



RHS

Garden Wisley



Made possible with
**Heritage
Fund**

rhs.org.uk/wisley

Deadliest Plants and Bugs Trail

Delve into a world of plants and bugs
that don't mind fighting back

**Design
your own
Deadly Bug**

Complete the trail
and collect your
deadly bug design
sheet and
sticker



Welcome to the *Deadliest* Plants and Bugs Trail

Bugs and plants have lots of funky and deadly adaptations to help them survive and thrive.

They can be fearsome predators, masters of disguise, tricky impersonators, smelly and secretive, gruesome parasites, devilishly defensive and strong and powerful.

In this trail we will explore some of these and learn their tricks to survive.

A Venus Flytrap waiting for its next meal.

DEADLY FACT

The word 'bug' is often used to describe invertebrate animals – ones without a backbone.

The stag beetle, a real fighting machine.

Scan the QR Code to find out what's on today



Design your own Deadly Bug

As you explore the garden and visit each trail point, you will get to choose or draw a feature of a bug. At the end of the trail, visit the CLORE Learning Centre to pick up your deadly bug design sheet where you can put all your chosen features together and design your own deadliest bug. You will also receive a sticker when you have completed the trail.

After 4pm, please collect your deadly bug design sheet and sticker from the team at the Welcome building entrance.

Once you have designed your own deadly bug, share your design at #RHSDeadlyBugs

There's so much more to *discover*...

Have fun exploring all year round with free unlimited visits to our RHS gardens when you upgrade to an RHS membership. Prices start from just £22.*

To join, talk to us today or visit rhs.org.uk/join/4345

Your membership supports our work as a charity

*Introductory offer for new members by annual Direct Debit

UPGRADE TO
MEMBERSHIP*
FROM JUST

£22



SCAN ME

1

Mimicry

Mimicry means to look or behave like something else. Many plants and bugs mimic other plants or bugs, some plants even pretend to look like a bug.

The Bee Orchid is a very clever mimic, it pretends to look and smell like a female bee. Male bees are attracted to say 'hello', land on the orchid and are tricked into pollinating it.

DEADLY FACT

The Elephant Hawkmoth caterpillar stretches up to make the most of its snake-like mimicry.



Bee Orchid pretending to be a bee

A hoverfly pretending to be a wasp



Plants with deadly names

There are many plants with deadly or gross names such as Witch Hazel, Bat Flower, Brain Cactus.

Can you find a plant in the Walled Garden called 'Spider's Web'?

If you had to name a deadly plant what would you call it?



Witch Hazel

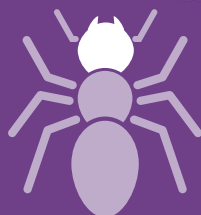


Fatsia japonica 'Spider's Web'



Design your own Deadly Bug

Step 1



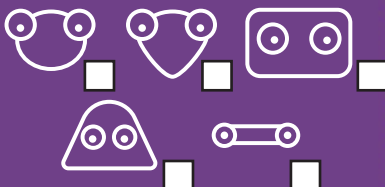
Head

Thorax

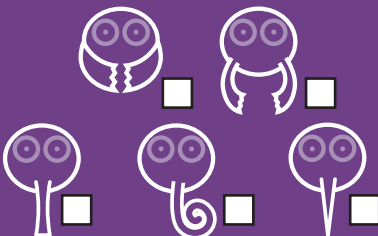
Abdomen

Body - Head

Decide on your bug's head shape and tick the box.



What kind of mouth will your bug have? Jaws for biting and chewing or a straw-like *proboscis* for sipping, sucking or piercing.



How many eyes will your bug have?

Will your bug have antennae? Decide if they will be long and thin, short and sturdy or feathery?

☐

2

Warning Colours

Bugs use colour to send warning messages or to hide themselves from predators. The black and red dots on a ladybird warn predators, such as birds, that it tastes terrible. The colours of a wasp or bee warn of danger and that it can inflict a painful sting.

As with bugs, bright colours such as red are usually a signal that plants might be poisonous. However, plants also use bright colours to attract pollinators.

Holly berries are poisonous to humans but are an important winter food source for birds.

DEADLY FACT

Scientists call the use of warning colours, *Aposematism*

The Cinnabar moth warning predators, they don't taste nice.

A wasp's yellow and black colours mean danger keep away.

Design your own Deadly Bug

Step 2

Colour and Pattern

What colour or pattern will your deadly bug be? Choose from the colour patterns below or create your own colour and pattern in the blank circle.



Red, yellow and black are warning colours and mean danger



Camouflage is great for hiding in plain sight



Design your own pattern

Look up and around can you see the colourful autumn blaze of the Maple trees in Oakwood.

Can you think of any insects that are either red, yellow or orange?



3

Predator

Bugs may be small, but they include some of the most skilful hunters in the animal kingdom.

Predatory plants, or carnivorous plants, can't go hunting for food, instead they wait patiently for the bugs to come to them. Perhaps the most famous of the carnivorous plants is the Venus Flytrap. Its leaf features a jaw-like hinged section, with spiky 'teeth' along the edge and highly sensitive hairs. When an insect lands and makes contact with these hairs, the trap snaps shut and dinner is served.



A fly caught in a Venus Flytrap



A ladybird hunting aphids

DEADLY FACT

Did you know dragonflies are one of the world's best predators. They can catch over 95% of the prey they target. So if you're a fly, ant or mosquito there is very little chance of escaping.

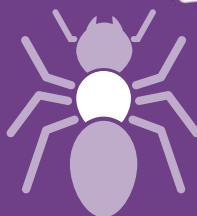


Can you find the **Trumpet Pitcher plants** and the **Sundew plants** in the Rock Garden. These are Carnivorous plants, so be careful and do not touch!



Design your own Deadly Bug

Step 3



Head

Thorax

Abdomen

Body – Thorax

The thorax is the middle part of the body of an insect where the wings and legs are attached.

Will your deadly bug have wings?
What type will it have?



4 clear wings like a bee, or add patterns like a butterfly.



2 elytra (wings adapted into hard outer casings) with wings for flying underneath like a beetle.



2 wings and 2 halteres (balancing sticks) like a fly.



4 long wings for super-fast and agile flight like a dragonfly.

DEADLY FACT

Dragonflies can move each wing independently, enabling them to move rapidly and skilfully in any direction.

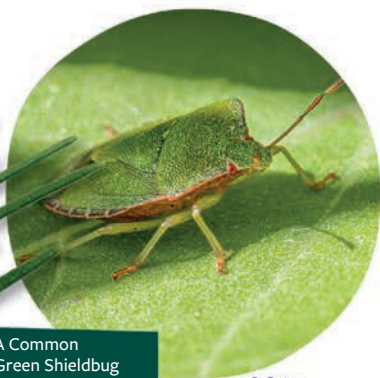


4

Deadly Scent

Plants and bugs use scent to either attract or repel. The smell a flower produces is intended to attract bugs that will pollinate the flowers. Some herbs contain essential oils, which play a defensive role against those animals that might want to eat them.

There are lots of different types of Shieldbug (stink bug) in the UK. When they feel threatened, they release a very unpleasant odour.



A Common
Green Shieldbug
(*Palomena prasina*)

DEADLY FACT

When the 'Corpse Flower' blooms, it emits a powerful stench, mimicking a smell similar to that of rotting meat. This scent attracts insect pollinators, such as flies, that feed on dead animals.

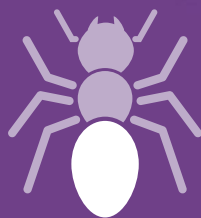


The Corpse Flower
(*Amorphophallus titanum*)



Design your own Deadly Bug

Step 4



Head

Thorax

Abdomen

Body – Abdomen

Like a human belly, the abdomen is where the digestive system is, and also the reproductive system.

Choose a shape for your deadly bug's abdomen



Oval

☐


Square

☐


Triangle

☐


Circle

☐

Can you see the Willow Bee Sculptures in the Back to Nature Garden.

☐

Did you know only female honey bees can sting?

5

Defensive

Bugs and plants have evolved various types of anti-predator defences. Some have developed hairs, spines or hard exoskeletons (outside skeleton) to protect themselves from predators.

Some plants, such as a cactus, have special defences. Cactus spines protect the cacti from animals and humans.

Don't touch a cactus, it's very spiky

Sometimes, the easiest way for a bug to defend itself from a threat is simply to stop, drop and play dead.

Look at all the cacti in the Glasshouse.

What's the tallest cactus you can find?

DEADLY FACT

The Bloody-Nosed beetle (*Timarchus spp.*) oozes their haemolymph (invertebrate equivalent of blood) as a horrid tasting deterrent.

Design your own Deadly Bug

Step 5

Defences

How will you stop anything from eating you?

Choose your defence system to deter predators. Tick the box when you've decided.



Poison

The caterpillar of the Cinnabar moth builds up poison after eating ragwort.



Acid

The Bombardier beetle (*Brachinus species*) keeps two chemicals separate in their abdomen, and mixes them to spray acid when threatened.



Sting

The European hornet (*Vespa crabro*) is usually calm, but has a sting if you invade its territory!



Bite

Horseflies (e.g. *Chrysops* or *Tabanus species*) can bite through the thick skin of mammals to drink their blood.



Stink

Shieldbugs (stink bugs), have glands between the first and second pair of legs, which can produce nasty smelling defensive odour.



Armour

Caddisfly larvae use silk webbing to build a case of stones, twigs and other materials to protect themselves.



6

Carnivorous

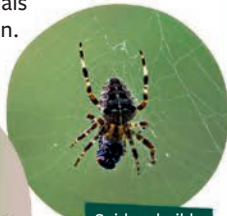
A carnivorous plant or bug is a meat-eater whose food and energy requirements are gained from animal tissues whether it be through hunting or scavenging.

Around 27% of insects are carnivores, however all spiders are carnivorous, with some female spiders even eating the male after mating. Many spiders build webs as a huge number of spiders are hunters.

A large number of bugs like to eat plants, but some plants like to eat bugs. Carnivorous plants attract, trap and digest animals for the nutrients they contain.



A Venus Flytrap munching on a delicious fly.



Spiders build webs to catch unsuspecting insects.

Look around the Tropical Zone in the Glasshouse.

Can you spot the Pitcher plant?

Most pitcher plants feed on insects but some pitcher plants are so large, they can trap and consume rats or frogs that have accidentally fallen into the pitcher. Yummy!



Design your own Deadly Bug

Step 6

Legs

How many legs will your bug have? Insects have 6 legs, spiders and other arachnids have 8 and the common centipede has 30.

Choose a texture for your bug legs.



Hairy



Sticky



Spiky



Smooth

DEADLY FACT

The digestive system of a Venus Flytrap is slow, taking as many as 10 days to completely digest insects and reopen its trap.

However, Venus Flytraps cannot digest exoskeletons.

Instead, when its trap reopens, it spits out the leftovers.



7

Parasites

A parasite depends on another organism for food and other things it needs to live. This is called parasitism. The parasite's victim is called a host.

Some types of plants live as parasites on other plants. For example, Mistletoe lives off the nutrients and water from a host tree.

Parasitic animals live either on or inside the host. Some species of worm make up one large group of animal parasites. Many live in their host's tummy and feed on the food that passes through.

Mistletoe growing on a host tree.



A parasitoid wasp (*Ichneumon suspiciosus*)



Can you find the spiky **Agave plant** in the CLORE Teaching Garden. The agave plant will only flower once in its lifetime. After blooming, the **Agave plant** dies back, leaving seeds to produce new plants.



DEADLY FACT

Many parasitoid wasps lay their eggs in or on their host. The host remains alive until the wasp parasitoid larvae are mature, dying later when the parasitoids pupate, or emerge as adults. Urgh!

Design your own Deadly Bug

Step 7

Life Cycle

How long will your deadly bug live for?

Many invertebrates only live for one year, going through the full life-cycle in that time – egg → young → adult

Where is your deadly bug going to lay its eggs?



On a leaf



In a leaf



On some poo



On a living animal

8

Destructive

There are bugs and plants that can be destructive.

Some caterpillars and aphids are eating machines and can feast on plants on farmland or in gardens.

Some plant species, such as Japanese Knotweed can cause serious problems, damaging the environment and growing through buildings.

Woodworm is the common name for the larvae of wood boring beetles. In the forest they are helpful in the process of recycling dead trees. When in human habitats like buildings they can become a big problem however, as they tunnel into furniture or house beams.

The destructive Japanese Knotweed



A Large White Butterfly caterpillar eating a cabbage leaf.



DEADLY FACT

Japanese Knotweed can grow up to 10cm a day during the summer and can grow through walls, tarmac and concrete.

Timber damaged by woodworm



Can you find the log pile with the bug sculptures in the CLORE Teaching Garden?
How many bug sculptures can you see?



Design your own Deadly Bug

Step 8

Habitat

Choose an area where your bug will live. Tick the box when you've decided.



Log Pile / Woodland



Pond or River



Soil / Underground



Grassland / Meadow



Urban areas



Now you have completed the trail, you should have gathered enough information to start to design your own deadly bug. Go to the CLORE Learning Centre to pick up your deadly bug design sheet and sticker.

Let your imagination run wild and get designing!

Fun Zone



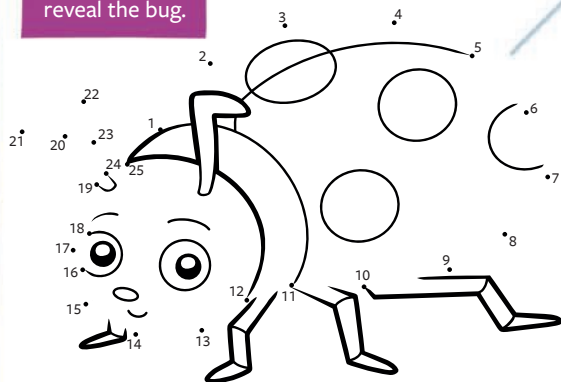
Only Joking

What do you call
a rabbit covered
with beetles?

Bugs Bunny

Dot-to-Dot

Join the dots to
reveal the bug.



Help the fly escape the
deadly spider's web

Scan the QR code
to download your
'How to make a
peg dragonfly'
activity sheet.



P	G	D	Y	A	G	Y	W	W	M	Z	S	C	I
I	I	E	F	N	P	J	K	E	A	U	Y	R	T
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Word Search

- | | |
|--------------------------------------|-----------------------------------|
| ☐ BEETLE | ☐ PREDATOR |
| ☐ BUG | ☐ PREY |
| ☐ CACTUS | ☐ SPIDER |
| ☐ CARNIVOROUS | ☐ STING |
| ☐ CENTIPEDE | ☐ THORN |
| ☐ CREEPY | ☐ WASP |
| ☐ DEADLY | |
| ☐ HAIRY | |
| ☐ MIMIC | |
| ☐ PARASITE | |
| ☐ PITCHER | |
| ☐ POISON | |



Deadliest Plants and Bugs Trail

Explore the garden, visit the eight bug stations and choose or draw a feature of a bug. When you have completed the trail visit the CLORE Learning Centre to pick up your deadly bug design sheet where you can put all your chosen features together and design your own deadliest bug.



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