BRUMA ANTS

2026 EDITION



THE COMPLETE BEGINNER'S HANDBOOK

The Ant Keeper's Starter Guide

From your first queen to a thriving colony of thousands: everything I wish I'd known when I started keeping ants.

11 chapters
From nuptial flights to thousands of ants

45 species
Rated from 1 to 7 in the species directory

By Bruma
Keeping ants since 2020

BRUMA ANTS

The Ant Keeper's Starter Guide

From your first queen to a thriving colony of thousands

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The care advice in this book comes from my own colonies and is checked against scientific sources such as AntWiki, AntWeb and published research. Species data matches the **species pages** of the BRUMA Ants website.

Ants are living animals. Always check the laws of your country before you catch, buy or keep a species, choose a species native to your region for your first colony, and never release ants into the wild.

The photos come from the BRUMA Ants website. The species photos taken by members of the iNaturalist community are credited by name, with their licenses, at the end of the book.

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Made in Italy **Keeping ants since 2020** **brumaants.com**

A LETTER BEFORE WE START

Hi, I’m Bruma!



In the summer of 2020 I caught a *Lasius niger* queen in a park in northern Italy and put her in a test tube. That tiny queen started everything: a YouTube channel, a website in seven languages and, years later, this book.

I made all the classic beginner mistakes, like not giving my first colony enough protein. Every one of those mistakes taught me something, and every lesson is in these pages, so you don’t have to learn them the hard way.

This book takes you from knowing nothing about ants to looking after a colony of thousands. First you’ll learn how a colony works. Then you’ll catch or buy your first queen, raise her first workers and give the colony the food, home and climate it needs to grow, year after year. Along the way you’ll find step-by-step guides, checklists and the species I’d recommend to a friend.

Ant keeping is a slow hobby. A queen can take two to four months to raise her first handful of workers, and a big colony takes a few years. But watching a single queen grow into a busy underground city is one of the most rewarding things I know. Take your time, read a chapter, then go and watch your ants.

Happy ant keeping!

Bruma

Ant keeper from Italy and the person behind **BRUMA Ants**

Since 2020

My first queen was a *Lasius niger* from a park

45 species

Rated from 1 to 7 in the directory

7 languages

Free guides and videos on brumaants.com

BEFORE YOU START

How to use this book

Read it in order the first time. Each chapter builds on the one before and follows the life of a real colony, from a single queen to thousands of workers. After that, keep it next to your ants as a reference: the contents, the glossary in **Appendix B** and the checklists in **Appendix C** will take you straight to the right page.

Your journey through this book ROADMAP



1. **Learn** — How ants and colonies work — CH. 1–2
2. **Find a queen** — Nuptial flights and buying — CH. 3
3. **Found** — The test tube stage — CH. 4
4. **Feed and house** — Food, outworlds and nests — CH. 5–6
5. **Grow** — Climate, scaling up, fixes — CH. 7–9
6. **Choose** — Species and reference — CH. 10–11

LOOK OUT FOR THESE

The boxes in this book

PRO TIP
A trick from my own colonies that saves you time, money or ants.

WATCH OUT
A common mistake, or something that can harm your colony.

GOOD TO KNOW
Background facts that explain what your ants are doing, and why.

DID YOU KNOW?
Amazing ant facts to share with your friends.

Links. Green underlined text is a link to a free guide, video or species page on brumaants.com, where many topics go deeper. Chapter numbers like **Chapter 4** jump straight to that chapter.

Species names. Ants are called by their scientific name, written in italics, like *Lasius niger*. Common names change from country to country, but scientific names are the same everywhere in the world.

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From giant carpenter ants to leafcutters and weaver ants: every species of the BRUMA Ants website is waiting for you in **Appendix A**.



1 PART ONE

The basics

Before you catch your first queen: what ant keeping really is, what it costs and how an ant colony works from the inside.

1 **Welcome to ant keeping** 8

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1

CHAPTER ONE

THE BASICS

Welcome to ant keeping

One queen, one test tube and a little cotton are enough to start a colony that can live for years. Here is what the hobby really involves, what it costs and what to expect.

Ant keeping is quiet, cheap and surprisingly rewarding, but it moves at the speed of an ant colony: slowly at first, then faster than you'd think.

In this chapter I'll explain what the hobby is, why ants make such good pets and what you really need to begin (less than you'd expect). You'll see what each stage costs in money and time, what a typical first year looks like and what being a responsible keeper means. I'll finish with the five classic beginner mistakes, so you can sidestep them from day one.

IN THIS CHAPTER

- What ant keeping is and where it began
- What you need to start, and what can wait
- What your first year really looks like
- Why ants make great, low-cost pets
- What each stage costs in time and money
- Your duties and the five classic mistakes

THE HOBBY

What ant keeping is

Ant keeping is the hobby of keeping ants as pets and watching them live, work and grow. A colony starts with a single queen and, with a bit of patience, grows into a family of thousands.

The person doing it is called an ant keeper. A colony begins with one **queen**, the large female who lays the eggs and is the mother of all the other ants. Her daughters are the **workers**: smaller, wingless females who build, find food, clean and look after the **brood**, the eggs and the young. Together they make up the **colony**. Your job is to give them a safe home, food and water, and then to watch what they do with it.

That home is called a **formicarium** (plural formicaria), or simply an ant farm. Most have two parts. The **nest** is the dark, humid area where the queen lives and the brood is raised. The **outworld** is the open area connected to it, where the workers come out to find food and water and to leave their waste. It's also where you'll do most of your feeding and cleaning, without disturbing the queen.



An outworld in action: *Tetramorium caespitum* workers exploring sand and a white pebble. This is where you'll see ants searching for food and forming trails.

The hobby has a longer history than the recent boom suggests. In the mid-1950s, an entrepreneur named Milton Levine, who as a child loved watching ants dig tunnels in his backyard, created Uncle Milton's Ant Farm. It was a **sandwich nest**: two clear panels set close together, with the gap between them filled with dirt, so you could watch the ants

tunnel. Levine sold more than 12 million of them over the next two decades, and it became one of the best-selling toys of all time.



A vintage comic-book ad for an ant farm: $2.98 bought the farm and a stock of live ants.

For a long time the ant farm stayed a children's pastime. In the last ten years or so, the hobby has grown very fast. Today hundreds of companies make nests in glass, acrylic, Ytong (a pale aerated concrete) and 3D-printed designs, plus food, accessories and even the ants themselves. **Chapter 6** covers the nest types, and my **guide to online ant farm shops** shows what's on offer.

GOOD REASONS

Why ants make great pets

Ants don't do cuddles, but they have a lot going for them. Start with the show. Many scientists see a colony as one big animal made of thousands of individuals that act together, each with a job to do. You can watch them dig, search for food, carry the brood around and look after their queen.

Weekly
MAINTENANCE
Feed, look and clean when needed

< $1
TO START
A basic test tube and a queen you catch

13,000+
SPECIES
Described ant species worldwide

Many years
QUEEN LIFESPAN
Some species live for decades

Care is simple. Once a young colony is up and running, it needs attention about **once a week**: sugar for energy, protein for the queen and the brood, fresh water, a quick look and some cleaning when needed. A big colony is fed two or three times a week, but each visit takes only minutes (**Chapter 5**). There are no walks and no litter box, a clean setup has no smell, and a young colony in a test tube fits on a shelf or in a cupboard.

Ants are also cheap and easy to find. A basic test tube costs about 40 to 50 cents, so with a queen you catch yourself you can start for **less than $1**. Ants live in backyards, parks and

sometimes inside your house. Queens are only out and about for a short season each year, so if you'd rather not wait, specialized shops sell them online. **Chapter 3** covers both ways.

?! **DID YOU KNOW?**

Ants have been around since the age of the dinosaurs. A study led by Harvard University researchers found that the first ants appeared about 140 to 168 million years ago.

Ants also suit families. Children can learn how a colony is organized and see how ants grow from egg to larva (a soft grub) to pupa (a resting stage) to adult. It teaches responsibility too, though a younger child will need an adult for the setup. Beginner species such as *Lasius niger* are no danger to people, but ants do escape, and **Chapter 6** covers how to stop them.

FAIR WARNING

The first weeks are slow, and there's nothing to cuddle. If you enjoy watching and waiting, you'll be fine. If you want instant action, this hobby will test your patience.

KEEP IT SIMPLE

What you really need to start

The first stage of ant keeping needs very little. You need a **newly mated queen**, one who has just mated and is ready to start a colony (ideally of a **local species**, one that lives in the wild where you do). You also need a home that copies what she would dig in nature: a tiny, closed, dark and humid chamber in the soil, called the **claustral chamber**. The cheapest and best copy of it is the **test tube setup**.

START WITH

- One newly mated queen of a local species
- A test tube, clean water and cotton
- Dark paper or tinfoil to cover the tube
- A quiet spot without vibrations or light changes
- Optional: a tiny drop of honey for energy

WAIT FOR

- A big nest or an all-in-one kit
- A large outworld with decorations
- Heat cables and other gadgets
- Exotic species

The setup takes about 15 minutes: half a tube of clean water, a cotton ball pushed down to the water, the queen, a second dry cotton plug and a dark cover of paper or tinfoil. She drinks from the damp cotton, and air still passes through both plugs. Lay the tube flat in a quiet spot at normal room temperature, never in direct sun. **Chapter 4** walks through every step, and my **test tube setup tutorial** has photos.

The one thing you can't make is the queen. You can catch her yourself after a **nuptial flight**, the day when winged queens and males leave their nests to mate (the mated queens drop their wings and wander on the ground; common European species such as *Lasius niger* usually fly in July and August), or you can buy her from a specialized shop. Whichever you choose, read **Chapter 10** first: her species decides how warm and humid her home should be and what she eats.

A note for readers outside Europe: the seasons, months and species in this book come from Europe, where I live. Elsewhere the flight months and species change (in the southern hemisphere the seasons shift by about six months), but the methods are the same: pick a species native to your region.

Why a big kit isn't the best first buy

It's tempting to start with a beautiful nest. But a founding queen wants a small space: the smaller the home, the safer she feels. Empty room stresses her, and waste piled in unused corners can turn into mold.



The ANTCUBE Starter Set Combi, seen from the side: the thin sandwich nest is the sand-filled strip on the right, next to the glass outworld.



The Anthouse Sand Ant Farm 3D L, filled with sand: a 20 x 25 cm sandwich nest, 2 cm deep, next to a sand outworld.

I called the ANTCUBE's quality excellent in my **ANTCUBE review**, with the high price as the only downside, and I keep a *Lasius niger* colony in it. Kits like these shine once enough workers fill them. Until then, a tube is safer and costs cents instead of a kit's price.

What about the ant farms in toy shops? Classic sand or soil farms are sandwich nests, like the one in the old ad, and they suit an established colony. Gel farms, the clear and often blue kind, are usually sold with worker ants but no queen, so no new workers are ever born: they work as short-term displays, not as a colony. For a first queen, nothing beats a test tube.

THE PRACTICAL SIDE

Time and money

Ant keeping is easy on your wallet and your calendar, but both change as the colony grows. The table shows each stage with a rough cost level and the time it asks for. Prices vary by country and shop, so check a few before you buy. **Appendix C** has a shopping list for the founding stage.

Stage	What you need	Cost level	Your time
Finding a queen	A nuptial flight to catch her, or a specialized shop	Free if you catch her; it varies if you buy her	Only in flight season, a short window each year
Founding	Test tube setup, dark cover, quiet spot, an optional drop of honey	Very low: a basic tube costs about 40–50 cents	Almost none: one quick look a week at most
First workers	A handful to a few dozen ants: sugar, tiny protein portions, water; a small outworld, then a small nest once the tube is crowded	Low	About once a week
Growing colony	Hundreds to thousands: a proper nest and outworld, feeders (small dishes or bottles for water and sugar water), insects as food	Low to high: DIY is cheap, premium kits are not	Two or three short feedings a week, plus an occasional bigger clean

What each stage of a colony asks of you

The early stages need very little money, and you can save more by building things at home. I used a plastic ice cream container as the outworld for a test tube colony. Young keepers do the same: in **an episode of The Ant Pod**, the podcast hosted by Ant Holleufer on my website, three keepers aged 13 and 14 talk about paying with pocket money and gifts and saving with DIY setups.

Once you have workers, a typical week looks like this:

1. Check the water and refill the sugar: honey, sugar water or ant jelly (a ready-made sugary gel sold for ants). A test tube is never topped up: when its water runs low, move the colony to a fresh one (**Chapter 4**).
2. Offer a small portion of protein, such as fruit flies or a piece of cricket (killed, and cut up if it's big). **Chapter 5** covers food in detail.
3. Take out leftover protein from the last feeding before it molds, usually within a day or two. A quick mid-week check is enough.
4. Look at the ants: are they active, drinking and tending the brood?
5. Remove dead ants and waste if needed, and make sure nothing can escape: the lid is on and any barrier, such as escape prevention oil (a slippery band ants can't climb), still works.

PRO TIP

Not ready to buy a nest? When your colony outgrows its tube, you can build the next home yourself. My **Ytong nest tutorial** shows how to make one from a single block of Ytong.

BE PATIENT

What to expect in your first year

The most important thing to know is that ant keeping is a slow hobby. Here is a typical first year with a common European species, the black garden ant (*Lasius niger*). Its queens are **fully claustral**: they raise their first workers on the reserves stored in their body, so they don't need to eat during that time. A few species are **semi-claustral**: the queen needs some food while she founds, so check your species (Chapters 2 and 4).

SUMMER, DAY 1

The queen moves in

After the nuptial flight (usually July or August for this species), your queen goes into her tube, wrapped in dark paper, in a quiet spot. Now you wait.

DAYS TO 2 MONTHS

The first eggs

The first eggs can show up within a few days or take up to a couple of months, depending on warmth and on how safe she feels. Resist the urge to look.

6–10 WEEKS AFTER THE FIRST EGGS

The first workers

The eggs become larvae, then pupae, then the first small workers, called **nanitics**. Warmth speeds this up and cool conditions slow it down, so they may arrive in autumn or only after the winter rest. Expect just a handful.

WITH THE FIRST WORKERS

The first meals

As soon as workers appear, offer tiny portions of sugar and protein. They start collecting food, and the queen can focus on laying.

OCTOBER TO MARCH

The winter rest

Temperate species need a cold rest, called **hibernation**. For *Lasius niger* it is about 8–12 °C; other species differ, so check yours in **Chapter 7**. Cool down gradually over a week or two. A queen without workers rests in her tube too.

SPRING

Waking up

Warm the colony up gradually, again over a week or two. The queen starts laying again and growth picks up.

A YEAR ON

A small colony

Expect a handful to a few dozen workers. When the tube gets crowded, add a small outworld (**Chapter 4**), then think about a first small nest (**Chapter 6**).

Treat these numbers as an example, not a promise: growth depends on the species, the temperature, the food and the queen. As a rough guide, expect a handful of workers in the

first season, dozens to a few hundred in the second, and hundreds to thousands after that. The pattern is a slow start and then a faster climb, because every new worker takes some of the load off the queen. **Chapter 8** shows how to grow a colony step by step, and my ***Lasius niger* care guide** has more on this species.



A busy colony in a small acrylic nest with a built-in outworld: the kind of home you move into once the test tube is crowded.

GOOD TO KNOW

Different species follow different calendars. *Messor barbarus*, for example, flies in autumn and prefers a milder winter of 12–16 °C, and many tropical species don't hibernate at all. Always check your species before you plan the year.

RESPONSIBILITY

Is it right for you?

Ant keeping is easy to start and very rewarding, but it's worth being honest about what you're taking on. You're looking after a living colony that depends on its queen, and a queen can live for many years, some species for decades (**Chapter 2** has the record).

Ant keeping is probably a good fit for you if you:

- enjoy watching and waiting more than instant results
- can spare a few minutes every week, a little more as your colony grows
- are happy to start small and grow step by step

- will research your species before you buy
- are ready to look after a queen for years

Start with a local species, as I said earlier. Watching the wild ants in your garden teaches you when they leave their nests in spring and what they like to eat, which makes recreating their habitat much easier. Exotic species are a step for later. *Lasius niger* (found across much of Europe) and *Messor barbarus* (around the western Mediterranean) are two of the easiest, if they live near you. **Chapter 10** helps you choose, and my **species finder** narrows it down.

WATCH OUT

Never release ants into the wild, whatever the species. An ant that doesn't belong in your region can become an invasive pest. If you can no longer keep a colony, pass it on to another keeper.

Finally, check the law. The European Union keeps a list of invasive alien species (non-native species that harm local nature) that can't be kept, and other countries and regions may have rules of their own. Before you order a queen, especially an exotic one, make sure the species is allowed where you live.

YOU'RE NOT ALONE

The **BRUMA Ants Discord** is a place where keepers post photos of newly caught queens to get an identification. I share videos on my **YouTube channel**.

A QUICK PREVIEW

Five classic beginner mistakes

Everyone makes mistakes when starting something new, and I made my share of these myself. Five mistakes show up again and again among beginners. Here is a quick preview, with the chapter where each one is solved. My post on the **five most common beginner mistakes** goes through them too.

Mistake	What goes wrong	Solved in
Not researching your species	Every species has its own needs for temperature, humidity, food and winter rest. Miss just one and you can lose the colony.	**Chapter 10**
Checking the queen too often	Each time you open the tube, she may feel her chamber is no longer safe. The stress can mean fewer eggs.	**Chapter 4**
Expecting fast growth	The first workers take weeks, and a young colony grows slowly before it speeds up.	**Chapter 8**

Mistake	What goes wrong	Solved in
Moving to a nest too soon	A founding queen hates large spaces. An oversized nest stresses the ants, and waste piles up and turns to mold.	**Chapter 6**
Starting with an exotic species	Its needs are harder to learn and to meet. Start with a local species and keep the exotic ones for later.	Chapters 3 and 10

Every one of these is easy to avoid once you know about it, and **Chapter 9** helps if something has already gone wrong. Now it's time to meet the animals themselves. In **Chapter 2** we'll look at how a colony works: what the queen, the workers and the brood do, and how thousands of tiny ants run as one team.

CHAPTER SUMMARY

Remember this

- Ant keeping starts with one queen and a test tube. Catch the queen yourself and you can begin for under $1; a young colony needs one short visit a week.
- Skip the big nest at first. A founding queen feels safest in a small, dark, quiet test tube, and she stays there until the colony outgrows it.
- Ant keeping is slow. The first workers usually appear about 6–10 weeks after the first eggs, and a colony of hundreds usually takes a couple of years to build.
- Queens can live for many years, so start with a local species, never release ants into the wild and check your local laws before you buy.
- Most beginner mistakes come down to impatience: too little research, too many checks, expecting fast growth, moving too soon or starting with an exotic species.



2

CHAPTER TWO

THE BASICS

How a colony works

Who lives in a colony, what does each ant do, and how does a new colony begin? Answer those three questions and almost everything you do as a keeper starts to make sense.

Before you catch a queen or set up a test tube, it helps to know who you're about to look after. A colony has a queen, workers and, one day, winged young queens and males that leave the nest to mate.

In this chapter we'll meet the whole cast, take a quick tour of an ant's body and follow one ant from egg to adult. Then we'll see how a new colony is born, why some species need one queen and others many, and how ants talk to each other. Everything here comes back in the later chapters.

IN THIS CHAPTER

- Who lives in a colony and what each ant does
- The life cycle from egg to adult worker
- One queen or many: the rule to remember
- The parts of an ant's body, in five minutes
- How new colonies start, and why it matters
- How ants talk, and how colonies grow up

THE BIG PICTURE

One colony, many ants

An ant colony isn't a crowd of individuals. It's closer to a single animal whose body happens to be made of thousands of small ants.

Scientists call this a **superorganism**, the "one big animal" idea from **Chapter 1**. Think about your own body: cells have different jobs, no single cell understands the whole, and together they keep you alive. In a colony, the ants are the cells. Some stay deep in the nest and look after the eggs, others find food and water, others dig, clean or guard the entrance. This split of jobs is called **division of labor**, and it is the secret of the ants' success.

The queen is the mother of the colony, but she isn't a commander. She lays the eggs, but nobody gives the orders. Each worker simply reacts to what she senses: a hungry larva, a dry corner of the nest, a drop of food, the smell of danger. Add up hundreds of those small reactions and you get a colony that looks perfectly organized.

Jobs also change with age. In many species the youngest workers stay inside and nurse the young, while the older ones take the risky trips outside to forage (search for food). When the colony's needs change, the workers shift their effort without anyone telling them to.

This matters for you as a keeper. You can't give a colony orders either, but you can give it the right conditions (a safe home, steady warmth, food and water) and let the workers sort out the rest.

MEET THE CASTES

Who lives in a colony

Ants that look different and do different jobs belong to different **castes**. Most colonies have three: the queen, the workers (some species also have big-headed workers called majors) and the males. Here they are at roughly their relative sizes:

Who lives in a colony

THE CASTES



THE MOTHER
Queen
Lays every egg and can live for many years

THE WORKFORCE
Worker
Female and sterile: forages, nurses, builds

THE HEAVY LIFTER
Major
Big head, strong jaws. Only in some species

THE SUITOR
Male
Winged, lives only to mate, then dies

Look at the sizes: the queen is the biggest (drawn here after mating, without wings), the male is the one with wings, and the major is the worker with the oversized head you'll meet in a moment.

The queen

In most species the queen is the only ant that lays eggs. She is usually the biggest ant in the nest, with a thick middle section and a large, round rear end (the **gaster**), and she lives far longer than any worker. She mates early in life, during a mating flight, and stores the sperm in her body to fertilize eggs for the rest of her life. Workers feed and groom her and carry her eggs to safety.



A *Pheidole pallidula* colony in a test tube: the queen is the big dark ant on the left, surrounded by smaller workers and her pale young.

The workers

Workers are all female. In most species they can't mate, but they do almost everything else: nursing the young, feeding the queen, digging, cleaning, foraging and defending the nest. In many species all the workers are about the same size. In **polymorphic** species (the word means many shapes) they come in very different sizes.

The small ones are **minors**. The big ones are **majors**, sometimes nicknamed soldiers, and the giveaway is the head: it's often huge, packed with the muscles that move the **mandibles**, the ant's jaws. In *Messor barbarus* the majors crack open seeds: minors are about 3–8 mm long, and the biggest majors reach 14 mm. In *Pheidole pallidula* they break food into pieces and help defend the nest, and there are just two clear sizes. *Lasius niger* and *Tetramorium caespitum* have no majors: their workers look alike.

Males and winged ants

Males are usually smaller than the queen, with a small head, big eyes and wings. Their only job is to mate. They don't forage, nurse or defend, and they usually die soon after mating. Males hatch from unfertilized eggs, so they have a mother but no father.

When a colony is big and healthy enough, it also raises new queens with wings. Together with the males they are called **alates**, the winged ants. They wait in the nest until the weather is right, then pour out for their mating flight. Workers never have wings, so a winged ant is always a young queen or a male. My short article on **the different roles in an ant colony** goes deeper into each caste.

KNOW THE BODY

Ant anatomy in five minutes

An ant's body has three main sections, the head, the middle section and the rear, joined by a very thin waist. Their names are worth five minutes, because keepers use them constantly to describe a queen, identify a species or ask for help online.

Part	What it does	What to look for
Head	Senses and jaws: antennae to smell and touch, mandibles to grab, carry and dig, eyes to see	Elbowed antennae, the size of the head and the eyes
Mesosoma (thorax)	Carries the three pairs of legs and, in winged ants, the wing muscles	Thick and bulky in queens, with small wing scars once the wings are gone

Part	What it does	What to look for
Waist	One or two small segments that let the gaster bend and swing	Count the segments: one or two
Gaster	Holds the crop (a pouch for sharing food), the digestion and reproductive organs, and in some species a sting or acid spray	Big and round in queens, swollen after a meal in workers

The parts of an ant's body, from front to back.

On the head, the **antennae** are an ant's nose and fingertips in one, and their elbow lets them sweep and tap. The mandibles work more like a pair of hands than like teeth: ants use them to carry larvae, cut food, dig and fight, but they don't chew the way we do.

Next comes the **mesosoma**, the section that carries the legs. Many keepers call it the thorax, and you'll see both words on ant sites. In this book I'll stick to mesosoma. In a winged queen it's packed with wing muscles, which is why it's so thick.



A *Messor barbarus* major on seed husks shows every part: the big head with its antennae, the mesosoma carrying the legs, the thin two-segment waist and the rounded gaster. A smaller worker stands in the background.

Then comes the waist, the thin pinch that makes an ant look like an ant. Its first segment is the **petiole**, and some ants have a second one, the **postpetiole**. *Lasius*, *Formica* and *Camponotus* (the subfamily Formicinae, a big group of related ants) have one segment. *Messor*, *Pheidole*, *Tetramorium*, *Crematogaster* and *Myrmica* (the subfamily Myrmicinae) have two, so counting them quickly narrows down which group an ant belongs to.

Crematogaster scutellaris is the fun case: its postpetiole attaches to the top of the gaster, so it can raise its heart-shaped gaster over its back.

Last is the gaster, the big rear section. You'll often see it called the abdomen, but strictly the gaster is only the part behind the waist. It holds the **crop**, a pouch used to share food, plus the digestive system, the reproductive organs and, in some species, a stinger or an acid-spraying gland.

PRO TIP

A queen's **thick mesosoma**, full of the muscle that once moved her wings, is the easiest clue for telling her from a worker, and her big gaster helps too. **Chapter 3** shows how to use both when you're looking for queens.

THE LIFE CYCLE

From egg to worker

Ants go through **complete metamorphosis**, the same total makeover a butterfly goes through, so every ant passes through four very different stages. The first three together are called **brood**, and the workers spend much of their day looking after it:

From egg to worker LIFE CYCLE



Follow the arrows: the queen lays the egg, the larva eats and grows, the pupa turns into an adult and the new worker joins the colony.

Egg. The queen lays tiny white eggs, often stuck together in a small clump. Workers lick them clean and move them around the nest to find the right temperature and humidity. An egg takes roughly two weeks to hatch when it's warm, and longer when it's cool.

Larva. A larva looks like a tiny white grub with no legs and hardly any way to move. Its only job is to eat and grow, and it needs a lot of protein to do it. It sheds its skin a few times, and the workers feed it and carry it to the best spot in the nest.

Pupa. The larva stops eating and the adult body takes shape. Here the subfamilies differ. As a rule, the larvae of Formicinae such as *Lasius* and *Formica* spin a silk **cocoon** first, so you'll see small tan "rice grains" in the nest. People often call these "ant eggs", but real eggs are far smaller: tiny white specks. The larvae of Myrmicinae such as *Messor* and *Pheidole* don't spin a cocoon, and their pupae are naked: they look like pale, motionless ants.

Adult. A newly hatched ant is pale and soft, and her color darkens over a few days. For a founding queen, the first small workers, called **nanitics**, usually appear about 6–10 weeks after her first eggs, faster when it's warm and slower when it's cool. After that she keeps laying, so you'll see eggs, larvae and pupae side by side.



Formica cinerea pupae sit inside cocoons: the pale oval capsules heaped on the floor of the nest chamber.



A *Messor barbarus* colony crowded around its brood. The young are white and bare, with no tan cocoons, because *Messor* pupae are naked.

Who eats what

Larvae and adults eat very differently. Growing larvae need **protein**, which is why a colony with lots of brood suddenly gets hungry for insects. Adult workers mostly live on liquids: honeydew (the sugary drops that aphids leave on plants), nectar, sugar water and the juices of insects. In some species they break solid food into pieces and offer it to the larvae, which do much of the digesting. Seed harvesters like *Messor barbarus* chew seeds into a paste that feeds the larvae.

Liquids travel through the colony from mouth to mouth, which is called **trophallaxis**. A forager drinks, keeps the food in her crop and later passes it on to nestmates, the queen and the larvae. So only a few ants need to leave the nest, and once workers exist the queen doesn't have to risk the trip. In practice: sugar keeps the workers going, but protein is what builds new ants.

PRO TIP

When you see plenty of larvae in the nest, offer protein as well as sugar. Keep the portions small, because a small colony can't deal with a whole cricket, and remove leftovers within a day or two, before they grow mold. **Chapter 5** covers feeding in detail.

FOUNDING

How a new colony is born

Most colonies begin with a **nuptial flight**, the mating flight of the winged ants. On a warm, humid day, the winged queens and males of many nests of the same species take off together and mate in the air or on the ground. The males usually die soon after, and the queens come down to look for a place to start a nest. **Chapter 3** covers when and where to find them.



A winged *Messor barbarus* queen before her nuptial flight. Once she has mated, she'll break off those wings and dig in.

After mating, the queen breaks her wings off at the base, and a queen without wings is called a **dealate**. Small scars remain on the sides of her mesosoma. Then she finds a quiet spot, digs a tiny cavity and seals the entrance behind her. This is the **claustral chamber** (also called the founding chamber), and the test tube setup of **Chapter 4** copies it. Dropped wings are a strong hint that a queen has mated, but not a guarantee.

What happens next depends on the species. Ants start new colonies in four main ways:

Founding type	What the queen does	What it means for you	Examples
Fully claustral	Seals herself in and lives on her own body reserves	The easiest start: a test tube, darkness and patience	*Lasius niger*, *Messor barbarus*, *Camponotus* species
Semi-claustral	Seals herself in, but leaves the chamber to hunt for food	You feed her from day one, and more colonies are lost	*Myrmica rubra*, *Manica rubida*
Social parasite	Takes over a host colony and lets its workers raise her young	Not for beginners: you need a host colony	*Lasius fuliginosus*, *Formica sanguinea*
Colony fission	Doesn't found alone: a piece of a big colony moves out	You start from a small colony, not a single queen	*Aphaenogaster senilis*

Founding types with real examples from the species directory in **Appendix A**.

In **claustral founding** the queen never leaves her chamber. Her body stores everything she needs: fat reserves plus the wing muscles she no longer uses (**Chapter 4** has the details). That's why these queens usually have a big, rounded gaster. She won't need to eat for weeks, usually two to four months, until her first workers arrive and start foraging. Even so, I like to offer her a tiny drop of honey as an energy boost (**Chapter 4** shows how).

A **semi-claustral** queen starts the same way but doesn't have enough reserves. She has to leave the chamber to hunt, so in a setup she depends on you for food from day one, and the founding stage is where many of these colonies are lost. If you can't tell which type a queen is, treat her as semi-claustral: offer a drop of honey water and a crumb of protein as **Chapter 4** describes, and remove leftovers within a day or two.

Social parasites are for experienced keepers, because the queen can't found a colony alone. A **social parasite** slips into a colony of another species and lets its workers raise her young: a *Lasius fuliginosus* queen, for instance, needs a *Lasius* host, and some, like *Formica sanguinea*, even raid nearby nests to steal pupae. Colony fission is different: you don't start from a single queen at all, and some fission species are easy to keep. A group of workers and brood splits off from a big colony and starts a new nest, which is why shops sell a fragment with a queen, workers and brood (see the ***Aphaenogaster senilis* species page**, rated 3 on my scale).

WATCH OUT

Choose your species first (**Chapter 10**), and check its founding type before you catch or buy a queen. The founding type decides how you'll feed her in the first weeks, and it tells you whether the species is a sensible first colony. **Appendix A** lists it for every species, **Chapter 3** shows how to recognize a queen, and **Chapter 4** covers the first weeks.

COLONY STRUCTURE

One queen or many?

Species also differ in how many egg-laying queens one colony holds. They fall into three groups, and the group tells you a lot about how to treat your ants:

Structure	What it means	Examples
Monogyne	One queen per colony	*Lasius niger*, *Messor barbarus*, *Crematogaster scutellaris*, *Tetramorium caespitum*
Polygyne	Several queens laying eggs side by side	*Myrmica rubra*, *Messor structor*
Facultative	One queen or several, depending on the colony	*Pheidole pallidula*, *Formica cinerea*

Many of the most popular species are monogyne, so the whole colony depends on one queen. Adult queens of these species are usually aggressive toward each other, and a colony that loses its queen usually can't replace her: no new workers are born, and it slowly fades away. A stable, quiet home is the best thing you can give her.

Polygyne colonies work differently. With several queens laying eggs they grow faster and survive the loss of one queen, and they often spread by budding, which means sending a group of workers and queens off to a new nest (the same trick as colony fission in the earlier table). They also fill a setup quickly, so plan space early (**Chapter 8**). In the extreme case, countless queens and nests merge into a **supercolony**, where workers from different nests treat each other as one big family.

?!

DID YOU KNOW?

One of the largest ant supercolonies ever found belongs to the Argentine ant. It stretches for about 6,000 km (3,700 miles) along the coast of southern Europe, with millions of nests and billions of workers.

There's one odd exception to the one-queen rule. Sometimes several queens of a monogyne species found a colony together (**pleometrosis**), most often after a very big mating flight, and it can give a faster start. It rarely lasts: once the first workers arrive, the queens usually fight, or the workers eliminate the extras, until one is left. You can't predict which queens will survive.

WATCH OUT

Give every queen her own test tube setup, and never add a queen to an existing colony. In a monogyne species, queens that share a nest usually fight once workers appear, and it almost always ends with dead queens. Even species that accept several queens can turn on a newcomer. With *Manica rubida*, for example, two founding queens housed in one tube began killing each other and had to be separated.

COMMUNICATION

How ants talk to each other

Ants have no voice box, so they mostly talk with chemistry and touch. Their world is built from smells, and a message from one ant can set dozens of nestmates in motion.

A **pheromone** is a chemical signal an ant releases to send a message to other ants of her species. The best known is the **trail pheromone**: when a forager finds food, she leaves a scent trail on her way home and her nestmates follow it. The more ants use the trail, the stronger it gets, which is why you see neat lines of ants between the nest and the feeder. **Alarm pheromones** warn the colony of danger and can send workers rushing out, ready to fight. Each colony also has its own odor, which lets ants tell a nestmate from an intruder.



Two *Crematogaster scutellaris* workers meet head to head. When ants meet like this, they tap each other with their antennae to check colony odor.

You can watch this in the outworld, the open area next to the nest where the ants forage: a scout finds a freshly killed cricket, a trail forms and soon much of the colony is rushing to it. Ants read these messages with their antennae.

There's one more channel: food. Trophallaxis also passes chemical signals around, which keeps the colony connected. It's why you shouldn't worry when only a few ants come to the feeder: they're filling up for everyone else. Not every species does it the same way: the workers of *Aphaenogaster senilis* don't pass liquid mouth to mouth, so they soak it into grains of sand or tiny sponge pieces and carry it to the queen and the brood.

DID YOU KNOW?

Ants have two "stomachs": one for digesting their own food and one, the crop, for carrying food to the others. A valve between them lets each ant decide how much to keep and how much to share.

PRO TIP

Chemistry works for you too. Wash your hands before working on a setup and clean the outworld with plain water, because soaps, lotions and strong smells confuse ants. Put food in the same spot each time so the colony builds a stable trail. If ants rush out with open mandibles after a disturbance, that's alarm pheromone: close the setup and let them calm down.

YEARS, NOT WEEKS

How a colony grows up

A new colony starts with one queen and a handful of eggs, and it begins very slowly. Her first workers, the nanitics, are smaller and weaker than the workers the colony will make later, because she raised them on limited reserves. There are only a handful at first. Don't let their size fool you: they take over the jobs the queen did alone, caring for the brood, feeding her and, most important, foraging. From then on the colony can bring in food, and the queen can concentrate on laying eggs.

Each new generation is a little bigger than the last, until the workers reach the normal size for the species. Growth isn't a straight line: at first it looks painfully slow, then, once there are enough workers to share the jobs, it curves steeply upward. Reaching thousands of ants often takes a few years, so patience is the most useful tool you have. **Chapter 8** shows how to keep up once a colony takes off.



A small *Lasius niger* colony in a test tube: the workers gather around a pile of pale cocoons next to the cotton plug.

In polymorphic species, majors don't appear until the colony can afford them. A larva's final size depends largely on how it is raised, especially how much it is fed, so a colony with plenty of protein starts raising bigger workers. It can take longer than you'd expect: in one well-documented *Camponotus barbaricus* colony the first small majors appeared in the first summer at roughly 50 workers, but the largest workers came only in the third year, after the colony passed 10,000 workers. A young colony with only small workers isn't doing anything wrong.

FIRST EGGS
The founding stage
The queen lays her first eggs, from a few days to a couple of months after she settles in, and raises them alone.

6–10 WEEKS LATER
The first nanitics
Small workers hatch, start foraging and take over the care of the brood.

THE FIRST YEAR
Slow, steady growth
Expect a handful to a few dozen workers after a year, with a first winter rest in between (**Chapter 7**).

LATER YEARS
Fast growth
With more workers, the colony speeds up, and polymorphic species raise more and bigger majors.

AFTER A FEW YEARS
A mature colony
Healthy colonies of many species start to raise winged queens and males.

WINGED ANTS IN YOUR SETUP

If winged ants appear in your own colony, it has reached maturity, which is a great sign. They can't mate or found new colonies indoors, so never release them outdoors. Remove any that die in the outworld, and make sure the setup is escape-proof, because they climb well and some will try to fly (**Chapter 8** has the details).

How long do ants live? A queen lives far longer than anyone else. In the lab, a *Lasius niger* queen lived for almost 29 years, one of the longest lifespans ever recorded for an insect. Workers live much shorter lives, usually from several months to a few years depending on the species, but the colony can outlive every one of them because the queen keeps replacing them. For most temperate species, her yearly hibernation is part of keeping her healthy for the long run (**Chapter 7**).

CHAPTER SUMMARY

Remember this

- A colony works like one animal: the queen lays the eggs, the workers do almost everything else, and nobody gives orders.
- A queen's thick mesosoma and big gaster help you spot her, and counting the waist segments (one or two) tells you which big group of ants you're looking at.
- Ants go from egg to larva to pupa to adult. Larvae need protein, while adult workers mostly drink liquids and share them mouth to mouth.
- Check how your queen founds her colony: claustral queens live on body reserves, semi-claustral queens need feeding from day one, and parasites suit experienced keepers, while fission species are bought as a ready colony.
- Never put two queens of a monogyne species together once workers appear. Give every queen her own test tube setup.
- Colonies start slowly and then speed up: expect the first workers after about 6–10 weeks, thousands of ants after a few years, and queens that live for years or even decades.



2 PART TWO

Your first colony

From the nuptial flight to the first workers, and everything your young colony needs to eat and live in.

3 **Getting your first queen** 33

4 **The founding stage** 43

5 **Feeding your colony** 55

6 **Housing your colony** 67



CHAPTER THREE

3

YOUR FIRST COLONY

Getting your first queen

Every ant colony begins with a single queen, and there are two ways to get yours: catch her on a warm summer day or evening, or buy her from a specialized shop. This chapter covers both, and how to do either one safely.

You'll learn what a nuptial flight is, when and where to find one, and how to catch a queen without harming her. You'll also learn to tell a queen from a male or a worker, how to guess whether she has mated, and how to find out her species.

If you'd rather buy, you'll see what to look for in a queen or a starter colony and in a seller you can trust. One thing comes first: choose your species (**Chapter 10**). We finish with the rules, because a few simple ones keep both you and the ants out of trouble.

IN THIS CHAPTER

- How a nuptial flight works
- Catch a queen gently and safely
- Identify your queen's species
- When and where flights happen
- Tell queens, males and workers apart
- Buy a queen or colony the safe way

TWO WAYS TO START

Catch or buy?

Every colony starts with a queen, and she's the one thing you can't make. There are two ways to get her: catch her yourself during a **nuptial flight**, the day when winged queens and males leave their nests to mate, or buy her from a specialized shop. Both can end with a thriving colony of thousands. They just ask different things of you.

My own first queen was a *Lasius niger* that I caught in a park in northern Italy in the summer of 2020. I still think catching your first queen is the best way to begin: it costs nothing, you start with a species that lives near you, and watching a colony grow from an ant you picked up yourself is hard to beat. The price is timing and luck, because flights are short and nobody sends you a warning. You also can't be sure a queen has mated.

Buying is the mirror image: the queen has already mated, you choose the species and you can order outside the flight season, but you pay for her and for shipping. My advice is to catch your first queen and buy later, once you have some experience. If no flights happen near you, buying is a perfectly good start.

Whichever way you go, choose your species first: read **Chapter 10** before you catch or buy a queen. Look for a species that is native where you live, legal to keep and friendly to beginners, such as *Lasius niger*. A flight brings you whatever lives nearby, so knowing the easy local species tells you which queens to keep.

THE MATING FLIGHT

How a nuptial flight works

A big, healthy colony raises winged ants called alates: young, unmated queens and males. Their only job is to reproduce, and they wait inside the nest until the weather is just right. Then the alates of many nests of the same species pour out on the same day, climb onto grass, walls and stones, and take off together. Flying at the same time helps the queens meet males from other nests.

In the air, the alates release pheromones, chemical signals that ants use to communicate. In many species it's the queens that attract the males. A queen mates with one or more males, in the air or sometimes on the ground. The males have done their job and usually die soon after.

Now the queen's life changes completely. She comes down, breaks off her wings at the base because she won't need them again, and goes looking for a small, safe spot to start a colony. A queen without wings is called a dealate, and she's exactly what we hope to find.

In the wild she digs a tiny chamber and seals herself in. This first phase, when a lone queen builds a colony from nothing, is the founding stage. That's why her first home in your care, a test tube setup (a tube with water and cotton, see **Chapter 4**), is small, dark and quiet.

?! **DID YOU KNOW?**

Lasius niger is famous for huge summer flights that seem to cover entire towns. Many colonies fly on the very same day, so a single evening can put thousands of queens and males in the air.

FINDING A FLIGHT

When and where to look

Flights don't happen at random. Each species has its own season and conditions, not every species flies at all, and not every area flies at the same time. As a general rule, most species swarm on warm, humid days or evenings, very often after a storm or a spell of rain, though a few fly in the morning, like *Tetramorium caespitum*. Calm air matters too: my species pages list hot days and calm weather as the triggers for *Lasius niger* and *Lasius flavus*.

Perfect nuptial flight weather — FLIGHT CONDITIONS

Warm	After rain	Humid	Calm	Evening	Summer
Hot summer days	Often after a storm	Moist air and soil	Little or no wind	Afternoon into night	Mostly June to August

Six signs of typical flight weather. The more of them a warm summer day ticks, the better your chances of finding a swarm, though your species may differ (see the table).

Flights are hard to predict to the day, so be ready all summer. Keep a few empty containers in your bag, have your test tube supplies ready (**Chapter 4** shows how to make a tube), and watch the forecast after hot spells. Winged ants gathering near a nest entrance are a sign that a flight may be close.

Swarming ants are drawn to bright light, so street lamps are the classic place to look. Queens land on the pavement under them, along walls and around lit doorways. Just after a swarm, walk slowly along pavements, paths and the base of walls, watching the ground. A queen that has just lost her wings walks quickly and alone.

Every species follows its own calendar. This table lists eight common species with the flight months from my species pages, plus the time of day and weather triggers where a page gives them ("No data yet" means it doesn't). Among these eight, flights run from May for the

earliest to November for the latest. Local weather shifts the dates by a few weeks, so use the months as a guide. The species are in calendar order:

Species	Flight months	Time of day and weather triggers
Pheidole pallidula	May to August	No data yet
Lasius emarginatus	June to August	No data yet
Tetramorium caespitum	June to August	Morning
Formica fusca	June to August	Afternoon, hot days
Lasius niger	July to August	Hot days, calm weather
Lasius flavus	July to September	Afternoon, hot days, calm weather
Crematogaster scutellaris	August to October	No data yet
Messor barbarus	September to November	After rain

Flight months, time of day and weather triggers of eight common species, as listed on their species pages. The months are for Europe: elsewhere they differ. *Formica* ants are protected in some countries (see the rules at the end of the chapter).

If it isn't flight season

Outside the flight months, use the time to prepare. Read **Chapter 10** and pick a species, gather the supplies for a test tube setup (**Chapter 4**), and watch the wild ants near you to learn which species live there. Or buy a queen, but remember that one bought in autumn may soon need her winter rest (**Chapter 7** explains what to do when winter comes early).

IN THE FIELD

Catching a queen

Catching a queen is gentle work: you're persuading her into a container, not grabbing her. Fingers and tweezers can crush her body or break a leg, and a damaged queen has a much smaller chance of founding a colony. You don't need much equipment, and the routine is the same under a street lamp or in a park. My **guide to catching your first queen** has the video version. Here are the steps:

1

Pack your kit

Take several small clear containers with snap-on lids, one for each queen you hope to catch, plus a long stick or a leaf to guide her, a flashlight for after dark and your phone for photos. Have a test tube setup waiting at home for each container (**Chapter 4** shows how).



2

Find the swarm

Go where the ants are: under street lamps, along walls, on lawns and paths. Stay off roads, and don't enter private land or nature reserves without permission. If you can, stand downwind of the swarm (so the wind blows from it toward you), where queens flying past are more likely to come your way. Watch the ground as much as the air, because that's where queens end up.

3

Spot a queen

Pick out the biggest ants with the bulkiest bodies. A queen is clearly larger than the males, with a thick middle section and a large rear end. Slim ants with a small head and big eyes are males, and small wingless ants are workers: leave both alone. The next section has a full comparison table.

4

Let her walk in

Hold the open container in front of her and sweep gently, so she walks or drops in. If she hesitates, nudge her from behind with the stick or the leaf. Close the lid as soon as she's in. Never pinch her or pull at her wings, and keep your fingers out of it: a few queens bite or sting.

5

One queen per container

Give each queen her own container so they can't injure one another, and note where and when you caught her.

6

Photograph, then head home

Take a few clear photos before you leave (the section on identifying your species says what to shoot). Keep the containers out of the sun and get every queen into a test tube setup the same evening: a snap-lid container is only a taxi, with no water and little humidity.

PRO TIP

Catch more than one queen. In my experience, not every queen is fertile and not every queen survives the long founding stage, so a few tubes are a safer start than one. Take only as many as you can look after, and read the rules at the end of this chapter.

TELLING THEM APART

Queen, male or worker?

A swarm holds winged queens and winged males, and nearby you'll see ordinary workers going about their day. Telling them apart gets easy once you know where to look. An ant's body has three parts: the head, the mesosoma (the middle section that carries the legs and wings, which keepers often call the thorax) and the gaster, the big rounded rear part. **Chapter 2** has the full tour; most of the differences are in those three.

Feature	Queen	Male	Worker
Size	The biggest of the three	Usually smaller than the queen, often close to worker size	Smaller than the queen, though some species have big-headed workers
Mesosoma	Large and bulky, with small scars where the wings were	Slimmer than a queen's, with wings attached	Narrow and plain, never any wings or scars
Gaster	Big and rounded, often swollen	Small and slim	Smaller than the queen's
Head and eyes	Well-developed eyes, larger than a worker's	Small head with big eyes	Head size varies by species, smaller eyes than a queen's
Wings	Four wings before the flight, none after she drops them	Four wings, which he keeps	None, ever

How to tell the three apart. Species differ, so use this as a guide rather than a rule.

The male is the one that surprises beginners. He's a slim, delicate insect with a small head and big eyes, and at first glance he hardly looks like an ant. Only a queen can start a colony, so leave the males alone.

One more check before you reach for the container: winged termites swarm around the same time and look similar. An ant has a thin, pinched waist and bent (elbowed) antennae, and its front wings are longer than its back wings. A termite has a thick, straight body, straight antennae and four wings of equal length.

Is she mated?

You can't tell whether a queen has mated just by looking at her, so you read the signs instead. Here are four, from weakest to strongest:

1. **Looking for a place to dig.** After a swarm, a wingless queen that runs alone across the ground, probing cracks and corners, is behaving like a mated queen.
2. **No wings.** Small scars on the sides of the mesosoma show she has dropped them. This is a strong hint, but not a guarantee.

3. **Eggs.** Good news, but not proof: in many species an unmated queen can lay eggs too, and they can only become males. The first clump can appear within a few days or take up to a couple of months.
4. **Workers.** The first tiny workers (nanitics) usually appear 6–10 weeks after the first eggs. They are the only real proof.

Be honest about the limits: nothing is certain until workers hatch. That's why I suggest catching several queens and giving every tube the same treatment: dark, quiet and left alone.



A lone *Crematogaster scutellaris* queen exploring her test tube next to the cotton plug. Only her first workers will show whether she mated.

PRO TIP

If you can choose, take wingless queens walking alone on the ground after a swarm. A queen who still has her wings may not have mated yet, so she's a long shot. If she's all you find, try her anyway.

WHAT DID YOU CATCH?

Identify your species

Once she's safe, find out what she is. Her species decides how warm and humid her home should be, what she eats, whether she needs a winter rest and whether she needs feeding while she founds her colony (**Chapter 4**). My website rates every species for difficulty on a scale from 1 to 7: 1–4 are beginner species, 5–6 intermediate and 7 advanced. *Messor barbarus* is a 1, *Lasius niger* a 2 and *Pheidole pallidula* a 7.

Identifying a queen takes practice, even for experienced keepers, because many species look alike. Good photos make it much easier. Take several: from the top, from the side and a close-up of the head, with the whole ant in focus on a plain background such as white paper. Put a coin or a ruler next to her for scale, and note where and when you found her: the place narrows down the options more than you'd expect.

Then ask for help. My **Discord server** has an identification channel where keepers post photos of newly caught queens and others help to name them. If you'd rather not use Discord, post the same photos on a nature app such as iNaturalist or on an ant forum in your country. Be patient: some queens can only be named with certainty under a microscope, and a good answer is often "probably this species", or just the genus.

When you have a name, look it up in the **species directory**, where every species page lists size, climate, flight months and difficulty. Not sure what to keep? The **species finder** is a six-question quiz that suggests species to match. **Chapter 10** and **Appendix A** of this book cover the most popular species in more depth.



GOOD TO KNOW

Don't wait for a perfect name before housing her. A dark, quiet test tube suits nearly any queen for her first days, and a best guess such as "some kind of *Lasius*" is enough to start. Look-alikes are common: *Lasius niger* has one, *Lasius platythorax*, that is hard to tell apart without a microscope.

THE OTHER WAY

Buying a queen or a starter colony

Buying makes sense if no flights happen near you, if you want a particular species or if you can't wait for next summer. Start with a local species: it's much easier to keep, because you already live in its climate and can watch wild workers of the same species in your backyard. *Lasius niger* and *Messor barbarus* are two of the easiest, as long as they live where you do.

You can buy a single queen, a queen that already has eggs or her first workers, or a starter colony with a queen and some workers. The more developed she is, the more she costs: a single queen is the cheapest, a mature colony the most expensive. For a first purchase I'd pick a queen with eggs or first workers. She is already past the first, most fragile weeks, so you skip the longest wait. Large colonies need more space and food than a beginner usually has ready.

Before you order, check the law. Rules on keeping and shipping ants differ between countries, and every species page on my website shows its legal status. Ordering from another country can also add taxes and import fees: a U.K. shop shipping to the EU is a

common example. And be home when the parcel arrives, because a box left in the sun or in frost is bad news for a queen.

Choose a seller carefully. Look for a clear species name on every listing, because some species look alike and a responsible seller labels them accurately. A live arrival guarantee, a care guide for each species and honest answers to your questions are good signs. Antstore, for example, filters species by experience level and adds a quick care guide to each one, and The Ant Lady offers a live arrival guarantee for every country in the EU (check the current terms before you order). My **list of shops that sell queens** has more.

When the parcel arrives, open it in a calm room and check the tube without opening it: the cotton should be damp and the water still behind it. A queen who comes in a tube with water and cotton can usually stay in it, so don't move her unless the seller says to. Lay the tube flat in a dark, quiet place and leave her alone. If she looks dead or the tube is damaged, take photos at once and write to the seller, because a live arrival guarantee may have a short deadline. In **an Ant Pod episode about selling ants**, a seller from Ant Antics explains why accurate labels matter most.



WATCH OUT

Be careful with exotic species. A rare tropical queen is exciting, but she may need heat, humidity or food that you can't easily provide, and a mistake in the first weeks costs you money. Master a local species first.

KEEP IT LEGAL AND FAIR

The rules

Ants are wild animals, and a few simple rules protect them, you and the hobby. Treat these as non-negotiable:

- **Check your local laws.** Rules on collecting and keeping ants differ between countries and regions, and they can change. Some places protect certain species, and nature reserves may need permission.
- **Respect the EU list.** The EU bans keeping, breeding, transporting and selling the invasive alien species of Union concern, species that harm nature outside their home range. The ants on it include the little fire ant (*Wasmannia auropunctata*) and the red imported fire ant (*Solenopsis invicta*).
- **Never release ants.** An ant that escapes or is let go can upset local wildlife, especially a species from somewhere else. If you have more queens than you can care for, give some to another keeper.
- **Catch only a few queens.** Take only as many as you can look after. A swarm holds thousands of ants, so a handful leaves the rest to do their thing.

- **Never dig up wild colonies.** Digging destroys a nest that may have taken years to build, and you'll probably never find the queen. Catching a flying or wandering queen is the right way.

WATCH OUT

Several countries protect certain ants, especially wood ants (the *Formica rufa* group). The Czech Republic protects every *Formica* species, one reason *Formica fusca* is marked as restricted on its species page. If your queen turns out to be a *Formica*, check your local rules before you keep her.

Whichever way she reached you, her next stop is a test tube setup. **Chapter 4** shows how to build one, how to move her in and what the first weeks look like. Until then, keep her dark, quiet and undisturbed.

CHAPTER SUMMARY

Remember this

- Catching your first queen is free and rewarding but relies on timing and luck, while buying is easier and almost certain to give a fertile queen but costs money.
- Most nuptial flights happen on warm, humid days or evenings, often after rain, but every species has its own months, time of day and triggers.
- Carry one container per queen, catch gently without squeezing, take clear photos and catch more than one, because not every queen is fertile or survives.
- A queen is bigger than a male or a worker, with a bulky mesosoma and a large gaster, and only her first workers prove she mated, even though lost wings are a strong hint.
- Pick a local, legal, beginner-friendly species in **Chapter 10** before you catch or buy a queen, and never release ants.
- Identify her species early with good photos, the Discord channel and the species pages, and check your local laws.



CHAPTER FOUR

4

YOUR FIRST COLONY

The founding stage

Most ant colonies begin with a single queen, alone in a tiny sealed chamber. Your job in the first weeks is easy to say and hard to do: build her a good chamber, then leave her alone.

This chapter covers the whole founding stage, from the day your queen goes into her tube to the day her first tiny workers appear. You'll build a test tube setup step by step, choose the right spot for it, and learn whether and how to feed her.

You'll also see what a normal wait looks like, what to do when something goes wrong, and how a test tube compares with a ready-made founding nest.

IN THIS CHAPTER

- Build a test tube setup step by step
- Choose the right spot for the tube
- Read the timeline to the first workers
- Move your queen in safely
- Know whether your queen needs feeding
- Fix mold, low water and other problems

THE CLAUSTRAL CHAMBER

What a founding queen needs

In the wild, the freshly mated queen of most species digs a tiny cavity in the soil, under a stone or inside a piece of wood, and seals the entrance behind her. This is the **claustral chamber**, also called the founding chamber, and it's where most of the colonies you'll keep begin. Your job is to recreate it.

These chambers are small, with barely room for the queen and her first pile of eggs, and that's the point: nothing to defend, no light, nothing moving around. Inside, she lays her first eggs and raises her first workers all by herself. A queen dropped into a big nest too early often feels exposed and stressed, which is one of the classic beginner mistakes.

To recreate the chamber you need to give her five things, and each one has a reason behind it:

- **Darkness.** Underground there's no light, and a dark tube feels safe to her.
- **Humidity.** Damp air stops the eggs and the tiny **larvae** (the grubs that hatch from them) from drying out, and the queen can drink.
- **A stable temperature.** Sunbeams, cold drafts and sudden swings all stress her.
- **Small size.** A snug space feels defensible and keeps the air humid.
- **Quiet.** No vibrations, no handling and no sudden changes of light.

The best tool for the job is the **test tube setup**: a glass or plastic tube, a little water and some cotton. It costs next to nothing, it carries its own water supply, and it lets you look inside without opening anything. It's my go-to way to start a new queen. Make the tube before you need it, so it's ready the moment your queen arrives.

?!

DID YOU KNOW?

A fully claustral queen can seal herself in for weeks without eating a bite, and fat is only part of her fuel. After mating she no longer needs her big flight muscles, so she breaks them down and turns them into eggs and into food for her first larvae.

STEP BY STEP

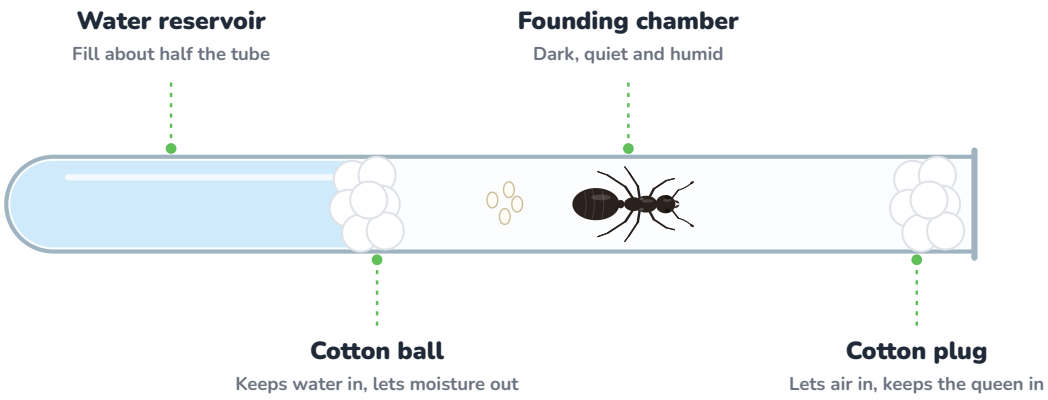
Building a test tube setup

A test tube setup is a test tube about half filled with water, a cotton ball that holds the water back, and a second cotton plug that closes the entrance. The queen lives in the dry part and drinks from the damp cotton. It takes about 15 minutes to make, and my **test tube setup tutorial** shows the same steps on video.

You need very little: a test tube, plain cotton (not synthetic fill), clean cold water (tap water is fine) and a long stick to push the cotton down, such as a wooden skewer or a plastic tool. A pipette (a small plastic dropper) makes filling easier. Glass and plastic tubes both work. A standard-size tube suits most species (mine are 15 mm across, outer diameter), and queens are adaptable: they'll lay in a slightly smaller or larger chamber.

Anatomy of a test tube setup

FOUNDING



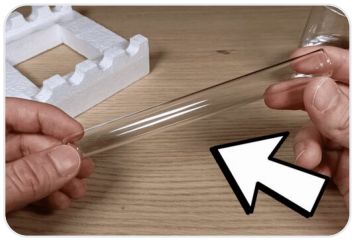
Read the tube from the closed end to the open end: the water, the cotton ball that holds it back, the dry chamber where the queen lives, and the plug that lets air in and keeps her inside.

Wash your hands thoroughly before you touch the water or the cotton, because bacteria and mold love a warm, damp tube. Then follow these five steps:

1

Gather your supplies

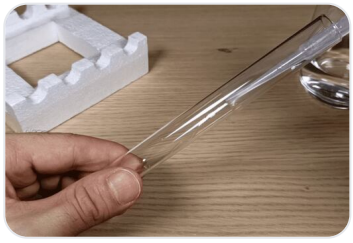
Lay out the tube, a small amount of cotton, clean cold water (in a bottle or a pipette) and your long stick. Roll a small piece of cotton into a loose ball that fits the width of the tube.



2

Fill about half with water

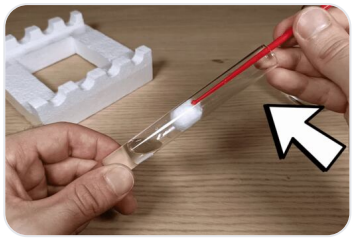
Pour or pipette in clean, cold water until the tube is about half full. This is the reservoir that keeps the cotton, and the whole chamber, humid.



3

Push the cotton down, fast

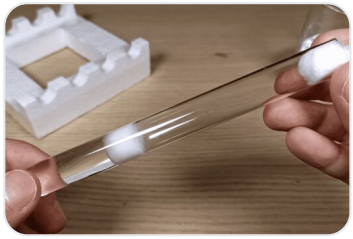
Slide the cotton ball in and push it down to the water with your stick in one quick movement. Going slowly leaves air bubbles between the water and the cotton.



4

Add the queen and the second plug

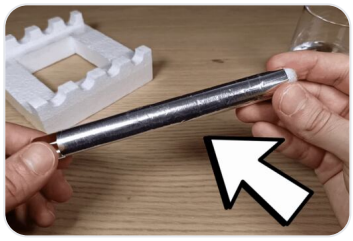
Place the queen in the dry part (the section after these steps shows how), then close the open end with another ball of cotton. It should sit snugly, so she can't push it out, without being rammed in.



5

Cover the tube

Wrap the tube in aluminum foil or dark paper to make it feel like a real claustral chamber. I like foil because it's quick. You can slide it down for a short look later.



How will she breathe? Air passes easily through cotton, so a sealed queen has plenty of air for a very long time. Never swap the cotton for something airtight, like a cap or tape.

PRO TIP: FIXING A MISTAKE

If you mess up before the queen is inside, or need to take a plug out of an empty tube, slide a pair of long tweezers (the kind used in fish tank setups) into the tube, grab the cotton and pull it out. The tube can be reused. With a queen inside, keep tweezers away from her and move the colony as shown in the troubleshooting section.

Moving the queen in

A newly caught queen usually sits in a small plastic container. That's fine for the trip home but poor as a home: there's no water source, the air is dry, and the tiny space is hard to keep clean. Move her into the finished tube soon. If you bought your queen and she arrived in a tube with water and cotton, leave her there unless the seller says otherwise.

Work over a tray in a closed room, in case she runs. If the finished tube is already plugged, take out that plug, open the container and lay the tube flat with its mouth against the opening. Let her walk in by herself, since a narrow tube is an inviting hiding place; a soft paintbrush can nudge her along. Never pick her up with your fingers or squeeze her with

tweezers: a hurt queen won't found a colony. Once she's inside, push the plug in and cover the tube. If she won't go in after a minute, leave the two mouth to mouth in a dark corner for an hour.



A *Crematogaster scutellaris* queen resting next to the cotton plug of her new test tube setup: a snug tube like this is all a claustral queen needs.

Where to keep the tube

Where the tube sits matters nearly as much as the tube itself. Think of an underground chamber: stable, dark, quiet and still. Aim for normal room temperature within your species' range (most kept species do well at 20–28 °C, and **Chapter 7** goes deeper). Never put the tube in direct sun, even for a few minutes. Glass heats up like a tiny greenhouse.

A GOOD SPOT

- A shelf or cabinet at room temperature
- Out of daylight and bright lamps
- Away from foot traffic and doors
- Tube lying flat and held in place

A BAD SPOT

- A window sill or any sunbeam
- Next to a radiator or heater
- On a speaker or washing machine
- A busy desk where it can be bumped

Keep the tube lying flat, so the queen gets a level floor for her eggs. Tubes roll, though, and a careless elbow can cost you a whole colony. A cardboard holder keeps tubes in place, makes them dark if you add a lid, and lets you sort colonies by species, worker count or climate needs. My **test tube holder tutorial** has a full plan.



A homemade cardboard holder keeps four foil-wrapped tubes from rolling away and keeps them neatly sorted in one place.

DO I FEED HER?

Feeding a founding queen

Whether to feed a new queen depends on how her species starts a colony. A **fully claustral** queen never leaves the chamber to eat: she lives on the reserves stored in her body until her first workers can forage. A **semi-claustral** queen can't. She has to leave the chamber to hunt or **forage** (look for food) while she raises her first workers, so in a tube she depends on you for food from day one.

Which one do you have? If you're not sure what she is, post photos on my **Discord server** and ask. Most species in this book are fully claustral, including *Lasius niger*, *Messor barbarus*, *Tetramorium caespitum*, *Lasius emarginatus* and *Formica fusca*, while *Myrmica rubra* and *Manica rubida* are semi-claustral. Claustral doesn't mean easy: *Pheidole pallidula* is claustral too, yet rated 7 (advanced), so read **Chapter 10** first. **Appendix A** lists each species' founding type. The **gaster**, the big rear part of the body, is a hint: large and round suggests claustral, small and thin semi-claustral. If you can't tell, treat her as semi-claustral: it's the safer mistake.

Care point	Fully claustral	Semi-claustral
Food in the first weeks	None needed, she lives on her reserves	Needed from day one
What to offer	One tiny drop of honey, optional but welcome	Sugar plus tiny pieces of protein
Where she eats	In the tube, on the glass	Best from a small feeding area joined to the tube
Leftovers	Leave a dried drop alone	Remove within a day or two
Risk level	Generally lower, if she is left in peace	Higher: many colonies are lost here
Examples	*Lasius niger*, *Messor barbarus*	*Myrmica rubra*, *Manica rubida*

Two ways of founding a colony, and what each means for you

Even with a claustral queen, I like to offer a tiny drop of honey. The easiest moment is while you're moving her in: put a drop about the size of a pinhead on the glass, away from the cotton so it doesn't soak in, then close the plug. Mix the honey with water first (about 1 part honey to 1–2 parts water), because a thick, sticky blob can trap a small queen. If it dries up, leave it. If it turns fuzzy or cloudy, see the troubleshooting section later in this chapter.

A semi-claustral queen needs more attention. She needs sugar (honey water works) and small amounts of protein, such as pieces of fruit fly or cricket, killed and cut up so she can reach the soft parts. The easiest way to feed her without disturbing her home is to join the tube to a small **outworld**, an open area connected to the nest where ants go to forage, and to put the food there. **Chapter 5** covers portions and timing, and **Chapter 6** shows how to build an outworld.

Keeping the tube clean is the other half of the job. Leftover insects turn moldy fast, so take uneaten food out of the outworld within a day or two. The Ant Pod **episode on semi-claustral queens** makes the same point: founding is the riskiest stage, and a balanced diet of sugar and protein matters.

DAY 1 TO FIRST WORKERS

The waiting game

Once the queen is settled, the hardest part of ant keeping begins: doing nothing. A new colony starts slowly because one ant, the queen, does all the work, and it only speeds up once workers can share it. Most beginners expect it to go faster, so here is what a normal founding looks like.

DAY 1 — **The queen moves in**
She goes into the tube, which is covered and placed in a quiet spot. Then you walk away.

FIRST DAYS — **She settles**
She explores, picks a corner and rests. Long periods without moving are normal.

A FEW DAYS TO 2 MONTHS — **The first eggs**
A small clump of tiny white eggs, usually kept close to her. The wait depends on the species, the temperature and how safe she feels.

THE NEXT WEEKS — **Eggs, larvae, pupae**
The eggs hatch into larvae, small white grubs that grow, then turn into pupae, where the adult body takes shape.

6–10 WEEKS AFTER THE EGGS — **The first workers**
The first small workers hatch. It happens faster in a warm tube and slower in a cool one.

The young stages together are called brood. Eggs look like tiny white specks. Pupae are either bare, like pale motionless ants, or wrapped in a silk cocoon that looks like a tan grain of rice, depending on the species. Temperature sets the pace: inside your species' range, a warmer tube means faster development and a cooler one means slower.

What if there are no eggs after a few weeks? Anything from a few days to 2 months is normal, and a queen who doesn't feel safe takes longer. While she looks alive, the cotton is damp and the spot is calm, wait. Season matters too: queens caught late in the year may lay little in autumn, and some species wait for spring (**Chapter 7** explains a founding queen's first winter). If a queen who should lay by now has no eggs after about 2 months, she may not have mated, because an unmated queen can only lay eggs that become males. That's one reason to catch several queens (**Chapter 3**).

How often to check

In the first days you'll want to check on her every ten minutes. Resist. Every time you uncover, bump or light the tube, she may decide her chamber has been compromised, the way it would be if a predator started digging. A stressed queen may delay laying, and she may even eat her eggs. The best thing you can do for a new queen is almost nothing.

Look at the tube no more than about once a week, and less is better. Slide the foil down, look for a few seconds, and slide it back. Don't open the plugs, tap the glass or use a bright light. A quick look answers four questions:

- Is the queen alive? A queen who has moved between looks, or sits with eggs, is fine. A dead one never moves, usually lies curled with her legs drawn in, and may dry out or grow mold. If unsure, look again next week.
- Are there eggs, larvae or pupae?

- Is the water line fine and the cotton still damp? Damp cotton looks darker, dry cotton white and fluffy.
- Is there any mold, or anything that doesn't belong?

> **PRO TIP**
> Out of sight, out of mind. Tubes kept in a lidded holder or a cabinet are much easier to leave alone than tubes sitting on your desk. My post on the **5 most common beginner mistakes** lists checking too often as number two.

TROUBLESHOOTING

When things don't go to plan

Most founding problems come down to a handful of causes. The table lists the usual suspects, with the first thing I'd try.

Problem	Likely cause	What to do
No eggs after weeks	Stress, light or vibrations, a cool spot, a queen still settling, or a queen that never mated	Make sure the spot is dark, quiet and within her temperature range, stop checking and wait up to 2 months, then suspect she never mated
Eggs eaten	Stress, or a semi-claustral queen without enough food	Keep conditions calm, check even less, and feed a semi-claustral queen. She may lay again
Mold on the cotton	Dirty hands, food leftovers or old, wet cotton	Move the colony to a fresh tube, wash your hands next time, and remove leftovers sooner
Water low or cotton drying out	Slow evaporation over many weeks, which you can't refill	Move the colony to a fresh tube once the water is nearly gone, before the cotton is fully dry
The queen dies	Injury or weakness before you got her, heat, cold, a dry tube, long stress	Check temperature, water and light, learn from it and start again with a healthy queen from a reliable source

Two rules apply to every problem. First, change one thing at a time, so you know what helped. Second, don't dig around in the tube: each time you open it you add stress. If a tube is fine, leave it. Moving the colony is the one fix that works for mold, for water problems and for water droplets that reach her chamber (**Chapter 9** has more on moisture), and it's easier than it sounds.

Moving to a fresh tube

You never pick up the queen or the brood. Ants move house willingly when the new place is better, and most prefer a dark tube to a bright one. So you make the old tube a little less

comfortable, the new one a little more, and let the colony walk across on its own. A move takes a few days, sometimes a couple of weeks:

1. **Prepare the new tube**
   Make a new test tube setup as in the earlier steps, using a tube of the same width, but leave the open end without a plug. Wrap it in foil or dark paper so it is properly dark and humid.

2. **Uncover the old tube**
   Take the foil off the old tube so it sits in ordinary room light (never in direct sun). Light makes it less attractive, but keep its cotton damp: never let it dry out with brood inside.

3. **Connect the open ends**
   Take the plug out of the old tube and push the two open ends together, mouth to mouth, with no gap. Hold them with tape or a short piece of soft tubing, and work over a tray so nobody wanders off.

4. **Wait**
   Leave the pair lying flat. Often within a day or two, sometimes longer, the queen walks across and carries her brood with her. Don't poke or tap.

5. **Close and clean up**
   When the queen and the brood are in the new tube, separate the tubes, plug the new one and keep it covered. If some ants or brood stay behind, leave the link in place a little longer.

GOOD TO KNOW
A move is a disturbance in itself. If the cotton is still damp and there's no mold, leave the colony where it is, even if the tube looks old and stained.

MEET THE NANITICS

The first workers

One day you'll notice a tiny ant that isn't the queen. The first workers are called **nanitics**, and they're smaller than later workers because the queen raised them alone on her reserves. Small or not, they take over her jobs: caring for the brood, feeding her and, above all, foraging, so the colony can finally bring in food.

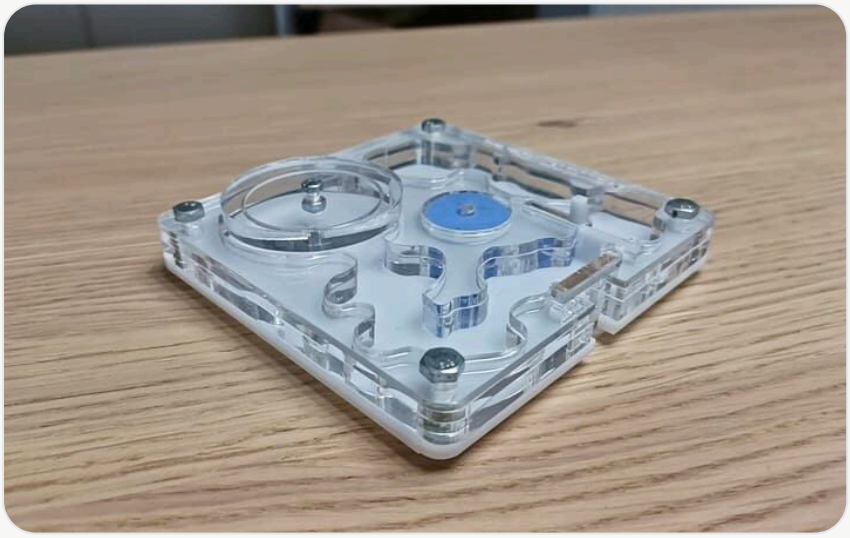
For a claustral colony, this is when regular feeding begins, in tiny amounts: a little sugar (honey water) and small pieces of protein, such as a fruit fly or a crumb of cricket. While the colony is still in its tube, work over a tray, lift the plug for a few seconds, put a pinhead-sized drop of honey water and a crumb of protein on the glass near the opening, and close it again. Leftovers are hard to remove from a tube and go moldy, so keep portions tiny. **Chapter 5** covers what, how much and how often, including seeds for *Messor*.

Keep the colony in its tube for now, because a few workers are safer in a small space. Add a small outworld as soon as workers start slipping out when you lift the plug, or when the tube is filling up with ants. The simplest way is to lay the tube flat inside a plastic tub, with a band of escape prevention oil (a slippery barrier ants can't climb) brushed around the rim. My **tubs and tubes tutorial** shows how, and **Chapter 6** explains when to move to a real nest.

CHOOSING A HOME

Test tube or founding nest?

The test tube isn't the only way to start a colony. The other popular option is a **founding nest**: a small, purpose-built nest, often made with 3D printing or laser cutting, and usually sold with a small outworld built in. For some unusual species it can recreate the founding environment better than a tube.



An Anthouse acrylic founding nest with its small round outworld and blue foam sponge: feeding is easier than from a tube, but in my review the sponge needed refilling every 2–3 days.

Each option has trade-offs. A founding nest's built-in outworld makes feeding and cleaning easier and reduces escapes. But it can be expensive, and its humidity system dries out quickly, so it needs maintenance at least weekly. A test tube is cheap and simple, and it needs very little care, just a quick look about once a week. Its weak point is feeding: once the colony has workers, removing the cotton lets them run over your hands.

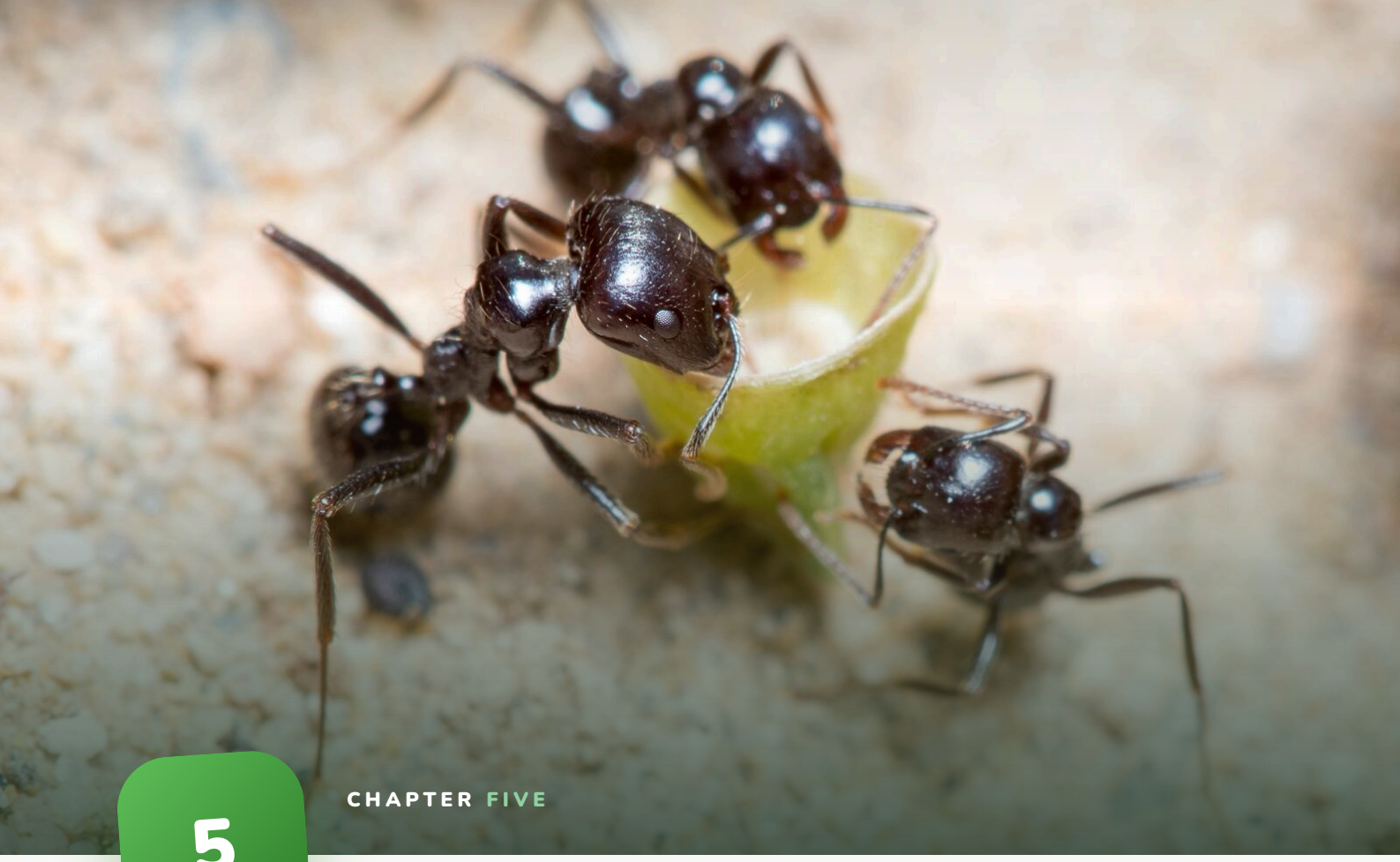
Feature	Test tube setup	Founding nest
Price	Cheapest option	Can be quite expensive
Setup	Very easy, few items	Bought from a supplier
Outworld	None	Usually built in
Feeding	Tricky as the colony grows	Easier thanks to the outworld
Maintenance	Very little: a quick weekly look	At least weekly
Humidity	Water reservoir in the tube	Dries out quickly, needs refills
Best for	Beginners and founding queens	Built-in feeding, special species

My advice: if you're new to ants, start with a test tube. It's the standard starter nest for a reason. A founding nest can come later, when you have experience or a species with special needs. The rules stay the same either way: small, dark, humid and quiet. For the long version, read my **test tube versus founding nest post**, or my **Anthouse Acrylic NaturColor 10x10x1 review**: that nest also works later as a first real nest (**Chapter 6**).

CHAPTER SUMMARY

Remember this

- A founding queen wants a small, dark, humid, stable and quiet chamber, and a test tube setup wrapped in foil gives her exactly that.
- Fill the tube about half with water, push the cotton down fast to avoid bubbles, then add the queen and a second cotton plug.
- Keep the tube lying flat, dark, at a steady room temperature and still, never in direct sun, and look at it once a week at most.
- Fully claustral queens need no food, though a tiny drop of honey is a welcome extra, while semi-claustral queens need sugar and tiny bits of protein from day one.
- First eggs can take days to 2 months, and the first workers follow about 6–10 weeks later, so patience is the skill of this stage.
- If mold or drying appears, connect a fresh, dark tube to the old one and let the colony move on its own.



5

CHAPTER FIVE

YOUR FIRST COLONY

Feeding your colony

Feeding is the job you'll do most often, and one of the biggest factors in how fast your colony grows. The good news is that it comes down to three simple things and a routine that takes only a few minutes per visit.

Ants don't need a complicated menu. They need sugar for energy, protein to grow and water to drink, served in small, clean portions. Where beginners go wrong is usually the details: a puddle where an ant can drown, a cricket far too big for the colony, or leftovers that sit and rot.

In this chapter you'll learn what to offer, how to prepare it, how much to give at every stage of your colony, and how to tell from the ants themselves whether you're getting it right.

IN THIS CHAPTER

- Why ants need sugar, protein and water
- How to serve liquids so no ant drowns
- How to read your colony's appetite
- Which sugars and proteins are safe to serve
- How much to feed at every colony stage
- How to keep leftovers and mold away

THE BASICS

What ants eat and why

Here is the idea that makes everything else easier: adult ants mostly drink, while the young need real food to grow. Sugar and water keep the workers going, and protein builds new ants.

Let's start with the fuel. Adult workers spend their days foraging (searching for food), digging and carrying, and all that work burns energy. Sugar is the perfect fuel for it: packed with calories and easy to carry home. In nature, ants find it in nectar, ripe fruit and **honeydew**, the sugary droplets that aphids (tiny sap-sucking insects) leave on plants. In your setup, honey, sugar water and ready-made ant nectars take their place.

Protein is the building material. The queen needs it to make eggs, and the **larvae**, the soft, worm-like young that hatch from them, need plenty of it to grow. Eggs, larvae and pupae (the stage in which the adult body forms) are together called the **brood**, and **Chapter 2** shows how they develop. Once an ant is fully grown, its need for protein drops and sugar takes over. That's why a colony with lots of brood gets hungry for insects. I'll admit that not giving my first colony enough protein was one of my own classic beginner mistakes, so expect me to nag a little.

Water comes third and matters just as much. Ants drink from damp cotton, from a drop or from a feeder, and they need moist air in the nest too. A founding queen in a test tube already has her water built in, and later in this chapter you'll see how to give a bigger colony its own supply.

What ants eat

DIET

Sugar

ENERGY FOR THE WORKERS

- Honey or sugar water
- Ant jellies and nectars
- Small pieces of fruit

Protein

GROWTH FOR THE QUEEN AND BROOD

- Fruit flies and crickets
- Mealworms and roaches
- Seeds, for harvester ants

Water

ALWAYS AVAILABLE

- The test tube reservoir
- A liquid feeder
- Moist cotton or sponge

Three jobs, three kinds of food. Seeds sit under protein because harvester ants such as *Messor* get protein, carbohydrates and fats from them.

Most species follow this pattern, with small differences in taste. *Lasius niger* loves anything sugary, *Crematogaster scutellaris* really loves honey, and *Messor barbarus* can live on seeds

alone. If you're unsure about your species, look it up in **Chapter 10**, in **Appendix A** or on the **species pages** of my website.

?!

DID YOU KNOW?

Lasius niger, the black garden ant, farms aphids. The workers stroke them with their antennae to collect honeydew, protect them from predators and sometimes move them to better spots on the plant. It's a lot like looking after a tiny herd of cows.

ENERGY

Sugar: fuel for the workers

Sugar is the easy part of feeding, because ants love it and almost anything sweet works. These are the options I'd start with:

- **Honey water:** honey stirred into a little warm water, roughly 1 part honey to 1 or 2 parts water, until it flows like thin syrup. Plain honey is so thick and sticky that small ants can get stuck in it, and honey water goes sour fast, so make only a little.
- **Sugar water:** ordinary table sugar dissolved in warm water, about 1 part sugar to 2 or 3 parts water, made with the same clean water you'd use for a test tube. Let it cool. Keep leftover syrup in a clean, closed jar in the fridge and throw it out after about a week, or sooner if it turns cloudy or smells sour.
- **Ant nectars and jellies:** ready-made sugary liquids and gels from ant keeping shops.
- **Fruit:** a crumb-sized piece of ripe fruit, such as apple or banana.

Stick to real sugar or honey, and avoid sugar-free sweeteners and diet syrups. Some of them, such as erythritol, may harm ants, and workers share whatever they drink with the whole colony.

Ready-made nectars are worth a look too. In my **Ant Antics sugar snaps review** I looked at 10 ml bottles in six flavors. They're very concentrated, so you mix them with plenty of water (follow the dilution on the label), and according to the maker they also contain minerals and vitamins such as B2 and B5. My colonies drank every drop within minutes. Homemade honey or sugar water still works well and costs next to nothing, so think of nectars as a nice upgrade, not a must.



A small drop on a paper pad is plenty. The ants drink until they are full, then carry the liquid home inside their bodies to share.

Fruit is a fun treat, but it goes off fast. Offer a piece the size of a crumb and take it away the next day or the day after.

Serving liquids safely

How you serve a liquid matters as much as what it is. Ants are so light that a drop of liquid can trap them, so the goal is always a small amount on a surface they can walk on:

- **A drop on a flat surface:** put one or two drops on a small piece of tinfoil, a plastic lid, a plastic card or a small square of paper in the outworld, the open area where your ants look for food.
- **A damp cotton ball:** use a tight ball with no loose fibers, squeeze it until it is damp but not dripping, and replace it within a day or two, before the sugar turns sour.
- **A liquid feeder:** a small upside-down bottle that lets ants drink through tiny holes. It lasts days or weeks, and the section on water and liquid feeders has sizes and a filling guide.

NEVER A POOL

Ants can drown in a shallow puddle, or in liquid that pools in a bottle cap. Serve liquid as drops on a flat surface, on damp cotton or in a feeder. Sugary liquid is also sticky, so wipe up any spill straight away.

GROWTH

Protein for the queen and brood

Insects sold or bred as food for animals are called **feeder insects**, and they're how most keepers supply protein. Almost any insect works, so the choice comes down to what is easy for you to buy or breed. Here are the usual suspects:

Feeder	Works well for	Good to know
Fruit flies	Young colonies	Buy flightless (wingless) ones. Easy to breed at home on fresh fruit and vegetables, and small enough to serve whole once frozen.
Mealworms	Beginners and most colonies	Easy to keep and low maintenance. Cut them open so the ants can reach the soft insides.
Crickets	Growing and big colonies	Big colonies love them. Tiny pinhead crickets suit small colonies, though some keepers find crickets hard to keep alive for long.
Roaches, such as Dubia and Red Runners	Growing and big colonies	Can be bred at home in a lidded tub, because escaped roaches are a pest (check local rules). Cut larger ones up for smaller colonies.

Feeder insects at a glance. The sizes in the next sections tell you how much to give.

Variety is good, so mix them up over the weeks. Before your first workers appear, buy a small batch: pinhead crickets or a mealworm from a pet store, frozen and cut into crumbs, are plenty. I feed my *Lasius niger* colony *Gammarus*, small river shrimps sold as fish and reptile food, and they're happy with them. Wax worms are another option. The hosts of the Ant Pod podcast compare many of these feeders in **an episode about the best feeders for your ants**.

Preparing the meal

Small colonies can't deal with live prey, which could hurt the queen or the larvae, so offer insects that are already dead. Freezing is the easy way. This is the routine I'd follow:

1. Kill the insects, for example by freezing them in a closed container for several hours.
2. Thaw only the portion you need, so the ants aren't dragging home a block of ice.
3. Cut or squash big insects open, so the workers can reach the soft insides through the hard shell.
4. Match the size to the colony: a crumb-sized piece for a handful of workers, a few small pieces for a small colony, small whole insects or cut-up bigger ones for a big colony.
5. Put the food on a small dish, a bottle cap or a piece of foil in the outworld, so you can lift it all out in one go, and remove leftovers after a day or two.

FREEZE IN PORTIONS
Freeze feeder insects in small batches. You can thaw just a few at a time, and you'll never be tempted to feed a whole cricket to a colony of 20 workers.

Protein jellies

Protein jellies are a handy alternative or addition. The Anthouse jelly cups I reviewed hold 16 g of soft jelly with proteins, sugars and some water, in six varieties: strawberry, banana, honey, milk, calcium and sugar. You peel off the film, lift out a small dose with a little spoon and put it on a small feeding dish. Sealed and refrigerated, a cup lasts for months, and in my review the jelly stayed mold-free for several weeks even without refrigeration, which makes it handy when you travel. I wouldn't use jelly as the only food, though. Alternate it with insects, as described in my **jelly cups review**.



Three of the six Anthouse jelly cup varieties, each holding 16 g of jelly.



Formica workers eating jelly from a small dish set on a stone, with a liquid feeder on each side.

Why not catch your own?

It's tempting to grab a spider or a beetle from the garden. Please don't. Wild insects can carry pesticides, parasites and mites, and ants pass food from mouth to mouth, so one bad meal can reach the whole colony, queen included. Buy feeder insects from a pet store or breeder, or breed your own. The same goes for aphids and plants brought in from outside: they can bring pests along with them. Skip human leftovers too: salty, greasy, spicy or processed food spoils fast and can harm ants.

SPECIAL DIETS

Seeds for harvester ants

Harvester ants such as *Messor barbarus* spend their days collecting seeds and carrying them home. In nature seeds are their main food, and in captivity they can be too: *Messor barbarus*

gets protein, carbohydrates and fats from seeds alone. Once the colony has grown, a few crickets, mealworms or fruit flies still help the brood, and a little honey or sugar water gives the workers energy. *Pheidole pallidula* also eats small seeds, which its big-headed **major workers** crack open.

Which seeds? Think small, dry and plain. Millet, canary seed, grass seeds and poppy seeds are common choices, and a bird seed mix works if it has no dyes or additives. Buy small bags, because big sacks of bird seed can carry grain mites. Offer several sizes: the small workers handle the small seeds, while the majors crack bigger ones with their strong jaws, called **mandibles**. Buy seeds from a pet store or a food store rather than collecting them outdoors, where they may have been sprayed.

The ants carry the seeds into the nest and store them in a **granary**, a chamber that stays much drier than the rest so the seeds don't sprout or mold. That's why a *Messor* nest needs a humidity gradient, a damp side for the brood and a dry side for the seeds. **Chapter 6** shows how to build one and **Chapter 7** gives the numbers. In short, add water to one end of the nest only, so the workers can choose the driest chambers for their seeds.

GOOD SEED HABITS

- Plain, raw, dry seeds
- Several kinds and sizes
- Small amounts, topped up as they run low
- Fresh seeds from a pet store or food store

AVOID

- Salted, roasted or flavored seeds
- Seeds sold for planting, which are often treated
- Damp seeds, or a nest that is humid everywhere
- Sprouted or moldy seeds left in place

At your weekly look, check the outworld for seeds that have sprouted (they grow a pale root) or gone moldy (fuzzy white or green patches), and lift them out with tweezers. If mold keeps appearing in the granary, the chamber is probably too damp, and **Chapter 9** explains what to do. My ***Messor barbarus* care guide** goes deeper into this species.

ROUTINE

How much and how often

Here's the rule of thumb I'd give any beginner: **give what the colony finishes in a day or so, and remove what's left.** Ants don't count calories, and an overfed colony simply leaves food to rot. Start with less than you think you need, look the next day and adjust. A young colony fits feeding into the weekly visit; bigger colonies get extra, short visits to the outworld, while the nest itself still gets just the weekly look. **Appendix C** has a care routine you can print.

Colony stage	Sugar	Protein	How often
Founding queen	One tiny drop of honey at move-in is optional	None needed (fully claustral species)	Once at move-in, then leave her alone
First workers (up to about 10)	1–2 drops of honey water or sugar water	A fruit fly or a crumb-sized piece of insect	Once a week, twice if it all disappears
Small colony (about 10–100 workers)	A few drops, or a 1 ml liquid feeder	A few small pieces: fruit flies, pinhead crickets, mealworm bits	1–2 times a week
Growing colony (about 100–500 workers)	A 5 ml liquid feeder, refilled when it runs low (check weekly)	5–10 fruit flies or small crickets, or a few cut-up mealworms	2 times a week
Big colony (500 workers to thousands)	A 10 ml liquid feeder, topped up when low and rinsed at each refill	Whole small insects, large ones cut open, several at a time	2–3 times a week

Starting points, not strict rules: the worker counts and portions are my own rough estimates, so judge by how fast the food disappears.

Two notes on the table. First, most beginner species are fully claustral: the queen lives on her own body reserves until her first workers arrive, which usually takes two to four months. Semi-claustral queens (found in genera such as *Myrmica* and *Manica*) are the exception: they forage during founding, so they need small amounts of protein and sugar from day one, fed as **Chapter 4** explains. Second, harvester colonies also get a small dish of seeds once the first workers appear.

Once the first workers have appeared, feed the tube like this: work over a tray, lift the plug for a few seconds, put a drop of honey water or a crumb of insect on the glass near the opening, and close it again so nobody walks out. Before that, the queen gets nothing beyond the optional drop of honey at move-in (**Chapter 4**). Keep portions tiny, because leftovers are hard to remove from a tube; if food is still there after two days, take it out with long tweezers. As soon as workers keep slipping past you, add an outworld (Chapters 4 and 6).

OBSERVING

Reading your colony's appetite

Your ants will tell you whether you're feeding them well, as long as you know what to look for. Your weekly visit is the perfect time to check these signs:

- **Lots of eggs and larvae:** the colony wants more protein. Offer a little extra and see how fast it goes.
- **Protein gone by the next day:** give a bit more next time, in small steps.
- **Sugar drained in minutes:** a second drop or a bigger feeder will help.

- **Round, glassy gasters:** the **gaster** is the rounded rear part of an ant's body. When it looks swollen and almost see-through (easiest to spot in light-colored species), the workers have drunk their fill and are well fed.
- **Food ignored for two days or more:** time to look for the cause.

When food is ignored, there are usually a few suspects. You may be offering too much, so nobody is hungry. The food may be wrong for your ants, or too big or hard to handle, so try a smaller piece or a different kind. The nest may be too cold, or the colony stressed after a move: give it a quiet week. In autumn, foraging slows down even in a warm room, and a hibernating colony hardly eats at all. Before a winter rest, taper off the protein and then stop it, and never leave insects in a cooling nest (**Chapter 7**). Meanwhile, remove the ignored food.

Liquids move through the colony mouth to mouth (trophallaxis, **Chapter 2**), so only a few ants may show up at the feeder: they're filling their crops for everyone else. Don't judge a meal by the crowd. Judge it by the nest, where growing brood and round gasters mean the food is getting where it should. You can read more in the glossary entry on **trophallaxis**.

IS SUGAR BAD?
Some experienced keepers, including the hosts of an **Ant Pod episode on sugar**, think constant, unlimited sugar may hold a colony back, though their experience is mostly with *Camponotus*. It's still debated. A sensible middle path: keep fresh sugar water available, offer protein regularly and watch how your own colony grows.

DRINKING

Water and liquid feeders

In a test tube setup the queen drinks from the damp cotton, and her water reservoir is the half of the tube behind it. Check the water level at your weekly look, without opening anything. When the water runs low or mold appears, don't top it up: make a fresh tube and let the colony walk across on its own, as shown in **Chapter 4**, and open the tube no more often than you have to.

Once your colony has an outworld, a **liquid feeder** is the best way to give it a steady supply. It works like an upside-down bottle: the liquid sits on top of a base with tiny holes, and **surface tension** (the skin-like pull that holds water together) keeps it from spilling while the ants drink from the holes. You fill it, place it in the outworld and the ants can drink whenever they like. Ants are sensitive to vibrations, so fewer visits mean less stress and can help a colony grow. My **Anthouse liquid feeders review** covers one model in detail.

1 ml
SMALL COLONY
Suits a starting colony. About 3 cm tall; lasts about a week if the room isn't hot.

5 ml
GROWING COLONY
I use two with my *Messor barbarus*: one with water, one with sugar water.

10 ml
BIG COLONY
At about 25 °C it can take several weeks, up to a month, to empty.

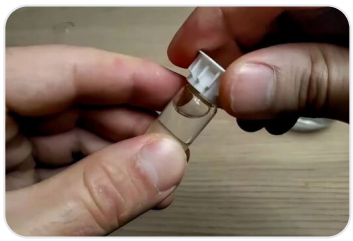
Use two feeders, one with plain water and one with sugar water, so the ants always have both. Here is how to fill a bottle-and-base model like the Anthouse ones (your feeder's instructions may differ in detail):

1. **Unscrew the bottle**
   Separate the little glass bottle from the base. Work over a tray or a plate in case of spills.

2. **Fill the bottle**
   Use a pipette or a syringe to fill it with water or sugar water, right up to the top.



3. **Screw the base back on**
   Keep the feeder upright while you do it, so nothing spills.



4. **Turn it upside down**
   Surface tension holds the liquid in. If it drips steadily, turn it upright again and check that the base is screwed on all the way.

5. **Place it in the outworld**
   Put it where the ants walk, and check the level at every weekly visit.

Feeders need cleaning. Sugar water can ferment or grow mold if it sits too long, so at each refill pour out what is left, rinse the bottle and base with warm water (no soap, which can leave a residue) and let them dry before you fill them. How long a feeder takes to empty is not how long the sugar water stays fresh: replace it every week or two even if some is left, at

once if it turns cloudy or smells sour, and sooner in a warm room. Plain water is more forgiving, but it still gets a rinse now and then.

GOING AWAY?
Before a trip, fill the water and sugar feeders and choose long-lasting food such as jelly cups (or seeds for harvesters). Don't leave fresh insects or fruit to spoil while you're away, and for anything beyond about a week, ask someone to check in. The **Ant Pod episode on preparing for vacation** has more ideas.

HYGIENE

Keeping mealtimes clean

Once your colony has an outworld, always feed there, never inside the nest. The nest is dark and humid, which is perfect for the queen and brood and also perfect for mold, and food left in there rots where you can't easily reach it. In the outworld the workers can find the food, drink and carry it home, and you can clean up without touching the nest. Until then, the tube is both nest and dining room: feed it as described in the section on how much and how often, and see Chapters 4 and 6 for the outworld.

Remove leftovers within a day or two. Uneaten insects and fruit soon grow **mold**, fuzzy white, gray or green patches, and tiny mites move in. Jelly keeps longer, but lift out any that looks fuzzy or dried up. A pair of tweezers and a minute is all it takes: lift out the leftovers and wipe the spot with a clean, damp paper towel. Wash your hands before you start, because bacteria and mold love a nest as much as ants do.

Ants are tidy, too. They carry dead nestmates, empty insect shells and seed husks to one spot, usually a corner of the outworld, called the **midden**. That is their trash pile, and a small one is perfectly normal. Check it at your weekly visit, and lift out loose waste with tweezers only once it has grown large, or as soon as it turns moldy. Wash the tweezers in hot water (no soap) and dry them before you use them on another colony, so you don't carry mites from one setup to the next.

Do these small things and feeding becomes the easy part of the hobby: a quick look, a drop of sugar, a bit of protein and a tidy-up. Next, in **Chapter 6**, you'll see what your colony lives in.

CHAPTER SUMMARY

Remember this

- Ants need sugar for the workers' energy, protein for the queen and the brood, and water at all times, while harvester ants get much of their protein from seeds.
- Serve liquids as small drops on foil or plastic, on damp cotton or in a liquid feeder, never as a pool where ants can drown.
- Offer insects that are already dead, cut up the big ones, and never use wild-caught insects, which can carry pesticides, parasites and mites.
- Give what your colony finishes in a day or so, and remove the leftovers within a day or two, before mold and mites can start.
- Read the colony: lots of larvae call for more protein, while ignored food means too much, the wrong food or a winter slowdown.
- Once your colony has an outworld, feed there and not in the nest, and clear the ants' trash pile only when it grows large or turns moldy.



CHAPTER SIX

6

YOUR FIRST COLONY

Housing your colony

A colony needs two things from its home: a quiet, dark nest to live in and an open outworld to feed in. Get both right, and moving up from a test tube becomes calm, planned and almost stress-free.

Sooner or later every colony outgrows its test tube. This chapter covers what comes next: building your first outworld, choosing between acrylic, Ytong, wood, sand and naturalistic nests, keeping every ant inside, and moving the colony without stress.

I'll also explain how to keep a nest humid and how to pick the right size, because ants hate big empty spaces and a nest that's too roomy causes more trouble than one that's a little snug.

IN THIS CHAPTER

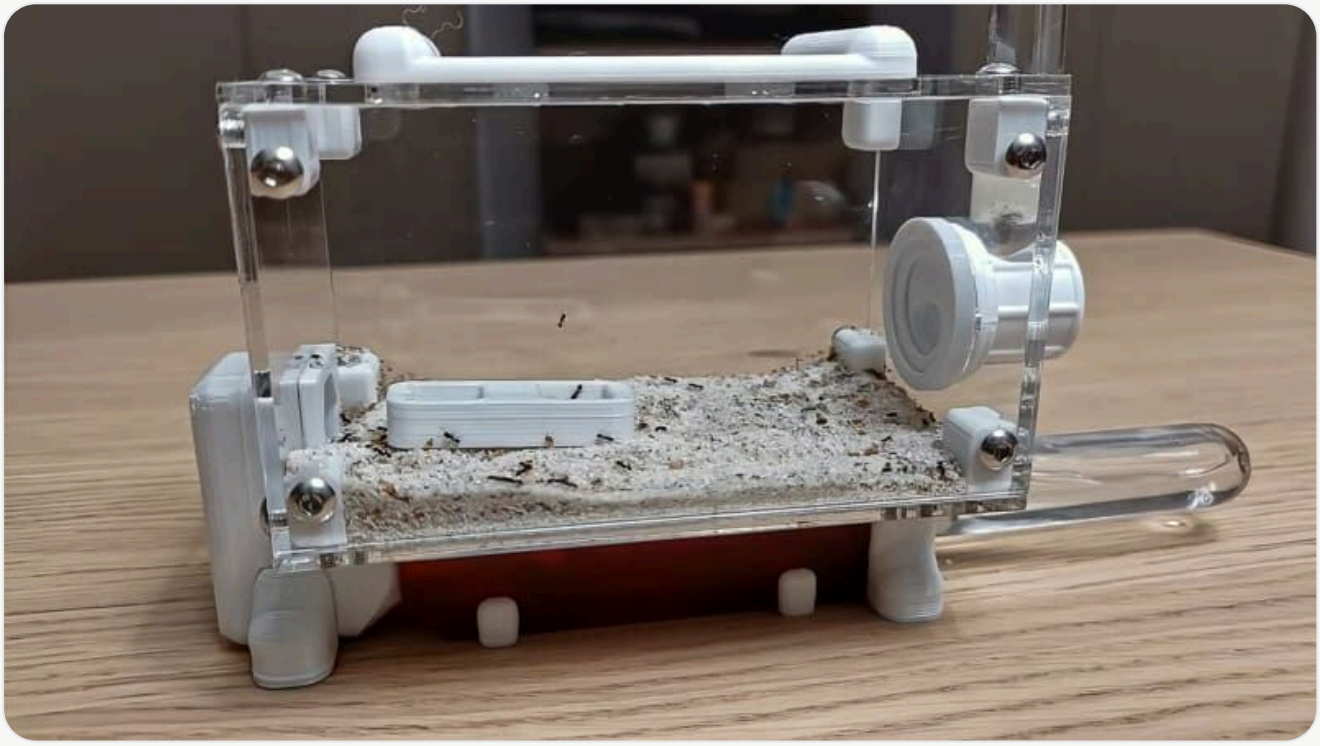
- Build an outworld around a test tube
- Compare test tube, acrylic, Ytong and more
- Spot the signs that it's time to move
- Keep every ant inside the setup
- Keep each nest humid, not wet
- Move a colony into a new nest calmly

THE TWO-PART HOME

Nest plus outworld

Almost every ant home has two parts. The **nest** is the dark, snug, humid place where the queen lives and the brood (eggs, larvae and pupae) grows up. The **outworld** is the open area beside it where the workers walk, find food and water, and leave their trash. Together they make a **formicarium**.

Splitting the home in two mimics what ants do in the wild. A real nest is a quiet space underground, and the workers leave it to look for food. Your setup works the same way: the nest should feel safe, small, dark, a little humid and rarely disturbed, while everything that comes and goes belongs in the outworld: food, water and, in time, the colony's trash pile (the midden from **Chapter 5**).



In this WaKooshi Mercury nest, the test tube underneath is the nest, and the sand-covered box on top is the outworld where the workers explore.

This split also protects the queen. You feed and clean in the outworld, so you rarely need to open the nest, and she stays calmer. Keep the nest snug, too (more on size later in this chapter): **Chapter 4** explains why, since a founding queen digs a chamber barely bigger than herself.

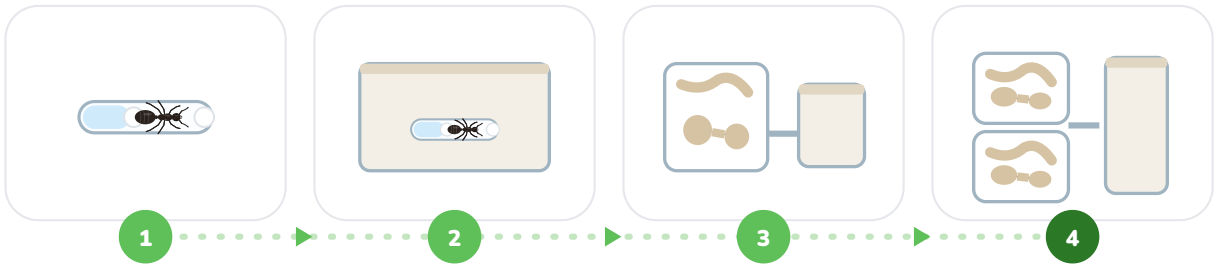
PRO TIP

Put sugar, protein and water in the outworld, never in the nest chambers, and remove leftovers within a day or two. Food that rots inside the nest is the most common start of a mold outbreak.

Four homes in a colony's life

A colony needs the right home for its size, and a new one when it grows. Most colonies pass through four stages, tied more to worker numbers than to the calendar, and species grow at very different speeds.

From test tube to formicarium HOUSING JOURNEY



1 **Test tube**
Queen + first workers
CHAPTER 4

2 **Tubs and tubes**
A few dozen workers
CHAPTER 6

3 **First nest**
Dozens to hundreds
CHAPTER 6

4 **Growing setup**
Hundreds to thousands
CHAPTER 8

Read it from left to right. Space is added only when the colony needs it: first an outworld around the tube, then a real nest, then several nests linked to a large outworld.

Stage 1 is the test tube of **Chapter 4**. Stage 2, tubs and tubes, comes next: your tube stands inside a plastic tub. Stage 3 is a first real nest with its own outworld, which this chapter helps you choose and move into. Stage 4 is a larger setup with several linked nests, and **Chapter 8** shows how to grow into it.

TUBS AND TUBES

Your first outworld

The easiest first outworld costs almost nothing. In a **tubs and tubes** setup, the tubs are flat-bottomed plastic containers, the tubes are test tube setups, and the tub becomes the outworld around the tube. The tube stays the colony's home, so nothing changes for the ants. What changes for you is that opening the plug no longer sends workers across your desk.

Have the tub ready before you need it: steps 1 to 3 take about a quarter of an hour, plus drying time. Put the tube in only when **Chapter 4**'s cue appears, that is, when opening the cotton starts to send workers over your hands or the tube is filling up with ants.

You need only a few things:

- A test tube setup with the colony inside
- A clean plastic tub, such as an ice cream container, with a hand's width of free floor around the tube and room above it for the oil band
- Escape prevention oil (a slippery liquid ants can't climb, sold by ant keeping shops), plus a sponge or paintbrush to apply it
- Optional: aquarium sand for the floor

Here is the build, in the order I do it:

1

Clean the tub

Wash the tub with plain hot water (a drop of unscented dish soap if the plastic is greasy, rinsed until no smell or foam is left) and let it dry completely. This removes dirt and bacteria before the ants arrive.



2

Add the sand (optional)

Pour in a thin layer of white aquarium sand, the kind sold for fish tanks, with no dye or coating. Rinse it until the water runs clear and let it dry completely. Keep the layer low, a good distance from the rim.



3

Brush on the oil

With a sponge or paintbrush, paint a continuous band of escape prevention oil around the inside of the tub, near the top. Leave no gaps between the strokes.



4

Place the test tube

Work over the tub, so any runaway lands inside. Lay the foil-covered tube on the floor, then take the cotton plug out of its mouth so the ants can walk out.



5

Leave them be

The oil band keeps the workers inside, so the tub stays open. They may need a day or two, or longer, to start exploring. Then you can offer food in a small dish (**Chapter 5**).



From then on the tube works as before. When its water runs low or the cotton turns dirty, don't pick the ants up. Put a fresh test tube in the tub, mouth to mouth with the old one, and let the colony move across by itself, as in **Chapter 4**. My **tubs and tubes tutorial** shows the whole build.

Substrate and decoration

Bare plastic works, but a thin layer of **substrate** (sand, soil or a mix) looks better and gives the workers something to grip. White sand shows dark ants clearly. Keep it thin so it's easy to clean, and away from the barrier band. Skip soil, bark or wood from places that may have been treated with pesticides, and wash any stones or decorations, keeping them low so they can't bridge the barrier. *Messor* workers started digging within minutes of meeting sand in one of my setups. Sand hides leftovers, so serve food in a small dish you can lift out.

ESCAPE PREVENTION

Keeping every ant inside

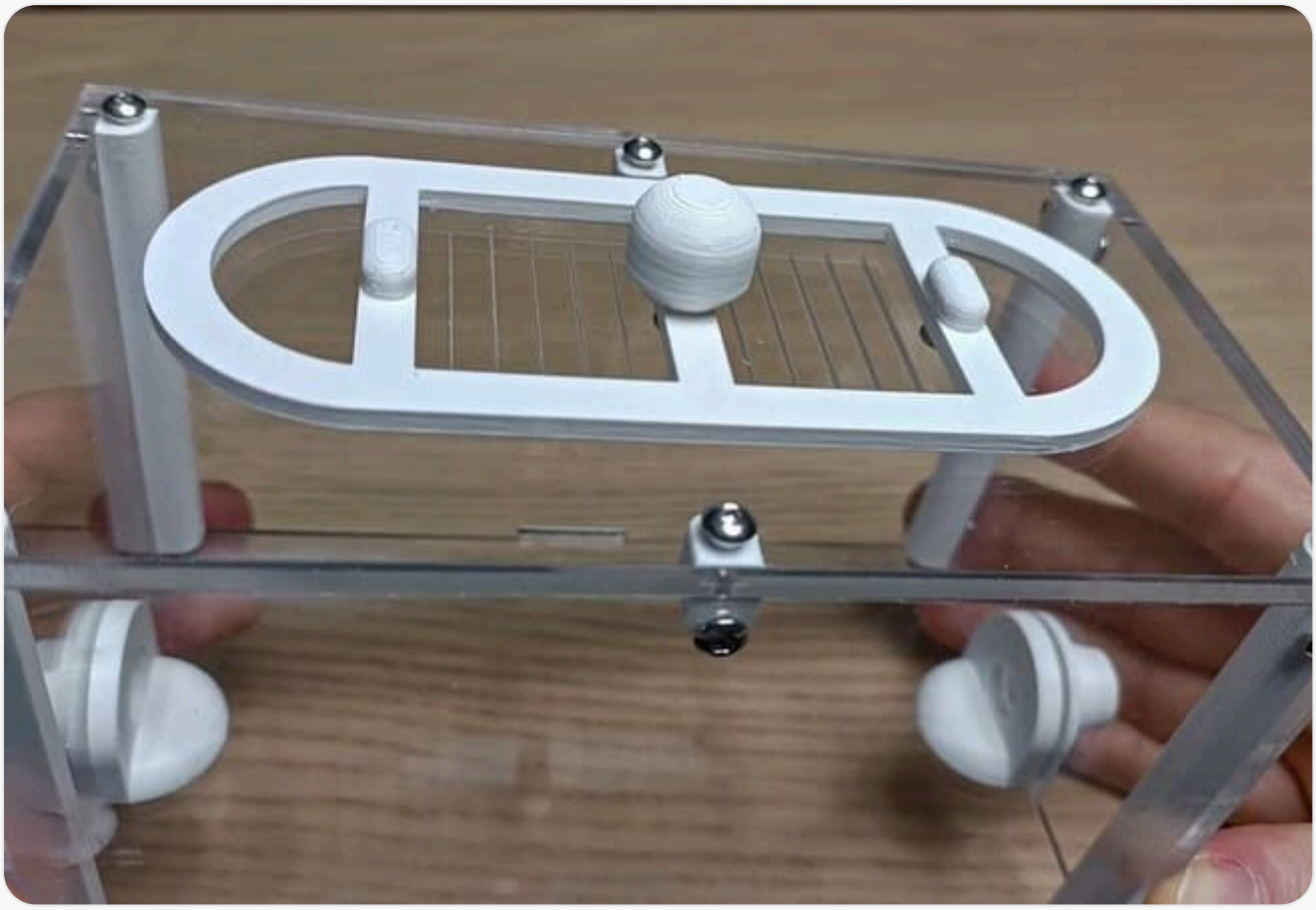
Escapes are the quickest way to lose workers and confidence in your setup, and nearly all of them are preventable. A good setup uses three layers of defense: an **escape barrier** (a slippery band of escape prevention oil or coating at the top of the outworld), a lid and **ports** (the round openings where tubing connects) with no gaps, and a weekly check of the whole setup.

Barrier oil and coatings

Escape prevention oil is a slippery liquid sold by ant keeping shops. Brushed in a band around the inside of the outworld, it gives the ants nothing to grip, so they slide back down. Some keepers prefer a dry coating made of **PTFE**, a slippery plastic sold as a liquid. Whatever you choose, apply it in one continuous band a few centimeters wide: if you leave a gap, the ants will find it. No barrier stops every ant. Keepers report that strong climbers, such as some *Camponotus* species, walked over coatings, and winged queens and males (**Chapter 8**) simply fly over it, so the lid matters just as much.

Placement matters too. The best outworlds have a flat, horizontal panel at the top, made for the oil. The ants would have to climb upside down to get past it, which is much harder than

climbing a wall. With a plain tub, paint the band on the upper part of the inside wall. Oil wears off and gets bridged by sand and crumbs, so check it every week and renew it as soon as it looks thin or bridged.



The flat top panel of this Esthetic Ants outworld is built for the oil: to escape, the ants have to climb upside down.

Lids, mesh and ports

A barrier is useless if the lid has gaps. The lid should fit tightly and still let air through: a few small holes covered by a fine metal **mesh** let fresh air in and stale air out, which helps against mold. The mesh openings must be clearly smaller than your smallest worker's head. Mesh also lets humidity escape, so tropical species may need some holes closed with a plastic cap.

Every opening needs a stopper. Cotton works in a test tube, but some species chew it, so close unused outworld ports with plastic caps instead. Check the joints, too: when I built the Esthetic Ants outworld, I found small gaps between the acrylic parts, and re-screwing the screws almost closed them. My **Esthetic Ants outworld review** shows the ports, caps and lid in detail.

Which species try to escape

Not every species is equally keen to leave. Every species page on my site has an escape risk rating (low, medium or high), and it's worth reading before you build anything:

Escape risk	Species examples	What it means for you
Low	*Messor barbarus* and the other *Messor* species, *Lasius flavus*, *Aphaenogaster subterranea*	These species rarely try to leave. Use a barrier and a tight lid anyway, and watch for chewing.
Medium	*Lasius niger*, *Lasius emarginatus*, *Crematogaster scutellaris*, most *Camponotus* species	A solid barrier and a tight lid usually do the job.
High	*Pheidole pallidula*, *Tetramorium caespitum*, *Solenopsis fugax*, *Plagiolepis pygmaea*, *Formica cinerea*, *Camponotus nicobarensis*, *Lasius fuliginosus*	Tiny, fast or strong climbers. Plan for escapes from day one: sealed joints, fine mesh, a fresh barrier and a second line of defense, such as keeping the whole setup inside a closed box.

The species pages add useful detail. *Solenopsis fugax* workers dig through plaster, hot glue and even silicone, according to one experienced keeper, so seal every joint and keep the whole setup inside a closed box. *Formica cinerea* workers move fast and unpredictably, so most escapes happen while you feed or clean: work calmly and watch every ant until the setup is closed again.



WATCH OUT

Check the barrier, lid and ports at least once a week, and before you go on vacation. Feed when the workers are away from the edge, and work over a tray so any runaway lands somewhere safe.

PICK A HOME

Nest types compared

There is no single best nest: the right one depends on your species, your budget and how much you enjoy building things. If you want weekly care only, favor a real water reservoir (a Ytong nest with an outside tank, or a nest built around a test tube) over a tiny sponge. My **comparison of four nest types** and my **Ytong versus acrylic post** go deeper, and the table sums up the main points.

Nest	Best for	Humidity	View and cost	Weak points
Test tube	Founding queens and small colonies	Very stable (water reservoir)	Good view; the cheapest option	Tiny; hard to feed as the colony grows
Acrylic	Almost every species, especially tiny ones	Needs a sponge, wick or tube; dries out fast	Excellent view; cheap to high-end	Stagnant air, mold risk; frequent refills
Ytong	Humidity-loving species; DIY fans	Soaks up water and releases it slowly; good airflow	Good view; a block costs under $5	Fragile; some species chew it
Wood	Wood-nesting species, such as *Crematogaster scutellaris*	Moderate; for species that don't need much	Good view; low cost from scrap wood	Few ready-made options
Sandwich	Natural diggers, such as *Lasius niger*	Fairly stable once the sand is moist	Excellent view of tunnels; price varies	The gap must suit the ants
Naturalistic	Diggers and very small species	Stable if the soil is kept moist	Poor view (ants hide in soil); a jar is cheap	Hard to check and to clean

The main nest types side by side

Acrylic nests

An **acrylic nest** is built from layers of clear plastic held together with screws. It survives a fall that would wreck a Ytong block, it's easy to clean (unscrew, wash, dry, reassemble), and the layers fit so tightly that it's very hard for ants to get out. That's why acrylic suits tiny species such as *Pheidole* and *Solenopsis*. The price is humidity: acrylic absorbs no water, so it dries fast and the air can stagnate.

?!

DID YOU KNOW?

Most ant species barely see red light, but we can. That's why red acrylic covers are sold as an extra for nests: to the ants the chambers look dark, while you can still watch them.

Ytong nests

Ytong is aerated concrete, a light building material full of tiny air bubbles. It soaks up water and releases it slowly, and air passes through it, which helps against mold. It's cheap, and so soft that a screwdriver carves the chambers, so it's the classic DIY nest. Carving makes a lot of fine dust, so wear a mask and brush the chambers clean before the ants move in. My **Ytong nest tutorial** goes through it. Ready-made versions exist too, such as the Esthetic Ants nest, whose hard 3D-printed shell keeps chewers in.

WATCH OUT

A bare Ytong block won't stop a determined chewer. The major workers of *Messor*, the biggest ones with huge heads, dig real tunnels through it. Put the block inside a closed plastic or glass enclosure, or choose a nest with a hard shell.

Wooden nests

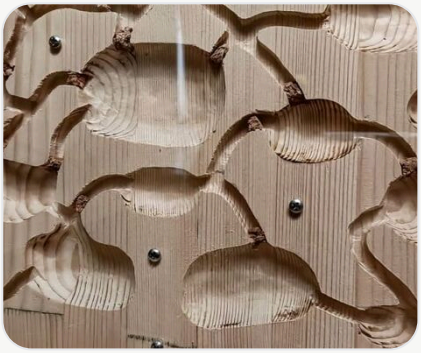
Some species nest in dead trees, logs and other wood, and a wooden nest suits them best. *Crematogaster scutellaris* is the classic example. Few companies sell wooden nests, but you can make one from a plain, dry, untreated panel with no varnish or preservatives: draw the chambers, engrave them, and screw a clear front panel of acrylic (often sold as plexiglass) on top. My **wooden nest tutorial** recommends a mix of large chambers and tight passages.



Acrylic: a clear square nest with winding chambers, a sponge in the middle and a small built-in outworld.



Ytong: precisely milled chambers in a white block, where dark ants would stand out.



Wood: chambers and tunnels carved into a solid wooden panel.

Sandwich and naturalistic setups

A **sandwich nest** is the classic ant farm: two clear panels close together with a thin layer of sand or soil between them. The ants dig their own tunnels, and you watch them work. The gap matters: thin gaps suit small species, wide ones big workers. The glass ANTCUBE I reviewed comes with 6, 10, 20 or 54 mm between the panels: too narrow stresses the ants, and too wide hides them. If your nest has spare openings (ports for adding space later), close them with the stoppers supplied before you pour in the sand, or the sand runs out.

A **naturalistic setup** copies the ants' own habitat: a jar or box with soil, moss, a branch and small plants, where the colony digs wherever it likes. My **jar terrarium tutorial** builds a closed one with a stone drainage layer under a mesh, and suggests it for very small species. Use clean soil with no pesticides, keep the lid tight (a section of fine mesh lets air in, **Chapter 11**) and feed on a small dish on the soil. The trade-off is visibility: the ants hide in the soil, so checking the brood and cleaning take more effort.

Matching nest and species

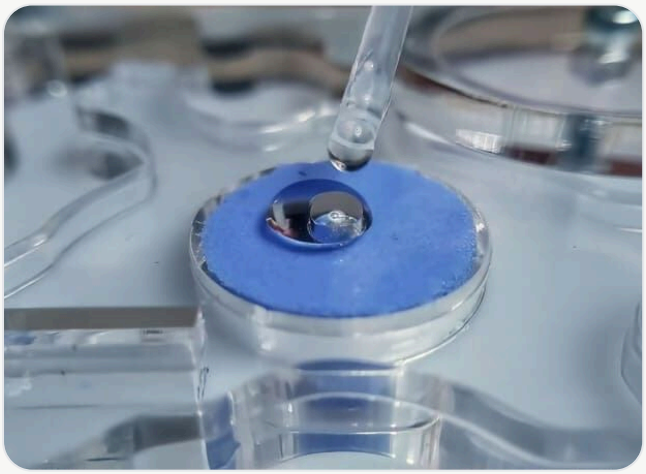
Each species page on my site lists the nests that suit it (**Chapter 10** helps you choose the species itself). *Lasius niger* does well in sandwich, Ytong and acrylic nests. *Messor barbarus* fits Ytong, acrylic or naturalistic setups. *Pheidole pallidula* wants acrylic or naturalistic, *Tetramorium caespitum* acrylic, test tube or naturalistic, and *Crematogaster scutellaris* wood, Ytong or acrylic. Browse the **species directory** for yours, and when two nests fit, pick the one that's easier to clean and feed, because you'll do it every week.

WATER AND AIR

Humidity in your nest

Every nest needs a way to stay humid, and each type does it differently. **Ytong** soaks up water and gives it back slowly, so you add water to a hydration chamber (a small chamber made to hold water) or a small tank, never straight onto the ants. The Esthetic Ants nest has an outside tank you fill with a pipette, so the water reaches the block slowly and never floods the chambers. My **Esthetic Ants Ytong nest review** shows how.

Acrylic absorbs nothing, so it needs a system built in: a sponge, a wick (a strip that draws water up) fed by a tank, or a test tube. The sponges in the small Anthouse nests hold little water: in my reviews the 5x5x1.3 needed a refill every day and the 10x10x1 every 2 or 3 days. Check how often a model needs water before buying. A **test tube** setup is itself a water tank, as **Chapter 4** showed. In a sand nest, you water the sand with a pipette and the moisture slowly works down.



Acrylic: a pipette waters the small sponge at the center.



Ytong: a pipette fills the outside tank.

A moist area and a dry area both matter. Water only one end or one side of the nest, so the colony can choose where to put the brood and where to rest or store food. *Messor* shows why: the brood needs humid chambers, but the seeds in the granaries (the dry storage chambers) must stay dry or they sprout and mold. **Chapter 7** gives the target numbers and the fixes.

PRO TIP
Water the nest, don't flood it. Add small amounts with a pipette on one side, and look at the material: damp is darker. Droplets on the walls mean there is too much.

GROWING UP

Size, and when to move

Two decisions keep a colony comfortable as it grows: how big the next home should be, and when to leave the old one.

Choosing the right size

Ants hate big empty spaces. A small colony in a huge nest gets stressed, and the empty chambers fill up with trash, which raises the risk of mold. So the best nest isn't the biggest you can afford but the smallest one that still leaves the colony room to grow. When it fills up, move up one step, not three.

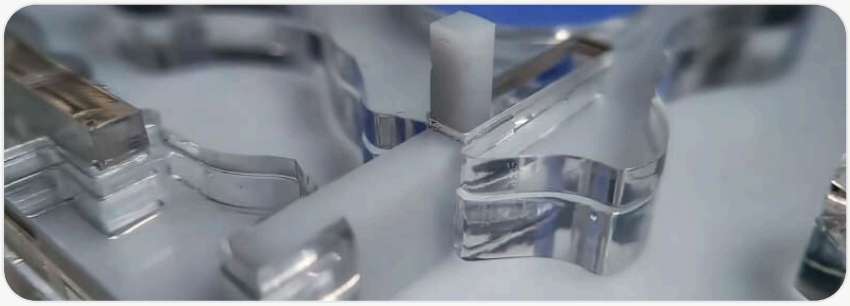
7.5 cm
SMALL ROUND NEST
5 chambers: small species or founding queens

10 cm
MEDIUM SQUARE NEST
A small to medium colony of a small species

5–20 mm
CHAMBER DEPTH
Match it to the size of the workers

These come from the Anthouse NaturColor nests I reviewed, whose names are the maker's labels: the round "5x5x1.3" is 7.5 cm across and 1.3 cm high, and the square "10x10x1" is 10 cm wide and 1 cm high. The Esthetic Ants Ytong nest comes in chamber depths of 5, 10, 15 and 20 mm. Pick a depth a little taller than your biggest workers: tiny species fit the thinnest chambers, while large ones such as *Camponotus* need more room. The 10x10x1 also holds a fairly large 1–2-year-old colony of a tiny species such as *Tetramorium*.

Good nests let you grow in steps. The Anthouse 10x10x1 has a small sliding door: once the colony has filled the open chambers, you open it and a second set becomes available, with no new nest to connect. My **Anthouse 10x10x1 review** shows the door.



The small sliding door keeps a second set of chambers closed until the colony has filled the first.

Signs it's time to move up

Don't move on a calendar. Move when the setup tells you to. These signs mean the tube is full, and it's time for a tub or a fresh tube:

- **A crowded tube.** Workers and brood fill most of the dry space, and opening the plug lets ants pour out.
- **Water running out.** The reservoir has shrunk to a thin layer and the cotton is drying out.
- **Dirty cotton.** It is stained, moldy or full of trash.
- **Brood filling every space.** Eggs, larvae and pupae are piled up, and there's no free corner left.



This *Lasius emarginatus* colony has filled the dry part of its tube, a classic sign that it is crowded.

These signs mean a nest is full, and it's time for the next step up:

- Workers and brood have filled every chamber you gave them.
- More and more workers live in the outworld instead of the nest.
- Larvae and cocoons are stacked in tight heaps.

GOOD TO KNOW

One sign is a reason to look closer; two or three are a reason to move. If the cotton is still damp and clean and the ants have room, leave them alone, even if the tube looks old (see **Chapter 4**). Don't move a colony during its winter rest unless there is mold or the water has run out (see **Chapter 7**).

A tubs and tubes setup buys you time, because you can keep swapping fresh tubes inside the tub. Move to a real nest when one or two tubes no longer hold the colony, roughly when it has grown beyond a few dozen workers. That is stage 3 of the journey.

STEP BY STEP

Moving day

A move is a disturbance, so turn it into a choice. Ants change homes willingly when the new place is more comfortable, and they do it on their own schedule. Make the new home better than the old one and the colony does the moving. Never shake, tap or pull the colony out, because that can hurt the queen and the brood. The same steps work from a tube to a first nest, or from a small nest to a bigger one.

1

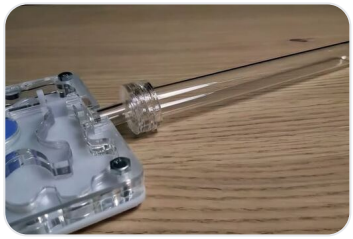
Get the new home ready

A day or two ahead, hydrate the nest as described in the humidity section earlier in this chapter (Ytong needs time to soak), wash anything new, and check the lid and ports. Brush a fresh band of oil in the outworld.

2

Build the route

Connect the new nest to its outworld and close the unused ports. If the nest has no outworld of its own, your tub can serve: stand the nest inside it, or run tubing through a hole in the tub wall and seal the gap. Then link the old test tube or nest to that outworld with short tubing or a test tube adapter (many acrylic nests include one). Vinyl tubing 10 mm wide inside is a common choice. Leave no gap at any joint.



3

Make the new nest dark and humid

Cover it with dark card or a red cover, and make sure it is damp but not wet. The ants should find a better home than the one they have.

4

Make the old home less inviting

Take off the foil or cover of the old tube or nest and shine a bright lamp on it. Use a cool LED lamp, because heat can harm the colony. Keep the old home damp until it is empty: the aim is to make it less comfortable, not dangerous.

5

Wait and watch from a distance

Give it a few days, sometimes a couple of weeks. The workers usually scout and start carrying brood first, and the queen often follows. Look once a day, and don't poke.

6

Close up

When the queen and the brood are in the new nest, look through the old tube once more for brood or a stray queen, then disconnect it and plug the port. If a few ants linger, leave the link a little longer before you remove it.

PRO TIP

If nothing moves after a week or two, check the new nest, not the ants. Too bright, too dry, too wet, too big or a spot with vibrations are the usual reasons, so fix the nest and give them time.

CHAPTER SUMMARY

Remember this

- Give every colony a dark, humid nest and a separate outworld, and keep food, water and trash in the outworld.
- A test tube inside an open plastic tub, ringed by a continuous band of escape prevention oil, is the simplest first outworld.
- Choose the nest for your species: acrylic for tiny escape artists, Ytong or sand for humidity-loving diggers, wood for wood-nesters.
- Water only one side of the nest, so the colony can choose between a moist and a dry area.
- Give the colony a nest it nearly fills, and move up one step at a time, never into a big empty space.
- Move when the tube is crowded, dry or dirty, and let the colony walk across to a darker, damper home instead of forcing it.



3 PART THREE

Growing strong

Climate, hibernation and the art of turning a few dozen workers into a colony of thousands, plus how to fix things when they go wrong.

7 **Climate, humidity and hibernation** 82

8 **From hundreds to thousands** 96

9 **Problems and fixes** 109



7

CHAPTER SEVEN

GROWING STRONG

Climate, humidity and hibernation

Ants can't warm themselves, so the climate you give them sets the pace of everything: how fast the brood grows, how busy the workers are and how healthy the queen stays through the years.

Get the climate right and a colony almost looks after itself. This chapter covers the temperature, humidity, light and calm your ants need, how to warm a nest without cooking it, and how to give your colony the winter rest that keeps a queen healthy for years.

It's the chapter that turns a colony that survives into a colony that grows.

IN THIS CHAPTER

- Why warmth sets the speed of your colony
- The 20–28 °C comfort zone and how to heat safely
- How to keep a nest humid, not wet or moldy
- What hibernation is and which species need it
- A step-by-step winter rest and spring wake-up
- What to do with species that never hibernate

WARMTH

Why temperature matters

Ants are **cold-blooded**, which means their body temperature follows the air around them. A warm nest gives you a fast, busy colony, and a cold nest gives you a slow, sleepy one.

Everything an ant does runs on chemistry, and chemistry speeds up with heat. The work a body does to turn food into energy and growth is the **metabolism**. In a warm nest it runs fast: eggs hatch sooner, larvae grow quicker (eggs, larvae and pupae together are the **brood**), workers **forage** (go out to look for food) more and the queen lays more. In a cool nest everything slows down.

You can see this in the first weeks of a colony. As **Chapter 4** explains, the first workers, the nanitics, usually appear about 6–10 weeks after the first eggs: closer to 6 in a warm room, closer to 10 in a cool one. The rule keeps working for years: within the safe range, the warmer the nest, the faster a colony climbs from a handful of workers to hundreds and then thousands.



This young *Lasius niger* colony was kept warm for growth, and its brood is gathered close together near the cotton plug of the test tube.

What matters is knowing your species' range and keeping the nest steady, because ants cope badly with sudden swings. You don't need lab equipment for that.

?! **DID YOU KNOW?**

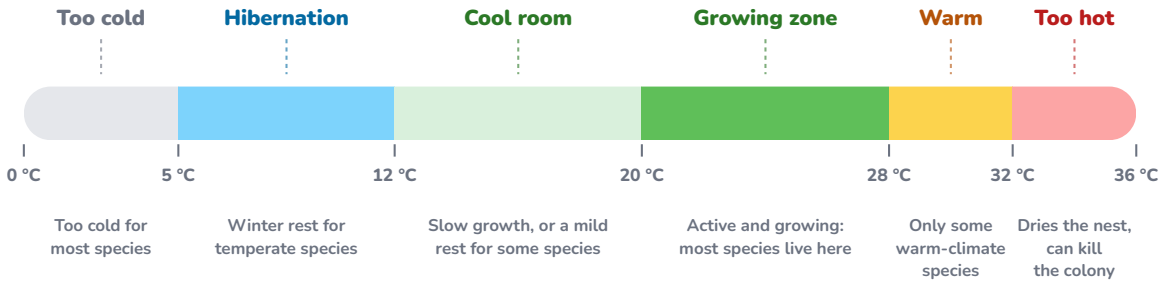
Ants are natural thermostats. Workers carry their brood toward warm spots when it's cool and away from them when it gets too hot, and black garden ants are easy to find in summer under stones the sun has heated. A nest with a warm side and a cooler side lets your ants do the same.

COMFORT ZONE

The right temperature

For most of the species in this book, a nest temperature of **20–28 °C** is the sweet spot. A few warm-climate species like it up to 30–32 °C, but for most species a nest above about 32 °C is dangerous. In the diagram, look for the green growing zone first.

Temperature zones CLIMATE



The green zone is where most species grow best. Most hibernation happens in the blue band at 5–12 °C, but some Mediterranean species, such as *Messor barbarus*, rest at 12–16 °C. Anything above 32 °C puts the colony in danger.

Between 12 and 20 °C a cool room keeps ants alive but slow, and a few species do their winter rest in this band (the hibernation section explains which). Between 28 and 32 °C only some species, such as certain desert and tropical ones, are comfortable, so check yours first.

Every species has its own range (**Appendix A** has them all). Here are six examples with their nest temperature, humidity and winter needs:

Species	Nest temperature	Nest humidity	Hibernation
Lasius niger	23–25 °C	40–60 %	Required, 8–12 °C
Messor barbarus	21–26 °C	50–60 %	Required, 12–16 °C
Formica cinerea	21–27 °C	50–60 %	Required, 5–8 °C

Species	Nest temperature	Nest humidity	Hibernation
Tetramorium caespitum	21–27 °C	50–60 %	Required, 5–8 °C
Pheidole pallidula	21–28 °C	60–70 %	Required, 12–16 °C
Camponotus maculatus	24–28 °C	50–70 %	None

Numbers from the BRUMA Ants species pages. Humidity and hibernation are covered in the next sections.

These ranges are for the nest itself, not the room: a corner by a sunny window can sit at 30 °C while the room reads 21 °C. Put a small digital thermometer with a probe (a sensor on a wire) right where the ants live, and read it a few times over a day and a night.

PRO TIP

If you don't know your species yet, normal room temperature is fine, and a queen founding in a test tube needs no heat at all. If you add warmth later, aim for around 23–25 °C, which sits inside the range of most temperate species in this book.

HEAT MATS AND CABLES

Heating safely

If your room is cool or air-conditioned, or you want a young colony to grow faster, add a little heat. The two common tools are the **heat cable**, a thin flexible heating wire, and the **heat mat**, a flat heated pad. Both sit under or behind part of the nest. Some nests are made for one: the **heat cable glossary entry** mentions the WaKooshi Venus, with pre-cut cable ports, and the Esthetic Ants Ytong nest, with clips for a cable or mat.

The golden rule is to warm only one part of the nest. This creates a **gradient**, a smooth change from warm to cooler, and the ants pick the spot they like and move the brood to the temperature it needs. If the whole nest is the same temperature and it's the wrong one, they have nowhere to go. Here is the setup I recommend:

1. **Put the heat under one end**
   Place the mat or cable under or behind one end or one side of the nest. Fix it so it can't slide, and never put it inside the nest.

2. **Add a thermostat**
   Use a **thermostat**: a plug-in controller with a probe on a wire (sold for heat mats) that switches the heat on and off to hold the temperature you set. Without one, a heat source can cook a colony.

3 **Place the probe on the nest**

Put the probe on the nest right above the heated area, not on the cable itself, so it reads what the ants feel.

4 **Set a safe target**

Choose a temperature inside your species range, for example 25 °C for *Lasius niger* (23–25 °C), and keep a second thermometer at the cool end.

5 **Test before you trust it**

Run it for a day before the ants move in, or watch the colony closely for the first days. Ants staying only at the warm end suggest the nest is too cool; ants and brood crowding at the far end suggest it's too hot.

Heat dries things out, so the moist side needs checking more often. If your nest has a test tube that holds its water, keep the heater away from it: the warmth can make it flood the nest. Under a plain test tube, warm only the half where the ants live.

WATCH OUT

Never put a heat source inside the nest, and never run one without a thermostat. Above about 32 °C a nest turns dangerous quickly, and ants in a small tube or chamber can't always get away from the heat.

The sun is the other heater you can't control. Never put a nest, a tube or the outworld in direct sunlight or on a sunny windowsill: glass and acrylic trap heat, and a nest can overheat very quickly. In a heatwave, move the colony to the coolest, darkest room, not an attic or a car, and check the water.

THE NEST ENVIRONMENT

Humidity, light and calm

Humidity is the amount of water vapor in the air, usually given as a percentage. Eggs and larvae are soft and dry out easily, and a nest that is too dry can stop the brood from developing. Most species in this book like somewhere between 40 % and 70 %. *Lasius niger* is happy at 40–60 %, *Pheidole pallidula* prefers 60–70 %, and a few rainforest ants such as the leafcutter *Atta cephalotes* want 85–95 %.

A moist side and a dry side

Just as with temperature, the best nest offers a choice. Harvester ants such as *Messor* dig down to damp soil for the queen and brood and keep their seeds in drier chambers above. In your nest, **hydrate only one end or one side** so the other end stays drier. For *Messor barbarus*, the brood chambers sit at 50–60 %, while the granaries, where the ants store seeds, should stay very dry, ideally 10–40 %. Damp seeds can sprout or grow mold.

Keeping each nest type humid

Each kind of nest holds water in its own way:

Nest	How it stays humid	What to watch
Test tube	Water sits behind a cotton ball, and the damp cotton keeps the air moist.	Low water or mold in the cotton. Move the colony to a fresh tube when it happens.
Ytong	The aerated concrete soaks up water and releases it slowly. Add water to the hydration chamber (a small water chamber in the block), not to the ants' chambers.	Refill the hydration chamber. The material breathes, which helps against mold.
Acrylic	It doesn't absorb water, so it needs a built-in system: a sponge, a wick fed by a water tank, or a test tube.	It dries quickly, and stagnant air raises the risk of mold.
Sand or soil	Moisten one side of the sand with a pipette (a small dropper); a light spray also works. It darkens when wet. Wood or bark holds moisture.	Flooding. Add a little water at a time.

My **comparison of Ytong and acrylic nests** covers how each one handles humidity. A small digital **hygrometer** (a humidity gauge) in the nest area measures it, but a reading in the outworld shows only the room. You can also judge by eye: damp nest material looks darker, and the water level behind the cotton shows when a tube runs low.



A *Lasius emarginatus* worker, with its reddish thorax, next to the cotton plug of a test tube. The damp cotton keeps the air in the tube moist.

Too dry or too wet?

Ants can't tell you when the humidity is wrong, so learn the signs. Correct either extreme a little at a time:

Look at	Too dry	Too wet
The nest	Pale, dry-looking material and dry cotton.	**Condensation** (water droplets on the walls), puddles and a musty smell.
The ants	Workers crowd around the water source, and the brood looks shriveled.	Ants and brood avoid the wet part. Small ants can drown in puddles.
The risk	Eggs and larvae dry out, so the brood stops developing.	Mold: fuzzy white, gray or green patches on food and damp surfaces.
The fix	Add water on the moist side, spray the sand, refill the reservoir.	Stop adding water, let the nest dry, remove leftovers and clear any blocked vents (never open anything an ant can escape through). If mold stays, move to a fresh nest.

Mold is the most common humidity problem, and it very often starts with leftover food (dirty hands and old, wet cotton are the other usual causes). Remove leftovers within a day or two, keep food in the outworld once your colony has one, and never let sugar water sit and ferment. **Chapter 9** covers mold in more detail.

Light and vibrations

In nature a nest is a dark, quiet place underground or under a stone, so a bright, shaky nest stresses a colony. Cover a test tube with tinfoil or dark paper, and put a dark or red cover over acrylic chambers. A red cover usually lets you watch without bothering the ants.



The brood of this colony sits at the far end of the tube, inside its holder, where it is darkest and quietest.

Put the nest on a stable shelf, away from speakers, washing machines and slamming doors, and look in quickly and rarely: every look adds vibration and stress. A liquid feeder (a

small reservoir that gives a steady supply of water or sugar water, see **Chapter 5**) means fewer visits.

HIBERNATION

The winter rest

Hibernation is the word ant keepers use for the cold rest that temperate colonies take in winter. Its biological name is **diapause**: a built-in pause in which the metabolism slows right down, the queen stops laying eggs and the larvae stop growing. Almost everyone in the hobby says hibernation, and so do I.

Why does it exist? Because winter is hard: cold nights and short days make food and water hard to find, and a cold-blooded animal can't stay active in the freeze. So wild ants retreat underground and wait for spring.

Does your colony really need it? Not to get through the first winter: most species survive without one. The cost shows up later, because keepers and myrmecologists (ant scientists) report that a queen kept without a proper rest may live a shorter life, and the colony with her. Picture a queen with a limited amount of life energy: if she uses it for 9 months a year, she lasts longer than if she uses it for 12. So when your species rests in the wild, give it that rest.

An **internal clock** is also at work. Even in a warm room, a queen often lays fewer eggs in autumn and the workers forage much less. A sleepy colony in October is not a sick one, so don't force it awake with extra heat or food.

Which species need it

The species directory (**Appendix A**) sorts every species into three groups: **required** (give it the rest every winter), **recommended** (it does better with one) and **none** (a warm-climate species that stays active all year). Most European species, such as *Lasius niger*, *Formica cinerea* and *Messor barbarus*, are in the required group. Here is how the 45 species divide up:

24	10	11
REQUIRED	RECOMMENDED	NONE
Cold rest needed	Not needed, but it helps	Active all year

PRO TIP

Not sure what your queen is? Identify her before the first autumn with the photo tips in **Chapter 3** or by asking in the **BRUMA Ants Discord**, then look her up in the **species directory**. Locally caught queens from temperate climates usually need a winter rest, so the earlier you know, the better you can plan.

Species with a recommended rest

The ten species marked recommended don't strictly need a rest, but they do better with one. Their temperatures differ, so read your species page; the steps are the same.

Species	Rest temperature	Months
Manica rubida	5–10 °C	Oct-Mar
Solenopsis fugax	5–10 °C	Nov-Feb
Aphaenogaster subterranea	8–12 °C	Nov-Feb
Camponotus japonicus	8–12 °C	Nov-Mar
Plagiolepis pygmaea	10–15 °C	Nov-Feb
Aphaenogaster senilis	12–16 °C	Dec-Feb
Camponotus barbaricus	12–18 °C	Nov-Feb
Pogonomyrmex rugosus	13–16 °C	Dec-Feb
Messor ebeninus	15–18 °C	Jan-Feb
Camponotus fedtschenkoi	15–18 °C	Dec-Feb

The ten species marked recommended, with the rest the species pages suggest.

For *Camponotus fedtschenkoi*, keepers report that the queen stops laying around midwinter: offer sugar water and drinking water, feed less protein and keep a little moisture in the nest until the eggs return.

When to start

For most temperate species the rest runs from about October or November to February or March, with at least a couple of months of diapause. My care guides give late October to late March for *Lasius niger* and late October to early March for *Messor barbarus*. Seasons are shifting in many places, so decide by the calendar and by your colony's behavior (fewer eggs, less foraging) rather than by the weather outside.

STEP BY STEP

How to hibernate your colony

Hibernating a colony is simpler than it sounds: slow the colony down gently, cool it gradually, and park it somewhere steady at the right temperature. My **tutorial on how to hibernate your ants** covers the same ground.

Choose the place

Pick the place first, because it decides the temperature. If you can't give the temperature your species needs, choose a species whose rest fits your home (**Chapter 10**). There are three common options:

Place	Temperature	Good for	Keep in mind
Fridge or wine cooler	About 5–8 °C	*Formica cinerea*, *Tetramorium caespitum* (5–8 °C)	Most household fridges run at about 3–5 °C: set it warmer and check with a thermometer.
Cool cellar or garage	About 8–12 °C	*Lasius niger* (8–12 °C)	A garage follows the weather, so bring the ants inside before a hard freeze. No cellar? A fridge or wine cooler that holds 8–10 °C also works.
Cool room	About 12–16 °C	*Messor barbarus*, *Pheidole pallidula* (12–16 °C)	An unheated room works. A normal fridge is too cold for these species.

A fridge or wine cooler gives the steadiest temperature: use a middle shelf, away from the back wall, often the coldest spot. A garage or cellar follows the season, so a thermometer that records the lowest and highest values shows what really happens. Several test tubes stay put in a cardboard holder (see my **test tube holder tutorial**). A bigger nest with an outworld usually won't fit in a fridge: use a cellar, garage or cool room, remove all food from the outworld and keep the escape barrier in place.

The plan

Once you know the place, follow these steps:

1. **Check your species**
   Look up whether your species needs a rest, at what temperature and in which months (**Appendix A**), and note the date you'll start cooling.

2. **Stop the protein**
   A week or two before cooling, taper off the protein and then stop: it encourages egg laying, and uneaten insects rot in a cold nest. For harvester ants like *Messor*, take out old seeds too. Keep offering a little sugar and water.

3 **Let the colony slow down**

Switch off any heat cable or mat and keep the colony at room temperature, or a little cooler, for a week or two (this can overlap with the protein taper in the previous step). The queen stops laying and the workers slow down. Brood may finish growing or simply pause, and both are normal.

4 **Check the water**

While the colony is still warm and active, make sure the water is full. In a nest, fill the hydration chamber or water tank. In a test tube, check the water behind the cotton; if it is low, move the colony to a fresh tube now (**Chapter 4**). Cold slows evaporation, so the water lasts a long time.

5 **Cool down gradually**

Don't carry ants from a 22 °C room straight into a 5 °C fridge. Step the temperature down over a week or two, for example a few days in a cool room at about 15 °C and then the final place.

6 **Move in and leave them alone**

Put the colony in its place, dark and with a thermometer next to it, and write the start date on a label. Each disturbance interrupts the rest.

7 **Check once a month**

Look quickly without taking the colony out of the cold: is there still water behind the cotton, and any mold? If the water is almost gone or mold has appeared, move the colony into a fresh tube (**Chapter 4**) in the same cool place, working quickly. It's the one good reason to disturb a resting colony.

Don't be alarmed the first time you look in: a hibernating colony often sits in a tight, nearly motionless cluster with the queen inside, and it can look lifeless. Worry only about an empty water supply, mold, a sour smell, or a temperature outside your species range.

⚠ **WATCH OUT**

Never let a colony freeze. A hard freeze can kill ants, and a garage in a cold snap is the classic trap. Don't go much colder than your species range either: a rest that is too cold can slow the colony's growth in the years that follow.

Your first winter

A queen caught in summer rests too, even with no workers yet or only a handful. Check the water first and, if it is low, move her to a fresh tube while it's still warm (**Chapter 4**). Then

follow the same slow cooling and warming at your species' temperature, skipping the protein step if she isn't being fed. If workers have appeared, treat them as a small colony. A queen caught in autumn may lay few or no eggs before spring, so an empty tube in winter is no reason to worry by itself. If your species is marked none, don't cool her.

SPRING AND BEYOND

Waking up, and species that skip winter

When the rest is over, wake the colony gently, in the reverse order of how you cooled it. Species marked none skip all of this.

Waking up

When the months of your species are over, usually late February or March, reverse what you did: warm the colony up slowly over a week or two. A sudden jump from the cold to a warm room is a shock. A rhythm that works:

DAY 1 — Leave the cold

Move the colony to a cool room at about 15 °C and check the water and cotton (mold, or low water, means a fresh tube: **Chapter 4**). Species that rested in a cool room can skip this step.

DAYS 4–7 — Room temperature

Move it to its normal spot. The workers start to walk around and the cluster loosens.

AS SOON AS WORKERS WALK — Sugar first

Offer a little honey or sugar water, often by the end of week 1. Energy comes before anything else.

WHEN THE QUEEN LAYS — Protein returns

Once you see fresh eggs, offer small amounts of protein again, and switch the heat source back on if you use one. A queen can take from days to a few weeks to lay again, and that's normal.

Species that don't hibernate

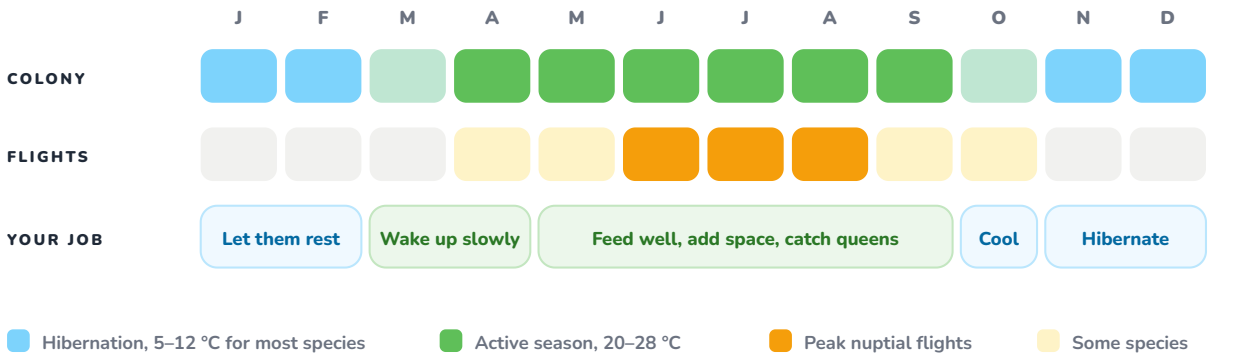
Eleven species are marked none, mostly tropical and warm-climate ants such as *Atta cephalotes* and *Camponotus maculatus*. They stay active all year, so don't hibernate them: cold can harm them. Keep them inside their normal range through winter, for example 24–28 °C for *Camponotus maculatus*, and watch for a room that cools at night (a heat mat on a thermostat solves it) and for dry indoor air from heating, which means checking the humidity more often.

PUTTING IT TOGETHER

The keeper's year

The ant year has a simple rhythm. The diagram follows a typical European species: blue for the rest, green for the active season and amber for the **nuptial flights**, the mating flights when young queens and males leave their nests.

The ant keeper's year SEASONS



A typical European species. Tropical species stay active all year: check your species in Chapter 10 and Appendix A.

Read it from top to bottom: the colony row shows rest and activity, the flights row shows when queens fly, and the last row tells you what to do. Shift it a month or so for your own species.

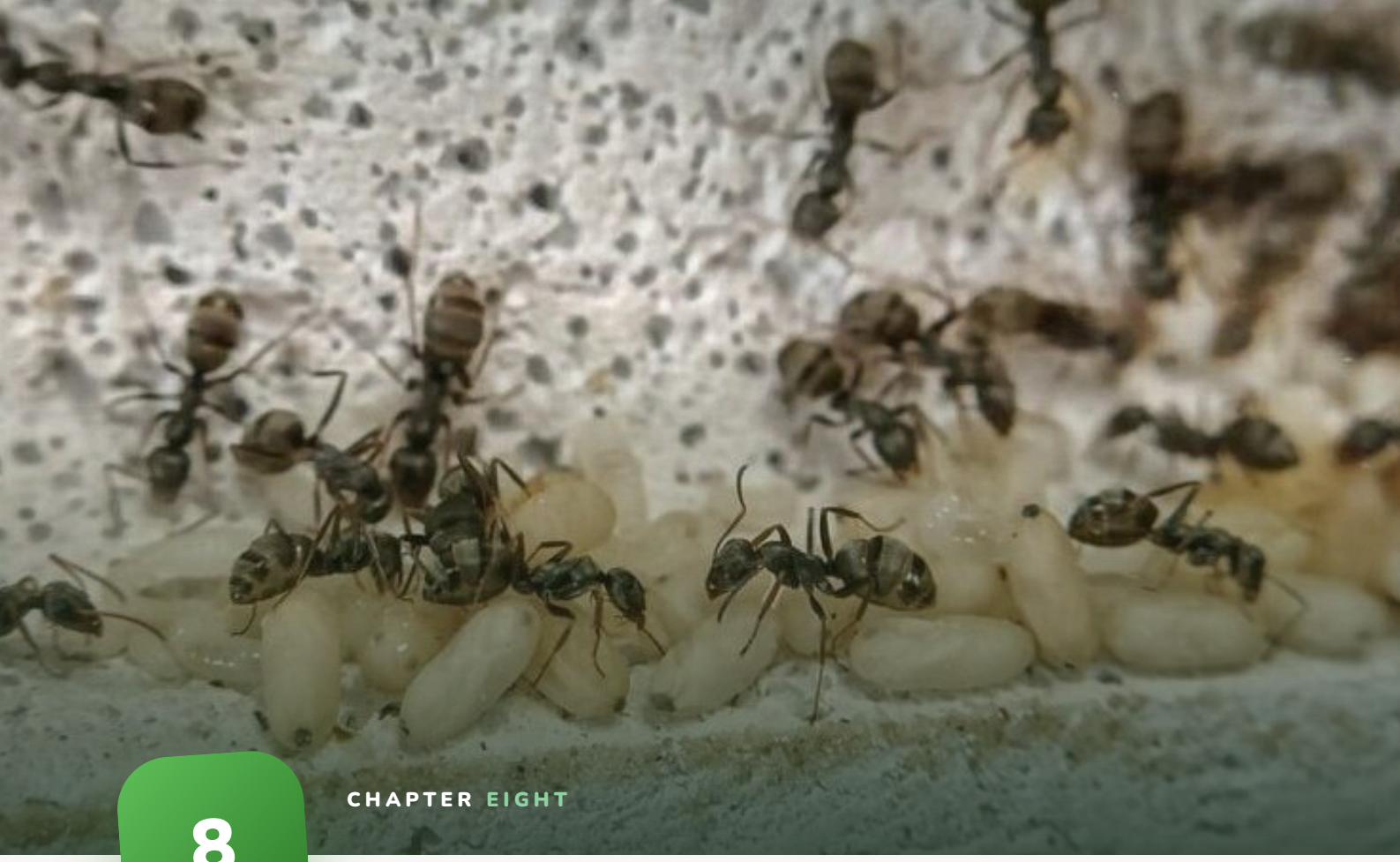
- **Winter (November to February):** the colony hibernates in its cool place. Check the water and mold once a month and leave it alone.
- **Spring (March and April):** wake the colony up slowly. Sugar comes first, protein when the queen lays.
- **Summer (May to September):** the growing season. Keep the nest at 20–28 °C, feed well, add space as the colony grows, and catch queens during the flights (**Chapter 3**).
- **Autumn (October):** stop the protein, switch off the heat and cool the colony down gradually.

Tropical species skip the cold months, and every species has its own months, so use your species page rather than the calendar alone. The months here are for Europe, where I live; south of the equator, shift them by about six months. **Appendix C** has a printable care calendar and hibernation checklists, and in **Chapter 8** we take a colony from hundreds to thousands of workers.

CHAPTER SUMMARY

Remember this

- Ants are cold-blooded, so warmth sets the speed of the brood and the colony. Most species grow best between 20 and 28 °C, and anything above about 32 °C is dangerous.
- Heat only one part of the nest from outside, always with a thermostat, so your ants can choose between a warm side and a cooler side.
- Keep one side of the nest moist and the other drier, and watch for the signs of too dry (shriveled brood) and too wet (condensation and mold).
- Most temperate species need a winter rest of at least a couple of months, at their own species' temperature (mostly 5–12 °C, some Mediterranean ones 12–16 °C).
- Stop protein first, cool down and warm up gradually over a week or two, keep the water full and check once a month for water and mold.
- Species marked none in **Appendix A**, mostly tropical and warm-climate ants, never hibernate and need steady warmth all year.



CHAPTER EIGHT

8

GROWING STRONG

From hundreds to thousands

A colony of 20 ants and a colony of 2,000 are very different pets. This chapter shows how growth really works, how to keep space, food and cleaning ahead of it, and what to do when your colony becomes the busiest thing on the shelf.

The first year is slow, and that's normal. Then something changes: more workers bring in more food, more food raises more brood, and the colony speeds up. That's the moment most keepers get caught out, with a nest that is too small, a feeder that runs dry in two days and an outworld nobody has cleaned.

Here I show you how to keep up, from your first hundred workers to your first few thousand.

IN THIS CHAPTER

- How fast colonies really grow
- Feeding and a daily to monthly routine
- Going on vacation without worry
- Planning nests and outworlds ahead
- Majors, minors and counting workers
- Alates, giving away and queen lifespan

THE GROWTH CURVE

How fast a colony grows

Ant colonies don't grow in a straight line. They creep along for the first year, pick up speed in the second and then take off, because every new worker makes the next batch of workers easier to raise.

At the start, one ant does everything: the queen lays the eggs and tends the brood (eggs, larvae and pupae). Her first workers, the nanitics from **Chapter 4**, are only a handful. But each new worker brings food home and looks after the brood, so the queen can lay more and the colony can raise more. That's why growth is closer to **exponential** than linear: instead of adding the same number of workers each month, the colony adds more than it did the month before, so the curve starts flat and then climbs steeply. Keep patience handy.

How a colony grows GROWTH



Notice that growth is flat at first and pauses in the shaded winters, then climbs steeply from year three.

Some things push the curve up and some hold it back. Your species matters most: each species page lists its growth as moderate, fast or very fast, and a few examples follow in a moment. Beyond that, four things are in your hands:

- Warmth in the growing season, inside the range of your species (most do well at 20–28 °C), makes the brood develop faster.
- Plenty of protein feeds the queen's eggs and the growing larvae (**Chapter 5**).
- A proper winter rest, for species that need one, lets the queen recover for the next season (**Chapter 7**).
- Enough room, which the next section is all about.

Species	Growth	Top size (workers)	What to expect
Lasius niger	Moderate	-	Steady and forgiving, a good species to learn patience with
Camponotus ligniperda	Moderate	5,000	A slow, quiet first year; many colonies multiply from the second or third year
Messor barbarus	Very fast	1,000	Can reach 1,000 workers in a few years at the right temperature
Formica cinerea	Very fast	10,000	Explosive growth within a few years
Camponotus nicobarensis	Very fast	10,000	Needs no winter rest, so it can keep growing through the year

Growth speed and top colony size as listed on the species pages of the BRUMA Ants website. A dash means the page gives no figure.

Every species levels off at its own top size, which is why the table has that column: if you dream of thousands of workers, pick a species with a higher top size (**Chapter 10**). If winter comes before your first workers, the queen rests too, in her test tube (**Chapter 7**). Don't compare your colony with someone else's video: a fast species in a warm room will always look ahead of you.



WATCH OUT

Don't rush the move to a big home. A small colony in a huge nest gets stressed, because ants feel safest in a snug space. Give more room when the colony needs it, not when you're excited about a new setup.

ROOM TO GROW

Planning space ahead

A colony that outgrows its home gets cramped fast, and a cramped colony is a stressed one. In their episode on **colonies that grow out of control**, the hosts of The Ant Pod podcast point to setups that can't expand as a common cause of overcrowding. The fix is to grow the home in steps.

Modular nests and sliding doors

A **modular** setup grows in pieces, so you never have to lift or shake the colony. The Anthouse Acrylic NaturColor 20x10x1 (a nest of about 20 x 10 cm) is divided into 3 zones by little sliding doors: the colony gets just the space it needs, and you open the next zone once it has filled the first. The WaKooshi Saturn is a nest made of clip-in test tubes with a built-in outworld: up to 5 tubes of 100 mm in the medium version and up to 7 tubes of 150 mm in

the large one, and you can start with only some of them. My **Saturn nest review** shows how it works.



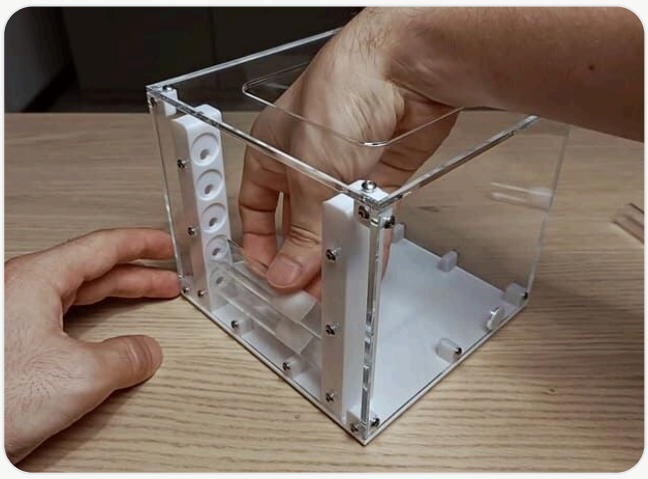
A sliding door between two zones of an acrylic nest: open it once the colony has filled the first zone, and it gets more room without a move.

Connecting nests and outworlds

Nests and outworlds connect with flexible tubing. A standard 10 mm tube connector lets you attach a second nest or a bigger outworld. The WaKooshi Venus nest has an expansion port at the end of its outworld, and the Saturn has two side ports (closed with flexible caps until you need them) and can even connect to another Saturn. Keep every unused port closed with its cap or a tight stopper, and check them often, because tiny ants find any gap. Tubes can also be fun: my **tube spiral tutorial** turns a 3 m tube into a long route, but every extra join is one more place to check.



A side port on a Saturn outworld, closed with a flexible cap: take the cap off when you're ready to connect more space.



Test tubes clip in by hand, one at a time, as the colony fills the ones it has.

How do you know it's time to add space? **Chapter 6** lists the signs that a nest is full: chambers packed with workers and brood, many workers living in the outworld, and larvae and cocoons stacked in tight heaps. Two or three together mean it's time to add space.



Three test tubes of a Saturn nest, all with ants along their length: when every tube looks like this, the nest is full.

Add the new space next to the old one, open the connection and leave the colony alone: the workers explore and move the brood across when they find the new space better. If they leave the old chambers entirely, keep that part damp until it's empty. **Chapter 6** has the full moving-day steps, including what to do when nothing moves.

Plan earlier for fast growers. A *Formica cinerea* nest that looks roomy at the start won't stay that way, and *Tetramorium caespitum* looks slow until it reaches a certain worker count and then takes off. Never shake or pull a colony into new space: connect it, keep it dark and damp, and give the workers a few days to settle.

Match the material to the species as well. *Messor* majors can chew tunnels through Ytong, the lightweight aerated concrete many nests are carved from, so keep a Ytong nest inside a closed plastic or glass enclosure. Tiny *Pheidole* workers are escape artists and need tightly layered acrylic, which is one reason *Pheidole pallidula* is rated 7 (advanced) on my site.

MORE MOUTHS

Feeding a big colony

A colony of 1,000 workers eats far more than a colony of 100, and its growing brood needs plenty of protein too. Small insects can go in whole, but kill large ones and cut them open so the workers reach the soft parts. **Chapter 5**'s table gives starting portions by colony size: for 500 workers or more, several whole insects at a time, two or three times a week. Then adjust to the leftovers: if everything is gone in a day, offer more, and if half is still there after two days, offer less.

Sugar has to scale up too. A drop on tinfoil is gone in minutes, so switch to a bigger liquid feeder (**Chapter 5**). A 5 ml feeder suits a growing colony, and my *Lasius niger* and *Crematogaster scutellaris* colonies get a 10 ml one, which in summer can last several weeks. Check it weekly: if the liquid is cloudy, bubbly or smells sour, replace it, and rinse feeders

with warm water (no soap) at every refill. My **liquid feeder review** covers sizes that last from about a week to about a month.

Harvester ants such as *Messor* need a seed stock rather than a pile of insects. The workers carry seeds into dry chambers called granaries. Offer a mix of seeds of different sizes, because the majors crack the tough ones. *Messor barbarus* can live on seeds alone, but a few insects once the colony has grown speed up the brood. Store your own seeds dry in a closed jar, and remove any that sprout or go moldy. **Chapter 5** lists which seeds are safe to buy and which to avoid.

DO

- Remove leftovers at every visit
- Rinse feeders at every refill
- Keep seed jars closed and dry

AVOID

- Piling in a week of insects at once
- Leaving dead insects for days, which invites mold and mites
- Letting a feeder run dry or turn sour

KEEPING IT TIDY

The routine of a big colony

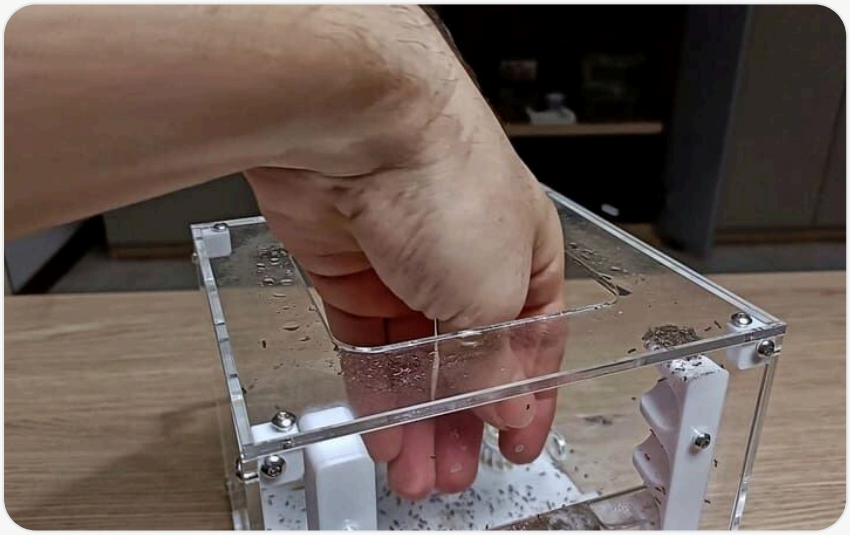
With a big colony, small jobs pile up fast if you skip them. A routine turns them into a daily glance, two or three short feeding visits a week and a longer clean once a month. The daily column is just a look as you walk past, so problems show early. The escape barrier in the table is the slippery band of escape-prevention oil near the top of the setup (**Chapter 6**). A printable version of the weekly and monthly lists is in **Appendix C**.

Task	Daily glance	Every week	Every month
Water and humidity	Look at the feeders and the nest's water tank	Top up the water; replace cloudy or sour sugar water; check the nest is neither dry nor soaked	Take the feeders apart, wash them with warm water (no soap) and refill
Feeding	Is the sugar still there?	Protein two or three times; seeds for harvesters	Review the month's leftovers and adjust portions
Leftovers	Spot old food	Remove all leftovers and sprouting seeds	Check the corners for forgotten pieces
Outworld and trash pile	None	Remove loose waste with tweezers	Wipe the walls (not the oil band) and replace dirty sand or soil
Mold and mites	A quick look at food and corners	Check feeders, nest corners and the trash pile	Inspect the whole nest for mold, mites and stuck brood

Task	Daily glance	Every week	Every month
Escapes	Glance at the lid and the escape barrier	Check ports, stoppers and tubes; renew the escape-prevention oil if worn	Inspect every join and connector
Colony log	None	One line in the log	A photo and a worker estimate

Daily is a glance, weekly is the main session and monthly is the deep clean.

Many ants dump their waste in one corner of the outworld. In *Messor* it's husks and leftover seeds, and you clear this trash pile every week with long tweezers or a small paintbrush. For the monthly clean, use a damp cloth with no soap or sprays, and close the tube to the nest first if you can (a tube clamp or a plug that fits the tube works), so the workers stay inside. A wide opening makes this easier. The built-in 7x7 cm outworld of the Anthouse nest is too small for it, so I'd connect a bigger one, like the one in my **outworld review**.



A wide top opening makes weekly feeding and cleaning easy: here a hand reaches into the outworld of a WaKooshi Saturn nest.

Mold looks like white or green fuzz on old food, wet cotton or damp soil. Mites are tiny moving specks on food or near the trash pile. Both love leftovers and constant dampness, so this routine is your best prevention. If you do find them, don't panic: **Chapter 9** shows what to do.

PRO TIP

Look after your healthiest colonies first and any colony with mold or mites last, and wash your hands and tweezers between colonies so you don't carry mites from one setup to the next.

DIFFERENT SIZES

Majors and minors

In polymorphic species (**Chapter 2**) the colony raises small minors and big-headed majors, sometimes called soldiers. *Camponotus* and the leafcutter ants are polymorphic too, and my **glossary page on polymorphism** has more.

You won't see big majors in a young colony. It makes small workers first, and majors appear as it grows and gets plenty of food, protein above all. In *Messor barbarus* the majors use their huge red heads to crack seeds the smaller workers can't handle. In *Pheidole pallidula* the sizes fall into two clear groups, tiny minors and big-headed majors, a pattern called **dimorphism**. There the majors break food down for the minors and the queen, and they defend the nest.

3–8 mm
MOST WORKERS
Messor barbarus, from small minors to mid-size

14 mm
BIGGEST MAJOR
Messor barbarus

6 mm
PHEIDOLE MAJOR
Pheidole pallidula, other workers 2–4 mm

For you as a keeper, majors mean two things. Plenty of protein helps a polymorphic colony raise them, so don't skimp on insects once the colony has grown. And *Messor* majors have powerful jaws: look for crumbs, new holes in soft materials and gaps at the joints during your weekly check. Watching a major crack a seed while the smaller workers carry off the pieces is the division of labor happening right in front of you.



Messor barbarus workers in the chambers of an acrylic nest, with seed stores in the neighboring rooms.

COLONY LOG

Keeping records

A colony grows so gradually that you won't notice it from week to week. A log fixes that. Every week, write the date, what you fed, what the brood looks like and the temperature and humidity. Once a month, add a worker estimate and a photo. After a few months your notes show how fast the colony grows, what it likes to eat and when it's ready for more space. A printable colony log is in **Appendix C**.

You don't need an exact count, and with hundreds of moving ants you couldn't get one anyway. You need a number you estimate the same way every time, so the trend means something. This five-step method takes a few minutes:

1. **Take a photo**
   Lift the nest cover for a moment (a red cover is gentlest) and shoot from the same angle each time, at a calm moment, with the lid closed.

2. **Count one chamber**
   Zoom in on one chamber or tube and count the workers you can see. If it's too crowded, count a quarter and multiply by four.

3. **Multiply**
   Multiply by the number of chambers or tubes that look about as crowded. In a sandwich nest, count one fifth of the glass area and multiply by five.

4. **Add the workers outside**
   Count the workers in the outworld and in the tubes. A quick look is enough.

5. **Round and log it**
   Round to the nearest 10 under 100, the nearest 50 under 500 and the nearest 100 above that. Hidden workers are not counted, so your number is a minimum.

Put the monthly photos side by side after a few months: the difference is often bigger than you'd guess. Note the brood as well: eggs, larvae and pupae (some species wrap them in a cocoon, others leave them bare), because it tells you if the queen is laying and the next wave of workers is on its way.

AWAY FROM HOME

Going on vacation

A colony can be left alone for a while if you prepare. On their **vacation episode**, the hosts of The Ant Pod name the main risks: water that runs out, a room that gets too hot or too cold, food that spoils and, for escape-prone species, a setup that fails with nobody home.

Before you leave

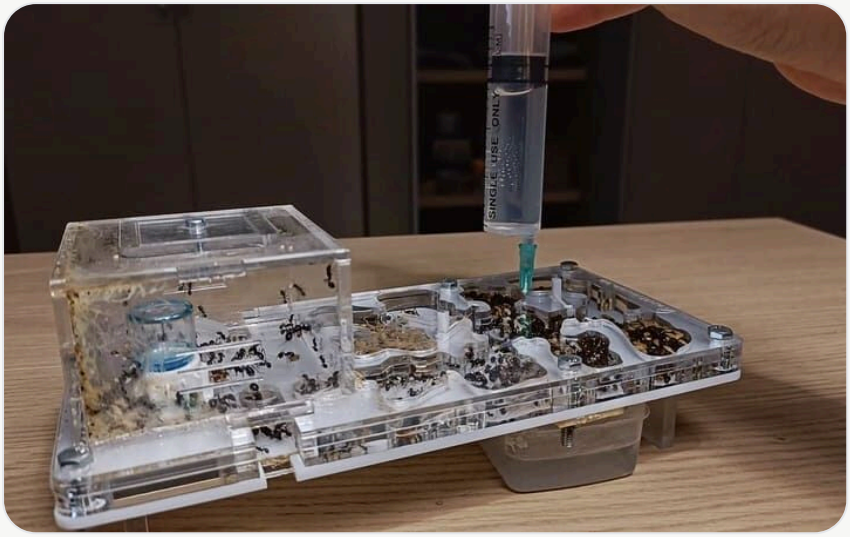
Start about a week ahead.

- [ ] Check every lid, port, tube and escape barrier a few days ahead, so there is time to fix a weak spot
- [ ] Feed a good meal a couple of days before you go, then remove every leftover
- [ ] Fill the liquid feeders and the nest's water tank, and add water to the damp side of the nest
- [ ] Leave long-lasting food: sugar water in a full feeder, jelly cups, sugar cubes or seeds for harvesters
- [ ] Leave a few frozen feeder insects (roaches work well) in the freezer, with a note to thaw one and offer it
- [ ] Pick a room that stays inside your species' range (usually 20–28 °C), away from direct sun, heaters and drafts; run heat cables only with a thermostat
- [ ] Write down your helper's tasks, what to do if ants escape, and your phone number

How long is safe? It depends on the species, the season and your setup. As a rough rule of thumb, an established colony with full feeders, water tanks and a good meal behind it usually copes with about a week, but check your own species and setup first. Beyond that, ask someone to look in. One of the Ant Pod hosts prepared water and sugar for a 13-day trip and now relies on a friend for longer ones.

Harvesters with a full seed stock hold out longest, and a colony in its winter rest is the easiest of all, since it only needs a quick water check once a month (**Chapter 7**). Small colonies and founding queens in test tubes have less margin: check the tube's water before you go and, if it's low, move them to a fresh tube (**Chapter 4**).

Choose a calm helper and keep the job small. Show them where the water and food are, how to open and close the lid without letting ants out, and whom to call, and leave the steps in writing. Tell them not to open the nest or move anything, and what to do if ants escape: stay calm, put the escapees back with a soft brush, and call you. If nobody is available, the hosts mention that boarding services for colonies exist.



Before you leave, top up the nest's water tank. This Anthouse nest has a hole on top, so a syringe does it without lifting the nest.

WATCH OUT

Temperature is the quiet danger. A closed, sunny room can get far hotter than you expect, and above about 32 °C most colonies are in danger, while a cold house can stall a warm-climate colony. Put a thermometer next to the nest a few days ahead and watch the room for a day and a night.

MATURE COLONIES

When a colony gets really big

Once a colony is mature, often after a few years depending on the species, it starts to raise alates: winged young queens and males. They appear in the season when wild colonies of the species fly. The flight months of common European species are in the table in **Chapter 3**. Seeing alates is usually a sign that your colony has reached maturity, so take it as a compliment.

In the wild, the nuptial flight (**Chapter 3**) sends alates from many colonies into the air at once, so queens meet males from other nests. A closed setup has no sky and no unrelated males, so your alates usually can't mate or found a colony. Some keepers experiment with flight arenas, and the hosts of The Ant Pod weigh the ethics in their episode on **nuptial flights in captivity**, but it's an experiment, not a plan. Alates left in the setup eventually die, which is normal.

WATCH OUT

Alates climb well and some will try to fly, so check the lid and the escape barrier whenever you see wings. Never release alates or any ants into the wild: if the species isn't native to your area, escaped queens can harm local ants, and in many places it's illegal.

When the colony gets too big to manage

Some keepers find that the colony has outgrown their time or space. The Ant Pod hosts say the hard part is the upkeep: a big outworld to clean, and species that escape or turn aggressive. Their advice is to adjust rather than reach for drastic measures. Feed less protein, which usually slows the brood. Improve the setup, because enough room prevents overcrowding. And if needed, downsize: pass the whole colony on (see the next section) or, with a species that can have several queens, some keepers split off part of it. This is an advanced step, so ask experienced keepers (**Chapter 11**) before you try it.

?!

DID YOU KNOW?

Ants have no ears. They pick up sound as vibrations through their feet, which is one reason keepers put nests on a steady shelf and keep visits calm.

Giving away or selling a colony

If you pass a colony on, do it legally and responsibly. Check your local law first: some places restrict selling or moving live ants, and the EU has a list of invasive alien species that can't be kept or traded. Label the colony with the right species name, and say so if you're not sure of the identification, since several species look alike. Hand over a care sheet and a healthy colony. To find a new keeper, ask local ant keepers, an ant keeping forum or the BRUMA Ants **Discord server**, and hand over or ship only what you've checked is legal. The Ant Pod episode on **selling ants** stresses accurate labels and healthy colonies. Never release ants as a solution.

How long a colony lives

The most important thing to remember about a big colony is the queen. In a **monogyne** species, one with a single queen, the colony lives about as long as she does. She lays every egg, and when she dies the colony can't replace her and slowly fades. Workers live months to a few years depending on the species, while queens can live for many years (**Chapter 2**). A big colony is a long commitment, and the best care for it is care for its queen: steady conditions, quiet and, for species that need one, a winter rest every year.

CHAPTER SUMMARY

Remember this

- Colonies grow slowly at first and then faster and faster, so be patient in year one and have the next setup ready before you need it.
- Add space in steps, with modular nests, side ports and tube connections, and let the ants move across on their own.
- A big colony needs more protein, bigger feeders and seed stocks for harvesters, but leftovers still go within a day or two.
- A daily glance, a weekly session and a monthly deep clean keep mold, mites and escapes in check, and a worker estimate made the same way each time shows slow growth.
- Prepare for vacations with full water, long-lasting food and a checked setup, and ask someone to look in on trips longer than about a week.
- In a one-queen species the colony lasts about as long as its queen; alates usually can't mate in a closed setup, and ants are never released into the wild.



CHAPTER NINE

9

GROWING STRONG

Problems and fixes

Every ant keeper meets mold, a stray worker or a colony that simply stops growing. Most problems are slow, small and fixable, as long as you look first and act second. This chapter shows what each sign means and what to do.

Problems are part of the hobby, and almost none of them is an emergency. Mold, mites, escapes and slow growth all give you days or weeks of warning, and the fix is usually simple: clean, dry, move or wait.

The chapter starts with troubleshooting tables you can come back to whenever something looks wrong. Then it goes through each problem in turn, from mold and mites to heat, poison and a lost queen: what causes it, how to tell a harmless sign from a real one, and what to do. At the end you'll learn how to ask for help in a way that gets good answers.

IN THIS CHAPTER

- Look first, then change one thing at a time
- Prevent mites, and what to do if they arrive
- Find out why a queen stops laying
- Handle mold and mites, harmless or serious
- Stop escapes, and catch ants that get out
- Ask for help with photos people can use

BEFORE YOU PANIC

A calm approach

Before you fix anything, work out what you are looking at. A colony rarely goes from healthy to lost overnight, so there is time to look and think.

Ants can't tell you what's wrong, but they leave clues: how many workers are out foraging, how fast the food disappears, whether the brood (eggs, larvae and pupae) looks plump or shriveled. Once you know what normal looks like, the odd thing stands out, and a weekly line in your colony log (**Chapter 8**) makes patterns easy to spot. When something looks wrong, I follow three rules:

1. **Observe first.** Look for a few minutes, take a photo and write down what you see before you touch anything.
2. **Change one thing at a time.** If you warm the nest, add protein and swap the nest in one weekend, you'll never know which change worked.
3. **Give it time.** Brood takes weeks to develop, so judge a fix after one or two weeks, not after one afternoon.

Opening, shaking and rearranging a setup is stressful in itself, and a stressed queen may stop laying or even eat her eggs (**Chapter 4**). So the best fix is often the gentlest: remove the cause and let the ants sort themselves out. My post on the **five most common beginner mistakes** covers the classics.

The next two tables list the signs I check first, the likely cause, a first fix and where to read more. The first covers the setup and the food:

What you see	Likely cause	What to do first	Read
Fuzzy white, gray or green patches	Leftover food, wet cotton, stale air	Lift out the food, dry the spot, let air move	Mold
Mold where the queen and brood live	Constant damp, trash in a nest that is too big	Offer a fresh nest and let the colony move	Mold, **Chapter 6**
Tiny moving specks on food or walls	Mites, drawn by rotting leftovers and damp	Remove food, dry and clean, move the colony if there are many	Mites
Ants outside the setup	A gap, a worn barrier, a loose lid or port	Close the gap first, then catch the strays	Escapes
Drops on the walls, puddles	Too much water	Stop adding water and let one side dry out	Water, **Chapter 7**

What you see	Likely cause	What to do first	Read
Dry nest, shriveled brood	Empty reservoir, dried-out cotton	Test tube: move to a fresh tube. Other nests: refill the reservoir	Water, Chapters 4 and 7
Food ignored for days	Not hungry, too cold, autumn slowdown	Remove it, then offer less or something else	**Chapter 5**

Setup and food problems

The second covers the colony itself. Check the season and your species before you worry: a quiet colony in November is normal for a species that hibernates, but not for one that doesn't (**Chapter 7**).

What you see	Likely cause	What to do first	Read
No eggs after weeks	Stress, cold, the season, a queen still settling	Darker, quieter, a bit warmer; wait up to 2 months	**Chapter 4**
Colony stuck at the same size	Cold, too little protein, a nest too big, no winter rest	Work through the causes in the growth section	Growth, Chapters 5, 7 and 8
Brood disappears	Hunger, stress, heat or dryness	Offer protein, keep calm, check temperature and water	Brood that disappears
Many dead ants at once	Overheating, drowning, drying out, poison	Check temperature and water, then ask what changed	Dead ants
Slow and sleepy in autumn	The internal clock of a species that rests in winter	Don't force it; if your species hibernates, plan the winter rest	**Chapter 7**
No young brood for months, queen not seen	A dead queen, or a normal winter rest	Check the season, look for eggs, post a photo	Losing the queen

Colony problems

THE CLASSIC PROBLEM

Mold

Mold is a fungus that shows up as fuzzy white, gray or green patches. It needs food, moisture and still air. A nest is damp by design, so food is the part you control: insects and fruit left in the outworld (the open area where your ants forage), sugar water that ferments, damp seeds and a growing trash pile.

An oversized nest makes it worse. Ants dislike big empty spaces, so they dump their waste in the unused chambers, which can become a time bomb of mold and bacteria. Stale air matters

too: acrylic doesn't let air through and Ytong does, so acrylic nests carry a higher mold risk (**Chapter 7**). My **comparison of Ytong and acrylic nests** goes deeper.

Harmless or serious?

Not every patch is an emergency. Here is how I sort them:

USUALLY A CLEANUP JOB

- A small patch on leftover food in the outworld
- The pale root of a sprouted seed, which only looks like mold
- Mold on the trash pile that you lift out at your weekly look

TIME TO ACT

- Mold on the cotton or the walls of a tube or nest
- Patches in the chambers where the queen and brood live
- Mold that comes back a few days after you clean
- A sour, musty smell from the nest

How to fix it

Where the mold is decides the fix. Mold in the outworld or on food needs steps 1 to 4. Mold on the cotton, on the nest walls or where the queen and brood live calls for step 5 straight away.

1. **Remove the food**
   Lift out leftovers, moldy seeds and fruit with tweezers, then wipe the spot with a clean, damp paper towel. Keep sprays and strong cleaners away from the colony.

2. **Let it dry**
   Stop adding water near the patch. Hydrate only one side of the nest, so the ants can choose (**Chapter 7**).

3. **Let air move**
   Give the outworld ventilation holes (covered with fine mesh for tiny species) or a lid that isn't airtight, and don't pack in damp substrate.

4. **Make the space smaller**
   In an oversized nest, plug the passage to the unused chambers with cotton or foam (or close the sliding door), or switch to a smaller nest (**Chapter 6**).

5

Move the colony

If mold has reached the part of the nest where the queen and brood live, set up a fresh nest or tube next to the old one, connect them and let the ants walk over on their own. Never pick up the queen or the brood.

Moving is the most reliable fix there, because you can't clean chambers full of brood without disturbing the colony. In a test tube it works like the move in **Chapter 4**. Afterward, throw away the old cotton, wash the tube in hot water (no soap) and let it dry.

TINY VISITORS

Mites and other pests

Mites are tiny, eight-legged relatives of spiders, often no bigger than a pinhead. They crawl over old food, around the trash pile and on the nest walls. You can often spot them on workers through the glass with a magnifier or your phone camera zoomed in, without opening anything. The hosts of The Ant Pod, the podcast on my site, also call mites a common problem in their episode on the **best conditions to keep ants**.

They arrive on wild-caught insects, on plants, soil and bark from outside, on unclean feeders, or with a colony shipped from elsewhere. Once inside, they thrive on what mold loves: rotting leftovers and constant dampness. Many mites are scavengers that eat decaying food, not ants, so a crowd of them mostly tells you the setup is too wet or too dirty. A heavy infestation can still mean trouble: keepers of *Messor structor* report that in a damp nest of rotting seeds full of mites, laying stopped and the brood vanished.



Ants and stored seeds in the chambers of a Ytong nest: harvester ants need a dry zone for their seeds, because damp seeds invite mold and mites.

Prevention

- Use feeder insects from a pet shop or breeder, or breed your own, and never wild-caught ones (**Chapter 5**).
- Freeze feeder insects and seeds for at least two days before feeding, then let them thaw to room temperature. *Messor structor* keepers recommend this against mites.
- Remove leftovers within a day or two, and pull out spoiled or sprouted seeds. Keep one dry zone in a harvester nest for the stored seeds.
- Wash your hands, and rinse your tweezers in hot water and dry them between colonies, so mites can't travel from one setup to the next.
- Don't bring in soil, bark, plants or aphids from outside, and look over any new colony before it sits near your others.

If they arrive

Treat mites as a symptom. Remove every leftover and spoiled seed, let the damp part dry out and clean the outworld. A few mites in a colony that is eating, laying and growing need nothing more than cleaning and watching. If they cover the nest or the brood is shrinking, move the colony to a clean, dry nest and throw away the old cotton. Wash a tube or acrylic nest in hot water (no soap); a Ytong or wooden nest can't be cleaned well, so let it dry completely or replace it. Tiny pale specks that jump are usually springtails, small scavengers that don't hurt ants: remove the food and moisture they live on.



WATCH OUT

Never use insecticide on a setup to fight mites. It kills ants too, and ants share food mouth to mouth, so anything toxic travels through the whole colony fast. Cleaning, drying and moving are safer.

ANTS ON THE LOOSE

Escapes

An escape is rarely dramatic: a few workers on the table usually mean a gap you haven't found yet. A loose queen or loose alates (winged young queens and males) need quick action, though: they can fly, and a non-native queen must never end up outdoors. Cover each one with a cup, slide a card underneath and put it back in the setup. Every species page lists an escape risk, from low for *Messor barbarus* to high for *Formica cinerea* and *Pheidole pallidula*. Check it in the table in **Chapter 6** or on the **species pages** before you pick a nest.

The first line of defense is an unbroken band of escape prevention oil (a slippery liquid from ant keeping shops) around the top of the outworld, plus a tight lid (**Chapter 6**). Both wear

out, which is why the weekly check in this section matters. See my **escape prevention glossary entry**.



This glass cube, the Antstore ANTCUBE, has a lid with small round caps and a sand floor with two liquid feeders: every lid, cap and seam is a spot to check each week.

Some species test every setup. For the high-risk ones in the **Chapter 6** table, such as *Pheidole pallidula*, *Tetramorium caespitum* and *Formica cinerea*, use tightly fitting acrylic or a closed box, and work slowly whenever you feed or clean.

Weekly escape check

Run through this during your normal weekly look:

- [ ] The lid sits tight, with no gap at the corners
- [ ] The escape oil is an unbroken band, clean and not worn off
- [ ] Unused ports are closed with proper stoppers, not cotton (some ants chew through it)
- [ ] Tubes, connectors and nest parts fit snugly, with no gaps (also between a Ytong nest and its glass)
- [ ] No cable, tube or plant leans on the outworld like a ladder

If ants get out

A few strays are easy to handle if you go in this order:

1. **Block the leak**
   Put the lid back or cover the opening first. A steady stream of escapees is worse than a few strays.

2. **Find the gap**
   Follow the trail back to its source: a lid corner, a port, a tube join. Fix it with a proper stopper or a fresh barrier.

3. **Collect the strays**
   Let them walk onto a piece of paper, or lead them to a spare tube with a drop of honey. A soft paintbrush helps. Don't crush or spray them.

4. **Keep them in**
   Tip them back into the setup. Never set escaped ants free outside: non-native species can harm local ants, and in many places it's illegal (**Chapter 3**).

Found ants in the setup that look different from yours? They are probably wild ants drawn by sugar or food. Remove the food, seal the way in and never add them to your colony.

PRO TIP
Work over a plain, light-colored tray or tablecloth whenever you open a setup. An ant that falls or runs shows up at once, and you can see where it's heading.

SLOW AND QUIET

A colony that stops growing

A queen that isn't laying and a colony that isn't growing often share the same causes. First check the calendar. Many queens lay fewer eggs in autumn, even in a warm room, because of their internal clock (**Chapter 7**). A queen of some *Messor* species caught after the autumn flight may lay only in late winter or spring, so an empty tube for months can be normal. If winter arrives before or soon after the first workers, a queen or tiny colony rests in her test tube like any other (**Chapter 7**). Young colonies are slow anyway, because one ant does all the work.

2 months
WAIT FOR EGGS
Normal range: a few days to 2 months

6–10 weeks
TO FIRST WORKERS
After the first eggs, faster when warm

1–2 weeks
TO JUDGE A FIX

If the timing is fine, go through these causes one at a time, starting with the easiest to check:

- **Too cold.** Everything slows in a cool nest, and the queen may lay fewer eggs. Put a probe thermometer where the ants live and compare it with your species' range (**Chapter 7**). Warm one side only.
- **Too little protein.** The queen needs protein for eggs and the larvae need it to grow. Offer small, fresh portions and see how fast they disappear (**Chapter 5**).
- **Stress.** Light, vibrations, frequent checks and moving house can all make a queen stop laying. Keep the nest dark and steady, and look in less often.
- **A nest that is too big.** A small colony in a big space feels exposed, grows slowly and fills the extra room with trash. Add space only as the colony fills it (**Chapter 8**).
- **No winter rest.** In species that need a cold rest, skipping it year after year may shorten a queen's life. Check your species' range (**Chapter 7**).
- **An unmated or old queen.** A queen that never mated properly can't produce workers, and an old queen may lay less. You can't fix either, so rule out the other causes first.

Brood that disappears

Ants sometimes eat their own eggs and larvae, and there is nearly always a cause. A hungry colony may recycle brood to recover the protein. A stressed one may do it too: keepers report *Formica fusca* queens eating almost all their larvae after repeated checks and vibrations. Dryness plays a part as well: one keeper lost a season when *Camponotus herculeanus* colonies in dry wooden nests stalled and ate their brood.

GOOD TO KNOW
Judge growth only in the active season, never in the winter rest, and compare it with the photos and notes in your colony log. A single week tells you very little.

DEATHS AND DROWNING

Dead ants and water problems

Some deaths are normal and some are an alarm. The first thing to learn is which is which.

Normal deaths and the trash pile

Workers live from months to a few years, depending on the species, so a few dead ants are part of life. Healthy colonies carry their dead, along with empty insect shells and seed husks, to one spot, usually a corner of the outworld. This trash pile is called the midden (**Chapter 5**), and a small one is a good sign. Lift it out with tweezers when it grows large or turns moldy. Winged ants that never mate also die in the setup sooner or later, which is normal too.

?!

DID YOU KNOW?

In a classic 1958 experiment, scientists dabbed living harvester ants with oleic acid, a fatty acid that decaying bodies give off. Their nestmates treated them as corpses and carried them to the trash pile, even though they were still alive.

When many ants die at once

The warning sign is a sudden pile of bodies, or workers that stumble, twitch or lie on their backs. Think through the usual suspects:

Cause	What you may see	What to do
Overheating	A heat mat or sun nearby, ants still or panicking	Switch off the heat mat or move the nest out of the sun, then keep it in a cool, dark room. More than about 32 °C is dangerous (**Chapter 7**)
Cold	A cold snap, or a winter rest colder than your species' hibernation range	Warm up slowly to the right range for the season (**Chapter 7**)
Drowning	Bodies in drops, dishes or the water tank	Remove open water and serve liquid safely (see the water section)
Drying out	Dry cotton or nest, shriveled brood, workers at the water	Test tube: move to a fresh tube (**Chapter 4**). Other nests: refill the reservoir and add moisture on one side
Poison	Ants stumble, twitch or stand still soon after new food, a plant or a spray	Stop the source, remove the food, air the room and ask for help

Mass deaths: causes and first steps

Poison is the hardest to see. Ants share food mouth to mouth, so one bad meal reaches the queen too. The usual sources are sprayed wild insects and plants, nursery plants treated with insecticide, and household sprays. In one keeper's report, a single sprayed flower killed nearly half of a small leafcutter colony. After any die-off, write down what changed in the last few days: a new food, a cleaning day, a new heater.

Water: drowning, drying and flooding

Ants are so small that even a fat drop of sugar water or a bottle cap of water can drown a worker. Serve liquids as drops on tinfoil or a plastic lid, on squeezed-out cotton (damp, not dripping, and replaced within a day or two) or in a feeder (**Chapter 5**), and cover open water with small stones or cotton. Keep the cotton plug of a water tank out of reach: in one report, a colony of small *Camponotus fallax* workers died after digging into it while the keeper was away.

Drying out is the slow opposite. A test tube loses water over weeks, so check the level at your weekly look, and when the cotton starts to dry, let the colony move to a fresh tube (**Chapter 4**). Refill the reservoir of any other nest on a schedule.

Too much water shows up as droplets on the walls (condensation), puddles and a musty smell. Stop adding water and let the nest dry out, then add a little at a time and on one side only, so the ants can move away from the wet part. If water reaches the ants' chamber in a test tube, move the colony to a fresh tube (**Chapter 4**).

THE HARDEST PROBLEM

Losing the queen

Everything in a colony depends on its queen. Many popular species are monogyne, which means one queen per colony, and she lays every egg. If she dies, no new workers are born. The workers you have keep going for months or even a few years, depending on the species, so the colony fades slowly instead of collapsing, and you may not notice at first.

The signs build up over weeks: no eggs, no small larvae and no new pupae during the active season, fewer workers each month and less activity. Queens hide, so not seeing her proves nothing, and a hibernating colony has no eggs either (**Chapter 7**). In some species, queenless workers lay unfertilized eggs that can only become males, which doesn't save the colony. If you aren't sure, ask for help, as the last section explains.

Can you add a new queen?

Usually not. Ants recognize nestmates by the colony's smell, so a strange queen is an intruder, and in an established monogyne colony she is usually killed. There are rare exceptions: a *Camponotus nicobarensis* colony of only about two dozen workers accepted a replacement queen soon after losing its own. Don't count on it. Some species do live with several queens, but that is a question for the species page, not a rescue plan.

WATCH OUT

Never add a queen to a colony or merge two queens of a monogyne species. Start every new queen in her own setup, and give a queenless colony sugar and water for as long as it lives. You can still learn a lot from watching it.

YOU'RE NOT ALONE

Asking for help

Sometimes you'll be stuck, and that's fine. First look up your species: **Chapter 10** and **Appendix A** cover the popular ones, and each species page on the website lists the temperature, humidity and watch-outs. Then ask, and make it easy for people to help. Take photos in good light, focused on the ants and not on the glass: a close-up of the problem and a shot of the whole setup. For an identification, add a worker seen from above and from the side, with a coin next to it for scale. A short video shows behavior better than a photo.



A few *Messor barbarus* workers photographed through acrylic. The plastic in front is out of focus, so the ants stay the subject. Aim for the same, with more light and a closer shot.

Then tell people the basics. Most answers start with the same questions, so put these in your first message:

Tell people this when you ask

- [ ] The species, or where you found the queen
- [ ] The nest type and size
- [ ] What you feed, and how often
- [ ] What you have already tried
- [ ] How long you've had the colony, and roughly how many ants
- [ ] The temperature and humidity where the ants live
- [ ] What changed in the last two weeks

The best place to ask is the **BRUMA Ants Discord server**, where keepers share photos and help each other. My **YouTube channel** has video guides for many topics in this book. And if a mistake gets you down, the hosts of The Ant Pod dedicate an episode to **their worst ant keeping mistakes**. Everyone makes them.

CHAPTER SUMMARY

Remember this

- Most problems build slowly, so look carefully, change one thing at a time and give each change a week or two before you judge it.
- Mold and mites follow leftovers and constant dampness: remove food within a day or two, keep a dry zone and let air move.
- Fix the gap before you chase the ants. Check lids, ports and barriers every week, and never release escaped ants outdoors.
- No eggs usually means cold, stress, too little protein or the season. If the queen has died, a one-queen colony fades slowly, and a new queen almost never works.
- Many dead ants at once point to heat, water or poison, so check temperature and water first and keep sprays and untreated wild food away from the colony.
- When you're stuck, share sharp photos, your species and what changed recently on the Discord server.



4 PART FOUR

Species and reference

How to choose the right species, where to go next, and the reference pages you'll come back to for years.

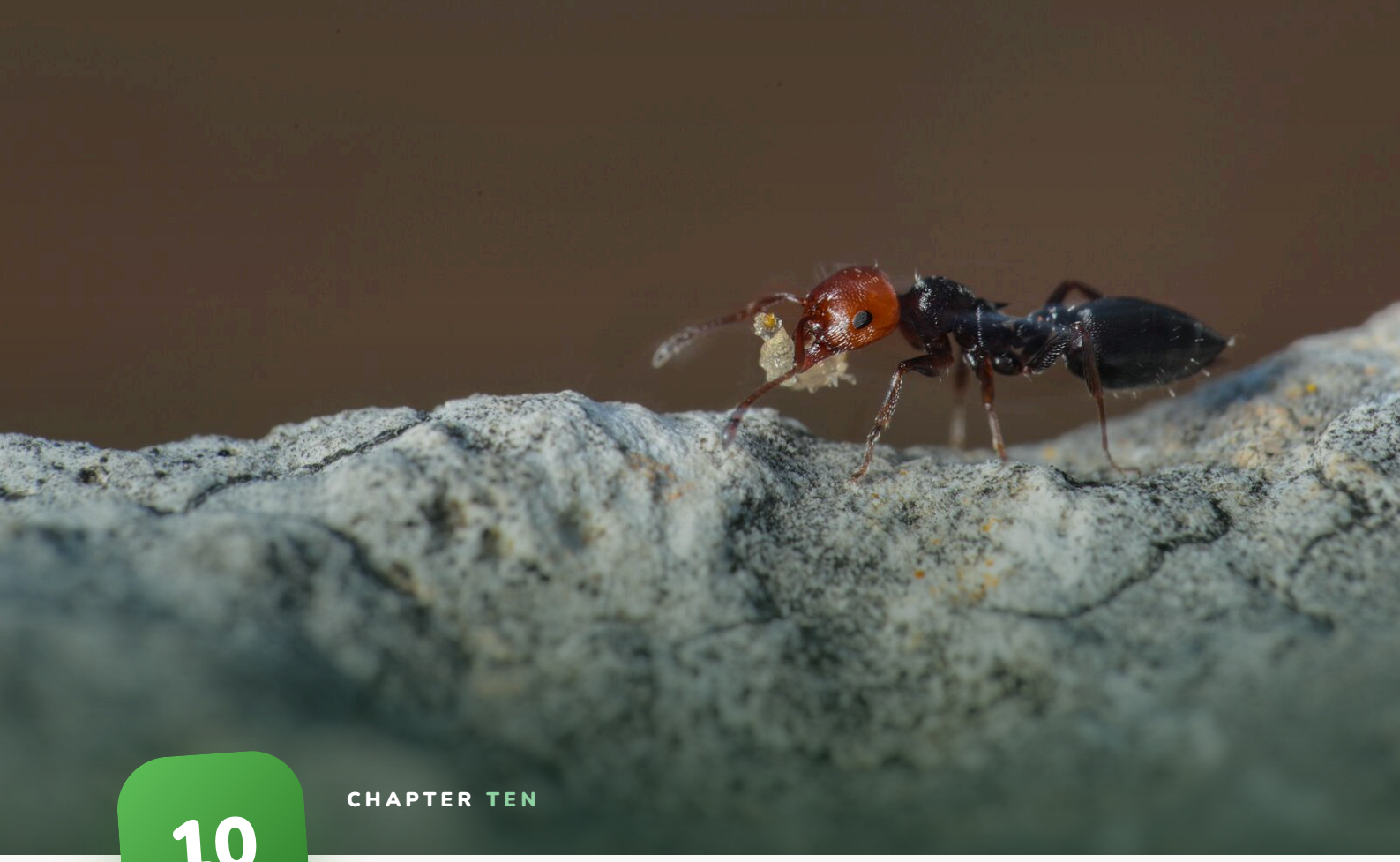
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10

CHAPTER TEN

SPECIES AND REFERENCE

Choosing your species

The species you start with decides how forgiving your first year will be. Match it to your climate, your winter and your free time, and the hobby feels easy. Get it wrong, and even good care won't save the colony.

There are more than 13,000 described ant species, and no two want exactly the same home. This chapter gives you a way to choose: the 1 to 7 difficulty scale from the BRUMA Ants website, five questions to ask yourself and a clear idea of which species to leave for later.

At the end you'll meet five species I'd happily recommend to a friend, each with its photo, its key numbers and what makes it fun to watch. Ideally you read this chapter before you catch or buy a queen. If you already have one, use it to check her needs and plan your next colony.

IN THIS CHAPTER

- Why your first species matters so much
- Five questions to ask before you choose
- How the online species finder helps
- How the 1 to 7 difficulty scale works
- Which species to leave for later
- Five great first colonies, profiled

START HERE

Why your first species matters

Your first colony is where you learn everything else: feeding, housing, humidity, winter. A forgiving species lets you make small mistakes and still end up with a thriving colony. A demanding one turns the same mistakes into a lost queen.

The first reason is simple: ants aren't one animal with one set of needs. Some species live happily at room temperature, others need a warm nest all year. Some sleep through the winter in a fridge, others never hibernate. Harvester ants live on seeds, and leafcutters grow a fungus on cut leaves. Get one of these needs wrong and a colony can fail, which is why not researching the species tops my list of the **5 most common beginner mistakes**.

The second reason is local knowledge. A species from your own region lives in the weather you already know. You can watch when the ants wake up in spring and slow down in the fall, so their temperature, food and winter are easier to get right. Exotic species can wait a few years. Start local, and never release ants into the wild.

Third, everyone slips at the start. I did, with my first colony, and a forgiving species leaves room for that kind of mistake.

HOW HARD IS IT?

The difficulty scale from 1 to 7

Every species in my directory (**Appendix A** lists all 45) gets a difficulty rating from 1 (the easiest) to 7 (the hardest), an overall measure of how forgiving it is. Each species sheet shows what makes the species easier or harder, and these are the same things you should weigh yourself:

USUALLY MAKES IT EASIER

- Calm workers that rarely try to escape
- A queen that needs no food at first
- Seeds in the diet, so a late feeding is no problem
- A winter rest that is easy to give (a cool room, cellar or garage)

USUALLY MAKES IT HARDER

- Escape artists, often tiny ones
- A founding queen that must hunt, or needs another species' workers
- Fungus gardens or heating all year
- A winter rest that needs a fridge, or a very fast and hungry colony
- Workers that can sting

A few of these need a word of explanation. A claustral queen seals herself in a tiny chamber and raises her first workers without eating (**Chapter 4**). A semi-claustral queen must leave the chamber to hunt, so you feed her, and a parasitic queen can't start at all without the

workers of another species. Escape risk is how likely the workers are to get past the escape barrier, the slippery band around the outworld. Very fast growers need plenty of protein and room.

Of the 45 species in the directory, 23 are beginner species (1–4), 13 are intermediate (5–6) and 9 are advanced (7). Only one rates a 1: *Messor barbarus*.

Level	Scale	What to expect	Examples
Beginner (23 species)	1–4	Almost all fully claustral. Most forgive mistakes and suit room temperature, but most want a winter rest, and tiny species need extra care against escapes.	*Messor barbarus*, *Lasius niger*, *Formica fusca*, *Tetramorium caespitum*
Intermediate (13 species)	5–6	A step up: some grow very fast, some escape easily, some have queens that must be fed. A good next move after your first colony.	*Formica cinerea*, *Myrmica rubra*, *Crematogaster scutellaris*
Advanced (9 species)	7	Parasitic or semi-claustral founding in some, fungus gardens, tiny escape artists or constant warmth in others. Plan carefully.	*Pheidole pallidula*, *Lasius fuliginosus*, *Manica rubida*, *Atta cephalotes*

The three levels of the difficulty scale, with the number of species in each.

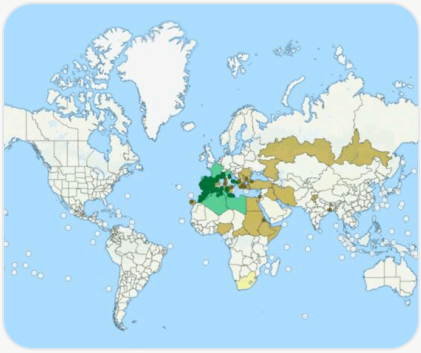
YOUR CHECKLIST

Five questions before you choose

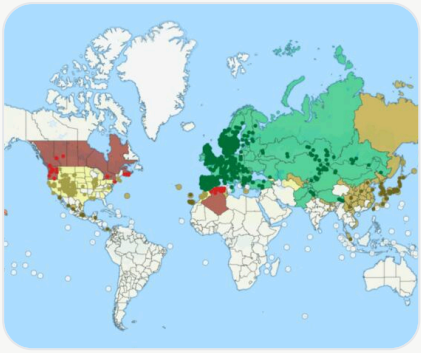
Before you fall for a photo, answer these five questions honestly. They take minutes and can save you months of trouble.

1. Is it local?

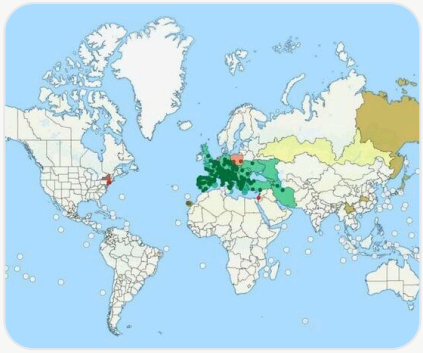
Pick a species that lives where you live. Local queens are adapted to your seasons, and in the flying season (summer for most species, fall for *Messor barbarus*) you may even catch your own for free. Check the range of a species, not only the continent: *Messor barbarus* lives around the Mediterranean, so wild queens are only found in Southern Europe and North Africa, while *Lasius niger* ranges across Europe and temperate Asia. If you buy a queen, ask where the species is native.



Messor barbarus lives around the Mediterranean, in Southern Europe and North Africa.



Lasius niger has a huge range across Europe and temperate Asia.



Lasius emarginatus is common across central and southern Europe.

2. Is it legal where you live?

Laws differ from country to country. The EU list of invasive alien species bans keeping, breeding, transporting and selling the species on it, and none of the 45 species in my directory is on it.

Each species sheet carries a legal status. Of the 45 species, 41 are marked **free**: not on the EU list and not protected in the countries I checked. Four are **restricted**: *Formica cinerea*, *Formica fusca*, *Formica sanguinea* and the leafcutter *Acromyrmex octospinosus*. Some countries protect *Formica* ants (the Czech Republic protects every *Formica* species), and *Acromyrmex octospinosus* is an invasive pest on islands like Guadeloupe, where live colonies need a permit. Even a free species isn't a guarantee: check your local rules before you buy or collect a queen.

3. Can you give it a winter rest?

Most temperate species need hibernation, a cool winter rest of at least a couple of months, usually from October or November until February or March. Most rest at 5–12 °C, but some Mediterranean species need a milder 12–16 °C. **Chapter 7** covers the routine. The right place depends on the species:

- A fridge or wine cooler (5–8 °C): *Lasius emarginatus*, *Formica fusca* and *Tetramorium caespitum*
- A cool cellar or garage (8–12 °C): *Lasius niger*
- A cool room (12–16 °C): *Messor barbarus*

Across the directory, 24 species need a winter rest, 10 do better with one and 11 skip it. Don't read "no hibernation" as "easy": those 11 come from warm regions, and several need heating all year. No fridge? A cool room (12–16 °C) still suits Mediterranean species like *Messor barbarus*. Of the no-rest species, *Camponotus maculatus*, *Camponotus nicobarensis* and *Novomessor cockerelli* rate a 4, but none is native to Europe.

PRO TIP

Stay inside the range of your species: too cold for too long can permanently hurt a colony's growth, and a freeze can kill it. A household fridge often runs at 3–5 °C, too cold for many species. A cellar or garage only suits species that want about 8–12 °C, like *Lasius niger*, so check it with a thermometer (**Chapter 7**).

4. How much space and time do you have?

Think about the colony you'll have in three years, not the one you start with. Some species stay small: *Temnothorax unifasciatus* reaches about 200 workers and *Camponotus fallax* about 300. *Messor barbarus* tops out around 1,000 and *Formica fusca* around 2,000, while *Formica cinerea* grows to 10,000 and needs a big nest and outworld (**Chapter 6** covers housing, **Chapter 8** how to plan space). Time matters too: a young colony needs one visit a week, a big one is fed two or three times a week, and each visit takes only minutes.

5. What do you want to watch?

This is the fun question: you'll be looking at these ants for years. Seeds stored in dry granaries and cracked open by big-headed majors, the largest workers? Choose *Messor barbarus*. A classic, busy colony? *Lasius niger*. Fast growth? *Messor barbarus* again, with *Lasius emarginatus* and *Tetramorium caespitum* close behind. Big ants? Several carpenter ants (*Camponotus*) rate a 4, such as *Camponotus barbaricus*, with workers up to 12 mm and majors up to 16 mm.

KNOW YOUR LIMITS

Easy to start, or better left for later

A beginner-friendly species usually ticks most of these boxes:

- Fully claustral, so the queen needs no food while she raises her first workers
- Calm workers, or an escape risk a tight nest can handle
- Simple food: sugar and insects, or seeds
- A winter rest you can actually provide
- Common, local and well documented, so help is easy to find

The numbers agree: 22 of the 23 beginner species are fully claustral, and all 7 species with a low escape risk are beginner species. Advanced species aren't bad species. They're projects that ask you to read a colony first. Here are the groups I'd leave for later, with examples mostly from the advanced species (difficulty 7).

Social parasites

A social parasite can't start a colony alone: the queen needs the workers of another species, the host, to raise her first brood. *Lasius fuliginosus*, the jet black ant, is the classic case. Keepers pair a young queen with young *Lasius* workers and plenty of cocoons (the silk cases around the pupae), and the natural host is a queenless *Lasius umbratus* colony. *Formica sanguinea* (rated 6) is a slavemaker: its workers raid other *Formica* colonies for pupae and raise them as helpers, so keeping one means sacrificing host colonies. Think about the ethics first. **Appendix B** explains **social parasitism** in more detail.

Tiny escape artists

When an ant is small enough, every gap is a door. *Pheidole pallidula* workers measure just 2–4 mm and are notorious escape artists. I've kept this species myself, and its escape risk is a big part of why it rates a 7. *Solenopsis fugax*, the thief ant, is even smaller at 1.5–2.5 mm: one experienced keeper reports that it digs through plaster, hot glue and even silicone, and many founding queens die.



A *Pheidole pallidula* colony gathered around its brood pile in a test tube: the workers are small enough to slip through gaps you can barely see.

Leafcutters and other special needs

Leafcutter ants such as *Atta cephalotes* and *Acromyrmex octospinosus* (both rated 7) don't eat the leaves they cut. They chew them into a pulp that feeds a **fungus garden**, the colony's main food. That means a steady supply of fresh, untreated leaves, constant warmth (23–27 °C, never hot) and a setup that can't be escaped. The Ant Pod episode on **keeping leafcutter ants** names three challenges: escapes, knowing how much the colony eats and keeping its size under control.

WATCH OUT

Sprayed leaves or flowers can wipe out a leafcutter colony, and keepers report that even a single sprayed flower can wreck a small one. Cut leaves only from plants you know are untreated, and plan your winter supply of fresh plants early.

Other advanced species have their own hurdles. *Manica rubida* has a painful sting and a founding queen that must hunt, and keepers run a group project, the *Manica rubida* Challenge, to find what works. The Ant Pod tells the story in an **episode on the challenge**. *Oecophylla smaragdina* needs a living plant for its leaf nests, and *Dinomyrmex gigas* is one of the hardest ants to get going.

Move up the scale one step at a time. Raise a beginner colony through at least one full winter before you try a 5 or a 6, and read the species sheet of any new species before you buy a queen.

TAKE THE QUIZ

The online species finder

If you're still undecided, the **species finder on brumaants.com** does the matching for you in about a minute. It asks six quick questions:

- Your experience
- What you'd love to watch
- Where the colony can spend the winter
- How much time you can give
- How you feel about escape artists
- How big you want the colony to grow

Each answer scores the species that fit it, and you get your best match with a percentage, plus a few alternatives. The finder only covers the seven species I've kept myself, each with a full care guide, so for any other species (*Formica fusca* included) read its species page or the directory in **Appendix A**.

PRO TIP

Treat the result as a shortlist. Read the species sheet of your match, check your local laws and make sure you can provide the winter rest before you catch or buy a queen.

MEET THE SPECIES

Five great first colonies

These five are my picks for a first colony, from the easiest to the most demanding. All are fully claustral, native to Europe and rated 1 to 4, and all need a winter rest (question 3). I've kept four of them myself.

THE SEED HARVESTER

Messor barbarus

(Linnaeus, 1767) · Myrmicinae

Harvester ant

A calm, clumsy seed harvester with huge-headed majors, and my top pick for beginners.

✓ Kept by Bruma | Fully claustral | One queen | Europe, North Africa | Hibernation required



Photo: André LABETAA/stock.adobe.com

My top pick for beginners if it lives near you (it's a Mediterranean ant, see question 1), and the only species rated 1 on the scale. I've kept it myself. The workers walk slowly and clumsily, so you get a long, calm look at seeds carried home, piled in dry chambers and cracked open by majors with oversized red heads. The colony grows very fast.

1 / 7	21–26 °C	50–60 %	3–14 mm
DIFFICULTY · BEGINNER	NEST TEMPERATURE	HUMIDITY	WORKERS · QUEEN 14–17 MM

A YEAR WITH MESSOR BARBARUS



Hibernation (12–16 °C) · Active · Nuptial flights

DIET
Sugar, insects, seeds

NESTS
Ytong, acrylic, naturalistic

WORKERS
Many sizes

GROWTH
Very fast

ESCAPE RISK
Low

NUPTIAL FLIGHTS
Sep–Nov, after rain

PRO TIP
Give the nest a humidity gradient: dry granaries keep the seeds from sprouting or going moldy, while the brood needs the humid chambers.

PRO TIP
Seeds alone can feed the whole colony, but a few insects once the colony has grown a bit speed up the growth of the brood.

WATCH OUT
The workers can chew through Ytong, so keep a Ytong nest inside a closed plastic or glass enclosure.

WATCH OUT
Husks and leftovers pile up in a corner of the outworld: clear this waste dump regularly before it grows mold.

DID YOU KNOW?
The majors crack tough seeds with their huge heads and strong jaws. The workers then chew the seeds into a paste, sometimes called ant bread, that feeds the larvae.

THE CLASSIC FIRST COLONY

Lasius niger

(Linnaeus, 1758) · Formicinae

Black garden ant

Adaptable, undemanding and found in almost every garden: the classic first colony.

✓ Kept by Bruma | Fully claustral | One queen | Europe, Asia | Hibernation required



Photo: BRUMA Ants

It was my first species too. It's the black garden ant of lawns and pavements, so queens are easy to find, and it's happy at room temperature. It grows at a moderate pace, so the colony never outruns you while you learn.

2 / 7	23–25 °C	40–60 %	3–5 mm
DIFFICULTY · BEGINNER	NEST TEMPERATURE	HUMIDITY	WORKERS · QUEEN 8–9 MM

A YEAR WITH LASIUS NIGER



Hibernation (8–12 °C) · Active · Nuptial flights

DIET	NESTS	WORKERS
Sugar, insects	Sandwich, Ytong, acrylic	All the same size
GROWTH	**ESCAPE RISK**	**NUPTIAL FLIGHTS**
Moderate	Medium	Jul–Aug, hot days, calm weather

PRO TIP

Use a soil-based sandwich nest to watch them dig their own tunnels, or a white Ytong nest, where the black workers stand out sharply.

PRO TIP

In the wild they milk aphids for honeydew, so they go wild for sweet food: keep honey, sugar water or ant jelly on offer and add a little protein, such as Gammarus or small insects, for the brood.

WATCH OUT

They don't like dry air, so if the nest dries out too fast, rearrange the setup or add a piece of wood or bark that holds moisture.

WATCH OUT

Don't hibernate the colony much colder than the recommended range: it can hurt the long-term growth of the colony. A basement or garage is fine if you have no fridge.

DID YOU KNOW?

?! You'll find *Lasius niger* in almost every European garden and across temperate Asia, but the black ants of North America belong to a closely related species.

THE REDDISH COUSIN

Lasius emarginatus

(Olivier, 1792) · Formicinae

A small, fast-growing Lasius with a reddish thorax that loves to dig tunnels.



Photo: BRUMA Ants

✓ Kept by Bruma | Fully claustral | One queen | Europe | Hibernation required

Its care is close to *Lasius niger*, but it grows faster and likes a colder winter rest. The reddish thorax between the dark head and the gaster sets the workers apart from the black species. I've kept it myself. It's common even in towns and cities, so you can watch wild colonies before you commit.

3 / 7	21–27 °C	50–60 %	3–5 mm
DIFFICULTY · BEGINNER	NEST TEMPERATURE	HUMIDITY	WORKERS · QUEEN 7–9 MM

A YEAR WITH LASIUS EMARGINATUS



DIET	NESTS	WORKERS
Sugar, insects	Ytong, sandwich, acrylic	All the same size
GROWTH	**ESCAPE RISK**	**NUPTIAL FLIGHTS**
Fast	Medium	Jun–Aug

PRO TIP

Because the colony grows fast, the brood needs a lot of protein: keep insects like crickets, worms or fruit flies coming alongside the sugar water.

PRO TIP

A Ytong nest suits it well: it holds moisture, and the white surface contrasts with the dark head and gaster of the workers, so they are easy to watch.

WATCH OUT

Once the colony passes a certain number of workers, its growth turns exponential, so have a bigger nest and outworld ready before it gets crowded.

WATCH OUT

Don't hibernate it much colder than the recommended range: very low temperatures for a long time can permanently damage the growth of the colony.

DID YOU KNOW?

Outside Europe, *Lasius emarginatus* has been introduced: in New York City it's nicknamed the ManhattAnt, and it has been spreading into New Jersey and onto Long Island.

THE QUICK RUNNER

Formica fusca

Linnaeus, 1758 · Formicinae

Silky ant

A shy, quick-footed black ant that forgives beginner mistakes and is the classic host of slave-making ants.

Fully claustral | One or more queens | Europe, Asia | Hibernation required



Photo: Jonghyun Park, CC BY 4.0

I haven't kept *Formica fusca* myself, so treat its numbers as starting points. It's rated 3 and fully claustral, a quick, long-legged hunter that works alone. Colonies are skittish: a slight vibration sends the workers running with the brood, so use a stable surface. They stay modest, up to about 2,000 workers. It's restricted in some countries, so check your local laws.

3 / 7	21–25 °C	50–60 %	4–7 mm
DIFFICULTY · BEGINNER	NEST TEMPERATURE	HUMIDITY	WORKERS · QUEEN 8–10 MM

A YEAR WITH FORMICA FUSCA



DIET	NESTS	WORKERS
Sugar, insects	Ytong, naturalistic, sandwich	All the same size
GROWTH	**ESCAPE RISK**	**NUPTIAL FLIGHTS**
Moderate	Medium	Jun–Aug, hot days

PRO TIP

Give the nest a humid chamber and keep the outworld dry. The species comes from dry, open ground, and keepers report that a moist nest with a dry arena works well.

WATCH OUT

Leave a founding queen alone as much as you can. Keepers report queens that ate almost all their larvae after repeated checks and vibrations, so keep the tube dark, still and closed until the first workers appear.

WATCH OUT

Colonies are skittish: a slight vibration sends the workers running around with the brood. Put the setup on a stable surface and give it room and ventilation, because the workers spray formic acid in cramped containers.

PRO TIP

Do not worry when the queen stops laying in late summer: the colony normally rests through the winter without any brood. Cool it down gradually in autumn, once the last brood has hatched and the workers slow down.

DID YOU KNOW?

?! It's called a slave ant because it's the usual victim of slave-making ants, not because it enslaves anyone: *Formica sanguinea* and *Polyergus rufescens* raid its nests for pupae.

THE PAVEMENT ANT

Tetramorium caespitum

(Linnaeus, 1758) · Myrmicinae

Pavement ant

Tiny, tough and fast-growing, as long as your nest is escape-proof.



Photo: BRUMA Ants

✓ Kept by Bruma | Fully claustral | One queen | Europe | Hibernation required

Rated 4, this is the most demanding of the five: the workers are only 2–4 mm long and find every gap. I've kept it, and the effort pays off with a busy, fast-growing colony. Under a magnifier you'll see a waist of two small segments and two short spines on the back of the thorax.

4 / 7	21–27 °C	50–60 %	2–4 mm
DIFFICULTY · BEGINNER	NEST TEMPERATURE	HUMIDITY	WORKERS · QUEEN 6–8 MM

A YEAR WITH TETRAMORIUM CAESPITUM



DIET	NESTS	WORKERS
Sugar, insects	Acrylic, test tube, naturalistic	All the same size
GROWTH	**ESCAPE RISK**	**NUPTIAL FLIGHTS**
Fast	High	Jun–Aug

WATCH OUT
These ants are masters at finding gaps, so pick an acrylic or test tube-based nest whose layers fit tightly together, and check every join of a naturalistic enclosure.

PRO TIP
Give this fast grower plenty of protein: once the first workers are out, regular insects feed the queen and the brood.

PRO TIP
Growth looks slow at first, then takes off once the colony reaches a certain worker count, so have a bigger nest ready before that happens.

WATCH OUT
Several sibling species look almost identical, so the name on a queen you caught or bought is only a good guess: telling them apart takes a microscope and detailed measurements.

DID YOU KNOW?
The pavement ants that ships brought to North America from the 1700s onwards look almost identical, but in 2017 scientists showed they are a separate, near-identical species, *Tetramorium immigrans*.

KEEP EXPLORING

Beyond these five

These five are a starting point, not a limit. **Appendix A** lists all 45 species side by side, with difficulty, size, climate and winter needs. If you like harvester ants, *Messor structor*, *Messor capitatus*, *Messor wasmanni* and *Messor ebeninus* all rate a 2, and *Temnothorax unifasciatus* (3) is a tiny, peaceful ant for a desk.

Living outside Europe? The method is the same: choose a species that lives near you, using the countries listed on each species page. *Camponotus herculeanus* (Europe, Asia and North America), *Camponotus japonicus* (East Asia) and *Novomessor cockerelli* (the US and Mexico) all rate a 4. Check their winter needs and your local laws first.

Every species also has its own page, with size, climate, a year calendar and sources: browse them in the **species directory**. If you already have a queen, use her species page to check her needs against your setup. If you're choosing another colony, **Chapter 3** shows you how to get the queen and **Chapter 4** how to start her off.

CHAPTER SUMMARY

Remember this

- Your first species decides how forgiving your first year will be, so choose for your climate, winter and free time, not only for looks.
- The scale rates how forgiving a species is: 1–4 is beginner (23 of 45 species), 5–6 intermediate (13) and 7 advanced (9).
- Ask five questions first: is it local, is it legal, can you give it a winter rest, how much space and time do you have, and what do you want to watch.
- Leave social parasites, tiny escape artists and leafcutters for later: they are projects, not first colonies.
- Five great first colonies, if their range matches where you live, are *Messor barbarus*, *Lasius niger*, *Lasius emarginatus*, *Formica fusca* and *Tetramorium caespitum*.
- The species finder on brumaants.com matches you with a species in about a minute: use it as a shortlist, then read the species sheet.



CHAPTER ELEVEN

11

SPECIES AND REFERENCE

Going further

You started with one queen and a test tube. Whether your colony is already growing or you're still planning your first one, this hobby has plenty of room to explore: DIY builds, new species, a friendly community and a few important responsibilities.

This last chapter is about what comes next. You'll build your own gear, choose a second colony without getting overwhelmed and see how naturalistic setups and vivariums work. You'll also find simple ways to watch and record your ants, places to meet other keepers and the golden rules that keep the hobby healthy.

There's no test and no finish line here. Read what interests you, pick one project and enjoy your ants.

IN THIS CHAPTER

- Build nests and accessories yourself
- Understand naturalistic setups and vivariums
- Find the Discord server, podcast and events
- Choose a second colony wisely
- Keep a colony log and test ideas safely
- Follow the golden rules of the hobby

YOU MADE IT

From one queen to a growing colony

If you've read this far, you know what a colony needs, and the rest is practice.

Every big colony starts as a single queen in a quiet tube. Along the way you need patience, probably the most useful skill in the hobby. Here is the road this book follows:

CHAPTERS 10, 3 AND 4 — **A queen in a test tube**
You choose a species (**Chapter 10**), get a queen and give her darkness, humidity and quiet while she lays her first eggs.

6–10 WEEKS LATER — **The first workers**
The nanitics, her small first workers, appear about 6–10 weeks after the first eggs, and the colony starts to grow.

CHAPTERS 5 TO 7 — **A weekly routine**
Sugar, protein and water, a proper home, the right climate and a winter rest.

CHAPTER 8 — **A bigger home**
More space and an outworld as hundreds of workers become thousands.

NEXT — **Going further**
A healthy colony, and the freedom to build, explore and share.

DIY PROJECTS

Build your own gear

Making your own nests and accessories is one of the best parts of ant keeping. It costs little and teaches you what a colony needs. My website has six step-by-step DIY tutorials, beyond the test tube and tubs and tubes setups of Chapters 4 and 6, from a quick paper craft to a workshop project.

Project	What it's for	Time	Main materials
Ytong nest	Cheap nest for humidity-loving ants	About 90 min	Ytong block, plexiglass, dowels, screws
Wooden nest	Nest for wood-dwelling ants	About 2 hours	Wood panel, plexiglass, screws
Jar terrarium	Terrarium for very small ants (add a fine-mesh lid)	About 30 min	Jar, stones, mesh, soil, moss
Tube spiral	Winding path from nest to outworld	About 90 min	3 m clear tube, wood, screws

Project	What it's for	Time	Main materials
Test tube holder	Keeps test tubes from rolling and in the dark	About 1 hour	Cardboard, paper cutter
Paper ant	Fun craft for kids	About 45 min	Paper, scissors, glue, marker

The six DIY tutorials on my website, with the time each one takes. Ytong is a light aerated concrete, and plexiglass is clear acrylic sheet.

A Ytong nest (**Chapter 6**) is carved into a block of aerated concrete, so the chambers stay humid. It suits humidity-loving species like *Lasius niger*. For *Messor barbarus*, which can chew through Ytong, put the block inside a closed enclosure (see the safety note at the end of this section). My **Ytong nest tutorial** shows how to add a hydration chamber (a chamber you fill with water to keep the block damp) and how to fix the front panel with screws and **dowels** (plastic wall plugs), so you can still open the nest to clean it.

The **wooden nest tutorial** follows the same idea, with the chambers engraved in a wooden panel, for wood-dwelling species such as *Crematogaster scutellaris*. For both nests you'll need a saw, a drill, sandpaper, and a Dremel (a small rotary tool) or just a screwdriver for soft Ytong. Ytong and wood panels are sold in most hardware stores.

The **jar terrarium** is the quickest build: stones that hold spare water, a mesh that keeps the soil off them, then soil, a branch, moss and small plants. The tutorial builds it closed, as a plant terrarium, and suggests it for very small species like *Tetramorium caespitum* and *Pheidole pallidula* (rated 7, advanced, and a notorious escape artist). Before ants move in, I'd add a lid of fine mesh for air, close every gap and offer food on a small dish, removing leftovers within a day or two.

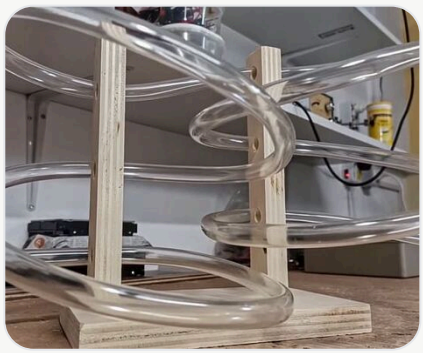
The **tube spiral** is an add-on rather than a home: a cheap version of a commercial spiral tower that links the nest to the outworld. It gives the ants a long, winding path to walk, which is fun to watch. Drill its tube holes to match the outer diameter of the tube (12 mm in mine), so the fit is tight.



The finished Ytong nest, with its carved chambers visible through the clear plexiglass front panel.



The finished wooden nest, 25 by 30 cm, screwed upright onto its wooden base.



The tube spiral: 3 m of clear tube winding around two wooden towers.

The cardboard **test tube holder** stops tubes from rolling off a shelf, keeps them dark with a simple lid and lets you sort colonies by species or climate. Measure the outer diameter of your tubes first: mine are 15 mm, so four fit. The **paper ant** is just a fun craft for kids: paper, scissors, glue and a marker, about 45 minutes. Both tutorials come with a printable PDF template.

STAY SAFE

Wear a dust mask (FFP2 or P2) and safety glasses when you carve Ytong, because it makes a lot of fine dust, and clamp wood before you saw it. Brush all dust out of the chambers before the ants move in. Strong diggers like *Messor* can chew through Ytong, so place the block inside a plastic or glass enclosure. Young builders should ask an adult to handle saws and drills.

GROWING THE HOBBY

Your second colony

Sooner or later you'll want another colony. That's normal, and it's a good sign. If your first colony still worries you every day, enjoy it for a while longer. You're probably ready for a second one when:

- Your first colony is settled, and the weekly routine feels easy.
- You know where each colony will spend the winter, a new queen's first winter included (**Chapter 7**).
- A clean test tube setup is ready for the new queen, and you know which nest you'll build or buy when her first workers appear (**Chapter 6**).
- You can find the time: a weekly visit for a young colony, a few short feedings a week for a big one.

To choose the species, take the six-question **species finder** (**Chapter 10**), then compare difficulty (1 to 7) and climate in **Appendix A**. Check the winter rest first, because it decides where the colony lives: *Tetramorium caespitum* needs 5–8 °C, which a fridge or wine cooler can give, while *Messor barbarus* prefers 12–16 °C, a cool room. Most temperate species rest at 5–12 °C, but your species' own range counts.

A SMART SECOND COLONY

- A local species that is legal where you live
- A difficulty only a little above your first colony
- Hibernation that fits the space you have
- A test tube ready for her and a nest planned for later

THINK TWICE

- An advanced species (7) bought on impulse
- A species that needs heat you can't provide
- Several new colonies at once
- A species you haven't checked against local law

Keep the number manageable. Every colony adds feedings (weekly for a young colony, two or three short ones a week for a big one), a cleaning routine, a hibernation spot and, a year or two later, a bigger nest. Add one colony at a time. Get the new queen the way you got the first one (**Chapter 3**) and start her in a test tube (**Chapter 4**). Keep each colony in its own nest with its own escape barrier (**Chapter 6**), so workers from different colonies never meet. A few well-kept colonies are more rewarding than many neglected ones.

?! **DID YOU KNOW?**
More than 13,000 ant species have been described, and native ants live on every continent except Antarctica. There is always another species to learn about.

BEYOND THE BASICS

Naturalistic setups and vivariums

Most nests in this book are made to be easy to watch and easy to clean. A naturalistic setup (**Chapter 6**) goes the other way: it copies the ants' habitat with real soil, moss or wood, so the colony digs its own tunnels. You see less, and cleaning is harder. My care guides for *Messor barbarus*, *Tetramorium caespitum* and *Pheidole pallidula* all show a jar terrarium as an option, and all three add the same tip: choose an enclosure without any gaps between its parts, so nobody can slip out. Feed on a small dish on the soil and remove leftovers within a day or two.



A finished jar terrarium with moss, roots and soil: real materials that make the nest look like the ants' natural habitat.

Vivariums: a warm box for your colonies

A **vivarium**, often shortened to **VIF**, is an enclosed space with controlled conditions. In ant keeping it usually means an insulated box with controlled heating. In **You Should Have a Vivarium**, Jake, one of the hosts of The Ant Pod, describes his homemade ones, built from an insulated wooden box or a plastic tool cabinet lined with bubble wrap.

Heat comes from flat heat cables (the hosts call them heat wires) connected to an inexpensive thermostat, as in **Chapter 7**. The hosts prefer heat cables to heat mats. Put the thermostat's probe near the nests, not on the cable. As in **Chapter 7**, heat only one end or one side of the box, so the nests have a warm and a cooler spot, and keep the cables away from the bubble wrap, plastic and wood. Add a second thermometer, because a thermostat can fail.

In a heatwave, frozen water bottles inside the box help cool things down. For exotic species (from other regions), a step for later once you have experience and have checked your local laws, the hosts recommend a VIF, which can significantly increase your success rate. Many local species do fine at room temperature.



WATCH OUT

Heat without a thermostat can cook a colony. Always use one, and set its target inside your species' range (most kept species like 20–28 °C, and above about 32 °C is dangerous). Run the box for a day before the ants move in, to check that the temperature holds, and check it daily for the first week.

OBSERVATION

Watch, learn and share

You don't need lab gear to learn a lot from your ants. Simple observation makes you a better keeper, because you spot problems early. During your weekly feeding, look for these things:

- How the workers find food: in many species a few scouts go first, then a trail of followers forms.
- Trophallaxis, when workers pass liquid food from mouth to mouth (**Chapter 2**).
- Where the workers keep the brood (eggs, larvae and pupae) and whether they move it.
- Which food they choose first: sugar, protein or seeds.

Then write it down. **Chapter 8** showed you how to keep a colony log, and the printable one is in **Appendix C**. Use its notes column for what you saw, not only what you did: "workers moved the brood to the warm end" or "sugar water gone in a day". Months later, those small notes show what your colony likes.

PRO TIP

Watch from a little distance first. Tapping the glass or opening the nest for a closer look stresses the colony, so look at the feeding spot in the outworld instead: that's where most of the action is.

Responsible experiments

Curiosity is great, but you're working with a living colony, so every test needs a purpose. Good first experiments are small and reversible: offer two kinds of sugar or seeds and see which the workers choose first, or move the feeding spot a few centimeters and time how long they take to find it. In **Experimenting On Ants**, the hosts discuss **merging** colonies (combining two into one) and **brood boosting** (giving a colony extra brood from another). Some tries worked and some failed, and their conclusion was: experiments need a clear purpose, an ethical approach and good knowledge of the species.

Before you try anything new

Run through this list for every change to a colony.

- [ ] I know exactly what I want to learn.
- [ ] I change only one thing at a time.
- [ ] The queen is never at risk.
- [ ] I write down what I did and what happened.
- [ ] I stop if the ants panic, carry brood around nonstop or start dying.
- [ ] I leave merging colonies and moving brood between colonies to experienced keepers.

Sharing what you see

Sharing is part of the fun, and explaining your colony makes you notice more yourself. Post photos and updates on the Discord server and answer other keepers' questions. Share the failures too. In **The Return of TAP**, the hosts openly discuss colonies lost over winter, possibly from hibernation mistakes, and that helps others avoid the same ones.

YOU'RE NOT ALONE

Join the community

Ant keeping is a small, friendly hobby, and it's more fun with other people. Here is where I'd start.

The Discord server

The **BRUMA Ants Discord server** is a place to chat with ant keepers from all over the world. Use it for questions and for species identification: post clear photos of a queen you caught, add where and when you found her, and other keepers can help you name her.

YouTube and The Ant Pod

My **YouTube channel** has been running since December 2021, with care guides, colony updates, DIY builds and honest reviews of the gear I test. Five of the six DIY tutorials also come with a video; only the wooden nest tutorial is text and photos.

The Ant Pod is an audio podcast hosted by Ant Holleufer (Alex) with co-hosts and guests, and published on my website. Each episode brings different YouTubers, nest makers, sellers and other ant keeping personalities. The episodes live in the **Podcasts category**. A good starting point is **Young Ant Keepers V2**, with three keepers aged 13 and 14.

Events

One event you'll hear about is **AntCon**, an annual ant keeping convention in the UK. In **Antcon 2024 Review**, the hosts say its real value is the community, and Jake compares going there to "going home". Search for the current year's dates and tickets before you plan a trip.

THE GOLDEN RULES

Keeping ants responsibly

The hobby stays healthy only if keepers look after more than their own colonies. These four rules cover most of it:

1. **Keep local species.** A species from your own region suits your climate and carries far less risk for local nature if a few ants escape.
2. **Never release ants.** Released ants can become an invasive problem, and the EU keeps a list of invasive alien species that can't be kept.
3. **Buy from legal, reliable sellers.** Check your country's laws first. Good sellers label species accurately and sell healthy colonies, as **Selling Ants** explains.
4. **Respect wild colonies.** Catch only freshly mated queens, take only as many as you can look after and leave nests alone. Some countries protect certain wild ants, so check your local rules.

The Ant Pod hosts sum up the spirit of the hobby in The Return of TAP: ethical ant keeping means treating ants with the respect they deserve. You can help by keeping your colonies well and sharing what you learn in detail.

GOOD TO KNOW

If you ever can't keep a colony anymore, don't release it. Ask other keepers, for example through the Discord server, whether someone can take it.

THANK YOU

A final word from Bruma

In the summer of 2020 I caught a *Lasius niger* queen in a park in northern Italy, and I had no idea where it would lead. I made the classic beginner mistakes, like not giving my colony enough protein, and I learned something from each one. That's why this book exists: so you can skip some of those mistakes and enjoy the good parts sooner.

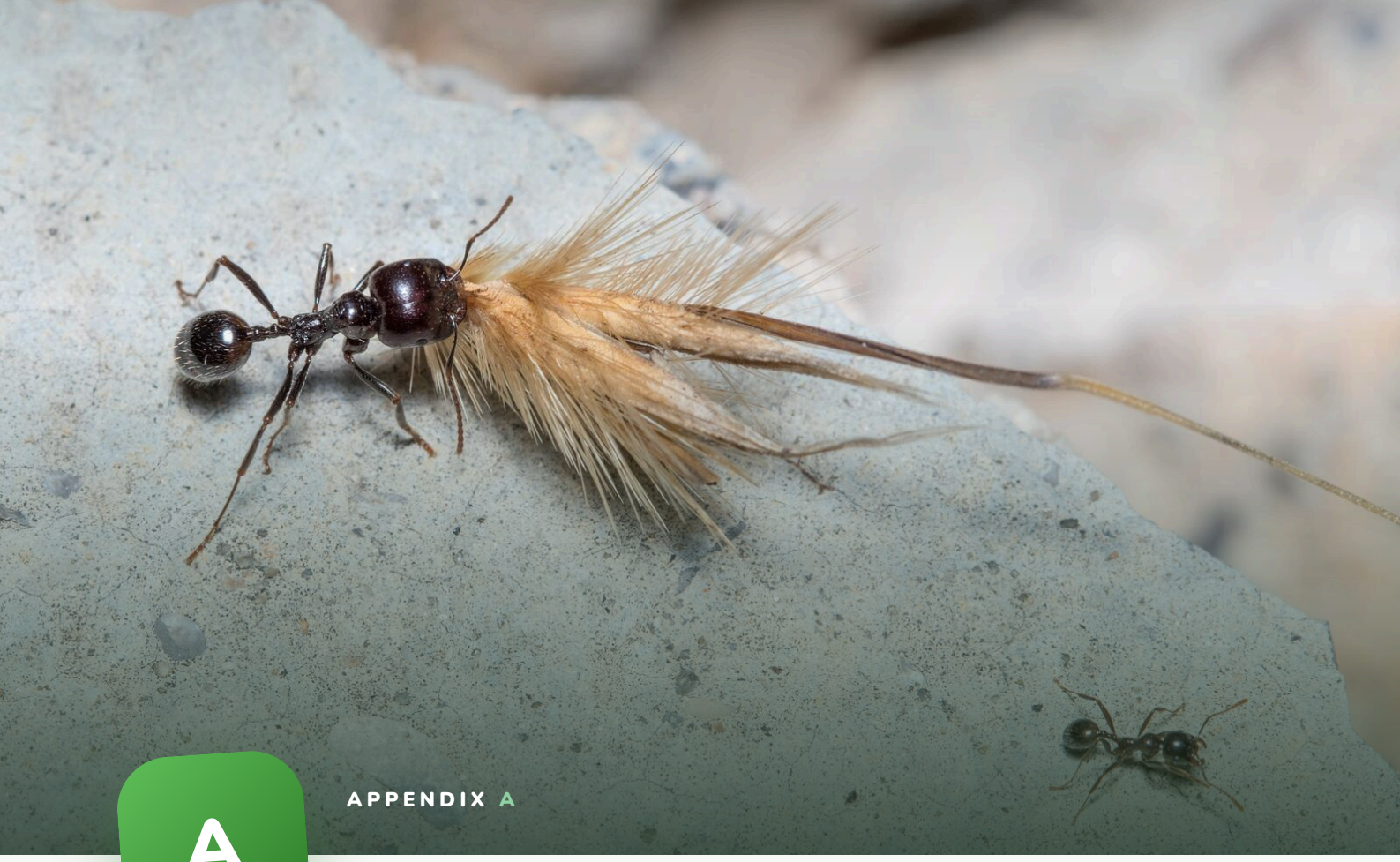
> ***Every big colony starts as a single queen in a quiet tube.***
>
> BRUMA

Thank you for reading this far. Now go and watch your ants: follow a trail, look at the brood, check the water, write a line in your log. Build something, ask a question on the Discord server and share a photo when your colony surprises you. A healthy colony and a keeper who passes on what they learned are the best thanks I could ask for.

CHAPTER SUMMARY

Remember this

- DIY nests and accessories are cheap and teach you what ants need, from a 30-minute jar terrarium to a 2-hour wooden nest.
- Add a second colony only when the first is settled, choose it with the species finder and **Appendix A**, and add one at a time.
- A naturalistic setup copies the ants' habitat, while a vivarium is a thermostat-controlled box that mainly helps temperature-sensitive species.
- A simple colony log and purposeful, careful experiments teach you far more than guesswork.
- The Discord server, the YouTube channel, The Ant Pod and events like AntCon connect you with other ant keepers.
- Keep local species, never release ants, buy from legal sellers and leave wild colonies alone.



APPENDIX A

A

SPECIES AND REFERENCE

Species directory

From the forgiving black garden ant to tiny escape artists that test even expert keepers: every species of the BRUMA Ants website, one card each.

Use this directory when you're choosing your next colony, or when you spot a species in a shop or on a forum and want to know what you'd be getting into. The cards are sorted by difficulty, on the same 1 to 7 scale used on the website and in **Chapter 10**.

Every card matches a full species page on **brumaants.com**, with a care sheet, a nuptial flight calendar, a distribution map and a printable PDF.

ON EACH CARD

- The difficulty, from 1 to 7
- The level: beginner, intermediate or advanced
- The nest temperature the species likes
- The size of the workers
- The winter rest, if it needs one
- A badge if I've kept the species myself

45 SPECIES, FROM EASY TO EXPERT

Every species, at a glance

All the species of the BRUMA Ants website, from the easiest to the most demanding. Each card shows the difficulty from 1 to 7, the nest temperature, the size of the workers and the winter rest. You'll find a full sheet for every species, with a printable PDF, on the BRUMA Ants website. A green badge means I've kept the species myself.

23 species

Beginner species

DIFFICULTY 1–4

Forgiving, easy to feed and happy in simple setups. Pick your first colony from here.



Beginner

Messor barbarus

Harvester ant

A calm, clumsy seed harvester with huge-headed majors, and my top pick for beginners.

1/7

NEST	SIZE	WINTER
21–26 °C	3–14 mm	12–16 °C



Beginner

Lasius flavus

Yellow meadow ant

A shy, golden-yellow soil dweller that herds root aphids and raises grassy mounds in old meadows.

2/7

NEST	SIZE	WINTER
20–25 °C	2–5 mm	5–8 °C



Beginner

Lasius niger

Black garden ant

Adaptable, undemanding and found in almost every garden: the classic first colony.

2/7

NEST	SIZE	WINTER
23–25 °C	3–5 mm	8–12 °C



Beginner

Messor capitatus

European seed harvesting ant

A glossy black seed harvester with big-headed majors that grind tough seeds into ant bread on dry, rocky ground.

2/7

NEST	SIZE	WINTER
22–28 °C	4–13 mm	10–15 °C



Beginner

Messor ebeninus

Ebony harvester ant

A glossy ebony-black harvester ant of the Middle East that stores its seeds upstairs and raises its brood in damp soil far below.

2/7

NEST	SIZE	WINTER
22–28 °C	4–10 mm	15–18 °C



Beginner

Messor structor

A rough-skinned brown harvester ant that shares its nest with many queens and spreads by splitting off new colonies.

2/7

NEST	SIZE	WINTER
22–28 °C	4–10 mm	8–12 °C



Beginner

Messor wasmanni

Wasmann's harvester ant

A big-headed seed harvester of sunny Italian and Balkan grasslands, with tidy trails to its nest and a name still written with a cautious cf.

2/7

NEST	SIZE	WINTER
22–26 °C	4–10 mm	12–15 °C



Beginner

Aphaenogaster senilis

A long-legged, restless hunter that spreads by splitting its colony instead of flying, and carries liquid food home on bits of debris.

3/7

NEST	SIZE	WINTER
21–27 °C	5–7 mm	12–16 °C



Beginner

Formica fusca

Silky ant

A shy, quick-footed black ant that forgives beginner mistakes and is the classic host of slave-making ants.

3/7

NEST	SIZE	WINTER
21–25 °C	4–7 mm	5–8 °C



Beginner

Lasius emarginatus

A small, fast-growing Lasius with a reddish thorax that loves to dig tunnels.

3/7

NEST	SIZE	WINTER
21–27 °C	3–5 mm	5–8 °C



Beginner

Temnothorax unifasciatus

A tiny, peaceful ant with a dark band across its gaster, small enough that a whole colony can live inside an acorn.

3/7

NEST	SIZE	WINTER
20–26 °C	2.5–3.5 mm	5–10 °C



Beginner

Aphaenogaster subterranea

A slender, secretive forest ant that nests under stones, hunts quietly in the leaf litter and carries sweet liquids home on soaked grains of soil.

4/7

NEST	SIZE	WINTER
20–26 °C	3–5 mm	8–12 °C



Beginner

Camponotus barbaricus

A shy, mostly nocturnal giant of the western Mediterranean that starts slowly, then grows into a huge colony once it has real warmth.

4/7

NEST	SIZE	WINTER
25–30 °C	6–16 mm	12–18 °C



Beginner

Camponotus fedtschenkoi

Yellow carpenter ant

A pale golden carpenter ant from the dry steppes of Central Asia that digs its nest in the ground and comes out at night.

4/7

NEST	SIZE	WINTER
24–28 °C	4–12 mm	15–18 °C



Beginner

Camponotus herculeanus

Hercules ant

A cold-hardy black giant of northern conifer forests that carves its nest into old stumps and standing trees.

4/7

NEST	SIZE	WINTER
18–25 °C	6–13 mm	5–8 °C



Camponotus japonicus

Japanese carpenter ant

A sturdy, matte-black giant of East Asian fields and parks that builds up slowly, yet can follow the same queen for many years.

4/7

NEST	SIZE	WINTER
22–28 °C	6–14 mm	8–12 °C



Camponotus lateralis

A small, shy carpenter ant with a red head and a black gaster that passes itself off as an acrobat ant and shadows its trails to find food.

4/7

NEST	SIZE	WINTER
21–27 °C	3–7 mm	8–12 °C



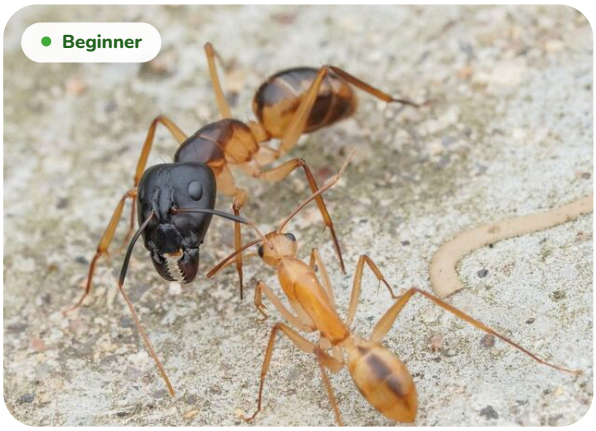
Camponotus ligniperda

Brown-black carpenter ant

One of Europe's biggest ants, a glossy red-and-black giant that lives by its own slow seasonal clock.

4/7

NEST	SIZE	WINTER
20–25 °C	6–14 mm	5–8 °C



Camponotus maculatus

Spotted sugar ant

A fast-growing, big-headed carpenter ant from Africa with a yellowish thorax and a spotted gaster, and no need for a winter rest.

4/7

NEST	SIZE	WINTER
24–28 °C	6–16 mm	None



Beginner

Camponotus nicobarensis

Nicobar carpenter ant

An adaptable, fast-growing carpenter ant from Asia that forages mostly by night and does not need a winter rest.

4/7

NEST	SIZE	WINTER
22–28 °C	5–12 mm	None



Beginner

Camponotus sylvaticus

A long-legged, red-and-black Mediterranean carpenter ant that sprints out of reach after dark and needs a few patient years to grow into a big colony.

4/7

NEST	SIZE	WINTER
22–28 °C	6–15 mm	8–14 °C



Beginner

Novomessor cockerelli

Desert harvester ant

A leggy desert scavenger whose workers team up to haul prey far too big for a single ant.

4/7

NEST	SIZE	WINTER
27–32 °C	7–10 mm	None



Beginner

Tetramorium caespitum

Pavement ant

Tiny, tough and fast-growing, as long as your nest is escape-proof.

4/7

NEST	SIZE	WINTER
21–27 °C	2–4 mm	5–8 °C

13 species

Intermediate species

DIFFICULTY 5–6

More demanding about climate, food or space. Great second colonies once you have a season or two behind you.



Intermediate

Camponotus cruentatus

Blood-spotted sugar ant

A matte-black Mediterranean giant with a rust-red band across its gaster, shy while small and fiercely territorial once the colony grows.

5/7

NEST	SIZE	WINTER
25–30 °C	6–15 mm	10–15 °C



Intermediate

Camponotus fallax

A shy, slender tree dweller that freezes when startled, nests in dead branches and keeps its colony small.

5/7

NEST	SIZE	WINTER
21–27 °C	4–9 mm	5–10 °C



Intermediate

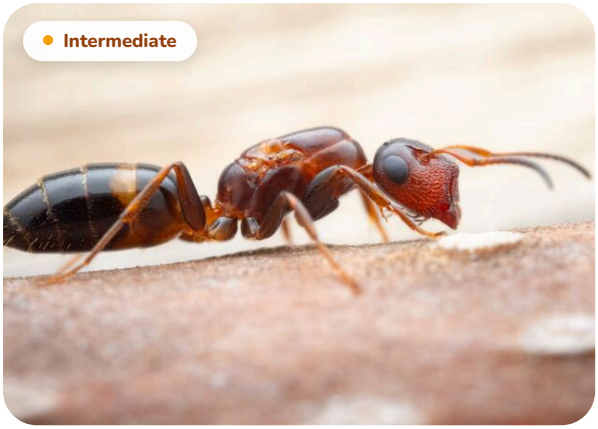
Camponotus vagus

Hairy carpenter ant

A fast, hairy, matte-black giant that sprints over sun-baked deadwood and bullies its neighbors at the food.

5/7

NEST	SIZE	WINTER
22–28 °C	6–13 mm	5–10 °C



Intermediate

Colobopsis truncata

European gate-keeper ant

A shy tree dweller whose soldiers, and the queen herself, seal the nest door with flat, plug-shaped heads.

5/7

NEST	SIZE	WINTER
21–28 °C	3–6 mm	5–10 °C



Intermediate

Formica cinerea

Big, fast and nervous: a formic acid sprayer that can reach 10,000 workers.

5/7

NEST	SIZE	WINTER
21–27 °C	4–8 mm	5–8 °C



Intermediate

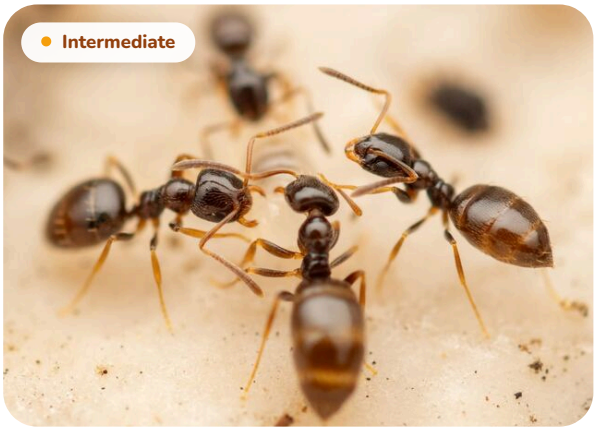
Myrmica rubra

European fire ant

A feisty red ant of damp meadows that lives in sprawling multi-queen colonies and defends its nest with a nettle-like sting.

5/7

NEST	SIZE	WINTER
18–25 °C	4–6 mm	5–8 °C



Intermediate

Plagiolepis pygmaea

A pinhead-sized, sun-loving ant that lives in networks of many-queened nests and slips through the smallest gap.

5/7

NEST	SIZE	WINTER
21–28 °C	1.3–2 mm	10–15 °C



Pogonomyrmex rugosus

Rough harvester ant

A heavy desert seed harvester with deep granaries, a bare disk around its nest and a painful sting.

5/7

NEST	SIZE	WINTER
26–30 °C	7–9 mm	13–16 °C



Polyrhachis dives

Asian spiny weaver ant

A spiny, fast-moving climber that weaves its nests with silk from its own larvae and lives in colonies with many queens.

5/7

NEST	SIZE	WINTER
25–30 °C	5–8 mm	None



Crematogaster scutellaris

Acrobat ant

Raises its heart-shaped gaster when disturbed and loves nesting in wood.

6/7

NEST	SIZE	WINTER
21–25 °C	3–5 mm	8–12 °C



Formica sanguinea

Blood-red ant

A bold red-and-black raider that steals the pupae of other Formica to raise as helpers, and a project for keepers who already know the basics.

6/7

NEST	SIZE	WINTER
21–26 °C	6–9 mm	5–8 °C



Harpegnathos venator

Giant jumping ant

A sharp-eyed, sickle-jawed hunter that freezes, wiggles its gaster and then leaps onto its live prey.

6/7

NEST	SIZE	WINTER
24–28 °C	14–18 mm	None



Myrmecocystus mexicanus

Mexican honeypot ant

A nocturnal desert ant whose swollen workers hang from the ceiling like golden jars to store the colony's sugar.

6/7

NEST	SIZE	WINTER
26–30 °C	4–9 mm	None

9 species

Advanced species

DIFFICULTY 7

Tiny escape artists, fragile founding stages or very special needs. Keep these for when you really know your ants.



Acromyrmex octospinosus

A spiny, rough-skinned leafcutter that farms fungus on roses and bramble and cuts flowers and fruit as eagerly as leaves.

7/7

NEST	SIZE	WINTER
23–27 °C	2–12 mm	None



Atta cephalotes

Hairy-headed leafcutter ant

The classic leafcutter: shiny red-orange workers of every size carry cut leaf pieces home to feed a living fungus garden.

●●●●●●● 7/7

NEST	SIZE	WINTER
23–27 °C	2–18 mm	None



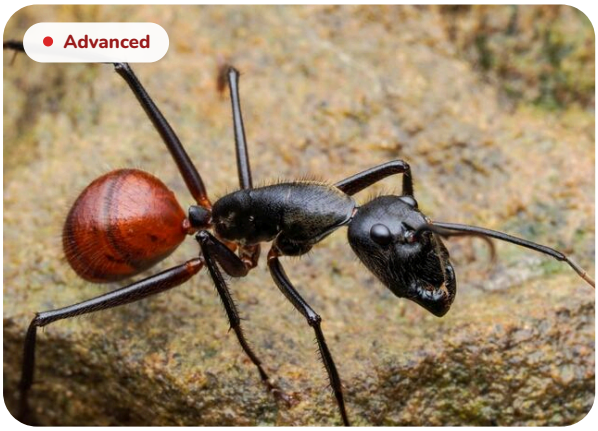
Carebara diversa

Asian marauder ant

A raiding marauder whose columns of tiny workers and giant-headed majors look like army ants, with the smallest workers riding on the biggest.

●●●●●●● 7/7

NEST	SIZE	WINTER
26–30 °C	2–15 mm	None



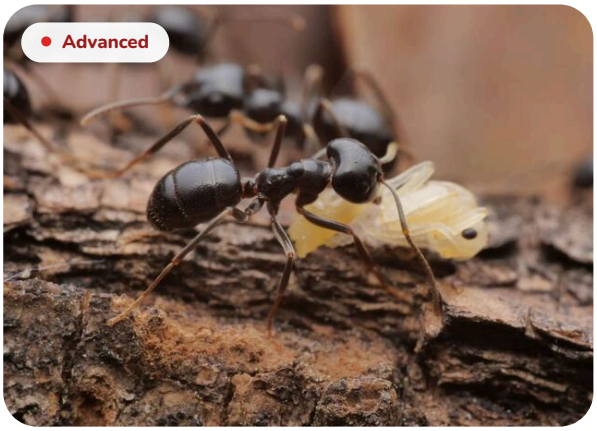
Dinomyrmex gigas

Giant forest ant

A night-active giant of the Southeast Asian rain forests, whose sprawling colonies settle border disputes with ritual tournaments between big-headed majors.

●●●●●●● 7/7

NEST	SIZE	WINTER
22–26 °C	18–30 mm	None



Lasius fuliginosus

Jet black ant

A glossy black, sweet-smelling carton builder that cannot start a colony without borrowing another ant's workers.

●●●●●●● 7/7

NEST	SIZE	WINTER
20–26 °C	4–6 mm	5–8 °C



Advanced

Manica rubida

A big, rusty-red mountain hunter that heaps crater-like mounds around its nest entrances, stings like a wasp and punishes mistakes in the founding stage.

●●●●●●● 7/7

NEST	SIZE	WINTER
20–28 °C	5–9 mm	5–10 °C



Advanced

Oecophylla smaragdina

Asian weaver ant

Long-legged tree ants that stitch living leaves into nests with silk from their own larvae, and an expert-level challenge to keep.

●●●●●●● 7/7

NEST	SIZE	WINTER
24–30 °C	5–10 mm	None



Advanced

Pheidole pallidula

Big-headed ant

Tiny minors, big-headed majors and a real talent for escaping.

●●●●●●● 7/7

NEST	SIZE	WINTER
21–28 °C	2–6 mm	12–16 °C



Advanced

Solenopsis fugax

Thief ant

A tiny underground thief that tunnels into the nests of bigger ants to steal their brood, and slips through almost any gap.

●●●●●●● 7/7

NEST	SIZE	WINTER
21–28 °C	1.5–2.5 mm	5–10 °C



APPENDIX B

B

WORDS AND TERMS

Glossary

Alates, nanitics, trophallaxis: ant keepers have a language of their own. Here are the words you'll meet in this book, on forums and in ant shops, explained in plain English.

The terms are sorted from A to Z. Each one matches a page of the **ant keeping glossary** on the BRUMA Ants website, where you'll find photos, examples and practical tips.

SIX KINDS OF WORDS

- Anatomy, like gaster and petiole
- Colony life, like brood and monogyny
- Feeding, like feeder insects and honeydew
- Life cycle, like alate and nanitic
- Behavior, like foraging and trophallaxis
- Setups, like outworld and Ytong nest

A

Acrylic nest SETUP

An ant nest made of clear acrylic layers stacked and screwed together to form the chambers, giving a great view of the colony and an escape-proof, easy-to-clean structure.

Alate COLONY

A winged reproductive ant, either a virgin queen or a male, raised by a mature colony to leave the nest during the nuptial flight and mate.

B

Brood LIFECYCLE

All the young, developing members of an ant colony: eggs, larvae and pupae. Pupae may be bare or wrapped in a silk cocoon, depending on the species.

C

Claustral founding LIFECYCLE

A way of starting a colony in which the newly mated queen seals herself in a small chamber and raises her first workers without leaving to forage, living on her own body reserves.

D

Dealate LIFECYCLE

A queen ant that has shed her wings, usually right after mating during the nuptial flight, as she gets ready to dig a chamber and found a new colony.

Diapause LIFECYCLE

A programmed resting phase in which an ant colony slows its metabolism, the queen stops laying eggs and brood development pauses, usually triggered by the cold and short days of winter.

E

Escape prevention SETUP

The barriers and design choices that stop ants from leaving their setup, most often a slippery escape prevention oil brushed around the top of the outworld, plus tight lids and stoppers.

F

Feeder insects FEEDING

Insects and other small invertebrates, such as crickets, mealworms, roaches and fruit flies, offered to ant colonies as protein, which the queen needs to lay eggs and the larvae need to grow.

Foraging BEHAVIOR

The search for food, water and other resources outside the nest, carried out by worker ants that collect what they find and bring it back to share with the rest of the colony.

Formicarium SETUP

An artificial habitat for keeping an ant colony, usually made of a nest where the ants live and raise their brood, connected to an outworld where they find food and water.

Founding chamber LIFECYCLE

The small, sealed cavity a newly mated queen digs in soil, wood or under a stone, where she lays her first eggs and raises her first workers. Also called the claustral chamber.

Fungus garden BEHAVIOR

A sponge-like mass of fungus that leafcutter ants grow on fresh leaf fragments inside their nest. The ants don't eat the leaves: they feed the fungus, and the fungus feeds the colony.

G

Gaster ANATOMY

The rounded rear part of an ant's body, behind the waist. It holds the crop, the digestive system, the reproductive organs and, in many species, a stinger or acid gland.

Granary BEHAVIOR

A nest chamber where harvester ants, like Messor barbarus, store the seeds they collect. It's kept drier than the brood chambers so the seeds don't germinate or go moldy.

H

Heat cable SETUP

A flexible heating wire placed under or behind part of an ant nest to keep it warm, which speeds up brood development, ideally controlled by a thermostat to avoid overheating.

Hibernation LIFECYCLE

The period of winter rest that ant keepers give to colonies from temperate climates, keeping them cool for a few months so the queen and the brood can pause, as they would in the wild.

Honeydew FEEDING

A sugary liquid excreted by aphids and other sap-sucking insects. Many ants, like Lasius niger, collect it as food and protect the aphids in return, almost like farmers with a herd.

L

Liquid feeder FEEDING

A small container placed in the outworld that holds water or sugar water and lets ants drink through tiny holes or a wick, providing a steady supply for days or weeks.

M

Major worker COLONY

A large worker, usually with an oversized head and strong mandibles, found in species with workers of different sizes. Majors handle heavy jobs like cracking seeds and defense.

Mandibles ANATOMY

The pair of jaws on the front of an ant's head, used to carry brood and food, dig, cut, crack seeds and defend the colony. Their shape varies a lot between species.

Monogyny COLONY

A colony structure with only one egg-laying queen. In monogyne species, colonies don't accept extra queens, and adult queens are usually aggressive toward each other.

N

Nanitic LIFECYCLE

One of the first workers raised by a founding queen. Nanitics are noticeably smaller than later workers because they grow on the limited food the queen can provide alone.

Nuptial flight LIFECYCLE

The mating event in which winged queens and males leave their colonies, often by the thousands, to find partners from other nests, after which the mated queens land to start new colonies.

O

Outworld SETUP

The open area of a formicarium, connected to the nest, where workers go out to find food and water, drop their waste and explore, just as they would forage outside their nest in nature.

P

Petiole ANATOMY

The narrow waist segment between an ant's thorax and gaster. Some ants have a single petiole, while others have a second segment behind it, called the postpetiole.

Pheromone BEHAVIOR

A chemical signal released by an ant to communicate with other members of its species, used to mark food trails, raise the alarm, recognize nestmates and attract mates.

Polygyny COLONY

A colony structure with more than one egg-laying queen living and working together. Polygynous species can accept several reproductive queens in the same nest.

Polymorphism COLONY

The presence of workers of clearly different sizes and shapes in the same colony, such as small minor workers and large, big-headed major workers, often with different jobs.

S

Sandwich nest SETUP

A nest made of two transparent panels of glass or acrylic held close together, with a thin layer of sand or soil in between where the ants dig their own tunnels and chambers in plain view.

Semi-claustral founding LIFECYCLE

A way of starting a colony in which the newly mated queen cannot rely only on her body reserves and has to leave her chamber to forage for food while raising her first workers.

Social parasitism BEHAVIOR

A relationship in which one ant species depends on the colony of another to survive, for example a parasitic queen that takes over a host colony and lets its workers raise her brood.

Substrate SETUP

The loose material, such as sand, soil, clay or bark, that covers the floor of an outworld or fills a sandwich or naturalistic nest, giving ants a surface to walk on, dig and keep humid.

Supercolony COLONY

A huge network of connected ant nests with many queens, whose workers treat each other as members of one family instead of fighting, sometimes stretching across entire regions.

T

Test tube setup SETUP

A simple founding nest made from a test tube with water at the bottom, held back by a cotton plug, giving a queen and her young colony a small, dark and humid chamber.

Trophallaxis BEHAVIOR

The mouth-to-mouth sharing of liquid food between ants. Foragers store food in their crop, or social stomach, and pass it to nestmates, the queen and larvae.

Tubs and tubes SETUP

A cheap and simple setup in which one or more test tube nests are placed inside an open plastic tub that acts as the outworld, protected by an escape prevention barrier.

Y

Ytong nest SETUP

An ant nest carved into a block of Ytong, a light and porous aerated concrete that holds moisture well and is easy to sculpt, usually closed with a clear front panel.



APPENDIX C

C

TOOLS AND PRINTABLES

Checklists and printables

Print these pages, stick them next to your ants and tick things off as you go. They condense the whole book into the jobs you'll actually do.

Each checklist points back to the chapter that explains it, so if something isn't clear, you know exactly where to look.

IN THIS APPENDIX

- A cheat sheet with the key numbers
- Your weekly and monthly routine
- A month-by-month care calendar
- The test tube setup, step by step
- Before and after hibernation
- A colony log to print and fill in

EVERYTHING ON ONE PAGE

The cheat sheet

The numbers you'll look up most often, in one place. They suit most of the common species in this book, but when your species needs something different, its own page (**Chapter 10**, **Appendix A** or the website) always wins.

20–28 °C
NEST TEMPERATURE
Most species, with a warm and a cool side (**Chapter 7**)

40–70 %
HUMIDITY
Most species, with a moist and a dry area

5–16 °C
HIBERNATION
Most species 5–12 °C, some Mediterranean ones 12–16 °C

6–10 weeks
FIRST WORKERS
After the first eggs, faster when warm

Half
TEST TUBE WATER
Cotton pushed down quickly (**Chapter 4**)

Weekly
ROUTINE CARE
Feeding, a quick look, a little cleaning

1–2 days
LEFTOVERS
Remove food before it molds (**Chapter 5**)

1 : 1–2
HONEY WATER
Honey to water; sugar water is 1 : 2–3

Colony stage	Sugar	Protein	How often
Founding queen	A tiny drop of honey is optional	None for fully claustral queens	Once at move-in, then leave her alone
First workers	1–2 drops of honey or sugar water	A fruit fly or a crumb of insect	Once a week
Small colony	A few drops or a 1 ml feeder	A few small insects or pieces	1–2 times a week
Growing colony	A 5 ml feeder	5–10 small insects	Twice a week
Big colony	A 10 ml feeder	Several whole insects	2–3 times a week

Feeding at a glance, from **Chapter 5**. Judge by how fast the food disappears.

- Start with a local species, and check the law before you catch or buy one
- Leave a founding queen alone in the dark
- Add space a little at a time, never a huge nest at once
- Give temperate species their winter rest every year
- Never release ants into the wild

GETTING STARTED

Your first colony

Everything you need for your first queen fits in a shoebox and costs very little. Buy the outworld and the nest later, when the colony actually needs them (**Chapter 6**).

Shopping list for your first queen

From Chapters 3, 4 and 5.

- [ ] A few test tubes (a standard size fits most queens)
- [ ] A pipette or small bottle for the water
- [ ] Tinfoil or dark paper
- [ ] Honey or sugar, for sugar water
- [ ] Later: a small outworld with an escape barrier
- [ ] Cotton wool
- [ ] A long skewer or long tweezers
- [ ] Small clear containers with lids, for catching
- [ ] Feeder insects, like fruit flies or crickets
- [ ] Later: a nest that fits the colony

The test tube setup, step by step

From **Chapter 4**.

- [ ] Wash your hands before touching the water or the cotton
- [ ] Fill about half the tube with clean, cold water
- [ ] Push a cotton ball down to the water quickly, so no air bubbles get trapped
- [ ] Let the queen walk in on her own, gently
- [ ] Close the tube with a second, dry cotton plug
- [ ] Cover it with tinfoil or dark paper
- [ ] Lay it flat somewhere dark and quiet, at room temperature
- [ ] Label it with the species and the date

EVERY WEEK

Your care routine

Ants need very little of your time, but they need it regularly. A young colony needs about one visit a week. A big colony is fed two or three times a week, but each visit takes only minutes. Once a month, add a slightly longer check.

Every week

From Chapters 5 and 8.

- [ ] Offer sugar and protein
- [ ] Check the water and the humidity
- [ ] Check the lid and the escape barrier
- [ ] Remove leftovers before they mold
- [ ] Look for mold, sprouted seeds and mites
- [ ] Write a line in your colony log

Every month

From Chapters 6, 8 and 9.

- [ ] Clean the outworld and the trash pile
- [ ] Inspect the whole nest for mold and mites
- [ ] Wash the feeders and refill them
- [ ] Replace dirty substrate
- [ ] Check whether the nest is getting crowded
- [ ] Take a photo to compare later

TWICE A YEAR

Winter rest

Most temperate species need a winter rest every year (**Chapter 7**). These two lists cover the days before it starts and the weeks after it ends.

Before hibernation

From **Chapter 7**.

- [ ] Check your species: does it need a winter rest, and at what temperature?
- [ ] Stop offering protein a week or two before
- [ ] Switch off any heat cable or mat and let the colony slow down
- [ ] Fill the water reservoir, or move the colony to a fresh test tube
- [ ] Remove every leftover and old seed
- [ ] Cool the colony down gradually over a week or two
- [ ] Get the place ready, then write down the start date and check the water once a month

Waking up in spring

From **Chapter 7**.

- [ ] Warm the colony up gradually over a week or two
- [ ] Offer sugar first
- [ ] Add protein once the queen starts laying again
- [ ] Replace old cotton and remove any mold
- [ ] Plan the space the colony will need this season

SPECIAL DAYS

Moving day and vacations

Moving day

From **Chapter 6**.

- [ ] The new nest fits the colony: snug, not huge
- [ ] The new nest is dark and humid
- [ ] The old setup is bright but stays damp until it's empty
- [ ] Connect the old setup to the new one and let the ants explore
- [ ] Be patient: a move takes a few days, sometimes a couple of weeks
- [ ] Never shake or force the queen
- [ ] Remove the old setup only once it's empty

Before you go on vacation

From **Chapter 8**.

- [ ] Feed a good meal a couple of days before you leave, then remove the leftovers
- [ ] Leave a sugar source that can't drown the ants
- [ ] Fill the water supply
- [ ] Keep the setup away from the sun and heaters
- [ ] Check the lid, the ports and the escape barrier
- [ ] For long trips, ask someone to check on them

MONTH BY MONTH

The care calendar

The yearly rhythm of a typical European species in the northern hemisphere. Tropical species stay active all year, and species from warmer places may fly or rest at other times, so always check your species in **Chapter 10** or **Appendix A**.

January — REST

- Hibernation at your species' temperature
- Check the water once a month, quickly and gently
- Plan this year's setups

February — REST

- Keep the colony cool and dark
- Clean and prepare the outworld and feeders
- Stock up on test tubes and cotton

March — WAKE UP

- Bring the colony back to room temperature over a week or two
- Offer sugar first, then protein once the queen lays
- Remove any mold or old food

April — GROW

- Brood season restarts: feed protein two or three times a week
- Keep a warm spot in the nest
- Check the nest's humidity

May — GROW

- Check if the colony needs more space
- Prepare clean test tubes for new queens
- Watch the first flights of some species

June — FLIGHTS

- Flight season opens for many species
- Look for queens on warm, calm evenings
- Feed well: colonies grow fastest now

July — FLIGHTS

- Peak flights for *Lasius niger* and many others
- Keep nests out of direct sunlight
- Top up water more often in the heat

August — FLIGHTS

- Late summer flights
- Leave new queens in peace
- Plan any big moves before autumn

September — GROW

- Some harvesters, like *Messor barbarus*, fly after autumn rain
- Last big feeding round before winter
- Move colonies that need more room

October — SLOW DOWN

- Stop the protein, keep sugar and water
- Switch off any heating
- Lower the temperature little by little

November — REST

- Most species start their rest by now, at their own temperature (5–16 °C)
- Fill the water reservoir before the colony goes in
- Keep a note of the date

December — REST

- Let the colony rest
- Check the water once a month
- Read about your next species

PRINT AND FILL IN

My colony log

Write down what you see every week or two. After a few months, your log will tell you how fast your colony grows, what it likes to eat and when it's ready for more space.

SPECIES	QUEEN CAUGHT OR BOUGHT ON	COLONY NAME

Date	Workers	Brood	Food given	Temp. / humidity	Notes

FIND IT FAST

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Thank you also to the BRUMA Ants community on YouTube, on Discord and on the website. Your questions, your colony updates and your mistakes (and mine) shaped every chapter of this book.

The care data of each species is checked against AntWiki, AntWeb and published research. If you spot something that looks wrong, or you have a question this book doesn't answer, write to me through **brumaants.com** or on the **Discord server**.

APPENDIX A AND CHAPTER 10

Species photos

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CHAPTERS AND COVERS

Other photos

Winged Messor barbarus queen with a reddish head standing on sandy ground: MACRONATURA/stock.adobe.com

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Crematogaster scutellaris workers walking in a line over a pale rock: Charles Galea Bonavia/Wirestock/stock.adobe.com

Two winged Messor barbarus ants on a dry seed head during a nuptial flight: Juan C. Espinosa, CC BY 4.0

Crematogaster scutellaris worker carrying food along a rock with its gaster raised: Charles Galea Bonavia/Wirestock/stock.adobe.com

Close-up of two Crematogaster scutellaris workers with heart-shaped abdomens on a twig: fabiosa_93/stock.adobe.com

Messor barbarus major walking over seed husks, with a smaller minor worker behind it: Jorge/stock.adobe.com

Winged male and female ants gathering on a grass stem at the start of a mating flight: Stephane Bidouze/Shutterstock.com

Three Messor barbarus workers, including a major, sharing a green seed on sandy ground: Jorge/stock.adobe.com

Messor barbarus major worker carrying a grass seed across a rock, with a smaller worker nearby: Jorge/stock.adobe.com

BRUMA ANTS

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