



The Open University's Evolution Megalab

What will the evidence show?

By Simon Terry

On 30th March 2009 a special project was launched in view of Charles Darwin's double centenary celebrations. Spanning the breadth of Europe the survey seeks to mobilise members of the public, particularly primary school children who will not only love the outdoor activities and research but will love the subject in question. ASE's Primary upd8 team www.primaryupd8.org.uk has been working with the Open University's Evolution Megalab to introduce the public to Darwin's ideas by studying the variation, adaptation and distribution of two of the nation's most popular garden residents - the Grove Snail and Garden Snail. The Evolution Megalab's website (<http://evolutionmegalab.org>) opens with the following extraordinary statement:

Welcome to the Evolution MegaLab!

Did you know that thanks to a common little snail you can find in your garden, in the park or under a hedge, you can see evolution in your own back yard?

OK, so evolution is a very slow process. Life on Earth started about three-and-a-half billion years ago! It's the tiny changes accumulating over a long, long time that got us here. And you can see some of those tiny steps by joining the Evolution MegaLab.



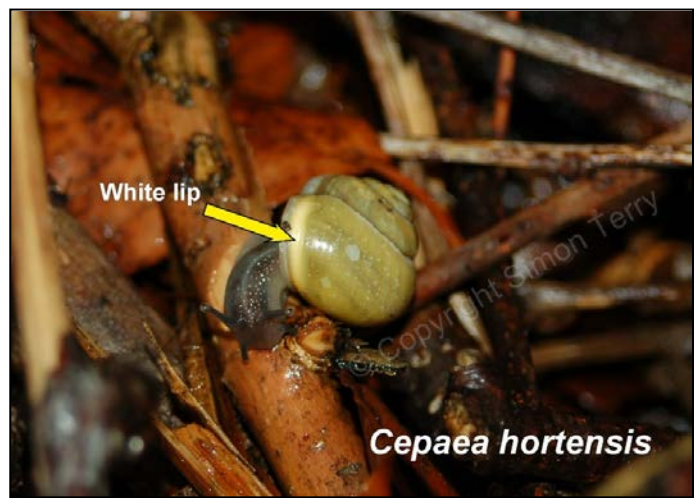
Does the evidence collected and studied in this project really support a connection between tiny changes in snails and evolution? Prominent factors made evident through this project push us towards the conclusion that any such connection must be believed by faith in the evolutionary process as the evidence does not reveal any evolution whatsoever. The project starts with the assumption that evolution has certainly occurred and then proceeds with the belief that all change is evolution, leading students to believe that the data they are being asked to collect is indeed evidence of 'those tiny steps' affirming that life has evolved.

The Snails & the Science

The focal point of the project are two of four European terrestrial snails found in the genus *Cepaea* – *Cepaea hortensis* commonly known as the White-lipped Snail or Garden Snail, and the slightly larger *Cepaea nemoralis*, the Grove or Brown-lipped Snail. The apertural lip of the adult's shell distinguishes one species from another - although, the White-lipped Snail can in some cases bear a brown lip.

The snails are safe to handle and colonies can be found in a wide variety of habitats from sand dunes to areas of woodland, including open grassland, parks and gardens. The widespread distribution of both species (1) makes them ideal for a continent-wide study. These particular snails are polymorphic - the adults displaying great variation in shell colour and banding. The colours can range between three main phenotypes - yellow, pink and brown, with unbanded, singular and multiple banded forms.

Since the 1950's extensive breeding has helped build a picture of the banded snail's complex genetics (2). They have been described by Professor Jonathan Silvertown from Open University, as an 'ideal organism' to study.



The photographs above show the distinctive brown lip and white lip that helps us distinguish the two particular species apart.

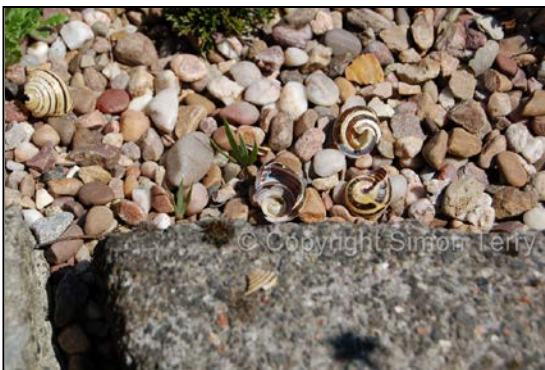


The snail's shell grows and develops as the creature matures. A thickened lip (edge) to the aperture (mouth of the shell) usually indicates adulthood which is key in the identification of both species. Only when the snails reach maturity can they properly be identified - juveniles do not bear this lip.

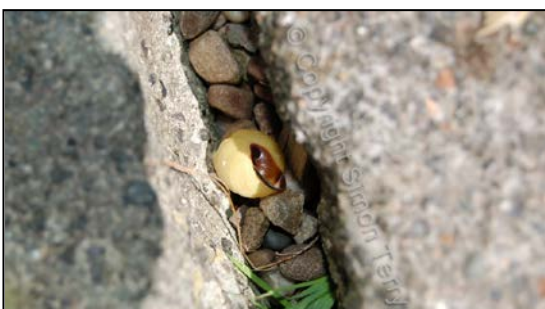
Snail Variation and Habitat

The snail's shell colour and presence or absence of banding can influence the temperature of the animal. This has been identified in *C.nemoralis*, differing between morphs (variety of form) (2). The ability to reflect sunlight is known by meteorologists as the albedo. Darker shelled snails, having lower albedo, tend to be found further north of the UK and are therefore considered to be at a disadvantage to their yellow conspecifics in the south being vulnerable to more water loss.

Of interest is also the relationship between a particular morph and its habitat. Some of the results reviewed so far (3), confining the analysis to *C.nemoralis*, indicate that yellow shelled snails are found increasing from areas of woodland to sand dunes - from shaded environments to quite exposed ones. There may be, therefore, ground to suggest that albedo effect of yellow is directly related to the habitat.



Observations made by Cain and Sheppard (3) found that woodland snails were darker than those in open habitats, and this they concluded was down to predation from the song thrush. These birds hunt by sight searching for a special stone which they use to crack open the shell in order to eat the soft fleshy part of the snail. It could be argued that the more camouflaged snail species in a given habitat have the greater prospect of survival. Brown and pink woodland snails would therefore blend in and be harder to find, as would the yellow shelled snails in open grassland.



The grey rock in the foreground of the photo above left has probably been used to crack open banded snails – it is called a thrush anvil. The thrush will return to the same spot over again with fresh snails. Note the banded specimens in the upper photograph, and non-banded individual caught and dispatched below.

These observations and studies highlight the incredible design, diversity and adaptability of this remarkable genus.

The Snails and Evolution

Now for the big question - how will this research help people better understand Charles Darwin's theory? Professor Silvertown believes the snails *have changed* in the last forty or fifty years. (4) The distribution of shell colour and banding are believed to have altered with a change in the climate and predation from thrushes. Again, this is where evolution is defined as change, all change is called evolution, and any change no matter how minute the change, is proof of evolution (5). The Megalab's web page (6) for the project speaks of **'those tiny steps'**, those **'tiny changes accumulating over a long, long time that got us here.'** We do see tiny changes, no argument, but they do not show any evolution. The argument at this point put forward by the evolutionist is that evolution takes so long to happen you wouldn't expect to see it happen. Professor Richard Dawkins said *'Evolution has been observed, it's just that it hasn't been observed while it's happening.'* (7) Which, as John Mackay has clearly pointed out, (8) raises an important question - what is the difference between what can't be seen because it is happening too slowly to be seen and what cannot be seen because it's not happening at all? As Dr. Kemp so eloquently put it regarding the tiny changes we observe : *"To account for evolutionary changes that take millions of years to completion solely by reference to processes that can be studied only over tens of years requires an extraordinary faith."* (9) It is an extraordinary faith to claim that these tiny observable changes in banded snails is evidence that life has evolved.

If the climate or habitat is responsible for the distribution of shell colour and banding in these snails it simply shows us that the species will thrive in conditions that are most favourable to their survival. However, stating (as the project web site clearly does) that what we are actually observing Darwinian evolution in action is asking us to take a leap of faith that the evidence does not support.

Evolution and Creation

There is a far better explanation of the evidence that fits the findings. The actual changes observed are simply examples of the variation or polymorphism of two species of banded snails which is exactly what the historic book of Genesis details – creatures reproducing after their own kinds. It is indeed *extraordinary faith* working way over and above the evidence collected through this project that concludes that the tiny observed changes are actually evidence of *'evolution in your own back yard.'*

If the climate or habitat is related to the distribution of shell colour and banding in these snails it simply shows us that the species will thrive in conditions that are most favourable to their survival. However, stating (as the project web site clearly does) that what we are actually observing Darwinian evolution in action is asking us to take a leap of faith that the evidence does not support.

This brings us to what Professor Silvertown describes as the second of the two evolutionary drivers – predation. As with the response of the snails to climate, if predation is a factor in the distribution of shell colour in these species, what we are actually observing is the survival of the species following pressures exerted upon them by predators. The less conspicuous you are the harder it will be to find you. How is this proof that one kind of life form evolves into another? We do not see any evolution.

The variation, distribution and adaptability of the species, even if influenced by climate and predation, reveal to us exactly what the book of Genesis tells us – that creatures will bring forth after their kind. The data collected throughout this project points to the clear observation of *variation within a kind*, not one 'kind' of organism evolving into another 'kind'. This *is* the observation from the fieldwork. The children, their parents and teachers have the right to be shown how these findings fit with the Genesis record in contrast to evolution that forces the findings to fit an unfounded framework.

A Golden Opportunity

From an early age snails are often a source of much fascination and wonder. Christians should take this opportunity to reach children with the truth pointing out the clear relationship between observational science and the record of Genesis. Warm, dull, damp summer evenings are ideal times to search for banded snails, especially after rainfall. Both species are widespread, although the White-lipped Snail prefers colder and wetter locations than the Brown-lipped. Look in woodlands, meadows gardens, open grassland and sand dunes. Hedgerows, riverbanks and railway embankments can yield some interesting finds. Look on the tops and underneath the surface of leaves as well as at the base of plants where the snails can be found either resting or crawling among the vegetation.

Young banded snails, particularly babies, are not easy to identify as the hard apertural lip will not have formed. Even in some sub adults identification can pose a challenge as the lip has not been produced - the shell ending abruptly. The adults of both species can be identified from the colour of the lip. As their common names indicate they are either white lipped or brown lipped. Despite this difference there are two main varieties within both species - banded and unbanded with shell colours of pink, yellow or brown. How wonderful to observe such great variety within the same species.



A typical spot for hunting banded snails. This railway embankment in Devon is home to the *Cepaea hortensis*. A number of these snails could be found crawling amongst the ivy and nettle at the base of the young trees.

After Their Kind

This variability or polymorphism in banded snails is such a clear example of what we read in Genesis 1:24 where God created creatures to bring forth **according to their kind**, displaying ingenious variety within their kind. This truly is *the* explanation to what you will find in the field – exactly what the evidence shows! Polymorphism is just one aspect of the incredible design and complexity of these incredible creatures. Snails like the rest of creation are a marvellous testimony to the power and wisdom of their Creator – to God be the glory!

For further practical studies in Malacology (study of the phylum Mollusca which includes slugs and snails) please contact the author.

References

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- 2) Murray, J. 1975. The genetics of the mollusca. In: Handbook of Genetics, vol. 3, (ed.) J. C. King. Academic Press, New York and London.
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- 5) Newstead Baptist Church (Producer) (2006). Debate: *Is evolutionary science reliable? Atheists vs Christians* (DVD)
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