

Living Things and Their Habitats

Lesson 3: Invertebrates

Science KS2 Year 4



Living Things and Their Habitats. Lesson 3: Classification of Invertebrates

Science

Key Stage 2 Year 4

Learning aims

- learn that animals can be classified as vertebrates or invertebrates
- classify invertebrates depending on whether they have soft bodies (hydrostatic skeleton) or hard bodies (exoskeleton)
- closely observe slugs, snails, spiders and ants to identify their different features
- record the number of snails, slugs, spiders and ants found outside and display the data in a bar chart
- decide how to classify slugs, snails, spiders and ants based on their different features
- learn how scientists classify these invertebrates in real-life. Identify other invertebrates in these groups

Curriculum objective

- recognise that living things can be grouped in a variety of ways
- explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment

Working scientifically

- asking relevant questions and using different types of scientific enquiries to answer them
- setting up simple practical enquiries, comparative and fair tests
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identifying differences, similarities or changes related to simple scientific ideas and processes
- using straightforward scientific evidence to answer questions or to support their findings.



Reading links

A list of reading links is supplied on pages 4 and 5 of this PDF.

Keywords

Vertebrate. Invertebrate. Hydrostatic skeleton. Exoskeleton. Snail. Slug. Spider. Ant. Gastropods. Arachnids. Insects. Centipede. Myriapod. Mollusc. Head. Thorax. Abdomen.

Vertebrates and invertebrates were also in Lesson 2. The remaining keywords are at the end of this PDF and can be placed on a learning wall as they are discussed during the lesson.



Equipment

You will need:

- Pens and pencils for colouring and labelling
- Magnifying glasses/bug pots
- “Close up!” worksheet on pages 8-12



Reading links:

Books for learning about vertebrates

1. **"A bug's world"** written by Erica McAlister. Discover the extraordinary things that bugs do for us - and how we can look after them too - in this vibrant gift book written by the Natural History Museum's senior entomologist.
2. **"Beetle Boy"** written by M. G. Leonard. Winner of the Branford Boase Book Award. 'By the end, you'll think beetles are the coolest creatures on the planet', Tom Fletcher. Darkus can't believe his eyes when a huge insect drops out of the trouser leg of his horrible new neighbour. It's a giant beetle – and it seems to want to communicate. But how can a boy be friends with a beetle? And what does a beetle have to do with the disappearance of his dad and the arrival of Lucretia Cutter, with her taste for creepy jewellery?
3. **"Invertebrates (Animal Classification)"** written by Angela Royston. This fascinating series takes a very simple look at animal classifications, with each book focusing on a different group of animals. This book is about invertebrates: what they do, how they behave, and how these characteristics are different from other groups of animals. Beautifully illustrated with colourful photographs, the book shows many examples of different types of invertebrates in their natural environment.
4. **"One Million Insects"** written by Isabel Thomas. Did you know that without insects, humankind could not survive? This illustrated, fact-filled title explores the huge variety of insects, with a focus on what makes an insect an insect, the differences between the groups, and why insects are the most important animal group on Earth. Broken down into sections exploring each of the main types of insect, each section takes a different, playfully visual approach to really capture the character of the insects in the order being explored.
5. **"Ants"** written by Lucy Bowman. Where do ants live? What do they eat? How much weight can they carry? This insightful look into the world of ants introduces beginner readers to an ant's anatomy, their habitats, how they keep safe from predators, and more. With simple text, detailed illustrations and colourful photographs on every page, and internet links to video clips and more information.
6. **"Charlotte's Web"** written by E. B. White - A poignant, humorous story of a pig, a spider and a little girl. Wilbur the pig's life has already been saved by Fern, but when he is sold to her uncle, he realises his life is in even more danger. Enter Charlotte A. Cavatica, a beautiful large grey spider. Charlotte is determined to keep Wilbur from the chopping block, and comes up with an ingenious way to do just that.



7. **“Spiders”** written by Laura Marsh - You don’t have to look far to see a spider’s web – in the corner of the window, on a fence, or in a bush – spiders make their homes everywhere. And there are so many kinds of spiders! Some red, some blue, yellow, and more...all fascinating. Amazing photography and easy-to-understand text make the level 2 book Spiders a hit in this National Geographic Kids series.
8. **“Snails and Slugs”** written by Claire Llewellyn - An exciting new series that tells you everything you need to know about each minibeast using dramatic close-up photographs and annotated artwork. The series provides opportunities for investigation as each of the minibeasts chosen can be found in the local environment and it also encourages use and understanding of relevant vocabulary.



PowerPoint presentation

The accompanying PowerPoint presentation has 24 slides with the following learning points. At intervals throughout the lesson, we suggest asking the children what questions they might have. These can be collected throughout the unit of learning and added to the slide at the end of the lesson.

- Slides 1 and 2: introduce the lesson.
- Slide 3: Recaps Lesson 2, then introduces today's learning about classification of invertebrates.

Skeleton Skills Activity (slides 4 – 5)

- Slide 4: Learn what invertebrates have instead of a backbone. Can the children identify which of the invertebrates on the slide have a soft body, a hydrostatic skeleton and an exoskeleton?
- Slide 5: Shows the correct grouping. Then asks the children to revisit the list of invertebrates identified in the Classification Challenge in Lesson 1 and sorted in Lesson 2, and then to select which have soft bodies and which have an exoskeleton.

Close up Activity (slides 6 – 10)

This activity is linked to the "Close up!" worksheet

- Slide 6: Time to use their observation skills. Encourage the children to think of themselves as scientists of old, who faced the challenge of first classifying animals and invertebrates. Take them outside and see if they can find snails, slugs, spiders and ants. Ask the children to complete their worksheet to identify the different features these invertebrates have, how many they found and what their habitat was like. If they cannot get outside to observe these animals, they can use the images at the end of the PowerPoint.
- Slide 7: How many of each invertebrate did the children find? They can display their results in the bar chart on their worksheets.
- Slide 8: Can the children draw or make a model of each invertebrate they found? There are great drawing videos to help them with this, and links are supplied at the end of the PowerPoint. The children should label their diagrams to reinforce the different or similar features of each animal.
- Slide 9: Use the bar charts the children created to conclude which invertebrate they counted the most/least of. Look at the habitats they were found in. Does the numbers of these habitats around the school favour certain invertebrates? Maybe there is another reason for the difference in numbers, for example: time of year, time of day, does that species tend to have greater numbers, etc.?



- Slide 10: Children should use the results of their observations to see if they can classify snails, slugs, spiders and ants into different groups depending on their features. Do they think some of these invertebrates belong to the same group? Can they think of other examples of invertebrates they could add to their groups? At this stage, there is no 'right or wrong' answer. Children are facing the same challenge that faced scientists of old!
- Slide 11: The children now find out how these invertebrates are classified in real life.

Quiz (slides 12 – 14)

- Slides 12 to 14: Quiz – What have we learned about invertebrates?
- Slide 15 and 16: the answer to the odd one out question at the end of the quiz is the centipede. We look at how this invertebrate is classified as a myriapod. We summarise how invertebrates are classified. Can the children find the groups we have learned about in this session?
- Slide 17: This slide is kept blank for your questions.
- Slides 18 and 19: Useful weblinks
- Slide 20: End of presentation.
- Slides 21 to 24 feature full-screen images of a snail, slug, spider and ant respectively, in case you were unable to go outside, or in case you didn't find all the invertebrates.



Close up!

A: Observation

1. Did you find any snails, slugs, spiders or ants during your search?
Record how many you found in Table 1 below:

Table 1: Number of invertebrates we found in our search

Invertebrates	Snails	Slugs	Spiders	Ants
Number found of each				

2. Describe the habitat where you found each of the different invertebrates?

Invertebrates	Description of the habitat where they were found, e.g. in long grass, under a stone, etc.
Snails	
Slugs	
Spiders	
Ants	



3. What features do these invertebrates have?

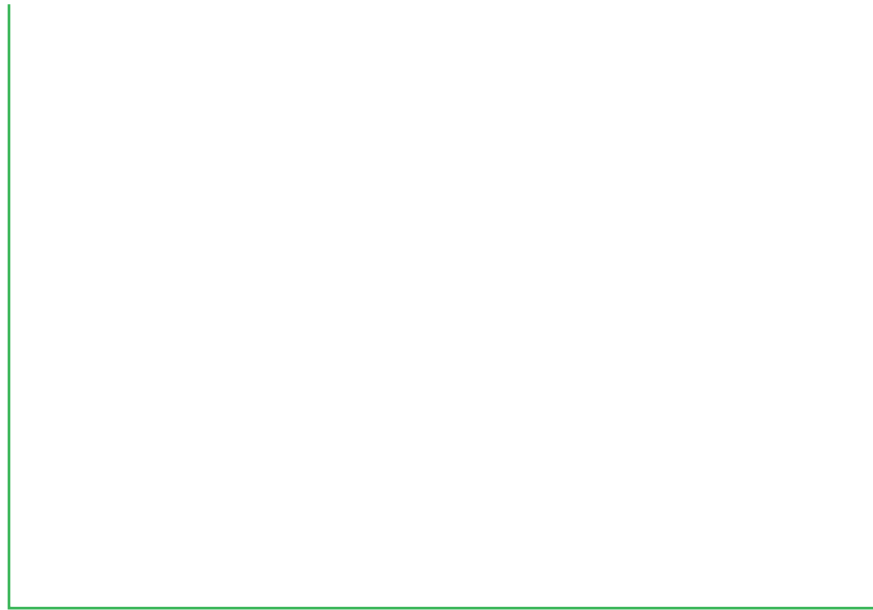
Features	Description			
	Snails	Slugs	Spiders	Ants
Body (exoskeleton, soft shell, slimy, etc)				
Eyes				
Legs (how many, none?)				
Colour?				
Antennae (how many?)				
Number of body segments? (head, thorax, abdomen)				



B: Results

1. Create a bar graph to compare the number of each invertebrate you found.
Remember to fill in the key with the colour you are using for each invertebrate.

Number of each
Invertebrate



Type of Invertebrate

Key

☐ Snail

☐ Slug

☐ Spider

☐ Ant

2. Use the results from your observations to help you draw a labelled diagram of a snail.



3. Use the results from your observations to help you draw a labelled diagram of a slug.

4. Use the results from your observations to help you draw a labelled diagram of a spider.

5. Use the results from your observations to help you draw a labelled diagram of an ant.



C: Conclusions

How many? Where do they live?

1. Use the bar chart you created to compare the number of snails, slugs, spiders and ants you found. Which did you find the most of? Which did you find the least of?

2. Did all the invertebrates you found live in the same kind of habitat? How were they different?

3. Do you think the number of invertebrates you found was influenced by the availability of certain habitats in your school? Do you think something else affected the numbers of each invertebrate you found?



D: Classification

Use your observations to compare the features
for snails, slugs, spiders and ants.

Based on these features, which of these invertebrates should be in separate groups?

Could you group any of the invertebrates together?

How many groups will you have: 1, 2, 3 or 4?

Write the name of the invertebrates in each of your groups in the box below, then
write down the features for each group.

Can you think of any other invertebrates that could be in the same group?

You could even have a go at thinking of a name for each of your groups!

Group 1: Name:	
Name of invertebrate(s):	
Features: 	

Group 2: Name:	
Name of invertebrate(s):	
Features: 	



Group 3: Name:	
Name of invertebrate(s):	
Features: 	

Group 4: Name:	
Name of invertebrate(s):	
Features: 	



Living Things and Their Habitats: Keywords Flashcards



Vertebrate

Invertebrate

**Hydrostatic
skeleton**

Exoskeleton

Snail

Slug

Spider

Ant

Gastropod





Arachnid

Insect

Centipede

Myriapod

Mollusc

Head

Thorax

Abdomen



Vertebrate



Invertebrate



Hydrostatic skeleton



Exoskeleton



Snail



slug



Spider



Ant



Gastropod



Arachnid



Insect



Centipede



Myriapod



Mollusc



Head



Thorax



Abdomen

