

Student Activity Sheet

Sprawl Module

1. You have been hired to work in a city land-use planning department. It is your job to plan for the city's growth and development. Your boss enjoys the outdoors, and would like to know what affect expanding the town will have on the amount of tree cover, temperature, wildlife, soil erosion, and water quality in the forest next door. Based on what you have learned in this module, write a report to your boss telling her what to expect.
2. After reading your report, your boss asks you for advice on how to reduce the impact of development on the forests, wildlife, and streams. Write a brief response with four suggestions for her to consider.
3. How did the stream respond to rainfall as more development is added? Why did this happen?
4. Name three benefits of forests that you learned from this module.

Teacher Answer Sheet

Sprawl Module

1. You have been hired to work in a city land-use planning department. It is your job to plan for the city's growth and development. Your boss enjoys the outdoors, and would like to know what affect expanding the town will have on the amount of tree cover, temperature, wildlife, soil erosion, and water quality in the forest next door. Based on what you have learned in this module, write a report to your boss telling her what to expect.

Answer. Done in the traditional manner, expanding the city will result in a loss of tree cover as the forest is removed to make way for homes, services, and industries. Temperature will increase as tree cover declines and asphalt coverage increases. The populations of wildlife species that are sensitive to development pressure and habitat loss will go down, while the populations of species that thrive in the presence of humans will increase. Erosion increases due to soil disturbance, construction, and increased runoff. Water quality declines as a result of runoff and pollution from developed areas.

2. After reading your report, your boss asks you for advice on how to reduce the impact of development on the forests, wildlife, and streams. Write a brief response with four suggestions for her to consider.

Answer. Instead of building homes across an entire forested area, we can use cluster development to group houses together in one area on smaller lots. This way, the rest of the land in the subdivision remains forested. This forest provides some wildlife habitat, intercepts runoff from the subdivision before it reaches the stream, protects water quality, gives residents an area to walk and relax, and helps cool the air. We can use permeable pavement for large parking lots instead of asphalt or concrete. This will allow water to soak into the ground rather than run off into storm drains, ditches, and streams. Leaving a buffer of trees along streams helps cool the water, stop runoff from reaching the stream, and provides wildlife habitat. Spaying and neutering animals can reduce the impact of feral cats on the native wildlife populations.

3. How did the stream respond to rain as more development is added? Why did this happen?

Answer. Following rain events, the stream gets larger, and eventually floods. Trees and forest soils absorb rainfall. When forest cover declines, runoff from impervious pavement and other surfaces increases. Water enters the stream faster and in greater quantities. This increases stream flow and velocity, resulting in erosion of stream banks and flooding.

4. Name three benefits of forests that you learned from this module.

Forests help moderate temperatures at the earth's surface, provide wildlife habitat, reduce soil erosion, and protect water quality.