

NAME _____ DATE _____

A magnificent forest, 400-Acre Wood, has just been donated to your community. You and your team have the job of deciding what to do with this forest. An acre is an area of land equal to a square that is 209 feet or 70 yards on each side, so 400 acres is approximately 0.6 square miles.

400-Acre Wood is made up of pine forest, with about 150 mature pine trees per acre. Because the forest has no roads or trails, few people visit it. A small stream containing trout runs through it. In addition, lots of wildlife live in the forest, including owls, deer, bears, woodpeckers, turkeys, quails, wood rats, and woodland salamanders.

Wildlife biologists focus on **management indicator species** to evaluate the positive and negative effects of people's actions on the environment. The impacts of changes on these species carry over to other species as well. For 400-Acre Wood, the indicator species are barred owls, wood rats, and woodland salamanders. Biologists estimate that eight owls, 400 wood rats, and 10,000 salamanders live in 400-Acre Wood.

In the northwest corner of the wood is a rock outcropping with three petroglyphs on it. These images were chiseled into the rock surface by Indigenous ancestors and are believed to be 600 to 1,000 years old. Your plan should safeguard this cultural site, keeping trails, camping, and exhaust from cars (which can erode the rock) a safe distance away.

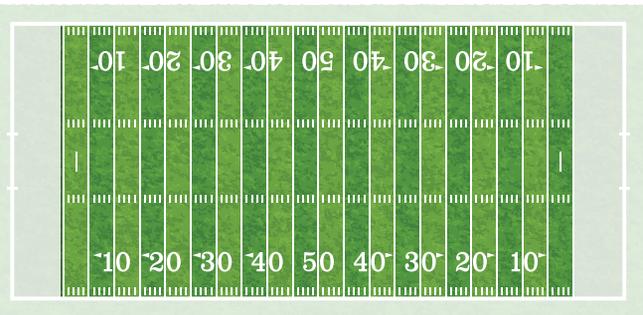
You and your team will develop a management plan for 400-Acre Wood and make a map of it. You may decide to do one thing with the entire forest, such as create a campground. Or you may want to divide the forest and do different things in different areas, such as devoting some portion to wildlife management or hiking, some to a campground, and some to timber or hunting. Your goal is to find what your group thinks is the best balance among five priority interests: 1) number of visitors, 2) wildlife conservation, 3) number of trees, 4) cultural site protection, and 5) costs and revenue.

Using a landscape in various ways can have either positive or negative effects. The effects of forest uses described in the box on the following page are specific to this learning activity. Actual forest uses may have very different effects, depending on the geography, species of trees, types of animals, and people involved, as well as other local conditions.

The What's the Score? student page will help you evaluate your plan's total effect on the five priority interests (visitors, wildlife, trees, cultural site, and costs and revenue).

HOW BIG IS AN ACRE?

An acre is a measure of land that is exactly 4840 square yards. It can be any shape, but it is approximately the size of an American football field without the end zones.



1 acre = about the area of a football field

Metric unit conversion:

1 acre = 0.4047 hectare

1 hectare = 1 square kilometer

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Forest Use	Effects
Wildlife Management Area	
<p>The purpose of a wildlife management area is to allow wildlife to thrive by preserving important ecosystem features that are critical to maintaining wildlife populations. Typically, areas that are managed for wildlife have few or no roads, timber operations, graded trails, or campsites.</p>	<p>Wildlife management areas will bring some visitors to the forest. The numbers of trees and amount of wildlife will remain the same. This type of management is compatible with protection of the cultural site. It will cost money to monitor the area.</p>
Timber	
<p>Timber harvest and regeneration involves cutting trees and planting new trees. Part of sustainably managing a forest includes determining which areas of the forest to harvest and regenerate. Using sustainable practices based on research, trees are removed in a way that minimizes effects on wildlife and people, while also producing valuable products over the long term. Pine trees take 35 years to reach maturity, but some trees may be removed periodically through “thinnings” to maximize growth and generate products. Trees must also be removed to build the road.</p>	<p>To protect the stream’s water quality, timber production must retain a “buffer” alongside any stream. This is called a streamside management zone.</p> <p>The addition of roads will bring some visitors to this area. The timber harvest and regeneration will have a minimal effect on the three indicator species, since sustainable management will ensure regeneration of the forest. It will cost money to build and maintain the roads and for management, but the harvested trees can be sold to generate revenue.</p>
Trails	
<p>Graded trails allow different types of visitors to enjoy a forest area, including walkers, cyclists, families with strollers, and wheelchair users. Trails should not be built near a cultural site.</p>	<p>Trails will bring more visitors, but they will also disturb the wildlife, particularly the owls and wood salamanders. It costs money to build and maintain trails, and trees will need to be cut to make room for the trails. But you may sell the cut trees and charge an entrance fee to visitors.</p>
Campground	
<p>A campground allows visitors to enjoy a forest area overnight or over the weekend. It typically has campsites, picnic tables, fire pits, parking spaces, and bathrooms. A campground also needs to have a road winding through it. Campgrounds should not be built near a cultural site.</p>	<p>A campground will bring more visitors, but it will cause all three indicator species—owls, wood rats, and salamanders—to disappear from the area. Trees will need to be removed to build the road and campsites. It costs money to build and maintain the campground. But you may sell the cut trees and charge a camping fee.</p>



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Forest Use	Effects
Hunting and Foraging	
<p>Some forest areas are managed to encourage game animals (deer, turkey, and quail) for hunters and edible items (medicinal plants, mushrooms, and berries) for foragers.</p>	<p>Hunting and foraging will bring some visitors, but with regulations to keep game populations constant, there should be no effect on the three indicator species—owls, wood rats, and salamanders. It will cost money to manage the area. But you may charge visitors a license fee.</p>
Reservoir	
<p>To supply water to the nearby community, a forest stream can be dammed to form a freshwater reservoir. A reservoir will bring visitors for canoeing, kayaking and other nonmotorized boating. Trees will need to be removed to create the reservoir.</p>	<p>The reservoir will cause all three indicator species—owls, wood rats, and salamanders—to disappear from the flooded area. It will cost money to build the dam and to manage the reservoir. But the cut trees can be sold, and you may charge visitors a recreation fee.</p>
Cultural Sanctuary	
<p>The purpose of a cultural sanctuary is to honor the people who lived there before and to respect the history, culture, and beliefs of Indigenous people today. A cultural sanctuary has no roads, graded trails, or campsites.</p>	<p>A cultural sanctuary will not change the number of visitors, trees, or amount of wildlife. It will cost money to monitor the area.</p>

CAREER CORNER

FORESTERS manage forests for public and private use. They may develop short- and long-term plans for the forest. Their plans may include planting, growing, and monitoring trees for healthy growth, and making sure forest practices are sustainable and meet environmental regulations.

I LOVE MY
GREEN JOB!

