

If You Were the Boss Student Page

Overview

Someone has just donated a magnificent forest, 400-Acre Wood, to your community. You and your team have the job of deciding what to do with this forest.

A 400-Acre Wood is 400 acres (162 hectares). An acre is an area of land equal to a square that is 208.7 feet on each side, about the size of a football field. 400 acres is a little less than 1 square mile. (A hectare [ha] is 10,000 square meters and is equal to about 2.47 acres. To convert acres to hectares, multiply by 0.4047.

The 400-Acre Wood is a conifer forest, with about 150 mature pines, spruces, and cedars per acre. In addition, it contains lots of wildlife such as owls, deer, moose, bear, woodpeckers, grouse, mice, fish, and salamanders.

Wildlife biologists use “Management Indicator Species” (MIS) to evaluate the effects of people’s action in the environment. If the species exists in healthy populations, then the habitat is healthy. In the 400-Acre Wood, the indicator species are barred owls, moose, and salamanders. Wildlife biologists estimate that the 400-Acre Wood currently has two barred owls per 100 acres [40 ha] of forest, two moose per 400 acres [162 ha], and 25 salamanders per acre [0.40 ha].

Because the forest currently has no roads or trails, few people use or visit it.

You and your team will make a map of 400-Acre Wood and develop a management plan for it. You may decide to do one thing with the entire forest. Alternatively, you may want to divide the forest and do different things in different areas. Your goal is to find what you think is the best balance between visitor enjoyment, trees, wildlife, and money.

Below are the different forest uses you can include in your plan. The “What’s the Score?” student page will help you evaluate your plan’s total effect on visitors, trees, wildlife, and money.

Wilderness Preserve

The purpose of a wilderness preserve is to allow wildlife and plants to exist without humans interfering. Typically, a wilderness preserve has no roads, graded trails, or campsites. Wilderness preserve areas will have the following effects:

- Visitors: About five people per acre per year will visit the preserve.
- Trees: The number of trees per acre will remain the same.
- Wildlife: The numbers of owls, moose, and salamanders will remain the same.
- Money: It will cost money to manage the preserve, and each visitor will pay an entrance fee.

Trails

Graded trails allow different types of visitors to enjoy a forest, including walkers, cyclists, families with strollers, and wheelchair users. Trails area will have the following effects:

- Visitors: About 25 visitors per acre per year will use the trails.
- Trees: Some trees must be cut to build a trail.
- Wildlife: The increase in visitors will disturb the wildlife. Owls will leave areas with trails (they sleep during the day when people are about), and trails are dangerous for salamanders as they migrate to pools of water during breeding season. There will be no effect on the moose.

- Money: It costs money to build and maintain trails. Trees removed to make the trail can be sold. Each visitor will pay an entrance fee.

Campground

A campground allows visitors to enjoy a forest area overnight or over the weekend. It typically has a number of campsites, plus picnic tables, fire pits, parking spaces, and bathrooms. A campground also needs to have a road winding through it. A campground has about 4 sites per acre. Campground areas will have the following effects.

- Visitors: About 12.5 campers per site per year will come to the campground, or 50 campers per acre per year.
- Trees: Trees need to be removed to build the road and the campsites.
- Wildlife: A campground and campers will cause all three indicator species—owls, moose, and salamanders—to disappear from the area.
- Money: It costs money to build and maintain the road, to clear and level the campsites, and to build and maintain the restrooms. It also costs money to manage the campground. Trees removed for the road and campsites can be sold. Campers pay a camping fee.

Hunting

Some forest areas are managed to encourage game animals (deer, moose, grouse) for hunters. These areas require a road for visitors. Hunting areas will have the following effects.

- Visitors: About one hunter per acre per year will visit.
- Trees: Trees will need to be removed to build the road.
- Wildlife: With regulations to keep game populations constant, there should be no effect on the three indicator species—owls, moose, and salamanders. (Moose is not a game animal in the 400-Acre Wood.)

Fishing

- To encourage fish for anglers, a lake can be created by damming the forest stream. Fishing areas will have the following effects.
- Visitors: About two anglers per acre per year will visit.
- Trees: Trees will need to be removed to create the lake.
- Wildlife: Creating the lake will cause two indicator species—owls and salamanders—to disappear from the fishing area.
- Money: It will cost money to build the dam to create the lake. It will also cost money for management. Trees removed for the lake can be sold. Anglers will pay a fishing fee.

Timber Harvest

Some forest areas are set aside for timber harvesting, which means cutting trees to sell the logs. Using a sustainable yield approach, only a portion of the trees is removed at any given time. This minimizes the effect on wildlife, while producing as many logs as possible over the long-term. Conifers take 80 years to reach maturity, so one-fifth of the trees are cut every 16 years. Timber harvest areas will have the following effects.

- Visitors: About five people per acre per year will visit.
- Trees: Trees will be removed to build the road, plus one-fifth of the remaining mature trees will be removed.

- Wildlife: the timber harvest will have minimal effects on the three indicator species.
- Money: It will cost money to build and maintain the road and for management. The harvested trees can be sold. Visitors will pay a fee.

Moose Viewing Areas

The moose population in Minnesota was once much larger and covered a greater area in the state. Rising temperatures, habitat loss, and the increase in the white-tailed deer population have all had negative effects on this population. The word *moose* is actually an English take on the Ojibwe word *mooz*, which means twig eater.ⁱⁱⁱ Before white-tailed deer became common in Minnesota, moose were the major game animal that the Ojibwe hunted. Because moose are very large, people needed to hunt far fewer animals to keep a family or village fed throughout the year. People would eat the meat fresh, freeze it during the winter, and dry it for long-term preservation. People would also use moose hides and bones for making clothing, drums, sewing supplies, and tools. Moose hair was used to make traditional art forms like tufting or quilling. Moose have been such an important part of the Ojibwe lifeway that in 2009, the Chairman for Grand Portage, Norman Deschampe, said, “Whither go the moose, so go the Ojibwe.”^{iv} Moose do well in areas that have experienced wildfires, harvests, or storm damage, or open spaces such as farm fields and tree stands. These areas should be near to bodies of water, since moose primarily feed on aquatic vegetation. The range of a moose varies greatly based on season and gender, but a single moose needs at least 65 acres. Moose viewing areas will have the following effects.

- Visitors: A healthy moose population will attract visitors—1 person per acre per year.
- Trees: Trees will need to be harvested to create enough open space to support moose.
- Wildlife: Moose can share their habitat with owls and salamanders because they are not competing for the same food source. The removal of trees to create open space for moose may cause owls and salamanders to disappear.
- Money: To attract visitors, a moose viewing area consisting of a raised platform (or several) will need to be built, which will cost money. A road will have to be built to provide access to the moose viewing area. Harvesting trees to create open space for moose will be a source of income. Visitors will pay a fee to access the moose viewing area.



Ojibwe birchbark moose call
Minnesota Historical Society Collections Online; 1981.4.58



Hide scraper made from moose bone
Minnesota Historical Society Collections Online; collected by Frances Densmore; 6935.30.C



Ojibwe pictographic moose hide robe
Minnesota Historical Society Collections Online; made by Mary Hudson, Mille Lacs Band, 1930; 1976.37.1