


Bee Family


Overall Details

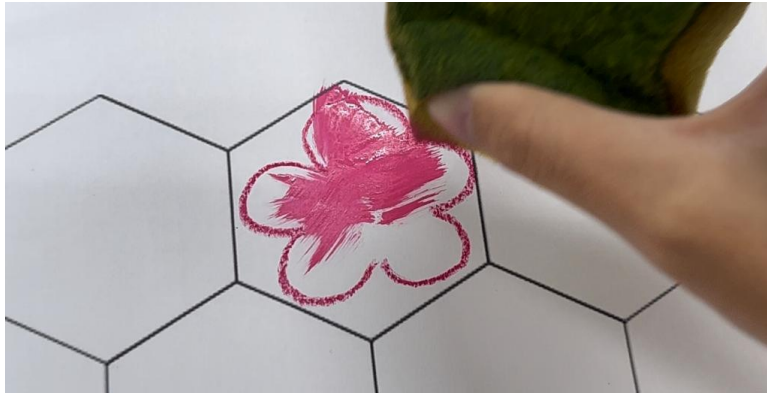
Objective	<p>To educate participants about Singapore's native bees and plants namely:</p> <ul style="list-style-type: none">• Asian Honey Bee (<i>Apis Cerana</i>)• Pearly-banded Bee (<i>Nomia strigata</i>)• Singapore Rhododendron (<i>Melastoma malabathricum</i>)• Dragon Fruit Flower (<i>Selenicereus undatus</i>)
Summary	<p>To educate participants about Singapore's native bees by engaging participants in a fun bonding activity with their family members.</p>
Duration	<p>30 min</p>
What Participants will need:	<ul style="list-style-type: none">• Crayons• Used/unwanted sponges• Paint• Paintbrushes• Scissors• Glue• Template Sheet 
Remarks	<p>Parental supervision required when handling scissors.</p>

Activity Description

a) Instructions

Note: The instructions below are only for the flower - Singapore Rhododendron and the bee - Pearly-banded Bee. You are highly encouraged to use your creativity to create the other flowers and bees.

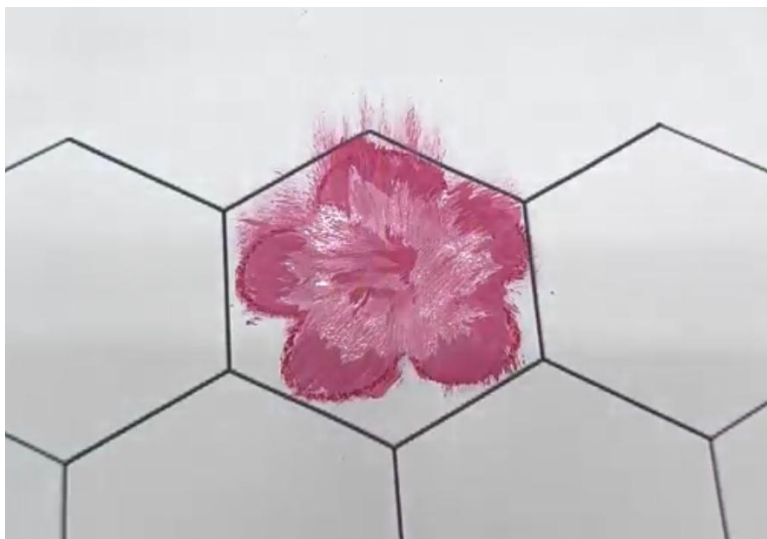
Making the flower		
No.	Instructions	Comments
1	<p>Choose a bee and flower of your choice:</p> <ol style="list-style-type: none"> 1) Asian Honey Bee - Dragon Fruit Flower 2) Pearly-banded Bee - Singapore Rhododendron <p>Note: Each bee will be matched with a corresponding flower it often visits and pollinates.</p>	Parents can educate the child about the types of bee featured in this activity. See the Background Information & Fun Facts attached at the back of this document.
2	<p>Draw the outline of the flower chosen.</p> 	The flower chosen in this set of instructions is the Singapore Rhododendron.
3	<p>Then dip the corner of an unwanted sponge in pink (magenta) paint and swipe outwards on the petal using the template given.</p> <p>Note: Ensure that you scrape off the excess paint to get a better blending effect.</p>	<p>Refer to the video for an accurate technique of creating the texture. This will ensure smooth strokes resembling flower petals.</p> <p>! Tip: You can cut the same sponge into smaller cubes to reduce the number of sponges used.</p>



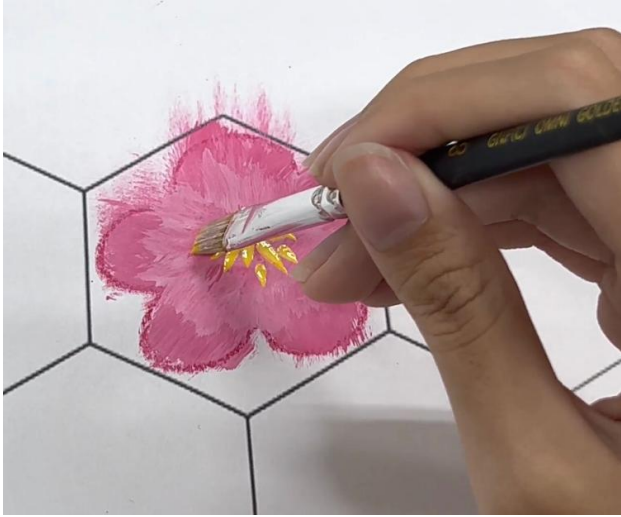
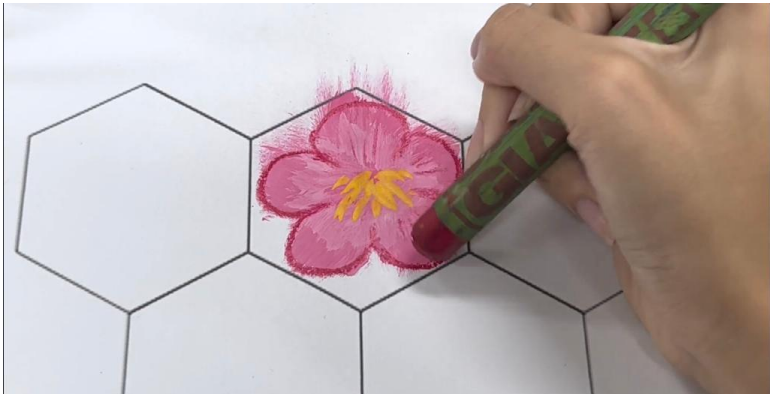
- 4** Find an unpainted portion of the same sponge and dip it in a lighter colour (paint colour used should be the same as that in step 2, but of a different shade, e.g. light pink for Singapore Rhododendron) and continue blending it on the outer portion of the petal to create a gradient.


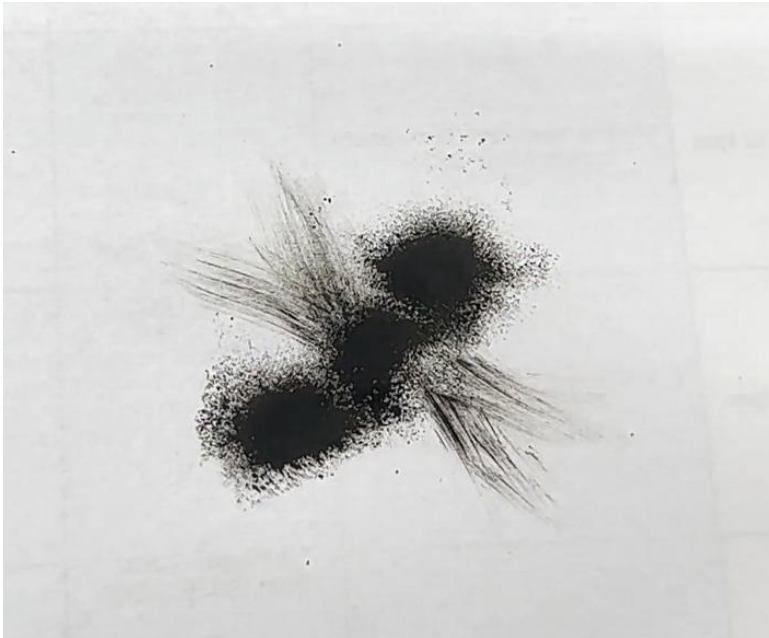
Let it dry for 5-10 minutes.

Note: Ensure that you scrape off the excess paint to get a better blending effect.



Refer to the video for an accurate technique of creating the texture. This will ensure smooth strokes resembling flower petals.

5	<p>To create the anthers of the flower, dip a paint brush into yellow paint and paint light strokes onto the template.</p> <p>Let it dry for 5-10 minutes.</p> 	<p>Refer to the video for an accurate technique of creating the texture.</p>
6	<p>Use a red crayon to outline the edges of the flower.</p> 	<p>You may refer to the video tutorial.</p>
Making the Bee		
7	<p>Dip the edge of the sponge into black paint and gently dab to create the fuzzy texture of the bee's body.</p>	<p>Refer to the video for an accurate technique of creating the texture.</p>

		
8	<p>Using the same sponge, lightly pull the sponge outwards, in small strokes, to create the bee's wings.</p> 	<p>Refer to the video for an accurate technique of creating the texture.</p>
9	<p>Using a paintbrush, add the following different colours to the bands on the bee's abdomen:</p> <ol style="list-style-type: none"> 1) Green 2) Orange 3) Yellow 	<p>You may refer to the video tutorial.</p>



10 Using a black crayon, outline the edges of the bee.

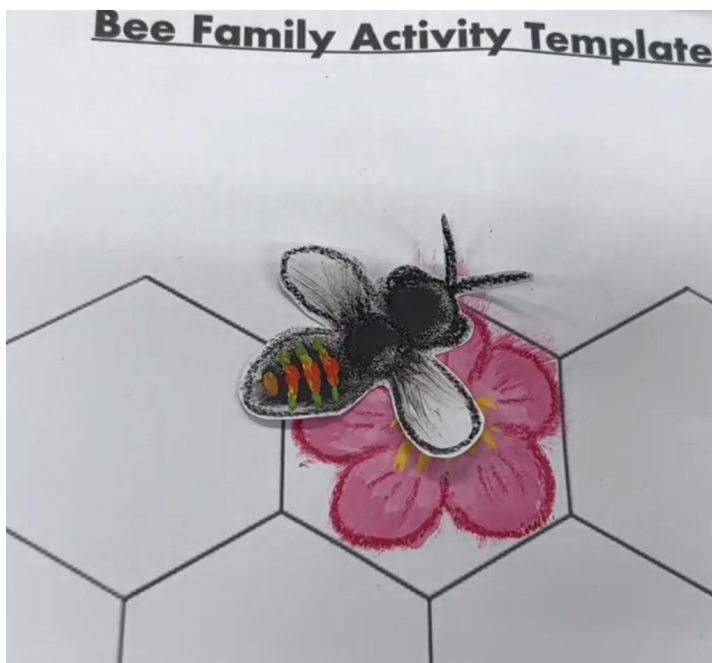
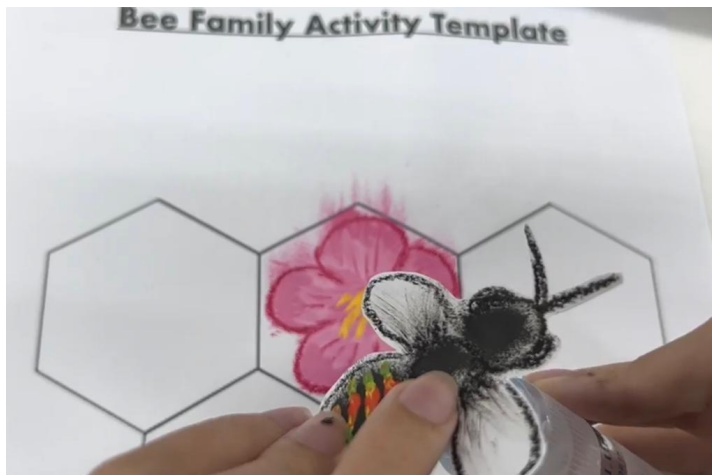


You may refer to the video tutorial.

11

Cut out the outline of the bee and apply glue to stick it onto the flower.

You may refer to the video tutorial.



Background Information & Fun facts

Asian Honey Bee (*Apis Cerana*)

Physical Characteristics

- 11-14 mm in size
- 4 prominent dark yellow or orange bandings found on its abdomen
- Primary diet is pollen and nectar from a wide range of flowers
- Has tiny branched hairs on its body which aid in its collection of pollen



Fig. 1 Asian Honey Bee pollinating a flower
(Photo Credit: NParks)

Behaviour/Habitat

- Found across Southern Asia
- One of the most common species of bees in Singapore
- Can be found in many rooftop gardens and parks, in a wide range of temperatures from hot to cold
- Has the ability to produce beeswax and honey by collecting pollen and nectar from flowers such as the False Heather (*Cuphea hyssopifolia*) and Sunflower (*Helianthus annuus*)
- Lives in nest, which can be found in small cavities such as tree holes, sheds and even letter boxes
- Heat balling:
 - What most Asian Honey Bees do, where they huddle in a tight group around a hornet or a predator
 - Increases the temperature to about 46°C which is enough to kill the predator

- Stinging bee - will sting if provoked
- Can be spotted moving around in tight clusters

Conservation Status

- Listed as a species of Least Concern according to the NParks Flora & Fauna Web

Supplementary Information on bees

- Play an important role in our ecosystem as pollinators of our food crops and plants
- Less than 800 species of bees in the world
- In Singapore: 120 species of bees and 3 main types of bees that can be commonly found, namely the honey bees, stingless bees and the solitary bees

References:

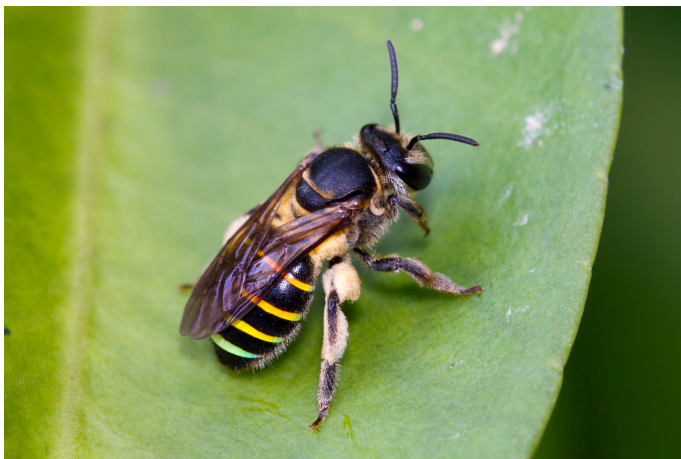
<https://www.nparks.gov.sg/juronglakegardens/explore-our-gardens/animals/bees-and-wasps/honey-bees>

<https://www.nparks.gov.sg/nparksbuzz/issue-43-vol-4-2019/gardening/bee-list-stars#:~:text=The%20most%20common%20stingless%20bee,plant%20resin%20and%20some%20beeswax.>

https://entnemdept.ufl.edu/creatures/misc/bees/Apis_cerana.htm#:~:text=The%20physical%20characteristics%20of%20Apis,hind%20legs%20to%20transport%20pollen.

<https://www.nparks.gov.sg/nparksbuzz/issue-43-vol-4-2019/gardening/bee-list-stars>

Pearly-banded Bee (*Nomia strigata*)

Physical Characteristics	
Size	<ul style="list-style-type: none">• Around 9 mm
Distinct Features	<ul style="list-style-type: none">• Bright opalescent¹ coloured bandings on its abdomen<ul style="list-style-type: none">◦ Vary from yellow-green to bright blue• Black eyes• Dark thorax <div data-bbox="603 573 1286 1030"></div> <p>Fig. 1 Pearly-banded Bee resting on a leaf (Photo Credit: Zestin Soh, NParks Flora & Fauna Web)</p> <p>¹ Opalescent: Reflecting colours that seem to change from different angles</p>
Behaviour/Habitat	
<ul style="list-style-type: none">• Buzzes loudly at a specific frequency when collecting pollen from buzz-pollinated plants such as the Singapore Rhododendron (<i>Melanoma malabathricum</i>)• Mixes and drinks pollen with nectar• Solitary bee• Also known as the Striped Nomia• Can be spotted at the following places in Singapore:<ul style="list-style-type: none">◦ Parks such as Coney Island Park and nature reserves◦ Mangroves◦ Forests• Native plants they visit: Seashore Ardisia (<i>Ardisia elliptica</i>), Singapore Rhododendron (<i>Melanoma malabathricum</i>)• Native edible plants they visit: Tomato, Chilli and Brinjal	
Conservation Status	
<ul style="list-style-type: none">• Listed as a species of Least Concern according to the Singapore Red Data Book (RDB) Version 3	

Fun Facts & Common Misconceptions

- **Not** all bees:
 - Have yellow and black stripes
 - Produce honey (only less than 4% of all the bees in the world make honey)
 - Sting
- Certain species of bees can become potentially dangerous when their hives are disturbed

References:

<https://www.nparks.gov.sg/nparksbuzz/issue-43-vol-4-2019/gardening/bee-list-stars>

<https://www.singaporegeographic.com/insects/bee-wasp-hornet/pearly-banded-bee-nomia-st-rigata>

<https://www.nparks.gov.sg/florafaunaweb/fauna/1/2/1294>

Dragon Fruit (*Selenicereus undatus*)


Features	
Leaves	<ul style="list-style-type: none">• Can reach up to 10 m in height• Member of the Cacti family• Has a vining growth habit
Flowers	<ul style="list-style-type: none">• Colour of flower petals range from white to greenish-yellow• Around 30 cm in length• Colour of stamen can range from white to yellow• Flowers open at night and close shortly after daybreak• Flower lifespan: 1 night• Not capable of self-pollination• Dependant on bees such as the Asian Honey Bee (<i>Apis cerana</i>) to pollinate it <div data-bbox="481 745 1358 1234"></div> <p>Fig 1. Dragon Fruit Flower (Photo Credit: Brenda Alejandra Ramirez Dieguez)</p>
Fruits	<ul style="list-style-type: none">• Following the process of flowering, the reproductive structure of the Dragon Fruit Flower undergoes a metamorphosis¹ and develops into the fruit known as Dragon Fruit• Dragon Fruit<ul style="list-style-type: none">○ Oval in shape○ Scaly texture○ Comes in various colours such as pink, red and yellow○ Edible flesh with black seeds inside <p>¹ Metamorphosis: The process of transformation from an immature form to an adult form in two or more distinct stages.</p>



Fig 2. Dragon Fruit

(Photo Credit: Vicky Lim Yen Ngoh, NParks Flora & Fauna Web)

Location



- Can be found extensively throughout Southeast Asia

References:

<https://www.singaporegeographic.com/article/dragon-fruit-flower-is-being-pollinated-with-the-help-of-asian-honey-bee>

<https://www.nparks.gov.sg/florafaunaweb/flora/1/4/1419>

Singapore Rhododendron (*Melastoma malabathricum*)

Features	
Leaves	<ul style="list-style-type: none"> • Leave blades are lanced-shaped • 3 prominent leaves – one central and 2 marginal • Leaves are bristly on the underside <p>¹ Lanced-shaped: a long and narrow shape that tapers to a point</p>
Flowers	<ul style="list-style-type: none"> • 8 cm wide in size • Colour of petals may range from dark magenta-pink to white • Attract pollinators such as the Pearly-banded Bee (<i>Nomia strigata</i>), Large Carpenter Bees (<i>Xylocopa latipes</i>) and Blue-banded Digger Bee (<i>Amegilla andrewsi</i>), for pollen • Lifespan of flower: 1 day  <p>NParks Flora&FaunaWeb</p> <p>Fig. 1 Pearly-banded Bee pollinating the Singapore Rhododendron (Photo Credit: Ang Wee Foong, NParks Flora & Fauna Web)</p>
Fruits	<ul style="list-style-type: none"> • Bears red fruits which are round and 6-10 mm wide • When ripe: <ul style="list-style-type: none"> ○ Open up irregularly to reveal the dark blue pulp with orange coloured seeds • Edible but tasteless • Pulp stains the tongue blue when consumed • Usually consumed by birds and squirrels  <p>© NParks Flora & Fauna Web</p>

	<p>Fig. 2 Singapore Rhododendron Fruit (Photo Credit: Shi Biying, NParks Flora & Fauna Web)</p>
Location	
<ul style="list-style-type: none"> • Found not only in Singapore but also in Malaysia and Sri Lanka • In the lowlands • In open sites • In wastelands • In secondary forests • Can be considered invasive species in other countries 	
Conservation Status	
<ul style="list-style-type: none"> • Listed as a species of Least Concern according to the NParks Flora & Fauna Web 	

References:

<https://www.nparks.gov.sg/florafauanaweb/flora/2/2/2221>
