Teacher Notes	# *Cloaked in Camouflage*

The following worksheet is based on a visit to the Inquiry Centre at Cobb+Co Museum.

It addresses several aspects of the Australian Curriculum and can be used with Year 5 and above.

Aim: *To investigate the structural features and adaptations of living things and how these help them to survive in their environment*

Camouflage is a method of crypsis. The aim is to avoid being seen. This allows an otherwise visible organism to remain undetected from the surrounding environment.

Crypsis: colour patterns resemble a random sample of the background as seen by predators or prey.

Many features of camouflage are based on **structural mechanisms.**

Structural mechanisms -

1. **Background matching coloration**: the animal resembles a random sample of the visual background in shape, size, and colour seen at the time and place of highest risk of detection.
   (a) Concealing colours – the organism may have a colour over its body so that it blends into the background. e.g. green tree frogs; carpet pythons; counter-shading of sharks.
   (b) Mimicking – the organism looks like something that it's not. e.g. crabs have sponges and algae growing on them so they look like part of the reef; some moths and insects may have a grey-brown speckled colour that looks like lichen on the bark of a tree; stick insects look like a small stick or tree branch; some grasshoppers look like leaves; leafy sea dragons are sea horses that resemble algae; some moths appear to have the eyes of larger animals on their wings; dead leaf butterfly.

2. **Disruptive coloration**: Animals have patterns that disguise their shape and break-up their outline. Some of the colour patterns (especially those of the margin) resemble a random sample of the visual background while others contrast strongly, breaking up the margins of the body. Stripes help animals blend into their environment. e.g. tigers in the jungle and zebras in grasslands. Many insects and insect larvae have patterns that break up the margins of the body. e.g. bee flies; tortoise beetle larvae. (See the Animal Adaptation videos on Bee Flies and Tortoise Beetles at http://www.qm.qld.gov.au/Find+out+about/Behind+the+Scenes/Museum+Experts)

Behavioural mechanisms -
Some cryptic animals also simulate natural movement. e.g. some insects move like leaves in the wind; velvetfish hide amongst surface algae as their dorsal fin resembles floating algae. (See the video on Velvetfish at the above link.); some pencilfish hang vertically near coral outcrops and look like part of the reef.

Other animals *consciously* attach or attract natural materials to their body for concealment. Some predatory fish burrow into the sand or cover themselves with sand lying in wait to ambush unsuspecting prey.

Functional mechanisms -

A few animals have a chromatic or colour change response. This occurs in changing environments either seasonally or instantaneously. e.g. brown summer and white winter coats of the Arctic fox; octopi and cuttlefish can change their surface colouration to mimic that of the background using an extremely quick physiological response controlled by nerves and hormones. (Chameleons can change colour very quickly but colour change in this species is mainly for communication between members of the species, rather than for camouflage.)

Pre-Visit Discussion Questions for students:

1. What does the word 'camouflage' mean? Give some examples of animals that are well-camouflaged.
2. Why would these animals need camouflage?
3. What would happen to them if they weren't camouflaged?

Post-Visit Discussion Questions: Extensions work

1. What factors influence the type of camouflage an animal has?
2. Originally some members of an animal population may have been well-camouflaged and others not. How would this affect the evolution of the species over a long period of time?

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1. Some birds are a dull brown or green-brown colour. How would this help their survival?

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2. Some birds are brightly-coloured. This is especially true for the *male* of some species. Why do you think some male birds are brightly coloured?

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3. On the Moreton Bay Fig tree there are several animals that are difficult to find. Start a stop watch and see how many you can find in 1 minute. How many did you find? ……

4. Complete the table below for animals found on the Moreton Bay Fig.




Name	Where is it found on the tree? (its micro-habitat)	What makes it difficult to see and why is it found there?
Grey-headed Flying Fox		
Tawny Frogmouth		
Rainbow Lorikeet		
Noisy Miner		
Australian Brush Turkey		
Carpet Python		
Skink		
Giant Barred Frog		
Common Green Tree Frog		

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5. Below are two cicadas commonly found on the trunks of Moreton Bay Figs. They are the **Razor Grinder Cicada** (left) and the **Brown Bunyip Cicada** (right). What features do they have in common and how do these features help with survival?

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6. Below is an image of an Orchard Swallowtail (*Papilio aegues).* What do you think is the purpose of the large white spots on each hindwing? (Hint: if a predator saw these from a distance, what would it see and how might it react?)

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7. Choose one of the animals below and research some of its adaptations. i.e. investigate how the following help the animal to survive in its habitat: its physical features (the body structures that is has); and its behaviours (what it does to avoid detection from predators or prey or to scare predators away).

Eastern Water Dragon; Tawny Frogmouth; Rhinoceros Beetle; Goliath Stick Insect; Bladder Cicada

Name of Organisms	
Physical Features	
Behaviours	