



A Visit to Bukit Batok Nature Park



Pre-Learning Journey Worksheet: Bukit Batok Nature Park

Annex 1

Did you know? Bukit Batok Nature Park was once mined for granite.



A Map of Bukit Batok Nature Park



Research on the features of Bukit Batok Nature Park

Based on your research, make a list of the some features that you can find in Bukit Batok Nature Park.



Pre-Learning Journey Worksheet: Useful Plants and Trees

Annex 1a

Before setting off on our learning journey, let's go around the school garden to see what we can find.

Look out for useful trees or plants in your school garden.

- i) Identify which part/s of the trees or plants is/are useful. Write down the name of the plant in the table below.
- ii) Take a photo of the tree or plant.
- iii) After the walkabout, download your photographs and do research on these trees or plants.

Trees or Plants with useful leaves	Trees or Plants with useful fruits
Trees or Plants with useful stems	Trees or Plants with useful roots

Bukit Batok Nature Park is 36-heactare park that offers a trail which meanders through a well-established secondary forest. The forest has started to regenerate from former settled areas.

There are many interesting trees that can be found in Bukit Batok Nature Park. The park is also planted with ornamental trees, shrubs and flowers including exotic species like the Heliconias.

This park holds some historical significance. It was once mined for granite. The quarry has since become a large reflecting pool. There is a war memorial at the top of the hill.



Flora found at Bukit Batok Nature Park

Curtain Fig (*Ficus microcarpa*)

It has (brown) cords which are actually its aerial roots. Figs are a botanical oddity and their survival is entirely dependent on a tiny (wasp) for pollination. Some species of figs, especially the ones that are trees or stranglers, are considered keystone species as they provide a precious food resource during lean periods in the forest.

Simpoh Air (*Dillenia suffruticosa*)

It is a shrub with large leaves and bright yellow flowers. The flowers are pollinated by (bees) which collect its pollen. The plant can live for 50 to 100 years. An interesting fact about this plant is that it (hisses) when the trunk or a branch is cut. The sound comes from the air that is sucked into the cut vessels. The Simpoh Air provides food and shelter for other plants and creatures. It is among the few plants that can germinate and grow on white sands. As a pioneer species, it provides shade for other less hardy plants to establish themselves. The tiny bit red flesh, called (arils) surround the seeds and they are irresistible to birds, which quickly disperse the seeds.

Tailorbirds often make their nests out of the large leaves of the Simpoh Air.

List down some uses of the Simpoh Air below.

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Tembusu Tree

Tembusos are very hardy trees which can thrive and bloom even under (adverse) conditions. A native tree of secondary forest, it is well adapted to grow on poor soils in open areas. A long-lived tree, it can live up to 150 to 200 years. It can reach a height of about 25 metres. It produces creamy and sweet-scented flowers. Its wood is very hard and resistant to rot and termites. It can be used for making (bridges), rafts, chopping boards, furniture, and house building. The Tembusu tree found at the Singapore Botanical Gardens has been identified as a heritage tree and is featured on the Singapore \$5 currency note and in postage stamps.

Durian Tree

The durian is known as the "King of Fruits" in Southeast Asia. It exists because of the pollination performed by nectar (bats). The durian is distinctive for its large size, unique odour and formidable thorn-covered husk. The fruit can grow as large as 30 centimetres long and 15 centimetres in diameter. It typically weighs one to three kilograms. Its shape ranges from oblong to round. The colour of its husk ranges from green to brown while its flesh pale yellow to red, depending on the species. The edible flesh emits a distinctive (odour), strong and penetrating even when the husk is intact. Some people regard the durian as (fragrant) while others find the aroma overpowering and offensive.

Rambutan

The rambutan (*Nephelium lappaceum*) is a tropical fruit native to the region. The word rambutan is derived from the Malay word rambut meaning "....." (hair), which is a reference to the numerous hairy protuberances of the fruit. The hairy fruit is often (red) but sometimes yellow. When peeled open, it reveals a sweet and white flesh which clings to a woody seed. Singapore is the

largest importer of rambutans worldwide, accounting for more than 60% of world imports

List down some of the uses of the rambutan tree below.

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Breadfruit

Breadfruit (*Artocarpus Altilis*) is a fast growing tree. The fruit averages about 2 kg in weight. A fully ripe breadfruit is soft and fragrant and its flesh is cream coloured or yellow and pasty with irregularly oval seeds.

List down some of the uses of the Breadfruit tree below.

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Mango

Mango (*Mangifera indica*) is a common dessert fruit in Asia. Ripe fruits differ greatly in terms of taste, colour, shape and size. In general, choice fruits are a delightful shade of yellow, sometimes with a greenish, pale orange or vermilion flush. The orange-yellow flesh is sweet and succulent with a wonderfully fragrant and exotic aroma. Each contains a single, elongated, fibrous seed stone which clings to the flesh. It should be noted that some unripe mangoes contain a highly irritating sap which can cause extreme discomfort to those with allergies or hypersensitivity.

List down some of the uses of the Mango tree below.

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Yellow Stem Fig (Ficus fistulosa)

The common Yellow Stem Fig (Ficus fistulosa) is possibly the most common forest fig in Singapore and one of two local fig species with figs growing on its main (trunk). It may reach a maximum height of about 12m. The figs of fistulosa ripen to a bright (yellow).

Figs are very important components of forest ecosystems, as they support a wide variety of *frugivorous animals. Birds, macaques, squirrels, fruit bats are attracted to the masses of ripening fruit.

*Fruivorous animals are fruit eaters.

Tree Ferns and Elephant ferns

They are termed as "living fossils" as they have (evolved) little since they first appeared many millions of years ago.

Why do you think ferns are important in the ecosystem?

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Let's explore Bukit Batok Nature Park

Annex 3a

Fauna found at Bukit Batok Nature Park

Freshwater turtles and various fish species at the quarry lake, reptiles like the changeable lizard and the less common green-crested lizard, squirrels, and birds are some of the animals that one can find in Bukit Batok Nature Park.



Fauna species in Bukit Batok Nature Park

Put a tick next to the boxes if you spotted the following animals during your visit.

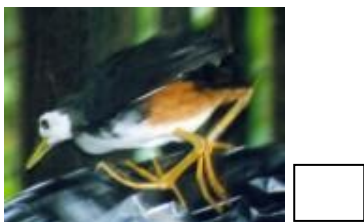
Rea-eared Terrapin



Malayan Box Terrapin



White-breaster Waterhen



Black-naped Oriole



Collared Kingfisher



Blue-tailed Bee Eater



War Memorial at Bukit Batok

The Syonan Chureito was a memorial built by the (Japanese) to commemorate those who died during a fierce battle that took place there during World War II. It has since been destroyed. All that is left of the original shrine are the steps and two short pillars at the base.





What is one feature that you like most in Admiralty Park? Why?

How do you think the features in Admiralty Park have benefitted visitors to the park?

What other features would you like to see in the park?

As students, what is one thing you can do to help make the park a better place for park users?

Without NParks, what do you think Singapore will be like?

How do you feel about working in a group? What has your group done well? What can be improved?

Introduction:

As part of reforestation efforts, part of the secondary forest have been cleared of invasive exotic species such as rubber trees and have been replanted with young saplings of native forest trees. Methods such as these help improve the biodiversity of the forest habitat and conserve the genetic diversity.

Native flora is essential for the regeneration and survival of native fauna. A healthy native ecosystem is an asset to a country's quality of life and builds her natural heritage.

Your Roles are:

1. To understand and appreciate history, flora and fauna in Bukit Batok Nature Park.
2. To learn about the importance of the secondary forest in Bukit Batok Nature Park.
3. To learn about the biodiversity of flora and fauna found in Bukit Batok Nature Park.
4. To promote Bukit Batok Nature Park as a park with rich biodiversity to all walks of life.

Your Task:

At the end of your visit to Bukit Batok Nature Park, your team is to complete a poster with information on the various fauna that can be found at Bukit Batok Nature Park.

Some useful questions to guide your team:

1. What is the role and purpose of Bukit Batok Nature Park in Singapore?
2. Who is the organisation behind the management of Bukit Batok Nature Park today?
3. Why is Bukit Batok Nature Park important in Singapore?
4. Why should we visit Bukit Batok Nature Park?
5. What are some of the important features that can be found in Bukit Batok Nature Park?
6. What are the changes that Bukit Batok Nature Park has gone through over the years?
7. What can be done for the future of Bukit Batok Nature Park?

Process:

Assigning specific roles for each member of the team

Example

1. Group Leader (Lead and co-ordinate, conceptualize ideas)
2. Scribe (Recording information)
3. Photographer (Take and edit photos)
4. Researcher (Searching for information on the history, flora and fauna, what to look out for at the park etc.)
5. Logistics and Map reader (Prepare the equipment, map reading if they are carrying out the task without a guide)

Websites:

1. http://www.nparks.gov.sg/cms/index.php?option=com_visitorsguide&task=parks&id=9&Itemid=73
2. <http://www.wildsingapore.com/places/bbnp.htm>
3. <http://www.ecologyasia.com/html-loc/bukit-batok.htm>

Project Rubrics

Annex 7

Group Members:

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CATEGORY	4	3	2	1
Graphics - Clarity	Graphics are all in focus and the content easily viewed and identified from 6 ft. away.	Most graphics are in focus and the content easily viewed and identified from 6 ft. away.	Most graphics are in focus and the content is easily viewed and identified from 4 ft. away.	Many graphics are not clear or are too small.
Graphics - Originality	Several of the graphics used on the poster reflect a exceptional degree of student creativity in their creation and/or display.	One or two of the graphics used on the poster reflect student creativity in their creation and/or display.	The graphics are made by the student, but are based on the designs or ideas of others.	No graphics made by the student are included.
Graphics - Relevance	All graphics are related to the topic and make it easier to understand. All borrowed graphics have a source citation.	All graphics are related to the topic and most make it easier to understand. All borrowed graphics have a source citation.	All graphics relate to the topic. Most borrowed graphics have a source citation.	Graphics do not relate to the topic OR several borrowed graphics do not have a source citation.
Labels	All items of importance on the poster are clearly labelled with labels that can be read from at least 3 ft. away.	Almost all items of importance on the poster are clearly labelled with labels that can be read from at least 3 ft. away.	Several items of importance on the poster are clearly labelled with labels that can be read from at least 3 ft. away.	Labels are too small to view OR no important items were labelled.
Required Elements	The poster includes all required elements as well as additional information.	All required elements are included on the poster.	All but 1 of the required elements are included on the poster.	Several required elements were missing.

Knowledge Gained	Student can accurately answer all questions related to facts in the poster and processes used to create the poster.	Student can accurately answer most questions related to facts in the poster and processes used to create the poster.	Student can accurately answer about 75% of questions related to facts in the poster and processes used to create the poster.	Student appears to have insufficient knowledge about the facts or processes used in the poster.
Content - Accuracy	At least 7 accurate facts are displayed on the poster.	5-6 accurate facts are displayed on the poster.	3-4 accurate facts are displayed on the poster.	Less than 3 accurate facts are displayed on the poster.
Attractiveness	The poster is exceptionally attractive in terms of design, layout, and neatness.	The poster is attractive in terms of design, layout and neatness.	The poster is acceptably attractive though it may be a bit messy.	The poster is distractingly messy or very poorly designed. It is not attractive.
Title	Title can be read from 6 ft. away and is quite creative.	Title can be read from 6 ft. away and describes content well.	Title can be read from 4 ft. away and describes the content well.	The title is too small and/or does not describe the content of the poster well.
Mechanics	Capitalization and punctuation are correct throughout the poster.	There is 1 error in capitalization or punctuation.	There are 2 errors in capitalization or punctuation.	There are more than 2 errors in capitalization or punctuation.
Grammar	There are no grammatical mistakes on the poster.	There is 1 grammatical mistake on the poster.	There are 2 grammatical mistakes on the poster.	There are more than 2 grammatical mistakes on the poster.

Copyright Acknowledgements

- Information about Simpoh air is taken from http://www.naturia.per.sg/buloh/plants/simpoh_air.htm
- Information about Durian Tree is taken from <http://en.wikipedia.org/wiki/Durian>
- Information about Rambutan Tree is taken from http://infopedia.nl.sg/articles/SIP_208_2004-12-16.html
- Information on bread fruit is taken from http://infopedia.nl.sg/articles/SIP_837_2005-01-22.html
- Information on Mango is taken from http://infopedia.nl.sg/articles/SIP_872_2005-01-11.html
- Some information found here about Bukit Batok Nature Park is taken and adapted from <http://www.ecologyasia.com/html-loc/bukit-batok.htm>
- Information about the White-breasted water hen is taken from http://www.naturia.per.sg/buloh/birds/Amaurornis_phoenicurus.htm
- Information about the Black-naped Oriole is taken from http://www.naturia.per.sg/buloh/birds/Oriolus_chinensis.htm
- Information about the Collared Kingfisher is taken from http://www.naturia.per.sg/buloh/birds/Halcyon_chloris.htm
- Information about the Blue-tailed Bee Eater is taken from http://en.wikipedia.org/wiki/Blue-tailed_Bee-eater
- Photograph of the Bukit Batok Memorial is taken from http://en.wikipedia.org/wiki/File:Bt_Batok_Memorial.jpg
- Cliparts and graphics are taken from <http://office.microsoft.com/en-us/images/>
- Rubrics in Annex 6 is created from Adapted from *rubistar.4teachers.org*
- All other information, resources, pictures and photographs are adapted from the National Parks Board and NParks Flora and Fauna websites.

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