Aquatics

Lakes, river, streams and oceans are full of a vast diversity of life. These water bodies provide numerous wildlife habitats. The soils and trees surrounding the water bodies affect the water quality and run off into the aquatic wildlife habitats. Aquatic environments tell us a lot about overall environmental health and how everything in nature is interrelated.

What do you need to know for the competition?
Here is a list of all the skills you will need to master the aquatics section.

Knowledge Base
Some of the things you will be able to do after you master the aquatics section include:

- Define a wetland;
- Identify and describe the four major types of wetlands: swamps, marshes, fens, and bogs
- Describe the importance (i.e., values and benefits) of wetlands (grade 11 biology);
- Identify at least 3 characteristics or properties of water and explain how those characteristics relate to or affect aquatic organisms;
- Identify at least three chemical factors in water and how they can affect aquatic life;
- Explain or show how a range of aquatic organisms have adapted to those characteristics;
- Describe with detail the composition of Ontario's aquatic communities;
- Relate the elements of each community to the physical characteristics and processes of its environment (grade 10 academic science);
- Describe the flow of energy through aquatic systems, emphasizing aquatic food chains and webs;
- Describe the cycling of nutrients within aquatic systems, including additions from upland systems, with particular attention to carbon phosphorous and nitrogen (grade 10 applied/academic science);
- Define habitat requirements and illustrate with specific examples;
- Define and illustrate carrying capacity, including the importance and effects of critical habitat;
- Identify simple and diverse aquatic systems found in Ontario, and illustrate the advantages of biological diversity;
- Describe normal succession in Ontario's lakes, steams and wetlands;
- Identify the right of Ontario's first nations with regard to aquatic resources;
- Identify Ontario's rare, threatened and endangered aquatic species, as identified by COSEWIC, and explain how and why selected species were reduced to those levels.

Hands on Application
After mastering the knowledge base you will be able to:

- Carry out a number of tests (visual, water, soil, vegetation, etc.) to determine if a site is best described as a swamp, marsh, fen or bog (grade 12 biology);
- Identify plants and animals commonly found in wetlands;
- Identify on site what animals would be found in a given wetland;
- Compare and contrast the physical characteristics of lakes and streams, as well as the adaptations of life to those environments;
- Identify from a small cluster of species, to which aquatic community they belong;
- Identify habitat requirements on site;
- Illustrate carrying capacity;
- Carry out water testing (alkalinity, CO2, nitrate, phosphate, chloride, turbidity, pH, hardness) (grade 12 chemistry);
- Use a hand lens and secchi disks;
- Calculate the rate of flow of a stream (3 times, take the average) (grade 9 geography);
- Report on the effects of pollutants on aquatic life (11 wp) Putting it all Together

Now you can:
- Demonstrate, using Ontario based examples, how current use affects aquatic resources;
- Examine the effect of the introduction of exotic species in aquatic systems, including origin, means of introduction, attempts at control and results;
- Assess the application of current aquatic resource management or control;
- Recommend plans for aquatic management.

Aquatics
Module Study Material Download

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