



## Introduction

In this lesson, we challenge you to examine tree bark in a new way! Have you ever noticed how different bark can look from one tree to the next or thought about what bark does for a tree. A simple description of bark is the outermost layer on woody plants that we can see. The basic function is to protect the internal parts of the tree. Do you see how this is similar to the outer layer we see on animals, like skin?

Think about how these two outer layers compare and how their appearance can be very different. Ask yourself why these outer layers are so important and why they vary in color, texture and patterns.

## Composition & Function

Bark is the outermost protective layer that surrounds the wood of the trunk, branches, and even roots of a tree. It is actually a thin layer that extends around what is considered the wood of a tree and the term used to describe it is cork. The purpose of the bark layer is to protect the tissue inside the trunk, branches and roots that are responsible for the continued growth of the tree from various environmental factors.

## Patterns

Patterns of bark vary from being smooth, spiny, bumpy, multi-colored, or divided by fissures causing different shapes and/or ridges. These patterns provide another character to help in identifying trees as mentioned in Lesson 1 about the naming of trees. Sometimes it is very difficult to determine the difference between a species because the bark looks similar, but if you compare all of the characters, like leaves, flowers, fruits, and bark, then it helps to distinguish one species from another. So, what is bark?

The following examples are tree species found on the grounds of the Smithsonian Gardens. Use these examples to consider the questions on the activity page.

Common Name	Scientific name (Latin)	Location
Pricklyash	<i>Zanthoxylum americanum</i>	NMNH
Crape myrtle	<i>Lagerstroemia indica</i>	HAUPT, NMAH, HSG, NASM
Dawn redwood	<i>Metasequoia glyptostroboides</i>	HSG, NMNH, NASM
Paper birch	<i>Betula papyrifera</i>	HAUPT
Persian Ironwood	<i>Parrotia persica</i>	FREER
Eastern sycamore	<i>Platanus occidentalis</i>	NMAI
Lacebark pine	<i>Pinus bungeana</i>	HAUPT, NMNH





## Vocabulary

- Secondary growth
- Bark
- Fissure
- Texture
- Pattern

## Learning Goals:

- Learn about the function and structure bark
- Gain an understanding about the variety of bark found in nature
- Understand what it means for something to provide function and structure while applying this knowledge to other things in our surroundings
- Learn how nature influences products we use
- Learn to observe our surroundings
- Describe objects based on observations

## What you'll need:

- Activity sheet and notebook
- Colored pencils
- Crayons
- Ruler
- Camera (if possible)

## Sources:

- ***Bark : the formation, characteristics, and uses of bark around the world.*** Photographs by Kjell B. Sandved/ Text by Ghillean Tolmie Prance and Anne E. Prance. Portland, Timberland Press, 1993.
- ***Tree Bark, A Color Guide.*** By Hugues Vaucher, Portland: Timber Press, Inc., 2003.
- **USDA Plants** website: [plants.usda.gov](http://plants.usda.gov)
- **Virginia Tech Dept. of Forest Resources and Environmental Conservation- Tree Fact sheets:** [dendro.cnre.vt.edu/wwwmain.html](http://dendro.cnre.vt.edu/wwwmain.html)

## For younger students:

- ***Trees, Leaves and Bark.*** By Diane L. Burns. Minnetonka: NorthWord Books, 1995.



## Activity:

1. *In the classroom or at home:* Review the introduction and discuss the concept of bark. Use the idea of skin or the outer layer of animals being a protective barrier as an analogy to what bark does for trees. Have students cut-out and look through the Bark Image Cards and write their own descriptions for the different types of bark.
  - Have students complete Activity I- This is a matching game. Students should cut-out the Bark ID Cards and match them to the Bark Image Cards after writing their own descriptions. These can be glued together on heavy paper to make nice reference cards for your walk.
2. *On your walk in the Smithsonian Gardens:* If you get a chance to explore the gardens use the Bark Image Cards and the Bark ID Cards to find your way in the garden. Once in the gardens, have students locate the trees based on the bark patterns. If possible take more pictures of the bark to take back to your classroom for more discussion about textures, shapes, and colors.
3. *In your schoolyard or local garden:*
  - Choose different trees with textured bark patterns, if possible, and have students do rubbings of the bark. Use Activity Sheet II and make as many copies as necessary to obtain all the bark rubbings. If you cannot obtain a rubbing then take pictures of the bark on a few trees and have students complete Activity II based on the images.
4. *In the classroom:* Have students share their bark rubbings with the class and record their answers to the questions from Activity Sheet II on the board.
  - Activity Sheet III allows students to think about the patterns that have been discussed and what it means to be protective surface. Students can use their creativity to come up with the type of “bark” they would have if possible.
  - **Bonus:** Prepare pictures of various animal skins and have students think about the patterns, textures, and colors in them compared to that of tree bark. Have a discussion about the similarities and differences.

Answers for teachers: Bark ID Cards

A. 7; B. 1; C. 4; D. 2; E. 3; F. 5; G. 6

Bark Image Cards

Write descriptions for the different bark types.



A.



B.



C.



D.

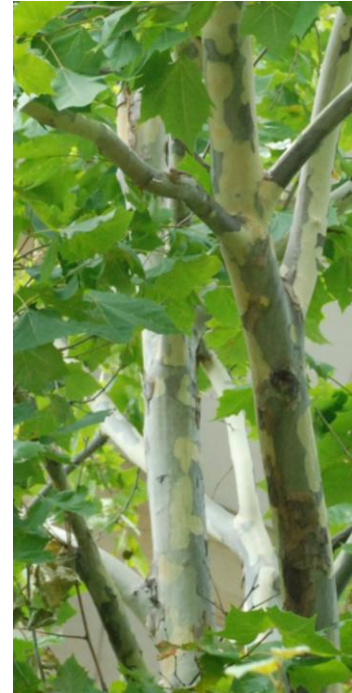
Bark Image Cards



**E.**



**F.**



**G.**

**Activity I – Match the Bark Image Cards with these Bark ID Cards.**

- Descriptions: I = USDA Plants Fact Sheets; II = Virginia Tech Tree ID Fact Sheets; III = Environmental Horticulture Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida

	<b>1</b>	<b>2</b>	<b>3</b>
<b>Common Name</b>	Pricklyash	Crape myrtle	Dawn redwood
<b>Scientific name (Latin) – And brief bark description</b>	<i>Zanthoxylum americanum</i> - Branches are dark brown and armed with 8 to 13 mm-long prickles. When broken, the twigs have a strong odor reminiscent of crushed lemon peel. <sup>I</sup>	<i>Lagerstroemia indica</i> - Strips of bark peel off in early summer to reveal mottled new bark ranging in color from pale cream to dark cinnamon to rich brown to bright orange. The bark color gradually fades over winter until it peels again the next summer. <sup>II</sup>	<i>Metasequoia glyptostroboides</i> - Reddish brown, fibrous and stringy, develops an irregular fluted pattern, exfoliates in strips, rope-like in appearance. <sup>III</sup>
<b>Location</b>	NMNH	HAUPT, NMAH, HSG, NASM	HSG, NMNH, NASM

	4	5	6	7
<b>Common Name</b>	Paper birch	Persian Ironwood	Eastern sycamore	Lacebark pine
<b>Scientific name (Latin)</b>	<i>Betula papyrifera</i> - The bark is thin, smooth, dark red to almost black on young stems, becoming reddish-brown and then bright creamy white. <sup>I</sup>	<i>Parrotia persica</i> - attractive peeling bark and spectacular form. Trunk and bark character can be displayed year round by removing lower branches and foliage. <sup>III</sup>	<i>Platanus occidentalis</i> - Bark of upper trunk exfoliating in patches, leaving areas of inner bark exposed, a patchwork of browns, yellows, and greens against a background of white, the darker bark with age falling away in thin brittle sheets, exposing younger and lighter-colored bark. <sup>I</sup>	<i>Pinus bungeana</i> - Exfoliating in irregular plates, grayish green with irregular chalky white or brownish patches, very attractive. <sup>II</sup>
<b>Location</b>	HAUPT	FREER	NMAI	HAUPT, NMNH

# Bark

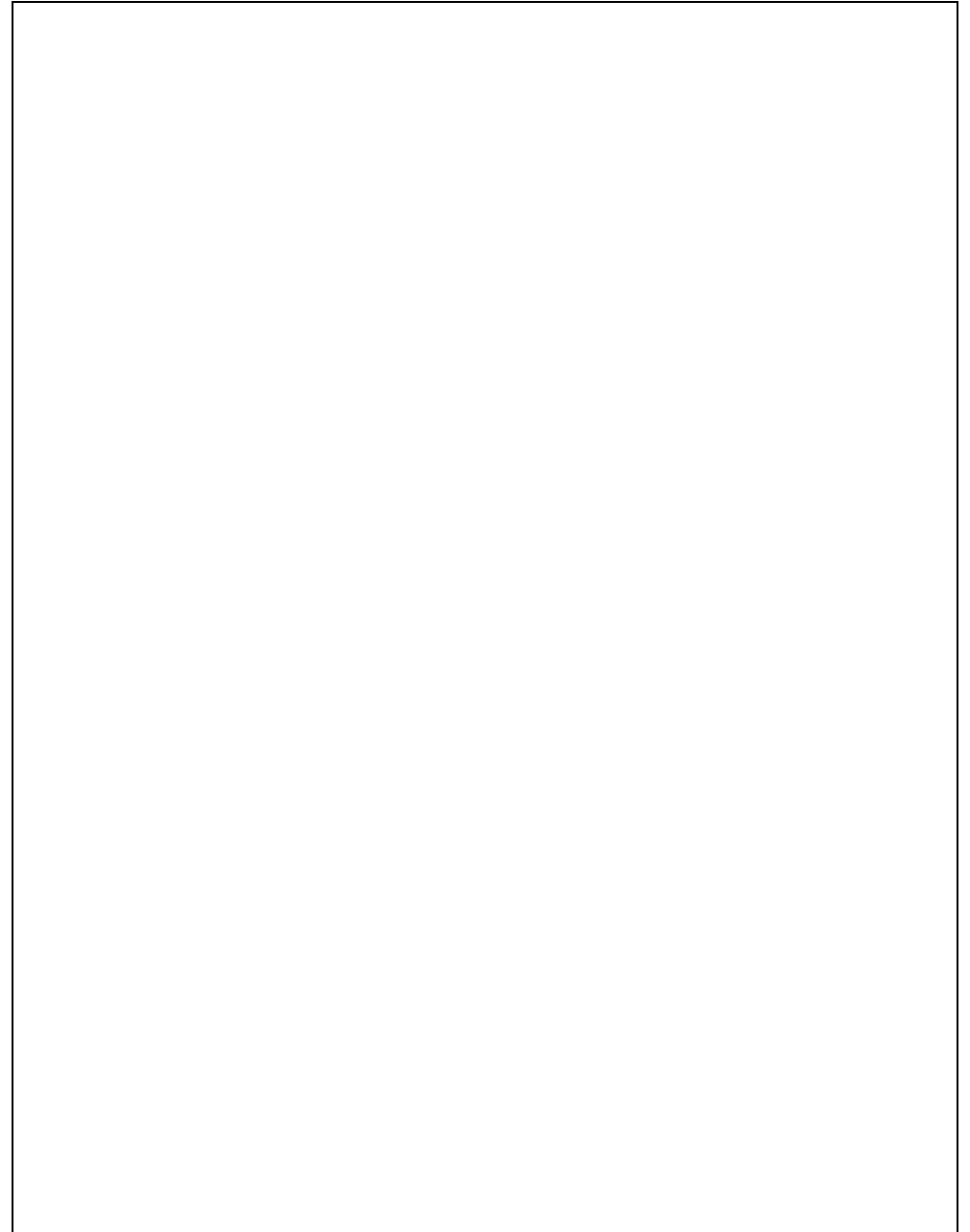
## Activity II

Find a tree in your schoolyard or neighborhood and do a rubbing of the bark in this square provided.

1. How would you describe this bark? Hint: use descriptive words for colors, measurements, and textures

2. What does the pattern look like? Does it look like something you see in other patterns around you?

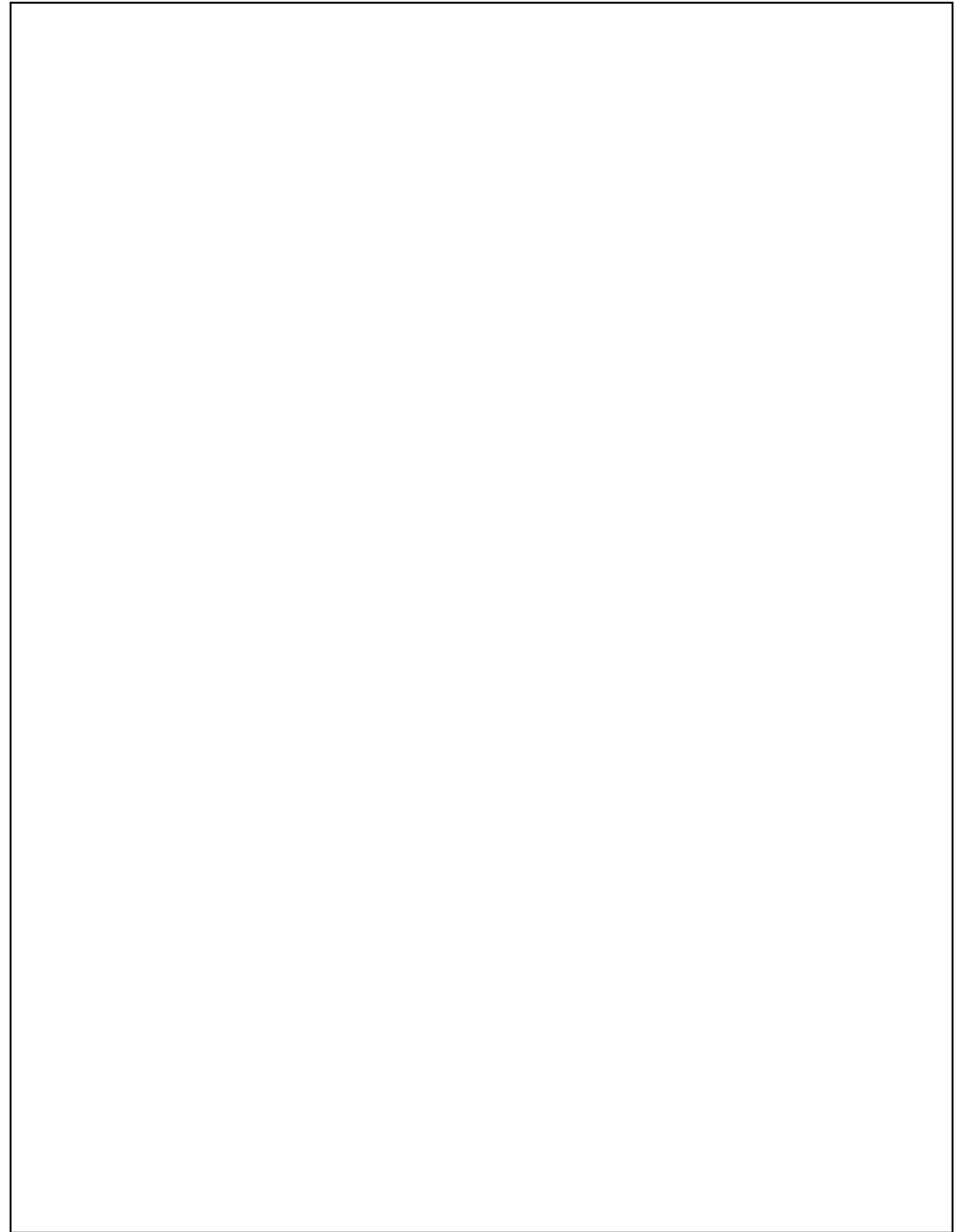
Bark rubbing here





### **Activity III**

3. Consider this- Bark is to a tree like skin is to people.  
What type of “bark” would you have if you were a tree?  
Do you have any scars on your bark?

A large, empty rectangular box with a thin black border, occupying the right half of the page. It is intended for a student to draw or write their response to the activity question.