



As you walk through each layer of the rainforest, look for the plants and animals pictured below. When you find one, fold over its tab and answer the question on the back by discussing it with your classmates. Good luck and have fun exploring!

a bird in the trees



a butterfly-
pollinated
flower



poison dart frog



red leaves on a
green plant



gecko



pointy spines on a
peach palm tree



macaw



bromeliad



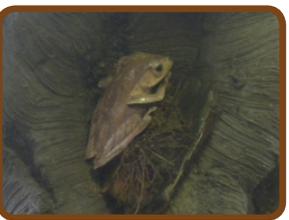
leaf-cutter ants



pitcher plant



borneo river toad



tree with flowers
on its main trunk



canopy

understory

forest floor

Flowers have different colors, shapes, and smells to attract different pollinators. What do you think attracted the butterfly to the flower you found?

Scientists can't agree on why new leaves on some tropical plants are red. How do you think the color red could protect tender, young leaves from herbivores or the sun?

How do you think the long, stiff spines on the trunk of this tree help it survive?

This plant's leaves form a cup that catches rainwater and provides habitat for other animals. What type of animal might use this tree-top pool? *Hint: there's one on this page.*

This plant attracts insects with its color, sugary nectar, and sweet scent. How do you think it will use the insects it traps?

Do you like chocolate? This is the tree it comes from! Its flowers and fruit grow right on its woody trunk. This allows the fruit to grow large and heavy. How does having fruit that is easily seen help a tree reproduce?

If you were a bird in a rainforest canopy, why might you hang out in a tree?

Frogs need water to lay their eggs. How does this frog use pools of water high up in trees? *Hint: think of the plants you have found so far.*

This gecko helps plants reproduce by pollinating them and spreading their seeds. What plant parts do you think this gecko eats?

Macaws mostly eat fruits that grow wild in the rainforest. How can this help plants reproduce?

These busy ants cut leaves and eat the fungus that grows on them. This fungus breaks the leaves down into soil. How do the ants help surrounding plants?

Why do you think this forest floor creature is a dark green-brown color?



Al caminar a través de cada capa de la selva, busca las plantas y animales que se ilustran debajo. Cuando encuentres uno, dóblalo y responde a la pregunta detrás discutiendo con tus compañeros. ¡Buena suerte y que te diviertas explorando!

Un ave en los árboles



Rana venenosas



Geco



Guacamayo



Hormigas arriaras



Rana



Una flor polinizada por una mariposa



Hojas rojas en una planta verde



Espinas puntiagudas en una palmera de durazno

Sotobosque



Bromelia



Planta insectívora

Suelo del bosque



Árbol con flores en su tronco

Las flores tienen distintos colores, formas y aromas para atraer a distintos polinizadores. ¿Qué crees que atrajo a la mariposa a la flor que encontraste?

Los científicos no pueden coincidir en el motivo por el cual las hojas nuevas de algunas plantas tropicales son rojas. ¿De qué manera crees que el color rojo podría proteger a las hojas nuevas y blandas de los herbívoros o del sol?

¿De qué manera crees que las espinas largas y duras del tronco de este árbol le ayudan a sobrevivir?

Las hojas de esta planta forman una copa que atrapa el agua de lluvia y ofrece un hábitat para otros animales. ¿Qué tipo de animal podría usar esta piscina ubicada en la copa del árbol?
Ayuda: hay uno en esta página

Esta planta atrae a los insectos con su color, su néctar azucarado y su aroma dulce. ¿De qué forma crees que usará a los insectos que atrapa?

¿Te gusta el chocolate? ¡Sale de este árbol! Sus flores y frutas crecen directamente sobre su tronco. Esto permite que la fruta crezca ser grande y fuerte. ¿De qué manera el hecho de tener una fruta, que se ve fácilmente, ayuda a que un árbol se reproduzca?

Si fueras un ave en la copa de los árboles de una selva, ¿por qué te gustaría estar allí?

Las ranas necesitan agua para poner sus huevos. ¿De qué manera esta rana usa las piscinas de agua que se forman en las copas de los árboles?
Ayuda: piensa en las plantas que has encontrado hasta ahora.

Este geco ayuda a las plantas a reproducirse polinizándolas y diseminando sus semillas. ¿Qué partes de las plantas crees que come este geco?

Los guacamayos comen principalmente frutas que crecen de manera silvestre en la selva. ¿De qué manera esto puede ayudar a las plantas a reproducirse?

Estas hormigas trabajadoras cortan hojas y comen los hongos que crecen sobre ellas. Estos hongos descomponen las hojas en el suelo. ¿De qué manera ayudan estas hormigas a las plantas que están alrededor?

¿Por qué crees que esta criatura que vive en el suelo del bosque es de color verde oscuro-marrón?



走过雨林的每一层时，寻找下图所示的植物与动物。
找到一种植物或动物时，折叠其标签，与同学讨论并回答背面的问题。
祝你好运、探索愉快！

树上的——一只鸟



蝴蝶授粉的花

毒箭蛙



绿色植物上的红叶子

壁虎



桃树上的尖刺

金刚鹦鹉



凤梨科植物

切叶蚁



猪笼草

婆罗洲河蟾蜍



主干上有花的树

树冠层

林下叶层

森林地面

花有不同的颜色、形状和气味，以吸引不同的传粉者。你认为是什么将蝴蝶吸引到你发现的花上？

如果你是雨林树冠层中的一只鸟，你为什么会在树上玩？

科学家无法就热带植物上的新叶为红色的原因达成一致。你认为红色能怎样避免嫩叶和幼叶被食草动物吃掉或保护嫩叶和幼叶收阳光直射？

青蛙需要水来产卵。青蛙会怎样利用树顶端的水池？提示：想想你目前已发现的植物。

你认为树干上的长硬刺能如何帮助树存活？

这种壁虎能通过授粉和传播种子帮助植物繁殖。你认为这种壁虎会吃植物的哪个部分？

这种植物的叶子形成杯状，以收集雨水和为其他动物提供栖息地。什么类型的动物可能使用这种树顶水池？提示：本页上有一种这种动物。

金刚鹦鹉通常吃雨林里的野生果实。这能怎样帮助植物繁殖？

这种植物以颜色、含糖花蜜和香甜气味吸引昆虫。你认为它会怎样使用诱捕到的昆虫？

这些忙碌的蚂蚁能剪切叶子，并吃掉长在叶子上的真菌。这种真菌能将叶子分解成土壤。蚂蚁怎样帮助周围的植物？

你喜欢巧克力吗？巧克力就是从这棵树来的！它的花和果实就长在木树干上。这样果实才能长得又大又重。果实显眼可以怎样帮助树繁殖？

你认为这种森林地面生物为什么是深绿褐色？

Rainforest Necklace Scavenger Hunt

GRADE LEVEL	3 rd -6 th ; with Correlated CA Content Standards for 3 rd , 4 th , and 6 th
SUBJECTS	Life Sciences
DURATION	Preparation: 5 minutes Activity: 30 minutes
SETTING	Rainforest Bolla Exhibit at California Academy of Sciences

Objectives

Through this scavenger hunt, students will:

1. Learn that plants and animals depend on one another for survival and reproduction.
2. Learn that animals can aid a plant's reproduction through pollination and seed dispersal.
3. Learn that a rainforest has distinct layers, with life specially adapted to each layer.

Materials

- ❖ Rainforest Scavenger Hunt Necklace (1 per student)
- ❖ Rainforest Scavenger Hunt Answer Key (1 for teacher; included in this document)
- ❖ Scissors
- ❖ Yarn (~38" piece per student)
- ❖ Hole Puncher

Activity

Preparation

1. Print and copy a Rainforest Scavenger Hunt Necklace (2-sided) for each student.
2. Cut along all dotted lines; this will create 6 foldable tabs on each side of the necklace.
3. Hole-punch the brown circle underneath the words "forest floor".
4. String a piece of yarn (~38") through the hole to create a necklace.
5. You may wish to laminate these if you want to use them in subsequent years.

Before the Scavenger Hunt

1. Depending on students' prior knowledge of a flowering plant's life cycle, you may want to review the following concepts: the functions of a flower, pollinator, fruit, and seed disperser. You may also want to review the concept of adaptations.
2. Assign students a partner to travel with through the exhibit.
3. Tell students they will start from the bottom of the page (forest floor) because that is where they will enter the exhibit. Once they find one of the plants or animals pictured on the page, they may fold back that tab and discuss the question with their partner.
4. Some of the answers will be featured prominently on graphics within the exhibit. Other answers will require the students to reason.
5. We made this scavenger hunt a "necklace" because it can be hung around the neck and does not require a pen or pencil. The California Academy of Sciences strongly discourages the use of pencils

and loose papers inside the Rainforest Bolla Exhibit. Several pencils have been found in the aquarium below.

6. To make sure students take the hunt seriously, let them know that the class will be discussing their answers afterwards. Either at the museum or back in class, use the Rainforest Necklace Scavenger Hunt Answer Key below to discuss each question.

Wrap-Up: Discussion Questions

After students have had a chance to explore the rainforest and complete scavenger hunt, ask questions such as:

- ❖ Which plants depend on animals?
- ❖ Which animals depend on plants?
- ❖ What do they depend on each other for?
- ❖ Which animals are pollinators? Which are seed dispersers?
- ❖ What are some adaptations (structures or behaviors that help an organism survive in its habitat) the plants and animals have?

Correlated California State Content Standards

Grade Three

Life Sciences

3a. Students know plants and animals have structures that serve different functions in growth, survival, and reproduction.

Grade Four

Life Sciences

3a. Students know many plants depend on animals for pollination and seed dispersal, and animals depend on plants for food and shelter.

Grade Six

Ecology (Life Sciences)

5c. Students know populations of organisms can be categorized by the functions they serve in an ecosystem.

Rainforest Necklace Scavenger Hunt Answer Key

Forest Floor

Pitcher plant: This plant attracts insects with its color, sugary nectar, and sweet scent. How will it use the insects it traps?

Pitcher plants are carnivorous. They feed on the trapped insects!

Tree with flowers on its branches: Do you like chocolate? This is the tree it comes from! Its flowers and fruit grow right on its woody branches which support its large and heavy fruit. How does having fruit that is easily seen help this tree reproduce?

Attention: The Theobroma (cacao tree) may not be flowering during your field trip! This may be a good point to bring up with students. Plants are not always in flower. This is a cauliflorous plant, which means the flowers and fruit grow right on the trunk and woody branches of the plant, rather than from new growth and shoots. The large fruit can be more easily spotted by potential seed dispersers. Cauliflory also makes the flowers and fruit more accessible for pollinators and seed dispersers that do not live in the canopy of the forest or do not fly.

Leaf-cutter ants: These busy ants cut leaves and eat the fungus that grows on them. This fungus also helps break the leaves down into soil. How do the ants help surrounding plants?

By enabling the growth of fungus, and thus encouraging decomposition, leaf-cutter ants help create new, nutritious soil for surrounding plants.

Borneo river toad: Why do you think this forest-floor creature is a dark green-brown color?

Its coloring helps it blend in with the surrounding plants and ground. This provides protection from predators. This adaptation is called "camouflage".

Understory

Pointy spines on a peach palm tree: How do you think the long, stiff spines on the trunk of this tree help it survive?

The long, sharp spines protect the tree from small herbivorous animals. The animals cannot climb over the spines to eat the tree's leaves.

Bromeliad: This plant's leaves form a cup that catches rainwater and provides habitat for animals. What type of animal might use this tree-top pool? *Hint: there's one on this page.*

Poison dart frog (or other tree frog).

Gecko: This gecko helps plants reproduce by pollinating them and spreading their seeds. What parts of the plants do you think this gecko eats?

This gecko drinks nectar from flowers and eats the plant's fruit. They are omnivorous and also eat insects.

Macaw: Macaws mostly eat the fruits of plants. How does this help plants reproduce?

Macaws play the role of seed dispersers in the rainforest. Due to their messy eating habits, they drop seeds from the plants they eat. Given the right conditions, some of these seeds may develop into new plants.

Canopy

A butterfly-pollinated flower: Flowers have different colors, shapes, and smells to attract different pollinators. What do you think attracted the butterfly to the flower you found?

This depends on which flower each student noticed being visited by a pollinator. Butterflies are attracted to bright colors and feed on nectar. The nectar guides, or patterns on a flower's petals point out the path to the nectar. Butterfly-pollinated flowers often grow in clusters which allow butterflies to perch on nearby flowers while feeding. The flowers may also have wide landing-pad-like petals for this reason.

Red leaves on a green plant: Scientists can't agree on why new leaves on some tropical plants are red. How do you think the color red might protect young leaves from herbivores or the sun?

Three possible reasons: (1) The presence of the red pigment may be to protect the developing chlorophyll (green pigment) inside the new leaves from too much light, or damaging light; (2) Red pigments may contain fungicides and other poisons; (3) Many herbivores prefer soft, fresh growth to the older, tougher leaves. The bright red may protect new growth by serving as a warning that the new leaves are toxic or distasteful.

A bird in the trees: If you were a bird in a rainforest canopy, why might you hang out in a tree?

Several birds in the rainforest are adapted to live in trees. They find food (fruit, insects), avoid predators, and build nests for their offspring high in canopy trees.

Poison dart frog: Frogs need water in which to lay their eggs. How does this frog use pools of water up in trees? *Hint: think of the plants you have found so far.*

These frogs find pools of water collected in epiphytic bromeliads. If a plant is epiphytic, it means it grows on another plant. The bromeliad the students were directed to find grows on a high branch of a tree.