



Nature-Watch Activity Kit

Forests Forever

(Nature Watch Kit #144)

Kit Contents

<u>Item:</u>	<u>Kit Size</u>	
	25	100
Pine Tree Seeds	25	100
Seed Pots	25	100
Soil Pellets	25	100
Pine Nuts	1 bag	2 bags
Pine Tree Info Cards	25	100
Pine Cone & Seed Pod Set	1	2
Tongue Depressors	25	100
Baggies	25	100
Instructor Manual	1	1

This page includes the Next Generation Science Standards (NGSS) mapping for this kit and Science, Technology, Engineering, and Math (STEM) extensions (on back) to use in adapting and extending this activity to other subject areas.

**See Back for
STEM Extensions**

Next Generation Science Standards Alignment

- K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) need to survive.
- 1-LS1-1. Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.
- 1-LS3-1. Make observations to construct an evidence-based account that young plants and animals are alike, but not exactly like, their parents.
- 2-LS2-1. Plan and conduct an investigation to determine if plants need sunlight and water to grow.
- 2-LS2-2. Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.
- 2-ESS2-1. Compare multiple solutions designed to prevent wind or water from changing the shape of the land.
- 3-LS1-1. Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.
- 4-LS1-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.
- 5-LS1-1. Support an argument that plants get the materials they need for growth chiefly from air and water.
- MS-LS1-6. Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.
- MS-LS1-4. Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristics animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively.
- MS-LS1-5. Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.

This Nature Watch Activity Kit contains an Instructor Manual and materials to implement the curriculum. The kit was designed to be used with adult supervision only. Unsupervised use is not recommended.



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STEM Extensions

Science

Find a few open pinecones outside and submerge them in a bowl of water. Check on the pinecones in 30-60 minutes, and you'll see that they have closed. Why do you think the pinecones would close? How does this help them in the forest? (Hint: think about how the seeds inside need to travel by wind.) Now leave the pinecones out to dry and see what happens to them over the next couple of days.

For some trees, fire plays an important role in helping seeds to be released or to germinate, and is a necessary event in the tree's life cycle. Go online to learn more about these pyriscent plants and how fire helps them.

Pine nuts are an interesting food because, for the most part, they do not come from cultivated orchards but rather from wild forests. Go online to find videos and information about how they are harvested. If you live near the right kinds of pine trees, try foraging for them yourself!

Technology

Make a digital collage about conifers. Find images online for branches, bark, pinecones, etc. and combine them into one document. Layer words over the images to reflect some of the key vocabulary. Finally, use word processing or paint tools to draw the conifer life cycle as a third layer over your collage. Publish the collage by making it your computer wallpaper or sharing it by email or social media.

Record a forest tour video to inform your community about the trees nearby. Take video footage of trees that you have identified and record a voiceover to describe the trees, their habitat, and conservation efforts in the community. You can go one step further by hosting a community meeting to foster awareness and encourage forest stewardship.

Engineering

Design a device that could water your tree for you. Draw and label a diagram of your device, then explain how it would work and what materials you would use.

Create a "Nature's Art Supply Box" using pinecones, seed pods, seeds, and other parts of trees. Think about how the items can be used for painting, drawing, stamping, etc. Package your kit and gift it to a young child to use.

Math

Use the equation on page 4 to estimate the height of the trees on your school/home property. If you have multiple trees of the same species, compare the heights of the individual trees. What is the species of tree on the property that grows the tallest?

As your pine tree is growing, measure and record its height daily. Create a line graph showing its growth over time and describe how it grew.