These notes are posted on my site for the following reasons:

- for students to copy in their own hand-writing
  - in order to complete their class notes
  - if student did not have enough time in class
  - if student was away and missed this section
- for assistants and tutors to follow progress of the concepts taught

Photocopied/printed notes can not be used during the Unit Notebook Check in class.

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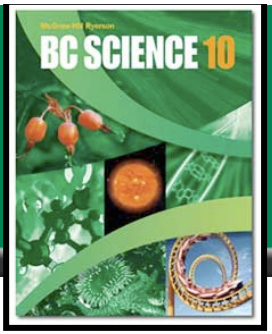
3.2 How Humans Influence Ecosystems

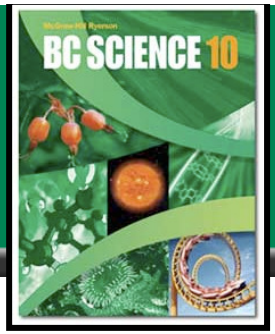


- **Wetlands are special ecosystems that contain completely waterlogged soil for long periods of time.**
  - **Not only do wetlands contain high biodiversity, but they also filter many impurities out of the water that slowly flows through them.**
    - **For this reason, they are sometimes called the "kidneys" of the Earth.**
  - **Because they hold large amounts of water, they can help prevent flooding.**
- **Human encroachment has caused many BC wetlands to disappear.**
  - **In the past 100 years:**
    - **Up to 70% of the wetlands in the lower Fraser Valley have been lost.**
    - **Up to 85% of the wetlands in the South Okanagan have been lost.**

Wetlands are vital ecological features in British Columbia.

See pages 122 - 123

Understanding Sustainability

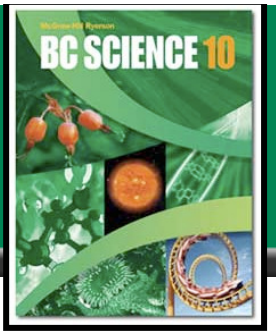


- **"Sustainability" is a word that is used often, and can be defined in more than one way:**
  - **"The ability for an ecosystem to sustain ecological processes".**
    - **These processes enable biodiversity and keep the ecosystem healthy.**
  - **"People using an ecosystem to meet their needs today without reducing the function or health of the ecosystem in the future".**
    - **Sustainable practices maintain, or even improve, healthy ecosystems.**
    - **Economic opportunity, biodiversity and ecosystem health are all possible.**

Returning young coho salmon to rivers near Port Alice can help maintain sustainability.

See page 125

The Effects of Land and Resource Use

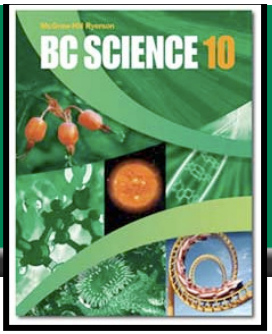


- **"Land use" refers to how humans use land around us for urban development, agriculture, industry, mining and forestry.**
  - **All of the land around us, even in cities, was once a part of an ecosystem.**
- **"Resource use" refers to the ways we obtain and use naturally occurring materials.**
  - **Most products you use every day involve the use of some natural resources in their production.**
- **If the land and resources are not used directly, they are often processed and exported to other places for use.**

The processing and export of resources like lumber, coal and sulphur are very important to BC's current economy.

See page 126

Habitat Loss



- **The use of land and resources have seen humans encroach on natural ecosystems very aggressively in the past 150 years.**
  - **As a result of this expansion, habitats have been lost or fragmented.**
  - **"Habitat loss" refers to to loss of habitats due to human activities.**
  - **"Habitat fragmentation" is the splitting of large habitats into many smaller ones, resulting in disrupted natural activities for plants and animals.**

Habitat loss (left) and habitat fragmentation (right) reveal the effects of human activities on ecosystems.

See page 126

Habitat Loss (continued)

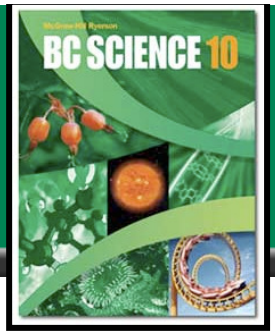
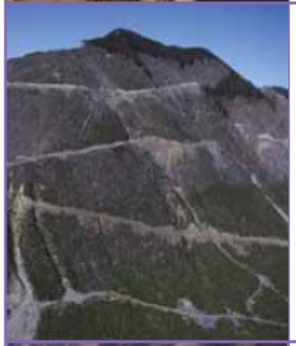
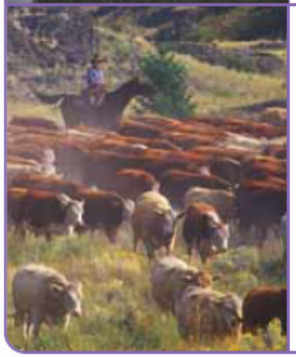
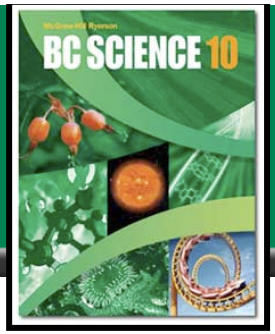


Table 3.1 Examples of the Effects of Land Use on Habitats in British Columbia

Land Use Effect		Sustainable Approach	
	The continuing expansion of populations into ecosystems can affect grasslands, forests, wetlands, and farmland. Urbanization causes biodiversity losses, greater reliance on motorized vehicles, and increased energy consumption.		Some cities are redeveloping industrial areas or buildings. These projects often include a mix of residences, businesses, and some industries. Waste treatment, storm water collection, native plantings, and other green areas to support native species and human activities are often part of the redevelopment plan.
	Clear-cutting large areas of forest at once and constructing steep switchback roads to harvest the timber have resulted in erosion and stream habitat destruction.		Some forestry companies are use forest management practices that allow more trees to remain uncut and include streambed restoration (left) and less harmful road-building. These practices consider both ecosystem functions and the economic needs of local communities.
	Towns, cities, agricultural fields, and cattle ranches have covered most of our grasslands. Livestock grazing, recreational vehicles, and introduced plants have altered this ecosystem.		Grassland management plans have been developed to protect the health and functions of natural grasslands and provide productive grazing lands. The success of these plans relies on understanding the relationships between soil and vegetation types, plant succession, and weed control.

See page 127

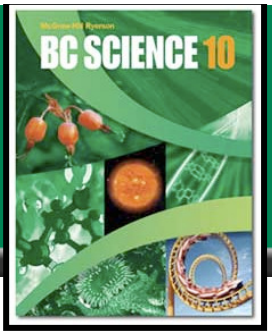
The Effects of Deforestation



- **Deforestation** is the clearing or logging of forests for human use.
  - The resulting barren land is never reclaimed or replanted.
  - The agricultural crops that are planted are often one species = monoculture
    - This reduces biodiversity, and leaves the crop vulnerable to pests or disease.
    - Polycultures, of many plant species, are more economically and biologically diverse.
  - Deforestation is still occurring in many tropical rainforests.
  - Deforestation results in soil degradation.
    - Soil degradation is when moving wind and water erode topsoil and leave bare land behind.
    - Topsoil, the upper layer of soil, is where most of the nutrients, water and air are found for plant growth.

See page 128

The Effects of Agriculture

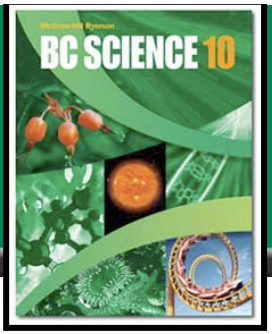


- If fields are left exposed during non-planting seasons, water and wind erosion can occur.
- In areas like southwestern BC, the soil can become compacted.
  - Soil particles are squeezed together and become compacted.
    - This is due to farm animals or vehicles.
  - There is no room for water or air to enter the soil.
  - Water then runs off the soil instead of soaking in.
    - Loss of water, increased erosion and the addition of farm fertilizers and pesticides to the ecosystem.
  - Aeration, which involves removing small plugs of soil, loosens soils and can reduce run-off.

Farm animals, such as these cows, can compact soils.

See page 129

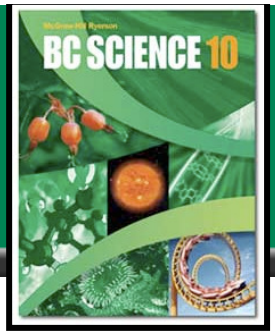
The Effects of Resource Exploitation



- **Resource exploitation = resource use**
  - Humans depend on resource exploitation for jobs, materials, food, shelter and energy.
  - Exploitation can lead to habitat loss, soil degradation and contamination of water supplies.
    - Contamination is the introduction of harmful chemicals or micro-organisms into the environment.
    - Many mining and resource exploitations require reclamation efforts.
      - Reclamation attempts to reduce environmental impacts of exploitation, and tries to restore the original (or at least functional) habitats.
  - Overexploitation is the extraction of resources until they are gone.
    - This can result in extinction, such as with the passenger pigeon.
    - Food webs can be greatly affected over long periods of time
    - The overexploited species could be a keystone species.

See pages 130 - 132

Resource Management and Traditional Ecological Knowledge

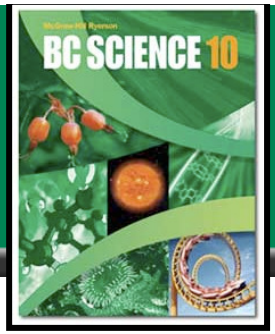


- **In Aboriginal cultures, traditional ecological knowledge is passed down from generation to generation.**
  - **This knowledge reveals what past condition were like, and also how the ecosystem and humans interact.**
  - **Knowledge is found in stories, songs, cultural beliefs, rituals, community laws and traditional practices.**
  - **Current ecological restoration and usage guidelines often involve this traditional knowledge from Aboriginal representatives.**
    - **Traditions such as the "Spring burn" allow for ecological renewal.**
    - **Fire suppression, enforced in BC for over 100 years, has led to recent issues like the mountain pine beetle infestation and huge wildfire losses.**

See pages 133 - 134

Take the Section 3.2 Quiz

Understanding Sustainability



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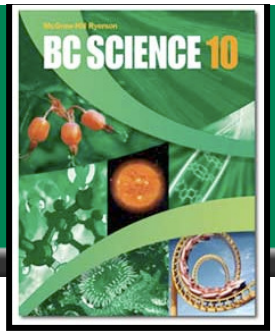
Who is this player?

See pages 8 - 9

Take the Section 8.1 Quiz

Understanding Sustainability



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