

Habitats in Indonesia

The following activities are intended to be used as a follow-up to the virtual tour of the Toronto Zoo's Indo-Malaya Pavilion, with a focus on the rainforest habitat, why it's important and the adaptations need by the Sumatran tiger, Sumatran orangutans, white-handed gibbons and the reticulated python to live there.

ACTIVITY ONE – Taking stock of your kitchen pantry

The Indonesian rainforest is home to a wide diversity of plants and animals. For their survival, the rainforest provides animals and plants all their basic needs such as food, water, air, shelter and space. What does this rainforest provide you and me? Did you know that many of the foods we eat come from the Indonesian rainforest? Perhaps even one of your favourite foods!



Using the list below, shop in your kitchen cupboards for these essential spices or food items. After taking stock of your kitchen pantry, research where these food items come from. Do they come from a plant or a tree and what type? Is it a fruit, a root or another part of the plant or tree?

Food Item	Plant or Tree	Source
Coffee ✓	Flowering plant and some species grows into a small bush	Coffee beans are the seeds from the cherry-like fruit of the <i>Coffea</i> species of plants.
Vanilla		
Black pepper		
Cocoa		
Nutmeg		
Cinnamon		
Tea		
Ginger		
Tumeric		

ACTIVITY TWO – What level do you live on?

Tropical rainforests are described as having 4 distinctive layers or levels which life can be organized. Think of the rainforest structure like a building we may live or work in. Perhaps you live in a 2 storey house or on the 25th floor of an apartment complex? Do you go to school in a one level school or does it have multiple floors? The four levels of the rainforest are (a) emergent layer, (b) canopy layer, (c) understory layer and (d) forest floor. Use the internet to research and discover why the rainforest has these layers and what is unique about each layer. Label the layers on the attached sheet by cutting out the appropriate name and pasting to the sheet.

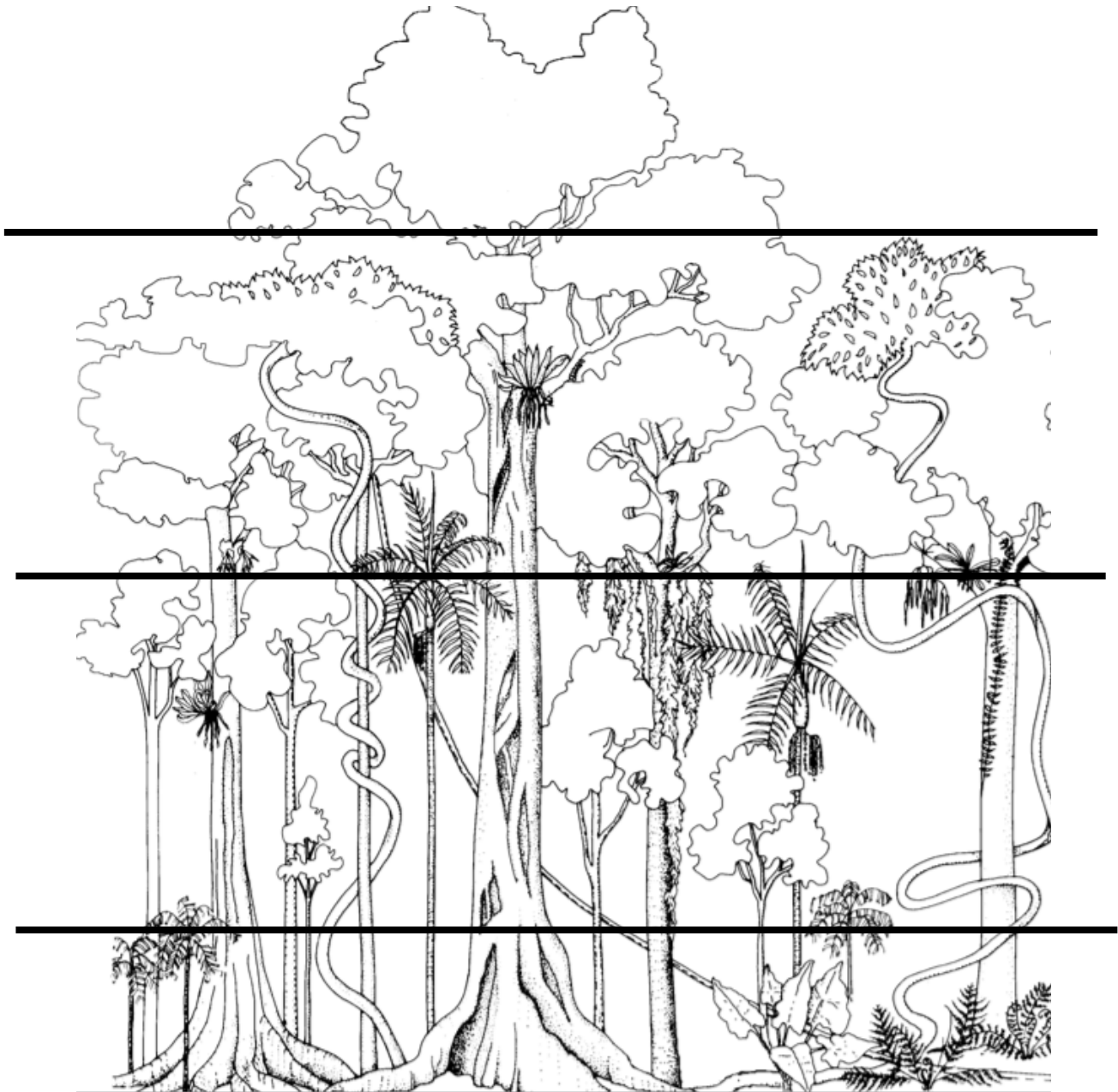
Tropical rainforest animals may live and “work” in one or more levels of the rainforest. During the presentation today, you visited the following rainforest animals from Indonesia: white-handed gibbon, Sumatran tiger, Sumatran orangutan and reticulated python. Where do these animals primarily live within the rainforest structure? Where do they primarily “work” in the rainforest structure? Cut out and paste the animal in the rainforest layer the animal primarily lives.

As discussed in the presentation, animals and plants have specific features or adaptations to survive in the rainforest. Draw a picture of and/or write a story about your favourite animal from the Indo-Malaya pavilion. Make sure you identify those special adaptations that help them in their habitat.

For more information on the animals, go to the Zoo website:

<http://www.torontozoo.com/animals/indo-malaya>

Tropical Rainforest Layers



Forest Floor

Emergent

Canopy

Understory

Orangutan

Sumatran Tiger

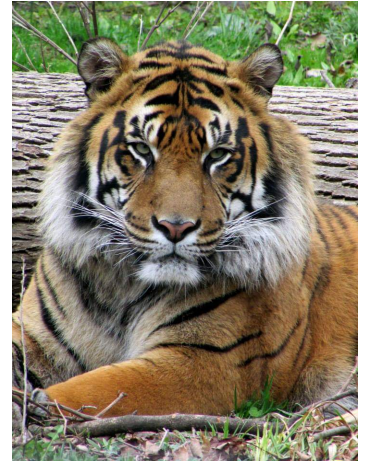
Reticulated python

White-handed gibbon

Concave casqued hornbill

ACTIVITY THREE – Why are tigers important for the rainforest?

In our day-to-day lives, we rely on other people to support us in our activities. Who helps you with getting your food? Who helps you with your education? The same is true in every ecosystem. All living things within an ecosystem are connected or dependent on other living things for the overall survival. Who depend on the tiger and who does the tiger depend on? How does the tiger support a healthy rainforest ecosystem? Let's find out by using your creativity and exploration in this simple activity!



Materials required:

Before completing the activity, you'll need to prepare the two building kits described below.

Building kit #1: 1 roll of tape, 4 plastic straws; 12 paper clips; 24 toothpicks; 8 pipe cleaners; 6 cotton balls; 8 marshmallows; 12 popsicle sticks; 3 pieces of string (12 cm in length); 6 rubber bands; handful of spaghetti noodles; 3 plastic knives; 8 Q-tips; 6 index cards

Building kit #2: 4 plastic straws; 12 paper clips; 24 toothpicks; 8 pipe cleaners; 6 cotton balls; 8 marshmallows; 12 popsicle sticks; 3 pieces of string (12 cm in length); 6 rubber bands; handful of spaghetti noodles; 3 plastic knives; 8 Q-tips; 6 index cards

Activity:

1. Using the materials found in building kit #1, build the tallest freestanding tower you can. You do not have to use all the materials but try to incorporate as many as you can. Let your engineering creativity and ingenuity soar! Once you have finished your creation, take a picture of your work and send it to the Zoo (programs@torontozoo.ca).
2. Set your tower construction aside for the moment. You'll be using your creation as a model for the second part of this activity.
3. Using the materials found **only in building kit #2**, re-create the freestanding tower you made with the items from building kit #1. Once you have completed your

re-creation of your tower, once again take a photograph of your second creation and send to programs@torontozoo.ca.

Was it easy to re-create your first tower? If not, why not? How difficult was it to make the same tower without use of tape?

Summary:

In this example, imagine that each object in the building kits is a different living thing found in the rainforest where the tiger lives. It could be different animals, plants, ponds, streams, soil and more. In this activity, the role of the tiger is represented by the tape you used. When tape was removed from the building kit, your second tower was no longer in balance and was not strong. Think of how then the removal of tigers from the rainforest impacts that ecosystem? Tigers are predators and hunt a variety of prey species. Removing them, impacts the population balance of those prey species, which in turn, impacts species connected to their prey and onwards. As the top predator in the rainforest, tigers are tremendously important to keep the rainforest ecosystem healthy.

ACTIVITY FOUR – Be an orangutan’s BFF?

Wild orangutans need the rainforest for their survival and in turn, the rainforest needs orangutans. Orangutans are often called ‘gardeners of the rainforest’ because of their connection to the rainforest. Moving through the canopy in search of food, orangutans create openings for sunlight to reach lower level plants and encourage grow. Fruit is a major part of their diet and orangutans are great seed dispersers. Seeds are spread while eating and through their waste/poop as they move through the canopy.

Sadly, the orangutans are losing their home due to human activity. Demands for timber, palm oil, roads, agriculture and mining means that huge areas of forest are being destroyed. Illegal poaching and pet trafficking also contribute to the loss of orangutans in Indonesia.

The biggest threat today facing orangutans and other rainforest animals is the unsustainable production of palm oil. Palm oil the most used vegetable oil and can be found in over 50% of the products on supermarket shelves. Products such as soap, shampoo, toothpaste, cookies, chocolate bars and much more contain a form of palm oil. With world-wide demand for palm oil growing, more native rainforest is cut and replaced with palm oil plantations.

Let’s learn more about the palm oil issue. After researching palm oil on the following websites, answer the questions found below.

<http://www.torontozoo.com/tz/palmoil>

<https://www.chesterzoo.org/schools/resources/sustainable-palm-oil-campaign-booklet/>

<https://orangutan.org/rainforest/the-effects-of-palm-oil/>

<https://www.orangutans-sos.org/take-action/learn/palm-oil/>

Complete the Good-Bad Palm oil chart:

What is good about palm oil?	What is bad about palm oil?	Why should we consider sustainable palm oil?

Palm oil can be found in many products we use in our daily lives. Select a number of products you use and determine if it contains palm oil. Record the list of products which contain palm oil below.

_____	_____
_____	_____
_____	_____
_____	_____

Now that you understand more about the palm oil issue, consider how you can become a BFF for orangutans. List your ideas below:



Photo Credits:

Spice photo- <https://spicesid.com/europeans-like-the-spices-of-indonesia/>

Tiger- Toronto Zoo Volunteer, Kim Beno