



漁農自然護理署
Agriculture, Fisheries and
Conservation Department



香港教育大學
The Education University
of Hong Kong

Curriculum-based Outdoor Learning
Programmes in Country Parks
General Studies (P.1 – P.3)



Hong Kong Biodiversity Student Handbook

Name: _____

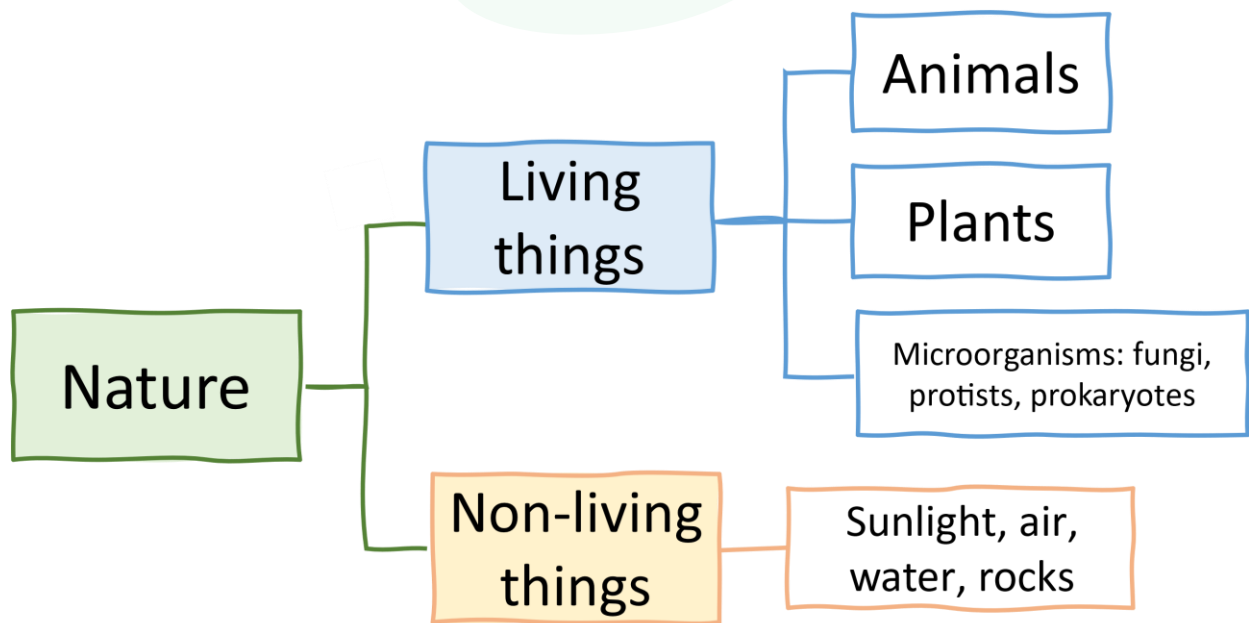
Class: _____

Group: _____

Date: _____

About the Nature

Nature refers to all things in the universe. Sunlight, air, water, mountains, forests, stones and other **non-living** natural scenery are all part of nature, while **living things** can be simply classified as animals, plants and microorganisms.

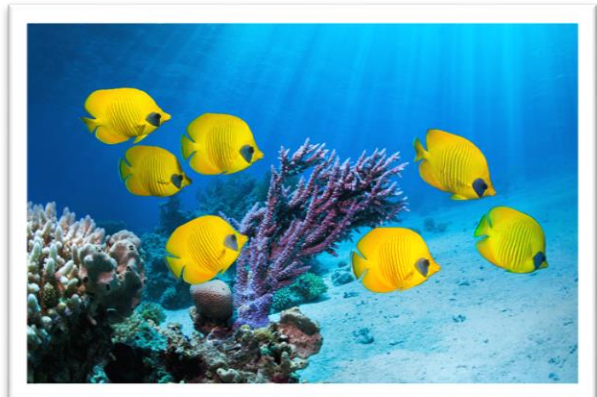


Nature includes the sunlight we see and the fresh air we breathe every day. Although there is no life, they are an important part of nature.





What do you think about nature?

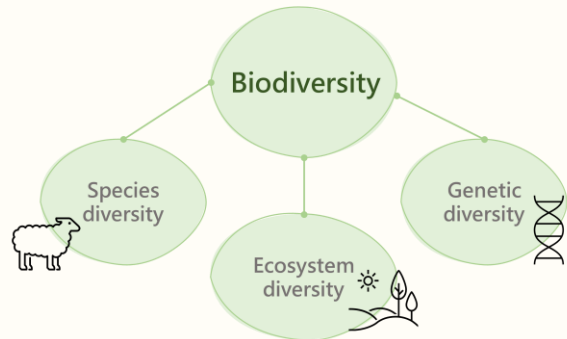


Nature can be divided into three systems: sea, land and air. It includes different topographic features and ecosystems such as sky, mountains, river valleys, islands, glaciers, deserts, forests, plains, lakes, beaches, oceans, and deep seas. All kinds of ecological environments breed countless creatures.

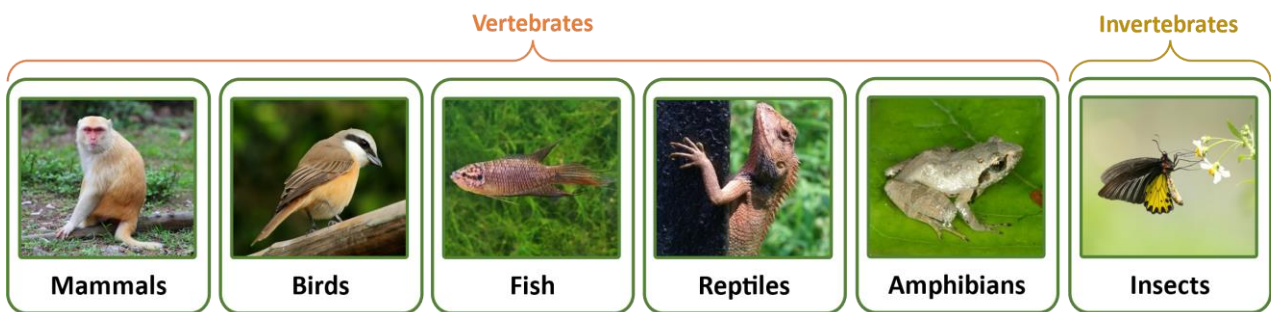
Variety of Living Things

There is a variety of living things, including different kinds of animals, plants and microorganisms, which is called biodiversity.

Biodiversity generally describes the abundance of species in a particular area.



Scientists classify organisms according to their main characteristics in order to identify and systematically study them. **Vertebrates** have a string of bones in the back that extends from the head to the tail. This set of bones is called the spine/vertebrae. Vertebrates are mainly divided into five categories. **Invertebrates** do not have backbone support, and they are usually smaller than vertebrates.

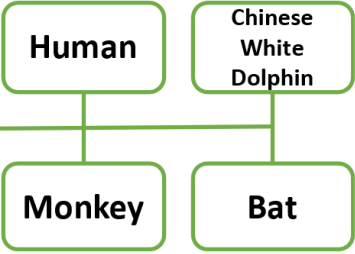


Human (*Homo sapiens*) is a kind of animal, which is biologically classified as Mammalia (哺乳綱), primates *Hominidae* (靈長目人科), and genus *Homo* (人屬). Animals and plants, like humans, are **living creatures** with unique names, different physical characteristics, and different ways of moving.

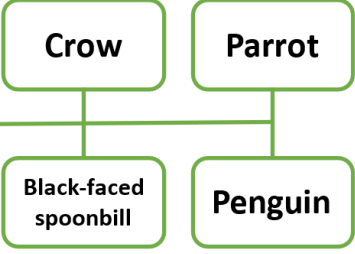




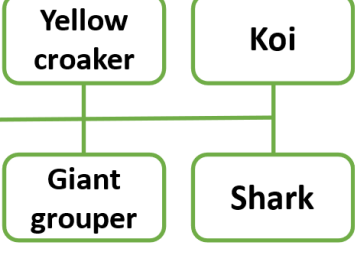
- Vertebrate**
- ✓ Hair on skin
 - ✓ Breathe with lungs
 - ✓ mammary glands secrete milk
 - ✓ Usually have four limbs
 - ✓ Maintain a constant body temperature



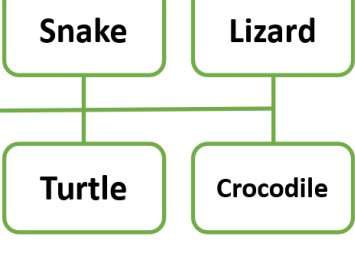
- Vertebrate**
- ✓ With beak and feathers
 - ✓ Breathe with lungs
 - ✓ Most use wings to fly
 - ✓ Dry hard scales on feet
 - ✓ Maintain a constant body temperature



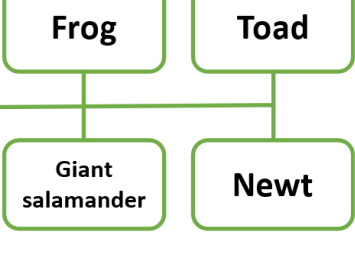
- Vertebrate**
- ✓ With wet scales
 - ✓ Swim with fins
 - ✓ Breathe in water with gills
 - ✓ Body temperature varies with ambient temperature



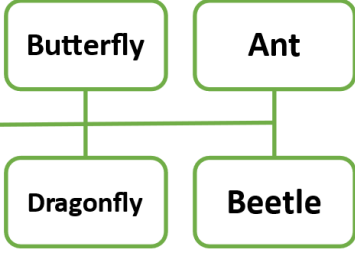
- Vertebrate**
- ✓ With dry scales
 - ✓ Breathe with lungs
 - ✓ Body temperature varies with ambient temperature

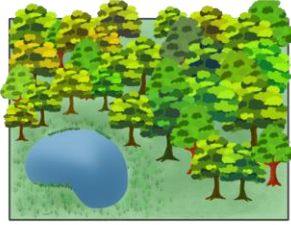



- Vertebrate**
- ✓ Secrete mucous to keep skin moist
 - ✓ Larvae breathe with gills and live in water
 - ✓ Adults breathe with lungs and move on land



- Invertebrate**
- ✓ Body divided into head, thorax, abdomen
 - ✓ With three pairs of legs
 - ✓ Use wings to fly



		
	Natural woodland	City
Biodiversity	High	Low
Population	Low	High
Infrastructure	Low	High

Biodiversity is **dynamic**. Environmental conditions vary with time and the amount of human activities.

Scientists estimate that there are approximately 8.7 million species of plants and animals on Earth. However, only about 1.2 million species have been identified and classified so far, most of them are insects.



Rules for Outdoor Learning

Each of us has a responsibility to protect nature. During environmental exploration outdoors, we should avoid destroying habitats and the beauty of nature.



We must comply with the following rules when studying outdoors:



Field Trip

Strand 2: People and Environment

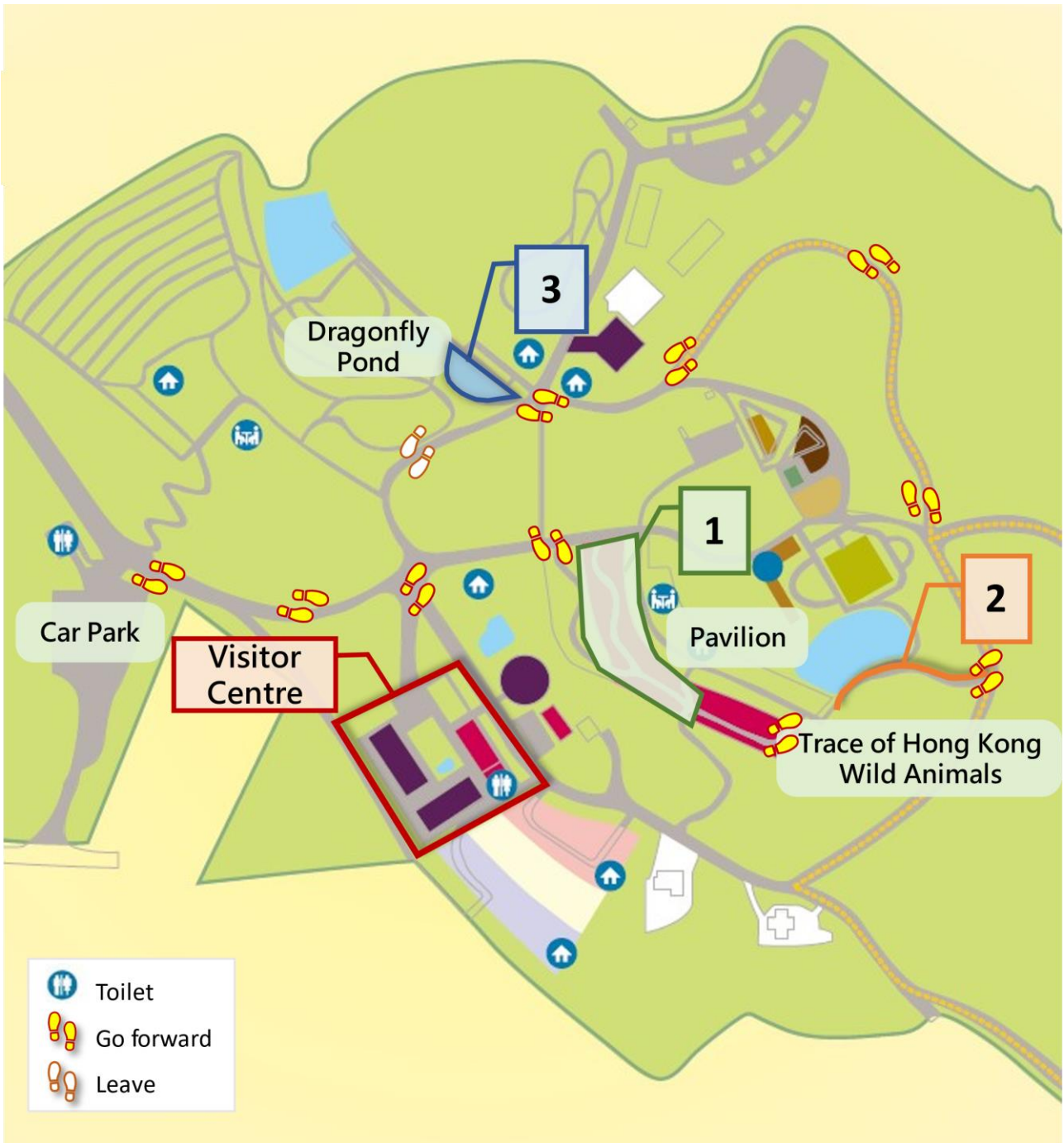
Venue: Lions Nature Education Centre



Lions Nature Education Centre is the first nature education centre in Hong Kong, managed by Agriculture, Fisheries and Conservation Department. This place is designated as a Special Area outside the country park and we should follow the rules for outdoor learning.



Field Route



Activity 1: Learn from Fallen Leaves



1.

Divide into groups of 4. Each group will receive one large zip bag.

2.

Collect fallen leaves with different shapes within the designated area in 10 minutes. Be mindful, you can only collect fallen leaves from the ground. DO NOT damage any flowers or plants, climb trees or pick fresh leaves from trees.

*Requirement: Complete leaf. Different shapes represent different species of plants.

3.

Gather and sort those collected fallen leaves according to their shape in another 10 minutes. Leaves with the same shape count as one. If the leaf shape repeats, you can place the duplicated leaves back on the soil.

4.

Waiting for teacher's instructions on the activity summary.

Extended Learning



Nutrient Cycle

- Leaves fall from the tree and return to the soil
- Turn into nutrients to support tree growth
- The nutrient cycle is everlasting in the ecosystem, providing endless supply of energy for animals and plants





















Reference: Overview of the types of leaves in Checkpoint 1

How many different shapes of fallen leaves can you find?



Activity 2: Our Wildlife Friends

There are 20 different wild animals shown on the right, try to find the wild animals hiding on both sides of the trail and circle their photos. You can find up to 15 species.

Owl 	Masked Palm Civet 	Burmese Python 	Little Egret 	Squirrel 
Black Kite 	Romer's Tree Frog 	Monkey 	Ferret Badger 	Green Turtle 
Leopard Cat 	Eurasian Wild Pig 	Bat 	Red Muntjac 	Common Birdwing 
Chinese Porcupine 	Eurasian Otter 	Chinese Pangolin 	Crested Myna 	Small Indian Civet 

(Photo sources: AFCD – Hong Kong Biodiversity Information Hub)

Living Environment and Habits of Wild Animals

Guess the living environment and the behaviour of the following wild animals, and put a ✓ in the appropriate .

Squirrel appears in:



- Woodland
- Pond
- Sky

Behaviour:

- Fly
- Walk
- Swim

Black Kite appears in:



- Woodland
- Pond
- Sky

Behaviour:

- Fly
- Walk
- Swim

Burmese Python appears in:



- Woodland
- Pond
- Sky

Behaviour:

- Fly
- Walk
- Swim

Would you be scared if you encountered real wild animals outdoors?

Some of them are nocturnal and are used to moving in the dark. Can you recognise them?

Do you find them scary?

What should you do if you encounter wild animals outdoors?

Can you identify their type?

Can you guess what kind of environment they live in?



Hong Kong has a diverse ecological environment with a warm and humid climate. With the favourable living condition, our law-protected country parks are home to many wild animals. Therefore, Hong Kong is rich in biodiversity. Some wild animals are quite common in urban areas, such as birds, butterflies and wild pigs.



Mammals are the most seen on the Trace of Hong Kong Wild Animals Trail. Most wild mammals are **nocturnal species** that are active at night. They are extremely alert to humans and avoid approaching human habitats, making it difficult to detect their traces.

Wild animals are our friends. When doing outdoor learning in the wild, remember not to have direct contact with any wild mammals, and should not feed wild animals, so as not to disturb the natural ecology.



Activity 3: Meet the Dragonfly

Dragonfly is a type of insect. Dragonfly species are rich in Hong Kong, with more than 110 species recorded in Hong Kong, including 18 rare and 34 uncommon dragonfly species.

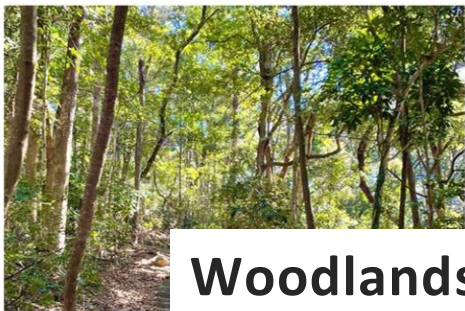
Habitats of dragonflies are very diverse. Which of the following places can easily see dragonflies? Put a ✓ in the appropriate .



Ponds



Oceans



Woodlands



Streams



Reservoirs

Body Structure of Dragonfly

Name the correct body part for the dragonfly.

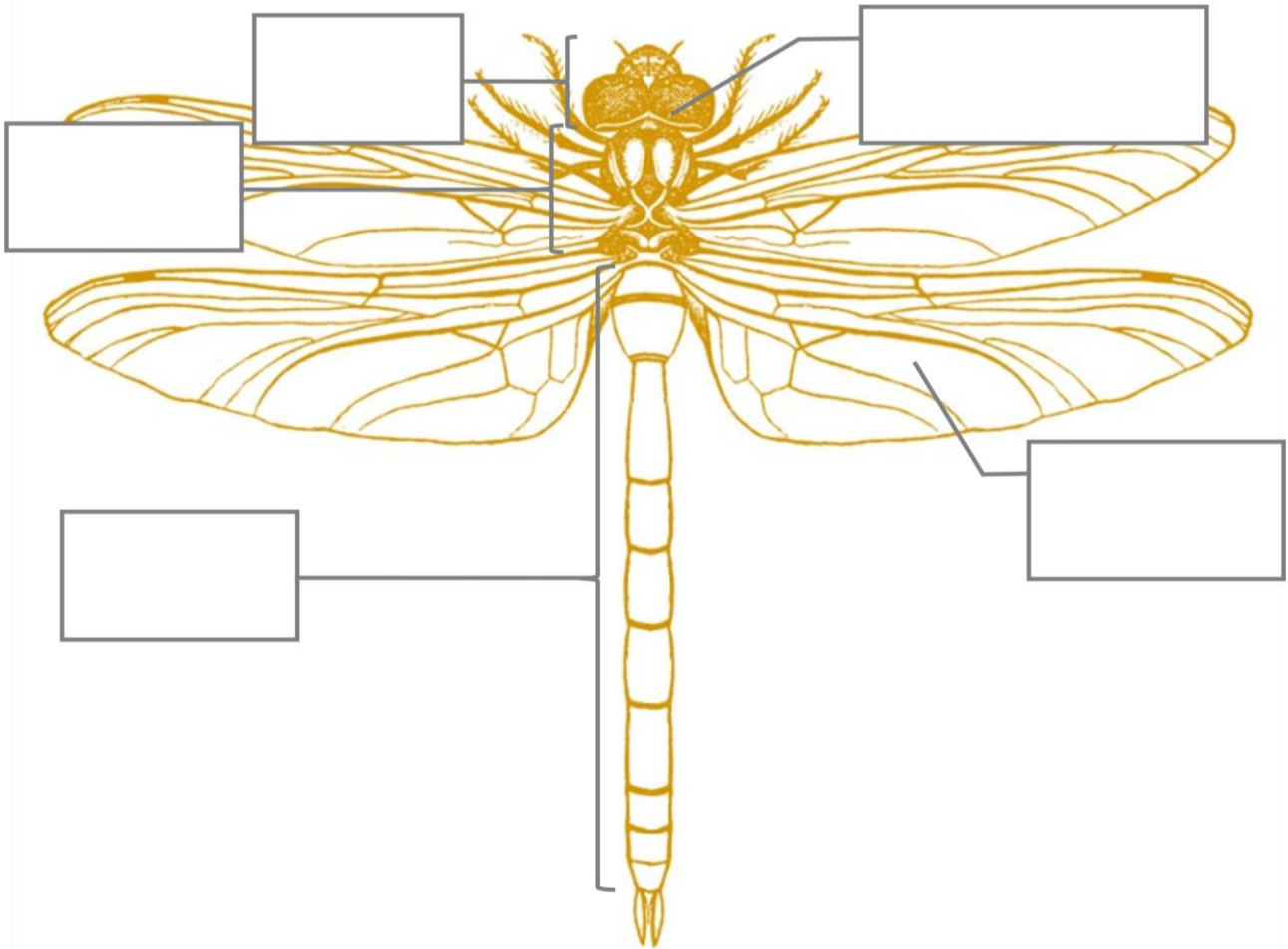
Head

Thorax

Abdomen


Compound Eyes

Wings



Let's Count the Dragonflies

What colour of dragonflies do you see? Record the numbers you observe in the table below according to the colour of the dragonfly.

If you saw 1 , draw | . If you saw 2, draw || . If you saw 6, draw ||||| , and so on.

Colour	Red	Orange/Yellow/Brown	Blue	Black
Number				

🌟 Challenge

Can you spot any of them? If yes, put a ✓ in the appropriate .

1. Russet Percher

網脈蜻

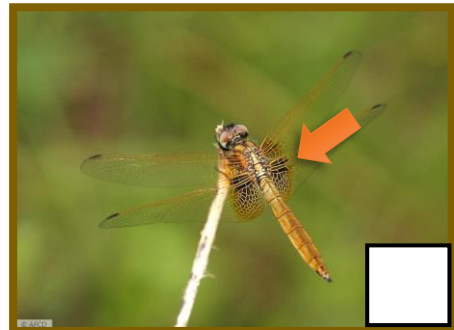


Identifying features:

- ✓ Thorax and abdomen: red (male)/ yellowish brown (female)
- ✓ Wings: red (male)/ yellowish brown (female)
- ✓ Wing tips with transparent round pattern

2. Crimson Dropwing

曉褐蜻

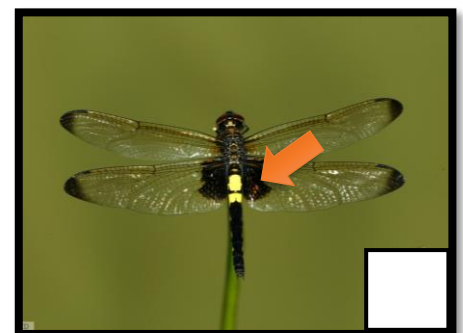
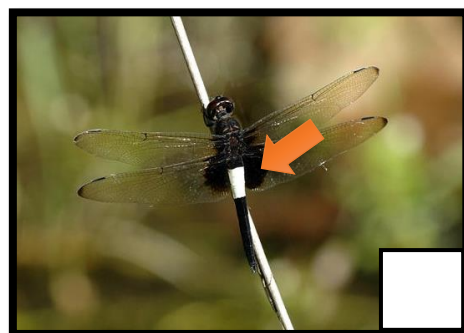


Identifying features:

- ✓ Thorax and abdomen: violet red (male)/ yellow (female)
- ✓ Colour marks at the wing base

3. Pied Skimmer

玉帶蜻



Identifying features:

- ✓ Abdomen: black with a white band (male)/ black with a yellow band (female)
- ✓ Colour marks at the wing base

Important Points for Observing Dragonflies

- Do not capture dragonflies. Try to identify dragonflies by taking notes and pictures, or observe with binoculars
- Do not leave rubbish to avoid damaging and polluting the habitat

There are dragonflies of different colours in the pond, which means that there are many different species of dragonflies here, and the diversity is very high!



Extended Learning

Besides colour, how can we identify dragonflies?



Field Summary

Living things I saw along the way:



What I heard along the way:

What I smell along the way:



What I touch along the way:

Endangered Species in Hong Kong

Black-faced Spoonbill 黑臉琵鷺



It is a large white wading bird with a distinctively spoon-shaped beak and black face. The body is about 76 cm long and weighs about 1 kilogram.

The habitat of the black-faced spoonbill is damaged and polluted by urban development and is threatened with extinction.

Green Turtle 綠海龜



Green Turtles play important roles in marine ecosystems. Turtles eat the seagrass to keep it from growing too high, blocking sunlight and spreading germs.

Green Turtles are listed as Critically Endangered reptiles due to the threat of accidental kills caused by overhunting and fishing.

Many mammals we have known since childhood are endangered species, such as tigers, giant pandas, sharks, etc. Among them, the endangered species that can be seen in Hong Kong are the Black-faced Spoonbill and the Green Turtle.



News Clip 1:

Press Releases

Thirty-one specimens of endangered turtles suspected of illegal possession seized in joint operation by AFCD and Police Thursday, May 19, 2022

The Agriculture, Fisheries and Conservation Department (AFCD) conducted a joint operation with the Hong Kong Police Force on May 17 on a case of suspected illegal possession of endangered species. Thirty-one live and dead specimens of turtles suspected of being illegally possessed were seized on a premises and two male suspects were arrested.

The spokesman went on to say that there are wild populations of big-headed turtles, three-striped box turtles and Beale's eyed turtles in Hong Kong. All local wild chelonians are protected by the Wild Animals Protection Ordinance (Cap. 170). Since the suspects have indicated on a social media platform that turtles were captured from Hong Kong countryside, the AFCD is also investigating along the direction of whether illegal hunting and possession of protected wild animals stipulated under the Wild Animals Protection Ordinance (Cap. 170) is involved.

The spokesman added, "Illegal possession of endangered species is a serious offence. Any person contravening the Protection of Endangered Species of Animals and Plants Ordinance (Cap. 586) will be liable to a maximum fine of \$10 million and imprisonment for 10 years upon conviction. The specimens will also be forfeited. In addition, the Wild Animals Protection Ordinance (Cap. 170) also stipulates that unless otherwise permitted, no one shall hunt, wilfully disturb, buy, sell, export, offer for sale or export, possess or control protected wild animals (including all wild chelonians). Offenders are liable to a maximum fine of \$100,000 and imprisonment for one year upon conviction."



Source: Agriculture, Fisheries and Conservation Department (19/5/2022)

https://www.afcd.gov.hk/english/publications/publications_press/pr2655.html

News Clip 2:

Smuggled endangered species seized

September 24, 2020

Like 0



Customs seized endangered species worth about \$6.2 million at the Kwai Chung Customhouse Cargo Examination Compound on September 16.

The suspected smuggled items include about one tonne of pangolin scales and about 13kg of dried snake galls.

Through intelligence analysis, customs officers inspected a container arriving from Indonesia and found the smuggled items.

Source: News.gov.hk (24/9/2020)

https://www.news.gov.hk/eng/2020/09/20200924/20200924_122159_856.html



Smuggling is illegal! The government is committed to combating all activities that threaten endangered species.

Some endangered species and their body parts are valuable, so they are often collected, overfished, hunted, and then sold as a goods, leading to the extinction of wildlife species in the near future.

Can you match different species and their derivatives?



•

• Medicine



•

• Pet



•

• Food



•

• Fur



Endangered species are species that are likely to become extinct. Under the rapid urban development, many important animal and plant habitats have been destroyed, and their living spaces have been threatened.

Group Activity: Create Your Own Woodland with High Biodiversity

Each group is given some colour pencils and paper-cuts of animals and plants. Think in groups about how to transform an empty land into a woodland with high biodiversity.





I (_____) promise to cherish every plant and tree in nature. Avoid direct contact with wild animals, and will not feed them. I will do my best to protect the natural environment.

Date: __ / __ / 20__

