

Science @Home

ISLANDS



Island-hop with us! Explore five unique island archipelagos around the world for a week of crafts, experiments, and videos for ages 8-11.

Islands are among the most diverse—and threatened—ecosystems on Earth. Journey to the Galápagos, Lesser Antilles, Madagascar, Philippines, and Gulf of Guinea islands and meet the fascinating animals, plants, and people who call them home.

Please note: While Science @ Home activities are designed to be conducted by kids, some little ones might need adult help with reading instructions and preparing crafts.

Day 1: Volcanic Islands: The Galápagos and the Lesser Antilles 60–90 minutes

- » Skull Comparison: Galápagos Sea Lion and Galápagos Fur Seal (specimen investigation)
- » Lesser Antillean Whistling Frog (craft)
- » Rumbling Volcano (experiment)
- » Hungry Galápagos Tortoise (craft)

Day 2: Gulf of Guinea: São Tomé e Príncipe 45–60 minutes

- » Birds of the Gulf of Guinea (coloring) (en español)
- » Begonia Specimen Investigation (video)
- » Float On (experiment) (en español)

Day 3: Madagascar 45–60 minutes

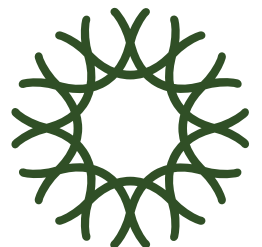
- » Eating Insects (video)
- » Leaping Lemurs and Arboreal Aye-Ayes (craft)
- » Fingerprint Madagascar Ants (craft)

Day 4: The Philippines 60–90 minutes

- » Peek-a-boo Pangolin (craft)
- » Orchid Pollination Game (activity) (en español)
- » Sulu Hornbill Hat (craft)

Kid & Caregiver Extension Activities

- » Edible Insect Lab (video)
- » Academy's Islands 2030 Initiative (resource)
- » Biodiversity and Community in São Tomé e Príncipe (video)



Galápagos Skull Examination

Take an up-close look at two skulls from the Academy's natural history collection on the [Sketchfab website](#). These two skulls come from two different animals that are related and share the same habitat. They are both residents of the Galápagos Islands and belong to a group of animals called pinnipeds, which means "fin feet," but we know them better as seals and sea lions. Investigate the [Galápagos fur seal](#) and [Galápagos sea lion](#) skulls to learn more, using your cursor to move, spin, rotate, and zoom in and out. As you explore the skulls, think about the four questions below. Share your answers with a friend or family member or just think in your head.

Exploration Questions

1. Compare the shapes and features of both skulls. What do they have in common? How do they differ from each other?
2. Compare the teeth of both skulls. What can they tell you about what the animal ate? Do they eat the same or different things? What evidence do you see that leads you to your conclusion?
3. Find the part of the skull where the eyes might have been. Are they in the front of the skull facing forward or located on the sides? Why might both animals have their eyes in the same area? How does the placement of the eyes help them to survive?
4. Notice the two small holes that are located on the side of the skull. They are positioned in roughly the same spot on either side, but they are too small to be eyes. What could they be? What other animals might have two small holes on the sides of their heads?

Fur Seals vs. Sea Lions

While you can tell the difference between a fur seal and sea lions by looking at their skulls, living ones have a variety of similarities and differences as well. Take a look at the images and traits of Galápagos fur seals and sea lions below. Can you see all the differences in the images?

Galápagos Fur Seal	Trait	Galápagos Sea Lion
		
<p>Males: 1.5 meters (4.9 feet) average Females: 1.3 meters (4.3 feet) average</p>	Length	<p>Males: 2 meters (6.6 feet) average Females: 1.5 meters (4.9 feet) average</p>
<p>Thicker fur coat that turns black when wet and goldish when dry</p>	Fur	<p>Not as much underfur, darker coloring</p>
<p>Bulging, more pronounced.</p>	Eyes	<p>Smaller</p>
<p>Stick out from head</p>	Ears	<p>Flatter and closer to the head</p>
<p>Found in more shaded areas and rocky coastlines of the Galápagos Islands</p>	Habitat Location	<p>Found on beaches and piers throughout the Galápagos Islands</p>
<p>Herring, sardines, tuna, lantern fish, and small squid. Forages during the night.</p>	Diet	<p>Mainly fish such as sardines, lantern fish, herring and one species of squid. Forages during the day.</p>

Seals and sea lions are found around the world, not just the Galápagos. In San Francisco Bay, you might spot the California sea lion and the harbor seal. Learn more about other seals and sea lions to compare them—do you see the same similarities, differences, and patterns?



Lesser Antillean Whistling Frog

Lesser Antillean whistling frogs are unique for many reasons: They make a high-pitched whistling call rather than a classic croak; they hatch from eggs as froglets and skip the tadpole stage altogether; and they only grow as big as your thumbnail. Now that you know how special these frogs are in their own habitat, create one for yours!

Materials

Frog template (page 2)

Clothespin

Colored pencils, crayons, or markers

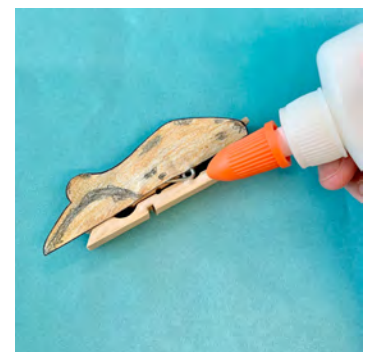
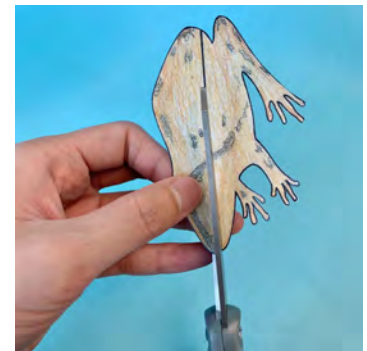
Scissors

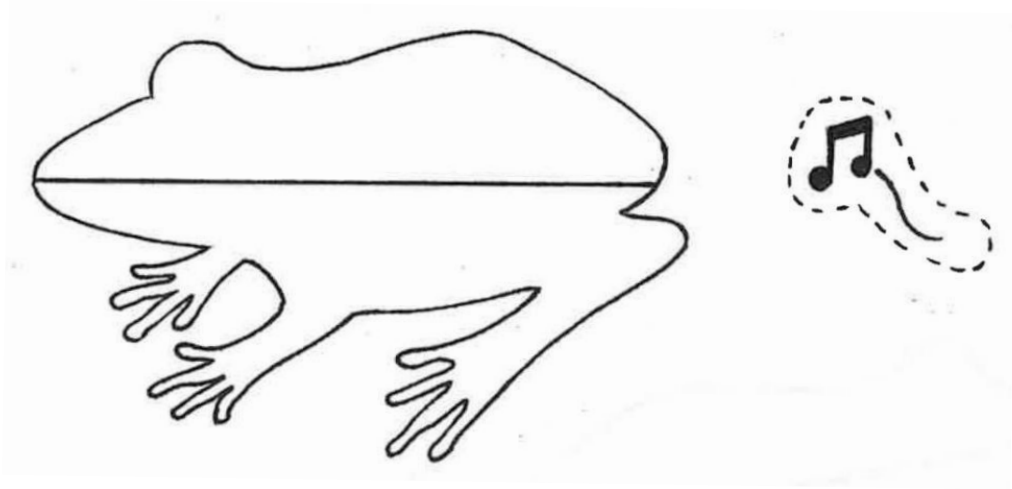
Glue or tape

Googly eyes (optional)

Directions

1. **Print** frog template on page 2.
2. **Color** your whistling frog.
 - a. How is the color and pattern of the frog important?
3. **Cut** out your whistling frog and the musical note. **Cut** along the line to separate the top of the frog from the bottom.
4. **Glue** or **tape** both the top and bottom of your frog to the side of the clothespin.
5. **Glue** or **tape** the musical note to the other side of the clothespin.
6. **Open** your frog's mouth and let it whistle!







Rumbling Volcano Experiment

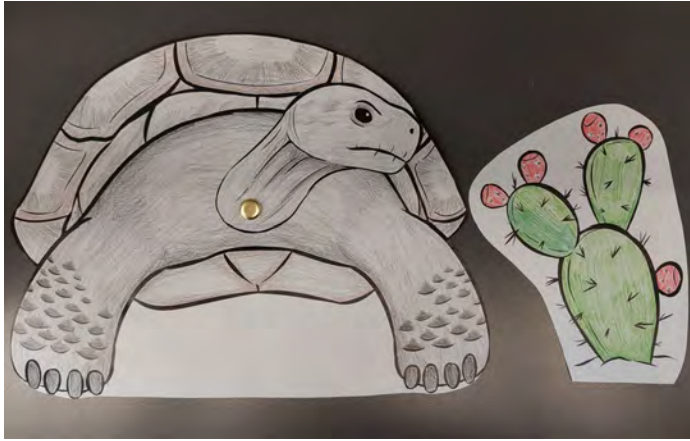
Volcanic islands, also known as oceanic islands, are formed by volcanoes that have erupted on the seafloor. Over millions of years, layer upon layer of lava builds up until the top of the volcano emerges above the ocean's surface. Volcanic islands can be as low as a couple meters above sea level, or as high as the 4,000-meter (2.5 mile) peak of Mauna Kea on the big island of Hawai'i. Create your own erupting volcano in this classic science experiment.

Materials

Baking sheet with edges
Homemade or store-bought play dough (or dirt and sand)
1 tbsp baking soda
1/3 cup vinegar (optional: mixed with 1-3 drops red food coloring)
Plastic spoons
Small measuring cup

Directions

1. **Shape** your play dough (or dirt and sand) into a small mound and press down on the top to make an indentation. This is your volcano's caldera or "crater."
2. **Place** the volcano in the middle of the baking sheet.
3. **Pour** the baking soda into the volcano opening with the plastic spoon.
Optional: add 1-3 drops of red food coloring.
4. **Pour** the vinegar very slowly into the volcano opening on top of the baking soda.
5. **Observe** the chemical reaction and add more vinegar to the mixture.
How fast do the "lava" bubbles rise? Do they flow evenly out of the entire rim or is the "lava" only flowing down part of the volcano? Why do you think that might be? Once there are no more bubbles, the "eruption" is over.



Hungry Galápagos Tortoise Craft

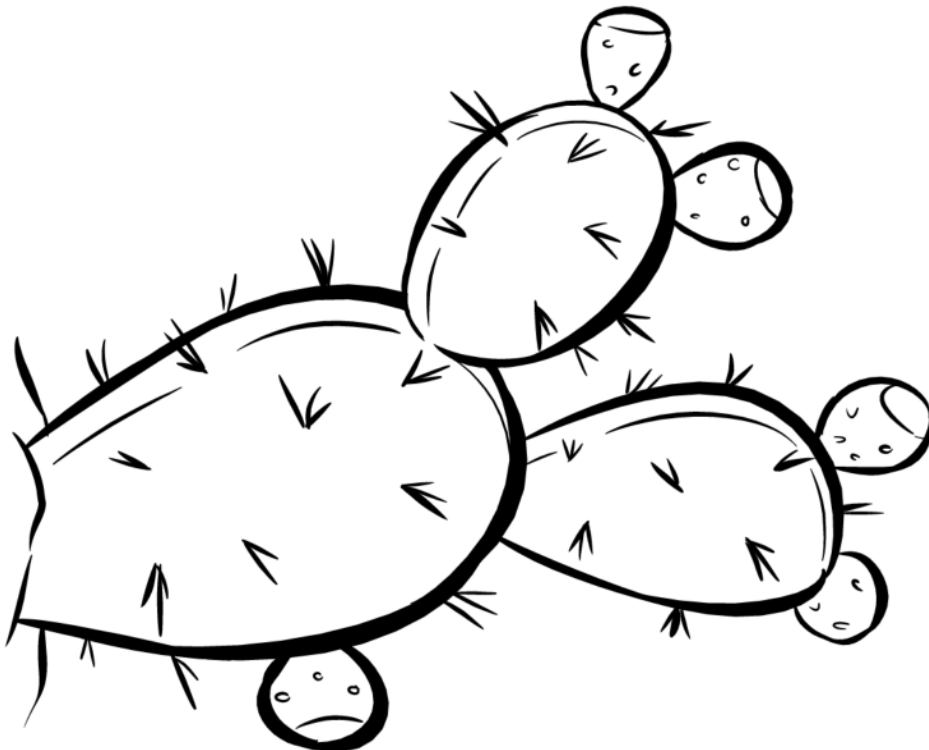
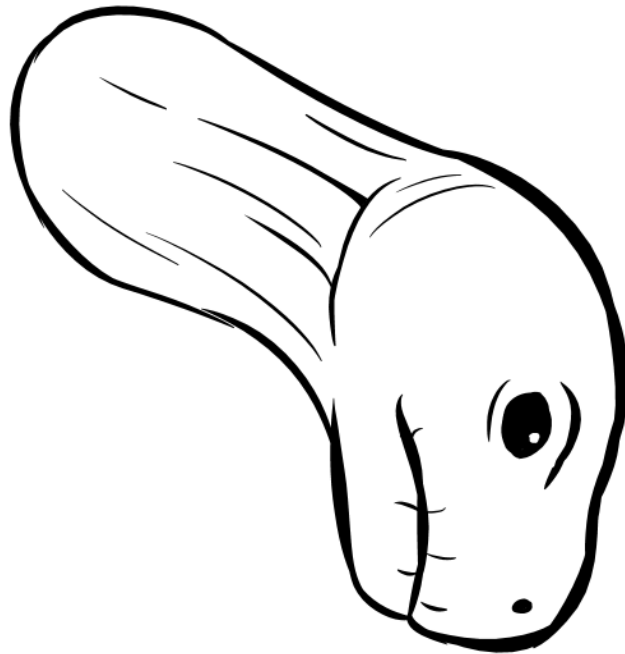
The Galápagos tortoise is the largest living species of tortoise in the world, weighing over 400 kg (900 lbs)! Their large size is what scientists think made it possible for their ancestors to make the 1000 km (620 mile) crossing from South America to the Galápagos Islands: Their longer necks let them breathe easier at sea, and their ability to go without food and water for months at a time helped them adapt to the Galápagos' dry habitats once they arrived. Follow the instructions below to make your own long-necked Galápagos tortoise!

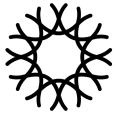
Materials

Print-out templates (pages 2 & 3)
Metal brads
Scissors
Crayons or markers

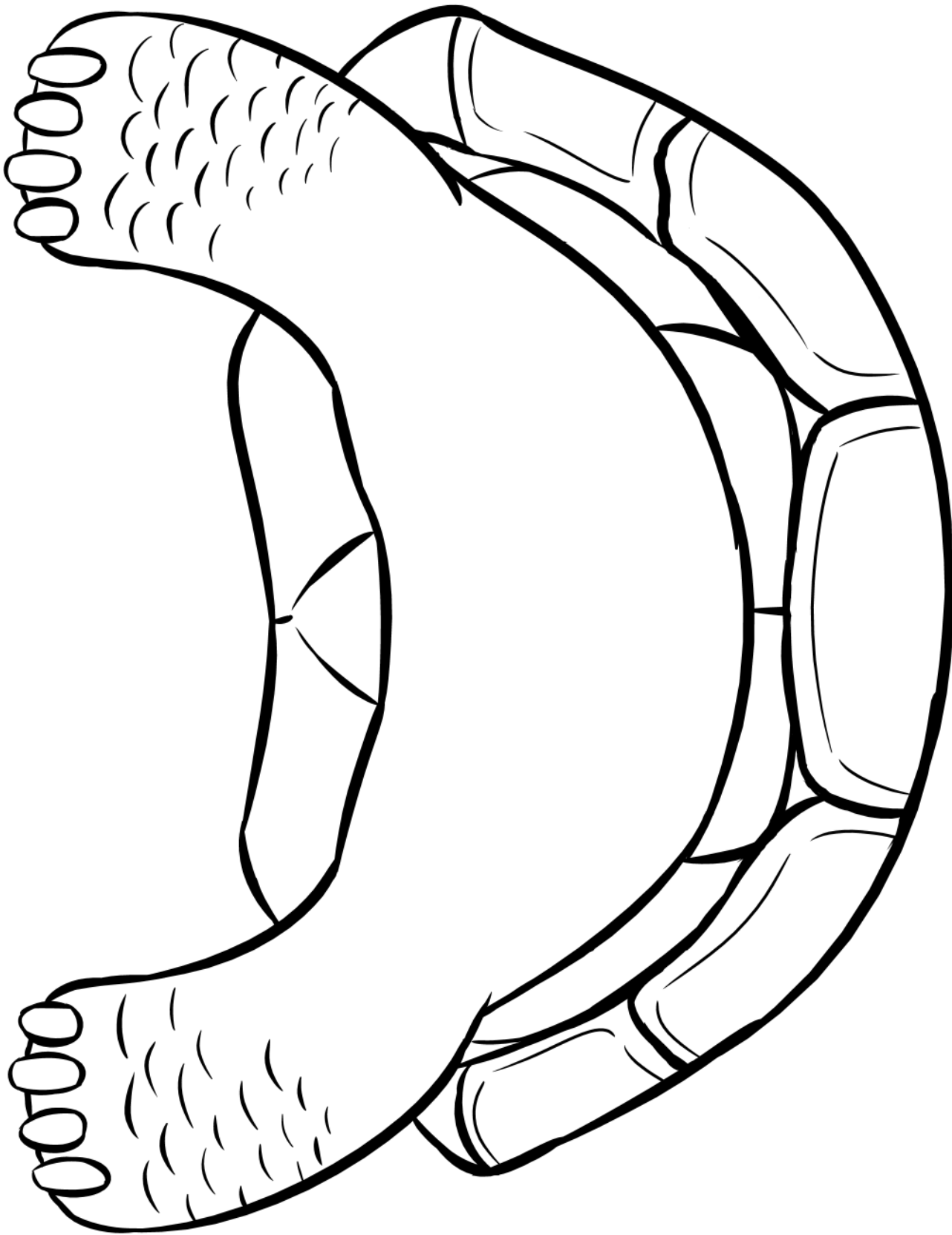
Directions

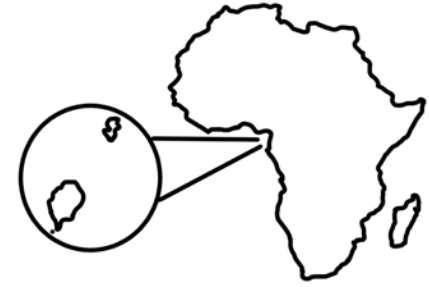
1. **Color** in the attached illustrations with crayons or markers.
2. **Print** out the templates on pages 2 & 3 and **cut** out the 3 templates (tortoise body, tortoise neck & head, and prickly pear cactus) with your scissors.
3. **Poke** a hole in the middle of the tortoise body template with a metal brad.
Poke another hole at the base of the tortoise neck & head cutout with a metal brad.
4. **Attach** the neck and head template to the body template with the metal brad.
Make sure the neck is in the center of the tortoise's body.
5. **Move** the neck of the tortoise up and down to eat the prickly pear cactus.





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Birds of the Gulf of Guinea

Islands are unique environments home to many animals found nowhere else in the world, including many birds. The islands of São Tomé and Príncipe, located 155 miles off the west coast of Africa, are no exception.

São Tomé scops owl: This small rufous owl is 1 of only 3 owls found on the islands of São Tomé and Príncipe. The 2 others are the barn owl and a currently undescribed (as of 2022) Príncipe scops owl.

Newton's Fiscal: With its black-colored back and yellow belly, the Newton's Fiscal is the only shrike living on São Tomé. They are also one of the few shrikes that live in forested environments.

White-tailed Tropicbird: Tropicbirds are known for their brightly colored bills and long tail feathers. White-tailed Tropicbirds can be found near tropical and subtropical waters, including around Hawai'i and Florida.

São Tomé Grosbeak: The chestnut-colored member of the finch family was once thought to be extinct, but it was rediscovered during a survey in 1991.

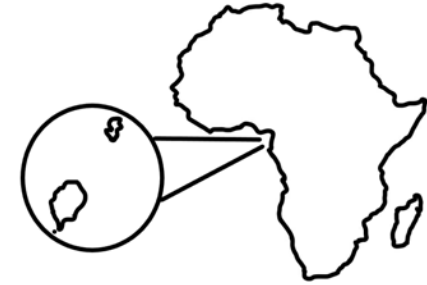
Dwarf Olive Ibis: The smallest member of the ibis and spoonbill family, Threskiornithidae, the dwarf olive ibis lives primarily in forests. They use their down-curved bills to probe for invertebrates in the dirt.

Malachite Kingfisher: This small kingfisher looks like a gem with its blue back, orange belly, and reddish bill as it perches on reeds looking for food in the water below. Subspecies of this bird can be found on both São Tomé and Príncipe.

Giant Sunbird: The giant sunbird is one of the largest members of the sunbird family, Nectariniidae. Sunbirds have long down-curved bills to feed on nectar. These birds can often be found in pairs or small groups in forest canopies.

Príncipe Starling: This endemic starling of Príncipe is related to the European starling we see in North America and Europe. They have iridescent feathers that can appear black from one angle and green, black, copper, and purple from another.





Aves del Golfo de Guinea

Las islas son ambientes únicos que son hogares para muchos animales que no se encuentran en ningún otro lugar del mundo, incluyendo muchas aves. Las islas de Santo Tomé y Príncipe, situadas a 155 millas de la costa de África Occidental, no son excepciones.

Autillo de Santo Tomé: Este pequeño autillo rufo es una de 3 búhos que existen en las islas de Santo Tomé y Príncipe. Los otros dos son la lechuza y un autillo de Príncipe todavía no descrita (a partir de 2022).

Alcaudón de Santo Tomé: Con su espalda de color negro y su vientre amarillo, este es el único alcaudón que vive en Santo Tomé. También son uno de los pocos alcaudones que viven en ambientes forestales.

Ave trópic de cola blanca: Las aves tropicales son conocidas por sus picos de colores brillantes y sus largas plumas en la cola. Las aves tropicales de cola blanca pueden encontrarse en aguas tropicales y subtropicales, ¡incluso alrededor de Hawai y Florida!

Picogordo de Santo Tomé: Este miembro de la familia de los pinzones de color castaño, se creía extinguido, pero se redescubrió durante una investigación en 1991. Aunque el picogordo de Santo Tomé es un miembro de la familia de los pinzones, también hay picogordos relacionados a los cardenales. Esto demuestra que los picos grandes son muy útiles cuando se trata de comer semillas.

Ibis oliváceo enano: El miembro más pequeño de la familia de los ibis y picos de espátulas, Threskiornithidae, el ibis oliváceo enano vive principalmente en los bosques. Utilizan su pico curvado hacia abajo para buscar invertebrados en la tierra.

Martín pescador malaquita: Este pequeño martín pescador se parece como una pequeña joya con su espalda azul, su vientre anaranjado y su pico rojizo cuando se pone en los juncos en busca de comida en el agua. Subespecies de esta ave se pueden encontrar en ambos Santo Tomé y Príncipe.

Suimanga gigante: El suimanga gigante es uno de los miembros más grandes de la familia de suimangas, Nectariniidae. Los suimangas tienen picos largos y curvados hacia abajo para alimentarse de néctar. Estas aves se encuentran en parejas o en pequeños grupos alrededor de las copas de los bosques.

Estornino de Príncipe: Este estornino endémico de Príncipe es relacionado a los estorninos europeos que vemos aquí en Norteamérica y Europa. Tienen plumas iridiscentes que pueden parecer negras desde un ángulo y verdes, negras, cobrizas y moradas desde otro.





Photo by Brian Gratwick, [Mangrove Propagules](#)

Float On

Have you ever floated in water before? What kept you from sinking? The seeds of island trees like mangroves and coconut palms float, too. This special ability to float allows seeds to travel to new locations far away from their parent trees. Explore how shape, density, and material affect a seed's ability to float.

Materials

Large bowl, tub, or sink

Items that float and sink, such as: popsicle sticks, paper, cardboard, plastic

Items to join other items together, such as: rubber bands, packaging tape, duct tape, plastic wrap

Scissors

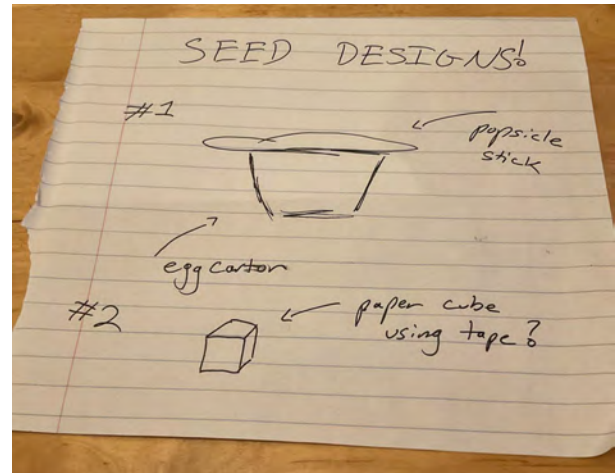


Directions

1. Fill a bowl, tub, or sink with water.
 - a. Test materials to see what sinks and floats. What do you notice?
 - b. Try adding tape to paper materials, what happens?
 - c. Try adding weight to an item, what do you observe?



2. **Draw** a design for a floating seed. You can learn more about seeds that float on page 3 and can use those seed shapes for inspiration.
3. **Craft** your seed.
4. **Test** the seed in the water. What worked well? What didn't work well?
 - a. **Make adjustments** and try again.
5. Challenge: How long can your seed float? How long do you think it could travel?
6. Challenge: Add a marble or small toy to the inside of your seed. Can you still get your seed to float with the extra weight?



Mangroves

Mangrove seeds have a special adaptation that allows them to germinate while still attached to their parent tree. This ability gives them a head start on growing before they fall to the water, float to a new location and take root. The long pencil-like shape of the seed is weighted so that the root side floats lower in the water than the first sprouting leaves. The root is ready to grow down into the sand as soon as the seed floats to a good location.

Image to the right: Mangroves sprouting at the California Academy of Sciences.



Coconuts

Coconuts are the seeds of the coconut tree, which is a species of palm tree. Coconuts have an outer husk, a hard shell, a layer of coconut meat, and are filled with coconut water. They are very buoyant and can float for weeks. Coconuts are culturally significant to communities in the Western Pacific and South Asia. Coconuts were first domesticated by the Austronesian peoples in Southeast Asia and were spread throughout Micronesia, Polynesia, Melanesia, Southeast Asia, and Madagascar. In addition to being spread through domestication, coconut palms have spread all over the world by coconuts floating on ocean currents—including as far north as Norway!

Image to the right: Coconut Sprouting





Photo by Brian Gratwick, [Mangrove Propagules](#)

Siguiendo Flotando

¿Has flotado alguna vez en el agua?

¿Qué te prevenió que te hundas? Las semillas de árboles de islas como los mangles y cocoteros también flotan. Esta capacidad especial de flotar permite a las semillas viajar a nuevos lugares lejos de sus árboles de origen. Explora cómo la forma, la densidad y el material afectan la capacidad de flotar de una semilla

Materiales

Tazón grande, bañera o fregadero

Artículos que floten y se hundan, como: palitos de helado, papel, cartón, plástico

Artículos para unir otros artículos, como: gomas elásticas, cinta de embalar, cinta de tela, envoltorio de plástico

Tijeras

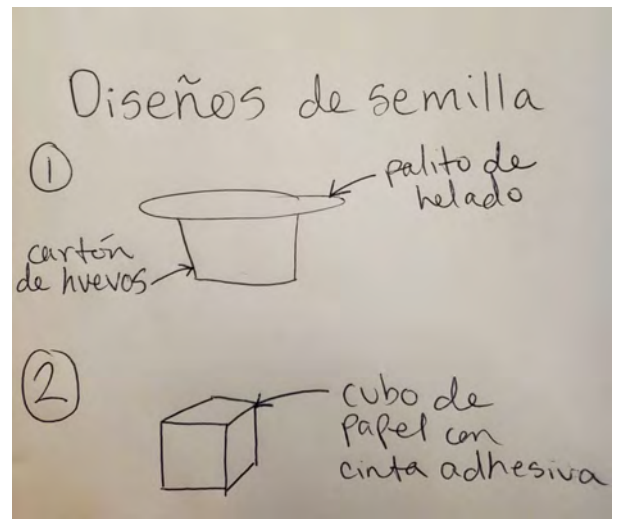


Instrucciones

1. **Llena** de agua un tazón, una bañera o un fregadero.
 - a. Prueba los materiales para ver qué se hunde y qué flota. ¿Qué notas?
 - b. Trata de añadir cinta adhesiva a los materiales de papel, ¿qué ocurre?
 - c. Trata de añadir peso a un objeto, ¿qué observas?



2. **Dibuja** un diseño para una semilla que flota.
Puedes aprender más sobre las semillas que flotan en la página 3 y puedes usar esas formas de semillas por inspiración.
3. **Crea** tu semilla.
4. **Prueba** la semilla en el agua. ¿Qué funciona bien?
¿Qué no funciona tan bien?
 - a. **Haz ajustes** y trata de nuevo.
5. Desafío: ¿Cuánto tiempo puede flotar tu semilla?
¿Cuánto crees que pueda viajar?
6. Desafío: Añade una canica o un juguete pequeño al interior de tu semilla. ¿Puede la semilla tuya seguir flotando con el peso extra?



Mangles

Las semillas de los manglares tienen una adaptación especial que les permite germinar mientras siguen unidas a su árbol de origen. Esta capacidad les da una ventaja para crecer antes de caer al agua, flotar a un nuevo lugar y echar raíces. La forma alargada de la semilla, parecida a un lápiz, está lastrada para que la parte de la raíz flote más abajo en el agua que las primeras hojas que brotan. La raíz está lista para crecer en la arena tan pronto como la semilla llegue a un buen lugar.

Imagen a la derecha: Manglares brotando en la Academia de Ciencias de California



Cocoteros

Los cocos son las semillas del cocotero, que es una especie de palmera. Los cocos tienen una cáscara exterior, una cáscara dura, una capa de carne de coco y están llenos de agua de coco. Son muy boyantes y pueden flotar por semanas. Los cocos son importantes culturalmente para las comunidades del Pacífico Occidental y el sur de Asia. Los cocos fueron domesticados por primera vez por los pueblos austronesios del sudeste asiático y se extendieron por Micronesia, Polinesia, Melanesia, el sudeste asiático y Madagascar. Además de la domesticación, los cocoteros se han extendido por todo el mundo gracias a los cocos que flotan en las corrientes marinas, ¡incluso hasta el norte de Noruega!

Imagen a la derecha: El brote del coco





Leaping Lemurs and Arboreal Aye-Ayes

Lemurs are a group of primates that are only found in Madagascar. Some lemurs, like the ring-tailed lemur, spend their days sunbathing on the forest floor. Others, like the aye-aye, forage for insects and fruits at night in the forest canopy. Make your own terrestrial (living on land) and arboreal (living in trees) lemurs and explore how their bodies are adapted for their different habitats.

Materials

- | | |
|-----------------------|--------------------|
| 2 toilet paper rolls | Scissors |
| 3 gray pipe cleaners | Crayons or markers |
| 2 black pipe cleaners | Tape |
| 1 white pipe cleaner | Printed templates |
| 3 brown pipe cleaners | Pencil |

Directions: Ring-tailed lemur

1. **Punch** one hole on each side of the top and bottom of the toilet paper tube roll. The two holes on top will be for the arms, and the two on the bottom will be for the legs. Punch one more hole in the back of the tube between the legs for the lemur's tail.



2. **Wrap** and **intertwine** the white and one of the black pipe cleaners around each other. This will be the lemur's black and white striped tail. The striking pattern of the tail helps keep the group (called a troop) together so each lemur knows where the others are.
3. Take two gray pipe cleaners and a pencil or pen. **Wrap** each pipe cleaner around the pencil tightly. Once all of the pipe cleaners are wrapped around, **push** the pencil out. Each coiled pipe cleaner will be a leg for the ring-tailed lemur. These lemurs spend about 40% of their time on the ground, unlike most lemur species that spend the majority of their time in trees.
4. Color and cut out the ring-tailed lemur head and body on page 3. They are labeled "A" and "a".
5. **Tape** the head and body pieces onto the toilet paper tube and then **insert** one gray pipe cleaner all the way through the upper holes on the side of the tube. These will be the arms. **Insert** the intertwined black and white pipe cleaners into the hole in the back. This will be the tail.
6. **Insert** the two gray coiled pipe cleaners into the holes on the bottom of the tube, one on each side. These are the legs of the lemur.
7. Your ring-tailed lemur is now complete! Can you make your lemur bounce and jump? While ring-tailed lemurs usually walk with their hands and feet on the ground, they can leap for defense or to compete with each other.



Directions: Aye-Aye

1. For the aye-aye, **repeat** step 1 by cutting 5 holes in a second paper tube. Aye-ayes are the world's largest nocturnal primate, and spend most of their lives high up in the trees searching for food after the sun sets.
2. **Color** and cut out the aye-aye head and body pieces from page 3. They are labeled "B" and "b".
3. **Tape** the head and body pieces onto the tube and then **insert** one brown pipe cleaner all the way through the top holes for the aye-aye's arms. Insert a second brown pipe cleaner through the bottom holes for the legs. Insert a black pipe cleaner in the hole at the bottom back for the tail.
4. To make the fingers of the aye-aye, **cut** a brown pipe cleaner in half. Take one half and **cut** it into 4 equal lengths. **Twist** 2 pieces onto an arm about $\frac{2}{3}$ away from the paper tube roll, making a hand that has 5 fingers (with the middle one being the longest). Repeat the same procedure with the other arm. Aye-ayes specialize in eating insect larvae found in trees, and use their long finger to tap the trees to find tunnels and hollow chambers. They use their big ears to detect where the larvae are in the trees, then they hook and pull the larvae out with their long middle finger.
5. Your aye-aye is now complete!
Where will your aye-aye explore?





Fingerpaint Madagascar Ants

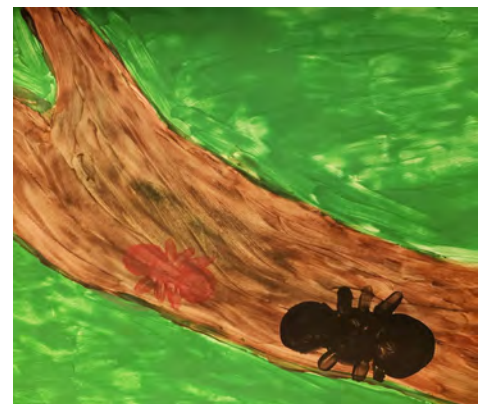
Celebrate island ecosystems by creating your very own masterpiece at home! Fingerpaint ants inspired by species from Madagascar, an island nation off the east coast of Africa. Observe and then incorporate unique details to demonstrate the biodiversity of Madagascar and other islands around the world.

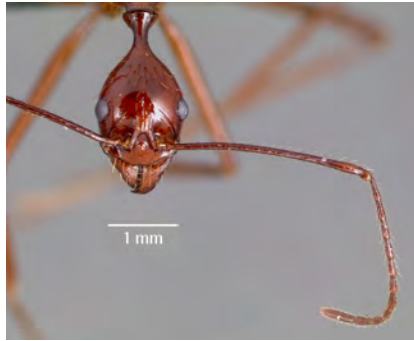
Materials

White paper
Colored pencils or crayons
Washable, non-toxic paint

Directions

1. **Paint** a background for your ants with your fingers. Will they be on a branch? The forest floor?
2. **Paint** an ant friend (or two!) with your fingers. Like all insects, ants have three body segments and six legs. Get creative with your color choices!
3. **Wait** for your painting to dry and **look** at the following images of ants from Madagascar. You can find more at antweb.org (hosted by the California Academy of Sciences). What do you notice that makes each ant look similar? What do you notice that makes each ant unique?



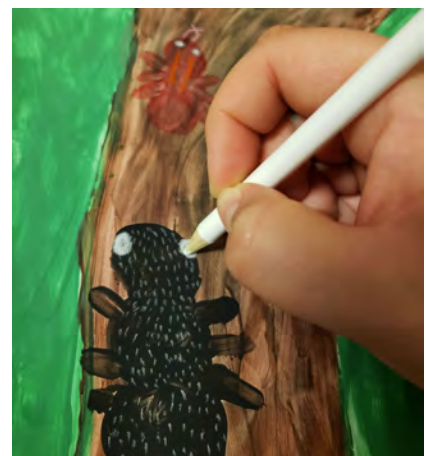


Species from left to right: *Aphaenogaster bressleri*, *Leptogenys alluaudi*, *Adetomyrma aureocuprea*



Species from left to right: *Camponotus androy*, *Anochetus madagascarensis*, *Strumigenys micrans*

4. **Use** colored pencils or crayons to add details to your ant(s) once your painting has dried. Will yours have hairs? Vary in color? Show off menacing mandibles? Feature bent antennae or iridescent wings?
5. **Show** off your masterpiece! Then, **look** for ants outside or on the second floor of Osher Rainforest next time you're at the California Academy of Sciences in San Francisco.





Peek-a-boo Pangolin

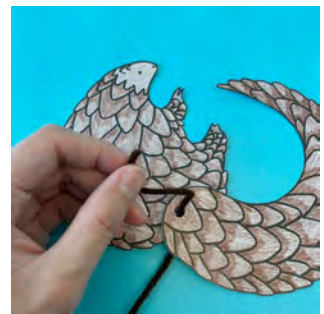
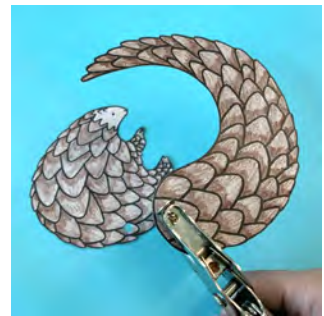
Pangolins, often called scaly anteaters, have their own set of built-in armor. Large scales made of keratin (the same material as your fingernails and toenails) cover their bodies. When threatened, pangolins curl themselves into a ball for protection, and can use their tail's curling ability to climb trees. Despite their impressive armor, pangolins are critically endangered. Learn more about pangolin conservation at [Pangolin Crisis Fund](#), [Save Pangolins](#), and [Wildlife Conservation Network](#).

Materials

Pangolin template (page 2)
Colored pencils, crayons, or markers
Scissors
Hole puncher or sharpened pencil
Yarn or string

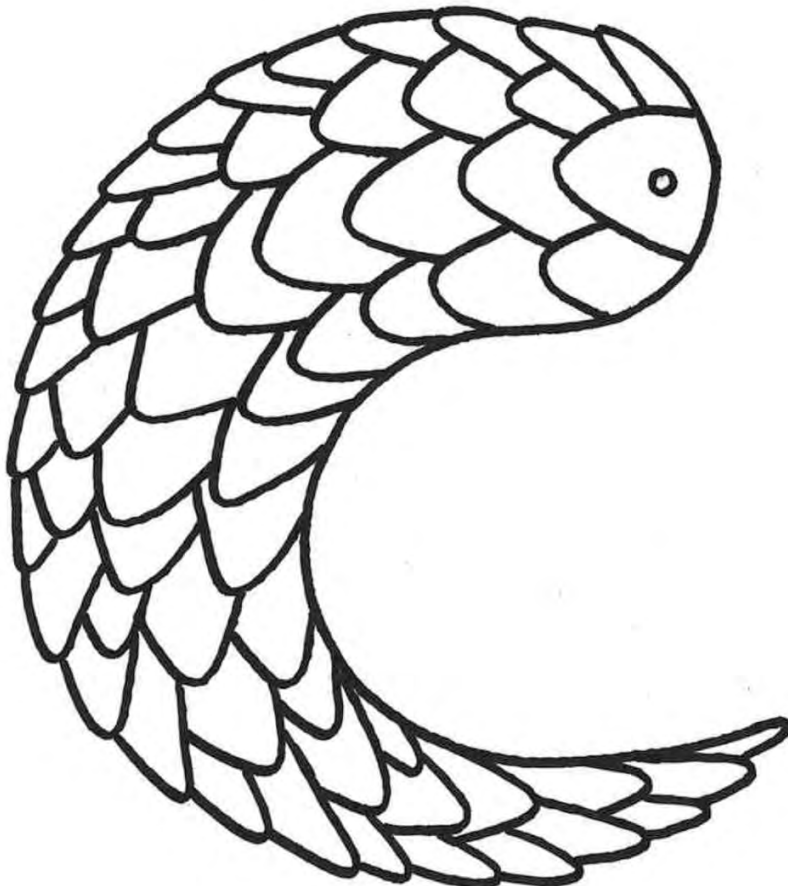
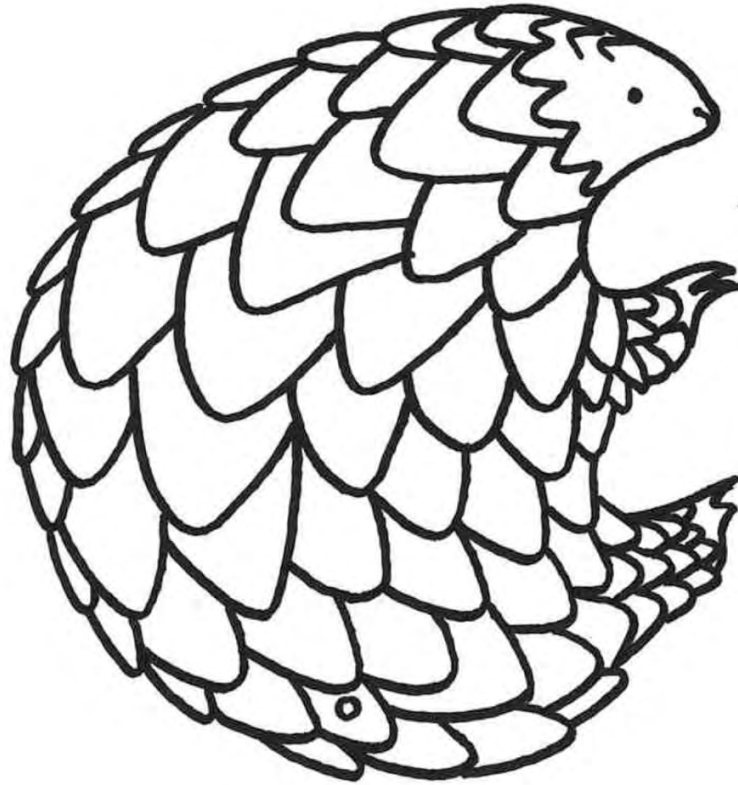
Directions

1. **Print** pangolin template on page 2.
2. **Color** your pangolin.
3. **Cut** out your pangolin.
4. **Punch** 2 holes, 1 on the body and 1 on the tail.
If you don't have a hole puncher, use a sharpened pencil.
5. **Attach** your pangolin's tail to the body using a piece of yarn or string. Make sure the tail is on top.
6. **Curl** your pangolin up into a ball.
Now you can withstand the bite of a lion!





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Orchid Pollination Game

There are over 1,000 species of orchid in the Philippines, and most of them grow nowhere else in the world! Many of these orchids reproduce with the help of pollinators, such as bees, wasps, and flies. Some orchids give off pleasant smells to attract night-flying fruit flies, while others use colorful patterns on their petals to mimic and attract the bees that pollinate them. Make your own orchid pollination game using a cardboard tube and a bead!

Materials

Upcycled cardboard tube
Wooden beads
Markers or paint
Scrap paper
String
Glue sticks
Tape
Scissors



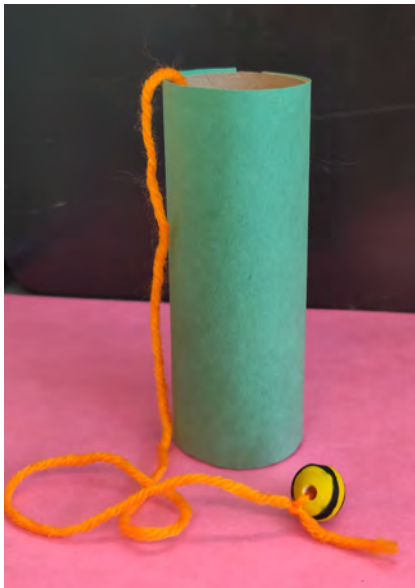
Directions

1. **Use** markers, paint, and/or colored paper scraps to decorate your cardboard tube like an orchid. Orchids are bilaterally symmetrical, meaning they look the same on the left and on the right—just like humans! Use this photo of the Waling-waling orchid on the right for inspiration.



Waling-waling orchid, © Jun Acullador

2. **Color** your wooden bead. You can use black and yellow stripes to make it look like a bee, draw on wings like a fly, or make up your own pattern to match the orchid you made.
3. **Tie** a piece of string around the bead, and **tape** the other end of the string to the base of your cardboard tube.
4. **Tape** the bottom of your tube closed.
5. You're all done! Can you get the insect in the tube to pollinate the orchid?





Juego de orquídea polinización

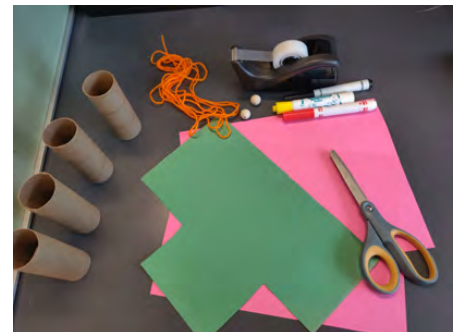
Hay más que un mil especies de orquídea en las Filipinas y la mayoría de ellas no crecen en ningún otro lugar en el mundo. Muchas orquídeas se reproducen con la ayuda de polinizadores, como abejas, avispas, y moscas. Algunas orquídeas producen olores agradables para atraer moscas de fruta que vuelan en la noche, mientras otras usan diseños coloridos en sus pétalos para imitar y atraer las abejas que las polinizan. ¡Haz tu propio juego de orquídea polinización usando un tubo de cartulina y una cuenta de madera!

Materiales

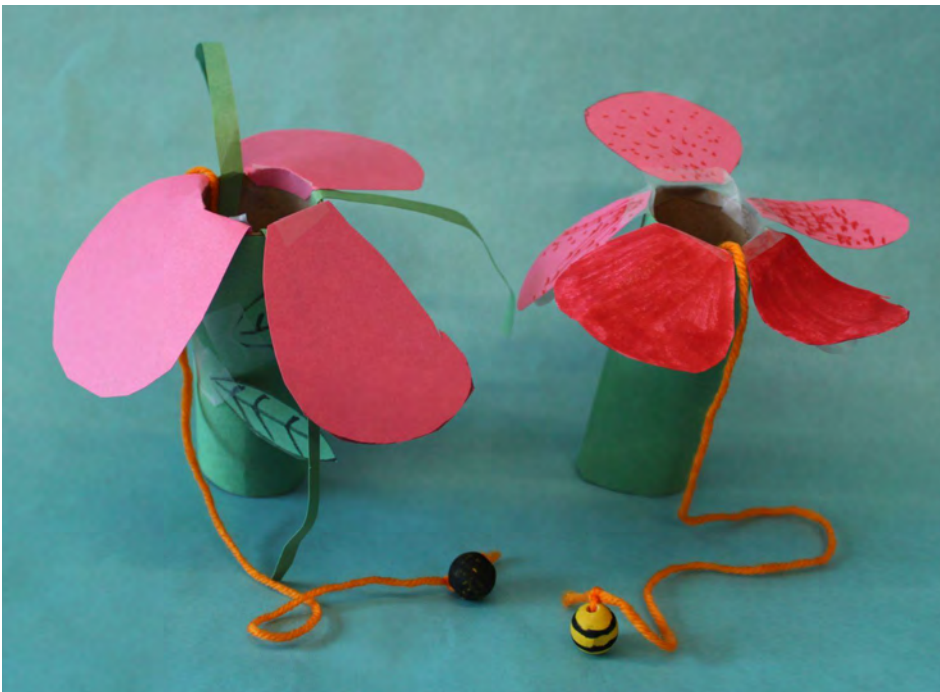
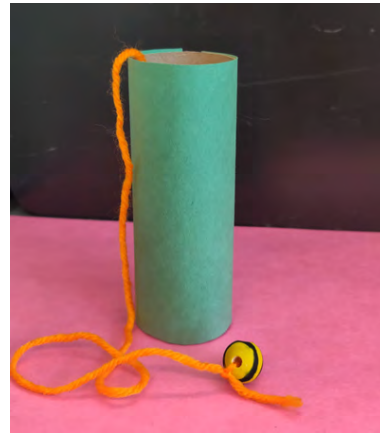
Tubo de cartulina reciclado
Cuentas de madera
Marcadores o pintura
Papel extra
Hilo o cordel
Pegamento en barra
Cinta adhesiva
Tijeras

Instrucciones

1. **Usa** marcadores, pintura, y/o trozos de papeles coloridos para decorar tu tubo de cartulina como una orquídea. Las orquídeas son bilateralmente simétricas, es decir, tienen se parecen mismo a la izquierda y la derecha - ¡como los humanos! Usa esta foto de la orquídea Waling-waling a la derecha por inspiración.



2. **Colorea** tu cuenta de madera. Puede usar rayas negras o amarillas para que parezca una abeja, dibuja alas como si fuera una mosca, o haz tu propio diseño como la orquídea que hiciste.
3. **Amarra** un trozo de cordel alrededor de la cuenta de madera y **pega** el otro extremo del trozo a la base de tu tubo de cartulina.
4. **Pega** el fondo del tubo cerrado.
5. ¡Ya has terminado! ¿Puedes estimular el insecto que está adentro del tubo a polinizar la orquídea?





Sulu Hornbill Hat

Sulu hornbills are one of the rarest birds on Earth, found only on the Sulu Islands in the southwestern Philippines. They are easily identified by their black body, white tail, and thick bill with a casque top. This dark-colored hornbill lives in forests and likes to feed on fig trees. What do you think it would feel like to have a large beak like a hornbill? Make a Sulu hornbill hat to find out!



Materials

Hornbill stencils (pages 3 & 4)
Construction paper: 3 black sheets, 1/2 white sheet
Glue and/or tape
Hole punchers
Elastic string
Scissors
White colored pencil or crayon

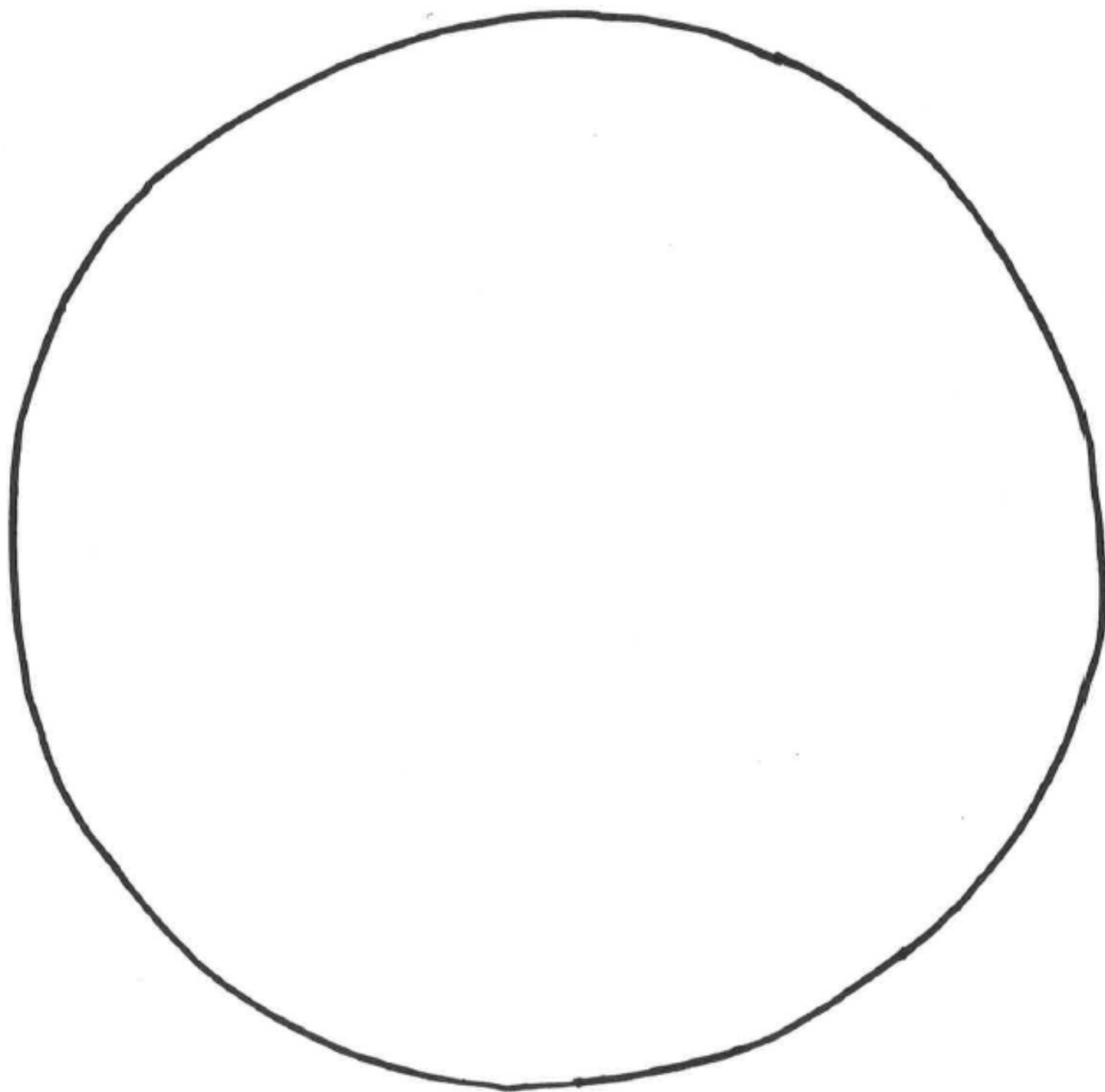
Directions

1. **Print** out the templates on pages 3 & 4 and cut them out with your scissors.
2. **Trace** the hornbill hat pieces using the stencils and **cut** them out.
Alternative: Color the templates instead.
 - a. Cut out two body circles using the circle template on page 3 on black paper.
 - b. Cut out two wings and the double-sided head using the templates on page 4 on black paper.
 - c. Cut out one tail using the tail template on page 4 on white paper.

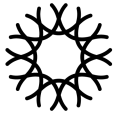


3. **Draw** eyes and markings, and any other decorations you like.
Use the illustration of the Sulu hornbill above as inspiration!
4. Lightly **fold** the two circles in half, but do not crease.
Position the circles as shown at right. This will be the base of the hat, so ensure it fits around your head before **gluing** or **taping** the edges of the circles together.
5. **Fold** the hornbill heads in half to form the two sides.
6. **Glue** or **tape** the hornbill head on the top of the hat, the two wings on the side of the hat, and the tail on the back of the hat.
7. **Use** a holepuncher to punch a hole on both sides of the hat and then tie a piece of yarn, string, or elastic to fit under your chin.





Body circle (cut 2)



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Wings, Tail, & Double-sided Head