



Harper Adams  
University

# Entomology Matters

A degree that matters



 **ENTOMOLOGY  
MATTERS**  
Reach Out

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# How to use this pack

## What is included?

This pack includes:

- 3 x research projects that are taking or have taken place at Harper Adams University
- 5 activities to be completed

If insects are something you love or whether they scare you a little, this pack will give you an opportunity to see how insects are vitally important to our world. It will allow you to learn new things about insects and the bug world!

Some sections of this pack will require you to have the internet, you will be able to access games, videos, and printable worksheets. We would recommend parental supervision when searching the internet to support with the activities.

To complete the pack, you will need some paper, a pen and coloured pens or pencils!

## Crest Awards

The activities in this pack have been designed so they can be counted towards a Superstar CREST award. The awards are fun and easy to complete and you will get a certificate and badge from the British Science Association, which is something wonderful to show off to your teachers and school friends when you go back to school. To get the full award students need to complete 8 x 1-hour challenges. We will provide more than 8 fun activities for you to choose from across our packs. Once completed, just send evidence of your completed work to Harper Adams University ([schoolsliaison@harper-adams.ac.uk](mailto:schoolsliaison@harper-adams.ac.uk)) for verification. Harper will then submit and fund the award to CREST for certification.

### Curriculum Links:

The following pack has been put together with the national curriculum in mind. The following activities and elements of this pack are linked to core national subjects such as reading and literacy skills, mathematics, and science.

Some links are around science, increasing scientific knowledge and conceptual understanding, nature, and processes.

# An introduction to Entomology

## What is Entomology?

Entomology is the study of insects and their relationship to humans, the environment, and other living things.

Insects and their relatives play an important role on our planet and our ecosystems (you'll learn what this means later!). They range from insects that have positive impacts on the world, such as Bees that help flowers and plants grow, to insects that can be naughty and can cause problems for farmers and those growing plants. Within Entomology, scientists will look at lots of things like an insect's behaviour, where they live and even discover new types of insects!

Many insects are also rare (not many about) and need to be watched carefully to make sure they do not disappear forever (like dinosaurs).

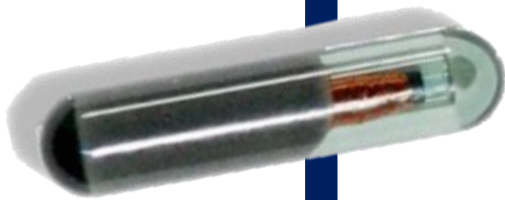
Here at Harper Adams University we do a wide range of research around Entomology and we would like to share some of this with you.

Take a read and immerse yourself in some of the research that is going on at Harper Adams on the following pages. Then as you progress through the pack use your task sheets to help your knowledge grow.



# Slug Tracking

## Researcher uses tiny trackers to learn about slug behaviour



RFID Microchip

Researchers at Harper Adams University are tracking slugs to learn more about how they move within the field to improve control of these pests. Slugs can be a big problem for farmers especially for those growing crops such as cereals, potatoes and other root vegetables.

By understanding how the slugs move and behave, we will be able to advise farmers on how best to protect their crops.

From previous studies, we can see that slugs get together in patches in the field. These patches normally form in areas where the soil is wet, or even waterlogged. What we don't know, is if the slugs stay in the same place and live there, or if they are moving around the field and then stop for a while at one of these 'slug heavens' before moving along again.

Harper Adams will be conducting research at night, as that is when the slugs are most active. We will be releasing tagged slugs into the field and then watch their movements by returning to them at different times throughout the night.

We are tracking the slugs by using a small device, which is about the same size as a grain of rice. This is inserted into the slug (The slug is does not get hurt and is asleep when this happens).

We can then track the slugs by using a detector, the same sort of thing as a metal detector. When the detector comes within about 20 cm of the tagged slug, it beeps and displays the slug's tracking number on the screen. We are then able to note down the slug's location and see how far it has moved since it was last detected. We are planning to track large numbers of slugs so that we gain a much better picture of their movements.



[Click here for the AUDIO FILE](#)





# Bumblebees' favourite flowers

*“Bumblebees have been studied since 1912, but there is still so much to learn, even though they are so important to our planet.”*

Bees have a huge role to play for our planet and are very important. To help them thrive we need to know what flowers bumblebees like and what gives them the best food to help pollinate.

Jake Jones, a student at Harper Adams, completed his research at Royal Society for the Protection of Birds where 15 of the 24 different UK species (types) of bumblebee have been recorded.

Jake said “I wanted my project to tackle a real-world problem. If we could increase the number of bumblebees, it would help the planet”

The research found that the most popular flowers for the bumblebees were flowers called Red Clover. However, the study did show that the bumblebees chose different flowers based on the length of its tongue! The weather also had an impact as the bees, in the hot dry month of August, changed their behaviour and went on plants such as sunflowers. During the study 14 different bumblebee species were found on this plant.

Jake went on to say “I didn’t want to provide advice on the best plants for just one species of bee, but instead plants which are beneficial to all bees”.

The information for this project has come from 5,000 records which were collected at the nature reserve over seven months.

The sightings were recorded by volunteers who are trained in bee identification.

Research like this helps us to better understand what we can do to help bumblebees thrive.

After finishing his degree, Jake said: “I’m hoping to take my skills learnt at Harper Adams to engage and promote nature to younger generations. I also wish to carry on with my research and interest into the sector by volunteering.



## Glossary (Key terms)

**Pollinate** Moving the pollen from plants to other areas of the environment to allow them to grow.

**Pollinators** An animal that moves pollen from plants to another for the pollination process

[Click here for the AUDIO FILE](#)



# Could vine weevils' poo be used against them?

*“While vine weevils like the smell of a healthy plant, they also like the smell of their poo.”*

Vine weevils are little bugs that can be a problem for plants. Researchers at Harper Adams University are looking into how to help tackle the problem of damage to plants by vine weevils.

Vine weevils are a huge problem in the plant world. Just a single adult can lead to huge amounts all in one area. Two problems for growers are that the adult vine weevil is active during the night and so eats the plants by night. The second problem is that the eggs of vine weevils live in the ground and you can't always see them. Often, the first time the grower is aware they have vine weevils is when it's too late and they already have a serious problem.

The whole project is looking at finding a proven way to check if there is a problem early and treat it.

Here at Harper Adams, we are building a system that will allow growers to check their crops. It will be a trap that growers can check to see if they have any vine weevils.

After being active through the night, the vine weevils want to find a safe place during the day. The trap will provide the right environment for a safe place. It then provides the grower with a place they can look in to check if they have vine weevils. The trap is basically a dark safe space. In addition, if it smells good, it will work better.

When it comes to a vine weevil's favourite smell, they really like the smell of the plant of which they have been eating. However, they also like the smell of their own poo! (Gross we know). So, the trap might use a mixture of plant smells and poo smells to attract the vine weevil in!



Click here for the  
AUDIO FILE



## Glossary (Key terms)

**Growers** People growing plants, could be individuals or a business.

**Researchers** People studying certain topics in lots of detail

## Activity 1

### Bug Identification!

Open the PowerPoint download titled 'Bug Identification' that is part of this pack to play a game.

You will have a series of questions to answer that will ask you to identify the picture of the bug!

SCORE



### What is an insect?

The last question asked you if the following statement was true:

**'All the bugs you identified were insects?'**

The answer was false.

So, what makes something an insect?



**What is an insect.**

## Activity 2

### Insect Labelling

Now you know what an insect is, research and find an image of an insect (choose one you like as you will do more research on it later).

Then complete your drawing of an insect below labelling the sections that you have just learnt from the video.

If you struggle to choose, we recommend ants, grasshoppers, or butterflies!

Space to draw your insect and label

Make sure you remember the key facts about what an insect is when you choose yours and include all the labels.



## Activity 3

### Entomology Matters – Fact sheet.

Now you have chosen your insect we want you to do some more research into the insect's behaviour and understanding how they have an impact on our planet and environments.

**We want you to carry out your own research and produce a fact sheet.**

You can use the template on the following page or create your own from scratch If you prefer. **However, make sure you use all the same headings highlighted on the template itself.**

Imagine that whoever is going to read your fact sheet will not know anything about that insect or entomology, so you need to ensure its clear and easy to understand.

The below video links might help you understand sections of your factsheet and what you might include about your insect (Click the icon).



#### Habitats and Ecosystems



#### Insect Lifecycle

Just press the back button after watching a clip to come back to the pack.



There are additional resources and information available from The Royal Entomological Society if you wanted to find out more.





# ENTOMOLOGY MATTERS



## FACT SHEET

Student Name

Chosen insect

INSECT PROFILE  
PICTURE:

LIFECYCLE

TOP FACT

HABITAT AND  
ECOSYSTEM

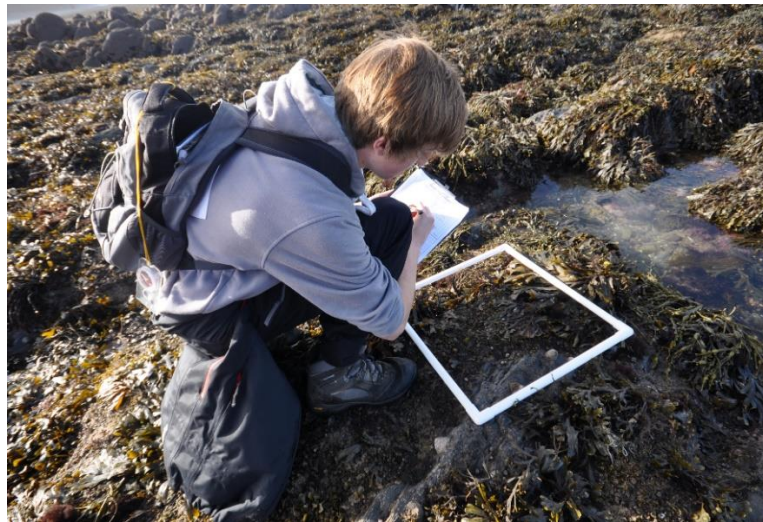


## Entomology Matters – Investigating an ecosystem

The amount of plants and animals in a habitat can vary, we want you to have a look at outside space (maybe your garden) and investigate your ecosystem.

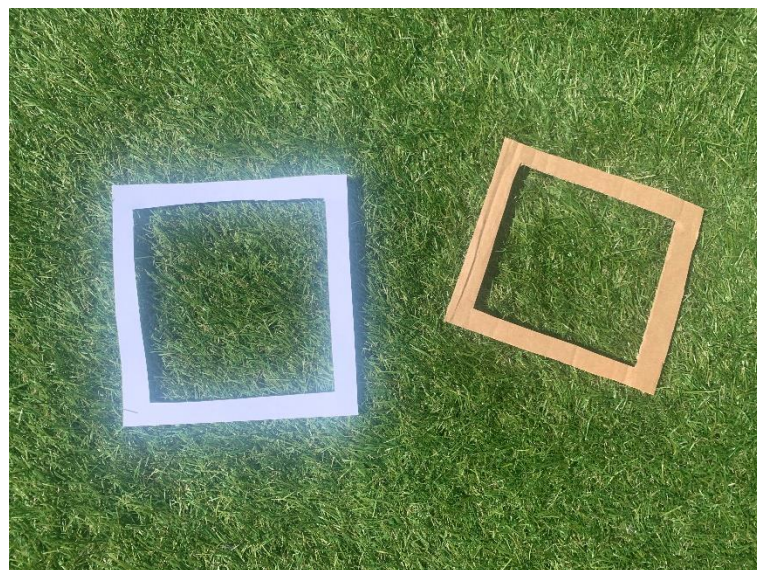
It can be hard to measure the plants and animals in one space, as there can be lots of movement of insects.

Therefore, using a tool like the one below can help you count.



You can make a tool out of string and/or cardboard or use a sheet of paper and cut it out into a square. Just ensure that your outlines make a square. Be careful with scissors and adults should help with this.

There are some examples below of what your tool should look like.



### Equipment required:

Pen/pencil

Outside space

A4 paper or  
Cardboard

Ruler

Safety scissors (get  
parents help if  
needed)

Entomology Matters – Investigating an ecosystem

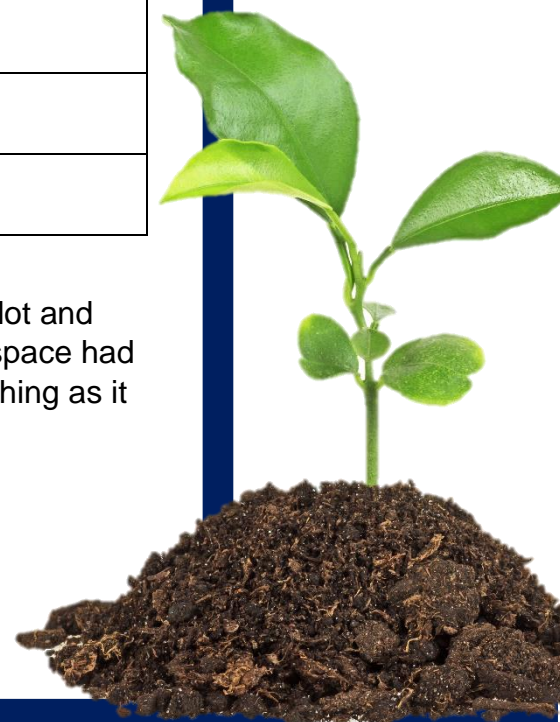
Once you have your tool ready to go, follow the steps below to carry out your investigation:

1. Find an area of outside space (e.g. your garden) place the tool **randomly** in an area of the garden or space.
2. Make a note of what you count within the tool (don't count anything that's on the edge, only what's inside of the square.:  
For Example. 3 ants, 1 flower.
3. Repeat this 10 times around the outdoor space, making sure you randomly chose your location each time. (Do not do the same spot twice).
4. Then **use the template on the next page** to count how many things of each item you find.

For Example – Kim placed the tool 10 times around the garden and found:

Sample Numbers	Dandelion	Spider	Daisies
1	1	0	3
2	2	1	0

This exercise helps build up a picture of your ecosystem. If you find lot and lots of different living and non-living things this means your outside space had good biodiversity (a range of plants and animals). This is a positive thing as it means more plants and insects can thrive.



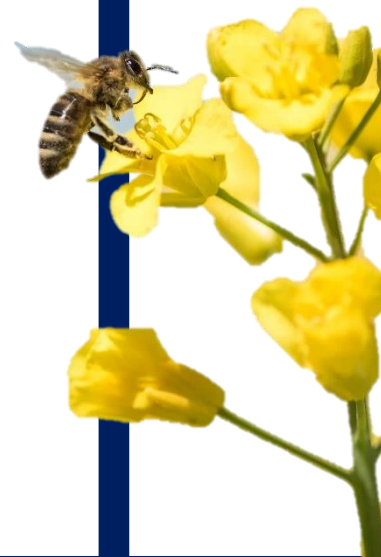


## Activity 4

## Entomology Matters – Investigating an ecosystem

You can use the template below to record your samples or create your own on a piece of paper.

In these top boxes write what you find. E.g. Dandelion.				
Sample Numbers				
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
Totals				







## Activity 4

# Entomology Matters Investigating an ecosystem

Now you have carried out your research, see if you can think about and answer the questions below.

### Question 1

Based on your data do you think the outside space you looked at is very Biodiverse (a range of plants and animals)?

### Question 2

Why do you think that is?

### Question 3

What do you think you could add to that outside space to encourage more species to grow and live there?

Answers:

## Activity 5

# Create your own insect!

Now you have learnt lots about insects and their habitats and ecosystems. We want you to imagine you are a scientific researcher and you have just uncovered a new species (type) of insect!

You can now get creative and create your own insect below and fill in the required information to record your new discovery.

You must remember what an insect is and if you need a reminder before you start designing click [here](#).



### VIDEO – WHAT IS AN INSECT

**You can use the templates on the next pages or create your own. Just be sure to include all the relevant sections.**



# ENTOMOLOGY MATTERS

## INSECT DISCOVERY

Student Name

Name of insect



You can call it anything!

**DESIGN YOUR  
INSECT**

Don't forget to label the parts of your insect

WHAT IS ITS  
HABITAT AND  
ECOSYSTEM

WHAT IS ITS  
LIFECYCLE

Metamorphosis



Incomplete Metamorphosis



Tick the one!

WHAT MAKES  
THIS INSECT  
COOL



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**Thank you for completing your activities around Entomology. We hope you enjoyed learning more and getting creative.**

**If you would like to have a look at more of our education packs, please visit our website for more information.**

Do not forget to send us your evidence of completion if you would like to submit your work for the SUPER STAR Crest award.

Please email your work to:

[schoolsliaison@harper-adams.ac.uk](mailto:schoolsliaison@harper-adams.ac.uk)

Use the subject line 'Entomology Matters – CREST award submission'

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