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**INSTRUCTIONS AND 9 PAGE
FACT FILLED ANT GUIDE**



Nick Baker's

ANT WORLD



Explore with Nick Baker!



**A fascinating insight into
a truly amazing world!**

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.**

**None of the accessories in this kit should
be allowed to come into direct contact
with foodstuffs.**

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



ABOUT THIS KIT

This kit is a hands-on guide for budding naturalists and contains the equipment you need to observe and study the fascinating life of ants.

The kit is designed to be fun and informative for kids of all ages. Although, young children will need the help and supervision of an adult. This kit can be used all year round. However, the best results are achieved in the warmer months between April and September. Ants are fairly easy to find locally. Finally, I hope you have fun with this kit and discover some fascinating insights into the wonderful world of ants.





INTRODUCTION

GIVE YOURSELF A PAT ON THE BACK...

You are holding in your hand what appears to be a box containing an assortment of odd plastic bits, some clear tubing and a bag of sand. What you have here is so much more than the sum of its parts. Ant World is a window into a secret world that is all around us and these little insects will never fail to blow your mind with what they get up to and their achievements.

I was bought one of these when I was about 8 or 9. My parents, finally fed up with ants escaping from my home made 'formicarium', decided that investing in a professionally designed device was going to save a lot of their stress, and stop me from turning the house upside down looking for any escaped ants.

CONTENTS:

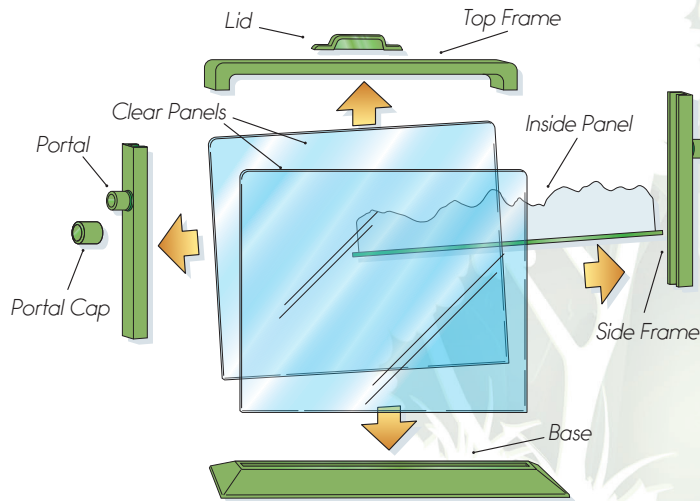
- Plastic Ant Housing
- Connectable Magnifying Bowl
- 2 Shades
- Tubing
- Scene Stickers
- Feeding Pipette
- Tunnelling Sand



QUICK SET-UP INSTRUCTIONS!

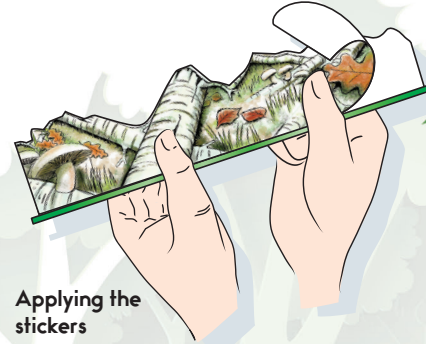
For those of you eager to get going straight away, just follow the instructions below.

The rest of this booklet gives more detailed instructions, handy tips, advice and interesting ant facts that will help you get the most from this kit.



1

Take the Ant World apart and apply the scene stickers to the inside panel. Put it back together again, except one of the side frames.



Applying the stickers

2

Fill the bottom part of your Ant World with sand through the side aperture in the panels (mixing in a little sieved soil will make your ants feel more at home). When finished, attach the side frame and make sure all parts fit snugly ensuring there are no gaps through which ants can escape.



Adding sand

- 
- 3 Remove the lid and using the pipette add drops of water to moisten the sand.
 - 4 Find about 30 - 40 worker ants and transfer them into your Ant World.
 - 5 Keep your Ant World in a warm (room temperature) shady place, never in direct sunlight. When not observing your ants, attach the Ant World Shades because your ants prefer to be kept in the dark.

- 6 Feed your ants once a week with a small (pin-head sized) amount of fruit; apples or bananas are best. Use the plastic tubing to attach the magnifying bowl to Ant World, then put the food in the magnifying bowl; hungry ants will soon find it. It's best not to put food directly into Ant World as it can go mouldy and is then difficult to clean.
- 7 Occasionally water your Ant World to keep the sand moist.
- 8 Have hours of fun and fascination watching your ants as they go about their daily tasks.

DETAILED SET-UP INSTRUCTIONS!

Best Time of Year to Use Ant World

Ant World can be used all year round but in this country all of our native ant species that live in the soil enter a quiet period. It's not strictly speaking hibernation, but the nest winds down and activity levels are reduced as they hunker down and sit out the worst of the cold season.

This colony shut-down occurs in the Autumn when the temperatures cool down and they don't wake up and get busy again until the Spring. So to get the best out of your Ant World it is best to set up between the first warm days of Spring through to around early September. However, if you keep them warm enough, not allowing the temperature to drop below 18°C, then they will stay active through the winter indoors.

In addition to the things supplied in the kit, you will need:

- 18°C, then they will stay active through the winter indoors.
- Newspaper
- Fine dry soil (I like to run it through a sieve)
- Dust pan and brush (for clearing up any mess you might make)
- A fine paint brush (for gently handling any escapees!)

1 Do some decorating

Your Ant World already comes partly assembled in the box, so before you begin gently take it to pieces. Apply the scene stickers to the inside panel, make sure they are stuck down nice and smoothly, with no rucks or wrinkles - you don't want your ants disappearing underneath the sticker as they will get stuck!

Now pop it all back together.



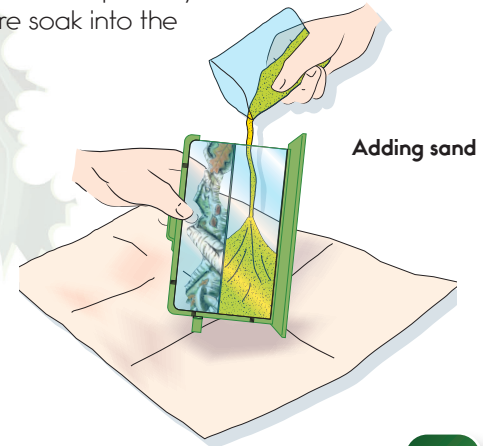
2 Filling your Ant World with sand

Your Ant World comes with sand which works well enough on its own but it is even better if you mix it with some garden soil. Soil is more interesting for the ants as it holds moisture and keeps the humidity in your Ant World at a level that is similar to that experienced in the wild. It also allows them to create better and stronger tunnels and chambers. I like to sieve it first to get rid of any lumps, stones and bits of large debris which may stop your Ant World fitting together properly.

Mix the sand provided with the soil, and then over a piece of newspaper stand the Ant World on its side and remove the side panel at the top. You can now pour the fine sand and soil mix into your Ant World using your funnel. Fill it up as much as you can and then, using the handle of a fine artists paint brush (pencils are too thick) gently tamp the mixture down, then top up with more sand and soil until you have filled the lower section of the Ant World.

The soil doesn't need to be packed too tightly as this may distort the panels and cause them to bulge and not fit together properly, but do try and fill up all the spaces. Now replace the side panel and stand the Ant World the right way up.

Now you want to add some moisture to the soil. This can be done by filling the pipette with water and pushing it through the service hatch at the top and then into the soil through one of the small holes in the inner panel (you will see the moisture soak into the substrate).

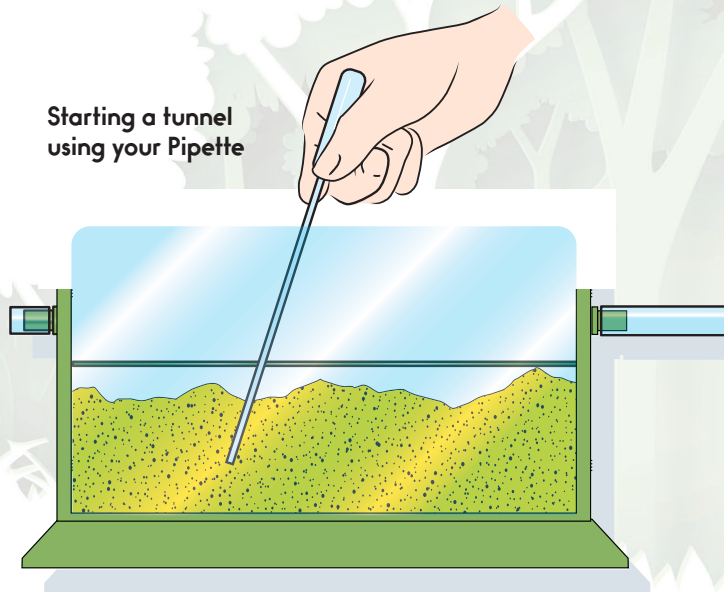


3

Starting them off

This step isn't essential but it makes settling in a little easier for your ants. Remove the plug from the service hatch at the top of your Ant World and push the thin end of the feeder pipette through one of the holes in the middle panel and make a starter tunnel for them.

Starting a tunnel
using your Pipette



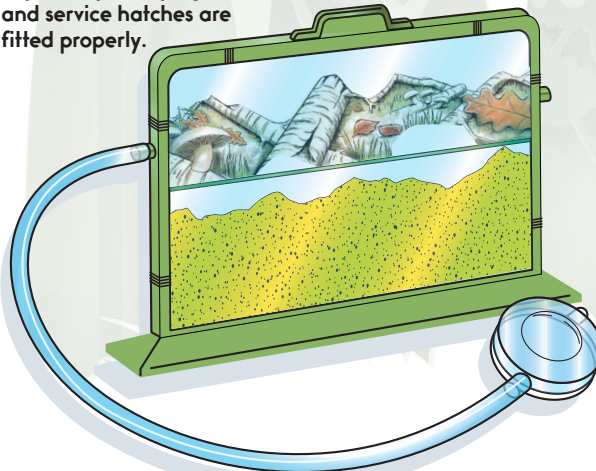


4

Last Minute Checks!

This is a very important step often overlooked in the excitement and dare I say it 'ant-icipation' of adding the ants! For your parents or guardians sake do make sure that all the pieces are fitted together properly, nothing should have to be forced as it will all snap together relatively easy and without any gaps for the ants to escape through. Check that all the caps and portal plugs and service hatches are fitted properly.

Please check that all the caps and portal plugs and service hatches are fitted properly.



Top Tip!

The little caps that you've removed from the portals are quite useful for just popping over the escaped ants until you are ready for them! Believe me, having more than one ant rushing about the table top transfers this frenetic energy whoever's trying to catch them.

5

Just add Ants!

For tips on collecting ants see page 14.

CARE AND MAINTENANCE

Settling in and maintenance

Your Ant World is provided with a couple of shades which hook over the pegs, this keeps the 'underground' environment nice and dark. In the wild the ants are soil dwellers and so these shades provide the most natural conditions. You simply lift them off when you want to see what they've been up to. If you leave the shades off the ants will do their best to block out the light themselves with soil and you won't be able to see them very easily.

The ants will take a few days to a week to get themselves in order, so be patient with them although you will start to see them moving soil around almost immediately. Once settled in the fun really starts.

Feeding

Your ants do not need to be fed too much. They only have small appetites but it is quite important to give them variety. They need sugar to give them that energy that they are so famous for and this can be provided in various forms. 0% honey solution is very similar to the honey dew they sip from aphids - dissolve 1/2 a teaspoon of honey in 25mls of warm water. This can be served up on a small piece of sponge or cotton wool.

Fruit is also a great source of sugars, moisture and vitamins - experiment and see what they like the best.

If your ants have 'brood' (that's the collective name for eggs and larvae) then they will need proteins as well, as this is what you need to build new ants! Protein can be supplied in the form of other insect bodies, such as fruit flies (check your compost heap). Mealworms and crickets can be sourced from many pet shops, but if you get quite a lot your ants won't be able to eat them all!

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Water

You must never let your ants go without water. While they can last for a couple of weeks without food, they will perish in a couple of days if they get no water. Keep offering them water in the magnifying bowl - this can be on pieces of sponge, cotton wool or tissue paper soaked in water* and every week or so (more often if it's very warm).

I also add water to the soil using the pipette through the service hatch, although you need to be a bit quicker than when you started off as the ants will be quite excitable. If you are not careful they will come rushing to the colony's defence thinking you are a predator attacking the nest! If you start to get condensation you are probably over watering and it is best to leave off for a while until it has disappeared.

As with any living animal, you have to treat your ants as if they are pets from the moment you collect them until the moment you let them go, they are your responsibility and not anybody else's. Make sure they always have food and water and that the temperature is not too hot or cold. Don't rely on other people to look after your insects for you.

Note: Ant World is re-useable and can be cleaned by rinsing under a tap and then cleaning with warm soapy water. Be careful not to scratch the surface of the clear plastic sides by rubbing too hard.

SPECIES OF ANT THAT CAN LIVE HAPPILY IN YOUR ANT WORLD

The Black Ant or Pavement Ant

Lasius niger seems the least fussy of our species and can be found in almost any habitat, but is particularly fond of our gardens. It gets on very well around our homes, even in city centres, and it is sometimes regarded as a bit of a pest when it comes into our houses.

It can be easily identified as its common name suggests - it is a very dark brown or black ant. This species is one of the easiest to keep as they are quite large (for an ant) with workers at around 3-5mm long (the queens are almost twice the size).

They are quite robust little ants and colonies with a healthy queen can become quite sizable averaging around 6,000, although super colonies containing over 15,000 have been recorded (imagine counting that lot!).



(*Lasius niger*)

Yellow Meadow Ant - *Lasius flavus*

These are a golden brown or burnt yellow colour and are usually much smaller than the previous species. Workers are variable but most range from 2-4mm in length and the queens are twice this size and a much darker brown. There is usually only one queen in a mature nest.

They mainly live in lawns and meadows where they can form hills and hummocks, which get bigger the older the nest. Some of these can be hundreds of years old and are an indication of ancient unimproved grasslands - the bigger the ant hill the older the nest is the general rule. This species is often overlooked as it occurs in much more subtle colonies in and around gardens and parks.



(*Lasius flavus*)



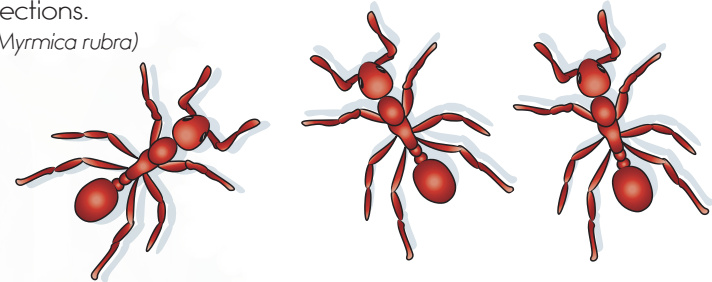
They can be confused with the 'red ants' but these are much more 'dopey' in behaviour and will not sting. They make their living farming aphids that live underground on the roots of grasses and feed mainly on their honeydew (a sugary substance excreted from the aphid).

They will also consume small seeds and insects. You can experiment with this in your Ant World and don't worry if you can't find any aphids as they take rather well to 10% honey solution in captivity.

Red Ants - *Myrmica rubra*

There are many similar species of these 'red' ants in the UK, the commonest is *Myrmica rubra* but to tell them apart is really the job of an expert with a microscope or good magnifying lens. But they are usually a deep dark red in colour and if you look close enough the 'waist' of the ant is split into two sections.

(*Myrmica rubra*)



Red ants belong to the other group of ants which sting rather than spray formic acid. Because of this they are not so easy to collect and handle by the beginner but once housed in the Ant World they make just as fascinating subjects as the more mellow *Lasius* ants.

ACQUIRING YOUR ANTS

You've got options here, but I suggest starting with one of the above species. They are all small enough and they are all species that have nests based in the soil and so they will live quite happily in your Ant World.

The easiest and most user friendly is the Black Ant (*Lasius niger*). They don't have a painful sting like the various Red Ant species and seem quite robust. You can simply go out looking under stones that are lying on the surface and eventually you will uncover a colony.

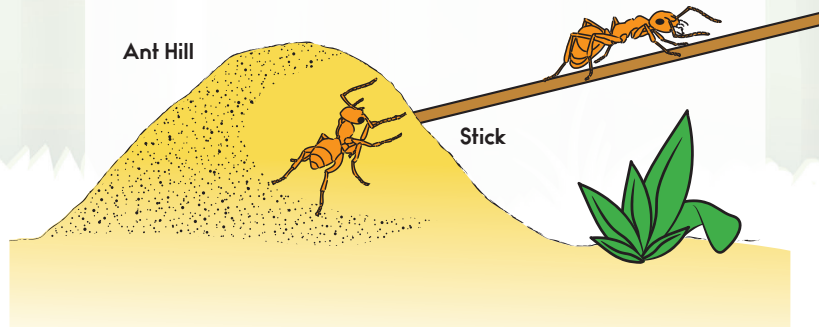
They like the warmth of stones, which heat up in the sun and then slowly radiate that heat out when the sun isn't shining. If you find a nice tight clump of ants, you can scoop them up with a trowel or metal spoon into a container such as the magnifying bowl supplied with your Ant World. A jam jar with a tight fitting lid can also be used as a collecting vessel.

Warning: You should only add ants from one colony to your ant world. Ants from different colonies will often fight to the death!

Meadow Ants can be found in the same way, but can also be collected direct from their grassy 'ant hills'. You just need to poke the surface and these much slower little insects will come and see what all the fuss is about, then you just need to scoop them up. If you find a stick they will probably climb on it and then it's a simple matter of tapping them from the stick into your Ant World.

THE NUMBER AND TYPES OF ANT TO USE!

For a novice ant keeper, the number of ants required to put on a good display is about 30-40 worker ants. Worker ants are easily identified as they are the most common members of a nest and it is fairly safe to say that an ant without wings or an ant that is no larger than the rest of the ants in a colony is a worker ant.



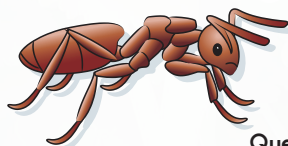
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Worker Ant



Male or young
Queen Ant



Queen
Ant

A small colony of ants will put on a fascinating display in Ant World. However workers on their own cannot breed, so the colony will not be able to increase in size.

It's best to gain experience with a worker colony before moving on to a full colony which has a queen. To find out more about collecting or acquiring a queen ant, visit some of the websites we recommend at the back of this booklet.

Please take care when collecting your ants.

The numbers required for Ant World should not harm a thriving colony. Do not destroy a whole nest for the sake of the few ants that are required for Ant World.

PLANET OF THE ANTS!

Ants are very successful creatures which have dominated the world for 130 million years!

They are incredibly numerous and surprisingly varied in size, shape and life-style, and your Ant World is just the beginning of what will be an exhilarating journey of discovery.

There are over 11,000 types of ant in the world and more are being discovered all the time. Some myrmecologists estimate there to be over 20,000 different types! A myrmecologist is someone who studies ants, get used to that word because you are now one of them!

Here in Britain we have around 50 species of ant. This is not many compared to some tropical countries, as our cool climate doesn't suit most of these sun and warmth loving insects. However, the ones we've got are fascinating - get to know even the most common species and you will be blown away by their complex lives!

Ants belong to the order of insects that include wasps and bees. To put it simply you can think of ants as wingless wasps! The big deal with ants and this order of insects is that they are social. They hangout in colonies started by one female (the queen) and the rest are her daughters (the workers) who not able to breed.

They carry out the tasks that are required to keep the colony functioning:

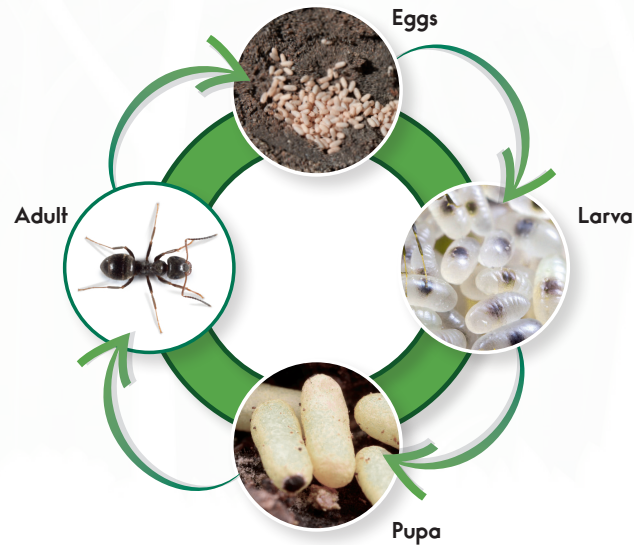
- Housework
- Building and repair
- Feeding the queen and larvae
- Hunting for food
- Defending the nest





THE ANT LIFE-CYCLE!

All ants have the basic four stage life-cycle. The eggs are laid by the queen, these hatch into little legless larvae, which moult their skins three times before spinning a neat yellow-white silken cocoon. Inside the cocoon is the pupa, and just like butterflies and moths the larva rearranges itself into an adult inside this 'skin'. Once this magic is complete these hatch into worker ants!



The process repeats itself many thousands of times until you have a colony of sisters!

The workers do produce eggs but these are usually 'duds' and are used as food for the larvae. Exceptions to the rules are when the colony produces the next generation of future queens. Later in the year, some of the grubs get more food than the others - these are destined to become the winged 'flying ants', or future queens and males.

These then leave the nest together when the conditions are right. This is usually during hot, still and humid weather in late summer - the sort of day your shirt sticks to your back!

These swarms or nuptial flights of ants can be quite spectacular, if short lived. The ants provide food for many birds and bats, but within an hour or so the females mate and scurry off to start the cycle again and find their own nest.

THINGS TO SEE IN ANT WORLD

F-ant-astically strong:

Having put your ants into their new home, you can watch them work! Every ant is programmed to do a job and the first thing they start to do is organise themselves and dig a nest. Watch them lift and carry particles of sand and soil in their jaws. Some species are for their size some of the strongest animals on earth, the equivalent of you or me picking up a car and running with it!

For animals that are so small they can have massive effects on the quality of the soil, playing a role just as important as earthworms in the tilling of the soil. A study of an American ant suggested that in an acre of pasture they could bring 7.4 metric tonnes of soil to the surface a year!

Joined up Drinking:

If you see ants that appear to be kissing they are almost certainly sharing liquid food. This behaviour is called trophallaxis and is used to distribute food around the colony and to let other ants know where the good stuff is.

Team Players:

Part of the success of ants is that they work together and when you have so many, each ant nest behaves a little like a single creature. Put a tiny dab of jam down and watch what happens. The first ant on the scene will fill its crop or 'communal stomach' and carry it back to the nest, leaving an invisible scent trail as it goes.

Pretty soon it will meet other ants from the colony and after a lot of excited waving and touching of antennae, the first ant will share the meal. This will happen to several ants, all of which will rush off following the scent trail until they find the food. They will fill themselves up and repeat the process, until more and more ants are visiting the jam.

When it starts to run out, fewer ants return with food and the scent trail gets weaker as it wears out. This is a process called recruitment and it's the way ants can quickly make the most of patchy abundant food.

All change:

Sometimes just by adding a new magnifying bowl or changing the conditions you will see the ants start to rearrange the nest structure. They do this in the wild and are constantly shifting brood from one part of the nest to another, often in response to temperature or humidity but sometimes food.



Give your pet ants their own pets!

Black Ants are rather fond of aphids – well, not the insects themselves. They tend these flocks of plant juice sucking insects, looking after them, protecting them from predators and parasites – even moving them from plant to plant if they run out of food. They do all this in a kind of insect ‘protection racket’ and are paid handsomely in sweet sugary secretions produced from the aphids bottoms called ‘honey dew’.

HELPFUL HINTS!

To heat or not to heat?

Ants collected in this country do not really need any extra heat and will usually do well at room temperatures.

Having said this in the wild they have the choice and will create a multi-layered nest in the soil and will move to the layer that suits them. This is why they can be found under sun-warmed stones and pavement slabs in the spring and will go deeper if the weather is too dry and hot.

You can experiment with your ants by providing gentle heat to one end of the Ant World or even to one of the magnifying cells. Watch where the ants prefer to be. Heat can be provided by a ‘spider mat’ from exotic pet stores or even a desk lamp. Remember ants do best at above 20°C. If the temperature drops below 10°C they will stop being active.

Keep the Ant World out of direct sunshine:

Window sills are a bad place for any living thing as the temperatures can fluctuate massively. The magnifying greenhouse effect of the window glass and the clear plastic sides of the Ant World can make the contents heat up so much you will cook your ants.

Varied diet

Try different food types, dead insects, aphids on leaves and fruit and see which your ants prefer. Don't overfeed or allow mould to develop on food as this can be a danger to the health of your ants.

Don't bang on the walls

Try and resist the temptation to tap the sides of your Ant World. Yes, sure, it makes them run around a bit but it not only wastes their energy but it can also cause their galleries to collapse in on themselves.

Keeping things moist

In addition to providing drinking water for your ants, on damp cotton wool, it is important to water your Ant World regularly (the amount you have to do this depends on how warm your room is) but keeping an amount of moisture in the soil helps hold it together.

Most ants prefer their soil humidity to be around 30%, which is hard for us to get right! Fortunately ants are very good at somehow mysteriously controlling this. Again, to give them choices, I like to make the soil at one end of my Ant World moister than the other, water can be introduced using the pipette provided pushed through the service hatch at the top of the Ant World.

Going to sleep

If the temperatures drop in the Autumn your ants may naturally go into hibernation. This is totally normal, just remove any uneaten food, and place your Ant World in the shed or garage until the following spring.

Don't mix ants from different sources

Ants from different nests will fight often to the death - not nice or respectful to these living things.

AND FINALLY..

I have been truly fascinated (if not obsessed) by ants most of my life and the more I discover about them, the more fascinating they become. This booklet barely scratches the surface of their amazing world so I really hope that this kit gives you an insight and a desire to discover more about them.

The rest of this booklet contains recommended books and useful web links, to help you find out more about these fascinating little creatures.

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USEFUL BOOKS AND WEBSITES

Antark - www.antark.net - a great ant website for anything ant.

Alex Wild's - <http://myrmecos.net/>

This is one of my favourite websites. Although there is loads of information about all manner of interesting insects, the main focus is ants and Alex's photographs of these insects from all around the world are second to none.

A great place to visit while you are waiting for your Ant colony to get going.

Queen Ants:

There are number of specialist ant suppliers that can be found online. Google 'buy queen ants UK' for a list of suppliers. Only buy British species for Ant World (Lasius niger, Lasius flavus or Myrmica rufus). Foreign species you may see advertised such as Harvester ants or Weaver ants are not suited to Ant World as they need specialist habitats.



Every nest of ants has its own particular scent. Ants recognise each other by this smell. In Ant World you can often see ants 'greeting' one another by touching antennae. But, if they are not from the same nest they will fight.

ANT SPECIFIC READING...

Ants by Ray North - *Whittet books.*

This is a great little book from their World Wildlife Series. A very readable book that explores the world of ants.

Ants - *Naturalists handbook 24 by Gary Skinner and Geoffrey Allen.*

This is a much more technical book, more for the student who wants to learn more about the lives and identification of British ants. It is, however, excellent and very readable. spring.

Ants of The British Isles - *G. J. Skinner.*

Shire Natural History. A great but simple little book on British ants, concentrating on the commoner and more noticeable species of the garden and countryside.

Journey to the Ants - *Bert Holldobler and Edward O. Wilson.*

Every 'ant man or woman' should have a copy of this on their shelf. Quite a technical book aimed at the student and older reader. Written by 'Mr. Myrmecology' himself, E.O. Wilson.

Ant - *Charlotte Sleigh.*

A 'kooky' little book full of Ant culture and symbolism. I like it!

MORE GENERAL INSECT GUIDES!

Collins Guide to the Insects of Britain and Western Europe - *Michael Chinery.*

The standard insect field guide for the region.

Garden Creepy-Crawlies - *Michael Chinery.*
Another great book from the Whittet stable.

Guide to Garden Wildlife - *Richard Lewington.*

Anyone who has a garden and has any kind of interest in other creatures that share it with us needs to have a copy of this excellent book.

Nick Baker's Bug Book - *Nick Baker.*

I wrote this to be good, so hopefully you'll agree with me.

A practical guide to the invertebrates that share our lives.

Bug Zoo - *Nick Baker.*

A book that encourages exploration, respect for life and responsibility by engaging the younger audiences in some 'jam jar science'.

ABOUT THE AUTHOR

Nick Baker is a professional naturalist whose career has taken him from being a field ecologist working on birds, butterflies and badgers to top TV broadcaster.

Best known for his wildlife programs on BBC, Animal Planet, Discovery and National Geographic, he has had many adventures with many species from gorillas to polar bears, but his real love is that of the wildlife in his own garden, the little things that make the world go around - it was the insects and other invertebrates that started him off as a kid and to this day still hold a very special fascination.



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Nick's TV programmes include:

The Really Wild Show
Nick Baker's Weird Creatures
Nick Baker's Beautiful Freaks

Nick has written over 12 nature study books; titles include:

My First Cockroach
Nick Baker's Bug Book
Nick Baker's British Wildlife
The New Amateur Naturalist
Habitat Explorer Guides
Nick Baker's Bug Zoo



Dedicated to conservation, Nick is involved with many wildlife charities and trusts:

Vice President - Butterfly Conversation Trust
Vice President - (youth) RSPB
Vice President - The Wildlife Trusts
President - Bug Life

To find out more about Nick and his many achievements visit his website: www.nickbaker.tv