

Invertebrates

Invertebrates are grouped together not because they have things in common, but because they all lack one important feature: a jointed back. Making up around 97 per cent of the animal kingdom, invertebrates vary wildly from the simple sponge to the intelligent octopus. They are split into related groups (such as flatworms, segmented worms and molluscs) and can be found almost everywhere on Earth: in water, in the air, on land and even underground!

Most species of invertebrate appeared around 540 million years ago, making them Earth's first animals. Sponges evolved from single-cell creatures to become the very first animals. They can't move or think so it's easy to mistake them for plants, but they feed on bacteria and can sense and react to their underwater environment.

Next came the cnidarians, a wide ranging group. Some, such as sea anemones, attach themselves to rocks, while most types of jellyfish can move freely through the water. While cnidarians kill and eat animals to survive, they are 'passive predators' which means they wait patiently for their prey and then sting them to death!

Key to plate

1: Black sea nettle
Diameter: 91cm

4: Dahlia anemone
Diameter: 12cm

7: Stalked jellyfish
Diameter: 15cm

2: White-spotted jellyfish
Diameter: 47cm

5: Staghorn coral
Diameter: 2m

8: Blue button jellyfish
Diameter: 2.5cm

3: Pacific sea nettle
Diameter: 27cm

6: Brain coral
Diameter: 2m

9: Flowerpot coral
Diameter: 1m





INVERTEBRATES

Squids and Octopuses

The cephalopod family – which includes squids and octopuses – dominated the seas several million years before fish existed. Around 800 species of cephalopod can now be found in every ocean on Earth.

Their large brains and impressive senses make them sociable creatures able to communicate with one another. They have sucker-like tentacles and move by taking in water and then shooting it out to move forward by jet propulsion.

Cephalopods can change the colour and pattern of their bodies to camouflage themselves and scare off predators. They also produce ink and,

when threatened, they release an inky cloud which confuses predators. Some can even produce a ghost-like cloud a similar size, shape and colour to their own body, which acts as a decoy and means the clever cephalopod can escape.

Key to plate

1: Long-armed squid

Mantle length: 12.5cm

This slow-moving, alien-like squid lives at depths of up to 2.4km.

2: Whip-lash squid

Mantle length: 10cm

The long, whip-like tentacles of this squid are covered in tiny, sticky suckers.

3: Angel octopus

Mantle length: 16cm

This deep-sea octopus lives at depths between 200–700m.

Flying Insects

Insects are arthropods (which means they have a hard outside called an exoskeleton) and are closely related to crustaceans (crabs and lobsters) and arachnids (spiders and scorpions). There are at least one million species of insects, and around 10,000 new species are identified every year!

Insects are the only invertebrates that can fly and were the first herbivores on Earth. Plants and insects have evolved together over millions of years. Plants have found ways to defend themselves from being eaten by insects while, at the same time, relying on them to spread their pollen and allow them to reproduce.

All insects metamorphose as they mature, which means they undergo a series of changes to their bodies. The wondrous transformation from caterpillar to butterfly is perhaps the most well-known example.

Key to plate

1: Blue Mormon butterfly

Wingspan: 13cm
This butterfly is found in rainy areas such as evergreen forests.

2: Crane fly

Wingspan: 4cm
This nocturnal insect has long detachable legs.

3: Mayfly

Wingspan: 1.5cm
Adult mayflies live for just one hour.

4: Emperor dragonfly

Length: 7.8cm
This species rarely lands, eating in flight.

5: Atlas moth

Wingspan: 30cm
This moth has the largest wings of any insect, but no mouth to feed with. Because of this, they only live for 1-2 weeks.

6: Pale snaketail dragonfly

Length: 5cm

7: Plains lubber grasshopper

Length: 5cm
This grasshopper can jump over one metre!

8: Luna moth

Wingspan: 10cm
The pattern on this moth's wings means it can easily

camouflage itself in trees and fallen leaves.

9: Common green grasshopper

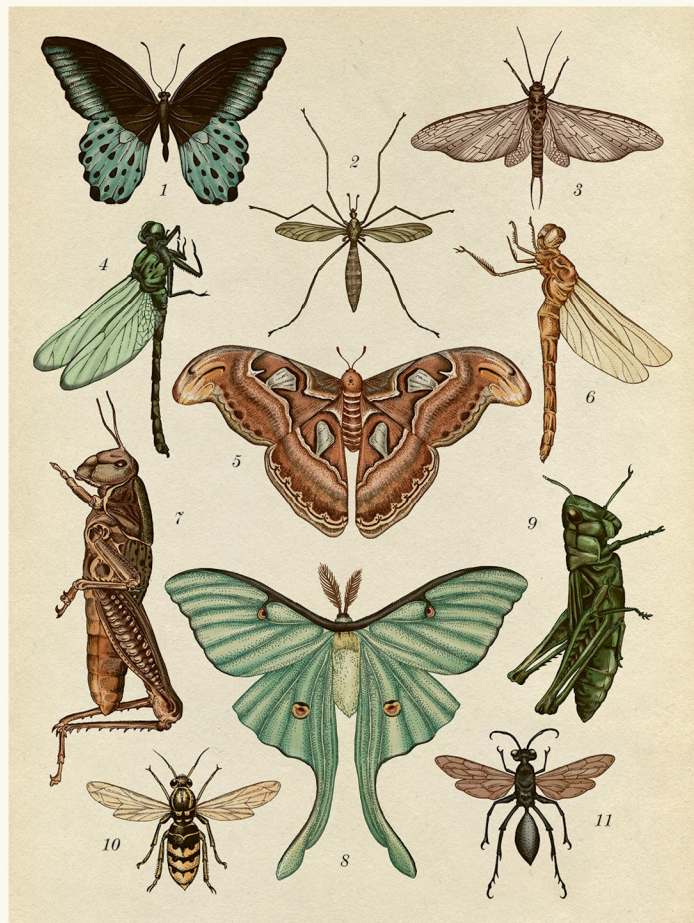
Length: 2cm

10: Common wasp

Length: 1.4cm
When attacked, this wasp sends out a call to others to come and help.

11: Great black wasp

Length: 2.8cm
This wasp paralyses its prey with its sting, then carries its meal to an underground nest to feed its young.



Habitat: Coastal Waters

Coastal habitats appear where the sea meets the land. They are areas of constant change as waves, tides and currents continuously affect the landscape. Despite these challenges, life in coastal areas is the richest in the world. With rivers flooding into the sea and waves constantly eroding the land, there's a never-ending source of nutrients.

Many of the creatures that live in coastal waters, such as crabs, limpets and scallops, have hard shells which protect them from the sharp rocks and powerful currents. Some, such as mussels, can open their shells, allowing them to sift the water for food, while others hunt for prey hiding in crevices.

Some areas of the coast are above the water at low tide and below the water at high tide. Many animals that live in these areas – known as intertidal zones – have cement glands that allow them to anchor themselves to a rock and stay put as the tides rise and fall. Others, like starfish and octopuses, have powerful suckers on their arms which help them to grip slippery surfaces.

Key to plate

1: Northern short-fin squid
Mantle length: 14cm

2: Crown jellyfish
Diameter: 20cm

3: Bushy-backed sea slug
Length: 10cm

4: Calico crab
Width: 7.6cm

5: Lettuce sea slug
Length: 5cm

6: Blue mussel
Length: 7.5cm

7: True tulip snail
Length: 13cm

8: Calico scallop
Length: 8cm

9: Striped venus clam
Length: 4cm

10: Little grey barnacle
Length: 9mm

11: Cushion star
Diameter: 24cm

