

Boreal Discovery - Curriculum Connections

Canadian Parks and Wilderness Society (CPAWS) wishes to help educators bring the boreal forest into the classroom and apply what's been covered with outdoor activities. The following Manitoban Curriculum connections are inclusive to Boreal Forest education and activities for grades 7, 10, and 12.

Grade 7 Integration

SCIENCE

- 7-1-01: Use appropriate vocabulary related to their investigations of interactions within ecosystems. Include: ecosystem, biosphere, abiotic, biotic, organisms, ecological succession, photosynthesis, cellular respiration, ecological pyramid, bioaccumulation, scavengers, decomposers, micro-organisms.
- 7-1-02: Define ecosystem, and describe various examples that range from the microscopic to the entire biosphere. Include: a place on Earth where living things interact with other living things as well as non-living things.
- 7-1-03: Identify abiotic and biotic components of ecosystems that allow particular organisms to survive.
- 7-1-04: Describe ecological succession and identify signs of succession in a variety of ecosystems. Include: the natural process whereby some species are replaced by other species in a predictable pattern.
- 7-1-05: Identify and describe positive and negative examples of human interventions that have an impact on ecological succession or the makeup of ecosystems. Examples: positive — protecting habitats, reintroducing species; negative — preventing natural fires, introducing non-indigenous species, draining wetlands for agriculture or housing...
- 7-1-06: Identify environmental, social, and economic factors that should be considered in the management and preservation of ecosystems. Examples: habitat preservation, recreation, employment, industrial growth, resource development...
- 7-1-07: Propose a course of action to protect the habitat of a particular organism within an ecosystem. Examples: protect the nesting habitat of a given bird in a local wetland...
- 7-1-08: Compare photosynthesis to cellular respiration, and explain how both are part of the cycling of matter and the transfer of energy in ecosystems. Include: photosynthesis: water + carbon dioxide + light energy = sugar + oxygen in the presence of chlorophyll; cellular respiration: sugar + oxygen = water + carbon dioxide + energy.
- 7-1-09: Analyze food webs, using ecological pyramids, to show energy gained or lost at various consumer levels. Include: producers; primary, secondary, and tertiary consumers.
- 7-1-10: Analyze, using ecological pyramids, the implications of the loss of producers and consumers to the transfer of energy within an ecosystem.
- 7-1-11: Explain, using ecological pyramids, the potential for bioaccumulation within an ecosystem.

- 7-1-12: Provide examples of scavengers and decomposers, and describe their role in cycling matter in an ecosystem. Include: micro-organisms.
- 7-2-05: Explain what scientific theories are and provide some examples. Include: a scientific theory helps to explain an observation; when this explanation has been repeatedly tested and shown to be consistent it is generally accepted in the scientific world.
- 7-2-23: Discuss the potential harmful effects of some substances on the environment, and identify methods to ensure their safe use and disposal. Examples: pollution of groundwater from improper disposal of paints and solvents; pollution of the atmosphere by car exhaust...

SOCIAL STUDIES

- 7-S-103: Make decisions that reflect principles of environmental stewardship and sustainability
- 7-S-203: Select and use appropriate tools and technologies to accomplish tasks.
- 7-S-204: Create maps using a variety of information sources, tools, and technologies. Examples: observation, traditional knowledge, geographic information systems (GIS), Global Positioning Systems (GPS)...
- 7-S-206: Select and interpret various types of maps for specific purposes.
- 7-S-207A: Use traditional knowledge to read the land.
- 7-S-208: Orient themselves by observing the landscape, using traditional knowledge, or using a compass or other tools and technologies.
- 7-KL-017: Locate on a world map and describe the major climatic and vegetation zones.
- 7-KC-004: Describe ways in which their personal actions may affect quality of life for people elsewhere in the world. Examples: consumer choices, conservation actions, sharing of resources, letters and petitions...
- 7-KL-028: Describe diverse approaches to land and natural resource use in a society of Europe or the Americas.
- 7-KL-029: Give examples of the impact of human activity on the natural environment in a society of Europe or the Americas. Examples: endangered plant and animal species, reforestation, restoration of wetlands...
- 7-KE-053: Describe sustainable development issues in a society of Europe or the Americas.
- 7-VL-009: Be willing to take actions to help sustain the natural environment in Canada and the world.
- 7-KL-026: Identify human activities that contribute to climate change.

Grade 10 Integration

SCIENCE

- S2-1-01: Illustrate and explain how carbon, nitrogen, and oxygen are cycled through an ecosystem.
- S2-1-02: Discuss factors that may disturb biogeochemical cycles.

- S2-1-03: Describe bioaccumulation and explain its potential impact on consumers.
- S2-1-04: Describe the carrying capacity of an ecosystem.
- S2-1-05: Investigate and discuss various limiting factors that influence population dynamics. Include: density-dependent and density independent factors.
- S2-1-06: Construct and interpret graphs of population dynamics.
- S2-1-07: Describe potential consequences of introducing new species and species extinction on an ecosystem.
- S2-1-08: Observe and document a range of organisms that illustrate the biodiversity within a local or regional ecosystem.
- S2-1-09: Explain how the biodiversity of an ecosystem contributes to its sustainability.
- S2-1-10: Investigate how human activities affect an ecosystem and use the decision-making process to propose a course of action to enhance its sustainability. Include: impact on biogeochemical cycling, population dynamics, and biodiversity.
- S2-4-07: Investigate and evaluate evidence that climate change occurs naturally and can be influenced by human activities. Include: the use of technology in gathering and interpreting current and historical data.
- S2-4-08: Discuss potential consequences of climate change. Examples: changes in ocean temperature may affect aquatic populations, higher frequency of severe weather events influencing social and economic activities, scientific debate over nature and degree of change...

SOCIAL STUDIES

- KL-018: Explain the importance of stewardship in the preservation of the Earth's complex environment.
- VL-005: Respect the Earth as a complex environment in which humans have important responsibilities.
- S-103: Promote actions that reflect principles of sustainability.
- KL-016: Locate on a map of Manitoba global environmental types found in Manitoba.
- KL-010: Describe the relationship between physical and human geography.
- KL-011: Locate major physical features on a map of North America.
- KL-019: Identify major natural resources on a map of the world, map of North America, and a map of Canada. Include: water, forestry, fossil fuels, metallic and non-metallic minerals.
- S-201: Organize and record information in a variety of formats and reference sources appropriately. Examples: maps, graphs, tables, concept maps...
- S-202: Select and use appropriate tools and technologies to accomplish tasks. Examples: Geographic Information Systems (GIS) and Global Positioning Systems (GPS)...
- S-403: Present information and ideas in a variety of formats appropriate for audience and purpose. Examples: models, displays, multimedia presentations, editorials...
- KC-002: Describe sustainability issues related to natural resource extraction and consumption.
- KI-004: Identify Aboriginal perspectives and rights regarding natural resources and their use. Examples: perspectives—sacred, caretaking; resources—land claims, fishing and hunting rights, mineral rights...

- KP-041: Identify ways in which competing interests and needs influence control and use of the land and natural resources in Canada. Examples: mining, forestry, water...
- VI-003: Be willing to consider diverse views regarding the use of natural resources.
- KE-047: Identify factors that determine the location of industry. Examples: energy, raw material, transportation, labour, markets, government policies...
- KE-048: Use examples to describe advantages and disadvantages of locating a manufacturing industry in a particular area.
- KE-049: Identify current issues related to industry and trade. Include: sustainable development, balance of trade.
- KL-024: Identify on a map of the world Canada's major trading partners and major products traded.

Grade 12 Integration

SCIENCE

- B12-4-01: Define the concept of biodiversity in terms of ecosystem, species, and genetic diversity.
- B12-4-05: Compare the characteristics of the domains of life. Include: Archaea (Archaeobacteria), Bacteria (Eubacteria), and Eukarya
- B12-4-07: Investigate an evolutionary trend in a group of organisms.
- B12-5-01: Discuss a variety of reasons for maintaining biodiversity. Include: maintaining a diverse gene pool, economic value, and sustainability of an ecosystem.
- B12-5-02: Describe strategies used to conserve biodiversity. Examples: habitat preservation, wildlife corridors, species preservation programs, public education...
- B12-5-03: Select and use appropriate tools or procedures to determine and monitor biodiversity in an area. Examples: field guides, dichotomous keys, quadrats, transects, mark and recapture...
- B12-5-04: Investigate an issue related to the conservation of biodiversity. Examples: heritage seeds, water quality in Lake Winnipeg, land-use designations, hydroelectric development...

SOCIAL STUDIES

- [Current Topics in First Nations, Métis and Inuit Studies](#)
- First Nations, Métis, and Inuit peoples share a traditional worldview of harmony and balance with nature, one another, and oneself.
- Understanding of and respect for First Nations, Métis, and Inuit peoples begin with knowledge of their pasts.
- First Nations, Métis, and Inuit peoples want to be recognized for their contributions to Canadian society and to share in its successes.
- [Global Issues: Citizenship and Sustainability](#)
- Apply concepts related to sustainability
- Learn about the interdependence of environmental, social, political, and economic systems

- Develop competencies for thinking and acting as ecologically literate citizens committed to social justice
- [Backgrounders for Area of Inquiry: Climate Change](#)
- [Backgrounders for Area of Inquiry: Environment](#)
- [Backgrounders for Area of Inquiry: Indigenous Peoples, Global Issues and Sustainability](#)

Other Resources:

- [Kindergarten to Grade 12 Aboriginal Languages and Cultures - Manitoba Curriculum Framework of Outcomes](#)
- [Education for Sustainable Development - Kindergarten to Grade 12 Correlation Chart Template and Kindergarten Tool Kit](#)
- [Lake Winnipeg - A Resource for Grade 12 Interdisciplinary Topics in Science \(40S\)](#)
- [Grades 11 and 12 Sustainable Tourism - Manitoba Curriculum Framework of Outcomes](#)