



### LESSON SUMMARY

Students will be given a forest management scenario and will use problem-solving skills to provide solutions

## Activity Information

**Estimated Duration:** One class period (for discussion and group work)

**Materials:** *Decision-Making Model Outline, Decision-Making Framework*, clipboard, pencil

**Setting:** Indoors

**Key Vocabulary:** Habitat, community, decision – making,



**Teacher Background**

Environmental planning and management is a complex process demanding the consideration of numerous factors and issues. Those issues include: social ones (spiritual values, hiking through a forest, bird watching); environmental ones (species at risk, water quality, erosion prevention, habitat protection); and economic ones (community dependence on resource-based industries, long term wood supply, financial viability of a forest ecosystem).

**Teacher Preparation**

Photocopy *Decision-Making Model Outline* and *Decision-Making Framework* – one set per group of students.

**ACTIVITY**

**Step 1** Ensure that your students are aware of the definition and functions of habitats and communities. Initiate a general discussion about habitat and the needs of plants and animals. Ask your students to think of examples of habitat issues and decisions that must be made about them. These issues might include:

- Building a highway through farmland (e.g. Trans-Canada Highway, Highway 407)
- Filling in a wetland for a new housing development
- Expanding an access road into a natural habitat (e.g. Oak Ridges Moraine, Spanish River Valley)
- Spraying larvicides to prevent West Nile Virus
- Cutting down a forest, including a certain species of trees, to stop an infestation (e.g. insects, fungus)
- Clearing forests for housing developments and/or farming

**Step 2** Discuss with your students the fact that most of these decisions are not made quickly; there are many factors to be weighed, requiring time and deliberation. Try to find a local community issue that can be explored to analyze decision-making priorities.

**Step 3** Explain to your class that there are many steps involved in creating a management plan for forestry. Decision-making often follows a model. The *Decision-Making Model Outline* hand-out shows the process that students can follow for the scenarios included in this activity. This model includes the following steps:

- Identify the problem
- Identify possible solutions
- Choose the best solution from the alternatives

**NOTE:** If the decision is to leave things the way they are, take no action; otherwise continue.

- Identify the steps needed to implement the solution
- Evaluate the effectiveness of the solution

Effective decision-making that results in sustainable forest management takes all perspectives and priorities into consideration. Environmental, social and economic issues are explored and weighed before decisions are made.

**Step 4** Divide your class into groups, each with its own group identification number. Hand out copies of the *Decision-Making Model Outline* and the *Decision-Making Framework* – one set of copies per group of students. Assign each group one of the *Decision-Making Scenarios* included in the *Decision-Making Model Outline*. Explain that each group will follow this outline and will provide at least three possible solutions, including cost factors.

**NOTE:** Hints have been provided for you in each scenario; these hints are not included on the student hand-out sheets.

**Scenario One** Your garden has three dozen spruce seedlings. In the spring, you notice that voles and rabbits have nibbled the bark and lower branches of these seedlings. Unless you protect the seedlings, they will soon die. What do you do?

**Teaching Hints** Some possible solutions could include: providing other sources of food; trapping the animals; fencing the trees; creating barriers to place on the trunks, such as plastic pails with the bottoms cut out; using a pest discourager, such as a cat or dog.

**Scenario Two** You have a farm property on which you have planted 25 young sugar maples. One spring, you arrive and find the saplings covered with caterpillars that are eating the leaves on the young trees. Without their leaves, the sugar maples cannot manufacture the food necessary for their survival and growth. What do you do?

**Teaching Hints** Some possible solutions include: picking off each caterpillar by hand; spraying the trees with a pesticide; planting some pine trees. Another option: leaving the sugar maples alone to see if the problem persists the next year before taking drastic action. Trees will often rebound if the following year's caterpillars are less abundant.

**Scenario Three** After a major rainstorm, you notice soil eroding down a hill beside your house. You would like to stop further erosion. What do you do?

**Teaching Hints** Some possible solutions are: planting trees; installing a retaining wall; creating a rock garden; planting perennial ground cover to help reduce erosion.

**Scenario Four** You live on a farm next to your neighbours' woodlot. Lately, your cows have been wandering into their woodlot, eating the small tree seedlings and trampling the soil. Your neighbours are furious, as they are trying to grow maples for fine wood products. What do you do?

**Teaching Hints** Possible solutions include: building a better fence; selling your cows; ignoring your neighbour's complaints; moving away; buying your neighbours' woodlot.

**Scenario Five** You run a forest harvesting company in northern Ontario. The federal government has designated a large section of land adjacent to your leasehold as a protected area. This area will require a significant buffer zone, so that wildlife and other aspects of the ecosystem will be unaffected by your harvesting activities. Your plans to carry out a large scale harvest in the area are no longer possible, due to possible detrimental effects on the wildlife and the ecosystem. What do you do?

**Teaching Hints** This land can be used for economic purposes, while still protecting the area’s ecological integrity. For example, there are alternate ways to harvest (e.g. shelter wood harvesting). There are also other “non-timber value” sources of income (e.g. eco-tourism, harvesting mushrooms, berries, valuable herbs). You could harvest a smaller area than originally planned, thus having less of a negative effect on the wildlife and possibly creating a habitat for species that need open areas. This open land could also be used as a park interpretation site, or as an eco-tourism site.

**Step 5** Once the student groups have completed this activity, they will present their group’s plan to the class. Students must be prepared to argue in favour of their decisions and to listen to suggested alternatives from classmates.

### **Evaluation**

Have student groups create information posters for a school display, highlighting the economic, social and environmental factors that must be considered when decisions are being made about one of the *Decision-Making Scenarios*. Ensure that students choose a scenario that is different from their original choice.

### **Extensions**

Find a current event (e.g. newspaper clipping, video, etc.) similar to the activity you have just completed. Ask your students to explore the problem-solving that was involved and to use rational arguments to explain whether they agree or disagree.

## DECISION-MAKING FRAMEWORK

Group I.D. Number: \_\_\_\_\_

Date: \_\_\_\_\_

Scenario: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Possible Solutions			
Evaluation Criteria*			
Cost			
Appearance			
Time involved			
Will it last?			
*Ranked from best (1) to worst (3) TOTALS (Lowest score = best solution)			

Decision Rationale: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Plan of Action: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_