



A SOUTHERN BAYBERRY BY ANY OTHER NAME...

The Science of Names

Rationale and Objective

Within any one of Louisiana's wetlands, there are hundreds of plants, animals, fungi, and algae that are large enough to be seen with the naked eye (*macro organisms*) and hundreds, possibly thousands, of species that are too small to be seen with the naked eye (*microorganisms*). Others are well camouflaged and, thereby, not visible. To communicate information about the Coastal Roots trees (and other wetlands organisms) to students, and to also have students communicate among their peers and our resource personnel, requires basic knowledge of biological classification, taxonomy.

Teacher Background

In the Eighteenth century scientists started to closely observe and to record the characteristics of the living things around them. They used physical relationships to group the organisms and gave each one a name consisting of a long series of Latin (or sometimes Greek) words. These strings of words, called *polynomials* (in Latin, *poly* means many and *nom* means name), give a detailed set of characteristics for the organisms. While the system has been modified over time, it is still in use today. Writing out an organism's "full" name while useful in studying characteristics, is unnecessary in most discussion of the organism. A shorthand version known as the binomial (2 name) or scientific name of the organism is composed of the genus and species names. The genus is written first and is capitalized. The species name follows the genus name and is not capitalized. To designate this is a scientific name; the genus and species are written in italics (or underlined). For example, the binomial for the tree known as the wax myrtle, southern bayberry, or candle-tree is *Myrica cerifera* or Myrica cerifera. Emphasize that while they may describe some characteristic of the organism and are popularly used, common names can be very misleading.

Biology and life science books all have chapters covering the topic of taxonomy. Students should read these and participate in class discussion of them. You may wish to include definitions of these terms: *Kingdom, Phylum, Class, Order, Family, Genus, and Species* and review the taxa of humans, dogs, or one of our wetland trees.

Louisiana Science Benchmarks

LOUISIANA BENCHMARKS: LS-H-C4, C5, C6

LS-M-C1, D1

Procedure

1. Introduce the concept of classification and taxonomy.
2. Have students read Student Worksheet #1 (A Southern Bayberry By Any Other Name...). Using the Internet and Coastal Roots Information pages (see Coastal Roots website, <http://lamer.lsu.edu> and download the plant information pages), have students answer the questions at the bottom of the worksheet.
3. Have students list characteristics they might use to identify tree leaves. Record these on the black board or have students record them in their notebooks.
4. Divide the students into cooperative learning groups.

5. Distribute 10- 20 leaf samples (or photos of leaves) to each group. Be sure you can identify them (and poison ivy), yourself.
6. Allow student groups access to copies of field guides and/or local resource materials.
7. Have each group develop and justify a taxonomic key for their leaves. If your students need guidance on developing a taxonomic or classification key, go to the Louisiana Marine Education Resources website and click on "Education on the Halfshell". There are three activities online that develop skills in preparation of classification keys. Other classification key references are listed below.
8. As a class exercise or as a form of assessment, have students create and justify their own classification system of leaves, seeds, or flowers. The Project Learning Tree Name That Tree activity has students design keys and suggests having student groups create their own field guides as an assessment.

Classification Key References

While texts or accompanying lab books frequently contain exercises that introduce use of taxonomic keys, additional practice is recommended. To include tree or seed classification activities into your class' studies consider:

What Tree Is That? National Arbor Day Foundation <http://www.arborday.org/trees/treeID.html>

Sorting Beans http://www.owu.edu/~mggrote/pp/botany/c_seeds.html

Project Learning Tree American Forest Foundation. Available through workshop participation—contact Louisiana Project Learning Tree coordinator, Wade Dubea at 225-925-4500 for workshop information.

There are several taxonomy-related activities including *We All Need Trees* and *Have Seeds Will Travel*. Some modifications may be necessary for upper grade levels.

Some Louisiana Resources...

Tree Planting Guide

Order from Baton Rouge Green, 448 North 11th Street, Baton Rouge, LA 70802. Phone: 225-381-0037. <http://www.batonrougegreen.com>, Email: <BGreen4U@aol.com>.

Contact Baton Rouge Green for this poster/pamphlet, which includes sketches, and growth and care information for trees suited for urban conditions. It also includes planting and maintenance guides.

Guide to Successful Trees (LSU AgCenter publication #2631) Available from LSU Agricultural Center publication catalog at: <http://www.lsuagcenter.com/nav/publications/pubcatalog.asp>

This booklet is multipurpose. It can be used for teaching botany of trees and tree-related vocabulary, taxonomy, tree planting and care.

Leaf Key to Common Trees in Louisiana (LSU AgCenter publication #1669)

This picture key includes sketches of numerous native trees. Sketches of flowers or fruit are included for many species

Louisiana Trees (LSU AgCenter publication #1093)

This guide gives characteristics and habitats of some of Louisiana's common native trees and includes diagram sketches of leaves and flowers or fruit.

Trees for Louisiana Landscapes – A Handbook (LSU AgCenter publication #1622)

Available from LSU Agricultural Center online publication catalog at:
<http://www.lsuagcenter.com/nav/publications/pubcatalog.asp>

On-Line Resources for General Taxonomy

Tree of Life Project <http://tolweb.org/tree/phylogeny.html>

The Tree of Life is a global, collaborative effort documenting biodiversity and phylogeny of life. Its goal is to compile information about evolutionary history and characteristics of all organisms.

Natural Perspective <http://www.perspective.com/nature/>

A collaborative Internet project, this site contains information about phylogeny and biodiversity of life on earth.

How to Know the Earth's Plants and Animals http://www.earthfoot.org/backyard/bak_menu.html

On-Line General Taxonomy Resources

Basic nature study techniques are explained while focusing on plants, animals and ecology found in the average North American's backyard.



A Southern Bayberry By Any Other Name... The Science of Names

Student Name: _____

Imagine that your teacher has promised to take your class on an all-day field trip to a Louisiana wetlands habitat. Armed with your new CDs, CD player, money for souvenirs and a picnic lunch, you are anxious and ready to spend the day "in the field". Shortly after boarding the bus your teacher (who obviously does not understand the function of fieldtrips), hands out pencils and lab data journals and then asks you to carry a backpack full of books. This teacher expects you to identify organisms, describe their characteristics and discuss relationships among the many living things you see on your field trip!



Your report would probably include how the organisms look and what they were doing. However, within any one of Louisiana's wetlands, there are hundreds of plants, animals, fungi, and algae that are large enough to be seen with the naked eye (*macro organisms*) and hundreds, possibly thousands, of species that are too small to be seen with the naked eye (*micro organisms*). Others are well camouflaged and, thereby, not visible. When you finally find one you think you can recognize, a wax myrtle tree, one partner says that he is sure that it is a bayberry and the other calls it a candleberry. A kid in another group says that you and your friends will continue to be confused as long as you use common names---names that people in one area commonly give to the organisms they encounter. Common names can be misleading because one organism many be known by many names and very different organisms may be known by the same name. Where can you and your friends go to find the true identity of the plant and information about it? Those books in the backpack and folks who lived over three hundred years ago might prove helpful.

In the eighteenth century scientists started to closely observe and to record the characteristics of the living things around them. They used physical relationships to group the organisms and gave each one a name consisting of a long series of Latin (or sometimes Greek) words. These strings of words, called *polynomials* (in Latin, *poly* means many and *nom* means name), give a detailed set of characteristics for the organisms. The task of grouping or classifying organisms by their characteristics is called *taxonomy*. While the system has been modified over time, it is still in use today. It is possible for you to learn all about an organism's *Kingdom, Phylum, Class, Order, Family, Genus, and Species* but, thanks to Carolus Linneaus, your work can be faster and simpler.

To help you in your taxonomic endeavors, let's learn how to take advantage of those books and the work of those old, dead naturalists. Biology and life science texts all have chapters on taxonomy. After reading those chapters and referring to COASTAL ROOTS Information Sheets, complete the questions below in your notebook.

1. Describe what is meant by "binomial name" and discuss its use.
2. Explain how common names can be deceptive or confusing.
3. What is the binomial name for the Southern Bayberry? What other common names is it known by?

