



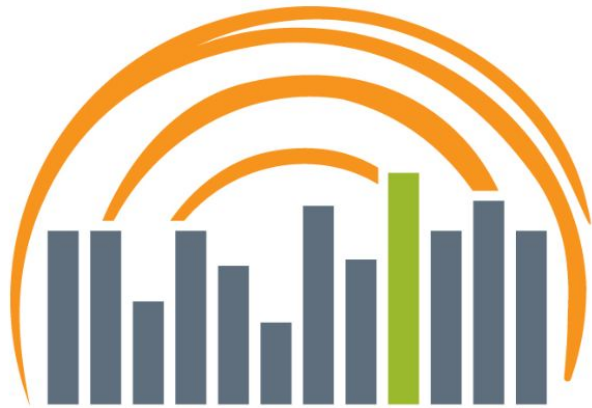
**WITH CITIZEN**

**SCIENCE**  
February 4, 2025

# PARTNERS & PRESENTERS



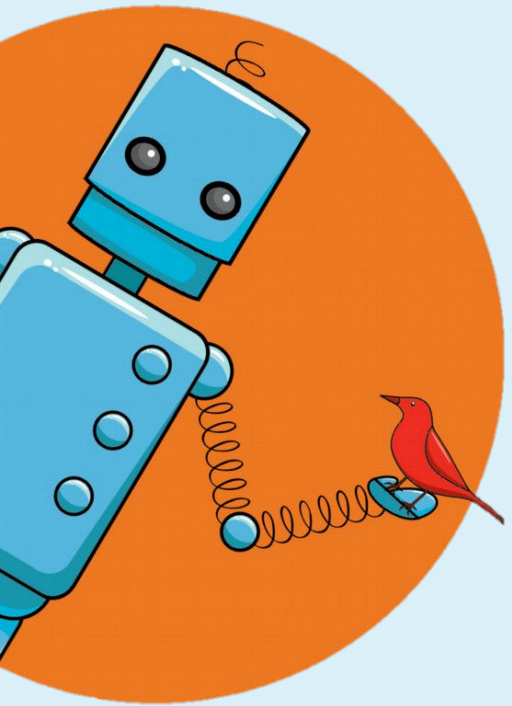
# A Word from our Partners



**collaborative**

summer **library program**™

Cathy Lancaster, Library of Michigan  
Past-President of CSLP



# Citizen Science 101

*Also called community science, participatory science, crowdsourced research.*

**Poll: How familiar are you with citizen science?**



# What is citizen science?

**A global movement that enables people from all walks of life to contribute to **real scientific research** in collaboration with scientists.**

# Citizen Science can involve...

<b>Observing</b>	Biodiversity, Night Sky
<b>Monitoring</b>	Wild Life, Pollinator Activity, Bird Migration
<b>Measuring</b>	Water Quality, Light Pollution, Marine Debris
<b>Analyzing</b>	Videos and Images online
<b>Collecting</b>	Photos and Samples



*in your backyard, while exploring your interests, through your hobbies, with your family, and more!*

# Because of citizen scientists ...

- We know the **human belly buttons contain 50+ species of bacteria**
- **3.5 months of lab-equivalent research was completed** in one weekend through 2,566 hours of volunteer participation
- **Hundreds of exoplanets have been discovered**, including “Percival,” an exoplanet in a habitable zone
- **126 birds species identified as “lost to science”**
- We’ve discovered that some **invasive ants spread by hitchhiking**



# The Difference Between STEM Programs and Citizen Science

STEM programs **teach** people about science/STEM topics.

Citizen/Community Science projects also **engage people in collecting and sharing observations and data** to accelerate research! People *AND* scientists learn!





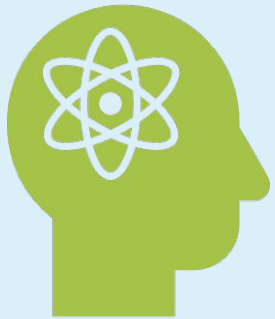
# Benefits to Science & Society



Broadens the scope of who can contribute to science.



Enables people to engage in data collection, analysis, and interpretation.



Empowers lifelong learning about science and nature.



Accelerates important research and discovery.

# Which of these activities is citizen science? There may be more than one answer.

**A** Take a photo of a plant during a nature hike and upload to *iNaturalist*



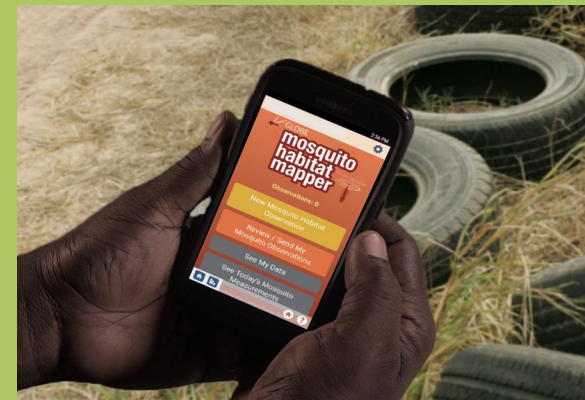
**B** Organize a beach clean up



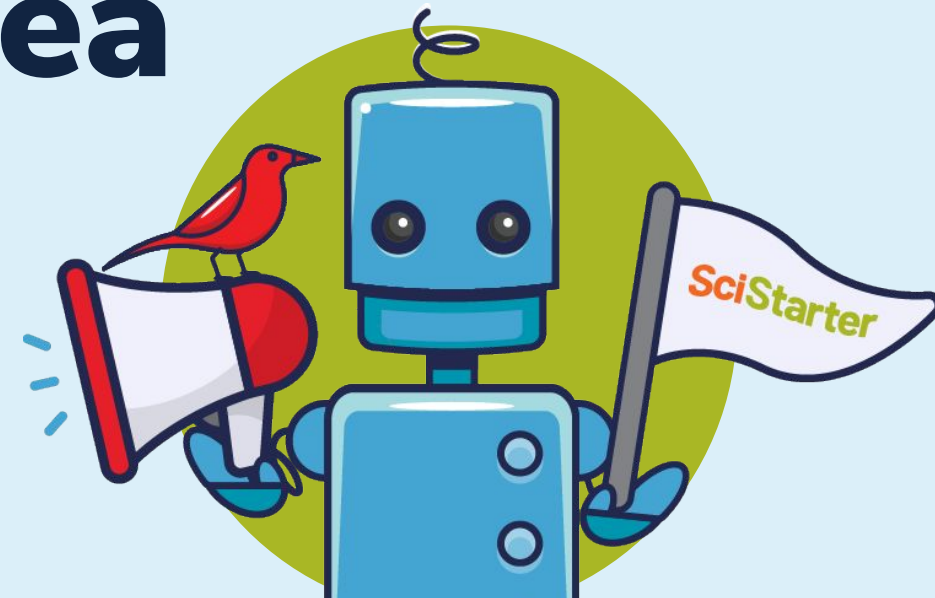
**C** Plant a pollinator garden to increase pollinator activity



**D** Test your local tap water and report findings to *Crowd the Tap*



# Citizen Science & STEAM Activities from Space to Sea



# Art is a Bridge for Scientific Exploration and Community Building

Art-Science  
Fusion  
Events

Community  
Art & Maker  
Projects

Advocacy  
Posters and  
Campaigns

Storytelling  
and Data  
Visualization

*Connecting citizen science to art can create powerful interdisciplinary opportunities to engage audiences, inspire creativity, and deepen understanding.*

# Globe at Night: Measure Light Pollution



- International citizen-science campaign to raise public awareness of the impact of light pollution
- Participants measure & submit their night sky brightness observations

# Globe at Night: Measure Light Pollution

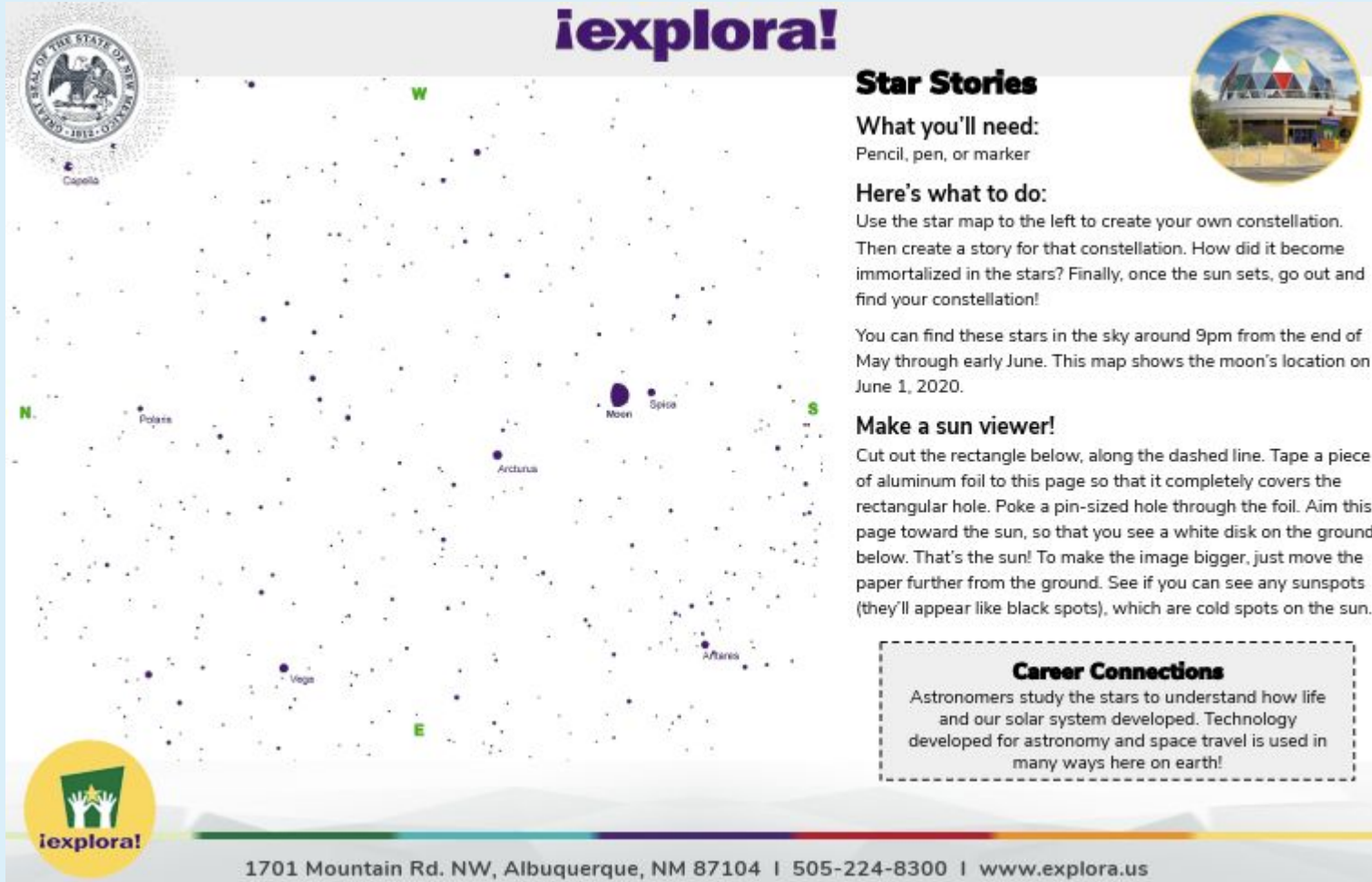
- Go outside during campaign dates. *The Moon should not be up.*
- Use the app to select a constellation and your location
- Observe and match to the star chart that's closest to what you see
- Or take light meter measurement
- Submit your data



Kit-Building  
Guide  
Available



# Create your Own Constellation



The image shows a star map titled "iexplora!" with a grid of stars. The map includes a circular inset of a building with a colorful dome. The map is labeled with "N", "W", "E", and "S" for cardinal directions. Stars are labeled with names like "Capella", "Polaris", "Moon", "Spica", "Arcturus", "Vega", and "Antares". The map is part of a worksheet for creating a constellation.

**Star Stories**

**What you'll need:**  
Pencil, pen, or marker

**Here's what to do:**  
Use the star map to the left to create your own constellation. Then create a story for that constellation. How did it become immortalized in the stars? Finally, once the sun sets, go out and find your constellation!

You can find these stars in the sky around 9pm from the end of May through early June. This map shows the moon's location on June 1, 2020.

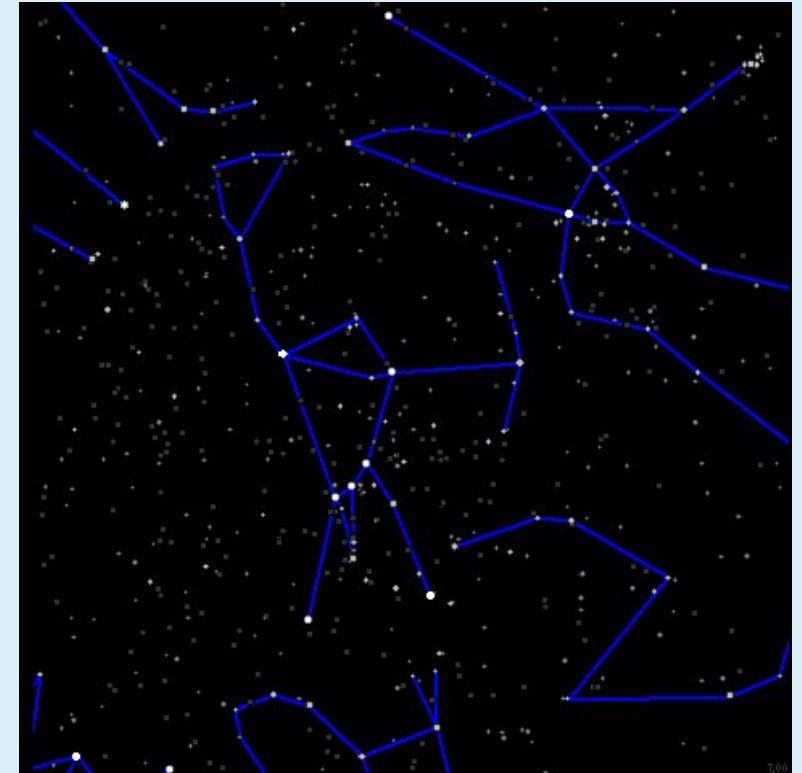
**Make a sun viewer!**

Cut out the rectangle below, along the dashed line. Tape a piece of aluminum foil to this page so that it completely covers the rectangular hole. Poke a pin-sized hole through the foil. Aim this page toward the sun, so that you see a white disk on the ground below. That's the sun! To make the image bigger, just move the paper further from the ground. See if you can see any sunspots (they'll appear like black spots), which are cold spots on the sun.

**Career Connections**

Astronomers study the stars to understand how life and our solar system developed. Technology developed for astronomy and space travel is used in many ways here on earth!

1701 Mountain Rd. NW, Albuquerque, NM 87104 | 505-224-8300 | [www.explora.us](http://www.explora.us)



# EZIE Mag: Monitor Earth's magnetic field



- Team up with Johns Hopkins Applied Physics Lab on NASA's EZIE Mission to ground truth magnetic field measurements
- Participants use a science-grade magnetometer to measure electrical currents & submit data



# EZIE Mag: Monitor Earth's magnetic field

- Apply for an EZIE Magnetometer
- Invite your community to learn about the Earth's magnetic field and demonstrate the use of a magnetometer.
- Follow instructions for placement outside
- Take measurements at least twice a month and submit data to the projects



Free while  
supplies last.  
Apply now!



# Aurora Chalk Art

Create your own artwork inspired by the northern lights!

## Materials Needed:

Aurora stencil (or draw your own), black paper, colored chalk, scissors.

*Optional:* Tissues.

## Instructions:

**Step 1:** Cut out the aurora stencil. If making your own, cut a strip of white paper or cardstock in a wavy aurora shape.

**Step 2:** Color the top edge of the stencil with colored chalk.

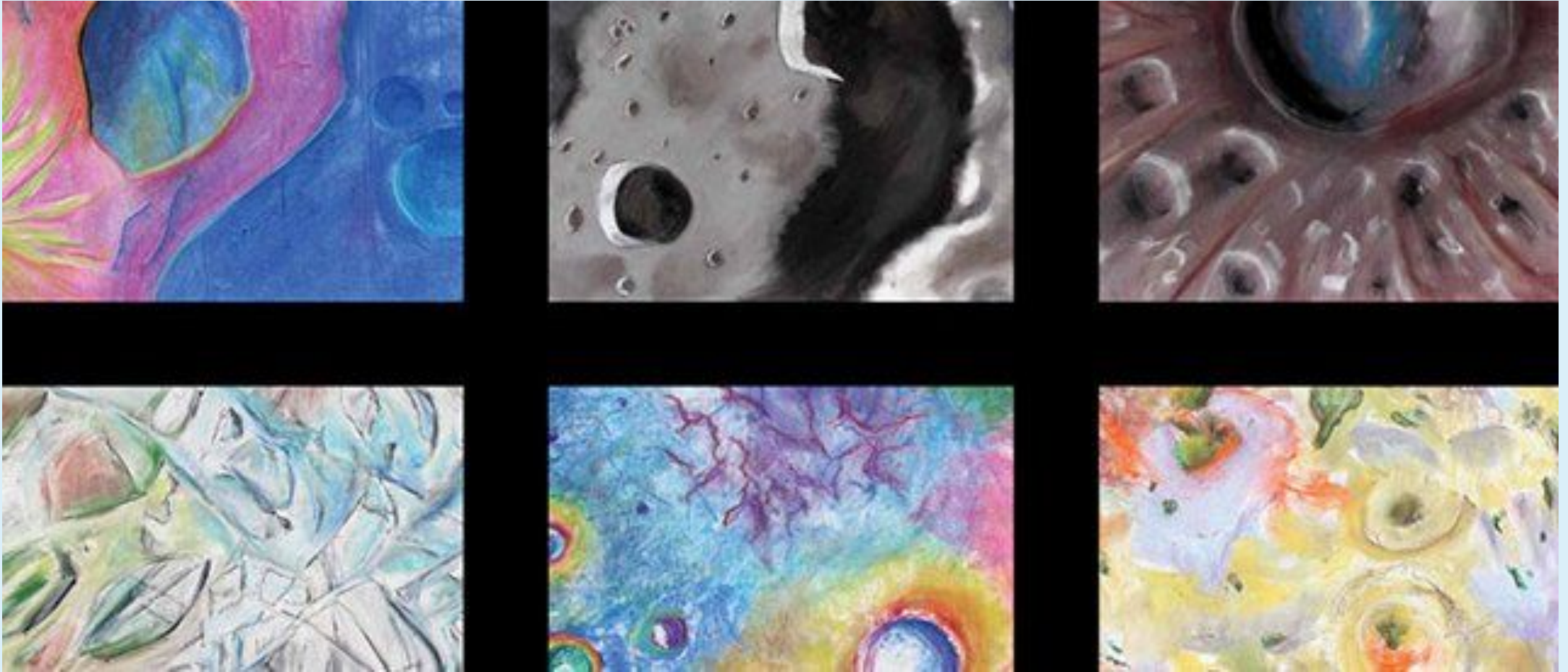
**Step 3:** Place the colored stencil on your black paper, chalk side up. Smudge the chalk onto the black paper using your finger or a tissue.

**Step 4:** Repeat using different colors to fill the sky with the colors of the aurora.

**Step 5:** Add a cabin, trees, campfires, or other things you might see under the northern lights. Be creative!



# Art and the Cosmic Connection





- **NASA Images**
- **Pastels**
- **Blending tools (Qtips, erasers, paper)**
- **Baby wipes**
- **Setting spray**



# Elements of Art and their Geology Matches

- **Circle:** impact feature or crater
- **Blobs:** volcanic processes or surface liquid (rivers and seas)
- **Straight Lines:** tectonic activity
- **Squiggly Lines:** forces of erosion
- **Color:** different frequencies of the electromagnetic spectrum
- **Value (contrast of light and dark):** albedo/reflectivity of a surface
- **Texture:** tactile quality of the surface

# Land & Air

# NASA's GLOBE Observer: 4 Choices



- GLOBE Observer is a set of 4 projects (protocols) to supplement satellite data on Earth's ground conditions.
- Collect data on land cover, clouds, tree size, and mosquito populations to help NASA predict weather patterns, understand biomass, predict spread of mosquito-borne illness

# NASA's GLOBE Observer: 4 Choices

- Choose a protocol: Trees, Clouds, Land Cover, or Mosquito Mapper
- Follow instructions for the protocol. In some protocols, this requires some extra materials
- Take measurements and submit the data, all done in the app.




Kit-Building  
Guide  
Available for  
Mosquito  
Mapper





# Cloudscape

Elementary  Do You Know That Clouds Have Names?  
NAME: \_\_\_\_\_

**Cloudscape Student Activity Sheet**

Date \_\_\_\_\_

### Cloud Features

Color \_\_\_\_\_

My cloud is  Low  Middle  High

Size \_\_\_\_\_

Shape \_\_\_\_\_

Other features \_\_\_\_\_

My cloud looks like this!

One word that describes my cloud is...

© 2006 University Corporation for Atmospheric Research All Rights Reserved



Sky window printout

Cloud materials (fabric, cotton, etc.)

Cloud identification chart

Glue

Crayons and/or markers

Paper strips for labeling

Blue cardstock

Clouds postcard

The image displays a variety of materials and printouts for a cloud science activity. At the top left, there is a 'Sky window printout' featuring a color calibration chart and a 'Clouds postcard' showing a smartphone app interface. In the center, a blue cardstock base holds several materials: white fabric, cotton balls, a tube of glue, yellow and white paper strips, and white markers. To the right, a 'Cloud identification chart' is shown, which is a grid of cloud types categorized by altitude (1000, 500, 100 feet) and includes a 'Sky window printout' with a color calibration chart and a 'Clouds postcard' featuring a smartphone app interface.

# Build a Bug



## Build-A-Bug Library Facilitation Guide

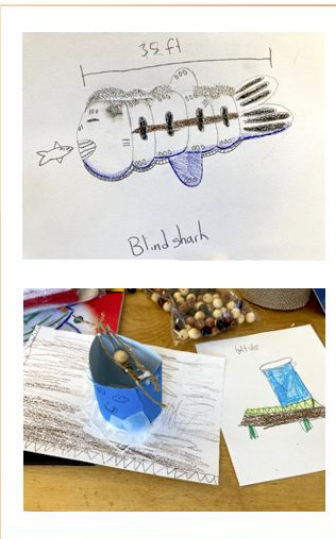
This guide was modified from [USU Extension's](#) water quality activity: [Build-A-Bug](#)

**Activity Time:** 10-30 minutes

**Age Group:** Ages 4 and up

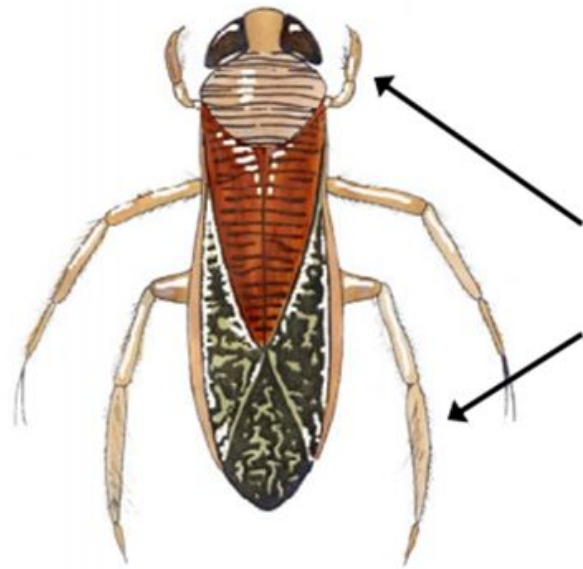
### What's the Point?

- ◆ Adaptations are unique characteristics that plants and animals have that help them survive in their environment.
- ◆ Aquatic animals have many different types of adaptations depending on how deep or shallow the water is where they live, how fast the water flows, what they eat, and how they can defend themselves against predators or other environmental hazards.
- ◆ Aquatic macroinvertebrates are small animals (such as insects, mollusks, and worms) that live in water.
- ◆ Some macroinvertebrates, such as leeches and snails, are very tolerant of pollution in water. Others, such as mayflies and stoneflies, are very sensitive to pollution and may move away or die from such waters. Identifying which species of macroinvertebrates are present in a body of water can help us understand if the water quality is poor or healthy.



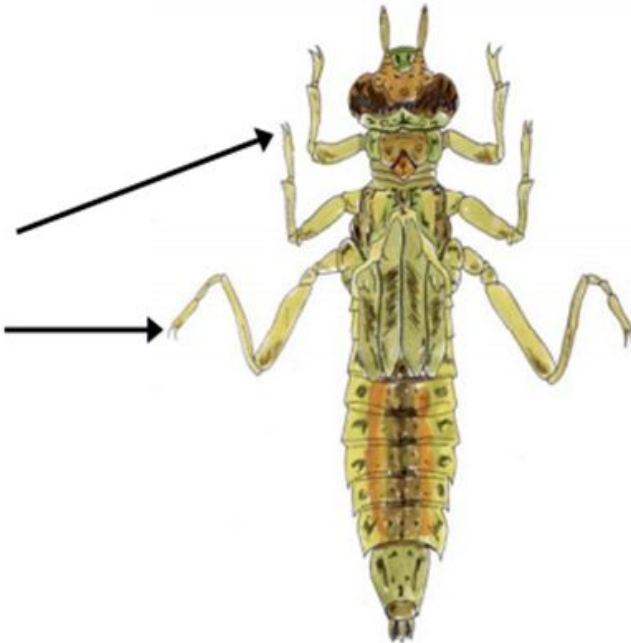
### Materials:

- ◆ Make a Macro-invertebrate Table Sign
- ◆ Photos of macroinvertebrates (pages 4-6 of [Build-A-Bug](#))
- ◆ (Optional): your own model of a macroinvertebrate with three adaptations



The **Water boatman** has paddle-like legs for swimming in slow moving water.

The **Dragonfly nymph** has claws on its legs for capturing prey and for climbing emergent vegetation.



**Macro:** big enough to see without a microscope.

**Invertebrate:** doesn't have a backbone.

## What are some adaptations a macroinvertebrate might need to live in the water?

Facilitation tip: ask probing questions  
Why would it need that?  
How does the adaptation help it survive?

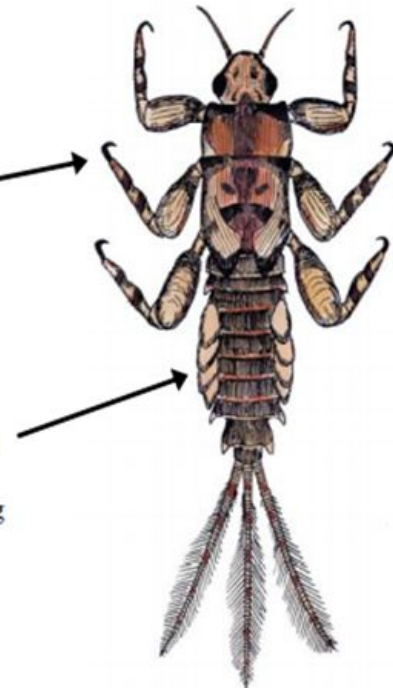


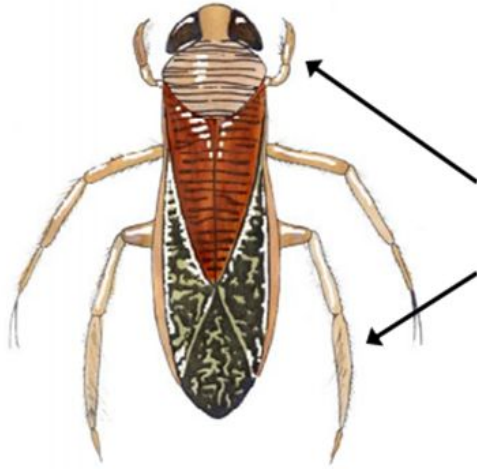
The **Stonefly** nymph has claws for capturing prey and holding on tight to rocky substrates.

The **Stonefly** nymph has gills in its “armpits” for breathing dissolved oxygen in fast flowing streams.

The **Mayfly** nymph has hooks for holding on tight to rocky substrates.

The **Mayfly** nymph has gills on its abdomen for breathing dissolved oxygen in fast flowing streams.



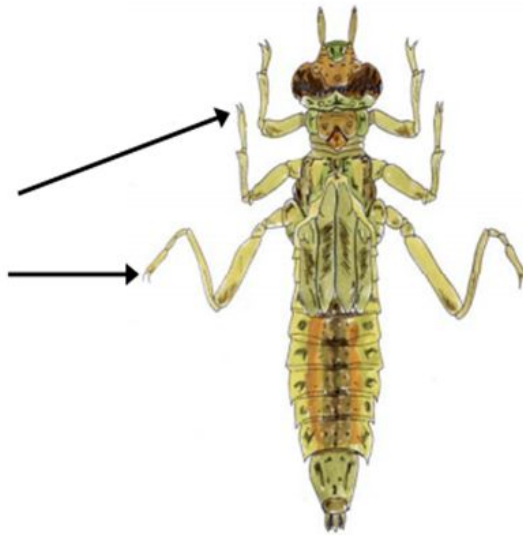


The **Water boatman** has paddle-like legs for swimming in slow moving water.

## Water Quality Connections

Many macroinvertebrates can't live in polluted water. What does the biodiversity of macroinvertebrates tell us about the water quality?

The **Dragonfly nymph** has claws on its legs for capturing prey and for climbing emergent vegetation.



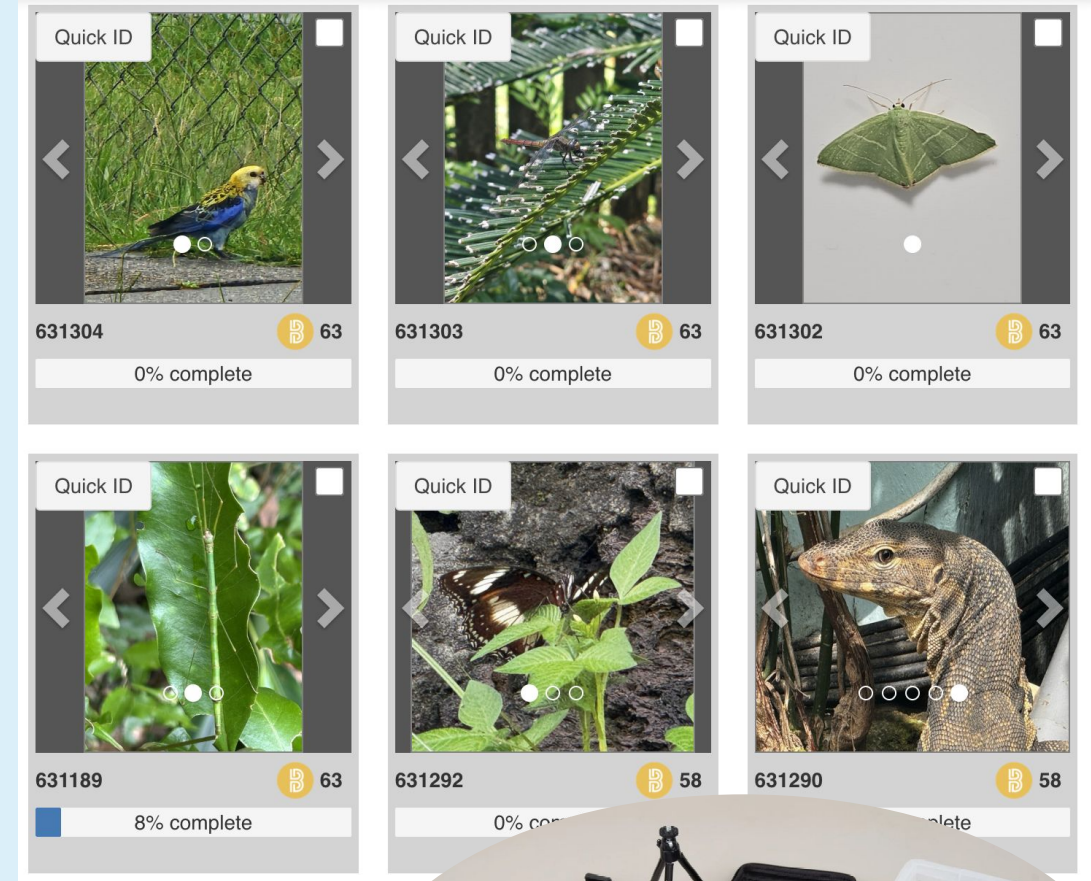
# QUESTAGAME: Pokémon go for Wildlife



- QuestaGame is a free-to-play, outdoor mobile adventure game in which you find plants and animals, photograph, join quests, and challenges.
- Submit sightings of your local flora and fauna while also helping researchers record and protect your local biodiversity.

# QUESTAGAME: Pokémon go for Wildlife

- Download the app and create an account (can also be done on web browser)
- Go outside and start documenting wildlife
- Gamified to earn badges, awards and more
- Help identify the observations made by others
- Submit your data



Related  
Kit-Building  
Guide Available  
(Exploring  
Biodiversity)





# Nature Journaling

**Activity 1**

## Season Seeking



**PHENOMENAL PHENOLOGY**

Observing plants and animals often involves noticing and recording seasonal changes over time. Every species moves through a series of life cycle stages that are related to environmental cues. The study of these life cycle stages is called phenology and the observable stages are called phenophases. Examples of phenophases include the breaking leaf buds on a plant; pollinator interaction with flowers; bird nest building; mammal hibernation; or butterfly emergence from a cocoon.

**You'll Need:** **1+ hours**

- pencil
- markers or colored pencils
- journals, sketch pads, or drawing paper
- optional: SciGirls Nature Nurture Journal
- optional: magnifying glasses, binoculars, plant and animal field guides

**SMART START:**

- ★ For resources about leaves, flowers, and fruits, use the Nature's Notebook phenophase definition sheets ([usanpn.org/nn/species\\_search](http://usanpn.org/nn/species_search)), Botany and Phenophase Primers, local field guides, or someone knowledgeable about the natural history of your area.
- ★ Find a spot that is accessible, whether it's a schoolyard, local botanical garden, arboretum, nature center, park, or wildlife refuge. Observations can start short (10 mins.) and can be made during a walk, hike, or while just sitting, looking, and listening.

**Here's how:**

- 1. Introduce phenology.** Discuss phenophases and phenology. Have the girls brainstorm different phenophases and what time of year they appear. Is there a connection between when a phenophase occurs and what's happening in the environment?<sup>6</sup>

**Nature's Notebook** nature's notebook  
A citizen and professional science program for gathering observations of plant and animal phenology across the United States. Researchers, land managers, gardeners, and naturalists use these observations to understand how species are responding to climate changes and to make decisions on local, national and global scales to ensure the continued vitality of our environment.  
[nn.usa.npn.org](http://nn.usa.npn.org)

**Logos:** tpt, National Science Foundation, infor, National Phenology Network, National Phenology Program, National Phenology Network, National Phenology Program

1-7 See SciGirls Seven strategies on page 3.

4



# Sea

# FathomVerse: Explore & identify ocean life



- FathomVerse is an immersive game where you'll encounter real scientific images collected by robots and researchers around the world.
- Look closely, and be the first to discover the ocean animals you find.

# FathomVerse: Explore & identify ocean life



dive in to discover life  
in the ocean



learn to identify  
ocean animals



get feedback from the  
community



unlock missions and  
expand your library

- Watch the [project walkthrough](#) on Youtube and test out the project for yourself!
- Prepare attendees with instructions to download the mobile app on a personal device, or provide prepared devices like tablets.
- Consider creating a set of library accounts that can be used by participants who do not want to create an account.

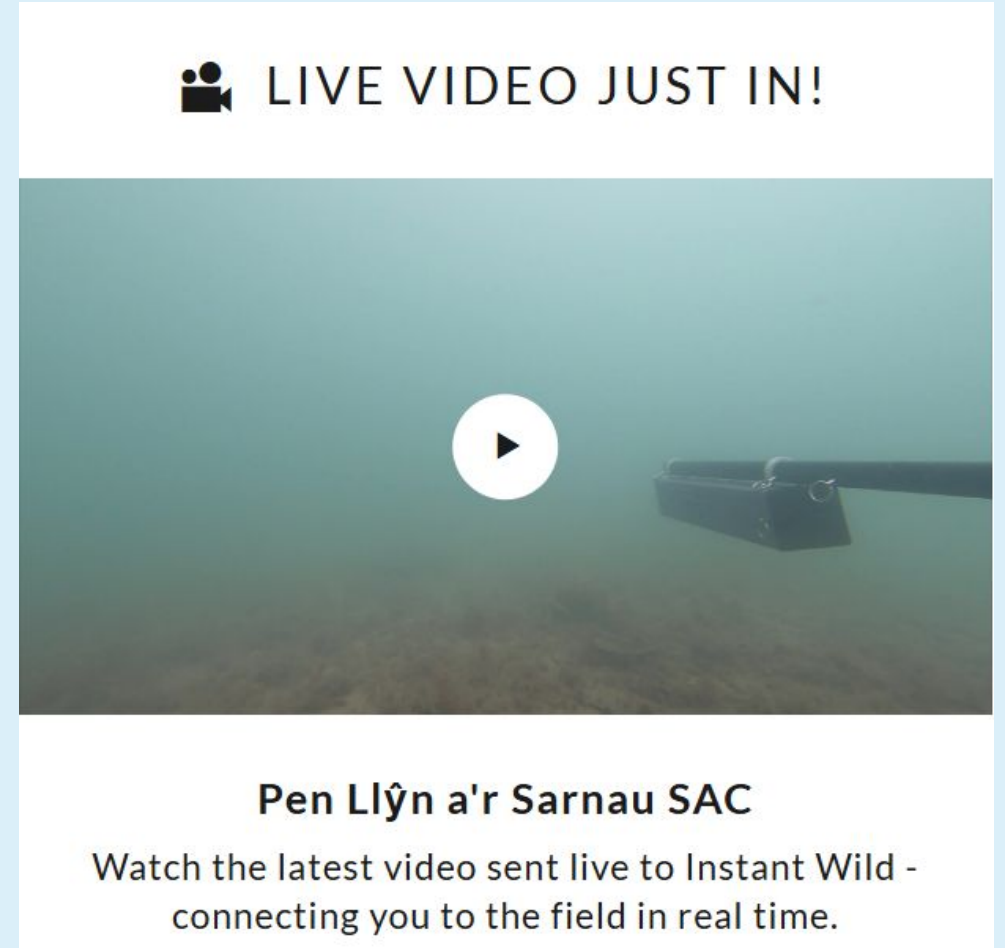
# Instant Wild: Conservation technology, camera trap imaging



- Instant Wild brings you live images from cameras around the world.
- Tag the animals to help conservation research.

# Instant Wild: Camera trap images

- Sign into an SciStarter-connected account or continue as a guest on the Instant Wild Platform
- Pick a project! Both underwater and land camera traps are available.
- Identify which species you see in the images and videos.



## FIN-TASTIC FUN! BLUE WHALE TAIL MURAL ACTIVITY

### Overview:

Blue whales are the largest animals ever to have lived. They can grow up to 100 feet long and weigh as much as 150 tons. Blue whales use their powerful tails to propel themselves across thousands of miles of ocean. In this activity, participants will be able to experience exactly how big a blue whale's tail can grow by working together to create a life-sized mural. This activity works well as a passive program or facilitated program.

### Target Age:

Family, Multigenerational,  
Pre-K, Early Elementary, Upper  
Elementary, Tweens (9-12), Teens,  
Adults

### Prep Time:

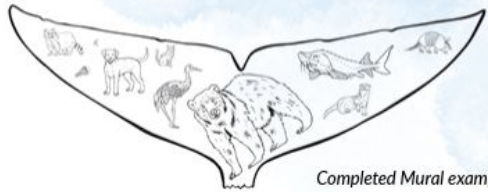
1 hour

### Activity Duration:

20-40 minutes, passive

### Perfect for:

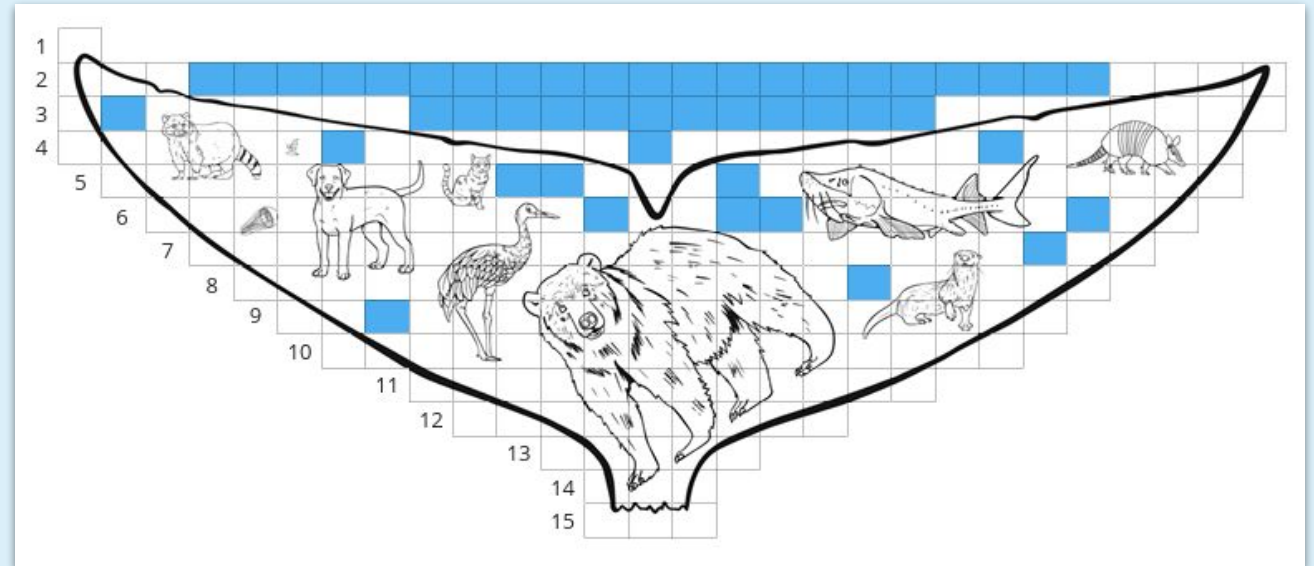
Open space indoors, libraries,  
unused hallways



Completed Mural example

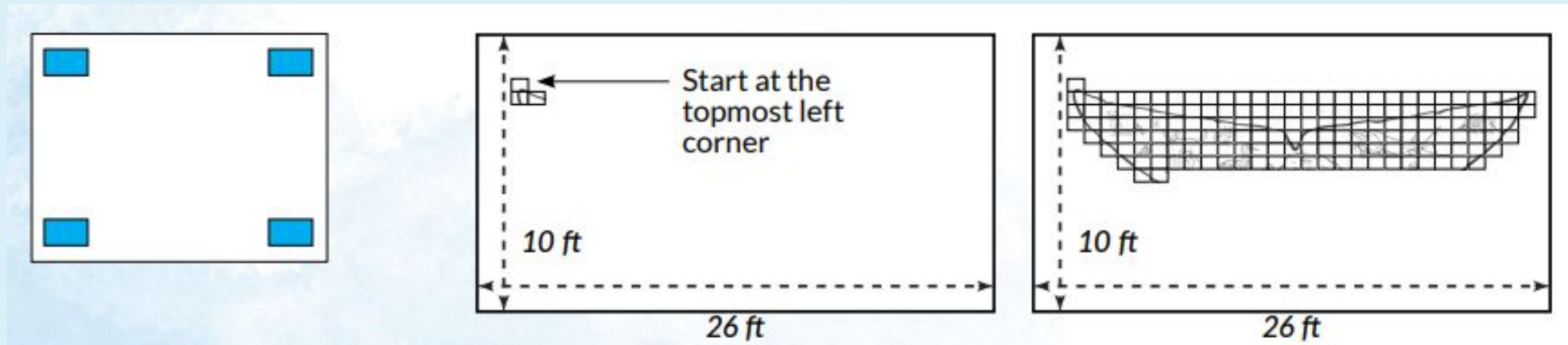
### Materials and Set-Up:

- Flat wall space of at least 26ftx10ft (*pick a space with room to place tables for coloring stations*)
- Printer
- 2 copies of the printed [blue whale tail mural](#)
- **Double-sided-tape**
  - + Double-sided-tape works well so the sheets don't have to be taped up immediately. If double-sided tape doesn't work for your wall space you can try:
    - + [Reusable adhesive \(Blue Tack\)](#)
    - + [Painters tape](#)
- Crayons, markers, and/or colored pencils
- Layout instructions (*included in this activity guide*)

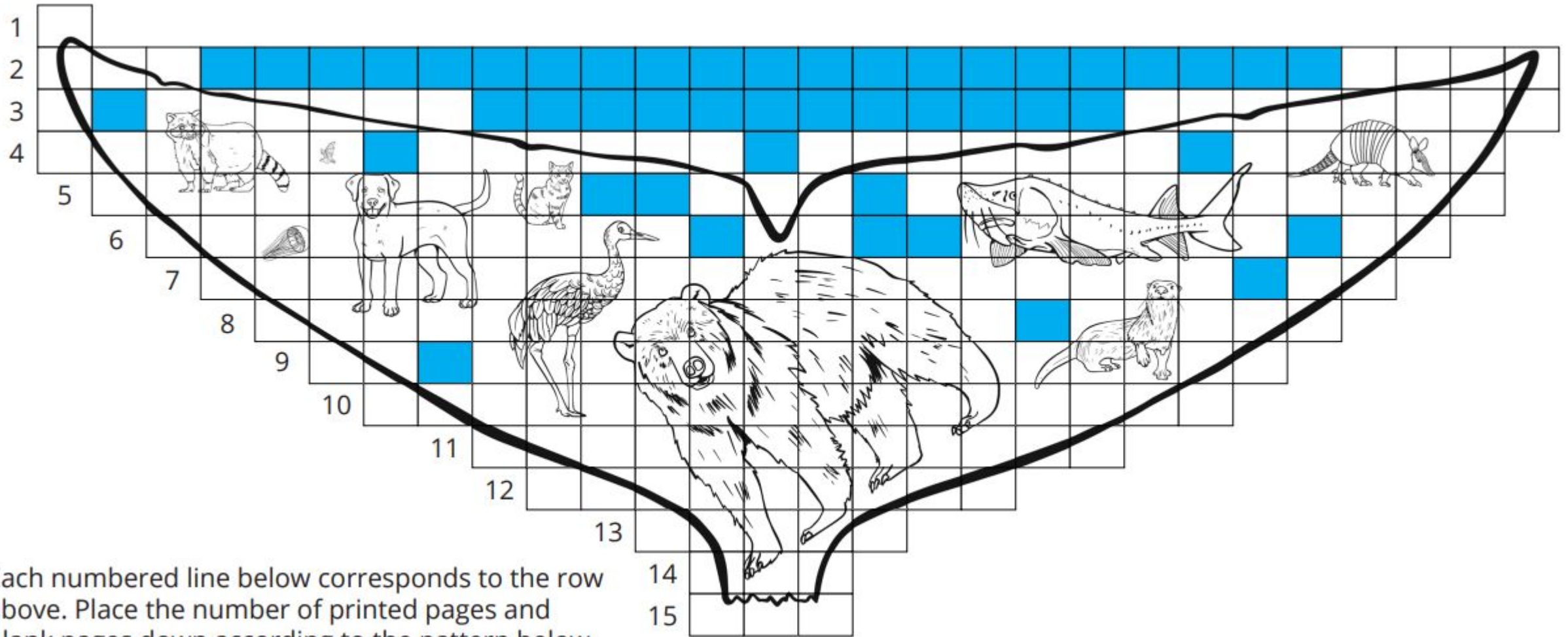


## Materials and Set-Up:

- Flat wall space of at least 26ft x 10 ft
- Printer
- 2 copies of the Blue Whale tail mural
- Double-sided-tape
- Crayons, markers, and/or colored pencils
- Layout instructions included in the activity guide

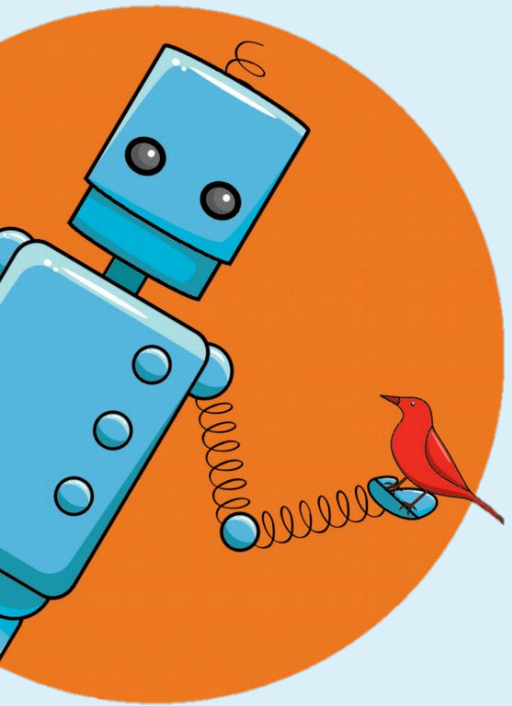






Each numbered line below corresponds to the row above. Place the number of printed pages and blank pages down according to the pattern below. The blue rectangles represent the blank pages.

14  
15

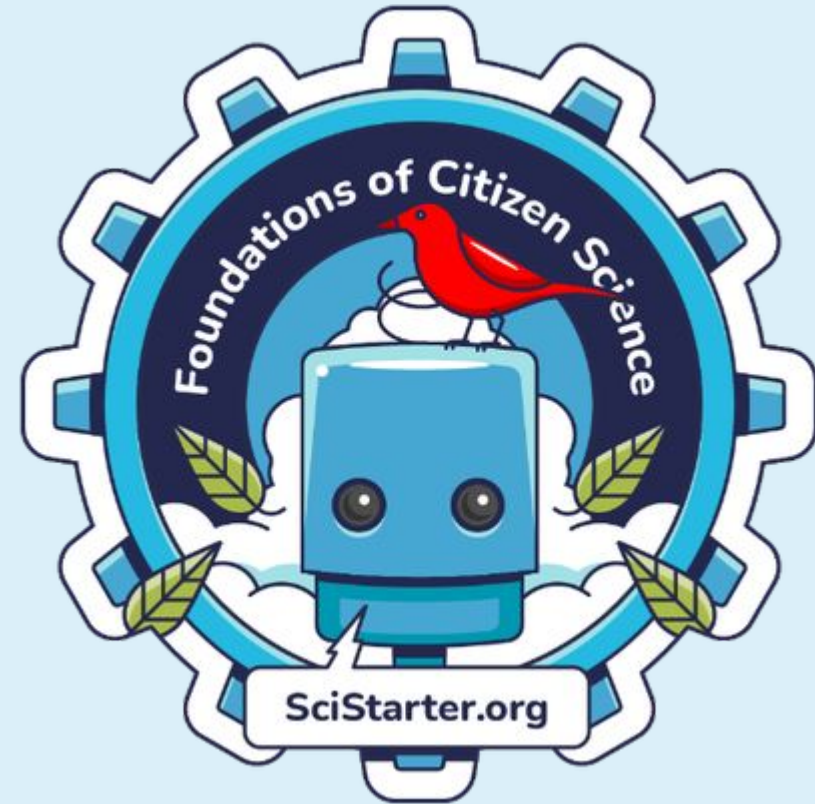


# Resources to Help You!



# Online, Self-Guided Trainings

Build confidence and increase engagement and retention via online training, resources and support from SciStarter team members.



[SciStarter.org/training](https://SciStarter.org/training)

# Try the Project Finder!



## Project Finder

 ▾ ▾ ▾ ▾ ▾

projects only  include events

only active projects

clear form

find projects

1-11 of 1431 Newest [Oldest](#)

< [1](#) [2](#) [3](#) [4](#) [5](#) [6](#) ... [144](#) >



VCE

### Mountain Birdwatch

Goal Monitor 10 species of high-elevation bird

Task Hike mountains, count birds & be merry. [more»](#)

Where [View map...](#)



### eButterfly

Goal Help monitor butterfly populations worldwide

Task Report butterfly sightings. [more»](#)

Where Global, anywhere on the planet

[SciStarter.org/ Finder](https://www.scistarter.org/finder)



# Citizen and Community Science Library Network

Join the Network!

[SciStarter.org/go/library-network](https://SciStarter.org/go/library-network)



## Empower

Increase the capacity of libraries to become community hubs for citizen science



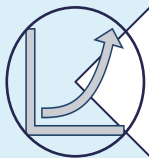
## Support

Support a community of libraries engaging their users in citizen science



## Broaden

Broaden participation of diverse communities in citizen science



## Accelerate

Accelerate and shape scientific research



Supported by IMLS, Moore Foundation, NLM, National Girls Collaborative, and others!

Now close to 1,000  
libraries  
participating!

# SciStarter Ambassador

A selective program that provides free training and programming support to individuals from diverse backgrounds and experience levels who want to introduce SciStarter and citizen science at local organizations like their public library.

Currently recruiting for Cohort 4!  
Applications due March 14

**SciStarter**  
**AMBASSADOR**  
*for*  
**CITIZEN SCIENCE**



[SciStarter.org/ambassadors](https://SciStarter.org/ambassadors)

# Public Directory

## Our Ambassadors are...

- Library Staff
- Library Volunteers
- Homeschool Teachers
- Informal Educators
- College Professors
- Naturalists
- Cyber security professionals
- Girl Scout and Cub Scout Troop Leaders
- ... and more!

Ambassador Name

City or State Abbreviation

e.g. Denver or NY

Search Ambassadors

Clear Search

109 Ambassadors



**Holly York**  
Oklahoma City, OK



**Megan Roberts**  
Virginia Beach, VA



**Maddy Griep**  
Lincoln, NE



**Chris Menne**  
San Antonio, TX



**Mallory Boykin**  
Columbus, OH



**Christopher Mick**  
HUDSON, WI



**Brynn Roberts**  
Lakeville, MN



**Lauren Bradley**  
North Little Rock, AR



**Maia Donovan-Smith**  
New York, NY



**Jennifer Martens**  
Ogden, UT



**Matt Haddox**  
Virginia Beach, VA



**Cole Slay**  
Atlanta, GA









Buttons and stickers



Free, Open Resources for Libraries



# Kit-Building Guides for Library Staff

 <p><b>BUILD YOUR OWN!</b></p>	 <p><b>BUILD YOUR OWN!</b></p>	 <p><b>BUILD YOUR OWN!</b></p>	 <p><b>BUILD YOUR OWN!</b></p>	 <p><b>BUILD YOUR OWN!</b></p>	 <p><b>BUILD YOUR OWN!</b></p>
<p><b>EXPLORING BIODIVERSITY</b></p> <p>Document and identify plants and animals around you. Great for all locations and ages.</p> <p><a href="#">DOWNLOAD KIT BUILDING GUIDE</a></p>	<p><b>OBSERVING POLLINATORS</b></p> <p>Identify and count pollinators. Good for all ages. Usable anywhere plants are flowering.</p> <p><a href="#">DOWNLOAD KIT BUILDING GUIDE</a></p>	<p><b>MEASURING LIGHT IN THE NIGHT</b></p> <p>Help gather light pollution data. Great for astronomy enthusiasts of all ages.</p> <p><a href="#">DOWNLOAD KIT BUILDING GUIDE</a></p>	<p><b>MONITORING AIR QUALITY</b></p> <p>Capture measurements using an AirBeam sensor.</p> <p><a href="#">COMING SOON</a></p>	<p><b>ZOMBEE HUNTING</b></p> <p>Track ZomBee Flies in your region, Good for locations with Zombee Fly infestation.</p> <p><a href="#">DOWNLOAD KIT BUILDING GUIDE</a></p>	<p><b>MAPPING MOSQUITO HABITATS</b></p> <p>Add your local observations to NASA satellite data!</p> <p><a href="#">COMING SOON</a></p>

[SciStarter.org/library-build-a-kit](https://SciStarter.org/library-build-a-kit)

**STARnet** In partnership with **Cornerstones of Science** **STEM ACTIVITY** Clearinghouse

STEM Clearinghouse Activities & Libraries

Search

Activities

**SORT**

Age Group

- All Ages (12)
- Family (529)
- Infant (0-2) (1)
- Pre-K (90)
- Early Elementary (287)
- Upper Elementary (482)
- Tweens (9-12) (453)

Time to Complete Activity

- Under 10 minutes (23)
- 10-20 minutes (124)
- 20-40 minutes (232)
- 40 minutes to 1 hour (266)
- 1-2 hours (90)
- 2-4 hours (13)
- Long Duration (days to months) (30)

**ACTIVITIES** There are 598 items.

Sort by -- Show 12 per page

Showing 1 - 12 of 598 items < Previous 1 2 3 ... 50 Next > Show all

**Can a Toaster Make Wind?**

★★★★☆ 1 Review(s)

In this demo, patrons investigate the source of wind by using a toaster to heat air while they observe its effect on a small aluminum foil kite.

[Check It Out](#)

[How-to Video](#)

[Teacher's Guide](#)

**Content Area**  
Earth Science

**Age Group**  
Family  
Upper Elementary  
Tweens (9-12)  
Teens

**Time to Complete Activity**  
Under 10 minutes

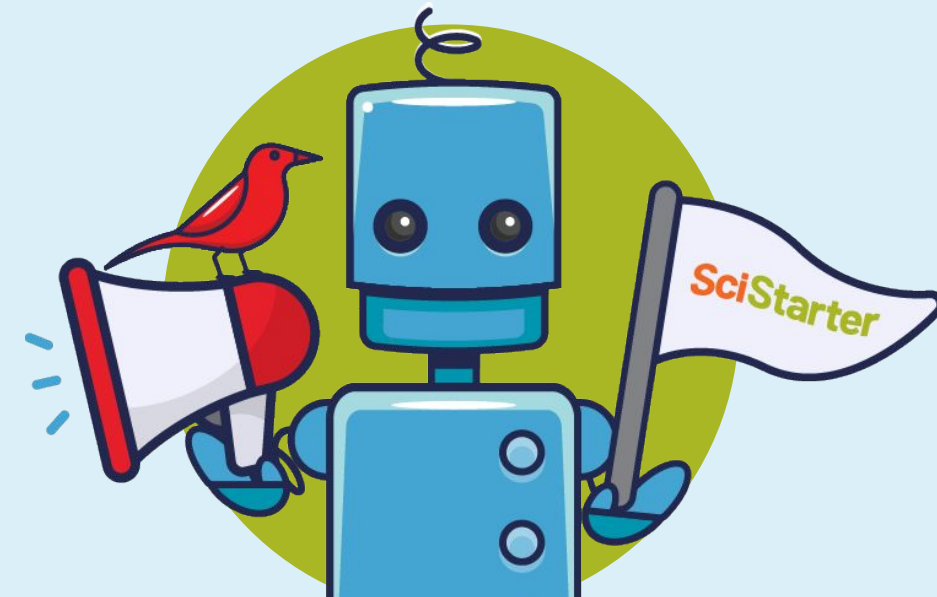
**Cost associated with Activity Materials**  
\$0 ("found" items)

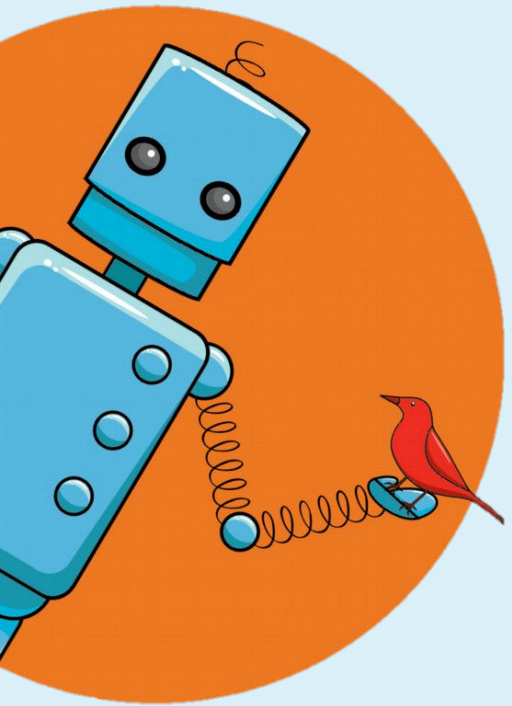
**Difficulty Level (by content)**  
Medium

**STEM Tools**  
Required

- Search by:**
- Age
  - Theme
  - Materials

**Poll: How likely are you to incorporate citizen science into your summer reading plans?**





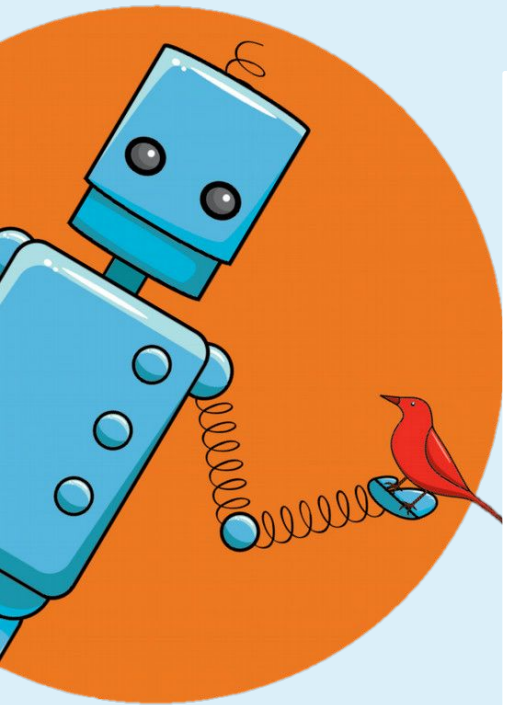
# Citizen Science Month 2025



**ONE  
MILLION**  
**ACTS OF SCIENCE**  
**— CITIZEN SCIENCE MONTH —**  
**APRIL**

**Join us on March 5 at 11 AM PT / 2 PM ET for *Prepare for One Million Acts of Science at Your Library* webinar and planning session.**

# Questions?



**Join us in  
April!**

[SciStarter.org/go/  
CSM25-facilitator-pledge](https://SciStarter.org/go/CSM25-facilitator-pledge)



**Join the  
Network!**

[SciStarter.org/go/  
library-network](https://SciStarter.org/go/library-network)



# FathomVerse Mini Program Guide



**Background:** FathomVerse is a fun, gamified citizen science project where you help train AI to recognize ocean animals using real scientific imagery.

**Website:**

<https://scistarter.org/fathomverse>

## Program Agenda

- Welcome your audience, complete an icebreaker together on the topic of marine life.
- Introduce the concept of citizen science and how volunteers can help scientists by identifying and categorizing animals
- Explain where the project originated and what volunteers are being asked to do.
- Demonstrate how to play

**Age group:** 14+ (\*under 13 allowed with adult parent/guardian email)

### Preparation:

1. Watch the [project walkthrough](#) on Youtube and test out the project for yourself!
2. Prepare attendees with instructions to download the mobile app on a personal device, or provide prepared devices.
3. Consider creating a set of library accounts that can be used by participants who do not want to create an account.

# Instant Wild Mini Program Guide

**Background:** Instant wild is a collection of data from camera traps set up in ecosystems all over the world, including in underwater locations. Conservation researchers need our help to identify and quantify all the animals caught in the camera traps.

**Website:** <https://scistarter.org/instant-wild>



**Age group:** All ages when scaffolded appropriately, such as completing the project as a group instead of individually.

**Event timing and location:** 15 min +, indoors

## Preparation:

1. Visit [Instant Wild](https://scistarter.org/instant-wild) to become familiar with the program. Save the project to your SciStarter dashboard.
2. Upcoming event with Instant Wild and PocketLab on February 13th: [Register here](#).
3. Accounts are optional. Consider creating a set of library accounts that can be used by participants to track impact.

## Program Agenda

- Welcome your audience, complete an icebreaker together on the topic of marine life.
- Introduce the concept of citizen science and how volunteers can help scientists and conservationists by identifying and categorizing animals.
- Explain where the project originated and what volunteers are being asked to do.
- Present Instant Wild on a main screen