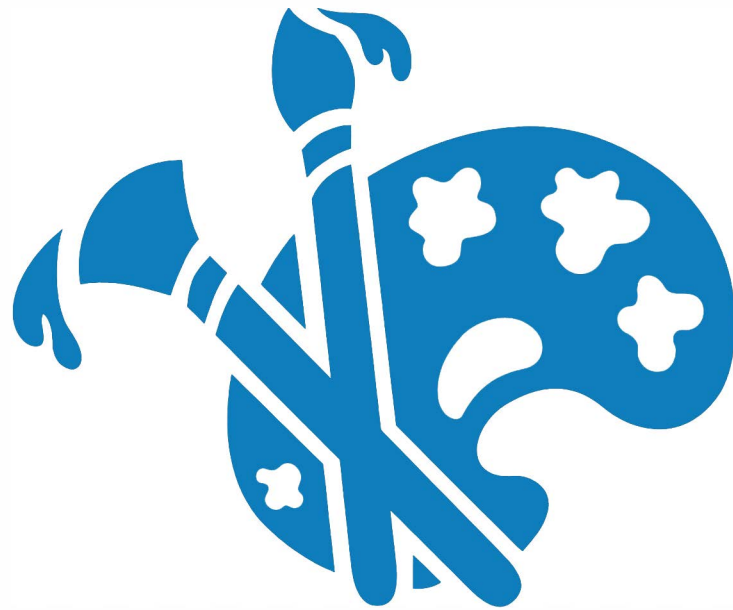


# *Making Art With Nature*



## *Nature & Art Vol. 2 Wonder Workbook*



# *You Are A Scientist!*

- A naturalist is a scientist who studies nature through careful observations and asking questions. What can you see, hear, smell, and feel? Ask yourself questions like “What do I notice?”
- Make the most of enjoying and sharing all of your observations by keeping track of them. Make a “nature notebook” to use pictures and words to record all the cool things you’re observing. Practice a scientific skill by doing some scientific drawing. Be sure to look closely to draw what you see--include details and use labels. Drawing is a great way to solidify understanding!
- Need an idea to get started? Try a nature window - pick a spot to record some observations each day and see what changes over time and what stays the same. Or pick a plant nearby to observe and notice seasonal changes.
- A scientific drawing is a record of all of the great observations you are making. You don’t need to be a ‘good artist’ to do a scientific drawing, just a careful observer. Be sure to include details you are noticing and use labels.
- Scientific drawings can be done by scientists of all ages! Early elementary scientists focus on recording things they can see or feel. Upper elementary scientists may include things that they can’t see or feel but can see evidence of (observe plants grow, what do they need?) Middle school scientists may observe to understand interactions between living and nonliving things. Young adult/adult scientists may look at a larger scale by comparing and contrasting interactions happening in different ecosystems, or look closer in and add ideas to explain the function behind the interactions.
- Inspired by your exploration of nature? Make a model of something that intrigues you. Get your craft supplies - some paper for drawing or look for odds and ends in your recycling - to recreate and showcase all of the things you are noticing around you. Be creative and share what you’ve discovered!



# Image Investigator

**Summary:** Students observe an image and create an accompanying story to construct an explanation as to what might be going on in the image.

**Grade Range** (suggested): K-5

**Materials:**

- An image or video
- Image Investigator worksheet



**ENGAGE**

1. Tell students that today we will be looking at an image/video to try to understand what might be happening in it, and uncover the story that it is telling.

**PREPARE TO EXPLORE**

2. Introduce the image/video you will be looking at. Ask students to look closely at the image for a minute or two or watch the video once or twice.

**EXPLORE**

3. Once students have had a minute to look at the image or watch the video, ask them “What is going on here?” The goal of this activity is to guide your student’s thinking and understanding as to what is going on in the image/video. Avoid inserting information--let students look closely and reason out their responses, rather than by discussing the facts.
4. Follow up the first question with, “What do you see that makes you say that?” to encourage students to back up their explanation with evidence from the image. This step can be repeated many times, having students build on their own ideas.
5. When a train of thought comes to an end, ask “What more can we find?” to pull out more evidence or to continue to build the explanation.

**REFLECT and SHARE**

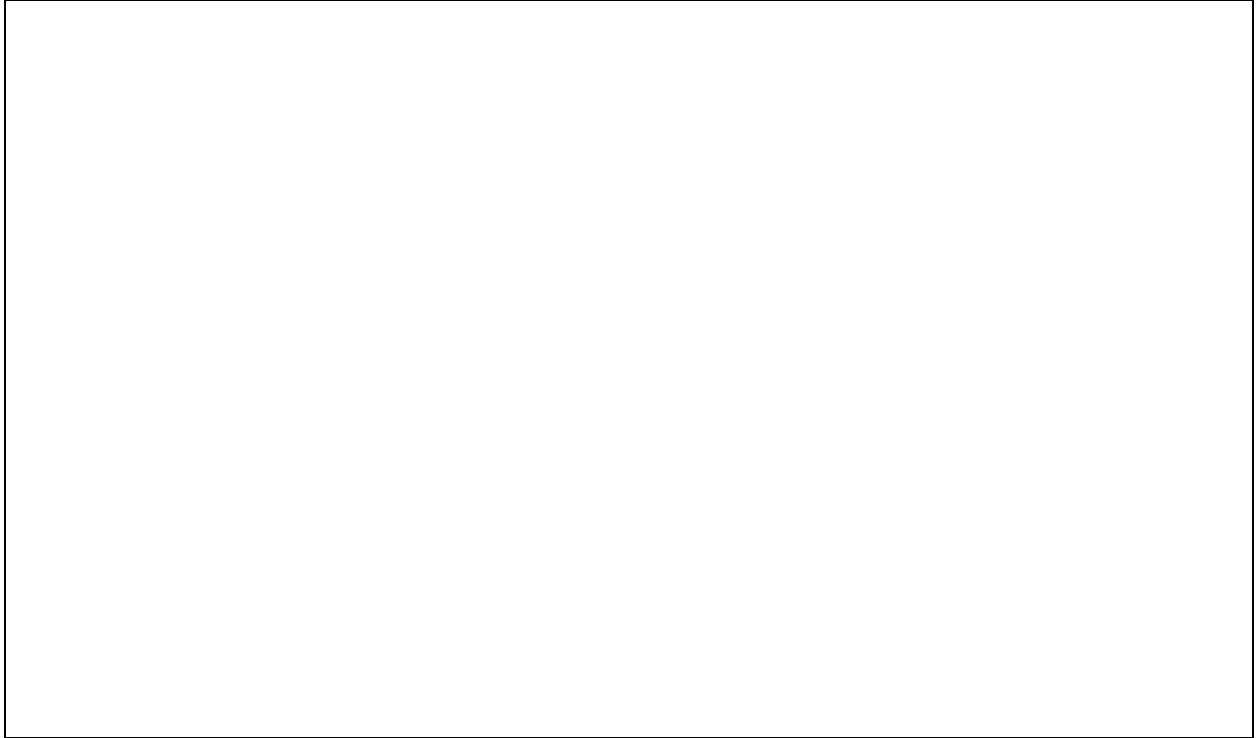
6. Now that your students have thought about the image/video and what might be going on, have them write a story that explains it using the worksheet. They can use words and/or pictures to tell their story.
7. Have students share their story with someone!

**Extensions and Variations:**

- Use the same graphic organizer, but look at a different image or video. It could be related to any content!
- Take all of the stories your class creates and put them together in a book to share!

## Image Investigator

Use words and/or pictures to tell a story about what you observed.



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# Investigador de imagen

Resumen: Los estudiantes observan una imagen y crean una historia que la acompaña para construir una explicación de lo que podría estar pasando en la imagen.

**Rango de grado escolar (sugerido): K-5**

**Materiales:**

- Una imagen o video
- Hoja de trabajo del Investigador de Imágenes



**Engranar:**

1. Diga a los estudiantes que hoy veremos una imagen / video para tratar de comprender lo que podría estar sucediendo en él y descubrir la historia que está contando.

**Preparar para explorar:**

2. Presente la imagen / video que estará viendo. Pida a los alumnos que observen detenidamente la imagen durante un minuto o dos o que vean el video una o dos veces.

**Explorar:**

3. Una vez que los estudiantes hayan tenido un minuto para mirar la imagen o ver el video, pregúnteles "¿Qué está pasando aquí?" El objetivo de esta actividad es guiar el pensamiento y la comprensión de su estudiante sobre lo que está sucediendo en la imagen / video. Evite insertar información: permita que los alumnos observen detenidamente y razonen sus respuestas, en lugar de discutir los hechos.
4. Siga la primera pregunta con: "¿Qué ves que te hace decir eso?" para alentar a los estudiantes a respaldar su explicación con evidencia de la imagen. Este paso puede repetirse muchas veces, haciendo que los estudiantes desarrollen sus propias ideas.
5. Cuando un tren de pensamiento llega a su fin, pregunte "¿Qué más podemos encontrar?" para sacar más evidencia o continuar construyendo la explicación.

**Reflexionar y Compartir:**

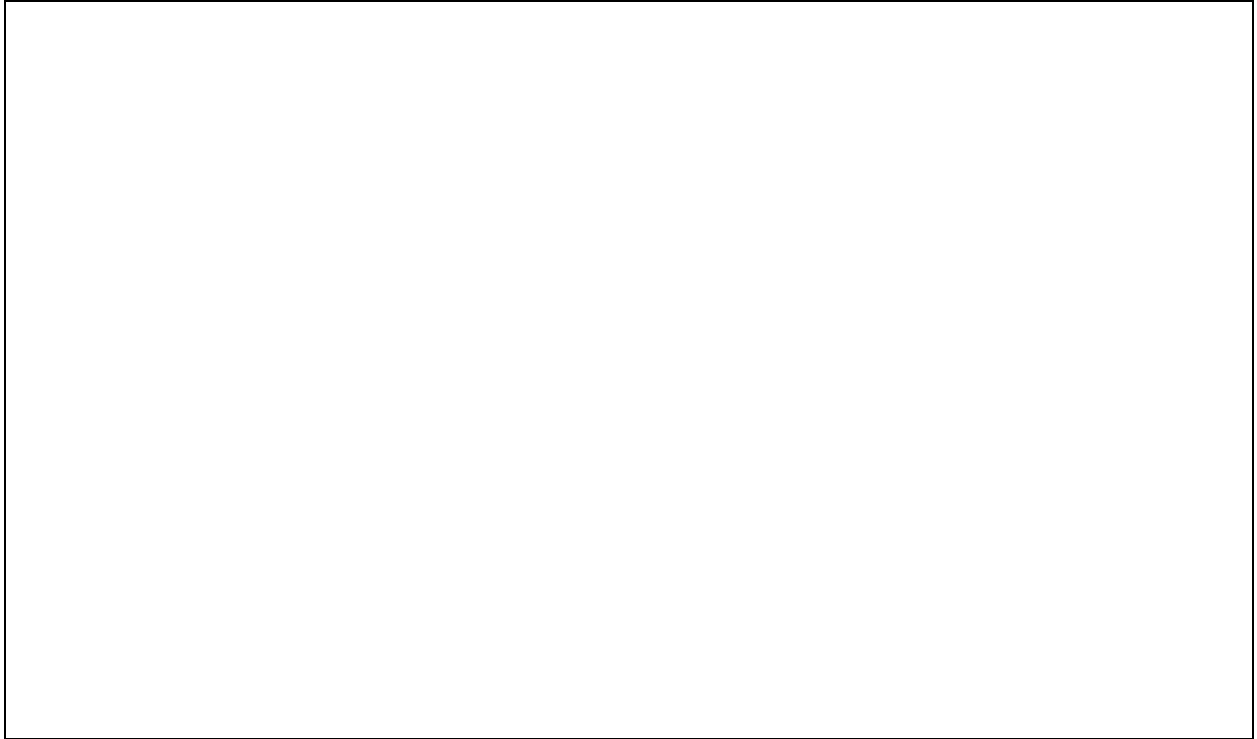
6. Ahora que sus alumnos han pensado en la imagen / video y lo que podría estar pasando, pídale que escriban una historia que lo explique usando la hoja de trabajo. Pueden usar palabras y / o imágenes para contar su historia.
7. ¡Haga que los estudiantes compartan su historia con alguien!

**Extensions and Variations:**

- Utiliza el mismo organizador gráfico, pero mira una imagen o video diferente. ¡Podría estar relacionado con cualquier contenido!
- ¡Tome todas las historias que crea su clase y compártalas en un libro para compartir!

## Investigador de imagen:

Use palabras y / o dibujos para contar una historia sobre lo que observó.



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# *Drawing from the Museum's Collections*



## **Draw/Label:**

Use pictures and words to show what you notice about **ONE** of the specimens on this page.

## **Think:**

What can you learn about this organism from observing the specimen?

**What questions do you have about this specimen?**

# *Dibuja de la Colección del Museo*



## **Dibuja/Etiqueta:**

Usa dibujos y palabras para mostrar lo que notas sobre **UN** espécimen en esta página.

## **Piensa:**

¿Qué puedes aprender sobre este organismo al observar la muestra?

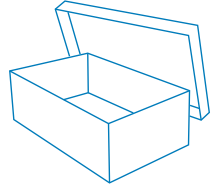
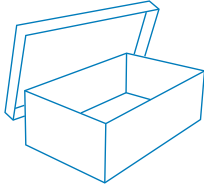
**¿Cuáles preguntas tienes sobre este espécimen?**



# EXHIBITION

IN A

# SHOEBOX



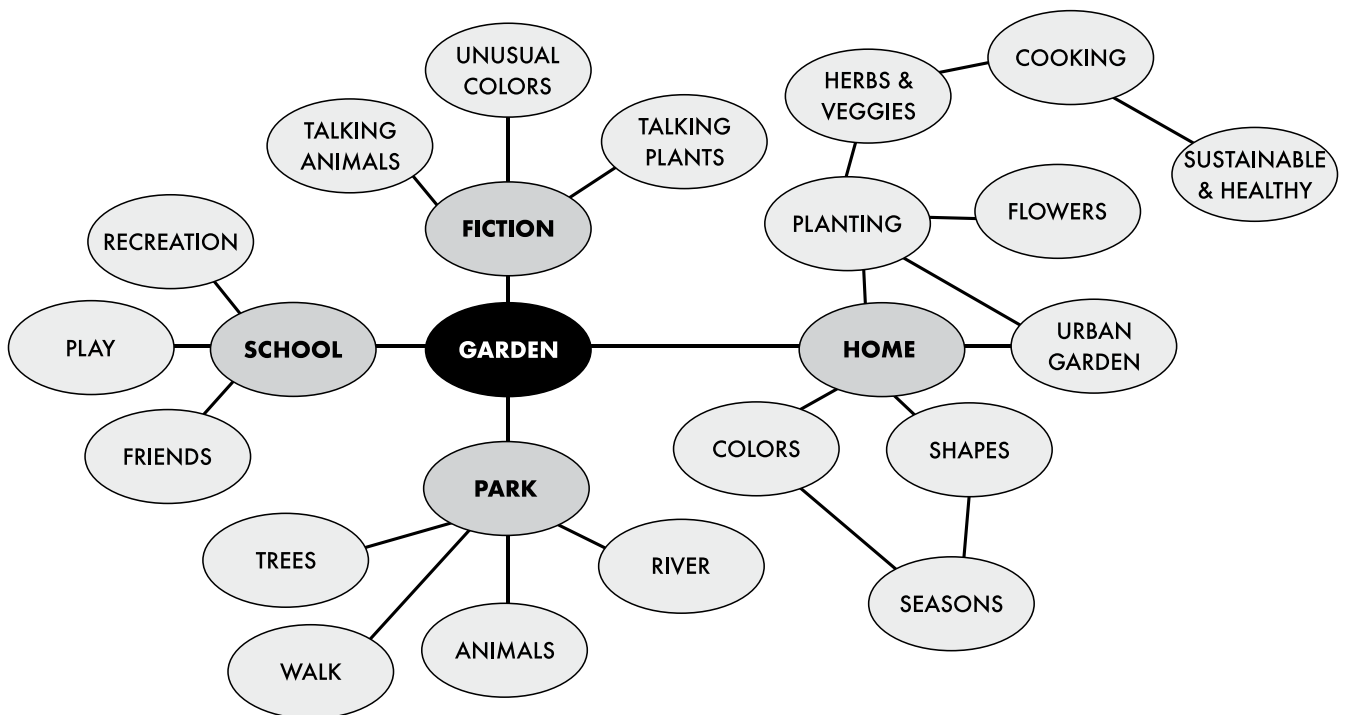
At the Chicago Academy of Sciences / Peggy Notebaert Nature Museum, you find yourself immersed in multiple exhibitions, permanent or temporary, that introduce you to the wonders of nature. Have you ever asked yourself, how does an exhibition come to life? How do you go from an idea, to an interactive multimedia experience for audiences of all ages?

Exhibition in a Shoebox is a guided activity for kids and adults alike, who would like to experience what it means to curate, design and produce an exhibition. The guide includes space for you to document the progress of your exhibition development. You can print it out and create a booklet each time you would like to repeat this activity, to create your personal collection of exhibitions in a shoebox.

## Step 1: From Idea to Concept

Every exhibition starts from an idea, which can come to you in many ways. It could be an image you dreamed at night, a word that is stuck in your head, a concept you read about. Creativity has no limits, and everyone in their own way is creative, in the sense that we “create” combinations of words, images and thoughts in our daily lives.

Begin with an idea and write it down on a big sheet of paper, or a whiteboard. Now begin to write or draw around it anything that comes to mind when you think about this idea. This can be words, images, entire sentences. You are now brainstorming and expanding your idea into a concept bubble.



## Step 1: From Idea to Concept

You can use this space to create a concept bubble. You can also draw one on a big blank surface, then photograph it and tape your image in this space. You can always refer back to your original idea during the development of your exhibition.

Now look at your concept bubble. Try to think about one or two sentences that can describe your idea. This will be your concept.

For example:

“Urban gardens are a great resource to grow your own food sustainably”

Now write your own!

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## Step 2: Collect and Prepare Specimens

You can now go and search for materials for your exhibition. Think about what materials you can find in the environment around you that best represent your concept. You can look for plants, flowers, natural materials or objects in your house. Make sure to collect lots of specimens and objects. You will not use all of them in your exhibition, but you will decide what fits best later.

If you collect leaves, flowers or any other natural materials that can be subject to decay, and would like to preserve your exhibition project, you will need to treat specimens correctly. Next is a side activity for you to preserve your plant specimens. You can also find a video of this activity on the Peggy Notebaert Nature Museum YouTube channel, part of the Curious by Nature series.



## Side Activity: Plant Pressing

For a scientific collection, we collect as many parts of a plant as possible – stem, leaves, flowers, roots – as these aid with the identification process and can inform future study of the specimen. When collecting plants for fun, you can take smaller amounts – a stem with flowers and leaves, leaves on the ground, or just a flower.



The first step is to remove the moisture. Pressing your plant between pieces of paper helps remove the moisture from the plant during the process. Sandwich your plant specimen between two sheets of paper, or one folded in half. Make sure to cover the plant entirely. You can use newspaper, blotting paper, or regular copy paper.



## Side Activity: Plant Pressing

The second step is to flatten the plant. Having evenly distributed weight across your plant is the key. A plant press used for scientific collections is made of sheets of cardboard interleaved with paper, book-ended with boards and tied together with adjustable straps. You can make these pretty easily if you plan to do more plant pressings.



If you don't have a plant press, you can place the papered plants within a heavy book or between two pieces of cardboard. You want to ensure enough weight is applied to evenly press the plants, so stack a couple of heavy books on top. The specimen can take 1 to 2 weeks to dry, depending on the humidity level in your room.





## Step 3: Prepare Your Shoebox

It's time to choose your exhibition space! Find a shoebox that you like and some acrylic paint. You will start by painting the inside of the shoebox in white. This will become the base for your exhibition space. You can always decide to add some color to your exhibition box later on, but starting from a neutral space is a good way to begin designing an exhibition as if you were working on a blank canvas. You can also paint the exterior of your shoebox and the lid in white or in a different color. Let the paint dry completely and add a second layer of paint if needed. While the shoebox dries out, you can move to the next phase.

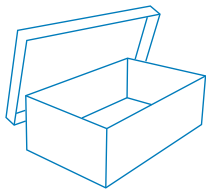


## Reflection space

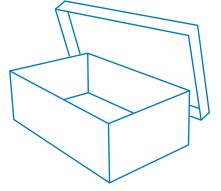
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# EXHIBITION



## IN A SHOEBOX



In part 1 of the Exhibition is a Shoebox activity booklet, we learned how to start from an idea and develop the exhibition concept. We searched for specimens and objects in our immediate surroundings and learned how to preserve them. We also prepared our shoebox to become an exhibition space. The second part of this activity will lead you through the design and completion of your project.

## Step 4: Select your exhibition components

Take all the specimens and objects you collected and lay them out on a table or on the floor. Look at them, and think about your concept statement. Which of these objects seem to better represent your idea? Pick them up and set them aside.

Next, take a look at the elements you have selected, and repeat the process. Ask yourself how these objects relate to the story you would like to tell with this exhibition. How do they relate to each other? Try to find commonalities and differences alike, both visually and conceptually. Continue to reduce your selection until you have an amount of specimens that you can fit in your shoebox without crowding it.

**You can print and tape a photo  
of the specimens you selected here.**

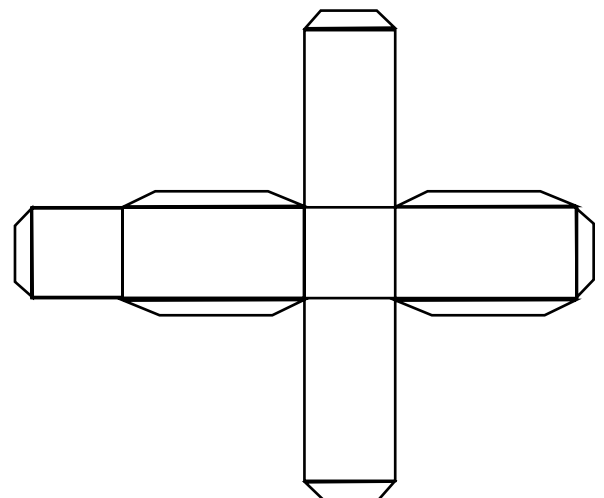
## Step 5: Design the floorplan

Take your shoebox and start placing your specimen in the space. Do not fix them just yet. Try first to move them around in different positions. You can also decide to use the box lid as an additional component of your space, for instance an extension of the floor. You can decide to position your box horizontally, vertically, or at different angles.

You are now starting to design your floor plan. An important step in this process is to decide how you will install specimens in the space. Here are some options you can experiment with, but remember that with your creativity you can come up with other interesting solutions and designs.

### **Pedestals**

Using cardstock paper, you can create pedestals to support some of the objects. You can use the sample design in this page to draw a pedestal on cardstock, cut it out with a pair of scissors and fold it into shape. Fix it in place with some hot glue.





## Step 5: Continued

### Ceiling hang

Cut a piece of cord and tie one end to the specimen or object you would like to hang. Find the correct position in your shoebox and poke a hole through the top side, big enough for the cord to slide in tightly. Fix the cord into position with a knot. For more stability, you can also tie a knot around a toothpick and let it sit on the top of your shoebox.



### Wall Hang

You can attach a specimen to the back or side walls of your exhibition space. Use a push pin or T pin to hang the object. Hot glue is also a good option. There is no limit to where your creativity can take you. Enjoy the process of experimenting with your specimens, shapes and colors until you are satisfied with the result.

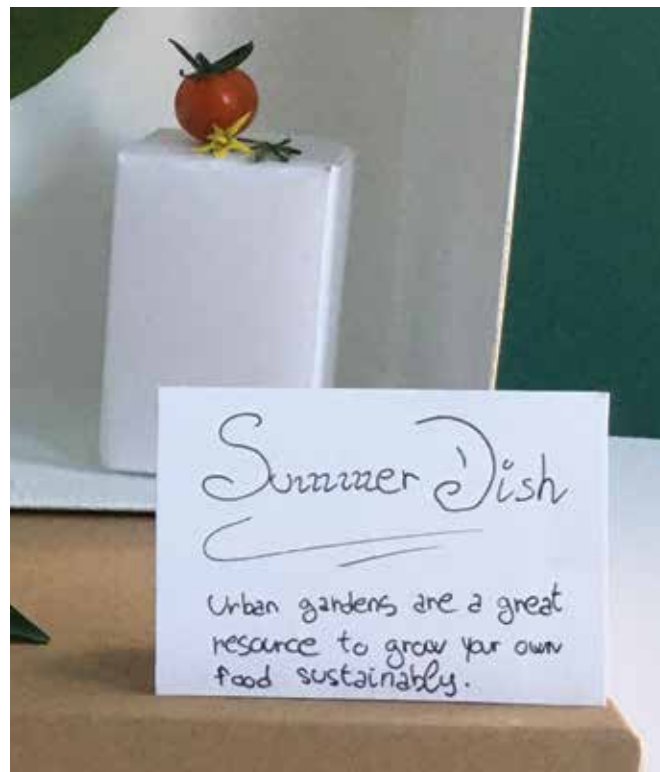


## Step 5: Continued

### Labels and Title

If you'd like to add more details, you can create small labels for each specimen using the leftover cardstock paper, and attach them next to objects with hot glue. Write down the name of your specimen, where you found it and when you collected it.

You can also decide on a title for your exhibition. Go back to your concept statement and think about a title that will communicate to others your idea in just a few words. Now write your title on a piece of cardstock paper and copy the concept sentence underneath. This will be your introductory panel, and you can fix it to the side of your exhibition space, or attach it to one of the walls.



## Step 6: Documentation

Now that your exhibition is ready, it's time to photograph it! It is very important to document your work for future reference, and to preserve the memory of your project. Especially for temporary exhibitions that rotate frequently, documentation becomes necessary to create archival records of the projects produced in the past. Have fun with your camera. Take full shots and close ups, trying different positions and angles.





**You can print and tape photos  
of your exhibition here.**

## Reflection space

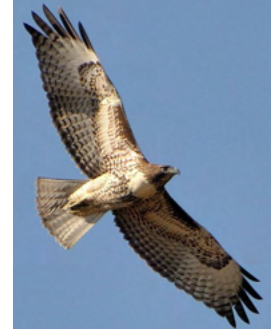
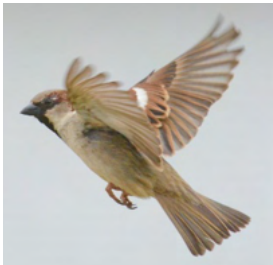
[illegible][illegible]

## This image shows a blank sheet of white paper with horizontal blue ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.



# Facts of Flight

Have you ever seen a flapping sparrow, a gliding seagull, or a soaring hawk?

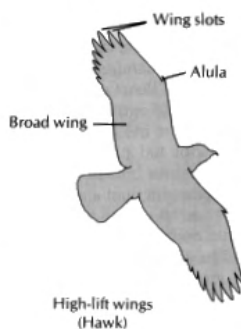


**What do their wings have in common?** You might notice long feathers, short feathers, dark colors, or light colors.

**What is different about their wings?** One main difference is **their wing shape**! Since birds live in many different environments, birds come in all shapes and sizes with wings that are adapted for their survival needs and habitat.

There are **four general types** of wing shapes that are common in many birds.

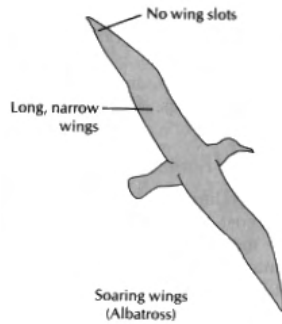
Let's take a look at them, and see if we can make our own bird wings!



**Passive Soaring wings:** What does **soaring** mean? It's when you can fly for a long time without flapping your wings!

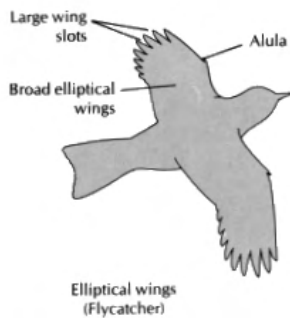
These wings have **long, broad feathers** that spread out to make "slots" that let the bird catch rising warm air (called "thermals") which pushes them up higher in the sky.

Common birds with this wing type include: eagles, many species of hawks, cranes, and vultures. Since these birds are so large, it would take a lot of energy for them to fly by flapping their wings a lot. By "riding the thermals" they can fly high, or circle their prey, while conserving their energy.



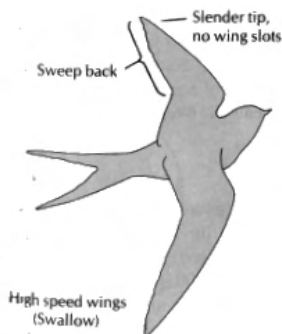
**Active Soaring wings, or Gliding wings:** These wings are **long and narrow** and also allow birds to soar easily. These birds are more dependent on the different wind currents than the passive soaring birds (above). Many of these birds live near large bodies of water, or **migrate** long distances over water, where there are strong, constant winds. This wing shape lets them travel very far without using a lot of energy and getting tired.

Common types of birds with this wing type include: gulls, albatrosses, and gannets. Airplanes also use this wing shape!



**Elliptical wings, or Flapping wings:** These wings are good for **short bursts of high speed**, and involve a lot of flapping when flying. Birds with this wing shape can take off and land quickly, and can perform tight turns and aerobatics. This lets them catch small quick prey like bugs, or to easily dodge a larger bird (such as a hawk) trying to catch them!

Common birds with this wing type include: robins, sparrows, crows, and blackbirds.

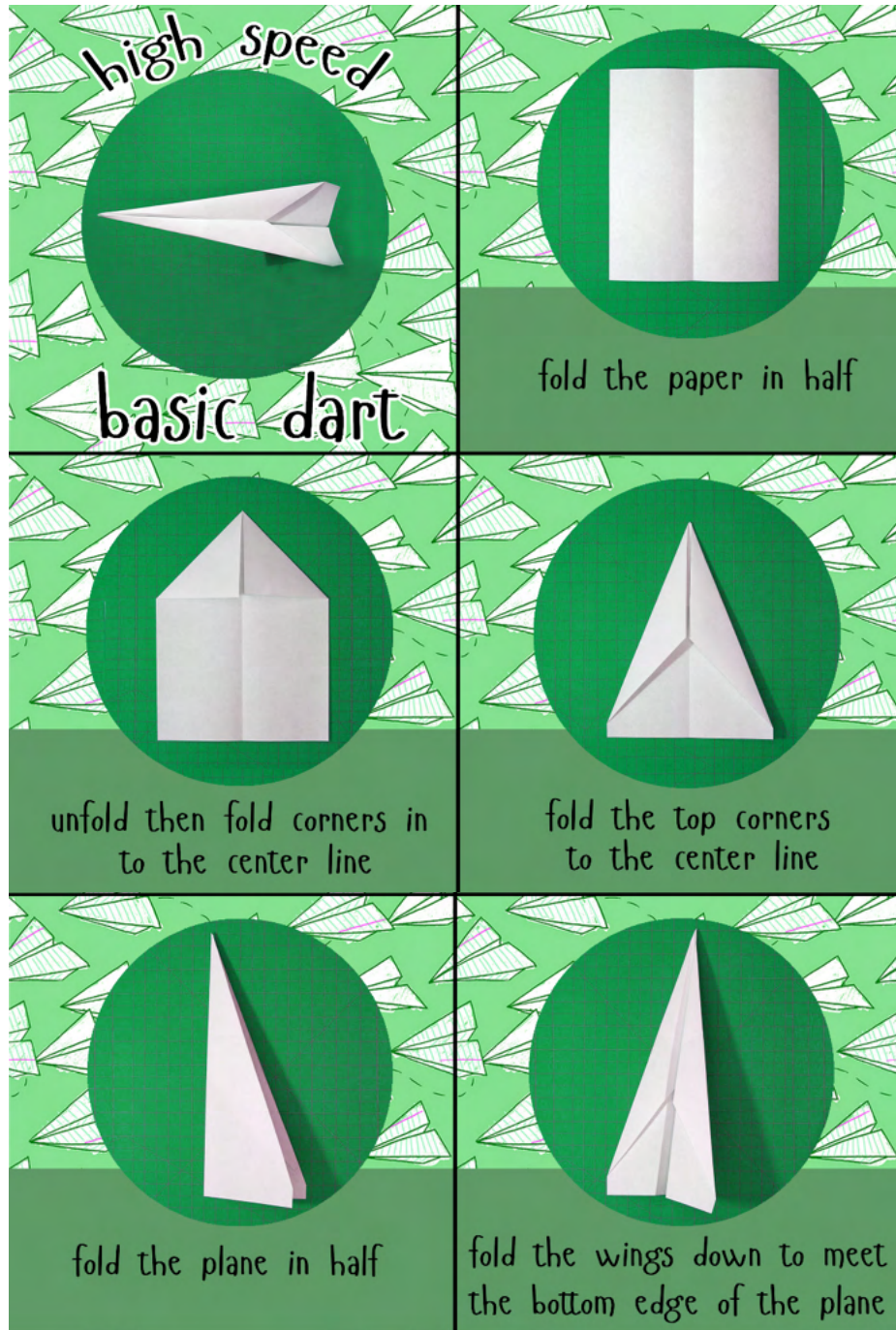


**High-speed wings:** These wings help a bird move **very fast** for a **long period of time**. The wing shape is long and thin, but shorter than the gliding wings. Birds with this wing shape often **hunt their food in the air**—they can dive and swoop quickly to catch prey.

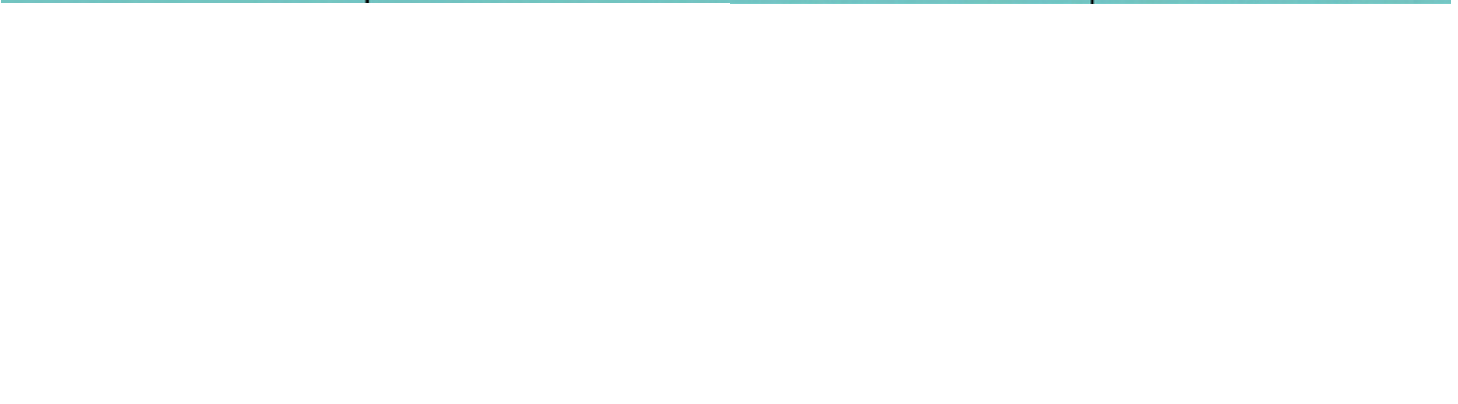
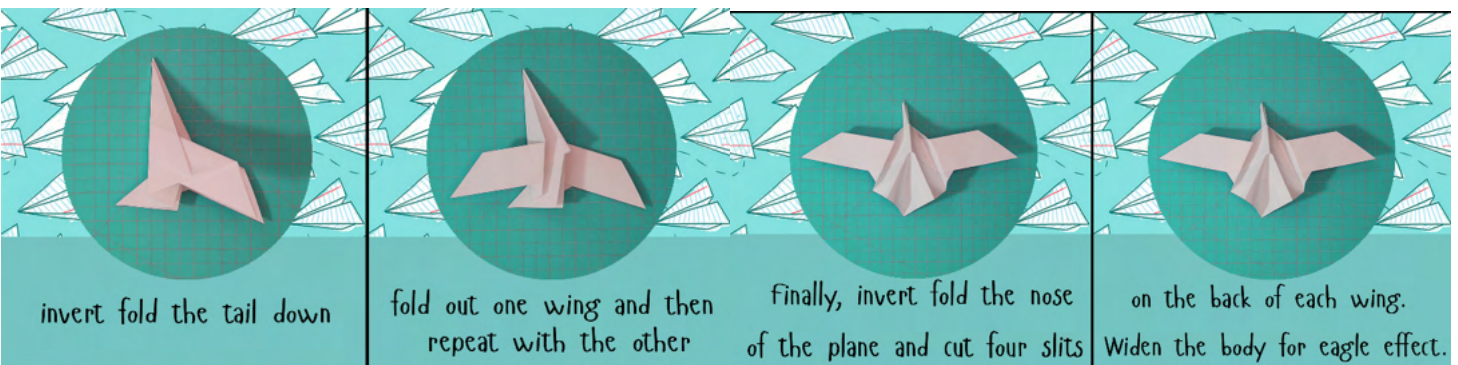
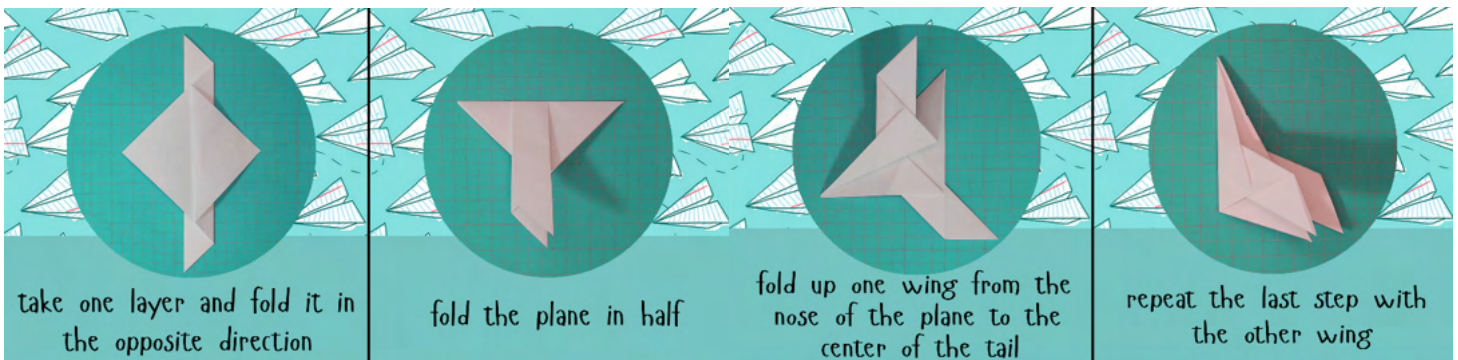
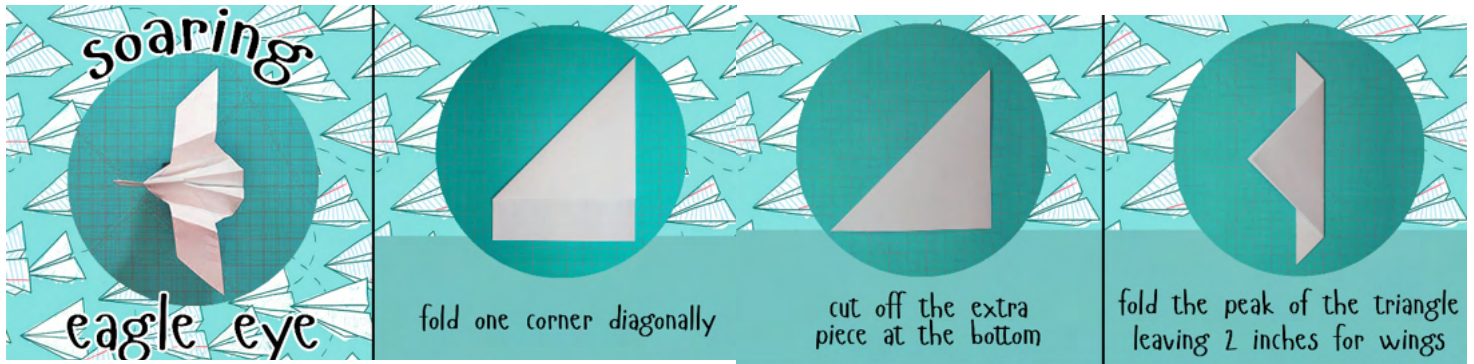
Common birds with this wing type include: falcons, swifts, swallows, and terns.

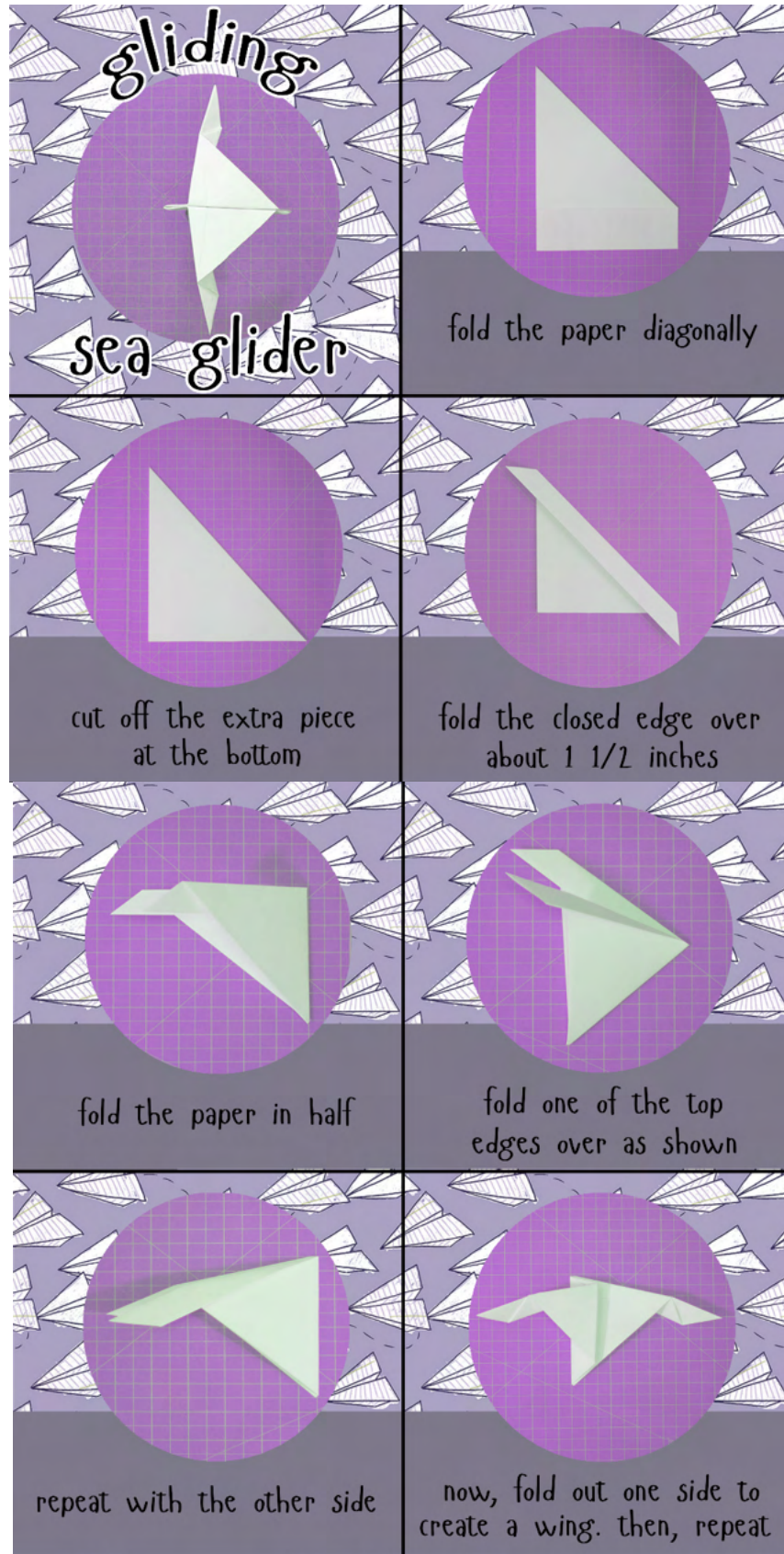
**Take a look at the birds below.** Can you guess what wing type they have? Why do you think they have that wing shape? What kind of habitat do you think they live in, and what lifestyle do they have?



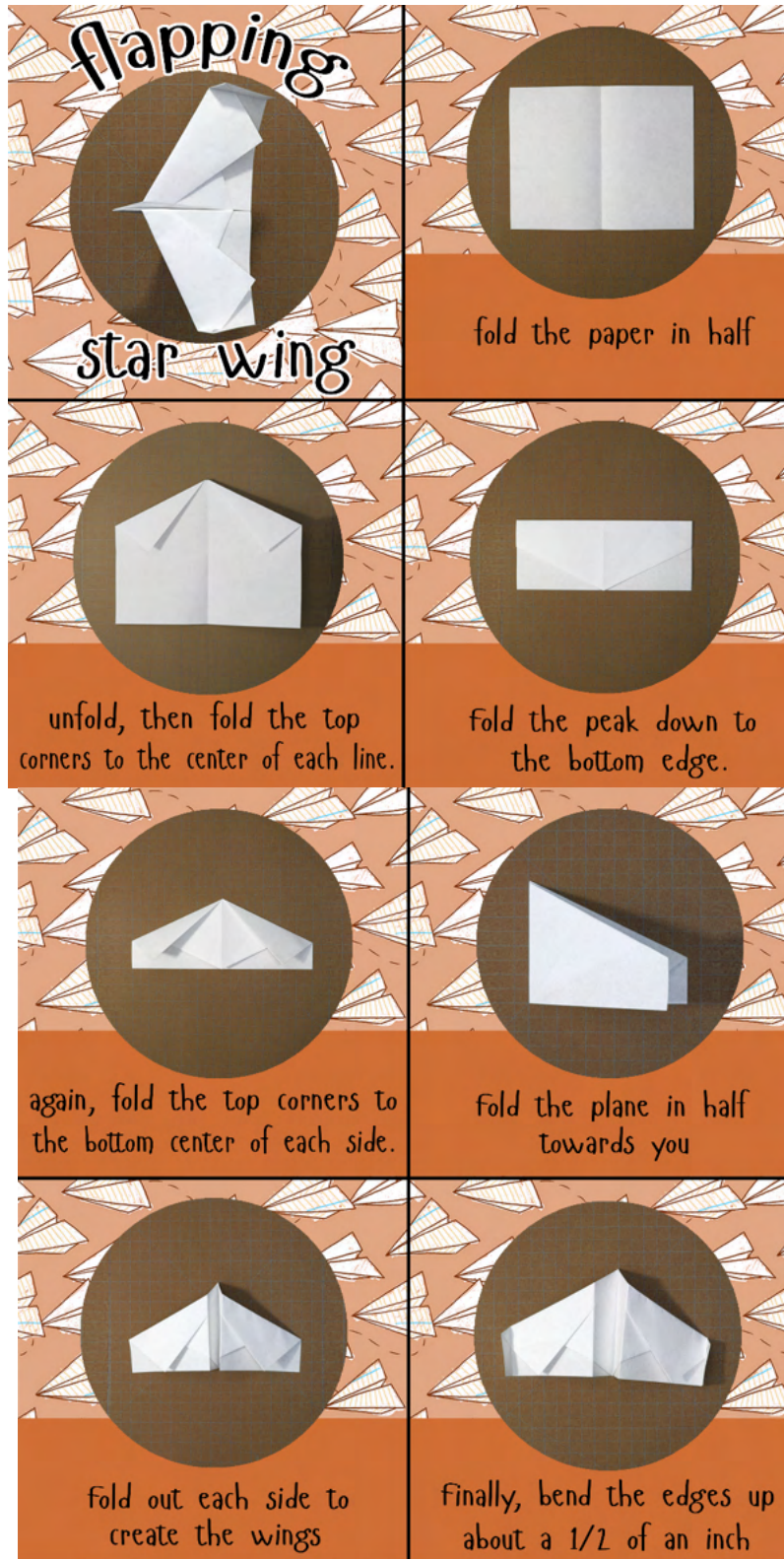












# *Let's Make a Scientific Drawing*

Let's make close observations to create a scientific drawing using found objects (seeds, sticks, leaves, rocks, critters, etc.). A scientific drawing is based on careful observations. A good scientific drawing has words (labels) and pictures. You don't have to be a "good artist" to make a scientific drawing. All you have to do is make sure the drawing reflects your real observations. Scientific drawings communicate information to others, and to ourselves at a later time, so it's important to include lots of details.

## **SUPPLIES**

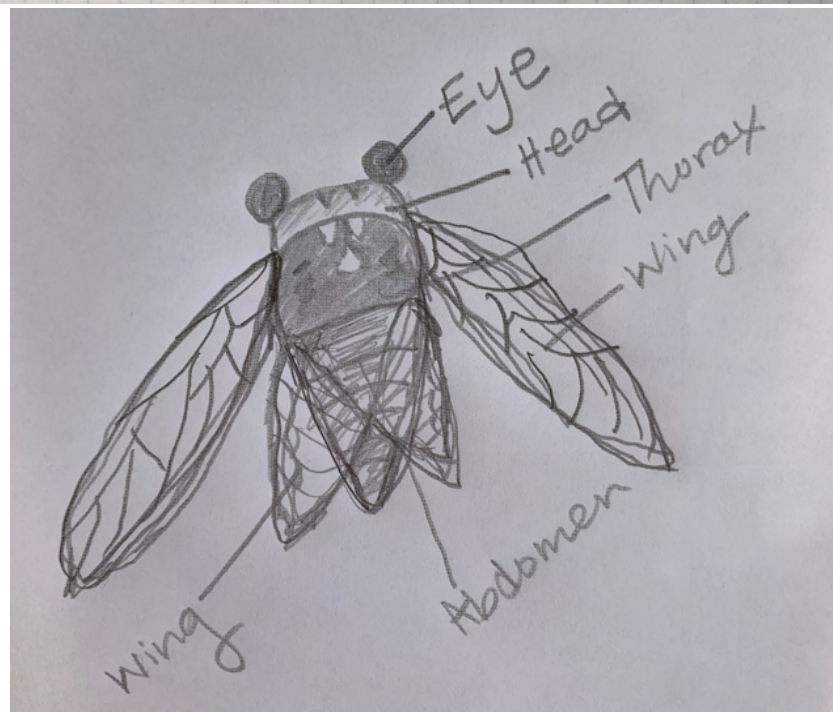
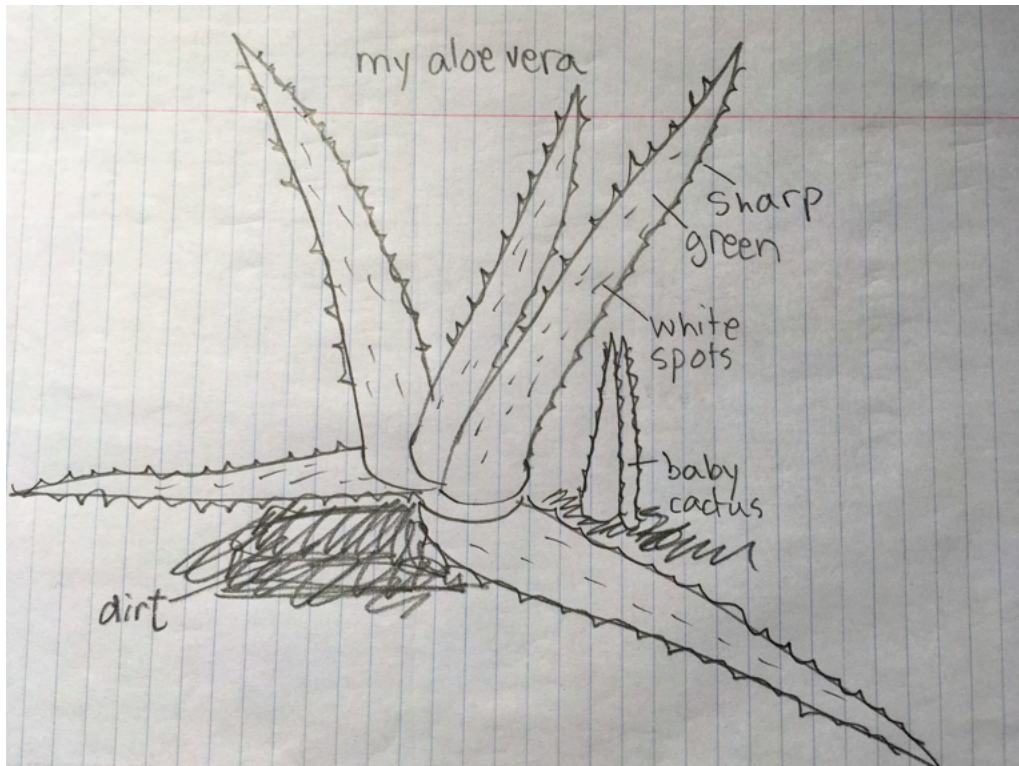
- Found objects (natural objects, household objects, anything!) or a photo of something in/from nature
- Drawing tool (pencil, pen, marker, etc.)
- Paper

## **DIRECTIONS**

1. Select an object for your scientific drawing. It can be a household object or an object from outside.
2. Make close observations of your object. What colors, patterns, shapes, textures, etc. do you observe? What is unique or interesting about your object?
3. Show those details by making a scientific drawing with pictures and words.
4. As you draw, draw what you actually see. Imaginative drawings are important and fun too, but when scientists do scientific drawings, they draw only what they observe.
5. Add labels along the way. Including labels helps when others look at your scientific drawing because they can understand all the parts. A label can also share extra information - a color you don't have in your box, or a texture that's hard to draw, for example.
6. Before you finish, take another look at your object and drawing. Is there a detail you missed that you can add in? Is there another label you add to help others understand your drawing?

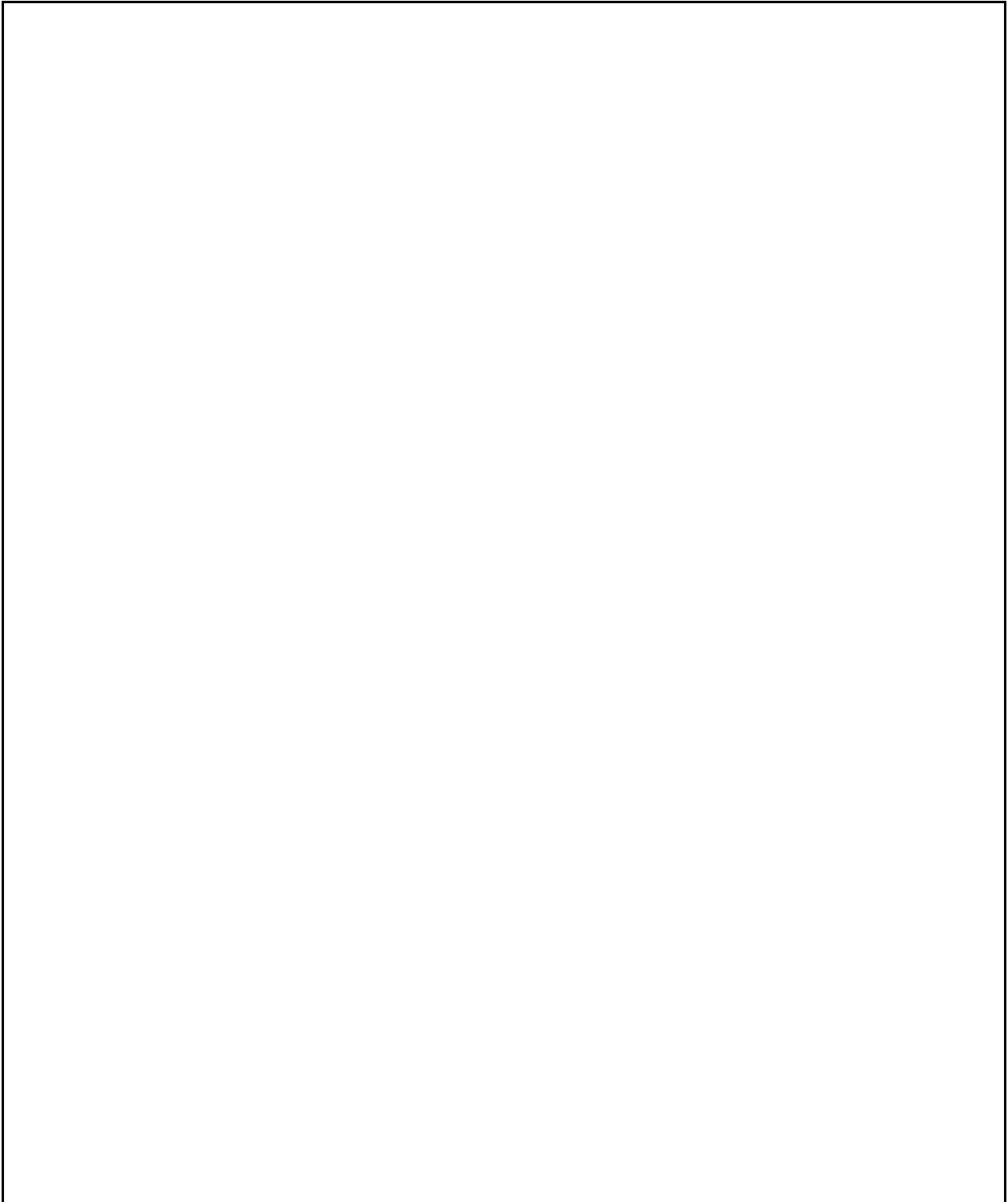


**EXAMPLES:**



## Scientific Drawing

Add details and labels to your scientific drawing! Draw what you actually see.



## La Ilustración Científica

Incluye detalles y etiquetas en tu ilustración científica! Dibuja lo que realmente puedes ver.



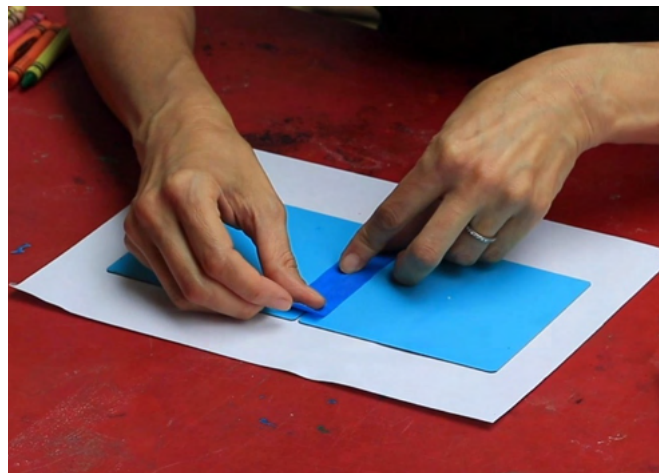


# Stand-Up Nature Kaleidoscope

Local artist Katherine Lampert is showing us how to make our own stand-up kaleidoscope with the directions below.

## SUPPLIES

- 2 small mirrors
- Masking tape
- White paper
- Something to draw with (crayons, markers, pens -- anything you have laying around will do)
- Bag for collecting objects from nature



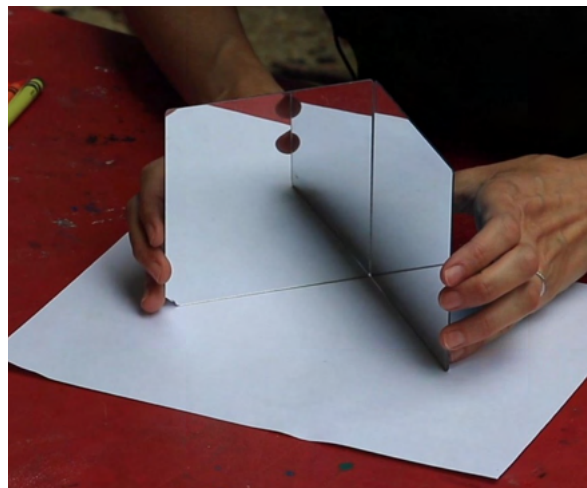
## DIRECTIONS

Go on a nature hunt, collecting as many interesting objects as you can find, such as leaves, stones, twigs, pinecones, or whatever exists in your outdoor surroundings. Bring your treasures back to your “studio.”

On a flat surface, tape the two small mirrors together, facing each other like a slightly open book. Open to about a 45-degree angle.

Place a plain piece of paper underneath to eliminate the texture of your work surface.

Arrange your nature objects on the paper inside the kaleidoscope.



You can also experiment with sketching your objects on another piece of paper and sliding your drawing under the kaleidoscope.

Look into the mirror to see your amazing symmetrical designs!



# Nature Rubbings with Crayons & Watercolor

Local artist Katherine Lampert is showing us how to make our own nature rubbings using objects we can find in our backyard or local park.

## SUPPLIES

- Wax crayon (any color works, clear or white will give an invisible design)
- Lightweight white paper, such as regular copy paper
- Watercolor paint
- Bag for collecting objects from nature

## DIRECTIONS

Go on a nature hunt to collect objects that have some texture, such as leaves with bumpy veins, twigs, flowers and seed pods.

Back at your “studio” place a sheet of clean paper on your work surface. This will help eliminate the rubbing picking up any surface texture from the table. Arrange your nature objects, textured side up, on top of the paper. Place another sheet of paper on top.

Using a crayon, begin to create your rubbing. Experiment with pressing very lightly at first and add more pressure later if you want to add more texture.

Once finished, add a wash of watercolor paint over the top. If you used a clear or white crayon, watch your invisible design appear! If you used a colored crayon, try using paint colors that contrast with the crayon color so that your design really “pops.”





# Upcycled Butterfly Craft

Local artist Katherine Lampert is showing us how to make our own symmetrical butterfly by using recyclable objects!

## SUPPLIES

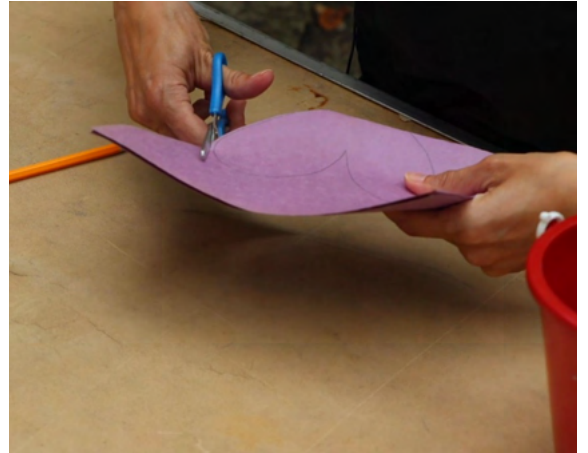
- Acrylic or tempera paint (we like the washable variety)
- Any kind of paper
- Paintbrush
- Scissors
- Pencil or crayon
- Upcycled toilet paper roll insert
- An adhesive: glue, paste or tape will all work
- A smock or apron when painting is always a good idea!

## DIRECTIONS

Start by folding a piece of paper in half. Sketch out half of a butterfly using your pencil, then cut out both halves at the same time, so that you have two matching sides with a fold in the center.

Open up your butterfly wings. Apply paint thickly, creating a design on one side only. Before your paint dries, fold your wings together, pressing down so that the design from one wing prints onto the other. Open up your wings to see your symmetrical design! Allow to dry.

In the meantime, use an upcycled toilet paper roll to create the butterfly's body. Decorate the body, paint a silly face, make antennae, and allow to dry. Once dried, glue or tape the wings onto the back!



# *Make Blackberry Ink!*

Did you know that you can use natural objects to make your own ink? Local artist Solomon Salim Moore shared his amazing blackberry ink recipe with us. Check out the full list of supplies and ingredients, and the tutorial, below!

## **SUPPLIES**

- 1 cup of blackberries
- 1 cheesecloth
- 1 tbsp of salt
- 1 tbsp of white vinegar
- 3 bowls
- 1 tablespoon measuring tool



## **DIRECTIONS**

In a bowl, unfold and lay down your cheesecloth.

Pour 1 cup of blackberries on top of the cloth, then fold the four corners on top of them. Holding the cheesecloth tight, squeeze all the berry juice in a clean bowl, making sure all seeds and residues remain in the cloth.

Add salt to the juice and the vinegar; stir for about 15 seconds.

Pour your ink in a glass bottle or jar for storage. Your ink is ready to use immediately.



# *Create Your Painting!*

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# *Neighborhood Species*

**Species name:**

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**Description (color, size, etc.):**

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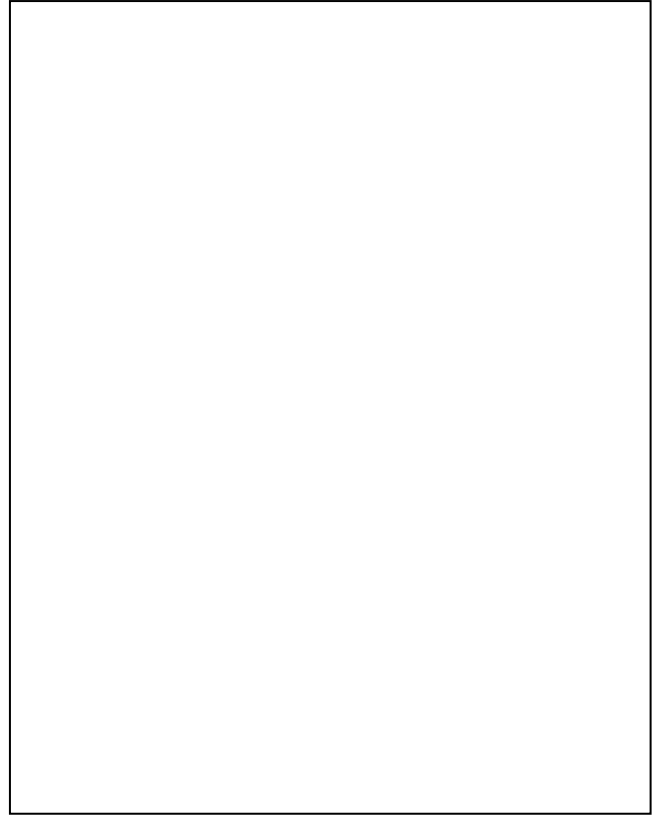
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**Diet:**

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**Habitat (where did you see it?):**

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**Behaviors (what was it doing?):**

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**Drawing and research done by:** \_\_\_\_\_

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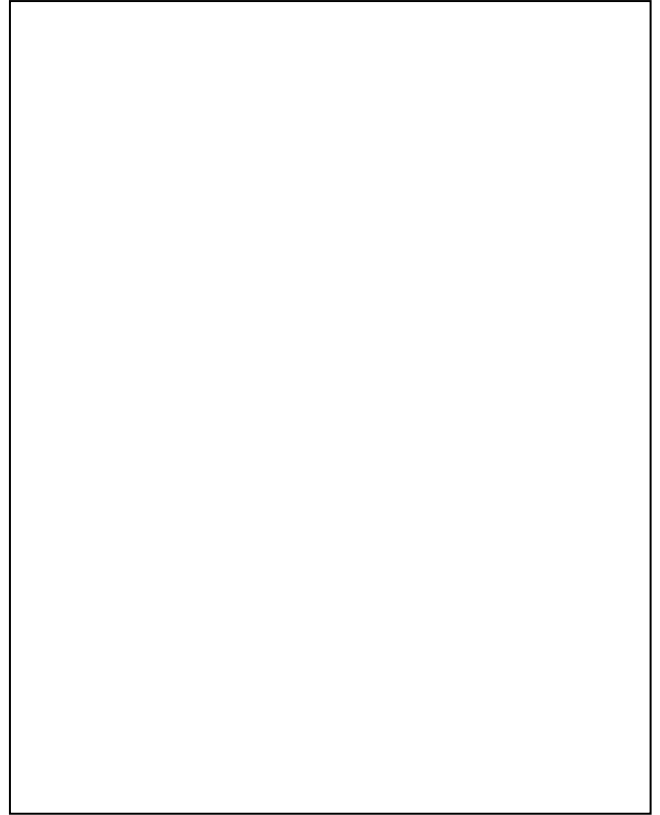
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# *My Observations*

I'm observing\_\_\_\_\_.

**I notice:**

(use words and drawings to describe what you're observing)

**I wonder:**

(write all the questions you have about what you're observing)

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# Story Time Graphic Organizer

Story Time Book Title: \_\_\_\_\_

Use words and pictures to share about  
a main idea in the story you read.

Describe some adventure or exploration that happened.

How is nature involved in the story?

As you were reading the story, how did you feel?

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