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Product Code LW007C v1.0  
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**INSTRUCTIONS AND 24 PAGE  
FACT FILLED SNAIL GUIDE**



# SNAIL WORLD



**Explore the wonderful  
world of Snails!**

# WARNING!

For children over 5 years of age only.  
For use under adult supervision. Read the instructions before use. Follow them and keep them for reference.

Not suitable for children under 36 months due to small parts that could represent a choking hazard. Do not use the magnifying lens to look directly at the sun or other sources of bright light as this could damage your eyes.

None of the accessories in this kit should be allowed to come into direct contact with foodstuffs. Keep bugs and dirty hands away from the mouth!

Wash hands after using this kit or the activities contained in this booklet.

# SNAIL WORLD

## CONTENTS:

- Clear Tank and Lid (Visualarium)
- Pipette
- Tweezers
- Field Lens
- Instruction Manual





## INTRODUCTION

**We give snails and slugs a very hard time on account of just a handful of species, which have a rather fiendish taste for our flowers, as well as things we like the taste of too like vegetables and salads.**

You could argue that because of this they have good taste, but it doesn't really do their reputation any good and we're all too eager to sprinkle the garden with slug pellets and ignore their true wonder.

This handful of 'pest' species really are few, but they do seem to flourish in our gardens in large numbers and that is what ultimately causes grown-ups to get all excitable. Even these pests are fascinating in their own way, and when you start to really explore your garden you will find many more types that you didn't even know you had!

More to the point though is that even these pests are fascinating in their own way and when you start to really explore your garden you will find many more types that you didn't even know you had!

They do pretty well in our warm and wet climate and we have over a hundred different species of mollusc, for that is what they are. It breaks down into around 20 species of slug and 80 species of snail. They are a pretty interesting bunch too. We have snails that smell of garlic, predatory slugs that hunt worms, slugs that dance, underwater snails and even hairy ones! And the best way to get to know them is to keep a few and study them and this is exactly the point of this Snail Study kit.



## ABOUT THIS KIT

**This kit is a hands-on guide for budding naturalists and contains the equipment you need to observe and study the life-style of snails and slugs. The kit is designed to be fun and informative for kids of all ages. However, young children will need the assistance of an adult.**

To start with, I recommend collecting a couple of small snails to look after and observe. They should come to no harm if kept as pets for a few days then released back into the wild where they came from. Once you have gained some experience, you can progress to keeping them for longer if you wish.

Snails and slugs are active most of the year, although they can be hard to find in winter. Therefore, the best times of year to use this kit are the Spring, Summer or Autumn months when they are abundant and easy to find.

Finally, I hope you have fun with this kit and discover some fascinating insights into the life of these wonderful creatures.

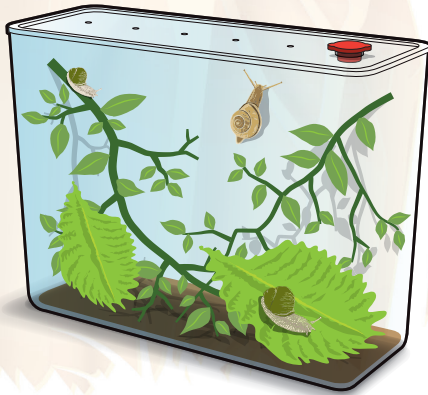
**Note:** Slugs and snails are very similar species. In fact a snail is really just a slug that has a shell, and a slug is a snail without a shell.





## GETTING STARTED

- 1 Rinse out and dry your tank.
- 2 Then go out into the garden and get some leaf mould or moss to line the bottom of the tank with. This helps to hold the moisture and keeps the humidity (the moisture in the air) nice and high which stops the snails drying out - dehydration is the biggest enemy of land living molluscs.



- 3 Then go and collect your specimens (more about this later). For best results I tend to collect the smaller species or young ones - they tend to make less mess, are more interesting and you can keep more of them together. If you are going to collect adults of the large species such as garden snails or great black slugs - then I recommend only going for a maximum of two.
- 4 Make sure you fit the lid properly.
- 5 Keep your tank in a cool place and definitely out of direct sunshine - slugs and snails don't like this very much. You don't need to provide any additional heat.



## FINDING YOUR SUBJECTS

You have two choices. The first is to go looking for them. Hunting under objects that are lying on the ground is pretty rewarding – have a look under stones, logs, garden furniture anything that might provide a nice dark, damp place to hide out during the day.

The other option is to wait for them to leave their hangouts – choose a warm damp night in summer time and go hunting for them with a torch – these are the sorts of night that your parents will lose seedlings and lettuces to their number! Walls are an excellent place to look as are rockeries and for some reason the ivy in my garden always turns up a good crop.

## MAINTENANCE

- 1 Make sure your set up is always a little on the damp side but not mouldy! If it starts going a bit manky, simply pull everything out, give it a good clean with hot, soapy water, a thorough rinse and then start again.



- 2 Food – this depends a little on the species you are keeping but most will take to salad leaves, slices of apple, cucumber, potato, dandelion leaves etc. But why not experiment and find out which they prefer or indeed if there is anything else they will eat.

- 3 All molluscs, especially snails, need a source of a mineral called calcium carbonate. This is what they build their shells out of and so for healthy snails you will need to provide this. This is nothing more technical than providing a clean and washed cuttlefish bone (the internal skeleton of a marine species of mollusc) for them to ‘gnaw’ on and supplement their diet. These are available from pet shops. Alternatively finely ground eggshells are also a good source of calcium carbonate.

- 4 Your slugs and snails will want to cruise around on the sides of the tank, and in doing so they will lay down their famous mucous trail. This can start to build up and smear your view of the inmates and so I would give it a regular wipe down with a bit of kitchen towel every day or so.



## KNOW YOUR WAY AROUND YOUR PET

Slugs and Snails belong to a huge family of creatures called molluscs. Most of these live in water but there are quite a few that have managed to leave this behind and crawl around quite happily on land. The Molluscs include a few surprising members including Squid (the largest invertebrate on earth is the Giant Squid!),

Cuttlefish, and Octopus (undoubtedly the smartest of the bunch).



Octopus



Cuttlefish

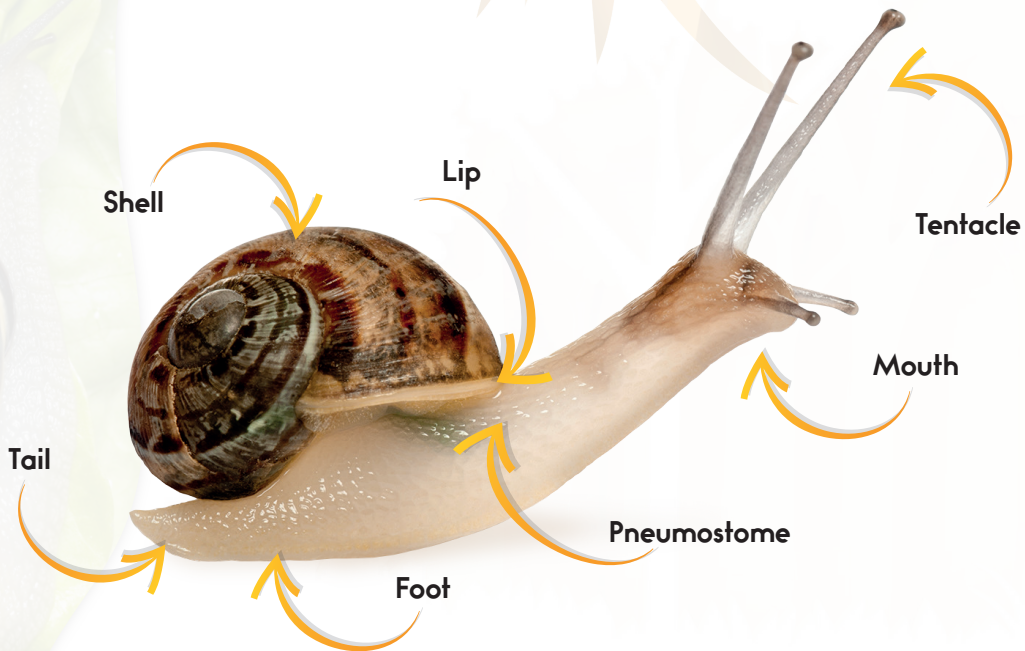
There are also those that live in shells.

Some have a shell made up of two pieces (think of Clams and Cockles) – these are the bi-valve molluscs (this just means two-shells). Then there are the gastropods which means 'belly foot' – the slugs and the snails you'll find in your garden and park which are most suitable for study belong to this group. Maybe we should have called this kit 'Belly Foot World'?



Giant Squid

# THE ANATOMY OF A SNAIL!





**Shell** - Most snails are right handed! The shell coils to the right but you occasionally find left handed ones and these are super-rare and are suitably called 'Snail Kings'. The shell grows as the animal does and, just like a tree, the growth can be seen as lines and ridges. All the essential organs of a snail are stashed away safely inside the shell.

**Lip** - This is the growing edge of the shell and if the animal is a young one and it is still growing this will be papery and thin, while an adult snail will have a nicely finished thickened lip.

**Foot** - This isn't a foot like you have on the end of your leg, rather a very muscular surface of the body on which the slug or snail slides around. The edge of the foot which can sometimes have a pretty colour or striking marking is called the fringe.

**Slime Glands** - Slime or mucous is a very important thing for a snail or slug and there are many different kinds all with their own special properties. The foot produces the famous slippery mucous that the mollusc surfs on with its muscular foot - this is why they leave these silvery trails behind them.

**Mouth** - This is on the underside of the head.

**Tentacles** - There are two pairs of these and they are very, very sensitive. The mollusc uses them to feel, smell and taste its way around. The top pair tend to be longer and also have a simple eye at the tip; the lower pair are more sensitive to taste and smell and can sniff out food up to 50cm away!

**Tail** - Not really a tail like you might imagine, just the trailing end of the foot

**Pneumostome** - This is the posh word for breathing hole. All land molluscs have them and they can be open and shut when the snail needs to breathe allowing air to pass to the lung which is housed like all the other essential gubbins - inside the shell.

**Whitey Mite** - You might see loads of little white mites scampering around on the skin of the larger snails and slugs. These hitch a lift and live inside the lung. Often they'll make a dash for it as soon as the breathing hole is open, run around on the surface, before dashing back before it shuts again.

**Mantle** - Poke a snail and it will retreat into its shell. The smooth skin you are left looking at is the mantle and this is the bit of the body that builds the shell. In slugs the mantle is the 'hump' on its back.

## FIELD GUIDE TO A FEW COMMON SPECIES

**Some common species of mollusc that you might want to try keeping.**

This really is just a simple guide to the more common and easily seen types but keep your eyes open when exploring and you could easily find other species. Make a note of the conditions you find them in and try and copy them in your Mollusc Mansion.

### TERRESTRIAL SNAILS

**Garden Snail** - This is the commonest of the British snails and can be found in almost any garden. They are easily recognised and spotted as they are quite big (they have a shell around 3cm across) and have a distinctive mottled shell with lots of lovely streaks of light and dark brown. Not to be mistaken for the fully protected and bigger Roman Snail which has a lighter, much more uniform colour to its shell.



**Banded Snail**  
*Cepaea hortensis*

**Banded Snails** - There are two different kinds - the White-Lipped and the Brown-Lipped Banded Snail. I'm rather fond of these pretty little snails. They don't get very big, about 1.5cm - 2cm across the shell. The Dark-Lipped is often found in gardens while the White-Lipped likes it a little wetter. You can tell the two apart by the colour of the lip in the adults. However, there is much confusion as they come in a variety of different colours (from yellow to pink!) and some have no bands on at all!



**Garden Snail**  
*Helix aspersa*



**Strawberry & Hairy Snails** - These are quite small flattened snails that can be found in the garden, usually underneath debris. The Strawberry Snail can be a bit of a pest on soft fruits. Both have hairs on their shells - the Strawberry Snail loses them as it gets bigger while the smaller Hairy Snail retains a 'coat' of short curved hairs which gives it a fuzzy appearance!

**Glass Snails and Garlic Snails** - Another group of tiny little flattened snails that can be found in the garden. Telling them all apart can be a bit tricky without a detailed field guide but the black body and shiny glossy shell of the Glass Snail is fairly easy to spot. It gives off a faint whiff of garlic when disturbed but not as stinky as the Garlic Snail which looks similar!



**Door Snail**  
*Alinda biplicata*

**Door Snails** - These are a group of very pretty snails with spindle shaped shells. They like it a little drier than some other species and can close their shells with a little plate, hence the name. If you decide to keep these put moss and leaf litter into your visualarium as this is what they like to eat.



**Glass Snail**  
*Zonitidae*

## AQUATIC SNAILS

**Great Pond Snail** - This is the biggest (up to 5cm long) of the Pond Snails and is easily recognised by the sharp pointed coil in its shell. It tends to be commonest where the water is slightly 'hard' - that means in areas where there are clay or chalk landscapes.

**Great Pond Snail**  
*Lymnaea stagnalis*



**Great Ramshorn Snail** - This is a well named beauty of a Pond Snail easily recognised by its large (over 3cm) rounded button-like coiled shell which is flattened from side to side. Sometimes you get populations which are missing some of the dark colours in the body and so it appears a blood red, literally as it happens as the red is haemoglobin pigments in the blood (the same as you and me).



**Great Ramshorn Snail**  
*Planorbis corneus*

**Wandering Snail** - This is a common and variable Fresh Water Snail with a shorter more rounded shell than the Great Pond Snail. It can be found in many different situations and is variable in size up to about 2cm in length.

**Wandering Snail**  
*Lymnaea peregra*



(See the Question and Answer section for information on keeping Aquatic Snails)





## SLUGS

**Great Black Slug** - This is the second biggest slug in the UK and it comes in two major colour forms - the black one and the brown one. Both are recognizable as they all have a pretty little foot fringe of orange with little black bands.



**Great Black Slug**  
*Arion ater*

**The Garden Slug** - This is another round backed slug. It is quite small - at full stretch it is only around 3-4cm long with reddish brown tentacles and a yellow/orange foot and fringe.



**Garden Slugs**  
*Arion hortensis*





**Keeled Slug**

*Tandonia budapestensis*

**Keeled Slugs** - This group of slugs have a ridge or keel that runs along the top of the back. There are several common species. The very common pest species, the Grey or Field Slug is around 4cm long, while Sowerby's and Budapest Slugs have a keel of contrasting colour usually a light brown - the former produces a thick yellow mucous and the latter is a long thin slug reaching around 6cm.



**Leopard Slug** - This is usually a gorgeous grey with lots of black blotches all over its mantle and topside. This is the UK's largest slug at as much as 20cm long and is quite common in gardens.



**Leopard Slug**

*Limax maximus*



## THINGS TO LOOK OUT FOR!

### Munching Molluscs!

Slugs and snails have an amazing way of eating - if you are lucky you might see this as the animal crawls up the transparent side of your tank. The mouth is situated underneath the head and contains a weird tongue-like organ called a radula. This is covered in hundreds of tiny, hard, spiky teeth which is stuck out of the mouth and is used to scrape the surface over which the snail is moving. Usually it will be rasping off a layer of algae, the layer of a leaf surface or if it's a nice soft lettuce, they grind away the whole lot!

### See the 'Radula Rasp'

This only works with terrestrial species and the bigger the better. If you don't provide food for a couple of days (don't worry this won't harm them) then make up a soup of liquidized lettuce and a little sugar. Then paint it onto the sides of your tank, leave it to dry and then add your slugs and snails - watch them closely and you will see the snail or slug's radula in action as it scrapes away at the soup you made for it.



## Inactivity

If your 'gastropets' stop moving the chances are it's too dry for them - slugs will simply hunker down in the tightest, dampest corner and hope things change for the better soon. Snails are generally much better at surviving a dry spell as they can seal their shell shut with a layer of papery slime (epiphragm) and sit it out - their water proof shell becomes a survival capsule.

## Tricks with the tentacles...

Steer your snail, and you can see just how sensitive the tentacles are in this little experiment. Get your snail or slug moving fast (relatively) along a surface and then gently tap the tentacle with your finger. Watch what happens - does the snail steer towards you or away?



## Torch & Eyeball

Using a bright LED torch (LEDs emit a cold light and are therefore not harmful to your snail) shine it through the tentacle when it is fully extended. Then gently tap the eyeball on top (don't worry they are not quite as delicate as your own eyes!) you will see the tentacle turn itself inside out and you can watch the eyeball lead the way as it is pulled back inside the snail's 'head'. Wait a while and you will see it come rushing back out again.



## Where's its bum?

This is a good game to play to test your powers of observation. You might have seen your snail's poo, it's a wet squiggly string (it looks a bit like silly string but not as colourful!) but has it ever occurred to you from where on the snail it comes out? Well the only way to find out is to watch your snail very carefully!



**Eggs** - Terrestrial molluscs lay their eggs in batches usually in damp places such as under bark or in the soil. They are easily recognizable if they are laid in your tank - depending on the species they are either white or off-white and neat little spheres.



**Slug Eggs**

Those of the Common Garden Snail are quite big around 4mm in diameter and laid in clutches of around 80 or so; other species are much smaller. I recommend keeping them and watching them hatch, but make sure they don't dry out. As time goes by inspect them with a hand lens and you will see the little mini-molluscs developing inside.



**Bubbles in trouble** - When a snail is attacked by a predator it will blow loads of bubbles from glands on its mantle. These are sticky and probably taste horrible too and provide a very messy deterrent to any animal or curious conchologist (someone who studies molluscs).

Many slugs will ooze a special foul tasting, colourful and super sticky slime when picked up for the same reason. Other slugs will for some reason hunch up, present their leathery thick mantle and then wiggle on the spot - nobody really knows what this is supposed to achieve, we just know they do it when stressed!



## Popping!

If you are keeping some Pond Snails, try and keep them on your bedside table and at night you will hear a gentle popping noise as they open their pneumostome to breathe at the surface. The warmer the water the more popping you'll hear as warm water doesn't hold much dissolved oxygen and so they can't breathe through their skin and need to come to the surface.



**Great Pond Snails**  
*Lymnaea stagnalis*

## Fancy Footwork!

The graceful way the gastropods move around on their foot is quite unique. Half of the beauty of this is provided by the special slime which allows them to travel almost anywhere, over steep uneven ground, even upside down.

The other half of the story is the highly specialised muscular foot. Watch your molluscs from underneath and you will see how they do it. A series of muscular ripples push backwards and move the snail forwards; these can be seen as a series of moving bands. The whole operation is pretty impressive and a snail such as the Garden Snail isn't quite as slow as you might think as it's able to cover nearly 50m an hour!

## QUESTIONS & ANSWERS

- Q** *What time of year are snails active?*
- A** Snails and slugs can be active all year round. However they are difficult to find in Winter months
- Q** *What is the difference between a slug and a snail?*
- A** There is very little difference between the species except for the obvious one; snails have shells.
- Q** *How long do snails live?*
- A** Snails can live a remarkably long time. Some species will live up to fifteen years!





**Q What do snails eat?**

**A** Snails are herbivores, this means they only eat plants. In your visualarium feed snails salad leaves, slices of apple, cucumber, potato, dandelion leaves etc. Snails also need calcium to maintain their shell. This can come from natural chalk (not blackboard chalk), finely crushed egg shell or cuttlefish bones.

**Q Can I keep aquatic snails in my 'visualarium'?**

**A** Yes. Here's what to do:

1. Rinse out and dry your visualarium.
2. Fill your tank up to around 12cm depth with either rain water or pond water.
3. Put about 0.5cm of clean sand in the bottom of the tank
4. Add some pond weed.
5. Then collect your snails from a suitable pond - the smaller they are the more you can fit happily into your tank - as a guide 2-4 large pond snails (such as the Greater Pond Snail) and 10 or so smaller individuals or smaller species.

6. Remember to add the lid. They might be at home in the water but many species will happily crawl out and up the sides.

7. They will eat the pond weed and algae that forms on the side of the tank but you could also feed them lettuce leaves that are dangled in the water. They will also need calcium like a cuttlefish bone.

8. Do not keep them in direct sunlight. Clean the tank and add fresh water about once a week.

**Q Is keeping snails in captivity cruel?**

**A** No, not if you take care of them properly as described in this booklet. Keeping snails is fun and educational but remember they are dependent on you for their wellbeing. Release them back to the wild when you no longer want to study or observe them.



## USEFUL BOOKS AND WEBSITES

### Snail World

[www.snail-world.com](http://www.snail-world.com)

As you might expect a fab website all about the world of snails! Worth a look for any Malacologists.

### The Living World of Molluscs

[www.molluscs.at](http://www.molluscs.at)

A good read about all kinds of molluscs.

### A guide to the Snails of Britain & Europe

by Dr. V. Pflieger & Dr. June Chatfield.

This is more of a book for conchologists (those who collect snail shells) although there is plenty about the living creatures including plenty of slugs. A fine book on the subject if you can find a copy.

If you are serious about your slugs and snails then there is only one book.

### A Field Guide to the Land Snails of Britain and North-West Europe (Collins Field Guide)



by M. Kerney & R.A.D Cameron.

A great, although quite technical, book on the identification and appreciation of slugs and snails.

**Nick Baker's Bug Book** - It's not entirely a book about slugs and snails but I did write a long chapter on the garden species. A book for any youngster who likes the creepy crawlies.

**Bug Zoo** - This is another book I wrote to help those who want to keep creepy crawlies including a section on molluscs.





## MY SNAIL DIARY

### Fill in the blanks:

I have \_\_\_\_\_ snails in my Snail World.

Their names are .....

.....

I found them .....

.....

.....

They have..... coloured shells and look like .....

.....

.....

My snails like to .....

.....

.....

.....

