



Pygmy Chameleon

Chameleons are one of the most recognized animals in the world, from their color changing capability to their specialized tongue. Pygmy chameleons are less well known and have several differences from their larger cousins. These small, leaf like, chameleons range in size of 1-3" (3-8 cm). Like their nickname "Stump-tail" implies, their tails are small and weak or non-prehensile. Unlike their arboreal cousins, pygmy chameleons are terrestrial and spend much of their time close to the forest floor. As such, their body shapes vary by species but are designed to hide themselves on the forest floor. Most pygmy chameleons are brown in color and lack much changing ability, except darkening to regulate their temperature.

Although lacking in size and color, pygmy chameleons more than make up for it in personality. Delightful to observe, they can be kept in small groups if properly cared for.

General

The flap-necked chameleon's common name derives from the large, movable flaps that protrude from either side of the upper surface of its neck. Normally these flaps lie flat, over a bony protuberance at the back of the head called a "casque", but during threat displays to deter rivals or predators, they can be raised and angled at 90 degrees to the head. Males can be distinguished from females by their taller casques, larger flaps and by the small spurs which protrude from the hind legs of some subspecies. At rest, the flap-necked chameleon's body coloration is usually light green, brown or yellow, with a light or dark stripe extending across the flanks. The flap-necked chameleon's body is diffusely marked with numerous dark spots, which become bright yellow or orange when it is excited or ready to mate. Two low crests formed from large conical scales run down the centre of the upper and lower surfaces of the body, with the lower crest beginning at the throat and continuing unbroken over the belly.

Flap-Necked Chameleons come from Tanzania. This species is arboreal (a tree dweller) inhabiting the tropical rain forests and savannas. Males can become territorial, separate from other males. Usually tame but frequent handling will stress the animal.

Terrarium

In general Pygmy chameleons are best suited to glass enclosures. The reason for this being that it is easier to maintain the high humidity that is needed. They also help maintain temperature gradients, which would be very difficult in an all wire, mesh cage. As a general rule, more room is better when it comes to housing Pygmy chameleons.

30 x 30 x 30 cm 12" x 12" x 12" (WxDxH) = 2

30 x 30 x 45 cm 12" x 12" x 18" (WxDxH) = 3

45 x 45 x 45 cm 18" x 18" x 18" (WxDxH) = 4

45 x 45 x 60 cm 18" x 18" x 24" (WxDxH) = 5

60 x 45 x 45 cm 24" x 18" x 18" (WxDxH) = 5

60 x 45 x 60 cm 24" x 18" x 24" (WxDxH) = 6

Some people say that more pygmy can be placed in the terrarium sizes above, but once you have placed your substrate, plants, decoration etc, you will already have lost around 20% of the original enclosure space.

An important part in the husbandry of pygmy chameleons is the fact that they need to have high humidity. This results in the enclosure needing to be misted 2-3 times a day. To prevent water logging of the soil, it is a good idea to have a drainage layer at the bottom of the enclosure. The common drainage layers used by keepers are Hydroleca clay balls or Lucky Reptile's Hydro-Drain. Both do the same job and absorb excess moisture. It is common to have between 1-2 inches of drainage layer. On top of this is placed some weed mesh. This prevents the soil layer from mixing in with the drainage layer after it becomes wet. Lucky Reptile have their own version of this separating layer called Hydro-Fleece but I have found this to be more expensive and does not necessarily do a better job than normal weed mesh which you can pick up for next to nothing. Once your drainage layer and weed mesh are in place, its time to place your substrate.

Most keepers use CoCo Noir soil, which is readily available in most pet stores. It comes in the form of a brick that needs to be soaked for 30 minutes and produces around 9liters of soil per brick.

Lighting

This is a common area of discussion amongst Pygmy owners as there is much debate over the use of UVB lighting. It is hypothesised that pygmy chameleons no longer utilise UVB in the metabolism of Vitamin D/Calcium given the fact that most pygmy are found on the forest floors under dense leafy canopies of the tree tops. However there must still be some chance that the suns rays get through right?

A lot of trial and error has already gone into the use of UVB lighting in pygmy enclosures. A lot of problems have occurred in the past with pygmy chameleons dying in enclosures that did not use UVB and those that did use UVB have lived long and happy lives. That isn't to say that UVB will be the only factor in your pygmy having great health. Good diet and supplementation is of equal importance.

Most users tend to use a combination of lighting, but then a small minority only use a single light source. Some use no lighting at all!

Commonly though, Pygmy chameleon keepers have a combination of 2% and 5% UV lighting.

2% - has high levels of UVA needed for general health and sexual development.

5% - generous levels of UVB

In general lights should be on for between 9-12 hours a day. These are best set to come on with the use of a timer so that a regular day/night cycle is maintained.

Decoration

This is the most important part of setting up any terrarium. Good husbandry will ensure that you pygmy chameleons live happy lives and breed successfully with minimal problems. As most pygmy like to stay at low levels near the forest floors in their native environments you, you should aim to re-create something that mimics this.

Background

Some people choose not to use one, others like the foam backgrounds that come with a lot of glass enclosures, some like coco panel. I tried to use the foam backing that came with my Exo-Terra when I first got pygmy, but found it to be a pain. Not only can crickets get behind the backing and become very noisy at night time, if they died behind the backing, then it got a bit smelly to say the least!

Instead of using the foam backing I tend to use Coco Fibre Panel. This is basically coco fibre that is woven together to form a mat, which can be easily cut.

It can then be stuck in place on the back of the enclosure using some silicone and acts as a background. It can also be placed on to the sides of the enclosure as well. If you have multiple enclosures, the site of other pygmy (males) may cause stress so this helps to reduce that risk. Coco fibre backgrounds also have the advantage that if you are using natural plants in the enclosure, the mat will act as a substrate to climbers and plants will take hold in it. (Great for Pothos)

I find its best to leave a small gap between the bottom of the coco panel and the substrate. This helps avoid the coco panel becoming saturated with water and prevents mould. It also helps keep your crickets at the bottom of the enclosure instead of them escaping through the top! I also leave a gap between the top of the coco panel and the roof of the enclosure.

Plants

Plants are what will make the bulk of the decoration in your enclosure so it's a good idea to think about the way you want it to look and have an idea of some of the plants you might want to include. Its important if you are using live plants that you make sure that the plant is non-toxic to chameleons. It might seem silly as you are probably thinking that pygmy chameleons don't eat plants right? Well for the most part you would be right thinking that, but Crickets eat anything! And as Pygmy are next up in the food chain, whatever the cricket eats, the pygmy eats! So make sure that all plants are from the safe list. Below is a list of plants that are known to be safe to chameleons in general.

Abelia
African Daisy
Sweet Alysum
Asperagus Fern
Baby's Tears
Bird's Nest Fern
Boston Fern
Bouganville
Bridal Veil
Bromeliads
Caladium
Camellia
Chamomile
Corn Plant
Corn Flower
Draceana
Dwarf Banana Plant
Emerald Ripple
Eugenia
Fuschia
Geranuim
Hawaiian Schefflera/Brassaia Arboricola (Beautiful plant, grows upwards, gets very full, Solid Leaves.)
Hen and Chicks Succulent
Hibiscus
Hoya
Iceplant
Impatients
Japenes Aralia
Jade
Jasmine
Kangaroo vine

Lavender
Mother of Pearl
Natal Plum
Painted Nettle
Mini Palms
Pampas Grass
Parlor Palm
Perperomia
Philodendron species
Phoenix
Purple Velvet
Pelia
Pink Polka Dot
Ponytail Plant
Pothos (#1 Choice, easy to maintain & Hard to kill. Grows well!!)
Spider Plant (Do not do well with high humidity..)
Staghorn Fern
Swedish Ivy
Tree Mallow
Umbrella Plant
Wandering Jew
Warneckii
Wax Plant
Zebra Plant
Zinnias

When you know roughly where you want to put the plants, you then need to prepare them ready for permanent placement in the enclosure. As many stores spray the plants with insecticides, it is very important to wash the plant thoroughly. The best way is to fill a wash basin with some washing liquid and warm water, and hold the plant upside down submerged in the water. Give it a gentle clean by moving the plant through the water. Once you have done this then you need to rinse with fresh water.

Now you need to remove all the soil that the plant sits in. this is to remove any bugs and fertilizers that may cause your new pygmy harm. Rinse off all the old soil. Now you have 2 choices:

- 1) Re-pot the plant and bury the pot into the substrate
- 2) Plant directly into the substrate

Everyone is different and I have tried both methods, but found that keeping plants in pots is far easier when it comes to cleaning out the enclosures.

Some plants can be separated when you are cleaning off the roots and what started off as 1 plant can easily become several. This was the case with a Pothos plant that I bought. It is now 8 separate plants that line the back of my enclosure. This plant also has the advantage that cuttings can be taken from it very easily. Plastic plants are always another option if you decide you don't want to go down the real plant route. These are easy to remove and clean and most have small branches that are ideal for little pygmy hands.

I use a mixture of both plastic and real plants.

Twigs/Branches

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Pygmy love to climb and will happily sit for hours perched on one particular branch waiting for its prey to come along. Its really important to have some vertical branches and some horizontal highways so use as many thin twigs and branches as you can find.

If using twigs and branches from outside, be sure to give them a really good clean before hand. Give them a good scrub with a nailbrush and running warm water. You can sterilize them by putting

them into the oven on full heat for 15minutes – but make sure you have them real wet beforehand otherwise they will burn

As the different species of Pygmy Chameleons originate from different part of the African continent and can be found at different altitudes, temperatures for keeping them vary.

Below is a table illustrating the relevant temperatures and humidity required by some of the most common pygmy chameleons available.

Species	Average	Temp Max	Temp Low	Temp Humidity
R. Brevicaudatus	70-75°F	78°F	60°F	80-90%
R. Kerstenii	70-75°F	78°F	60°F	80-90%
R. Nchisiensis	55-66°F	72°F	50°F	?
R. Ulugurensis	70-75°F	78°F	60°F	80-90%

From previous, for those keepers using an Exo-Terra terrarium and compact hood, average temperatures of around 70°F is easily achievable without the need for extra heating. However in cool climates where ambient temperature is significantly lower than 70°F using the compact canopy, a small basking light can be used. This should be used in conjunction with an appropriate dimming thermostat to maintain a constant temperature.

Temperature and Humidity need to be monitored – to do this invest in a digital Thermometer and Hygrometer. If you have an Exo-terra terrarium, their own brand thermometers/hygrometers are ideal as these can be incorporated into the light canopy. The analogue temperature and humidity gauges are not as reliable as the digital kind may give you false readings. Exo-terra makes a combined Thermo/Hygrometer, which cuts down on the number of wires that would be visible in the terrarium. If you decide to use this option, remember that you will need to place the sensor at the bottom of the enclosure to monitor the humidity levels accurately. This will result in you only being able to monitor the temps at the bottom of the enclosure. This isn't a problem though, as before my pygmy moved into the enclosure, I monitored the temps for a week at the top and a week at the bottom and found that there was only a 4-degree difference and I have a 60x45x60cm terrarium. If you are using a smaller sized terrarium, you will have a smaller temperature difference between the top and bottom of the enclosure.

Humidity is best maintained by misting the enclosure 2-3 a day. This can be done with a simple hand pump, but these tend to spray out large sized water drops which your pygmy will not thank you for if it hits them directly.

A pump spray bottle works brilliantly as these can be adjusted to deliver very fine water spray and its less likely to give you cramp in your hand!

It is best to use water that contains no chlorine, which most tap waters do. There are supplements that are available that can remove chlorine and other harmful elements. Exo-Terra has 2 water supplements called Aquatize and Calcimize. Some keepers just use boiled water that is left to cool for 24 hours. Over this time any chlorine particles have been lost and the water is safe to use.

From past experience, we have found that using natural plants has helped to maintain excellent levels of humidity through out the day, and water droplets tend to stick for longer meaning you know that your pygmy will have the opportunity to drink.

Feeding/Supplement Most keepers tend to find that their pygmy have individual tastes when it comes to food. Primarily the staple diet of Pygmy chameleons is Crickets. These should be no bigger than about 7mm in length otherwise these will be too big for pygmy to eat. Below is a list of the common feeders available.

- 1) Crickets – 7mm or ¼ inch
- 2) Wax worms (very fatty and should only be used as treats, but also may be too big)
- 3) Mini Mealworms – have been used successfully by some keepers, however the hard shell of these may cause impaction if eaten in big quantities. Mealworms also bite! One keeper found that his female had been eaten by mealworms whilst laying eggs.
- 4) Small Hatchling Locusts – good feeders but will destroy all real plants!
- 5) Fruit flies – Small flightless flies

Most keepers tend to feed their Pygmy chameleons every other day and give between 3-5 crickets per pygmy.

Its important to realise that good nutrition for the feeders is important for pygmy chameleon health. All feeders should be gut loaded appropriately so that that natural vitamins and minerals an be passed on to your pygmy. Crickets can easily be gut loaded using slices of carrots, broccoli, potato etc. There are foods that are available specifically to feed crickets and these contain a lot of vitamins and minerals that are important both for cricket and Pygmy chameleon health.

Calcium and vitamin supplementation is also needed. Calcium is extremely important for chameleons especially females that are breeding as the calcium is required for egg formation. It is also important to maintain strong healthy bones.

Most keepers typically dust each feed with calcium powder. Simply get a small amount of calcium powder and sprinkle it onto the feeders and lightly coat them so that they look pale. Its important not to over do it with pygmy as they are extremely small and don't need a lot.

Vitamin supplements

are good to use once or twice a month. If you are correctly gut loading the feeders then you will already be supplying your Pygmy chameleons with a lot of the vitamins that they require. As with the calcium powder only a small amount is needed. This can be mixed in with the calcium powder when you need to use it.

The big debate is whether or not Pygmy Chameleons utilise Vitamin D3, which is important for true chameleons to be able to metabolise calcium. Vitamin D3 is usually found naturally in sun light and in the wild true chameleons bask in the sun whenever they can. As Pygmy chameleons tend to be forest floor dwellers, it is a theory that they no longer need Vitamin D3 for calcium metabolism. This is sometimes a confusing area for new pygmy keepers as most are left wondering do you use a supplement with or without Vitamin D3?

Given that most keepers now tend to use a 5% UVB bulb, If Pygmy chameleons do utilise Vit D3, they will probably be able to get it from the light. But as this is an area of some debate, vitamin supplements can be found with and without Vit D3 – the choice of which to use is yours.

Supplement	Frequency
Calcium	Dust every feed
Vitamins/Minerals	1-2 monthly
Nutrobol	
Zoo Med Reptivite	

Although earlier we mentioned that Custodians do a lot of the cleaning work, it is a good idea to spot clean your Pygmy Chameleons enclosure on a daily basis. This is to remove any large visible

faeces and dead crickets. If these are left in the enclosure, it may cause disease and put your pygmy at risk.

Sexing

This is probably the main question that always gets asked within the forums but in general its quite easy to distinguish males from females.

Males:

Tend to be a lot thinner, have dorsal ridges and display more colouration than females. Males usually have longer tails.







Females:

Tend to be rounder, they don't have prominent dorsal ridges, have smaller tails and tend to be duller in coloration and patterning.





Breeding

Breeding usually occurs between 3-5 times a year if you have your enclosure set-up with the correct conditions. Mating is usually initiated and the male may display stripy coloration along the length of his body to try to entice a female to mate. Usually eye turrets are very prominent in their coloration

This male was one of mine and it was very obvious to me when mating was going to occur – see how the eyes turrets are displaying vivid cross shape patterning along with horizontal striping.

Mating usually occurs from anything from 5 minutes to 30 minutes. You may catch the pygmy in the process. Egg production usually takes around 30 days from the time of mating. In this time calcium supplementation is very important as it will ensure good eggshell formation.

The female when ready to lay, may spend some time on the floor of the terrarium searching around the soil and may even dig some test holes to check the conditions of it making sure that she has picked the right place to lay.

Once the correct place has been found, the female will lay each of the eggs in turn and position them correctly before covering them over with soil. During the laying process should you be lucky enough to see it, try not to stress the female out by towering over the enclosure. It is best to leave her to finish the laying process in peace, as if stressed, the female may not lay all of the eggs. If this happens and she feels threatened, she may retain the eggs inside her indefinitely. If this happens the female may become what is known as egg bound. This is when ultimately if she does not lay them, the eggs continue to grow inside of her and as a consequence the eggs draw in water from the female and dehydrate her. The eggs in turn become too big to be laid and result in the death of the female.

Eggs are very easy to recognize as they look like little tic-tacs. Most will be buried roughly 2-3 inches below the surface of the soil. It takes between 60-90 days for eggs to hatch.

After eggs are successfully laid there are 2 options available to incubate them:

- 1) Leave them in the enclosure to hatch naturally
- 2) Remove the eggs and incubate them artificially

If you plan on leaving the eggs in the main enclosure – Keep a look out for some tiny chameleons! They tend to climb to the highest spots once they have hatched so that they can survey their new surroundings.

If you plan to remove eggs and incubate them artificially, it is best to use Vermiculite as the substrate to keep the eggs in. Vermiculite has good antifungal and anti-mold properties and can be kept moist with no problems at all.

A simple plastic container can be used to keep the eggs in throughout incubation. To prepare the vermiculite, really give it a good soak in de-chlorinated water. Then squeeze out as much of the moisture as you can. Then place a good layer of vermiculite into the tub. You want it at least 1 inch thick.

Then carefully make an indentation in the vermiculite with the end of your finger. Do this for the number of eggs you want to incubate.

With the vermiculite prepared you can now remove any eggs that you want to incubate from the main enclosure. It is extremely important to make sure that you keep the eggs in the same position whilst you are moving from one place to another as any forming fetus inside the eggs will be positioned in a certain way so as not to drown in the egg contents. Failing to keep the egg the same way as you find it will probably result in the unborn fetus dying.

Place eggs of the eggs into the indentations within the vermiculite and gently make sure that the eggs are $\frac{3}{4}$ covered leaving the top of them exposed to the air.

Make a few holes in the lid of the plastic container and place it on to cover the eggs. Now put the container in a safe place like a wardrobe and wait.....

Every week or so, check on the eggs and make sure that the vermiculite is slightly damp still, if it feels too dry, add a few drops of water to each corner of the container/ this helps keep the conditions right for the eggs to grow. If it is too dry, the eggs will dry up on the flip side if it's too wet, the eggs will take on too much water. Either way both will result in bad eggs.

You will know that your conditions are right as you will see the eggs beginning to grow.

When it's time for the eggs to hatch, they start to become translucent and you may be able to see inside the egg to an extent. The eggs may also develop beads of sweat on their surface. When the

baby pygmy chameleon is ready to hatch it will use its egg tooth to make a slit in one end of the egg (the egg is then said to have "pipped") and hatching begins.

This can take anything up to 24hours.

Usually if you have a clutch of eggs together they will all hatch within a few hours/days of each other.

Each hatchling will be roughly 2cm long. It's important to keep the humidity up with the babies to make sure that they are well hydrated. For the first couple of days they will survive off of their yolk sac, but after that they can be fed using micro-crickets and fruit flies.

It is easiest to keep babies all together in a small enclosure so that you can be confident that they are eating and drinking well. Most keepers tend to use kitchen roll as the substrate as it helps retain moisture and keep humidity up. It is also quick to replace when you come to clean the little pygmy enclosure.

Make sure to put some fake plants and other items into the enclosure for them to climb on. Once they reach the age of around 8 weeks you can then put them in to the main enclosure with the adults. One thing to note with baby pygmy chameleons, especially the bearded variety is that it is very difficult to sex them at a very young age. Each sex can display some very interesting coloration and patterning that might lead you to think you have a certain sex but this may not always be the case. It is best to sex them once they get a bit older and start to develop the known characteristics of a given sex.

Referral

Thank you Tazjunky from <http://www.pygmychameleon.co.uk>