

Snail Hunt

Teachers' notes

What's it all about

As part of the Darwin 200 celebrations, ASE's Primary upd8 team has been working with the Open University's *EvolutionMegalab* to provide activities for school pupils.

This activity introduces pupils to Darwin's ideas on evolution by looking at variation, adaptation and distribution of banded snails. In this activity children use the correct vocabulary to describe habitats and different banded snails. Pupils take part in practical science, collecting snails and collating data and are shown how information that they collect relates to, and can be included on, the *EvolutionMegalab* website. www.evolutionmegalab.org

EvolutionMegalab involves members of the public contributing to a Europe-wide survey of banded snails in gardens and public open spaces. The project *EvolutionMegalab* involves a data gathering study of snail habitats, their shell colour and pattern of banding. Over many years snails have been adapting to their environment. This may be as a result of climate change and changes in other animals and plants around them. Pupils can conduct their own snail hunt and record their findings via the *EvolutionMegalab* website, and will receive personalised interpretations of their observations. Comparing these samples with historical data, the *EvolutionMegalab* team will examine evolutionary changes over the last 50 years, along with the impact on the banded snails of the changing thrush numbers (thrushes eat banded snails) and of climate change.

Where it fits

Science:

QCA Unit 1A: Ourselves

- observing and describing living things and communicating what happened in their work

QCA Unit 1D: Light and dark

- Children will learn that darkness is an absence of light

QCA Unit 2B: Plants and animals in the local environment

- turning ideas into questions that can be investigated

Scientific enquiry

QCA Unit 2C: Variation

- making observations and comparisons
- presenting findings in drawings and block graphs
- using results to draw conclusions

Literacy: Speaking and Listening

- make contributions relevant to the topic and take turns in speaking
- extend their ideas in light of discussion
- be able to put forward a point of view

What children will learn

- to describe living things

Children will demonstrate this by completing the task on page 1

- to observe and describe living things and that darkness is an absence of light

Children will demonstrate this by completing the task on page 2

- to turn ideas into questions that can be investigated

Children will demonstrate this by completing the task on page 3

- how to communicate what happened in their work by presenting their results using graphs and will draw conclusions

Children will demonstrate this by completing the task on page 4

What you need to do

Introducing the activity - during 'carpet time'

- Discuss with the children that we will be looking at snails and finding out how many we can find and how many different types we can find. Just like Charles Darwin we will become science explorers and naturalists. Charles Darwin was a scientist who was born 200 years ago. He loved nature and was especially interested in how different plants and animals evolve. Evolve means to change gradually, step-by-step over time, improving the chances of survival in response to external stimuli such as change in weather patterns.
- Display **Page 1** through a data projector or as an OHT. Discuss that we are celebrating Charles Darwin's anniversary in 2009. Explain that he went on a 5-year voyage on a ship named *HMS Beagle* (as long as some of them have been alive!) which is shown on the image. Darwin visited different islands all over the world. He found different animals and plants on different islands and noticed that they had adapted to the island where they lived and the food available (e.g. finches with different beaks to eat different seeds etc.).

Discuss as a class

- *What animals can they see in the image?*

- *Do they look the same?*

- *How are they different?*

With talking partners discuss why Darwin may have found different plants and animals in different places.

Look at the different snail shells. The four photos in the middle of the image show snail shells (the snails may be hidden inside the shell or maybe the shell is empty). The snails on the right hand side show the animal and its shell. The children may notice whether the snail shells have one band, many bands or no band and look for the brown lip or white lip along the bottom of the shell (where the snail's head pops out). Only the snail on the bottom right has a white lip, the others have a brown lip. The banding and the colours of the shells are different. The colours of the (empty) snail shells in the middle photos are different: the top and the third down are yellow; the second snail is pink and the snail at the bottom has a brown shell. The snail on the top right has a brown shell, single band and brown lip. The snail on the bottom right is yellow, many bands and a white lip.

- *What might the young boy be thinking?*
- *Why might the snails be different?*
- *What other animals have bands or stripes? They might think of the zebra - the stripes are for camouflage in their grassland habitat.*

The children may also notice that one of the snails on the right is on the ground the other is on a leaf. Have the children seen snails before? Where were they?

It would be useful to have a collection of 'empty' snails shells to complement the photos. These could be collected by the teacher beforehand or maybe the children could be asked to look in their gardens or on the way to school etc. for any empty snail shells (possibly with parental guidance). Ensure that health and safety measures are taken into account and children wash their hands on arrival at school if they have been collecting snails. See www.evolutionmegalab.org for further guidance on collecting and identifying snails.

To encourage observational skills, discuss as a class the colours, shapes and sizes (and other characteristics that the children notice) of animals and plants they have seen:

- *on the way to school*
- *in the playground*
- *in our garden*
- *on the television or elsewhere*

Some of the children may be able to name the plants and animals, others may not. For this activity, the description is more important than the name.

Suggestion for an extension activity – children work in pairs or small groups. One child describes an animal or plant they have seen and the others guess the answer from the description. An alternative is for one child to draw an animal or plant, while the others in the group try and recognize it as the drawing progresses (the child may wish to describe what is being drawn) as the image progresses e.g. it is big, blue, has a tail etc.

Leading the main activity

- Display **Page 2** through a data projector or on an OHT. Discuss what the children can see in the picture.
Look at the different habitats - what can you see? (Long grass; sandy area maybe a sand pit or sand dunes; woods with shady undergrowth, hot dry area like the playground in summer). What does shady mean? Which habitat might be shady? Explain that darkness is a place that has no light. Like our bedroom when the curtains are closed, or a habitat that has tall trees which block out the light from reaching the ground beneath it.

With talking partners pick one habitat and discuss what might live there and what it might feel like to live there (cold, hot, dark, light etc.). Share ideas with the class. Why do we have such different ideas? What different things do animals need (light, shade, plenty of space, places to hide, grass or something else to eat). What would happen if an animal ended up in the wrong habitat, or we moved it to a different habitat or we changed the habitat by, for example, cutting down the trees?

Make a list of descriptive 'habitat' words (dark, shady, damp, dry, grassy) with class (onto A2 paper - can be used as part of a display).

Look for the snails in the slide – describe them. They are called banded snails, can you see which snails have a single band, which have many bands and which do not have any bands? Count the bands on each of the snails. What colour are the snails, are they yellow, pink or brown? Count the number

of snails that are each colour. In the image on **Page 2** assume all the snails are alive.

Look at the notepad that the young girl is holding. What is she doing? She is recording the snails that she finds and looking at the habitats. What might they have in their rucksacks?

Discuss what they might need to take outside with them on a snail hunt for example: recording sheet, pencil, crayons, magnifying glass, camera, video, portable microscope, hand-held computers etc. Discuss what they might take if they are finding out about the different habitats for example: thermometers (air temperature, soil temperature) and data loggers.

- Display **Page 3** through a data projector or on an OHT. Print off copies for the children as appropriate. This is a simplified record sheet. The original can be found at http://www.evolutionmegalab.org/file_downloads/en/record_sheet.pdf Use the slide showing the record sheet to record what you can see in **Page 2**. Did the children find all the snails and did they get the same answer as Sam?
 - Sunny, hot, dry playground – no snails
 - Long grass, dry, light and warm – lighter coloured snails, yellow with many stripes (usually 5 stripes, but number varies)
 - Dark, damp, shady area under trees – darker brown snails, no stripes
 - Warm area in corner of sandpit, some shade – pink snail and yellow sand-coloured snail, single stripe

Some of the snails in **Page 2** were easy to see, others were more difficult, either because they were partly hidden or because of their colour. Discuss 'camouflage' meaning hidden. The snails use camouflage to protect them from being found and then eaten, so you might have to look very hard for them.

Answers for Page 3.
Snails shown in **Page 2** are:

The answer sheet shows a large garden snail *Cornu aspersum* in the centre of the page. There are none in the image on **Page 2**. *Discuss how they are different from the banded snails that we are finding out about for the EvolutionMegalab snail hunt.*

- Grass – 1 yellow snail with single band and brown lip; 3 yellow snails with many bands and white lip (many stripes good camouflage for grassy areas)
Note: these 3 are not shown on the recording sheet – discuss with pupils how they might add this information – maybe by producing their own recording sheet, or maybe by crossing off the snail in the centre as it is not a *Cepaea* banded snail and there are none in the grass, and drawing in the correct snail etc. Children could use the practice they have had here to design a recording sheet for their snail hunt (they may choose to use cameras etc. to record what they find).

- Woods – 2 brown snails with no band and brown lip; 1 pink snail one band with brown lip (dark brown snails good camouflage for dark shady area)

- Sand – 1 pink snail with no band and brown lip; 2 yellow snails with no band and brown lip (one is partly hidden in the sand – good camouflage)

Practical activity

Once the children understand the method of recording their observations and are able to use the correct vocabulary to describe the habitats, they may go on a snail hunt.

Work in pairs or small groups, each with a copy of the recording sheet (or they could agree a way of recording what they find, for example using a camera or drawing pictures. (Maybe bring in some parent helpers for the activity). Explain to the children the importance of returning a snail to its habitat and being very careful when handling them. At this stage it doesn't matter whether the snail shells are empty (dead) or not for the activity. It may be necessary to discuss this with the children (empty shells are lighter, but may also have had the lip damaged or broken off). Wash hands when back to class.

What questions might we ask in order to find this information? How many are there? Where are the shady areas? Is this a banded snail? The children will come up with some questions. Make a list (can be displayed).

Go outside and explore the playground. Use record sheets (downloaded from the *EvolutionMegalab* website or designed by the children) on a clipboard if possible. If there is a possibility of very few snails then print out and laminate examples and put them in the correct area.

The snail hunt can be used as a regular event within the school (checking information to see whether there are any changes depending on season, time of day etc.) possibly with snail hunts taking place before the summer holidays and again after the holidays. During the holidays children could be encouraged to look for snails at home or while on holiday and either record what they find or bring specimens back to the classroom to show to the class.

Plenary:

Discuss the findings and make conclusions. Where the most snails were found? Was there one type of snail we didn't find? Why might this have been? What type of habitat did this snail like? Which snail didn't like the shady areas?

- Display **Page 4** (a class data sheet, based on the record sheet from the *EvolutionMegalab* website)
http://www.evolutionmegalab.org/file_downloads/en/record_sheet.pdf
A class data sheet could be filled out gathering all the data together. Choose a snail from the sheet and add up, as you go along, each pair's findings and fill in **page 4**. It can then be printed out for display.

After the activity:

If you were able to find banded snails on the snail hunt, log on to the *EvolutionMegalab* website www.evolutionmegalab.org and follow instructions to add the data from your class to the database. You may need to check lip colour as this may be too difficult for some of the children, especially where the lip of a dead snail has been broken off or damaged. Use a user name so that your class and school can be recognised. Data can be shared between classes, local schools or even used as a method of meeting and working in partnership with schools elsewhere in Europe or further afield.

Extension Ideas . . . Cross Curricular Links

Researching the islands (Geography)

Find out which islands Darwin went to and mark them on a map in the classroom.

The Beagle (History)

Research what it might be like on board The Beagle and what the boat looked like.

The Little Lost Snail (Literacy)

Story of a snail (for example, the journey of a snail getting lost and then finding its way home and happy back in its preferred habitat).

Haiku poems (Literacy)

Haiku poems based on habitats, snails, different environment.

Collage (Art)

Simple collage of playground, with snails drawn then stuck onto correct habitat area.

Pictograms (Maths)

Make pictograms of gathered data.

Card Games

Using record sheet make a 'snap' card game with all the varieties of snail- could play 'matching pairs'. Could make a 'Happy Families' old-fashioned game with Mr Snail, Mrs Snail, Master Snail and Miss Snail. Have to collect the whole family. These will encourage the children to look carefully at the physical characteristics of the snails either in preparation for the hunt or afterwards.

Snail Hunt

Teacher could hide a toy snail or pictures in various places in the school grounds for children to find.

Other snail activities

A detailed drawing of an environment (maybe digital picture of the playground) that the children can 'stick a snail on the habitat' and discuss with their partner or group.

Maybe a black and white picture of an environment that has very small snails hidden in it. Children find and colour the snails. Could link with the maths extension activity and have many different types of snail that can be located, coloured and then make a pictogram from the data.

Thumbs Up	We were great at the task because...		We were able to investigate our questions and were able to complete our table of information and make conclusions	
			We could observe and describe different habitats	
Thumbs Sideways	We were good at the task because...		We were able to investigate our questions and were able to complete our table of information	
			We could observe and describe different habitats	
Thumbs Down	We were OK at the task because...		We could observe and describe different habitats	

Next time we will...

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What are banded snails?

Banded snails come in assorted colours. Their shells are various shades from yellow through pink to brown. They can have one band round the middle like a karate black belt, up to 5 bands like a T-shirt or even no band at all. Banded snails are a favourite food of the song thrush and their various shell colours and patterns camouflage them against different backgrounds. Shell colour also affects how sensitive a snail is to temperature. Have shell colours changed with our warming climate?

<http://www.evolutionmegalab.org/>

What is the background to the project?

Scientists have been studying the banded snail for many years and have found that the darker shell types tend to be more common in woodland where the background colour is brown, while in grass the banded snails tend to be lighter-coloured, yellow and have more bands. This camouflage is an example of adaptation. However scientists now want to find out whether this pattern can still be found, because there has been a big decrease in the numbers of song thrushes in some places over the last 30 years. If there are fewer song thrushes about, you would expect the different snails to be less faithful to their particular habitats than they used to be. There is also a geographical pattern in the colour of shells that may have changed in response to the warming of the climate over the last 30 years. Darker shells used to be more common in the north than in the south. Scientists think this was

because darker shells warm up more quickly in sunlight, enabling the animals to be more active than light-coloured snails in colder areas. The aim of this project is to find out whether lighter coloured shells are more common further north than they used to be, now that the climate has become warmer.

Curriculum: Extra Information:

Unit 1D: Light and Dark:

Be very aware and sensitive to children that are visually impaired. You can also explain that light is linked to heat sources and changes in temperature.

Unit 2C: Variation:

Work in this unit also offers opportunities for children to relate understanding of science to environmental contexts and to consider how to treat living things with sensitivity.

Work in this unit also offers opportunities to relate understanding of science to the local environment, to consider how to treat living things and the environment with care and sensitivity and to recognise hazards to themselves, and to take action to control the risks from these hazards.

Within this unit there are opportunities for children to consider how to treat each other and other living things with care and sensitivity.

Slide 1: Darwin and HMS Beagle:

Maybe have a map of the world that children can research where he went and pin a picture of HMS Beagle on that island.

Have a picture of the ship and research what life may have been like on board for so long.

For Display:

Charles Darwin and The Beagle and its route around the world

The snail identification chart

The snail data recorded by the class

The list of habitat words

A collage or digital picture of the playground with print outs or drawings of the snails we have found, linked to their correct habitat

List of questions to ask to complete grid

Stories children have written about snails

Haiku poems

Pictograms of gathered data

Web links

Evolution MegaLab

<http://www.evolutionmegalab.org/en/information/viewBackground>

The site promoting the project, including the recording sheet

Snail Guide from Evolution MegaLab

http://www.evolutionmegalab.org/file_downloads/en/snail_guide.pdf

Snail Guide- print off and use as a display in class

The Standards Site

<http://www.standards.dfes.gov.uk/schemes2/science/sci2c/?view=get>

The curriculum website to assist planning and ideas

Wikipedia

http://en.wikipedia.org/wiki/Charles_Darwin

Information on Charles Darwin- will need to be re-worded for key stage 1

http://en.wikipedia.org/wiki/Charles_Darwin#Journey_of_the_Beagle

The journey of The Beagle story with a map that shows the route

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