## The Ultimate Guide to Breeding and Culling Land Snails

Part of a collaborative effort to improve species within the hobby

*Note: This information in this guide is intended for use with land snails only. Please seek advice from experienced fish keepers regarding the breeding/culling of aquatic/semi aquatic snails.*

*This guide is subject to change, and you can see a list of updates in the changelog at the bottom of this guide.*

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*Part 1: Can I hatch these eggs?*

*So, your snails have laid eggs! Congratulations! If you want to hatch them, you must first determine if these eggs are suitable candidates. The size of the clutch, age, size, and relationships of the parent snails are all important factors to keep in mind.*

*Clutch size:* The proper egg clutch size depends on the species. You should only hatch clutches that contain the minimum expected amount of eggs for your particular species. Helix pomatia, for example, should only be hatched from clutches of at least 40 eggs. This is because you need as many baby snails as possible to compare to each other for culling (see the culling section for details).

*Age of the parent snail:* Snails will often begin to lay eggs at a very young age. It is important to ensure your snails are experienced breeders and layers. Before breeding from them, you should check that your species meets all the markers of being a mature adult, and for long lived species (5+ years), it is best to wait until they are at least 2 years of age. Offspring produced from young and inexperienced snails tend to be weak and fail to thrive.

*Size and shape of the parent snail:* It is absolutely vital that you only hatch eggs from the largest snails. Parent snails should meet the minimum size expectation common for their species, and ideally as close to the maximum size expectation as possible. Snails with congenitally deformed or weak shells should also not be bred from (this excludes snails who have deformed shells from injury).

*Snails housed alone:* Snails that are housed alone, and decide to self-fertilize, should not be bred from. This method of reproduction is relatively rare, as snails prefer to mate with another individual. However, if they go long periods of time without encountering another snail, they may choose to self-fertilize.

Despite what your initial instinct may be, a snail who self-fertilizes, is *not* producing a clone of itself. It is using a sperm and an egg, which both contain differing genetic materials,

from its own body to achieve reproduction. This method of reproduction is more akin to a snail mating with a sibling or parent, than to cloning. Eggs produced from single snails should be tossed.

It is important to keep in mind that wild caught snails, who may have been previously mated, can store sperm for long periods of time. If your recently caught wild snail lays eggs, it is safe to assume it has mated with another individual, and you can proceed to hatch the eggs (assuming the snail meets the required criteria). However, if your wild caught snail has been housed alone for over a year, any new clutches of eggs produced should be assumed to be from self-fertilization.

*Relationship of the parent snails:* While not much is known about the gene expression of snails, we do know that offspring from closely related snails tend to be smaller and weaker. It is probably better safe than sorry to avoid breeding snails who are of close genetic relation. Sibling/sibling and parent/child pairings should be prevented. Cousin/cousin pairings are safer, but ideally your snails should be completely unrelated to one another. If you intend to breed your snails, it is best to keep close relatives in separate enclosures, as it will be impossible to tell who has bred with whom.

If your snail is wild, you may assume that its parentage, and any eggs produced from stored sperm (should it lay eggs while being housed alone for under a year), are healthy. This is because a snail is likely to travel a long enough distance away from the time it hatches, to the time it breeds, to mate with unrelated snails, rather than parents or siblings.

*IF YOUR SNAILS DO NOT MEET ALL OF THE ABOVE CRITERIA, DO NOT ALLOW THEIR EGGS TO INCUBATE.*

*If your eggs are unsuitable for hatching, simply collect them, crush, boil, or freeze them (eggs must be frozen for a week straight). You can then either dispose of them, or feed those eggs back to the adult snails (and they will appreciate it, as egg laying is an exhausting task for them).*

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Part 2: *Hatching Snail Eggs*

*If your snails meet the above criteria to an acceptable degree, then it is safe to allow them to hatch.*

*In order to hatch your snail eggs, you will need a very small container, just large enough to hold the eggs, and small enough to fit inside the adult enclosure. Line the small container with a small amount of substrate from the adult container (this will ensure the conditions are the same as when the parent snail laid them). Gently scoop out the eggs with either your hands or a plastic spoon, and lay the eggs inside the small container.*

*Place that small container, with the eggs in it, back in the same place the parent snail laid them. Snails will do their best to choose the best place to lay their eggs, so this ensures the conditions are kept the same for hatching. Putting the eggs in a container prevents babies from scattering in the larger enclosure, making them impossible to keep track of.*

*Depending on the species, your snail eggs should hatch in 2-4 weeks.*

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Part 3: *Raising the Hatchlings*

*Once your eggs have hatched, you can move them to a slightly larger enclosure than their hatching container. The enclosure should still be much smaller than the adult enclosure; babies will waste a lot of energy trying to find food, and will not grow to be as big as possible if their enclosure is too big. Small takeout containers, margarine containers, and things of a similar size will do.*

*You will again want to supply them with substrate from the adult enclosure, to help them build their gut microbiome. You can then either place that container back in with the adults again, or put them somewhere on their own (but you will have to try and mimic the conditions they need as an adult, which can be difficult to achieve in a small container).*

*For the first few days, you will notice that they don't move around a lot, and they aren't interested in eating. This is normal; they are digesting the rest of their embryonic nutrients and eggshells. Start offering them food after about 3 days.*

*Feed and mist your hatchlings in the same way you would the adults. They do not need any special diet, and can be fed the same things the adults eat; even a newly hatched snail can eat a hard carrot or sweet potato. They will need access to cuttlebone, and will be eating a lot of it since their shells are growing. Be sure to have plenty on hand.*

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Part 4: *Culling Hatchlings*

*This is the most important, and most extensive subject on hatching and raising snails. Culling is something that can be a sensitive topic for many people, but you will find that it is actually a very altruistic and necessary task. Culling prevents the future suffering of 'runts' (genetically weak snails which tend to be very small), and it keeps snails born and shared within the hobby as big and strong as possible, so that everyone can enjoy the best their particular species has to offer.*

*Culling is a topic most brought up by keepers of GALS (Giant African Land Snails), but it is just as important in other species. How you cull and what criteria you use will depend on the*

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*species. For the sake of this guide, photos and descriptions mostly of GALS will be used, as those are the most readily available at this time.*

*What are runts?:* In the wild, snails will 'intentionally' lay eggs that contain genetically weak offspring, in order to give the healthiest young a better chance of survival against predators. These young will be born with a shell too small or malformed to accommodate their internal organs. Over time, their organs will continue to outgrow their shell, eventually running out of space and crushing themselves.

These snails almost always die within their first few months in the wild, and they almost never get a chance to breed. This keeps the wild population large and healthy. However, in captivity, runts can live a little longer before their genetic defects begin to kill them, meaning they may get a chance to lay eggs. This is what results in weak species within the hobby, such as Lissachatina fulica, formerly capable of reaching nearly 20cm in length, now maxing out at 8-12cm, and suffering a much shorter lifespan.

*Identifying runts:* Runt snails can be identified by comparing the largest and healthiest baby snail to all the others (this is why it is important to hatch the largest clutch possible). Runt snails will be obviously smaller than their siblings, starting at about 2-4 weeks of age, depending on the species. They may also have a malformed shell, and may spend more time hidden away.

*Below are some examples of runts, with or without deformities, compared to healthy baby snails, courtesy of helpful snail keepers around the internet.*

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***Img 1**: Healthy shell (left), compared to a bulbous* shell (middle), and a small shell (right). *Bulbous shells are shells that have a short apex, and wide body whorl.*

***Img 2:** Healthy apex length vs short apex, aka a "bulbous shell".*

***Img 3:*** *Hatchling with a congenital deformity on the shell (confirmed by owner not to be the result of injury or malcare).*

***Img 4:*** *Healthy snail hatchling compared to a runt, which also has a slightly shortened apex.*

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***Img 5:*** *Even in garden snails, runts are apparent.*

*When to cull runts:* It is common practice among GALS keepers to do staggered culling, meaning you will cull any unhealthy snails at 2, 4, 6, and 8 weeks of age, eventually ending up with only the largest and healthiest snails. Some will cull even later at 10-16 weeks of age, though, this depends on the species. In other species, it may need to be done earlier or later. You will need to familiarize yourself with your particular species growth and shape expectations.

*How to cull runts:* This can be an upsetting topic for inexperienced keepers, however, it is important to keep in mind that current studies suggest snails cannot experience pain, rather they can only feel stressors that indicate something is wrong. It is also important to keep in mind that culling runts prevents future stress and a long drawn out death as adults.

The quickest and most humane way to cull snails is to crush them. It is best to place them in a plastic or paper bag for ease of disposal, and to prevent fragments flying. You can use anything heavy to crush them, such as a hammer, meat tenderizer, large book, or your shoes.

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Crushing in this manner is best used on snails under 5cm (about 2in). For snails larger than this, it is recommended you soak them in beer before crushing. Beer does not physically harm them, but it will make them fall asleep. This ensures that larger snails will be asleep for the duration of the cull, and prevents them stressing out should you need to attempt to crush in more than one go.

Another humane method is to use the runts as feeder snails for other animals, such as skinks, large fish, or hedgehogs. **Do not soak your snails in beer if you intend to use them as feeders**.

You should never freeze, boil, or slice your snails as a method of culling. These methods are sometimes mentioned, but they can be stressful events for your snail. While snails cannot feel pain, to the best of our knowledge, they can still feel stress. It is always better to offer as quick a death as possible for your snails.

Culled hatchlings can be either disposed of, composted, or fed back to adult snails. **Do not soak your snails in beer if you intend to feed them back to other snails**.

*Can I just set my runts free?:* **It is incredibly irresponsible to release snails into the wild**. The release of snails, regardless of whether or not they are native to your area, is highly regulated in many parts of the world, and often require permits, identification, and notification/permission from local wildlife regulatory bodies. Failure to acquire legal permit to release snails can result in fines or even jail time if your actions are discovered.

Many snails that are considered 'native' to your area, are actually highly invasive (Cornu aspersum, for example). Invasive snails have decimated wild native populations all over the world, and just a single clutch of snail eggs can result in thousands of snails in just a few years.

Runt snails that have been hatched in captivity also have the advantage of access to nourishing foods, calcium supplements, and access to a stable environment; which can result in runt snails that may live long enough to reproduce in the wild, effectively ruining the healthy gene pool in your locality.

***DO NOT RELEASE CAPTIVE SNAILS INTO THE WILD.***

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*Changelog:*

*28 Oct. 2020*

- *Implemented changelog*
- *Changed title from 'Ultimate Guide to Breeding Land Snails' to 'Ultimate Guide to Breeding and Culling Land Snails'*
- *Added the new subsection 'Snails housed alone' to 'Part 1: Can I hatch these eggs?'*
- *Added an addendum regarding wild caught snails to the subsection 'Relationship of the parent snails' under 'Part 1: Can I hatch these eggs?'*
- *Clarified the ramifications of the release of captive bred snails/runts to the subsection 'Can I just set my runts free?' under 'Part 4: Culling Hatchlings'*