

Starting Your Own Colony

This booklet will go over how to catch your own queen and raise your own colony, as well as covering the option of collecting a wild colony.

Catching A Queen

An ant nest will produce winged ants called alates once a year (the time varies depending on the species). These are princes and princesses that will embark on the mating flight at the right time.

Most alates will only mate when they have flown high into the sky, so if you disturb an ant hill and see winged ants, don't bother collecting them. They haven't mated and are infertile. It is nearly impossible to get them to mate in captivity.

Alates usually fly just after a rain or in high humidity. Each species seems to send the alates out on the same day as others of their species. There may be 1-5 flights over a 1-3 week period.

Queens can vary greatly in size from one species to the next. Some are only 2mm, while others can reach 14mm.

To Find The Queens

It is easiest to find them on cement, usually a sidewalk or driveway as the queens run around trying to find a good place to dig their new home. You may walk along the sidewalk for days and weeks and see nothing, but one day you will see dozens.

Other ways to find queens include turning over small rocks or pieces of wood. New queens will crawl under these to start a new colony. Even pulling apart rotten logs, or peeling the bark off of a dead tree can yield the wood-dwelling species.

Wings

A Queen will usually shed her wings shortly after landing. Sometimes the queens will keep their wings for years even if they are mated.

Some people say queens with wings are infertile – not true. There are flourishing colonies in which the queens have wings, and many infertile queens who have shed their wings.

Queen, Prince, or worker?

A queen is larger than the males. The males have a very pointy gaster (abdomen) and are only 1/3 of the queen's size. The males also have extremely tiny heads with huge eyes.

It isn't likely that you will find a male. After mating the males die, if they don't mate they will only live 1-3 days without the colony to feed them. Males always keep their wings.

The queens and princes have larger thoraxes (mid-sections) than the workers do.



Flight Times

In Alberta, most ants will fly in May, early June, late July, and August. There are a few flights at other times, but they are few and far in-between.

Many may remember the large winged ants that appear on the first warm days of spring after the snow has left; those are carpenter queens (*Camponotus* species).

Some species are hard to find because they aim their flight to dense forests, or even fly at night.

This site lists the months that certain species were spotted flying (this is a world wide census, most are not found in Alberta). <http://forum.formiculture.com/index.php/topic/181-ant-mating-chart/#entry1004>

ID Your Ant

Once you have a queen, the first thing to do is to get your ant identified. The easiest way to do this is to take a few pictures, a measurement (in millimeters), and create a somewhat detailed description of the ant and where you found it (location based on the nearest large city is extremely important) and post it on www.formiculture.com or <http://antfarm.yuku.com>. Within a day or two someone will likely be able to ID your ant down to genus, perhaps even species.

Usually genus is enough to get a clear idea on how to care for your ant. Some ants, of course, are social parasites or semi-claustral and can make their care requirements a little harder to meet. I'll get more in-depth on these two stipulations further down.

Queen Care

Caring for a queen can be a bit different than caring for a mature colony. Different techniques used for the different types of queens. Some queens can be trickier than others or have special nesting requirements, food requirements, or something else.

In more northern locations, many ants that fly in or after August will wait until spring to lay eggs. A 2 month hibernation in the fridge may fool the queen into thinking it is spring.

Note: Even if you find a queen, they may be infertile, and in the first year or 2 many die for no apparent reason.

Differences Among Queens

There are 3 different categories of queens: fully-claustral, semi-claustral, and socially parasitic. Each has slightly different methods of care.

Fully-claustral

Fully-claustral queens are typically bulkier than semi-claustral queens, with smaller heads proportionately to social parasites and semi-claustral. The reason for this is that they do not forage or need to fight during the founding stages since they spend their entire time in the nest. These queens are the easiest to care for and the most important things to keep in mind are humidity and disturbances; you can typically just put them into a new home and forget about them for a month. They nourish themselves through fat and food stores along with metabolizing their wing muscles.

Semi-claustral

Semi-claustral queens are usually thinner and require a foraging area and access to food during the founding stages. These queens can be trickier, but are fun to watch. Food requirements vary from species to species, but for the most part the diet is comprised of sugars and insects.

Social parasites

Social parasites are the third type of queen ant. These queens are usually somewhat stocky like the fully-claustral queen, but have larger heads and mandibles in proportion to the thorax compared to their fully-claustral counterparts. Their gaster is usually smaller. These queens need a host in order to found a colony. In the wild they invade a colony of their preferred host species, kill the queen, and use the workforce to raise her own brood. In order to care for these ants properly you will need to identify their host, collect brood (ant pupae or larvae) and give them to her. Once the workers emerge, they will think the queen is theirs and they will take care of her.

Note that adult workers from different colonies have different scents, introducing adult workers to a different queen may result in a fight that can kill your queen.

In a small handful of species, the queen may accept adult workers. First you need to refrigerate both the queen and her host workers for a few days. The longer workers are separated from their colony, the more likely they are to accept a new queen. After this is done, add one worker to the queen while they are all still in the refrigerator. The cold slows them down and usually limits their aggression to posturing. In some parasitic species the queen will kill the worker in order to use the worker's scent to infiltrate the colony, if this happens, do not be alarmed. Add a second worker, watch for signs of aggression, if it escalates to the point of combat, separate them and try again later. If all goes smoothly and you get the workers introduced to the queen without incident, leave them in the refrigerator for a few more days in order to allow the scent to really stick and get the workers used to their new queen.

Link to a document about social parasites: <http://antfarm.yuku.com/topic/11917/The-keeping-of-Lasius-umbratus-and-other-social-parasites?page=1#.UrnBj7TwrYQ>

Queen Setups

Among the most commonly asked questions is "What can I put her in?" The answer is just about anything. As long as your semi-claustral queens can forage, and your fully-claustral queens feel secure, just ensure that there is an easy way to maintain the nest, adequate humidity, and surface to view them from.

Common techniques and items used:

Test tube setup

The test tube setup is extremely cheap and easy to make while providing all of the key things a good claustral chamber needs. You fill around 1/3 or 1/2 of the tube with water, plug it with a piece of cotton, insert the queen, and then plug the open end with a dry piece of cotton. The water is needed for them to drink, and to maintain humidity or else they will dry out and die. The piece of cotton inside holds back the water to prevent drowning while also allowing an easy drink for your new pet. You can make it tighter or looser fitting as a way to help increase or lower humidity levels in the tube, too. The piece of dry cotton on the end allows air flow so she can breathe, and also keeps her from escaping. The test tube setup is nearly perfect for any queen or small colony. You can even add a bit of dirt or sand to give it a more natural look or feel, or for queens who like to dig. Dirt also helps prevent deaths from flooding most commonly encountered with small species such as *Solenopsis molesta*.

Video on test tubes: <http://www.youtube.com/watch?v=958o2VcABel>.



Once the queen has workers, you can place the tube in a plastic/glass container to let them forage. They can live like this as long as the tube has water. If the tube runs out of water, place a new tube in the container and they will likely move once the water in the original tube is gone.



Test tube alternatives

A common replacement for test tubes is vinyl aquarium tubing. You can easily find 10-foot lengths of this stuff at your local Home Depot or hardware store. Cut it into smaller (3-6 inch) segments, plug one open end with cotton, clay, or something else, and follow the above procedure for the test tube setup.

Another replacement is a prescription pill bottle. You can usually get them for free from your local pharmacy, and they can make wonderful impromptu test tubes.

Firebrick/ytong/pumice/grout chamber

Another option is a firebrick/ytong/grout/pumice setup. Use a small block molded or carved with small chambers and covered with a piece of glass. All you want is one, or possibly 2 chambers in the beginning. In general, the amount of space given to a queen is 1.5x her body length, and 1.5x her height. This gives her adequate room to maneuver, while also making sure she feels secure. Mold or carve little tunnels to place tubing into to allow each queen access to its own outworld – like a mini nest. This is good for small colonies, or for semi-claustral queens.

Ensure you keep the nest moist.

Household containers

Pretty much anything you find around the house can work as long as you ensure that it is cleaned out, first. A jar, with a layer of dirt on the bottom, or filled all the way up, can be a wonderfully successful environment, and provides plenty of space for quite a long time. There is record of someone who once crumpled a piece of damp paper towel up and placed it into a small cup for a *Camponotus* queen and she was able to successfully raise her first workers in this.

Feeding Queens

Fully-claustral

Ultimately, feeding a fully-claustral queen is a personal choice. They don't require any food for many months because they typically have fat and food stores, and will metabolize their wing muscles for nourishment. If you do decide to feed them, it's common that they won't accept protein in the form of insects, but they usually go for sweets. There are, of course, exceptions

to this rule; some *Aphaenogaster* queens ravaged any termites offered, for instance, but this isn't always or even typically the case. Usually a dab of honey, maple syrup, or sugar-water will suffice. One way to offer protein is to mix whey protein shake powder in with maple syrup/water or a hummingbird nectar mix and many queens will accept it. It's a great source for protein, but do note that you likely won't see any increase in numbers or size of nanitic workers when feeding a queen.

Semi-claustral

Semi-claustral queens need food. You can still use a typical test tube setup for them, but instead of sealing it off with cotton, leave it open and place it into a plastic/glass box. Put food into the box, and the queen will find it and take it back to her tube. These queens usually will accept protein, especially when larvae are present, and in some species, seeds such as sunflower seeds. Giving her some sugar isn't a bad idea either, in the form of sugar water or hummingbird nectar.

It is possible leave the queen in a sealed tube and place food inside with them. Ensure you use some tinfoil or paper as a feeding plate to prevent dirtying the tube.

Nanitic Workers (nanitic workers are a queens first workers, they are much smaller than normal)

When nanitics arrive, it's time to start thinking about food even if your queen is fully-claustral. You likely won't need to feed them for several days. When the nanitic workers begin trying to open the nest by tearing at the cotton plug sealing them in, you know they are very hungry. Offer some sugar water or hummingbird nectar, and maybe a small insect. Something soft and/or torn open with some needles/pins/tweezers to allow the smaller, weaker ants' access to the good stuff. Many young colonies will love pieces of large spiders, or whole small spiders with a tear in the body. Tearing off the meaty, metathoracic legs of a cricket and tearing open the tibia slightly will give them access to the muscle tissue within which is rich in protein. Fruit flies and termites work well too.

Freezing before feeding

Insects and arthropods can carry mites, diseases, or parasites that can be harmful to your queen/colony. It is highly recommended to freeze any food for a few hours at least before feeding. Many people store insects in the freezer until it is feeding time. They will last for a long time in there, but like other foods, freezing and thawing repeatedly can cause them to spoil

Feeding live insects that you yourself have raised is acceptable. Flightless fruit flies are commonly dumped into an outworld to let the ants hunt. Store bought insects may carry mites, crickets are well known to carry mites.



Methods of Feeding

There are several ways to feed a queen/colony while minimizing the mess.

Cut a Q-tip in half, dip one side of the cotton end into the liquid, and put it in. Lock it in place using the cotton plug dry side against the wall.

Place all food onto a small piece of tin-foil, remove the foil once the queen has eaten her fill.

Whenever using a liquid/semi-liquid, such as honey, syrup, etc, ensure you soak it into a small piece of cotton to prevent drowning deaths.

There can be problems if you're just dropping drops of honey and what not into the test tube. Sometimes ants can get stuck and drown in those drops, or they'll walk through them and make a huge mess in the tube which can cause mold.

Queen Problems

Sometimes not everything goes smoothly with your queens. Problems do occasionally crop up. Some are common while others are rare.

Settling/Cotton tugging

Often when the queen first goes into the tube she will start tearing at the cotton plug. This behavior may last a week or more, but you just need to be patient and leave her alone. Sensory deprivation can help get her to settle down and settle in a bit faster. Put her in a completely dark place where she won't be disturbed, and give her at least three days before you check on her. There are instances where she will do this until she's dead, while it is sad, it does happen, and if it goes on any longer than a week, consider using a different kind of setup for her. Many *Pogonomyrmex* queens, for instance, do not settle well in test tubes and usually perform far better in a dirt setup. Or when there is dirt in the test tube.

Then there are times where a queen gets a rough disturbance like being dropped and she may start tearing at the cotton all over again. This happens because she deems her nest to be unsafe and likely is prepared to abandon her brood and start over. Give her a few days of sensory deprivation, and maybe a day in the refrigerator if necessary to try to calm her down.

Fungi

Fungi can come in all different colors and shapes. Zombie-ant fungus, insect-infecting *Aspergillus flavus*, common house molds, etc. can all be harmful and fatal to an ant or

a colony of ants. If you spot mold in one of your formicariums, I suggest moving the colony as soon as possible. If you happen to be having worker or queen die-offs, leave the dead specimens in a container with a lid for a couple of days and see if they sprout any fungus. Some fungi will grow within an adult ant and end up eating it inside out. If after a day or two in a sealed container they do not sprout anything, it is likely that a fungus isn't the cause of death.

Some funguses are deadly, others don't seem to bother the ants.

Dirty tube

Ants poop just like you and me. Sometimes you get lucky and no mold ever sprouts inside your test tube, but after a while you'll notice the cotton and water looking yellow to brown in color. That's ant excrement and it can be gross to look at it. It shouldn't be harmful to your ants, but it is recommended to move them once the water gets contaminated.

Parasites

Sometimes your queen's parent colony will have a mite infestation, or she picked some mites before you found her, or perhaps some food you gave her was contaminated. In any case, if you see extremely tiny (like pinhead size) dots on your queen or running around your tube, it's likely you have mites. Unfortunately there's not much that can be done about a mite infestation in ants. With reptiles, they have mite powders that will dry the mites up without harming your pet, but I'm afraid these products are just as likely to kill your ant(s) as they are to kill the mites. Fortunately not all mites are detrimental to your ants so it may not be a problem at all. One thing you can try is offering lemon or orange juice (freshly squeezed from the fruit) on some cotton. Ants are smart, they know if they have a problem and how to deal with it. It's possible they'll use the acidic lemon juice to dry out and kill the mites taking care of the problem on their own. With 1-2 larger mites on a newly found queen, it may be possible to remove the mites with tweezers.

Some people have also found dead queens with small, larva-looking things in the test tubes. These are usually parasitic flies or even wasps that laid eggs on or in the queen. Once they hatch, they can chew through the queen's gaster causing death, and will usually eat their victim after. There's no way to know if your queen has a parasitic wasp or fly larva in them, and nothing you can do after it kills your queen.

Brood problems

Sometimes everything is going right with your queen, but you notice the brood keeps disappearing, or she constantly has a pile of fresh eggs, or you even catch her eating her brood. This can be caused by stress or environmental factors killing the brood. Sometimes queens are just fail moms, though. If your queen is eating her brood, or potentially eating her brood, I suggest taking a close look at the environment they're in and making sure there is no

reason the brood is dying. If there is no apparent reason for brood deaths, ensure that she is being left alone. Only check on her once a week, and put her somewhere where she won't be bumped, exposed to vibrations or any other disturbances. If all of this is done and she still isn't producing, or is eating her brood, consider her a fail mom. In this case, there is no harm in keeping her until she dies or perhaps gets lucky and produces some offspring. Offering her some callow workers of the same species may make the colony successful.

You can also attempt to introduce adult, non-callow workers. Some ants are more accepting than others, so always be wary and only do this if left with absolutely no choice. Stick the queen and any collected workers (of the same species!) in the fridge for a few hours. Introduce one to the queen and observe them for a few minutes. Chilling them in this way typically reduces aggression to only posturing, but be prepared to break up a fight. Leave them in there until they at least stop showing aggression before introducing more. The workers will be able to assist the queen in raising her brood.

To add to this, queens routinely feed eggs to larvae. It is one of the more common ways for a queen to feed the larvae. Sometimes queens simply lay a bundle of infertile eggs that are just for consumption and slowly consume them. It is common for a queen to lay a sizable pile of eggs, but end up with only one large larvae with no eggs or any other brood. The larvae will usually pupate and eclose, so no problem.

Spontaneous death

Sometimes a queen just dies for no apparent cause. It could be genetic, a disease, reaction to fumes, residues, or the stress of being caught, or some microscopic or nearly microscope life-form such as a mite. If you fail to find any likely cause of a queen's death, and no fungus sprouts after a couple of days in a clean, sealed container, chalk it up to luck of the draw.

Queens who are infertile usually die within days, although they can live up to year or more. Queens who are infertile will lay eggs, they will develop into males with wings. Only fertile queens can produce workers.

For this reason, many people catch 3-5 queens to ensure they get a couple that survive.

Colony care

Caring for a colony in a formicarium is different than caring for a single queen or fledgling colony. They will need a variety of foods, plenty of space, an outworld, preferably a moisture gradient, and a temperature gradient.

There are some things differences between catching a wild, mature colony and rearing a colony from a new queen.

Mature vs. new

Many people find a mature colony and are able to catch a queen from it. This is fine in as long as you do it properly and I'm sure most enthusiasts would agree.

Never take a queen without workers

Never take a queen from a colony without also taking her workers. After workers start pampering and caring for the queen, it is unlikely she will survive if she is removed from them. They tend to become wholly dependent upon their workers, so if you can't catch most or the entire workforce with a queen, don't collect a mature colony. Polygynous species are an exception. Catching only a portion of the queens and workers from a polygynous colony will allow the remaining portion of the colony to live on and give you a mature colony to keep and observe.

Collection of a colony

If you have to dig up a colony to get it, be aware that most ants dig many feet below the surface over a wide area so it is unlikely you will locate the queen, and even if you do, you could kill her. Ants nesting in wood are a different matter as they are usually easier to obtain. But most wood-nesting ants practice polydomy, so it's possible the queen isn't even in the log you're tearing apart.

Sometimes colonies will be just underneath a rock or piece of wood, if you turn it over you might see the queen. If you see her, catch her first, and then collect as many workers and brood as possible.

Stress of capture

Another problem that can arise is stress. A mature colony has likely lived and thrived in the wild for some years and a sudden home invasion, destruction, and capture can be extremely stressful for a colony. New queens from nuptial flights adapt to captivity far more easily than a mature colony. Sometimes a mature colony will have a large worker die-off after collection, so be prepared. A wild colony will probably take several days to 2-3 weeks to start eating and settle in.

Queens don't live forever

There is almost no way to determine the age of a queen. The queens you find in a mature colony are possibly quite old; some can live upwards of 12 years! So be advised that without knowing the age of the queen in a mature colony, it's possible she and her colony will be approaching the ends of their lives.

Formicariums

There are different types of formicariums you can use. You can make them or buy them from a good source.

Uncle Milton/Gel farms

You or your child may have received one of these ant farms as a gift or something, but let me inform you that they are not suitable for raising a full-blown colony. They mold easily, the gel doesn't have the nutrients ants need, plus ants like variety, and most colonies only last a few months to a year at most in these. They are designed for small children and only to view a few aspects of a colony. These are meant to observe workers, not to hold a functioning colony.

Please, if you are going to get into serious ant keeping, get a proper ant nest. You can make them or buy them.

There are places you can buy them such as Tarheelants.com, AntStore.com, or AntsCanada to name a few that sell proper high quality formicariums.

Heating

If your house is cooler than 24C, then you need a way to provide additional heat to your queen and/or colony.

Some species need more heat than others. Myrmica are heat lovers, while some species of Lasius place their brood in moderate heat and excess workers hang out in cooler areas.

The best heating method is to use a heating cable, or a heating pad meant for reptiles. Place it under one corner/side of the formicarium. This will create a heat gradient with heat on one side and cooler locations on the other side. This will allow the ants to choose what temperature they want.

Use a heating cable no hotter than a 15 watt. 11 watt and 15 watt are ideal. You can leave them plugged in all of the time, or place them on a timer to mimic the sun's heat.

You can place the heating cable under the open end of the test tube. In a Formicarium, you can place the cable under the nest, or on the glass.

If the ants are as far as possible from the heat, then it is too warm. Move it further away from the center of the nest and reduce the time it is on.

Observe your colony carefully for any indications of stress due to overheating.

Helpful Links:

Ant Flight Chart: <http://forum.formiculture.com/index.php/topic/181-ant-mating-chart/>

Ants of Alberta: <http://www.antweb.org/fieldGuide.do?project=albertaants&rank=genus>

General help: www.formiculture.com You can post picture for identification here.

