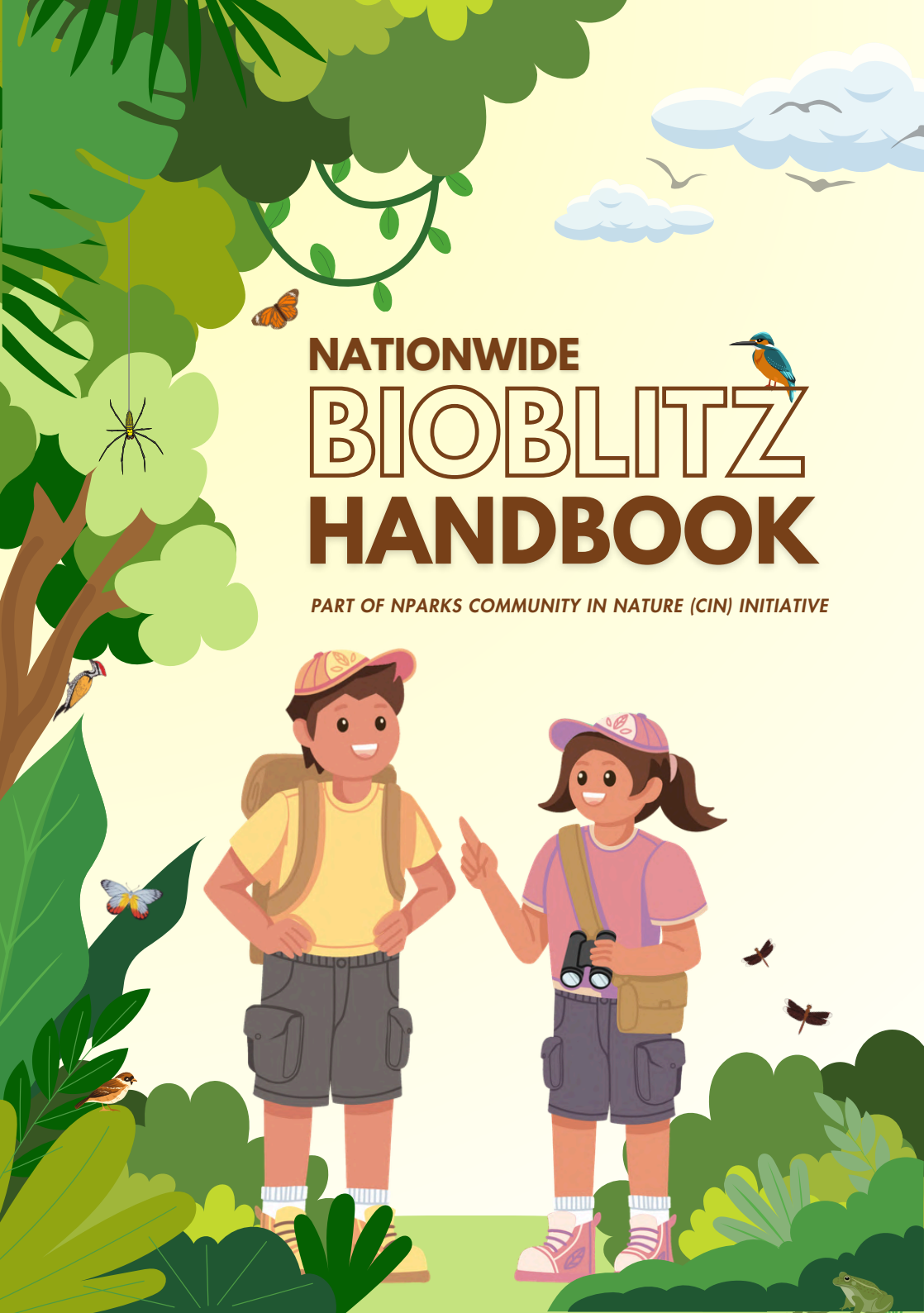




NATIONWIDE BIOBLITZ HANDBOOK

PART OF NPARKS COMMUNITY IN NATURE (CIN) INITIATIVE

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.



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. **Consolidate** and **submit** 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.



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.

- **Bird surveys** are usually carried out in the morning and evening.
- **Butterfly/Dragonfly surveys** are usually carried out in the afternoon.

Study Site

Different ecosystems are home to different types of flora and fauna. As such, the survey site you select (and the type of ecosystem it is associated with) can affect your survey results.



Our Ecosystems

Singapore has a remarkable array of ecosystems, each rich in biodiversity and unique in its contributions to the environment. From lush secondary forests to mangrove and intertidal zones along our coastlines, these habitats support a wide variety of flora and fauna. Here, find out more about a few of our common ecosystems!

1 Urban Green Spaces



Bidadari Park

Urban green spaces, which are managed by people, include **parks, roadside greenery, and gardens**. You may find small trees, mown turf, and ornamental plants of both native and exotic species in these areas. They support biodiversity – for instance, garden birds and butterflies are attracted to the flowering and fruiting plants.

2 Secondary Forests

Secondary forests in Singapore are forested areas that have regrown after the complete removal of the original (primary) forest, which is typically due to crop cultivation. The process of regrowth takes several decades, and there is a lack of native climax forest trees such as dipterocarps in secondary forests.



Mature secondary forest in the Central Catchment Nature Reserve

3 Intertidal Zones



Sandy beaches of East Coast Park

Intertidal zones are coastal areas that lie between the highest and lowest tide marks, where land meets the sea. These regions are home to a diverse array of marine life. During low tide, you may see tide pools filled with colourful sea creatures such as crabs and snails along with various types of seaweeds and marine plants.

4 Mangroves

Mangroves serve as habitats for a wide variety of wildlife. They provide crucial breeding grounds for fish and crustaceans as well as a natural barrier against coastal erosion. However, they are currently threatened by urbanisation and population growth.



Mangroves within
Sungei Buloh Wetland Reserve

GUIDE TO IDENTIFYING BIRDS

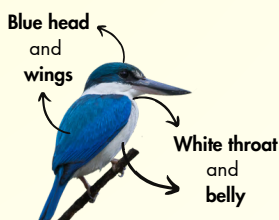
Learn how to identify birds by looking at their key features, such as **colour**, **size** and **shape**!

1 Colour

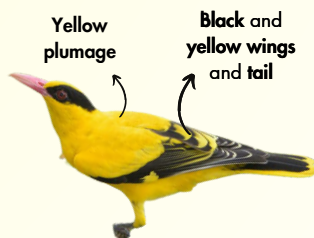
Many species have distinct colour patterns on their feathers, making it easier to tell them apart.



ORNATE SUNBIRD
Cinnyris ornatus



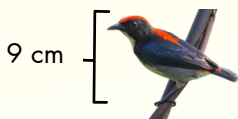
COLLARED KINGFISHER
Todiramphus chloris



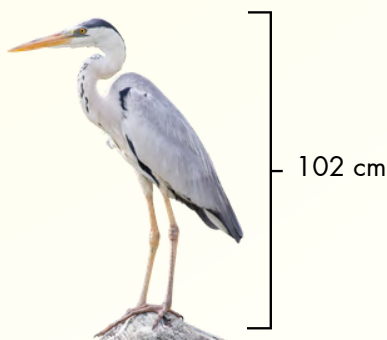
BLACK-NAPED ORIOLE
Oriolus chinensis

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

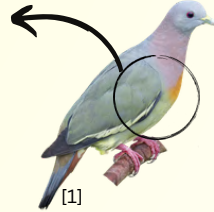
Birds belonging to a particular **family** often have **similar body shapes**, and have **body parts** with **similar shapes**.



SPOTTED DOVE

Spilopelia chinensis

Doves and pigeons have common features like **small rounded heads** and **plump bodies** with a **rounded breast**.



PINK-NECKED GREEN PIGEON

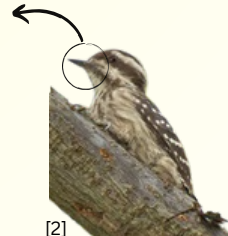
Todiramphus chloris



COMMON FLAMEBACK

Dinopium javanese

Woodpeckers have common features like **straight, pointed beaks** for drilling and **strong claws** for gripping onto trees.



SUNDA PYGMY WOODPECKER

Dendrocopos moluccensis

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

Birds have **different beak shapes depending on their diet.**

Cone-shaped beak

Seed eaters have cone-shaped beaks to crack open seeds and nuts.



SCALY-BREASTED MUNIA
Lonchura punctulata



EURASIAN TREE SPARROW
Passer montanus

Thin pointed beak

Insect eaters have thin pointed beaks to pick insects from leaves, bark or the ground.



ORIENTAL MAGPIE ROBIN
Copsychus saularis



SUNDA PYGMY WOODPECKER
Yungipichus molucensis

Long tubular beak

Nectar feeders have long tubular beaks to reach deep into flowers to extract nectar.



BROWN-THROATED SUNBIRD
Anthreptes malacensis



CRIMSON SUNBIRD
Anthreptes malacensis

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

Long straight beak

Fish eaters have long straight beaks to spear fish and pick up marine animals.



GREY HERON

Ardea cinerea



WHITE-THROATED KINGFISHER

Halcon smyrnensis

Short, slightly hooked beak

Fruit eaters have short, slightly hooked beaks to pluck and eat soft fruits.



ASIAN GLOSSY STARLING

Aplonis panayensis



YELLOW-VENTED BULBUL

Pycnonotus goiavier

Photo credit: Francis Yap

Birds with long necks adopt different **neck shapes** in flight.

S-shaped neck

Herons, bitterns and egrets retract their necks and tuck their heads close to their bodies while in flight, forming a S shape.



GREAT-BILLED HERON

Ardea sumatrana



YELLOW BITTERN

Ixobrychus sinensis

Straight neck

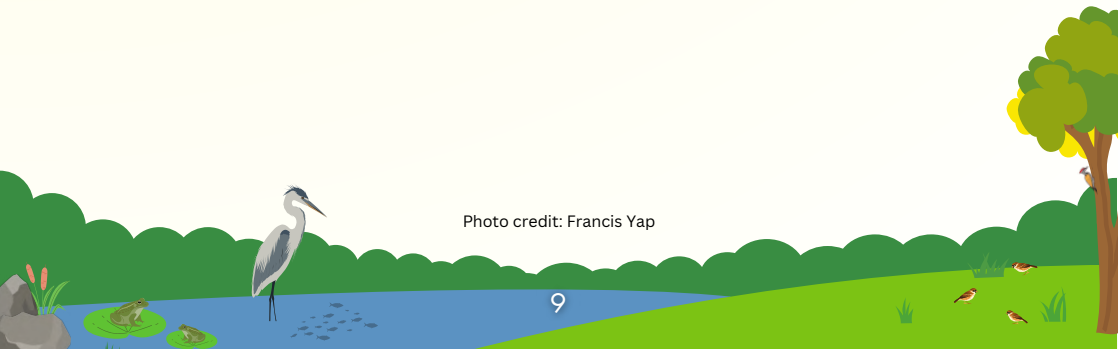
Storks, cranes and ibises fly with their neck extended, straight out.



PAINTED STORK

Mycteria leucocephala

Photo credit: Francis Yap



GUIDE TO IDENTIFYING BUTTERFLIES

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

1 Colour

Butterflies come in a wide range of colours.



PAINTED JEZEBEL
Delias hyparete



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.

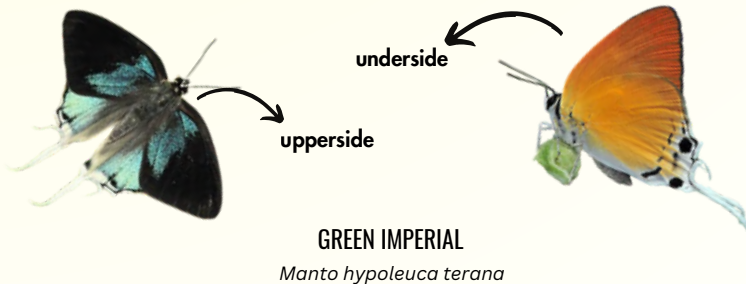


Photo credit: Khew Sin Khoon, Horace Tan [1]

2 Wing Markings

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

Stripes

Wings have distinct stripe patterns running across them, either vertical, horizontal or diagonal.



LITTLE MAPLET

Chersonesia peraka peraka



COMMON LASCAR

Pantoporia hordonia hordonia

Spots

Wings have spots or dots which aid in camouflage or mimicking other unpalatable species as a defence mechanism.



TAWNY COASTER

Junonia almana javana



CHOCOLATE PANSY

Junonia hedonia ida

Photo credit: Horace Tan

Eye-spots

Wings have prominent, circular markings that resemble eyes, often used to trick or scare away predators.



PEACOCK PANSY

Junonia almana javana



CRUISER ♂

Vindula dejone erotella

[1]

Veins

The wing veins are prominent, creating a visible network or “web” that stands out.



STRIPED BLUE CROW

Euploea mulciber mulciber



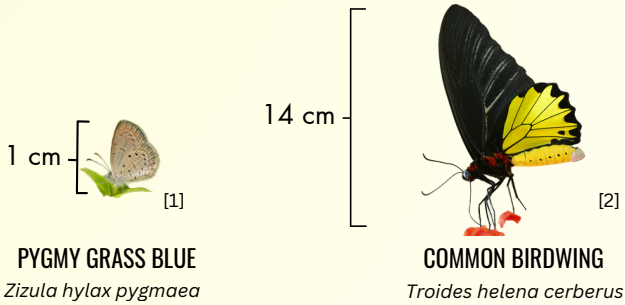
COMMON TIGER

Danaus genutia genutia

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!



**The pictures are not to scale.*

4 Wing Shapes

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

These butterflies have elongated, tail-like extensions at the hindwings.

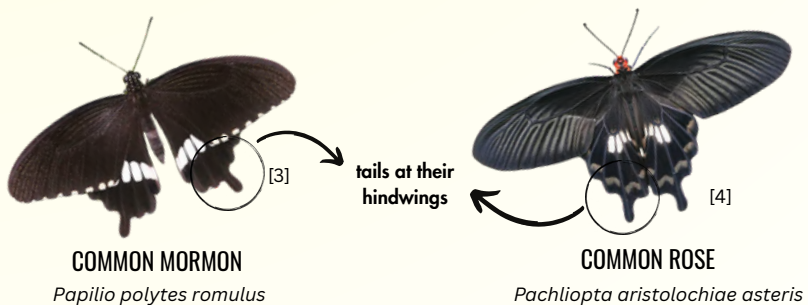


Photo credit: Zhou Boyi [1], Khew Sin Khoon [2], Horace Tan [3]

Scalloped Wings

These butterflies have gently scalloped edges, giving them a delicate, lace-like appearance.



MALAY LACEWING

Cethosia hypsea

rounded wings
with slightly
scalloped edges



BLUE GLASSY TIGER

Ideopsis vulgaris macrina

Rounded Wings

These butterflies have wings with smooth rounded edges.



LEMON EMIGRANT

Catopsilia pomona pomona



PLAIN TIGER

Danaus chrysippus chrysippus

Triangular Wings

These butterflies have wings that taper into a **triangular shape**, often associated with more compact bodies.



COMMON GRASS YELLOW

Eurema hecabe contubernalis



MOTTLED EMIGRANT

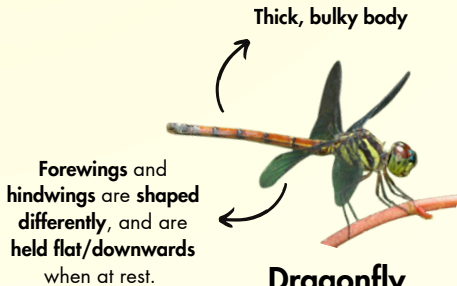
Catopsilia pyranthe

Photo credit: Khew Sin Khoon, Soh Kam Yung [1]

GUIDE TO IDENTIFYING DRAGONFLIES

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

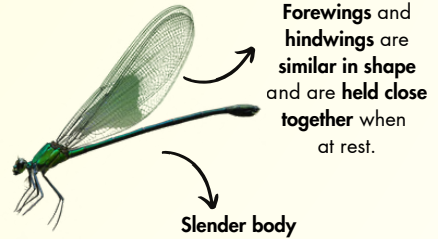
Do you know the differences between dragonflies and damselflies?



Dragonfly

SCARLET GRENADIER

Lathrecista asiatica



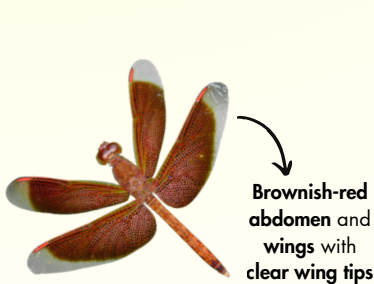
Damselfly

COMMON FLASHWING

Vestalis amethystina

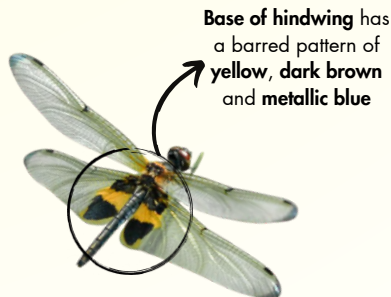
1 Colour

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



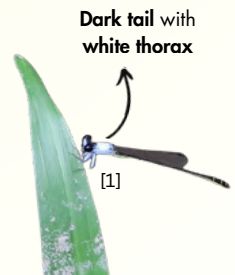
COMMON PARASOL♂

Neurothemis fluctuans



YELLOW-BARRED FLUTTERER

Rhyothemis phyllis



VARIABLE WISP

Agriocnemis femina

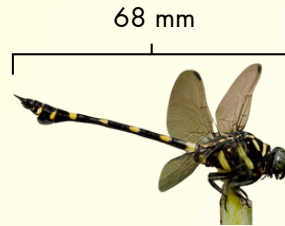
Photo credit: Cai Yixiong, Ruth Tan [1]

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!



SCARLET PYGMY ♀
Nannophya pygmaea



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:

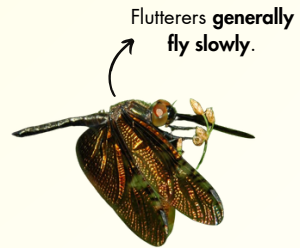
Gliders



COASTAL GLIDER ♂
Macrodiplax cora

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

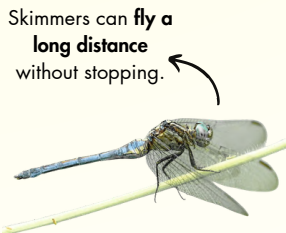
Flutterers



BRONZE FLUTTERER
Rhyothemis obsolescens

Flutterers **generally fly slowly.**

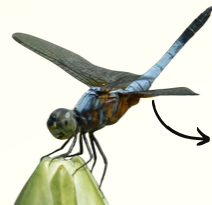
Skimmers



COMMON BLUE SKIMMER ♂
Orthetrum glaucum

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

Darters



BLUE DASHER ♂
Pachydiplax longipennis

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

Photo credit: Cai Yixiong

OTHER ANIMALS YOU MAY SEE

Singapore is also home to many other types of animals such as **mammals**, **reptiles**, **amphibians**, and **arachnids**! Do you recognise any of the animals below?

MAMMALS



[1]

PLANTAIN SQUIRREL
Callosciurus notatus



[1]

LESSER DOG-FACED FRUIT BAT
Cynopterus brachyotis



[2]

SMOOTH-COATED OTTER
Lutrogale perspicillata

REPTILES & AMPHIBIANS



FOUR-LINED TREE FROG
Polypedates leucomystax



COMMON HOUSE GECKO
Hemidactylus frenatus



COMMON SUN SKINK
Eutropis multifasciata

INSECTS & ARACHNIDS



[3]

ASIAN HONEY BEE
Apis cerana



[3]

BROAD-HANDED CARPENTER BEE
Xylocopa latipes



[4]

ELECTRIC BLUE JUMPER
Phintella vittata

Photo credit: Nick Baker [1], Max Khoo [2], John X. Q. Lee [3], Chris Ang [4]

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 (list the total number seen for each species) in this datasheet, including species that may not be listed in this booklet. You may refer to the e-posters for help in identifying birds, butterflies, dragonflies and damselflies.

Date: _____

Weather: _____

Start Time: _____

Study Site: _____

End Time: _____

Surveyors: _____

The following pages list some of the common species you may see on your survey. If you are unable to identify the animal, draw or describe it instead! You may also attach a photo, like the example below.



1 CRIMSON SUNBIRD
Aethopyga siparaja





Small bird with red

head and chest, olive-

brown back and belly

Photo credit: Cai Yixiong

Birds



☐ OLIVE-BACKED SUNBIRD
Cinnyris jugularis



☐ BLACK-NAPED ORIOLE
Oriolus chinensis



☐ EURASIAN TREE SPARROW
Passer montanus



☐ ASIAN GLOSSY STARLING
Aplonis Panayensis



☐ ZEBRA DOVE
Geopelia striata



☐ PINK-NECKED GREEN PIGEON
Todiramphus chloris



☐ YELLOW-VENTED BULBUL
Pycnonotus goiavier



☐ ASIAN KOEL
Eudynamis scolopaceus



☐ COLLARED KINGFISHER
Todiramphus chloris



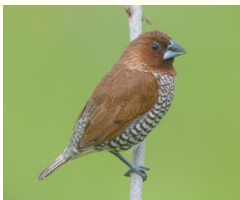
☐ BLUE-THROATED BEE-EATER
Merops viridis



☐ ORIENTAL MAGPIE ROBIN
Copsychus saularis



☐ GREATER RACKET-TAILED DRONGO
Dicricus paradiseus



☐ SCALY BREASTED MUNIA
Lonchura punctulata



☐ ASHY TAILORBIRD
Orthotomus ruficeps



☐ MALAYSIAN PIED FANTAIL
Rhipidura javanica



☐ COMMON MYNA
Acridotheres tristis

Photo credit: Francis Yap

Birds



GREY HERON
Ardea cinerea



BLACK-CROWNED NIGHT HERON
Nycticorax nycticorax



GREAT EGRET
Ardea alba



WHITE-BREASTED WATERHEN
Amaurornis phoenicurus



ORIENTAL PIED HORNBILL
Anthracoceros albirostris



HOUSE SWIFT
Apus nipalensis



LESSER WHISTLING DUCK
Dendrocygna javanica



BRAHMINY KITE
Haliastur indus



WHITE-BELLIED SEA EAGLE
Haliaeetus leucogaster



SPOTTED WOOD OWL
Strix seloputo



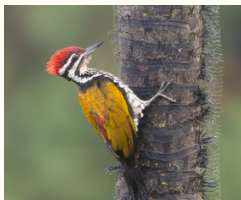
BUFFY FISH OWL
Ketupa ketupu



COLLARED SCOPS OWL
Otus lettia



RED JUNGLEFOWL
Gallus gallus



COMMON FLAMEBACK
Dinopium javanense



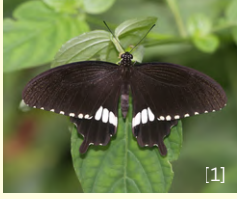
LONG-TAILED PARAKEET
Psittacula longicauda



LARGE-TAILED NIGHTJAR
Caprimulgus macrurus

Photo credit: Francis Yap

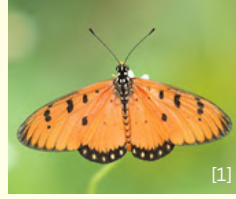
Insects



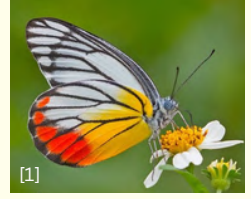
☐ COMMON MORMON
Papilio polytes romulus



☐ CHOCOLATE PANSY
Junonia hedonia ida



☐ TAWNY COSTER
Acraea terpsicore



☐ PAINTED JEZEBEL
Delias hyparete metarete



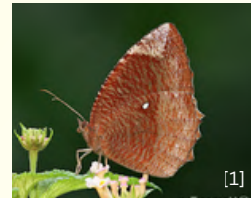
☐ GRASS BLUE
Lycaenidae sp.



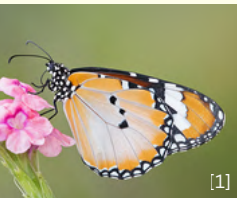
☐ GRASS YELLOW
Eurema sp.



☐ LIME BUTTERFLY
Papilio demoleus



☐ COMMON PALMFLY
Elymnias hypermnestra agina



☐ PLAIN TIGER
Danaus chrysippus



☐ BLUE SPRITE
Pseudagrion microcephalum



☐ COMMON BLUETAIL
Ischnura senegalensis



☐ COMMON FLANGETAIL
Ictinogomphus decoratus



☐ BLUE DASHER
Brachydiplax chalybea



☐ COMMON PARASOL
Neurothemis fluctuans



☐ COMMON SCARLET
Crocothemis servilia



☐ CRIMSON DROPWING
Trithemis aurora

Photo credit: Photo credit: Horace Tan [1], Zhou Boyi [2], Khew Sin Khoon [3], Robin Ngiam [4], Cai Yixiong [5]

Mammals



☐ SMOOTH-COATED OTTER
Aonyx cinereus



☐ PLANTAIN SQUIRREL
Callosciurus notatus



☐ MALAYAN COLUGO
Galeopterus variegatus



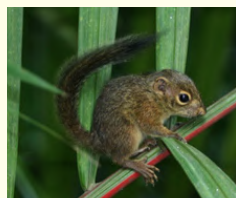
☐ COMMON PALM CIVET
Paradoxurus musangus



☐ LESSER MOUSE DEER
Tragulus kanchil



☐ WILD BOAR
Sus scrofa



☐ SLENDER SQUIRREL
Sundasciurus tenuis



☐ LONG-TAILED MACAQUE
Macaca fascicularis

Reptiles



☐ ESTUARINE CROCODILE
Crocodylus porosus



☐ MALAYAN WATER MONITOR
Varanus salvator



☐ COMMON SUN SKINK
Eutropis multifasciata



☐ MALAYAN BOX TURTLE
Cuora amboinensis



☐ ORIENTAL WHIP SNAKE
Ahaetulla prasina



☐ RETICULATED PYTHON
Malayopython reticulatus



☐ PARADISE TREE SNAKE
Chrysopelea paradisi



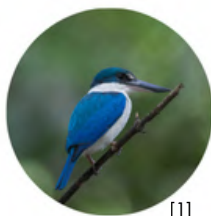
☐ GOLD-RINGED CAT SNAKE
Biota dendrophila

Photo credit: Max Khoo [1], Nick Baker [2], Cai Yixiong [3], Mary-Ruth Low [4]



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]

GARDEN BIRD WATCH

April,
Oct/Nov



[1]

HERON WATCH

Jan/Feb,
July



[2]

BUTTERFLY WATCH

May/June,
September



[3]

DRAGONFLY WATCH

March,
August

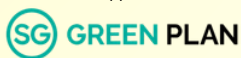
Photo credit: Francis Yap [1], Horace Tan [2], Cai Yixiong [3]

**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!





In support of:



Share your love for nature and animals at
#NParksBuzz #AnimalBuzzSG