

DEFINING ECOLOGICAL INTEGRITY

WHAT IS ECOLOGICAL INTEGRITY?

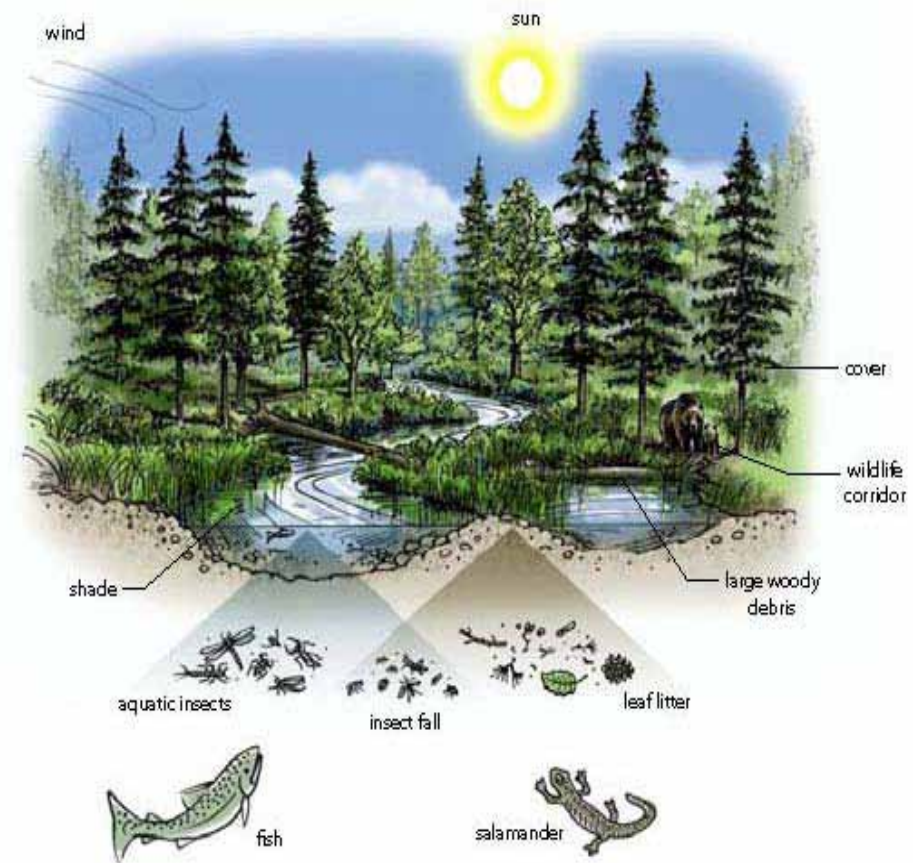
There is more than one way to define ecological integrity. A few different definitions follow:

- ♦ A report by the Panel on the Ecological Integrity of Canada's National Parks in 2000 proposed that "an ecosystem has integrity when it is deemed characteristic for its natural region, including the composition and abundance of native species and biological communities, rates of change and supporting processes."
- ♦ In 1999, the BC Parks Legacy Panel determined that an ecosystem has ecological integrity when "the structure, composition and function of the ecosystem are unimpaired by stresses from human activity; natural ecological processes are intact and self-sustaining, the ecosystem evolves naturally and it's capacity for self-renewal is maintained; and the ecosystem's biodiversity is ensured."

ECOSYSTEM STRUCTURE, COMPOSITION AND FUNCTION

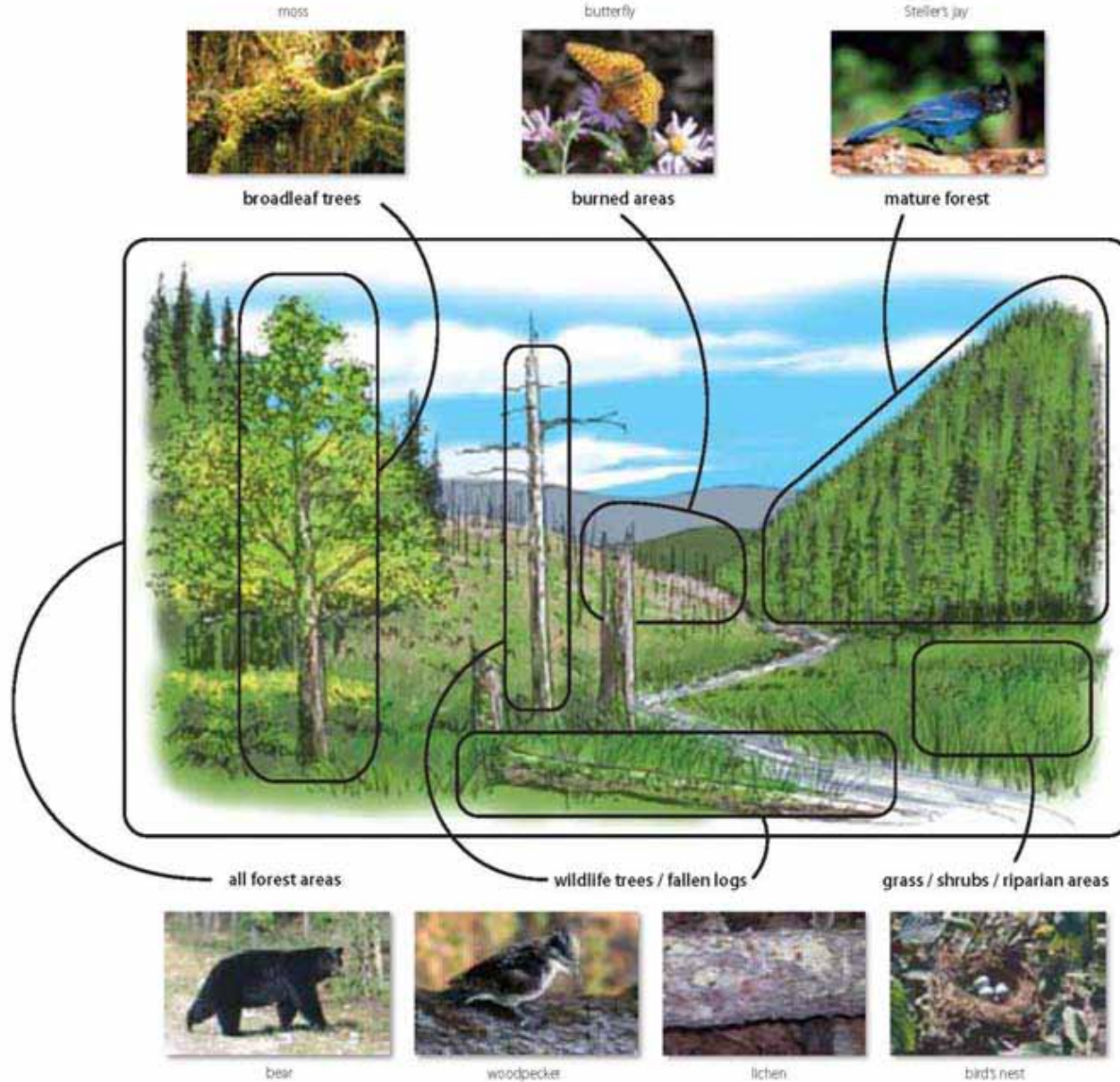
Ecosystems are extremely complex. The three primary elements of an ecosystem are its structure, composition and function:

- 1) Ecosystem structure refers to all of the living and non-living physical components that make up that ecosystem. The more components that make up an ecosystem, the more complex its structure becomes.
- 2) Ecosystem composition refers to the variety of living things found within an ecosystem.
- 3) Ecosystem function refers to all of the natural ecological processes that occur within an ecosystem. These are described below.



Courtesy: Biodiversity BC, 2008

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OTHER DEFINITIONS

Stresses from human activity

Human activities can create changes to the natural landscape and, in doing so, may alter the structure, composition and/or function of an ecosystem. This can make it more difficult or even impossible for an ecosystem to operate normally. Some of these activities include land development, logging, mining, hunting and other recreational activities, suppressing natural disturbances such as fire or flooding, and introducing exotic species.

Natural ecological processes/supporting processes

Many natural processes must take place for an ecosystem to function normally and have ecological integrity. Some of these processes are:

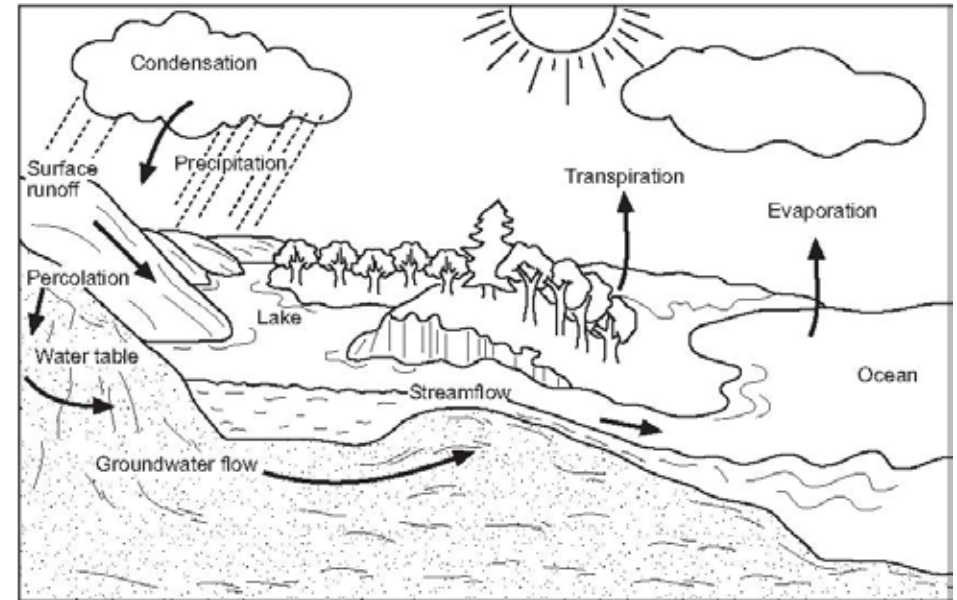
- ◆ Predator /prey cycles – for example, bears eat fish and fish eat plankton
- ◆ Nutrient cycling – as plants and animals die and decompose on the ground, they release energy and nutrients, as well as provide food or shelter for other species
- ◆ Fire – this is an essential process for some plant species to reproduce (e.g., the heat opens the seeds on a Jack pine)
- ◆ Hydrologic cycle – water cycles from the atmosphere to Earth and back into the atmosphere again (see diagram to the right)

Self-renewal

An ecosystem's capacity for self-renewal refers to its ability to recover from a natural disturbance such as fire, flood or wind, and to maintain the necessary ecological processes.

Biodiversity

The biodiversity of a particular area refers to the total of all plants, animals, fungi and microorganisms present in that area, including all of their individual variations and all of the interactions between them.



Hydrologic cycle - Courtesy: BCIT Course Manual

For further information about ecological integrity, visit the Parks Canada website:

http://www.pc.gc.ca/apprendre-learn/prof/itm1-con/on/eco/eco1_e.asp