



# WHY ARE MINIBEASTS NEEDED ON A GOLF COURSE?

 9-11 years  20-30 minutes per station

## Introduction

Under our feet on the ground and in the soil there are thousands of different minibeasts. There could be over 2000 in a square metre. Minibeasts help to form good quality soil. They provide the soil with nutrients by breaking down (decomposing) organic matter (natural) and creating gaps between soil particles, by digging holes and tunnels, which allow air and water in. Grass, crops and plants need good quality soil to grow well. Minibeasts also serve as food for birds, amphibians, reptiles, small mammals, and other minibeasts.

**In this session pupils will be looking for and identifying different types of minibeasts in leaf litter, focusing on those which are insects by looking at their body parts. They will discover the importance of minibeasts in the formation of good quality soil.**

## Pupil Learning Objectives

**By the end of the session pupils will be able to**

- » identify and name five different minibeasts
- » identify different parts of an insect
- » identify the insects they find in the leaf litter
- » describe how minibeasts help to break down leaf litter
- » explain why we find minibeasts in leaf litter
- » describe how minibeasts can put air into (aerate) soil
- » explain that putting air into the soil helps grass and other plants to grow better

## What is needed for the session

Item	Who will provide it
Several laminated pictures of insects and other minibeasts that may be found in the leaf litter (See page 8 and 9)	Golf course
Large bin full of leaf litter and minibeasts	Golf course
Laminated copy of insect body parts on page 10	Golf course
Clear tubs (ideally 1 between 3 pupils)	Golf course
Plastic spoons and clear low cups for each pupil	Golf course
Hand lenses (1 per 3 pupils)	Golf course or school
Wet wipes and a bag for rubbish	Golf course
Hi-visibility jackets for all pupils (not essential)	School
Pencil and clipboard for every pupil (not essential)	School
Printed worksheet for each pupil (only if using worksheets as agreed with school)	Golf course

## What the greenkeeper needs to do

Prior to the visit identify a safe walking route around the golf course and identify areas where there is a good amount of leaf litter. It is recommended that this activity is done sometime from April to end Oct to ensure there are plenty of creatures to be found in the leaf litter.

Activity	Equipment	Questions to ask
1. The day before the visit, fill a large bin with leaf litter and add as many different insects and minibeasts as you can. Ideally there should be enough insects for each group of 3 pupils to have several. Make sure that the bin is covered to keep in moisture but has air holes.	» Large bin of leaf litter containing minibeasts	
2. Just before the pupils arrive, put leaf litter and minibeasts into the small tubs. Leave plenty of leaf litter in the large bin.	» 1 clear tub between 3 pupils » Large bin of leaf litter	
3. When the pupils arrive take them to the area that you will be working in and outline any risks that may exist. (see risk assessment)		What are the potential dangers?
4. Show the pupils the leaf litter and ask them if they know what it is. Get the pupils to come to the large bin and touch the leaf litter. (Some pupils may feel anxious about doing this so reassure them it is safe and gently encourage them.)	» Large bin containing leaf litter and minibeasts	What do you think this is? How do you think it has got like this?

Activity	Equipment	Questions to ask
<p>5. Explain that leaf litter is dead plant material, including leaves, that has fallen to the ground. Leaf litter is an important part of an ecosystem. It provides shelter for many creatures including insects, toads and hedgehogs. Some minibeasts like wood lice feed on leaves which helps to break them down into leaf litter which will eventually form soil. Good soil that contains plenty of nutrients, air and water enables grass and plants to grow better. The nutrients come from the broken-down leaf litter. Some minibeasts help to get air and water into the soil by digging tunnels that make small gaps between the soil grains allowing water and air to get in. Making holes in the soil to allow air in is called 'aeration.'</p>	<p>» Bin of leaf litter</p>	<p>How are the leaves broken up?</p> <p>(Hopefully the pupils will suggest the minibeasts.)</p> <p>Why do we find many minibeasts in the leaf litter?</p> <p>What is needed to form good soil?</p> <p>How do nutrients get into the soil?</p> <p>How can minibeasts help air get into the soil?</p>
<p>6. Walk pupils to an area where leaf litter can be found and let them study the area.</p>	<p>» None</p>	<p>What is needed for leaf litter to be made?</p> <p>Where else can you find leaf litter on a golf course?</p>
<p>7. Back at the start, give each group of 3 pupils a clear tub containing leaf litter and ask them to look at it carefully without touching.</p>	<p>» 1 clear tub between 3 pupils</p>	<p>What can you see in your tub?</p>
<p>8. Show the pupils the laminated photographs of the insects often found in leaf litter.</p>	<p>» Laminated photos » (Insects)</p>	<p>Have you seen any of these insects before?</p> <p>Where have you seen them?</p> <p>Ask the pupils what features do all the insects have? (Some may already know the main features of an insect.)</p>
<p>9. Depending on the response to step 8 remind or tell the pupils that insects have:</p> <ul style="list-style-type: none"> <li>» 3 major parts to their body; head, thorax and abdomen.</li> <li>» Six legs</li> <li>» one pair of antennae</li> <li>» Some insects have wings</li> </ul>	<p>» Laminated image of the parts of an insect</p>	<p>What are the main parts of an insect?</p> <p>Show me the main body parts of an insect on one of the drawings.</p>
<p>10. Give out the laminated sheet of other leaf litter creatures and ask pupils to explain why these are not insects.</p>	<p>» Sheets</p>	<p>Do you recognize these creatures?</p> <p>Why are these creatures not insects?</p>

Activity	Equipment	Questions to ask
11. Give out the plastic spoons and clear cups. Tell pupils to find a minibeast and transfer it to the clear cup using the spoon. Remind pupils that minibeasts are living things and therefore need to be handled with care. Some pupils may find worms, woodlice and spiders. These are not classed as insects. Use these creatures as an opportunity to highlight the similarities and differences between the insects and other creatures. For example, look at the number of legs on a spider/worm/centipede. Do they have 6 legs like an insect?	» Plastic spoon and clear cup for each pupil	Can you name the minibeasts that you have found?  Look at the insects you have found what do the insects have in common?  Have you found any creatures that are not insects? (Common ones will be woodlice (crustaceans), spiders (arthropods) and worms.  Why are woodlice/spiders/worms not insects?
12. Give out the worksheets. You can give one sheet per group and ask them to collaborate on their answers	» Worksheet, clipboard and pen	See questions on the worksheet.
13. Pupils will need to wash their hands after handling the leaf litter	» Wet wipes and rubbish bin	Have you washed your hands?  Why do you need to wash your hands?

## Key words

You may have to explain some of these words as pupils will not be familiar with them. Check that pupils know their meaning before using them too much.

**leaf litter**

**decomposition**

**organic matter**

**nutrients**

**head**

**thorax**

**abdomen**

**legs**

**wings**

**aerate**

**insect**

**amphibian**

**invertebrates**

## Lesson extension activities

- » Pupils could try and put the different creatures that they find into groups based on a particular feature. Ask the pupils to justify why they have put them into these groups.
- » Pupils will find creatures that are not insects. How can you tell these creatures are not insects? What differences and similarities do these creatures have with insects?
- » Pupils can look through plastic tubs; identify the insect, check out the anatomy of each one. They can also figure out what "family" the insect is from. (The FERA additional resource below can help with this)
- » If caterpillars are found, you could ask pupils why caterpillars are insects?

## Support activities

Some pupils may find handling soil and leaf litter difficult. Where this is the case they could focus on the laminated pictures.

# Information for the teacher

## National Curriculum links

### England

- » Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals
- » Give reasons for classifying plants and animals based on specific characteristics

### Wales

- » Through fieldwork, study the plants and animals found in two contrasting local environments, e.g. identification, nutrition, life cycles, place in environment
- » The environmental factors that affect what grows and lives in those two environments, e.g. sunlight, water availability, temperature

### Scotland

- » By investigating the lifecycles of plants and animals, I can recognise the different stages of their development
- » I can use my knowledge of the interactions and energy flow between plants and animals in ecosystems, food chains and webs

### Northern Ireland

- » We can identify a variety of animals and plants according to their characteristics
- » To understand some of the ways in which living things rely on common landscape features

## Additional Resources that could be used to follow up the session

### Click on the links below to access

- » [Year 6 starters for science — Living things and their habitats](#)
- » [Fera resources: classification](#)
- » [Bugs count — OPAL](#)
- » [Incredible invertebrates — Explorify \(log in needed but it is free\)](#)

# Worksheet: Why are minibeasts needed on a golf course?

Date ..... Golf Course .....

Pupil Name .....

Please answer the questions below.

**Why are minibeasts important to small mammals and birds?**

**What is leaf litter and how is it made?**

**What are the main body parts of an insect?**

**What animals did you find that are not insects?**

**Why are minibeasts needed on a golf course?**



# Worksheet: Why are minibeasts needed on a golf course?

Date ..... Golf Course .....

Pupil Name .....

Possible answers for the questions are given below.

## Why are minibeasts important to small mammals and birds?

Insects and minibeasts are a food source for many small mammals and birds. Insects are an important part in the food chain.

## What is leaf litter and how is it made?

Leaf litter is dead plant material, including leaves, that has fallen to the ground. Leaf litter is an important part of an ecosystem. Insects and other small invertebrates help to break leaves down into leaf litter.

## What are the main body parts of an insect?

Head, thorax, abdomen, and legs

## What animals did you find that are not insects?

See laminated cards

## Why are minibeasts needed on a golf course?

For plants to grow they need soil with plenty of nutrients, air and water. Minibeasts breakdown leaf litter which puts nutrients into the soil and make tunnels which allows air and water to enter the soil. The better the quality of the soil the better plants like grass will grow. Minibeasts are also an important source of food for small birds and other animals like hedgehogs, toads etc.

# Insects

Print and laminate to make bug identification cards. Please note these are not to scale



Lady bird



Ant



Earwig



Weevil (Acorn)



Beetle (common longhorn)



Caterpillar (Yellow tail moth)



Shield bug



Aphids








Springtails

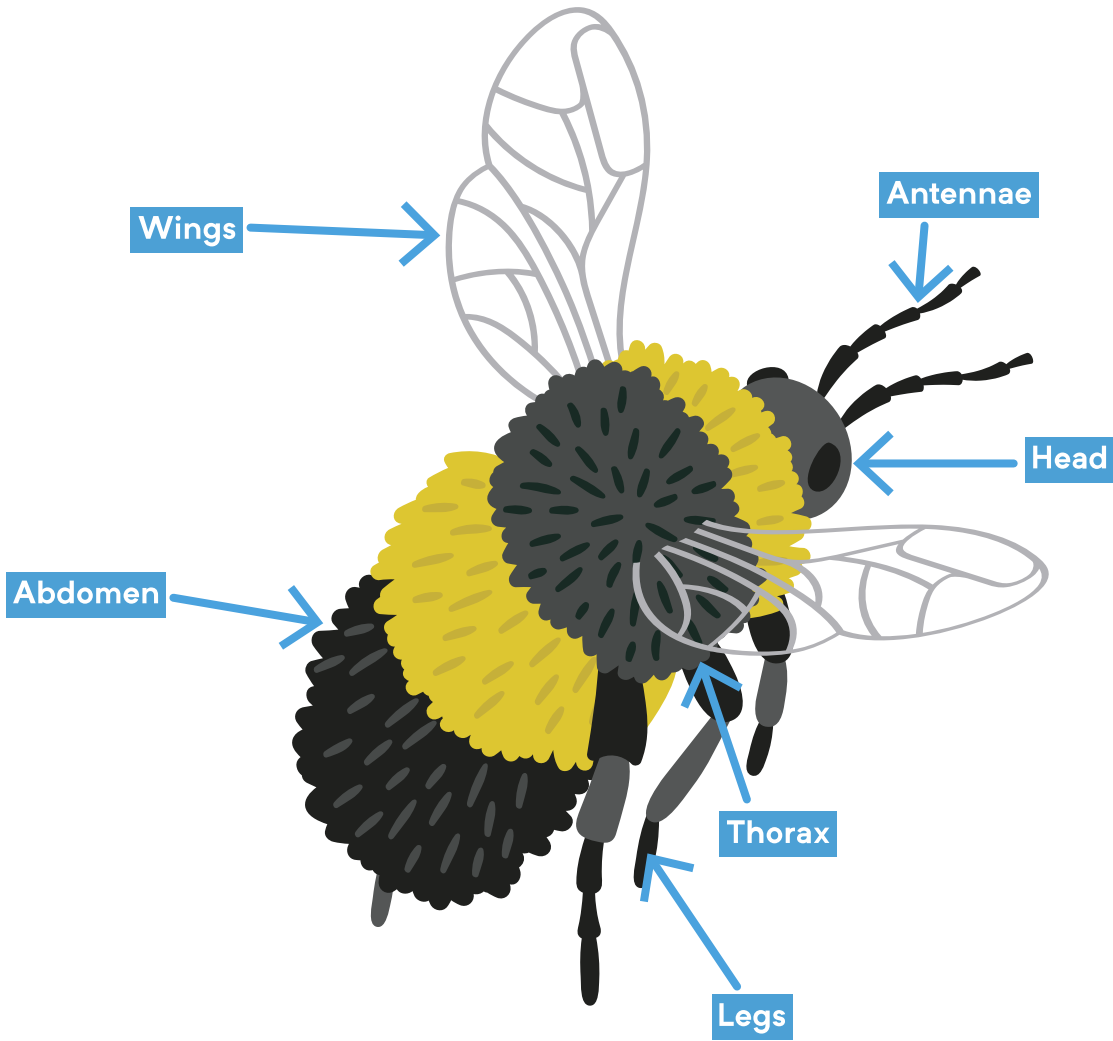


# Non - Insects

Print and laminate to make bug identification cards. Please note these are not to scale

		
Woodlouse	Spider (wolf)	Slugs
		
Centipede	Snail (brown lipped)	Millipede
		
Earthworm	Mite	

# Parts of an Insect



# Risk Assessment:

These are suggested risks, you will probably want to add some of your own.

School Name ..... School Representative .....

Golf Club Name .....

Greenkeeper Name ..... Date of Visit .....

What are the hazards?	Who/what is at risk?	What needs to be done to avoid accidents?	Who is to action?
There will be moving cars in the car park	Pupils	<ul style="list-style-type: none"> <li>» Inform pupils that they must follow instructions when leaving the minibus</li> <li>» All pupils to wear high visibility jackets whilst on the golf club (if the school requires)</li> </ul>	Teacher Greenkeeper
Pupils might get lost from the rest of the group	Pupils	<ul style="list-style-type: none"> <li>» All pupils to wear high visibility jackets (if the school requires) whilst on the golf club</li> <li>» Teacher to count pupils in every time they move between areas</li> </ul>	Teacher
Being hit by a golf ball	Pupils Teacher Greenkeeper	<ul style="list-style-type: none"> <li>» Inform pupils that there are some areas of the golf course that may be dangerous, therefore they need to avoid</li> </ul>	Teacher Greenkeeper
Pupils will be handling soil and leaf litter	Pupils	<ul style="list-style-type: none"> <li>» Ensure pupils wash their hands after handling the leaf litter, especially if they are eating</li> </ul>	Teacher Greenkeeper
Insects are fragile creatures	Insects	<ul style="list-style-type: none"> <li>» Inform pupils to be gentle when handling the insects</li> </ul>	Teacher Greenkeeper
Pupils will be handling leaf litter	Pupils	<ul style="list-style-type: none"> <li>» Pupils must wash their hands</li> <li>» Tell pupils to keep their hands away from their mouth</li> </ul>	Teacher Greenkeeper
There will be other adults around the course	Pupils	<ul style="list-style-type: none"> <li>» Pupils to be told to report to the teacher if they have any concerns</li> </ul>	Teacher Greenkeeper

