

Build a Homemade
Natural History Museum

A Fun Summer Project for Kids!



Created by Aurora Lipper

Summer is a great time to be outdoors and explore the world around you! The days are filled with taking nature walks, discovering hiking trails, spending the afternoon exploring the sea shore... it's limitless!

Even though it doesn't look like "learning" (no textbook, no desk...), kids will learn much more by being *in* nature than they ever will *reading* about it. It's a fantastic opportunity for kids to learn how to observe animal behavior, discover how to use their field instruments like microscopes and telescopes, and really be amazed at the diversity in their local ecosystem.

This summer, discover what nature has to offer by building a homemade natural history museum! Kids will collect, explore and curate things from nature and then study selected pieces and put them on display with their own identification cards. Kids will also be the ones to lead guests through their collections and answer questions about the treasures they have gathered.

What does "curate" mean? To *curate* mean to carefully gather and choose. Kids will curate their items from nature, meaning that they will carefully select the piece they want to bring into their collection, learn about each one, keep it organized in a way that makes sense, and share their treasure and knowledge with friends.

Are you ready to get started?

Step 1: Plan a trip to a Natural History Museum!

Before you do start your own museum, get inspired by other scientists and explorers who have already done an amazing job on their natural history museums. Take a notebook with you and take notes on what you like and how you think you can bring into your own private museum.

You can visit your local natural history museum, or use one of the links for an online tour from the list below:

- [Smithsonian National Museum of Natural History](#)
- [American Museum of Natural History, New York](#)
- [Monterey Bay Aquarium](#)
- [San Diego Zoo Wildlife Alliance](#)
- [Natural History Museum, London](#)
- [Museum of New Zealand](#)
- [French National Museum of Natural History in Paris](#)
- [Field Museum in Chicago, Illinois](#)
- [Denver Museum of Nature and Science](#)
- [Natural History Museum in Vienna, Austria](#)
- [Melbourne Museum in Australia](#)
- [Beijing Museum of Natural History in China](#)

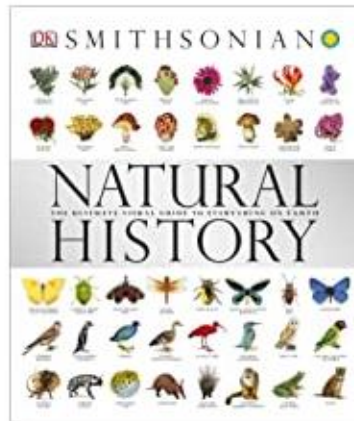
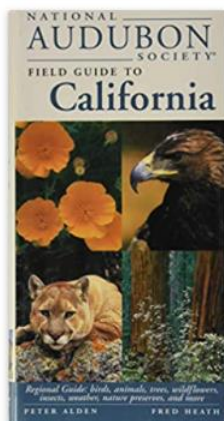
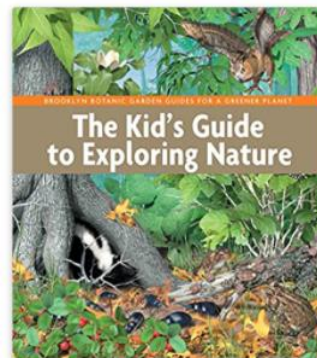
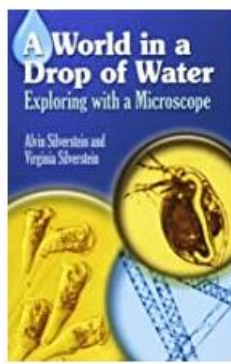
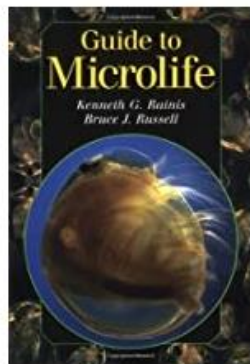
Step 2: Find a suitable space for your museum

You'll want the MOST amount of space you can find to store and display your treasures. Usually, kids collect *a lot* more items than they have space for, so find an empty area with: plenty of open shelving, cabinets with glass doors, tables that hold trays of rock samples, strings of yarn tacked to the wall with clothespins to hang delicate samples like feathers and herbs that need to dry.



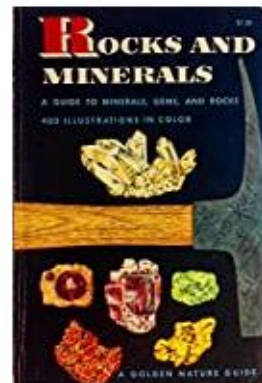
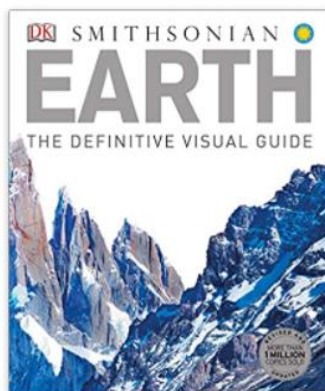
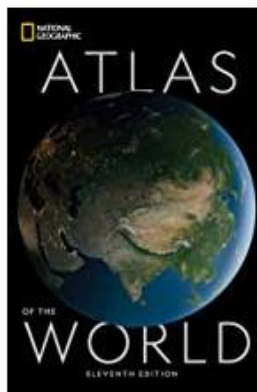
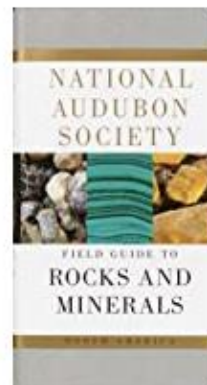
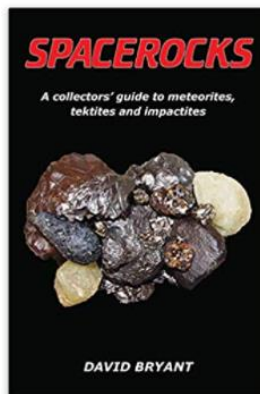
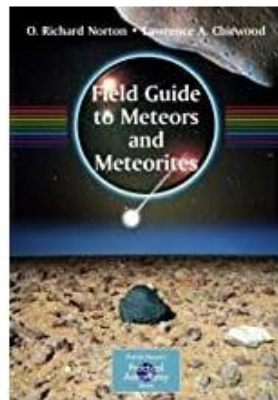
Also be sure to have a library! As you learn to identify your specimens, you'll start gathering books in your collection as well. Here are some of my favorites for living organisms:

1. *Guide to Microlife* by Rainis (or other microorganism reference book)
2. *A World in a Drop of Water* by Silverstein
3. *Kids Guide to Exploring Nature* by Brooklyn Botanic Garden Educators
4. *National Audubon Society Field Guide* (for your area)
5. *Natural History* by the Smithsonian Institution
6. *National Geographic Field Guide to Birds*, Alderfer, Dunn

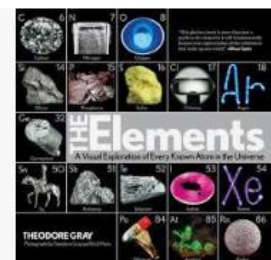


There are many wonderful books to have on hand for kids that are also interested in rocks and minerals, Here's a short list of my favorites:

7. *Field Guide to Meteors and Meteorites* by Norton
8. *Spacerocks* by Bryant
9. *National Audubon Society Field Guide to Rocks and Minerals*
10. *Rocks and Minerals* by Zim
11. *Atlas of the World* by National Geographic
12. *Earth* by Smithsonian



On the walls, you might want to include a periodic table (the one by [Theodore Gray](#) is excellent, and there's a book that goes with it). I would also include a world map *and* a detailed map of your country.



Step 3: Take a nature walk!

Before you start out, make sure you have these items in your pack to help you gather items. For really small kids, you can make them an inside-out masking-tape bracelet to stick their treasures on. The type of containers you take with you will depend on what you want to collect.

Here's a list of ideas you can choose from:

- Plastic zipper-type bag or empty water bottle for water samples
- Small bag for seeds and pods
- Port-a-bug or similar pop-up bug box for delicate living organisms
- [Insect aspirator](#) to collect insects without touching them (you can make your own)
- Egg carton to keep samples separate (and you can write info in each cup)
- Camera for items you can't take (like a tree)
- Magnifying lens (10x is a good size)
- Ruler or flexible tape measure for measuring tree circumference or rock sizes
- Separate bag for heavy samples like rocks (so they don't crush your delicate stuff)
- Notebook (I will also put leaf samples in the blank pages of my book to keep their shape)
- Pencils

If you're visiting a local pond, swamp or dam, you'll also want a net you can dip to catch organisms (or make your own from cheesecloth and a wire coat hanger). Bring large enough containers for your organisms to be happy in their environment while you study them.

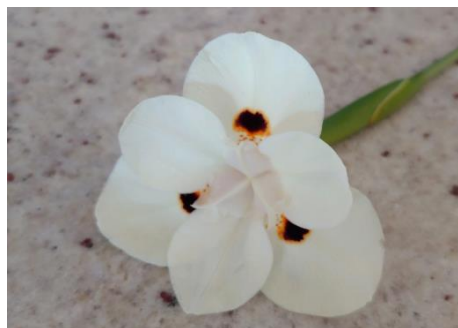


What types of things to collect? Collect the things that have naturally fallen to the ground that interest you, and steer clear of things prohibited in your area (or things that are just not a good idea, like poison ivy, any and all mushrooms...).

Here's a short list of things you might like to have for your collection:

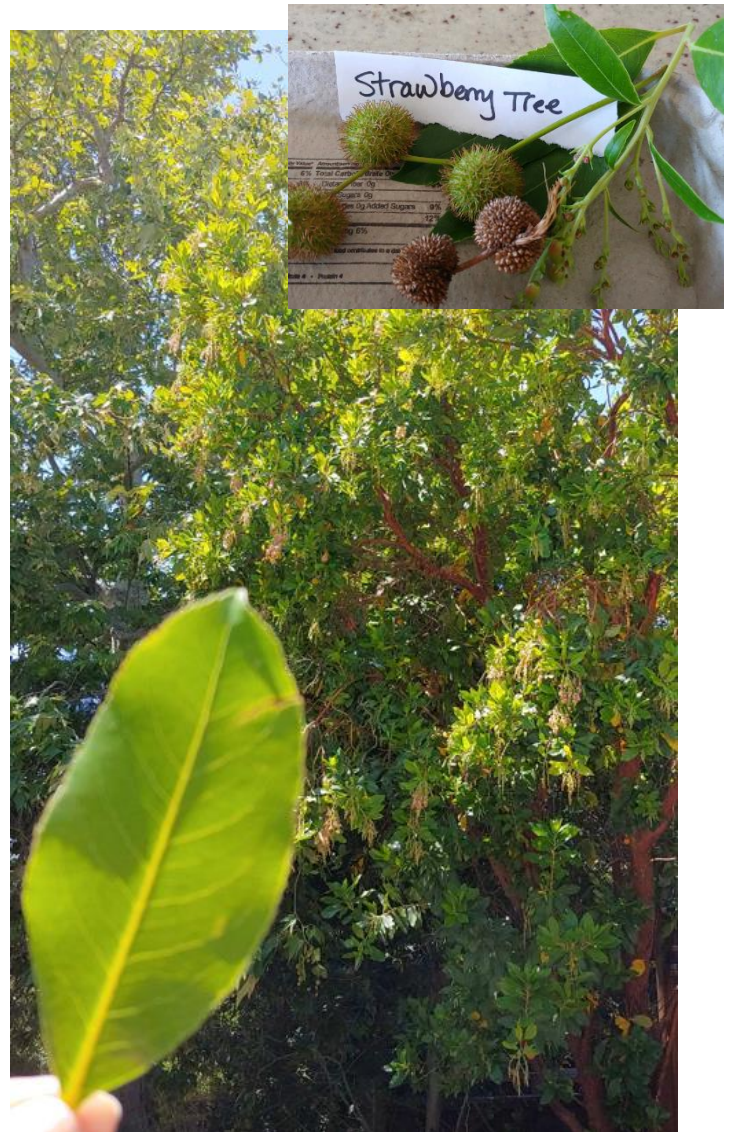
- Bark from local trees, sticks, pieces of wood (and driftwood)
- Feathers dropped from birds
- Seeds, pinecones acorns, pods
- Leaves, flowers, stems, roots, grasses, moss
- Dirt samples, sand samples
- Rocks and minerals
- Snake skins, reptile skin shedding remnants
- Abandoned or empty shells, like snail, crab, or turtle
- Pollen
- Sea shells
- Moss
- Pond water samples

Stuck indoors for a while? You can find interesting things in windowsills, rain gutters, under beds, or other places that don't get cleaned often. Cobwebs, dead bugs, and more await you!



Pro Tips: Initially, kids are so excited about collecting that all the zeal goes into filling the box or container with as much nature as they can find. The trouble is, bark samples and leaves look similar when you get back indoors, and it can be confusing to tell them apart. Here's a couple of tips for when you gather your nature items:

1. Hold your leaf or bark sample at arm's length and take a picture of both the leaf and the tree it came from to help you identify the leaf later on. You can later add the picture of the tree when you display your leaf in your museum, along with the specimen card (example of both shown at the right).
2. Make a note when you take samples about where you found it and what you think it is in your notebook and assign a number, and then use a marker (or write on a piece of sticky tape stuck to your sample) to write your sample number on the specimen itself. For wet samples, you can write right on the plastic water bottle.



Specimen Card Example

Your specimen card can have as much information as you want. At the very least, include the name, scientific name, where you found it (or where it's native to) and basic information you observed like size, weight and color.

Strawberry Tree *Arbutus Unedo* is an evergreen flowering plant native to Western Europe and the Mediterranean region.

The trees grow 4 to 7 meters tall; the trunk is 250 cm in circumference. Leaves are 3cm by 10cm long, berries are 2cm in diameter with a rough surface. It takes berries a full year to ripen, and tastes sweet when ripe and red. The small brown seeds are spread by birds. Flowers are white and shaped like bells and are pollinated by bees.

The Strawberry Tree is the national tree of Italy due to its colors (red berries, white flowers, green leaves) being that of the Italian flag. Leaves are shiny on one side, dull on the other. The branches are reddish brown and have small hairs.

The name "unedo" came from Pliny the Elder, who said "unum tantum edo", meaning "I eat only one", though it's not clear whether he meant that the fruit was so good he could eat only one, or whether he meant that the fruit was uninteresting so he ate only one.

Step 4: Sorting and Organizing

Once you've returned home, it's time for the fun part! Set out all of your samples, and select the ones that you definitely know what they are. Pull out a sheet of paper or use index cards for your specimen cards, and start writing information about each object on the card.

What do I write? Include the name of the item, the scientific name, fun facts, and where you found it. Try to include information that guests will find enjoyable to learn about. You can get out your magnifying lens or use a microscope to see more detail as you work on describing each piece. (Refer to example on page 7.)

What to do if you don't know what it is? If it's growing natively, you will be able to find information through your local community, nursery, and park and ranger services. I also have pocket guides on local birds and flowers that I keep handy. In a pinch you can try apps like PlantNet, but these are not as accurate as browsing through a nature guidebook.



Once you've started labeling the items you know, do a little more research (use books or get help from an adult doing online research with state parks, state forest services, local arboretums or your local Audubon society) to learn at least three new things about each item. Write this information down and when it's ready, you can put each item on display that you've labeled.

Specimen boxes are sometimes used to keep collections together. Use cardboard or shoe boxes and attach the index card to the back and place your items in front.

For items that are extra special, you can find small shadow boxes that are transparent, so people can lift and examine your items easily. Some mount on a wall to be displayed. You can even find tiny, 1-inch boxes, like the one below on the right, that have a magnifier built right into the lid (called [magnifier bug boxes](#)).



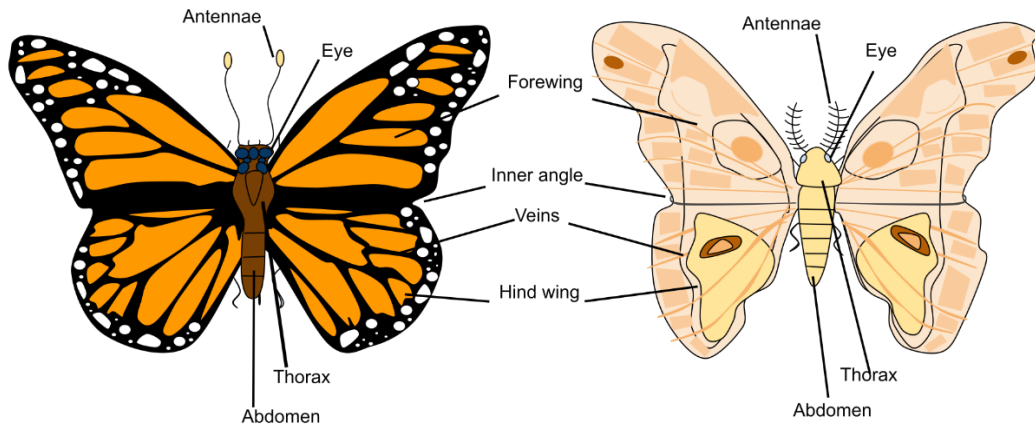
Mounting specimens Do not kill insects, including butterflies, to collect them. This section is only for when you find deceased animals. Good places to look are windowsills (especially up-high ones), attics, garages, around the upper frame of doorways, and high shelves in your home.

Most kids that start collecting will eventually find a butterfly (or part of one). Although mounting a butterfly takes patience, it's an eye-catching addition to your museum! (Dragonflies too!)

You'll need a [spreading board](#) (you can also use a piece of foam with a groove cut down the middle), a tupperware container, pins and a paper towel. Here's how you mount it:



1. Butterflies turn brittle very quickly, so we will create a “relaxing” chamber before spreading apart wings. Place the butterfly in a container with a tight-fitting lid on a damp paper towel (the paper towel goes in first). (You can add a few moth crystals if you want to prevent mold from growing, but this is totally optional.) Leave it alone for 12-24 hours.
2. The water has now been absorbed into the body and wings, and the trick here is knowing when the butterfly is ready. Larger butterflies will take a bit longer. Gently feel the body– it should feel nearly alive, not brittle. Don’t touch the wings with your fingers.



3. After the butterfly has been hydrated properly, gently hold the thorax and gently squeeze, and the wings will open just a little bit. You can use tweezers or forceps if you prefer.
4. Carefully insert a pin through the thorax about halfway through, right between the wings. If the wings start to move backwards, push the pin all the way through right into your mounting board, and then gently move the wings into position with forceps. The butterfly should be pinned onto your mounting board, with its body in the groove.
5. Place thin strips of paper or index card over each side of the wings, close to the body. This will hold the wings down. Use pins to hold the paper strips down. Do not put pins in the wings or you will tear the wings.
6. Move each forewing and hind wing into position with forceps, and move the antennae into a V shape.
7. Dry your butterfly on the board for 24-48 hours. When it’s dry, remove all pins carefully except through the thorax. Use this pin to attach your butterfly to its display case. If your butterfly breaks, you can usually fix it with a little clear glue.



For living organisms, please be sure you're allowed to collect them in your area. Try to keep them for less than 24 hours before you release them back into their natural habitat. We're talking about tadpoles and insects here, not birds and snakes (which should not be collected).

A natural history museum isn't quite the same thing as a wildlife reserve, so if you really want to have *live* animals in your museum, you *must* take care of them. If that sounds like something you'd like to do, then I recommend growing and hatching your own of any of the following:

- [Painted Lady Butterfly Pavilion](#)
- [Red Harvester Ant Ecosystem](#)
- [Tadpole to Leopard Frog Kit](#)
- [Venus Fly Trap Carnivorous Plant Garden](#)
- [Marimo Moss Ball Terrarium](#)
- [Red Worm Farm](#) and [Uncle Jim's Composting Worms](#)
- [Purple Pincher Hermit Crabs](#)



Each of the above links has complete care instructions and support for you as you learn how to prepare, grow, and take care of your animals. You'll also want to look up good reference books and learn all you can so you can take the best care possible of your animals!

Botany If you're growing seeds, you can build an indoor terrarium from clean, empty glass jars or plastic bottles. If you collect dirt samples, it may be tough to find the critters that are living in your sample, so make a simple [Berlese funnel](#) to separate the dirt from the critters.

For leaves and flowers, you can make a simple [plant press](#) to flatten them for display, and then mount them in frames, or by using sheet protectors, or mount the sample between two pieces of clear packing tape.

How to organize my collection? When you visited a local museum, you probably got a feel for how items were organized, what type of information accompanied each item, and so forth. Use your notes to help you figure out how you want to organize and display your treasures for your guests. For small items, you can rotate your collection through wall-mounted display boxes:



Bonus: Adding Geography Print out a map of the areas you are collecting, and you can color-coordinate your samples with colors on the map!

For example, if you collected sand from a beach in Santa Cruz, you can color the city in red or use a red tack and also write the information about the sand on a red index card (or put red sticky dots on both so you know they go together). You can map areas in your county or on a larger area map, depending on how far you trek.



Bonus! Adding a Microscopic View You can have a microscope set up with special slides of specimens that are permanently mounted. We offer a full microscopes set of labs with a real biologist, so if you're a member of our homeschool science program, please go here to find the [live microscope lessons](#).

Step 5: Tours and Treks!

After your natural history museum is created, it's time to offer a tour! Invite family and friends to take turns exploring your museum as you explain the items to them. Keep expanding your museum each time you take a trek into nature, and you'll truly be amazed by how much you're learning and how much fun you're having!