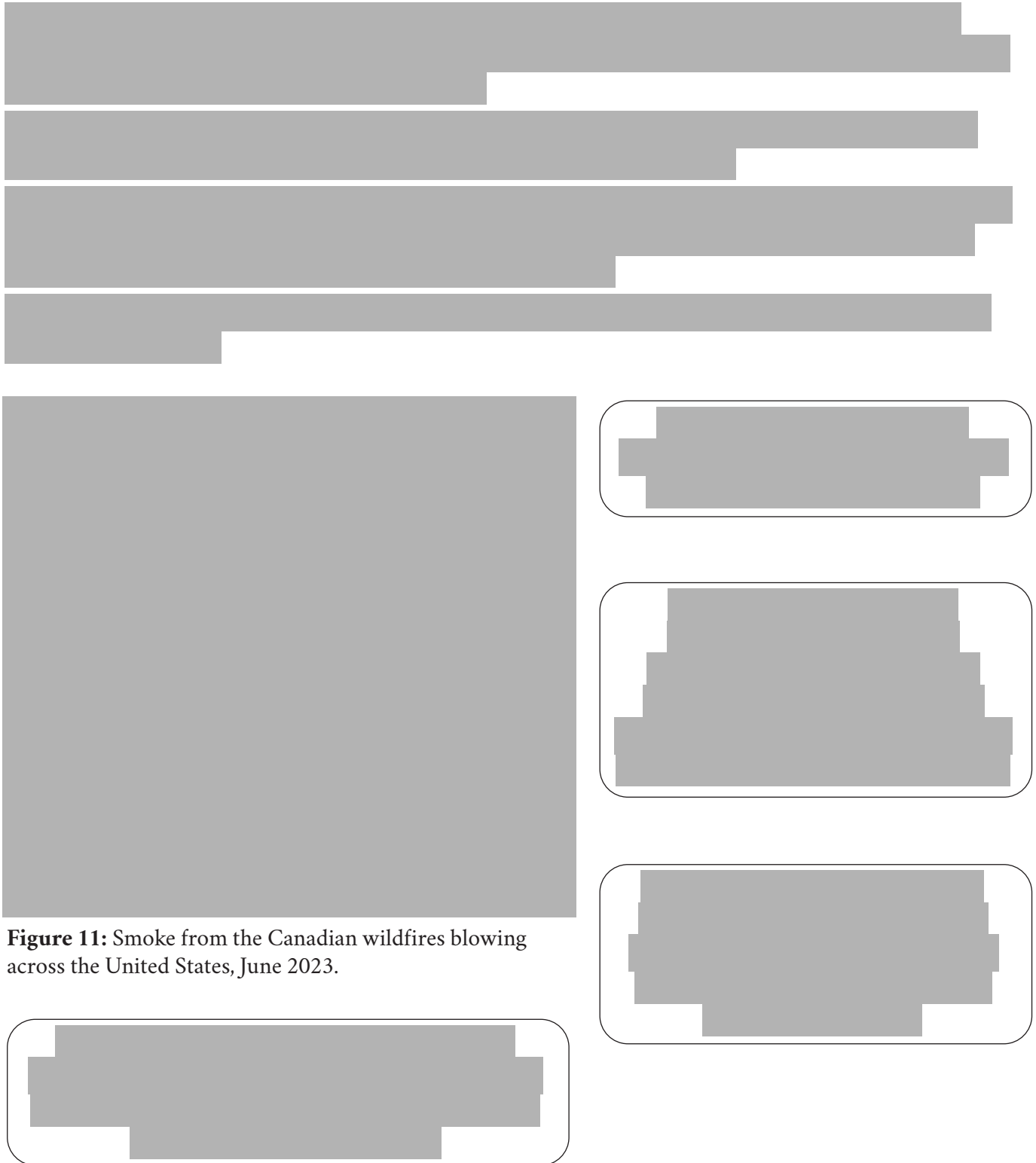


Figure 11: Smoke from the Canadian wildfires blowing across the United States, June 2023.

Financial cost

“It’s no understatement to say that the 2023 fire season is record breaking in a number of ways,” Michael Norton, director general of the Northern Forestry Centre, Canadian Forest Service, said during a briefing in June during the 2023 wildfire season.



Figure 12: The cost of fighting and suppressing Canadian wildfires.

Acknowledgements

Material from the following sources has been adapted for use in this assessment:

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