# A World in One Cubic Foot: Discover the Nature that Surrounds You

## Activity at a Glance for Teachers and Caregivers

There is a lot of life just outside our door that we never see - in the grass, under rocks, hidden bushes or in the water. Exploring this hidden life or biodiversity is a fantastic way to connect with the natural world while practicing scientific thinking and science skills. One way to do this is to use a Biocube, which allows one to look for the biodiversity in a cubic foot of space. In this activity, explorers build a Biocube out of household items, then use it to investigate nature in a small area just outside their home. Their goal is to connect with nature and investigate the hidden life that is outside their home. This activity is intended to be done by individuals or family groups while at home. It is modified from [*Biocubes - Exploring Biodiversity*](https://naturalhistory.si.edu/education/teaching-resources/life-science/biocubes-exploring-biodiversity)project that has been done by school and youth groups across the U.S. Please watch [*Biocubes: A World in One Cubic Foot*](https://naturalhistory.si.edu/education/teaching-resources/life-science/biocubes-exploring-biodiversity)to get started.

### Learning Goals

* Get outside to connect with nature
* Observe and document the biodiversity that lives near you by looking for hidden life in a cubic foot of space.
* Develop science skills, such as making observations, sorting and identifying plants and animals, recording data, drawing conclusions, and creative problem solving.

### Time & Resources

The length of time it takes to complete the investigation and the supplies you need are very adaptable depending on interest, time, age, and availability of household items. The investigation can be done all at once or spread out over a couple of days. Below are recommended times and supplies for each step.

#### Step 1: Build a Biocube

Explorers find household items to build a 12inch cubic frame that they will place outside to determine where they will collect plants and animals.

Time: 20-30 minutes

Supplies:

* [Recording Sheet](https://naturalhistory.si.edu/sites/default/files/media/file/biocube-recording-sheet-v2.docx) or paper
* Pencil
* Biocube sides = approximately 12, 12-inch-long thin pieces of sturdy material such as aluminum tubes, pencils, PVC, stiff wire, or other creative solution.
* Biocube corners = fasteners such as wire, tape, glue, clay, or other creative solution
* Optional: [Watch Video: Building a Biocube](https://naturalhistory.si.edu/education/teaching-resources/life-science/biocubes-exploring-biodiversity/building-biocube)
* Optional: [Recording Sheet](https://naturalhistory.si.edu/sites/default/files/media/file/biocube-recording-sheet-v2.docx)

#### Step 2: Select Your Space and Place your Biocube

Explorers look around their yard, sidewalk, parking lot, or other outdoor space outside their home to find where they want to place their Biocube. look for areas where they think they can find a lot of different plants and animals, then place their cube. This can be in a tree, halfway underground, on top of grass, at the edge of a stream, or other placement.

**Time:** 10-20 minutes

**Supplies:**

* Optional: [Watch Video: Selecting a Spot and Placing a Biocube](https://naturalhistory.si.edu/education/teaching-resources/life-science/biocubes-exploring-biodiversity/selecting-spot)

#### Step 3: Observe your Biocube

Explorers spend time observing the life in and around their Biocube sitting quietly from a distance. They then look around inside their Biocube to see what they find. Record observations on the *Recording Sheet* or own paper.

**Time:** 10 - 30 minutes

**Supplies:**

* Optional: [Watch Video: Observing Life in the Cube](https://naturalhistory.si.edu/education/teaching-resources/life-science/biocubes-exploring-biodiversity/observing-life-biocube)

**Step 4: Gather Your Collecting & Sorting Supplies -** Explorers look for household items that will help them remove their Biocube from its location and to sort all of the plants and animals that they find inside.

**Time:** 10 - 30 minutes

**Supplies:**

* Buckets, shovels, scoops, nets are helpful for removing the Biocube contents, but hands can also work!
* Spoons, tweezers, ice cube trays, cups, plates, bowls are helpful for sorting the plants and animals found.
* Optional: [Watch Video: Collecting Motile (moving) Biocube Specimens](https://naturalhistory.si.edu/education/teaching-resources/life-science/biocubes-exploring-biodiversity/collecting-motile-biocube)
* Optional: [Watch Video: Collecting the Contents of the Biocube](https://naturalhistory.si.edu/education/teaching-resources/life-science/biocubes-exploring-biodiversity/collecting-contents-cube)

#### Step 5: Explore Your Biocube

Explorers remove the contents of their Biocube so that they can sort through it looking for plants and animals. They sort what they find by putting similar types of plants and animals together in a container that they can then count and identify.

**Time:** 30 - 120 minutes

**Supplies:**

* Use the resources collected above. Explorers may need to improvise and do some problem solving as they work. This is GREAT and an important part of science.
* Depending on interest and age, explorers can identify what they found using general categories such as *worm, beetle, grass, flower*, or more specific identifications to genus or species name. Apps such as iNaturalist (<https://www.inaturalist.org>) and Seek (<https://www.inaturalist.org/pages/seek_app>) allow explorers to take a picture and have a community of experts help identify it. Other websites and books on species identification are another great resource. If you have no access to identification guides, stick with the general categories.
* Use the *Recording Sheet* or paper to record the plants and animals they find.
* Optional: Phone or camera to take pictures.

#### Step 6: *Share*

Explorers name and count what they have found and share what they learn.

**Time:** 20 - 60 minutes

**Supplies:**

* Paper and pencil