MAI PO PRIMARY TEACHERS' PACK

米埔小學老師教材套

This teachers' pack is generously sponsored by Exxon Energy Limited.
MAI PO PRIMARY SCHOOL VISIT PROGRAMME

"Studying in the environment" is an effective strategy for promoting environmental education. We make use of the Mai Po Marshes as an open-air classroom. It is an interesting place for pupils to find out more about the environment and an ideal place for spreading the message of conservation.

Our school visit programme aims to enhance pupils' interest in, understanding of, and concern for the environment by using the Mai Po Marshes as an example. Since April 1995, we have been offering three specially designed visit programmes. These are:

1. Explore the Marshes;
2. Story of a Bird and;
3. Mai Po Detective.

To satisfy the above aims, pupils taking part in our programme will:

EXPLORE THE MARSHES

- understand that the Mai Po Marshes is a wetland and that there are many wetland habitat types around the world.
- understand that the Marshes support a variety of wildlife and how they are dependent upon each other.
- understand how man relies on, but threatens the Marshes.

STORY OF A BIRD

- understand what a bird is.
- watch and understand the variety of birds inside the Marshes.
- understand how birds are adapted to their environment, for example, flying, feeding and migration.
- understand how birds are threatened by man.

MAI PO DETECTIVE

- discover the Marshes through a series of sensory activities.
- realise the beauty and diversity of the Marshes and its varied life.

A NOTE TO TEACHERS

DATE OF VISIT: WEEKDAYS, EXCEPT PUBLIC HOLIDAYS
TIME OF VISIT: 9:00 AM TO 12:00 NOON OR 2:00 PM TO 5:00 PM
LEVEL: PRIMARY 3 TO 6 ONLY
GROUP SIZE: RECOMMENDED 30 (MAX. 40), INCLUDING AT LEAST 2 TEACHERS PER GROUP
ADMISSION FEE: FREE
BOOKING & ENQUIRIES: 2471-8272
MAI PO MARSHES
NATURE RESERVE

The Mai Po Marshes are part of the Inner Deep Bay wetland and are the largest area of wetland remaining in Hong Kong. It comprises an extensive area of mudflat and mangroves, tidal shrimp ponds (locally called gei wais) and fish ponds.

HOME FOR WILDLIFE

The Marshes are rich in plant and animal life. At least 325 species of birds, 400 species of insects, 90 species of marine invertebrates and over 50 species of butterflies have been recorded. Otters, Leopard Cats and other mammals also occur there.

Six species of Mangroves grow around the edge of Deep Bay covering an area of 300 ha. This is the largest stand in Hong Kong and the sixth largest in China.

Every winter, over 60,000 waterfowl visit this place, including globally endangered species such as the Saunders' gull, Black faced spoonbill and Spotted greenshank. With only an estimated 300 to 350 Black faced spoonbills remaining in the world, Mai Po is the winter home for 25% of the world population.
USEFUL TO PEOPLE

People have also made use of the Marshes. Behind the mangroves is a series of shallow ponds (gei wais) which were built for shrimp farming. Inside the fish ponds, Mullet, Tilapia, Common carp and Grass carp are cultured for food production. Oysters, mudskippers, mangroves (as fuel), algae (as pig feed), salt and even red rice were other important products of the Marshes.

CHECKLIST OF MARSH WILDLIFE

1. SWALLOW
2. BUTTERFLY
3. DRAGONFLY
4. REED GRASS
5. CHINESE BULBUL
6. CHINESE POND HERON
7. BLACK WINGED STILT
8. LITTLE RINGED PLOVER
9. MUDSKIPPER
10. TILAPIA
11. MULLET
12. FIDDLER CRAB
13. MANGROVES
WHAT IS A BIRD?

The earliest known animal that biologists consider to be a bird is the Archaeopteryx which lived about 140 million years ago. There are over 9,000 different kinds of birds in the world today varying in size, body shape and colour. They live in places as cold as the two Poles and as hot as the Equator.

FEATHERS

Birds are the only animals with feathers. Body feathers provide insulation, allowing birds to be warm-blooded and active. Flight feathers in the wings and tail give a large surface area for lift.

BEAK

Birds have different shaped beaks depending on diet and how they search for food.

FEET

Birds’ feet vary in size and shape. Some birds have very long toes to walk over mud. Some birds have webbed feet to swim. Some birds have feet with claws for grasping their prey.

SKELETON

A bird’s skeleton is made of hollow bones - they are light but strong allowing birds to fly.

EARS

Birds have very sensitive hearing but their ears are hard to see.

EYES

Many birds have eyes on opposite side of their heads to allow them to have a wide field of view.

NECK

Birds can twist their necks so they can turn their heads to point backwards for preening their feathers.

BODY

Birds have streamlined bodies which reduce air resistance when flying.

THE MAI PO MARSHES: HOME FOR BIRDS

The Mai Po Marshes is a wintering ground for over 60,000 waterbirds and an important stop over for another 20,000 to 30,000 waterbirds during their spring and autumn migration. To date, at least 325 species of birds have been recorded from the Marshes.

IDEAS

1. Making use of the poster attached, which birds did your pupils see during their visit to Mai Po? Which didn’t they see? Of these which can be seen in urban areas. Which can’t? Why?

2. Make a key (refer to the "Explore the Marshes" activity sheet: activity two) to identify some of the birds your pupils saw during the visit.

BIRDWATCHING IN URBAN AREAS

Some birds are adapted to live in urban areas. For example, Tree sparrow, Spotted dove, Magpie, Magpie robin, Chinese bulbul, Crested bulbul, House swift and Black kite. Good places to watch birds include Kowloon Park, Hong Kong Park and the
ACTIVITY TWO: BIRD FEEDERS

WHAT TO DO

1. Make bird feeders from old milk or juice cartons.
2. Put different food items, for example, bread, biscuits, apples, peanuts, dead insects, inside each feeder.
3. Hang them in a row from a branch in your school grounds.
4. See and record how many birds visit each feeder.

TEACHING TIPS

1. Select the observation place carefully. If it is too close, birds will be more likely to shy away. If it is too far away, pupils will not see the birds clearly. Using binoculars may help.
2. Do all birds like the same food? Which food do birds like the most?
3. A bowl of water instead of food may also attract birds.
4. Repeat the observations at different times to recognise their daily behaviour. Is there any relationship with temperature or season?

ACTIVITY ONE: BIRDS ON A TREE

WHAT TO DO

1. Ask each pupil to select a young tree (about 3 to 5 metres tall) in a "green" area.
2. Sit down, keep quiet, and see how many birds visit the trees.

TEACHING TIPS

1. Teachers should select a quiet place with little disturbance and try the activity first.
2. In general, birds are more active in the morning.
3. If pupils camouflage themselves first, they may see more birds.

Hong Kong Zoological and Botanical Gardens or even your school grounds.

IDEAS

Go birdwatching in the urban parks. What are the birds doing? Standing, preening, walking, eating, drinking, perching, flying, bathing, hopping, singing? Focus on investigating bird behaviour rather than just naming different birds.
ACTIVITY THREE: MIGRATION GAME

WHAT TO DO

1. Design a migratory route with several stop-overs (6 to 10) along the route in your school's ground.
2. Give each group of pupils (about 10 pupils per group) a number of "energy points" (use cards, stones or whatever is easily available).
3. Walk along the migratory route with your pupils and collect one "energy point" from each group once they reach a stop over.
4. For each group, select one among several prepared cards at each stop over.
5. If they lose all their "energy points", they die. If they reach the last stop over, they have successfully reached their wintering ground.

TEACHING TIPS

1. The number of groups that successfully reach their wintering ground depend on (1), how many "energy points" your pupils have before the migration and (2), how many "energy points" they either gain or lose along the migratory point. It is better to have a trial first.
2. Here are some examples of what the prepared cards may mention.

Gain energy points:
1. Flying is easy in good weather (gain 2 energy points)
2. You find a wetland with lots of food in the mud (gain 3 energy points).

Lose energy points:
1. You need to fly over an ocean (lose 3 energy points)
2. Wetland is polluted by industrial chemicals. No food in mud. (lose 5 energy points)

BIRD MIGRATION

Migration is the seasonal movement of animals from one part of the world to another. Many animals show migratory behaviour, including fishes, butterflies and whales, but the most well-known migrants are birds.

Most birds cannot survive cold northern winters, and they cannot find enough food to rear their young in the south. So, birds fly south in the autumn and north in spring. Migration is, therefore, the key to survival for many birds.

The Mai Po Marshes are both a wintering area and a stop over for many migratory birds. While on migration, birds face many hazards. Some, such as rainstorms, ice and predation, are natural; others, such as pollution, wetland destruction and hunting are man-made.

IDEAS

Before we go hiking or camping, what do we need to bring along with us - water, food, tents, clothes, rain coats, map and compass? Why? Do birds have equivalent things while on migration? How do they get these?
EXPLORE THE MARSHES

WHAT ARE WETLANDS?

Wetlands are found all over the world. They are areas where land meets water. Freshwater, brackish or marine habitats no deeper than 6 metres can be classified as wetlands. These include river-banks, estuaries, seashores (either muddy, sandy or rocky), marshes, lakes, ponds and pools.

IDEAS

Where can we find water on the Earth? Of these places, which are wetlands? Is water cycled? How?

Wetlands have long been regarded as wastelands - that they are wet, muddy, unhealthy and dangerous. However, this is not true. Wildlife and humans need wetlands for survival.

THE MAI PO MARSHES: HOME FOR WILDLIFE

Marsh wildlife falls into the following categories.

Plants: seaweeds, ferns, reeds, grasses, climbers, mangroves, other shrubs and trees.

Animals: plankton, worms, insects, crustaceans, molluscs, amphibians, fishes, reptiles, birds and mammals.

IDEAS

Making use of the poster, briefly introduce your pupils to the Marsh wildlife. Which wildlife have they not seen before? Which wildlife do they like the most? Which can be seen in urban areas? Which cannot? Why?

ACTIVITY ONE: "WHO ARE WE?"

WHAT TO DO

1. Give a picture of a different component of the marsh wildlife to each pupil and help them pin it on their backs in such a way that the pupils do not know what his/her picture is.

2. Pupils then have to ask questions to find out what each other's wildlife are but the answer to each question can only be "yes", "no" or "maybe".

TEACHING TIPS

1. Using cards with animal names written on them is an alternative.

2. Examples of questions might be "Can I fly?", "Do I like eating fishes?" Encourage your pupils to think creatively.
ACTIVITY TWO: MAKING A KEY

WAHT TO DO

1. Prepare a list of living things.
2. Ask your pupils to make a key by asking yes or no questions and finally eliminating all but the correct one. Here is a short example.

A key to distinguish between: crab, swallow, fish and dragonfly.

Can it swim?
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<td>Yes</td>
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Does it have shell?
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<td>Yes</td>
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Does it have feather?
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Crab  fish  Swallow  Dragonfly

WHO EATS WHO?

Plants are the only living things that are able to make use of energy from sunlight to produce food from carbon dioxide and water. This process is called photosynthesis. Animals eat living things, either plants or other animals, for survival. This transfer of energy from plants through a series of living things is known as a "food chain".

IDEAS

1. What do your pupils eat? Where do they come from? For example:

   Milk in a carton ⇒ cow on a farm ⇒ grass ⇒ sunlight
   Fish in a market ⇒ fish in the ocean ⇒ small fish in the ocean ⇒ phytoplankton in the ocean ⇒ sunlight

2. Making use the poster enclosed, ask your pupils to build up different food chains.

3. Record plants and animals during a walk in the countryside and build up different food chains.

   But in a real habitat things are much more complicated and there may be a number of different food chains. Most animals eat more than one type of food and are eaten by more than one type of animal. This web-like feeding relationship within one habitat is called a "food web".

TEACHING TIPS

1. The more types of living things, the more complicated the key will be.
2. Selected living things can be within a particular group or in different groups. Here are two examples:

   Example one: Kite, Little Egret, Gull, Pigeon, Swallow, Sparrow.
   Example two: Frog, Snake, Ant, Sparrow, Shrimp, Snail, Dog.
3. It is a good follow-up to a walk in the countryside. During the walk, record the animals and plants and construct a key later on.
ACTIVITY THREE: WEBBING GAME

WHAT TO DO

1. Ask pupils to form a circle (10 to 15 is the optimal group size)

2. Each pupil in the circle acts as one of wildlife species on the poster together with humans and micro-organisms.

3. Starting with one pupil, ask him/her to pass a ball of string to another pupil if he/she thinks that both of them are related. For example, an egret eats fish, man eats oyster, the egret competes for fish with the kingfisher and so on.

TEACHING TIPS

1. At the end of the game, a web will be formed which shows that all individuals within one habitat are inter-related.

2. Ask one of the pupils to loosen his/her string. This represents the killing off of one living thing (for example, cutting down the mangroves). The effect of this will then spread among the pupils until every individual is shown to be affected.

WETLANDS: USEFUL TO PEOPLE

People rely on wetlands for survival. They produce food (fishes, shrimps, oysters, salt, rice, etc), filter water pollutants (many wetland plants can remove nutrients in water, for example, mangrove, reed grass and water hyacinth) and protect us from floods.

IDEAS

1. What do we eat? How many of these are wetland products?

2. Wetlands are like a sponge. It can store water during a rainstorm. Squeeze a water-filled sponge to see what will happen. What will happen if wetlands (sponge) are destroyed for urban development?
MAI PO DETECTIVE

Your pupils have already encountered the Mai Po Marshes through a series of sensory activities and are now known as "Mai Po Detectives". It should be emphasized that a perfect nature detective has to keep exploring the natural environment by using his/her eyes, ears, hands and nose. All the following suggested activities are designed to reinforce the various aspects of your visit to the Marshes. They can be conducted in the schools' garden, parks, countryside or other "green" areas. Use of the following suggested activities is a good start. But, why not also design your own activities.

TEACHING TIPS

1. This activity makes pupils aware of the sounds of nature.
2. Are these sounds important to nature? How? For communication, recognition, courtship, territory defence?
3. You may also ask them to distinguish between natural and un-natural sounds. Which do they like to hear?

ACTIVITY ONE: SOUND COUNTER

WHAT TO DO

1. Ask pupils to keep quiet, relax, close their eyes and listen carefully in a "green" area.
2. Encourage pupils to identify as many different sounds as possible. Every time they hear a new sound, they lift one finger.

ACTIVITY TWO: DUPLICATES

WHAT TO DO

1. Collect 10 to 20 common natural objects in a "green" area. Examples include a feather, a seed, a rock, and a leaf. Put them inside a tray and cover with a handkerchief.
2. Remove the handkerchief and allow each pupil to look at them for 15 to 30 seconds.
3. Ask them to collect identical items from the same area.
4. Gather your pupils again. Show them the objects one by one, and highlight their interesting features.

TEACHING TIPS

1. This activity can be topic-based. For example, collect different kinds of seeds and explain different dispersal methods.
2. Put the same objects as above inside a box and ask one pupil to reach down into the box without looking and feel what is in there. He/she then has to describe it without saying what it is so that the rest of the group can try to guess its identity.
ACTIVITY THREE: SCAVENGER

WHAT TO DO
1. Prepare a scavenger list of a number of objects that can be picked up in a "green" area.
2. Ask pupils to collect the listed objects.

TEACHING TIPS
You can make a list that requires your pupils to observe very carefully (for example, numbers 3 and 6) or think creatively (for example, numbers 9 and 10).

Scavenger list
1. A seed.
2. A rock.
3. Something has more than 5 colours.
4. Something white.
5. Something rough.
6. A leaf with 5 to 10 holes
7. Something makes you happy.
8. 3 pieces of litter.
9. Something important to nature.
10. Something unimportant to nature.

ACTIVITY FOUR: FEELING BOXES

WHAT TO DO
1. Show each of six groups of pupils one of the following descriptions separately and ask them to keep the descriptions secret.
   - Group 1: Hard
   - Group 2: Soft
   - Group 3: Sharp
   - Group 4: Fat
   - Group 5: Rough
   - Group 6: Smooth
2. Allow them to have 10 minutes to collect natural objects with that texture and ask them to put their collected objects inside 6 different feeling boxes.
3. Ask each group to touch the natural objects inside each box in turn and finally guess what "textures" each box is supposed to contain.

TEACHING TIPS
1. This activity makes pupils aware of the textures of nature.
2. There may be argument about texture because each object can have more than one texture.
ACTIVITY FIVE: MAKE FRIENDS WITH A TREE

WHAT TO DO
1. Pair off your pupils.
2. Blind fold one pupil in each group and ask another pupil to lead his/her partner to any tree in your school ground or a "green" area.
3. Ask the "blind" pupil to explore his/her tree and to feel its uniqueness.
4. When the exploring is finished, lead the "blind" pupil back to the original position (take an indirect route if possible).
5. Remove the blindfold and allow the pupil to re-find his/her own tree.
6. Repeat with another pupil.

TEACHING TIPS
This activity is a wonderful way to let pupils discover more about a tree in your school grounds. Each tree has its own characteristics, such as thickness, texture of bark, holes and associated insects.

ACTIVITY SIX: NATURAL PALETTE

WHAT TO DO
1. Distribute paper palettes among your pupils
2. Apply glue on one side and ask pupils to collect tiny pieces of colour and stick them down on the palette.

TEACHING TIPS
1. This activity makes your pupils aware of the colours of nature and enhances their appreciation of natural colours.
2. The palette itself is actually an excellent gift after a walk into the countryside. If they watch their palettes over the next few weeks, they may slowly change colour.
3. Colour is useful to living things, for example, as a warning, for displaying and for camouflage.