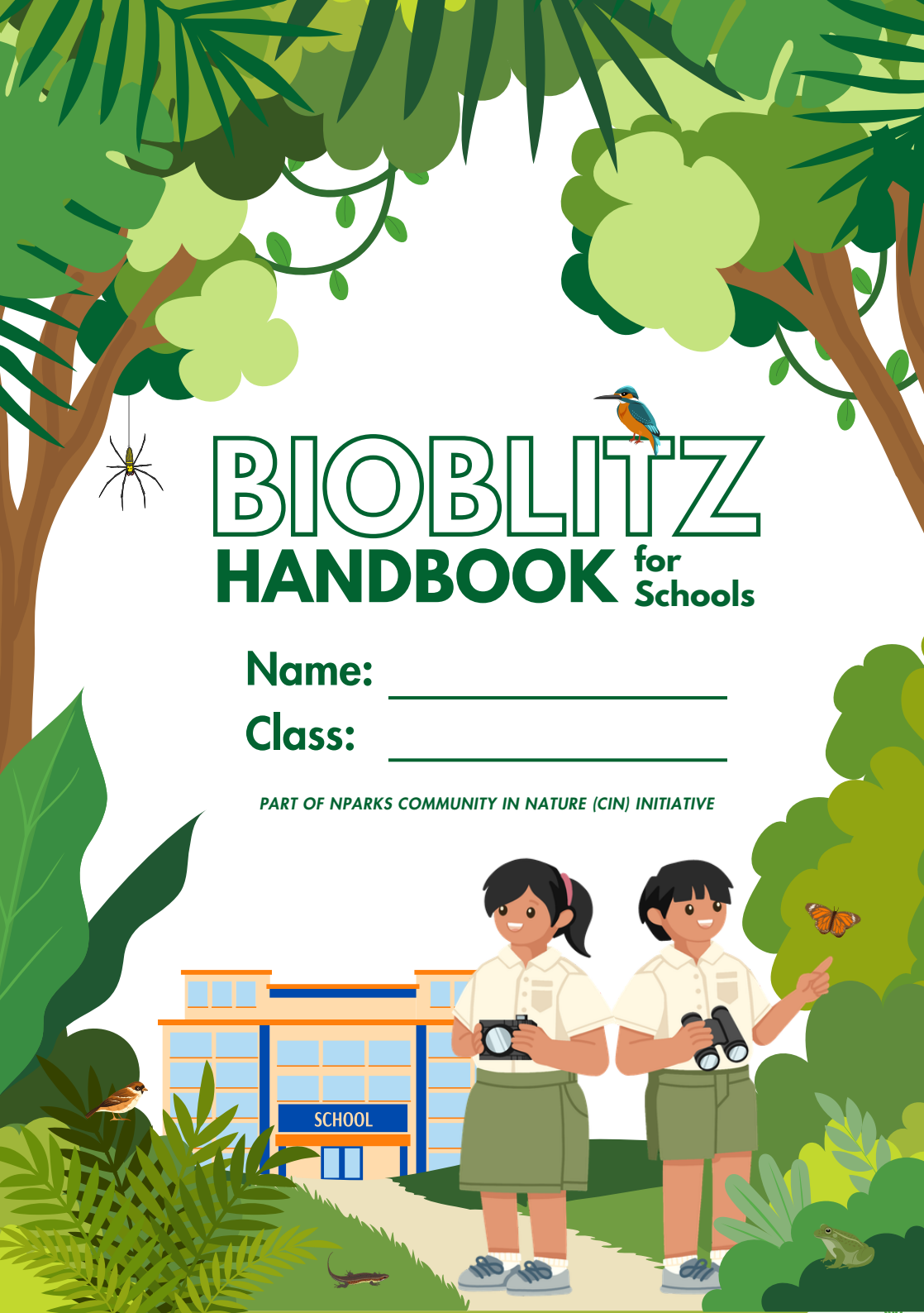
BIOBLITZ HANDBOOK for Schools

Name: _____

Class: _____

PART OF NPARKS COMMUNITY IN NATURE (CIN) INITIATIVE



Survey Etiquette

To ensure that the data collected is reliable, scientists also observe certain behaviour and survey etiquette to minimise disturbance to wildlife, as their actions may affect the survey findings.

Follow these simple Dos and Don'ts when conducting your survey!

✓ Observe animals from a distance	✗ Do not feed or handle animals
✓ Stay on designated paths	✗ Do not damage vegetation or wildlife
✓ Stay quiet and be mindful of your surroundings	✗ Do not litter

Survey Protocol

Selecting the best **survey time** and **study site** is important to get accurate results.

Survey Time

As different types of animals are active at different times of the day, surveys are carried out at specific timings to get the best possible results.

E.g.

- **Bird surveys** are usually carried out in the _____ and _____.
- **Butterfly/Dragonfly surveys** are usually carried out in the _____.

Study Site

Choosing the right survey site is important! Different ecosystems will be home to different types of flora and fauna and can affect your survey results.

What is BioBlitz?



BioBlitz is a **citizen science event** where participants document and identify as many species as possible in a designated area over a specific period. BioBlitz is usually carried out by volunteer citizen scientists, under the guidance of researchers.

Under "**BioBlitz for Schools**", you will be trained to be junior citizen scientists. Learn how to recognise and record different species found in your school and be a part of your school's efforts in greening its compound!

How is BioBlitz conducted?

1. **Learn** the survey protocol and etiquette.
2. **Prepare** necessary survey equipment: e.g. camera, binoculars.
3. **Conduct the survey** at the survey site(s) and **record** your findings.
4. **Compile** your data.
5. **Share** the results with all participants!

Why conduct BioBlitz?

The data collected through biodiversity surveys is valuable as it tells us more about the different species found within a specific area. This data can inform environmental management and conservation efforts.



GUIDE TO IDENTIFYING BIRDS

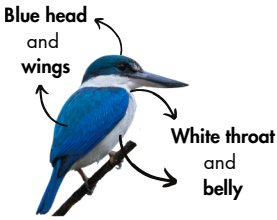
Learn how to identify birds by looking at their key features, such as **colour**, **size and shape**!

1 Colour

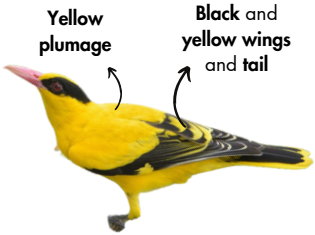
Many species have distinct colour patterns on their feathers, making it easier to tell them apart.



ORNATE SUNBIRD
Cinnyris ornatus



COLLARED KINGFISHER
Todiramphus chloris



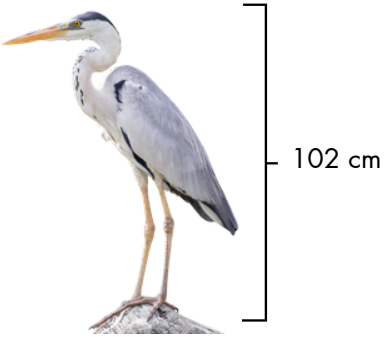
BLACK-NAPED ORIOLE
Oriolus chinensis

2 Size

Birds come in all sizes, from tiny little birds that can fit in your hand to big ones that are as tall as a child!



SCARLET-BACKED FLOWERPECKER
Dicaeum cruentatum



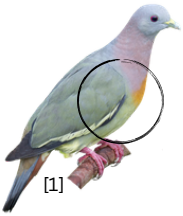
GREY HERON
Ardea cinerea

**The pictures are not to scale.*

Photo credit: Francis Yap

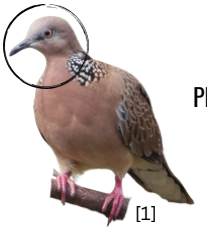
3 Shape

Birds belonging to a particular family often share similar body shapes. Can you spot how birds in the families below look similar to each other? Describe the similarities in the spaces provided.
(Hint: The circled areas are body parts with similar shapes.)



[1]

PINK-NECKED GREEN PIGEON
Treron vernans



[1]

SPOTTED DOVE
Spilopelia chinensis

Family Columbidae

Doves and pigeons look similar because they have ...

_____

_____

_____



[2]

SUNDA PYGMY WOODPECKER
Yungipicus moluccensis



[1]

COMMON FLAMEBACK
Dinopium javanese

Family Picidae

Woodpeckers look similar to each other because they have ...

_____

_____

_____

Photo credit: Francis Yap [1], Dillen Ng [2]

Birds have different beak shapes depending on their diet. Observe the beak shapes of the birds below. What do you think they eat? Match each bird to the correct food!



SCALY-BREASTED MUNIA
Lonchura punctulata



Short and wide



NECTAR



ORIENTAL MAGPIE ROBIN
Copsychus saularis



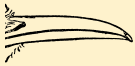
Slender and straight



INSECTS



CRIMSON SUNBIRD
Aethopyga siparaja



Long and hooked



FISH



GREY HERON
Ardea cinerea



Long and straight



FRUIT



YELLOW-VENTED BULBUL
Pycnonotus goiavier



Slender and hooked

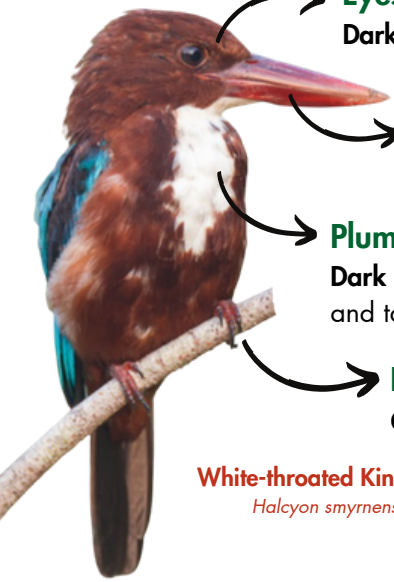


NUTS & SEEDS

Photo credit: Francis Yap

Morphology of a Bird

Knowing how to describe the morphology (physical features) of a bird helps others identify it as well. Here's an example below.



Eyes
Dark brown irises

Bill
Large red bill

Plumage
Dark brown with **turquoise-blue** back, wings and tail and a prominent **white throat patch**

Legs and Feet
Orange legs and **black** feet

White-throated Kingfisher
Halcyon smyrnensis

Now's your turn! Look at the bird below and describe its different parts in terms of colour, size and shape!



Scarlet-backed Flowerpecker
Dicaeum cruentatum

Photo credit: Francis Yap

GUIDE TO IDENTIFYING BUTTERFLIES

Learn how to identify butterflies by looking at their features, such as **colour**, **wing markings**, **size** and **wing shape**!

1 Colour

Butterflies come in a wide range of colours.



PAINTED JEZEBEL
Delias hyparete metarete

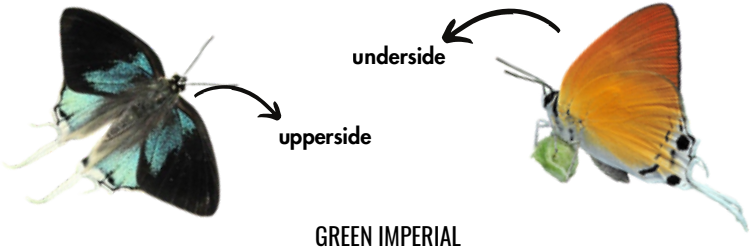


BLUE PANSY
Junonia orithya wallacei



COMMON MIME
Papilio clytia

In some butterflies, the colours on the upperside of their wings are very different from those on the underside! The details of both the upper and under side of a butterfly are important when identifying a butterfly.



GREEN IMPERIAL
Manto hypoleuca terana

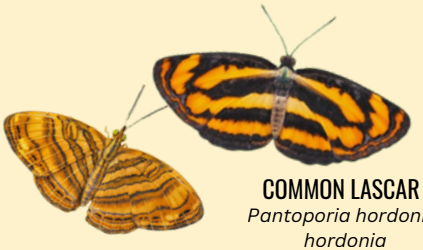
Photo credit: Khew Sin Khoon, Horace Tan [1]

2 Wing Markings

Butterfly wings aren't just colourful – they have varying patterns that make each butterfly unique!

Look at the wings of each pair of butterflies. Then fill in the blanks with the helping words below that describe the same pattern on the wings of each pair of butterflies.

Stripes	Spots	Eye-spots	Veins



LITTLE MAPLET
Chersonesia peraka peraka

COMMON LASCAR
Pantoporia hordonia hordonia

These wings have _____.



TAWNY COSTER
Acraea terpsicore

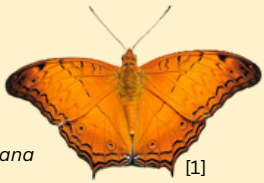


LEOPARD [1]
Phalanta phalantha phalantha

These wings have _____.



PEACOCK PANSY
Junonia almana javana



CRUISER ♂ [1]
Vindula dejone erotella

These wings have _____.



STRIPED BLUE CROW
Euploea mulciber mulciber



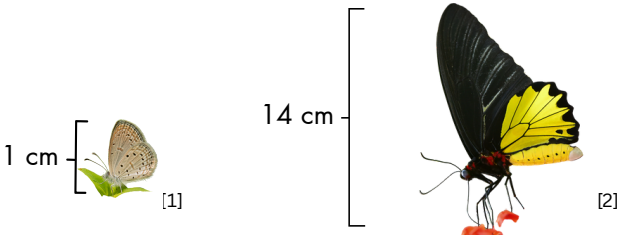
COMMON TIGER
Danaus genutia genutia

These wings have _____.

Photo credit: Horace Tan, Khew Sin Khoon [1]

3 Size

Butterflies come in all sizes – some can fit on your finger while others may be bigger than your palm!



PYGMY GRASS BLUE
Zizula hylax pygmaea

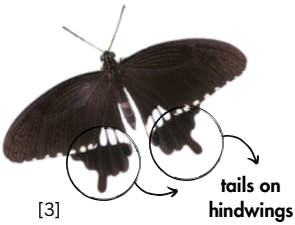
COMMON BIRDWING
Troides helena cerberus

**The pictures are not to scale.*

3 Wing Shape

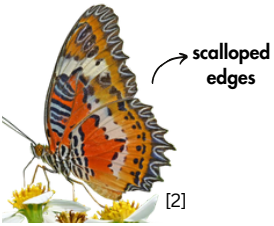
From pointy tails to round edges, butterfly wings come in all shapes. Let's see how different wing shapes help us tell them apart.

Tailed Wings



COMMON MORMON
Papilio polytes romulus

Scalloped Wings



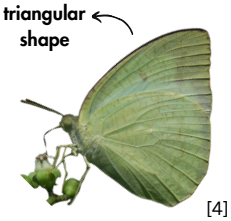
MALAY LACEWING
Cethosia hypsea

Rounded Wings



PLAIN TIGER
Danaus chrysippus chrysippus

Triangular Wings

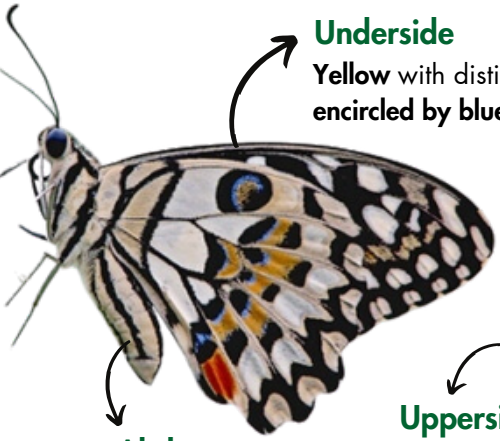


MOTTLED EMIGRANT
Catopsilia pyranthe

Photo credit: Zhou Boyi [1], Khew Sin Khoon [2], Horace Tan [3], Soh Kam Yung [4]

Morphology of a Butterfly

Knowing how to describe the morphology (physical features) of a butterfly helps others identify it as well. Here's an example below.



Underside

Yellow with distinctive **orange spots encircled by blue and black edges**

Abdomen

White with **black stripes**



Upperside

Mostly **black** with **large yellow markings**

Lime Butterfly

Papilio demoleus malayanus

Now's your turn! Look at the butterfly below and describe its different parts in terms of colour, markings, size and shape.



Common Tiger

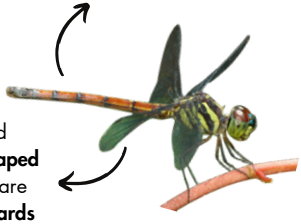
Danaus genutia genutia

Photo credit: Horace Tan

GUIDE TO IDENTIFYING DRAGONFLIES AND DAMSELFLIES

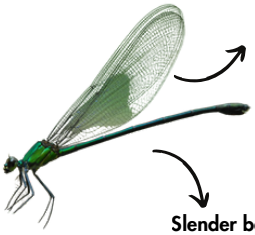
Learn how to identify dragonflies and damselflies by looking at their features, such as **colour**, **size** and **flight pattern**!

Do you know the differences between dragonflies and damselflies?



Dragonfly

SCARLET GRENADIER
Lathrecista asiatica

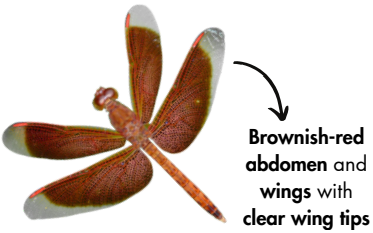


Damselfly

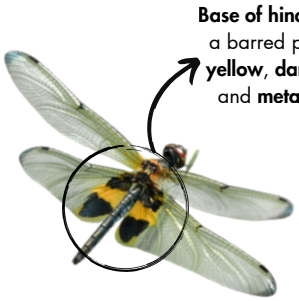
COMMON FLASHWING
Vestalis amethystina

1 Colour

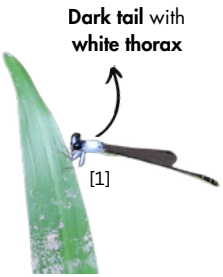
Dragonflies and damselflies come in different abdominal or wing colours! Some species have prominent markings on their abdomen and wings.



COMMON PARASOL♂
Neurothemis fluctuans



YELLOW-BARRED FLUTTERER
Rhyothemis phyllis



VARIABLE WISP
Agriocnemis femina

Photo credit: Cai Yixiong, Ruth Tan [1]

2 Size

Dragonflies and damselflies come in all sizes – some are as small as a paperclip while others are as big as the width of your hand!

17mm



SCARLET PYGMY ♀
Nannophya pygmaea

68mm



COMMON FLANGETAIL
Ictinogomphus decoratus

**The pictures are not to scale.*

3 Flight Pattern

Depending on the way they fly, dragonflies and damselflies can be classified into four groups:

Gliders



Gliders have **large wings** to fly smoothly and effortlessly.

COASTAL GLIDER ♂
Macrodiplax cora

Flutterers

Flutterers **generally fly slowly**.



BRONZE FLUTTERER
Rhyothemis obsolescens

Skimmers

Skimmers can **fly a long distance** without stopping.



COMMON BLUE SKIMMER ♂
Orthetrum glaucum

Darters



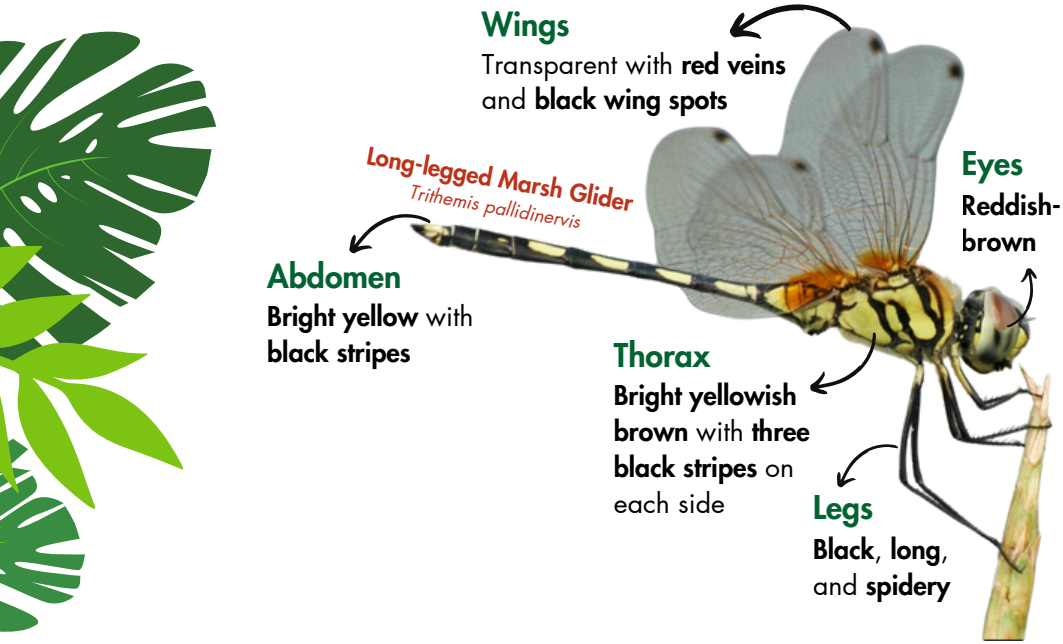
Darters **fly quickly in short, straight paths** with short periods of hovering.

BLUE DASHER ♂
Brachydiplax chalybea

Photo credit: Cai Yixiong

Morphology of a Dragonfly

Knowing how to describe the morphology (physical features) of a dragonfly helps others identify it as well. Here's an example below.



What do you think is happening here?

Now's your turn! Look at the dragonfly below and describe its different parts in terms of colour, size and shape.



Photo credit: Cai Yixiong

OTHER ANIMALS YOU MAY SEE AROUND SCHOOL

Your school may also be home to other types of animals such as **mammals**, **reptiles**, **amphibians**, **insects** and **arachnids**!

MAMMALS


[1]

PLANTAIN SQUIRREL
Callosciurus notatus


[1]

LESSER DOG-FACED FRUIT BAT
Cynopterus brachyotis

REPTILES & AMPHIBIANS



FOUR-LINED TREE FROG
Polypedates leucomystax



COMMON HOUSE GECKO
Hemidactylus frenatus



COMMON SUN SKINK
Eutropis multifasciata

INSECTS & ARACHNIDS


[2]

ASIAN HONEY BEE
Apis cerana


[2]

BROAD-HANDED CARPENTER BEE
Xylocopa latipes


[3]

ELECTRIC BLUE JUMPER
Phintella vittata

Photo credit: Nick Baker [1], John X. Q. Lee [2], Chris Ang [3]

BIOBLITZ DATASHEET

You are now ready to conduct your survey!
In your study site, **identify and count the species you see.**

Note down all your sightings in this datasheet, including species that may not be listed in this booklet. You may refer to the posters for help in identifying birds, butterflies, dragonflies and damselflies.

Date: _____ **Weather:** _____

Start Time: _____ **Study Site:** _____

End Time: _____ **Surveyor(s):** _____

Write down the number of each animal that you see.



☐ ORNATE SUNBIRD
Cinnyris ornatus



☐ BLACK-NAPED ORIOLE
Oriolus chinensis



☐ EURASIAN TREE SPARROW
Passer montanus



☐ ASIAN GLOSSY STARLING
Aplonis panayenis



☐ ZEBRA DOVE
Geopelia striata



☐ COLLARED KINGFISHER
Todiramphus chloris

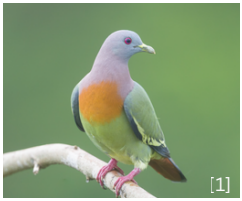


☐ YELLOW-VENTED BULBUL
Pycnonotus goiavier



☐ ASIAN KOEL
Eudynamys scolopaceus

Photo credit: Francis Yap



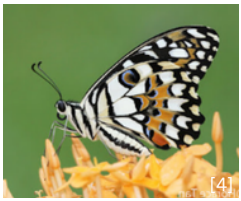
☐ **PINK-NECKED GREEN PIGEON**
Treron vernans



☐ **GRASS BLUE**
Lycaenidae sp.



☐ **GRASS YELLOW**
Pieridae sp.



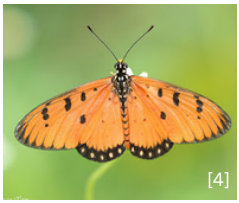
☐ **LIME BUTTERFLY**
Papilio demoleus malayanus



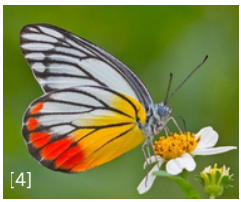
☐ **COMMON MORMON**
Papilio polytes romulus



☐ **CHOCOLATE PANSY**
Junoia hedonia ida



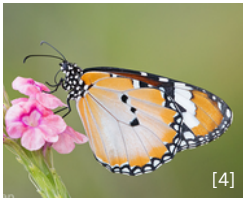
☐ **TAWNY COSTER**
Acraea terpsicore



☐ **PAINTED JEZEBEL**
Delias hyparete metarete



☐ **COMMON PALMFLY**
Elymnias hypermnestra agina



☐ **PLAIN TIGER**
Danaus chrysippus chrysippus



☐ **BLUE SPRITE**
Pseudagrion microcephalum



☐ **COMMON BLUETAIL**
Ischnura senegalensis



☐ **BLUE DASHER**
Brachydiplax chalybea



☐ **COMMON PARASOL**
Neurothemis fluctuans



☐ **COMMON SCARLET**
Crocothemis servilia



☐ **CRIMSON DROPWING**
Trithemis aurora



☐ **PLANTAIN SQUIRREL**
Callosciurus notatus



☐ **COMMON HOUSE GECKO**
Hemidactylus frenatus



☐ **BROAD-HANDED CARPENTER BEE**
Xylocopa latipes



☐ **ELECTRIC BLUE JUMPER**
Phintella vittata

Photo credit: Francis Yap [1], Zhou Boyi [2], Khew Sin Khoon [3], Horace Tan [4], Robin Ngiam [5], Cai Yixiong [6], Nick Baker [7], John X. Q. Lee [8], Chris Ang [9]

Record any other species that you see.

If you are unable to identify the animal, draw or describe it instead! You may also attach a photo.

E.g.



1 CRIMSON SUNBIRD
Aethopyga siparaja

Small bird with red head and chest, olive-brown back and belly

Photo credit: Cai Yixiong

☐ _____

_____

_____

_____

☐ _____

_____

_____

_____

☐ _____

_____

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☐ _____

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_____

JOIN US FOR OUR SURVEYS

Every year, Community in Nature (CIN) hosts four Biodiversity Watches. Learn to be citizen scientists and contribute to the long-term monitoring of fauna populations in Singapore!*


[1]


[1]


[2]


[3]

GARDEN BIRD WATCH	HERON WATCH	BUTTERFLY WATCH	DRAGONFLY WATCH
April, Oct/Nov	Jan/Feb, July	May/June, September	March, August

Photo credit: Francis Yap [1], Horace Tan [2], Cai Yixiong [3]

**If you are under 12, be sure to get your parents or guardians to accompany you for the survey!*

JOIN OUR MAILING LIST

Join our mailing list to receive updates on CIN Watches, programmes and events!


NATIONAL PARKS
LET'S MAKE SINGAPORE OUR CITY IN NATURE
Community In Nature
In support of:
SG GREEN PLAN
Supported by:
GARDEN CITY FUND
SHENGSIONG
... all for you!
Share your love for nature and animals at
#NParksBuzz #AnimalBuzzSG