Doodle

Overall Details

Objective	To educate children on Singapore's native biodiversity namely: ● Green Paddy Frog (*Hylarana erythraea*) ● Common Flameback (*Dinopium javanense*) ● Sunda Pangolin (*Manis javanica*)
Summary	This activity allows participants to explore their creativity in drawing and colouring Singapore's native biodiversity. They can choose to explore other animals on the NParks Flora & Fauna Web, which is linked via a QR code in this document.
Duration	10 - 15 minutes
What Participants will need:	● Pen/Pencil ● Provided template
Remarks	Let your creativity flow by exploring other animals on the NParks Flora & Fauna Web below: https://go.gov.sg/ffweb

Activity Description

a) General Instructions

No.	Instructions	Comments
1	Using the doodle template given, draw and add details to turn it into a native animal. Then, add in the appropriate colours by referring to the sample attached.	Parents can share some fun facts regarding the animals which are featured in the activity. You may refer to the Background Information and Fun Facts attached to the back of this document.
2	You may create your own doodles and turn them into native animals of your choice using the NParks Flora & Fauna Web.	Parents can share some fun facts regarding the animals which are featured in the activity. You may refer to the Background Information & Fun Facts attached to the back of this document.

Background Information & Fun Facts

Green Paddy Frog (*Hylarana erythraea*)

Physical Characteristics

- Also known as the Common Greenback
- Can grow up to 4.5 cm for males and 7.5 cm for females
- Characterised by:
    - A distinctive white band that streaks down each side of its green body
    - A white upper lip
    - A green/brown back

Fig 1. Green Paddy Frog on a leaf
(Photo Credit: Cai Yixiong, NParks Flora & Fauna Web)

Behaviour/Habitat

- Nocturnal
- Mainly consumes small invertebrates such as insects
- Thrives well in a clean aquatic environment → serves as an important biological indicator of the ecosystem
- Can be found in Central Nature Reserve and Sungei Buloh Wetland Reserve
- Can also be found in other countries such as Thailand, Indochina and Peninsular Malaysia
- Able to tolerate a range of habitats

- Large population locally

Conservation Status

- Listed as a species of Least Concern according to the Singapore Red Data Book (RDB) Version 3

Supplementary information on frogs

- Over 4,000 species of frogs worldwide - some of them normal-looking, but others, wacky-looking
- Come in a myriad of different colours and sizes, and some have very distinct features unique only to their own species
    - E.g. The Wallace's Flying Frog which is found in the dense tropical jungles of Malaysia and Borneo
        - Has huge webbed feet and skin flap attached to its sides to help it glide from one tree to another

Fig. 2 Wallace's Flying Frog
(*Rhacophorus nigropalmatus*)
(Photo Credit: critter.science)

- Have protruding eyes
- Lack tails
- Possess strong webbed hind feet that are adapted for leaping to great heights and swimming
- All frogs breathe through their skin, especially when underwater

- Most frogs have:
    - Smooth and moist skins
    - Poisonous skin glands, however the toxins produced normally are insufficient to protect them from predatory animals
- Many of them depend on camouflage either by:
    - Blending with their surroundings
    - Changing their colours
- Some frogs, like poison dart frogs belonging to the Dendrobatidae family, have several bright colours to warn predators of their toxicity

- Usually breed in freshwater
- Number of eggs laid can range from a few hundred to several thousand depending on the species
    - Tadpoles will emerge soon after and metamorphosis[1] will occur - the lungs will develop, limbs will appear, the tail is absorbed and the mouth turns frog-like
    - Exception: The Mexican Mini Frog (*Craugastor candelariensis*) as it skips the tadpole phase completely and hatches into froglets

[1] Metamorphosis: The process of transformation from an immature form to an adult form in two or more distinct stages

Fig. 3 Mexican Mini Frog
(*Craugastor candelariensis*)
(Photo Credit: University of Texas at Arlington)

References:

https://www.ecologyasia.com/verts/amphibians/common_greenback.htm
https://www.britannica.com/animal/f

Sunda Pangolin (*Manis javanica*)

Physical Characteristics

- Can be distinguished from the Philippine and Chinese Pangolins by:
    - Fewer rows of scales across its neck
    - Shorter forelimb claws
    - Longer, more slender tail
    - Longer head and body-to-tail length ratio

- Scales are predominantly dark brown in colour, despite “white” scales being found often on its tail
- Has a long snout, a long tongue laced with sticky saliva, coupled with sharp front claws to aid in excavating and consuming termites from the mound
- Small conical head with eyes that are protected by thick eyelids
- Possesses a prehensile[1] tail
- Ability to close its nostril and ear openings

Fig. 1 Sunda Pangolin
(Photo Credit: Max Khoo)

[1] Prehensile: Adapted for grasping by wrapping around something

Behaviour/Habitat

● Can be found in the Philippines, Vietnam, Laos, Cambodia, Malaysia and Singapore and is normally resident in Southeast Asia's forested habitats
● Terrestrial animal that inhabits burrows, either dug out with its claws or borrowed from previous residents
● Can be an agile climber that spend its time within trees (also known as arboreal animals) resting/searching for food
● Female Sunda Pangolin
  ○ Tends to have only one offspring after a gestation period of 3 to 4 months
  ○ Reaches reproductive maturity towards the end of its first year
● Threatened by habitat destruction and roadkill accidents

Conservation Status
● Listed as Critically Endangered according to the Singapore Red Data Book (RDB) Version 3

Supplementary Information on pangolins

● 8 species of pangolins worldwide:
  ○ 4 of which are found in Asia:
  ■ Chinese Pangolin (*Manis pentadactyla*)
  ■ Sunda Pangolin (*Manis javanica*)
  ■ Indian Pangolin (*Manis crassicaudata*)
  ■ Philippine Pangolin (*Manis culionensis*)
  ○ Other 4 are African species:
  ■ Ground pangolin (*Smutsia temminckii*)
  ■ Giant Pangolin (*Manis gigantea*)
  ■ White-bellied Pangolin (*Manis tricuspis*)
  ■ Black-bellied Pangolin (*Manis tetradactyla*)
 	
● Pangolin scales are made of keratin, the same compound found in our fingernails
● Populations of all these species are dwindling due to illegal trade
● Reason for illegal trade :
  ○ Despite having no proven medicinal value, they are highly sought after in traditional medicine to cure ailments such as arthritis[1] (not applicable to Singapore)
 	
● Solitary and nocturnal animals
● Majority of them reside on the ground
  ○ One of the exceptions include: Black-bellied Pangolin (which climbs trees)

- Nickname given to pangolins: “scaly anteaters”
- When faced with an imminent threat, they:
    - Roll into a ball, similar to armadillos
    - Secrete a foul liquid from a gland located at the base of their tails to defend themselves

- Characterised by their long snouts and even longer tongues - useful in helping them lap up ants and termites

Fig 2. A Cape Pangolin (*Smutsia temminckii*) rolled up into a ball
(Photo Credit: African Pangolin Working Group)

Fig 3. A Tree Pangolin (*Manis tricuspis*) lapping up termites
(Photo Credit: Peter Csandi)

[1] Arthritis: Joint inflammation

References:

https://www.inaturalist.org/guide_taxa/178736
https://www.nationalgeographic.com/animals/mammals/facts/pangolins
https://singaporepangolinwg.wordpress.com/sunda-pangolins/

WOW ! WHAT'S THAT ANIMAL?

Green Paddy Frog

- Distinctive white band that streaks down both sides of body
- White upper lip
- Green/brown back
- Nocturnal

Photo Credit: Cai Yixiong, NParks Flora & Fauna Web

Common Flameback

- Inhabits wooded areas
- Males: have red crown and crest; largely black hind-neck
- Females: have black crown, streaked with white

Photo Credit: Tan Kok Hui

Sunda Pangolin

- Rolls into a ball when threatened
- Solitary and nocturnal animal
- Agile climber

Photo Credit: Max Khoo