America's Scientific Revolutionaries

The Bartrams



AMERICAN PHILOSOPHICAL SOCIETY

RICHARD LOUNSBERY FOUNDATION

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AMERICA'S SCIENTIFIC REVOLUTIONARIES: THE BARTRAMS

Introduction

Pair this learning activity with the short educational film "Scientific Revolutionaries: The Bartrams."

How do you observe and record nature? Explore the ways William Bartram recorded information about the plants he saw throughout the American South in the 1770s. Then, try making your own observational drawing and written description.

Learn about Bartram's visit to the Seminole town Cuscowilla in 1774. Consider who gets to decide what information is important to know. How does their point of view help them decide what is important?

How can different types of records help us explore nature?

Cover Image:
William Bartram botanical illustration
APS Digital Library

Inquiry Design Model (IDM)

Compelling question:
How can different types of records help us explore nature?

PA State Aligned System Standards:

See Reverse.

Staging the Question:
Have you ever looked closely at a plant? Or maybe at its flower or leaf? What did you notice when you look at it? What did you wonder about the plant or the part of the plant you're looking at?

Supporting question #1:	Supporting question #2:	Extension Activity:
Why do you think William used different ways to collect information about plants?	What can we learn from drawing what we see?	Who decided what information William could collect?
Formative performance task:	**Formative performance task:**	**Formative performance task:**
• Watch the film about the Bartrams. • Read William's descriptions of plants. • Look at William's drawings of plants.	• Draw a picture of a plant. • Label the parts of the plant and any interesting things you find. • Compare your drawings and lists with a partner.	• Read the selection about Puc Puggy. • Discuss the questions provided.
Featured sources:	**Featured sources:**	**Featured sources:**
• Video on the Bartrams • Excerpt from Bartram's *Travels* • Bartram's botanical illustrations	• Vocabulary list of plant parts • Worksheet	• Story about Puc Puggy from Bartram's *Travels*

Summative performance task	Think about what you learned from William's work. Think about your own experience drawing and describing a plant. Discuss how different types of sources can help us explore nature.

PA State Aligned System Standards:

K-12 STEELS

3.1.K.A: Students who demonstrate understanding can use observations to describe patterns of what plants and animals (including humans) need to survive.

3.1.2.C: Students who demonstrate understanding can make observations of plants and animals to compare the diversity of life in different habitats.

C3 Framework for Social Studies State Standards

D2.His.9.K-2: Identify different kinds of historical sources.

D2.His.10.K-2: Explain how historical sources can be used to study the past.

For Extension Activity:

C3 Framework for Social Studies State Standards

D4.1.K-2. Construct an argument with reasons.

D4.2.K-2. Construct explanations using correct sequence and relevant information.

D4.4.K-2. Ask and answer questions about arguments.

D4.5.K-2. Ask and answer questions about explanations.

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STAGING QUESTIONS

Discuss:
Have you ever looked closely at a plant? Or maybe at its flower or leaf?

What do you notice when you look at it?

Does it make a sound or give off a smell?

If it's safe to touch, what does it feel like?

If it's safe to eat, what does it taste like?

What else do you wonder about the plant or the part of the plant you're looking at?

Scientists collect a lot of different evidence about the natural world. In the 18th century, people who did this kind of work were called naturalists. Two of the most well-known naturalists at that time were John and William Bartram.



MEET THE BARTRAM FAMILY

John Bartram built a botanical garden in Philadelphia. He shared seeds, specimens, letters, and descriptions with other naturalists around the world.

His special access to North American plants made him well-known in Europe. He was celebrated by the famous Swedish naturalist Carl Linnaeus. John was also given the title “Royal Botanist for North America” by King George III in 1765.

William Bartram was John's son. He became known for his travels, observations, writings, and illustrations. In 1791 he published his book *Travels* about his work in nature. He became known as one of the leading naturalists in North America.

Watch this short video about the Bartram Family and their work

Watch Film

https://youtu.be/XCNp-SYnhhE



OBSERVING NATURE

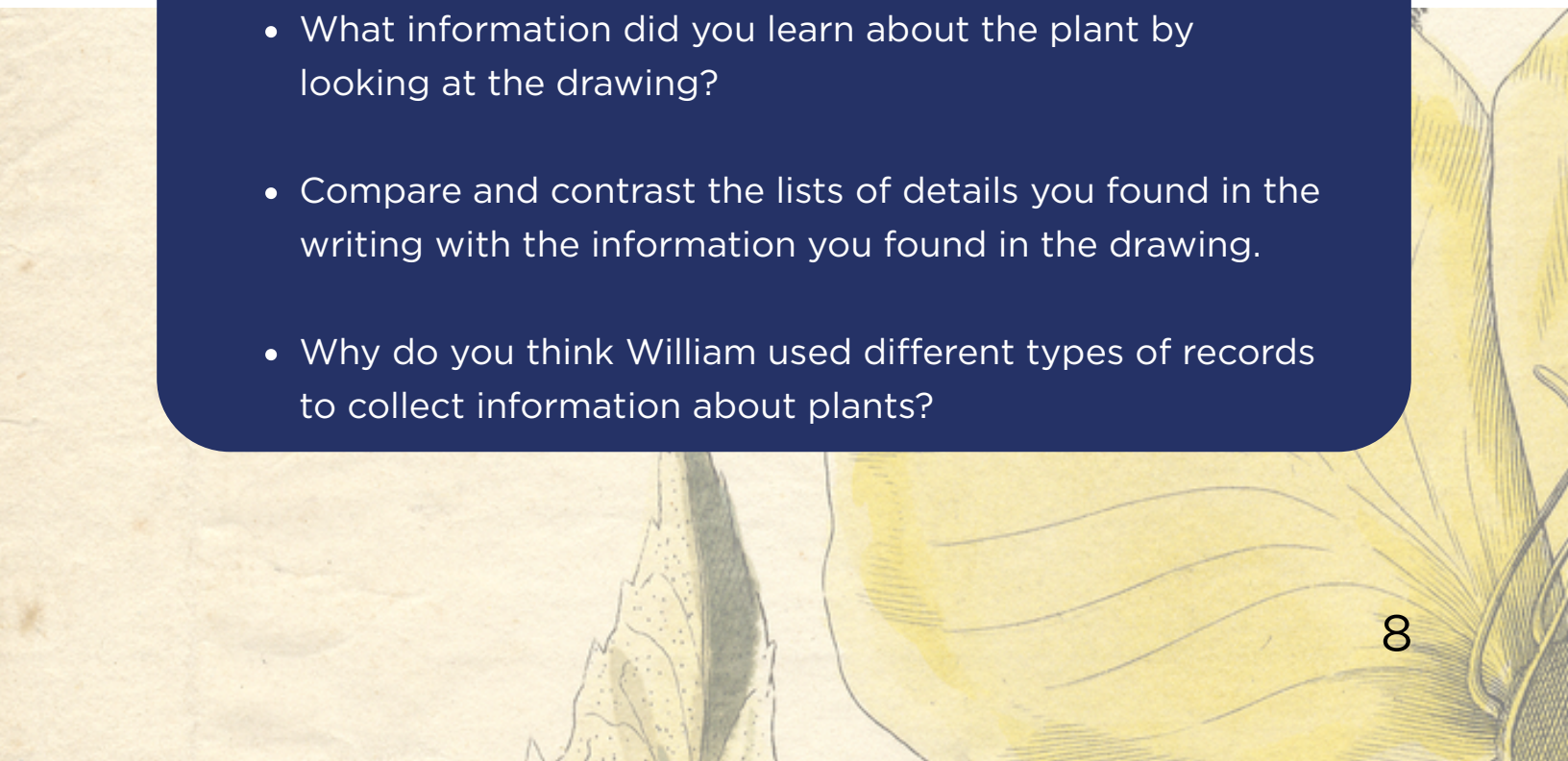
Read:
On the following pages are two examples from William Bartram's 1791 book *Travels*. In this book William recorded what he saw on his journey through North and South Carolina, Georgia, and Florida. He wrote about the plants, animals, and people that he met there. He also described how they were all connected together in their environment.

After you read or listen to each written passage, make a list of the details you learn about the plant.

Then turn to William Bartram's drawing of the same plant. Look closely at the drawing. Make a list of what you notice about the plant. Also list things you find interesting about the drawing.

Consider:

- What details did you hear or read in William's writing on the plant?
- What information did you learn about the plant by looking at the drawing?
- Compare and contrast the lists of details you found in the writing with the information you found in the drawing.
- Why do you think William used different types of records to collect information about plants?



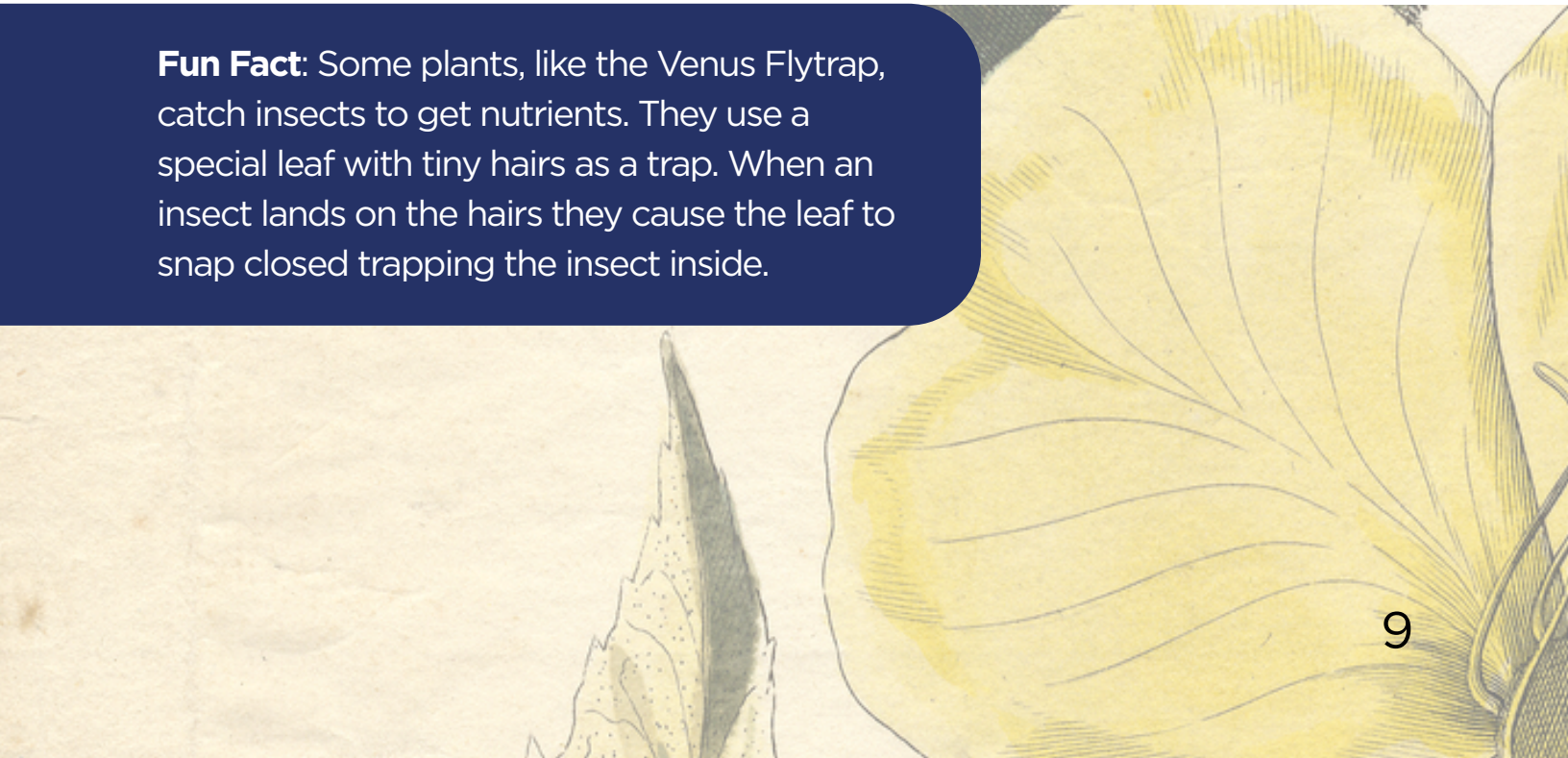
ABOUT THE VENUS FLYTRAP

"But admirable are the properties of the extraordinary Dionea muscipula! ... there behold one of the leaves just closed upon a struggling fly, another has got a worm, its hold its sure, its prey can never escape - carnivorous vegetable!...similar to those [attributes] that dignify animal nature; they are organical, living and self-moving bodies, for we see here, in this plant, motion and volition."

William Bartram, 1791, *Travels*, xx-xxi.

carnivorous: meat eating
attributes: characteristics, traits
organical: organic
volition: choice, free will

Fun Fact: Some plants, like the Venus Flytrap, catch insects to get nutrients. They use a special leaf with tiny hairs as a trap. When an insect lands on the hairs they cause the leaf to snap closed trapping the insect inside.



Dionaea muscipula (Venus Flytrap)



Source: APS Digital Library https://diglib.amphilsoc.org/islandora/object/graphics:839

ABOUT THE DOGWOOD

"We now enter a very remarkable grove of Dog wood trees (Cornus Florida) … the land on which they stand is an exact level; the surface a shallow, loose, black mould, on a stratum of stiff, yellowish clay; these trees were about twelve feet high, spreading horizontally; their limbs meeting and interlocking with each other, formed one vast, shady, cool grove, so dense and humid as to exclude the sun-beams and prevent the intrusion of almost every other vegetable, affording us a most desirable shelter from the fervid sun-beams at noon-day. … through this high forest, there constantly presented … spacious groves of this fine flowering tree, which must, in the spring season, when covered with blossoms present a most pleasing scene."

William Bartram, 1791, *Travels*, 401.

exact level: flat
mould: soil or ground
stratum: layer
exclude: keep out
"**prevent the intrusion of**…": it was so shady nothing else could grow
fervid: hot



Cornus florida L. (Flowering Dogwood)



Source: APS Digital Library https://diglib.amphilsoc.org/islandora/object/graphics%3A736

OBSERVING NATURE

Reflection for Social Studies:

You just looked at two different kinds of records about nature. They were also records about the past. Look at or listen to the writing about the flowering dogwood again.

What details did you learn about how the ground looked?

What did the dirt look like?

What is the weather like?

How do you think people traveled around this part of Florida? By boat? With a cart? On foot?

Think back to the video about the Bartrams. What was William doing in Florida? Why do you think he wrote down these details about this part of Florida?



YOUR TURN

What can we learn from drawing what we see? To answer this, look closely at a live plant or at one of William's drawings. Draw what you see on the page below.

YOUR TURN

Now pick one part of the plant, such as the leaf or stem, and look even closer at it. Try to draw what you see on the page below.

YOUR TURN

Use the vocabulary below to label the parts of the plant in both of your drawings.

Leaf: The part of the plant that grows from the stem. It helps the plant take in air and make food using sunlight.

Stem: It is the main part of the plant and it supports all the other parts, like leaves and flowers. It also carries water and food to the rest of the plant.

Branch: A smaller stem that grows from the main stem. It can hold leaves and flowers.

Flower: The part of the plant where the seeds or fruit are made. It is often colorful and pleasant smelling.

Pistil: The part at the center of the flower. Bees and other insects help move pollen into the pistil. This helps the plant make seeds.

Stamen: These are in the middle of the flower around the pistil. They make the pollen.

Seed: The part of the plant that grows into a new plant.

Fruit: The part of the plant that has seeds inside it.

Root: The part of the plant that helps it get water and nutrients. It also helps hold the plant in the ground.

Bulb: Some plants forms bulbs underground to store food and nutrients. They are attached to the roots.

YOUR TURN

Now list anything else you find interesting about the plant you drew.

What does it need to survive?

Does it live in dirt, sand, water, or something else?

Does it stand up straight or droop?

What color or colors is it?

Does it have a smell? What does it smell like?

If it's safe to touch, what does one of its leaves feel like?

Is it alone or with other plants?

What else do you think is interesting about this plant?



YOUR TURN

Discuss the following questions.

What did your drawings help you see about the plant?

How did the labels and list of details help you?

Compare your drawings and lists with a partner. What about your drawings or lists are different from the ones made by your partner?

What were you most interested in when you looked at the plant? Did you spend more time drawing or looking at that part? How about your partner?



DISCUSSION AND SUMMARY

Think about what you learned from William's work.

Think about your own experience drawing and describing a plant.

Discuss how can different types of records help us explore nature?



EXTENSION ACTIVITY

William Bartram could not have done his work without the help of others. In the 1770s many different Native American people lived in Florida. William was a guest in their lands. He needed their permission to visit, to collect plants, and to make his drawings.

Look at William's drawing of the region around this town: https://diglib.amphilsoc.org/islandora/object/graphics%3A853

Read together the following passage from William's book *Travels*. Here William described his visit in 1774 to a Seminole town called Cuscowilla. William asked the town's leader for permission to travel on their land. He also asked if he could study the plants and animals there.

> We were welcomed to the town, and conducted by the young men and maidens to the chief's house... the chief, who is called the Cowkeeper ... came to us, and in a very free and sociable manner, shook our hands... saying at the same time, "You are come."...
>
> The pipe being filled, it is handed around, after which a large bowl, with what they call "Thin drink," is brought in and set down on a small low table; in this bowl is a great wooden ladle; each person takes up in it as much as he pleases, and ... returns it again into the bowl, pushing the handle towards the person in the circle, and so it goes round.

- Passing a pipe told everyone that this was an important and serious meeting.
- "Thin drink" was a special drink made from holly. It was only used on special occasions.

EXTENSION ACTIVITY

After [greeting one another and asking us about]* our adventures, the chief trader [told] the Cowkeeper ... the [purpose] of our business... [He was pleased]. He was then [told] what...my errand was, and he received me with [kindness]; giving me unlimited permission to travel over the country for the purpose of collecting flowers, medicinal plants, etc., saluting me by the name of Puc Puggy or the Flower hunter, recommending me to the friendship and protection of his people.

The next day [we met and made an agreement], we [told] the chief [our plans to camp] on the borders of the great ALACHUA SAVANNA, and to return at the time appointed to town, to attend the council according to agreement.

William Bartram, 1791, *Travels*, 184-185.

Discuss

Who gave William permission to do his work? What was he allowed to do?

What did he agree to do? How important was the agreement they made?

The Cowkeeper gave William the name Puc Puggy. What does Puc Puggy mean? What does this name tell you about what Cowkeeper expected William to do?

Who decided what information William could collect?

*Brackets [] are used where the word or words have been edited for readability.
You can find the original text here: https://docsouth.unc.edu/nc/bartram/bartram.html

AMERICAN PHILOSOPHICAL SOCIETY

About the Center for the History of Science

The Center for the History of Science encourages greater engagement with the extensive holdings on this topic housed at the American Philosophical Society's Library & Museum. The Society has promoted research across the sciences since its founding in 1743, an objective that in turn shaped the scope of its collections. Many of the APS's earliest Members engaged in the pursuit of "natural philosophy"– what might now be considered scientific or technological inquiry. Throughout the 19th, 20th, and into the 21st centuries, the Society supported the development of new scientific theories and discoveries in topics as diverse as geology, paleontology, astronomy, medicine, evolutionary biology, genetics, physics, mathematics, and computing. The Society continues to collect broadly in these and other areas; today, the history of science collections represent well over half of the materials held at the Library & Museum.

"America's Scientific Revolutionaries"

Inspired by the 250th anniversary of the Declaration of Independence, "America's Scientific Revolutionaries" is a two-year initiative exploring the contributions of lesser-known scientists and physicians active during the Age of Revolutions. The project is generously supported by the Richard Lounsbery Foundation and consists of public programs, educational resources, podcasts, and written profiles intended to enrich public understanding of the historical significance of scientific ideas in the formation of the United States. To learn more, please visit https://www.amphilsoc.org/americas-scientific-revolutionaries.

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