

## About This Module

<b>Overview</b>	These important activities teach youth that we are dependent on nature for ecosystem services and why it is important that we protect our environment.
<b>Guiding Questions*</b>	<ul style="list-style-type: none"> <li>• What are ecosystem services and how can they help our environment?</li> <li>• What benefits do trees provide, and how can we protect the trees in our neighborhood?</li> <li>• How can we use social media to share important environmental messages with others?</li> <li>• How can we reduce our carbon footprint?</li> </ul> <p>*Guiding questions are not specifically asked in the activities themselves but are meant to guide your preparation and facilitation of the module. Keep these questions top of mind so you can help youth make connections and capture key takeaways relating to the topic.</p>
<b>Activity 1</b>	<b>Ecosystem Heroes</b> Youth learn about the essential services that nature provides. Next, they brainstorm ways to be an “Ecosystem Hero” and decorate paper grocery bags with an environmental message of their choosing.
<b>Activity 2</b>	<b>Put a Price Tag on a Tree</b> Youth discover the many benefits trees provide humans and the environment by using a free online tool to calculate the dollar value of a tree near their Club. They make price tags for trees, showing dollar values and some of the benefits the trees provide.
<b>Activity 3</b>	<b>Ecosystem Services Social Media Project</b> Youth go on a scavenger hunt outside the Club to look for signs of ecosystem services. They record what they find and use that information to create a video, song or poster collage about ecosystem services to share on social media.
<b>Activity 4</b>	<b>How Big Is Your Carbon Footprint?</b> Youth learn how to calculate their carbon footprint using an online tool, and they discover ways to lower their impact on the environment.



Key Terms	
Ecosystem	All plants and animals living in a particular area and their interactions with the nonliving parts of the environment, such as air, water, soil and rocks. Examples include forest, marsh, desert and ocean.
Hero	A person who is admired for their courageous acts or noble character.
Ecosystem services	Services we get from nature that help us live, such as food, clean air and water, and materials to build houses.
Carbon footprint	The amount of carbon dioxide released into the air because of a person’s energy use over a period of time, typically a year.

Supplies		
Activity 1: Ecosystem Heroes	Handouts	
	1	Ecosystem Service Items
	Supplies Needed	
	1 per participant	Ultimate Journey Passports saved from previous activities
	1	Ball
	1 per participant	Paper grocery bag
	1+ per participant	Scrap paper
	1 per participant	Pencil
	1 set per small group	Markers, crayons or colored pencils
	Optional supplies for display table	Glass of water
		Plate of fruits and vegetables
		Piece of wood, copper wire, large stone, nail
		Pinwheel
		Potted plant
		Coffee filter, muddy water and a jar
		Pictures of forests, parks and honey bee (from the Ecosystem Service Items resource)
		Soil in a pot
		Empty bottle or jar with a lid

## Supplies

<b>Activity 2:</b> Put a Price Tag on a Tree	Handouts	
	1 per pair of participants and facilitator	What's a Tree Worth?
	1 per pair of participants	Tree Price Tag
	Supplies Needed	
	1 per participant	Ultimate Journey Passports saved from previous activities
	1+	Tablet or other mobile device(s) with internet connection
	1	Tree field guides or an identification app (see Links to Resources)
	1	Calculator
		Basket/bin
		Chalk
	40+ feet	String
	1	Hole punch
	1 per pair of participants	Clipboard
	1 per pair of participants	Pencil
	1 per pair of participants	Markers
	1 per pair of participants	Large tape measure
<b>Activity 3:</b> Ecosystem Services Social Media Project	Handouts	
	1 per small group	Ecosystem Services Scavenger Hunt
	1	Ecosystem Services Scavenger Hunt Answer Key
	Supplies Needed	
	1 per participant	Ultimate Journey Passports saved from previous activities
	1	Computer or projector to display videos
	1+ each for facilitator and small groups	Large sheets of paper (e.g., butcher paper, flipchart paper, posterboard)
		Tape
	1 per small group	Clipboard
	1 per small group	Pen or pencil
	1 per small group	Camera, phone or tablet to take pictures

## Supplies

Activity 3: Ecosystem Services Social Media Project	Supplies Needed	
	1 set per small group	Markers, crayons or colored pencils
	1 per small group	Glue
Activity 4: How Big Is Your Carbon Footprint	Handouts	
		None
	Supplies Needed	
	1 per participant	Ultimate Journey Passports saved from previous activities
	1 per pair of participants	Internet-connected device
	1 sheet per participant	Paper
	1 per participant	Pencil

## Skills

Academic Skills	Social-Emotional Skills
Curiosity	Communication
Creativity and Innovation	Collaboration
Designing and Constructing Explanations	Identifying and Solving Problems
	Ethical Responsibility

## Background Information

It's easy to take for granted the variety of goods and services that nature provides us – clean air and water, food, raw materials to build houses, and fuel for energy. Basically, everything we need to exist.

Ecosystem services are benefits that humans receive from the environment. These benefits affect almost every aspect of our well-being, including our food and water, security, health, and economy.

Many of the decisions we make – from small things, such as how to dispose of an aluminum can to large things, such as how to develop land – affect ecosystem services. We're not always aware of the links between our environment and our well-being, so we may not always appreciate the importance of ecosystem services when we make day-to-day decisions.

Biodiversity is directly related to ecosystem services because biodiversity provides us with drinking water, oxygen to breathe, food, medicine, decomposition of waste and helps our planet withstand natural disasters. Hence, it is vital that we protect our planet's biodiversity.

## Links to Resources

<b>Activity 1:</b> <b>Ecosystem Heroes</b>	<b>“Eight Ways Kids Can Help the Environment”</b> (youtube.com/watch?v=vONBU7btYuo): This short video shows simple things kids can do to help the environment.
	<b>PBS Kids</b> (pbskids.org/plumlanding/parents/allresources.html): This PBS Kids Plum Landing website includes a variety of online games and videos that help youth learn about our natural world.
	<b>The Greens</b> (meetthegreens.org): This upbeat, interactive website developed by WGBH gets kids thinking about their world and ways they can help our planet. Through online games, short videos and blogs, kids explore green living, sustainability, ecology, environmental care and social equity.
<b>Activity 2:</b> <b>Put a Price Tag on a Tree</b>	<b>MyTree Benefits Calculator</b> (mytree.itreetools.org): This online tool calculates the dollar value of a tree. Just measure the circumference of a tree and input that number into the calculator, along with the species, condition and sun exposure of that tree.
	<b>Tree Identification Apps</b>
	<b>Leafsnap</b> (leafsnap.app): A free mobile app that uses visual recognition software to identify tree species from photographs of leaves. To use this app, place a leaf on a piece of white paper, then take a picture of the leaf through the app. This app can be used on iPhones and iPads.
	<b>vTree</b> (dendro.cnre.vt.edu/dendrology/main.htm): Virginia Tech’s free mobile app to help identify trees in North America.
	<b>Seek by iNaturalist</b> (inaturalist.org/pages/seek_app): With this free mobile app, you can take a photograph of a tree and share it with a global community of naturalists who can help to identify it.
<b>Activity 4:</b> <b>How Big Is Your Carbon Footprint</b>	<b>Arbor Day Foundation</b> (arborday.org/trees/whattree/whattree.cfm?ItemID=E6A): An interactive online guide to trees in the United States. Enter Yes or No to a series of questions, and find out what tree you are looking at.
	<b>Carbon Footprint Calculators</b>
	<b>Lovetoknow.com</b> (lovetoknow.com/life/lifestyle/carbon-footprint-calculator-kids) <b>Clever Carbon</b> (clevercarbon.io/quiz/)

National Parks Spotlight	
Activity 1: Ecosystem Heroes	For a brief overview of environmental services nature provides us, visit <b>National Park Service: Biodiversity</b> ( <a href="https://nps.gov/subjects/biodiversity/explore.htm">nps.gov/subjects/biodiversity/explore.htm</a> ).
Activity 2: Put a Price Tag on a Tree	The Social Science Program of the National Park Service (NPS) conducts economic research to support the sound management, preservation and valuation of National Parks' resources. Efforts include estimating the economic benefits associated with the preservation and enjoyment of NPS natural and cultural resources. To learn more, visit <b>National Park Service: Social Science</b> ( <a href="https://nps.gov/subjects/socialscience/index.htm">nps.gov/subjects/socialscience/index.htm</a> ).

**Note to Facilitator:** Portions of Activities 2 and 3 are conducted outdoors. Check the weather and schedule the activities for a clear, sunny day.