

# The Fantastic, Satanic Leaftail Gecko



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PHOTOS BY THE AUTHOR

Large morph *Uroplatus* aff. *phantasticus*

**G**ECKOS OF THE GENUS *UROPLATUS* pose some challenges to the herpetoculturist. However, the opportunity to use naturalistic vivaria, and advance the herpetoculture of a problematic and poorly-understood genus is very rewarding. Thankfully, success has become more common.

The content of this article is derived from my own experiences and invaluable advice from other *Uroplatus* enthusiasts. The purpose is to develop protocol for repeatedly breeding *Uroplatus phantasticus* in captivity—an important endeavour, given the precarious environmental state of Madagascar. Sometimes being passed over as being too difficult, or requiring too much work, this article aims to encourage more effort by hobbyists to firmly establish a solid captive population of *U. phantasticus*.

If you've ever observed satanic leaftails at a reptile store or expo, you have no doubt been impressed by their leaf-like appearance and modified tails. This is only the beginning! Watching these geckos come alive and climb, hunt and breed is akin to watching life on another planet, especially at night. One of the

down sides to keeping any *Uroplatus* species is that you may start to lose sleep by spending too much time in front of the terrarium.

*U. phantasticus* are found in central and southern rainforest on the eastern side of Madagascar where maximum daytime temperatures are below 30°C (86°F) in summer and 20–25°C (68–77°F) in winter, with much cooler nights—as low as 5–10°C (41–50°F).

The tail is flattened as with other members of the genus. The Satanic Leaftail has the most leaf-like tail of all *Uroplatus*, often having notches and a shape that blends well with leaf-litter. There is considerable variation in tail shape. The body is not flattened as in the larger *Uroplatus* species. Colouration is often an earthy shade of brown, tan, orange or red, resembling dead leaves instead of the bark- and lichen-like appearance most common in *Uroplatus*. Markings often resemble leaf veins and can be quite intricate, an added bonus for these very cryptic geckos. Superciliary spines appear above each eye and soft spines are also found laterally on the body, on the



*Uroplatus phantasticus*, subadult female



Large morph *Uroplatus* aff. *phantasticus*, juvenile male

anterior extremities of the skull, and at limb joints. *U. phantasticus* has a snout to vent length of 2.25" (57mm) and a total length of up 4.25" (108 mm) TL. There are exceptions, as some satanic leaftails can slightly exceed 4.375" (111 mm).

It seems that there is at least one undescribed species or subspecies sometimes exported as *U. phantasticus*. It is difficult to determine from imported geckos if differences are merely normal variations within populations, however, the "Large morph" *U. aff. phantasticus* is significantly larger than *U. phantasticus* and should be considered distinct at least regarding captive-breeding. One hobbyist e-mailed me about possible interbreeding between *U. phantasticus* and *U. fiera* in the vivarium. This brings into play the possibility that there may be natural intergrades between the two species. According to Glaw and Vences (1994), the ranges of these species do not overlap. However, these authors did note that they assigned some earlier records from the east coast to *U. phantasticus* without examining the specimens. It makes sense to keep geckos from different localities in separate breeding groups when possible, but unfortunately, locality data is rarely available for imported or captive-bred animals.

Sexing adult Satanic Leaftails is fairly easy. The males have prominent hemipenal bulges. There are no femoral or preanal pores. Males also tend to be somewhat slimmer than females. Sexing hatchlings is another matter entirely. Some morphological traits have been suggested; notches in the tail of a hatchling *U. phantasticus* means that the gecko is a male or that males are more colourful. Males also often have a distinct light marking at the lower corner of the eyes. The prominence of spines at the base of the tail is probably one of the best indica-

tions of sex; Males generally have more developed spines. These characteristics may often hold true, but they are by no means absolute. I've hatched males with smooth tails and females with a few notches. Colour is likewise variable. Most of my females are red, tan or dark grey, but so are some of the males I have bred. Colour and pattern can also change somewhat as the geckos grow. In some cases, hatchlings will look obviously male or female, but there are others that are more difficult to determine.

Satanic leaftails move their tails in an animated fashion. The tail is often waved slowly side to side like a flag as the geckos prowl around at night. The meaning of this is not clear, although it may be a way in which they advertise their presence to other members of the species. Males sometimes approach females with their tails held up and rhythmically waving side to side, suggesting that this behaviour may play a role in courtship. Similar to many other geckos, the tail tip will writhe and twitch when the geckos become excited while stalking prey. Usually it is only the small tail tip that moves in this situation, which suggests that it might be acting as a "lure" to attract insects, although attracting anything predatory of any size would be risky.

Another interesting behaviour common to both gecko species is their habit of hanging upside-down like a bat from one or both hind limbs. The front feet are tucked in and the body mimics a hanging leaf. Sometimes the geckos will assume this position after they have been disturbed, other times they hunt this way, nabbing unsuspecting prey unfortunate enough to walk beneath them. If their perch is shaken, the gecko will often fall into the leaf litter, blending in perfectly.

During the day, these geckos will make full use of their cryptic abilities by often sleeping in plain sight. *U. phantasticus* sometimes stick a straightened leg out at an odd angle to resemble a stem, further adding to the dead-leaf illusion.

### ACCLIMATION

I find it important to go into detail regarding acclimation as many of the *Uroplatus* available to hobbyists are wild-caught. Low export quotas and uncertain status of exports from Madagascar further underlines the necessity of making every effort to successfully acclimate and breed these creatures.

Newly acquired wild-caught *U. Phantasticus* may be stressed from shipping, warm temperatures, dehydration and parasites. Weak animals may succumb to bacterial infections. The key is to reduce or eliminate stress factors to allow the gecko's immune system to function at its best.

Aside from environmental issues, endo-parasites are a common stress factor. A large percentage of *Uroplatus* are found to be carrying one or more particularly harmful parasites. Captive-bred animals may also carry parasites, but to a lesser extent. Under natural conditions, parasites, in small numbers, will have little effect on a gecko's health. The stresses of capture, shipping, warehousing and the closed nature of a captive environment can shift the balance, and make parasites become a serious issue.

There are 2 general approaches to treating newly-acquired *Uroplatus*. The method I use is to quarantine all new geckos and have fecal tests performed at 2 week intervals until 3 negative test results occur in a row. The reason for using a long quarantine period is that geckos can easily contract parasites while being crowded during the export process. If you then receive them shortly after they have been imported, the parasite levels may initially be so low as to make detection difficult. By the time six weeks have passed, protozoans and some worms will have greatly multiplied and are more likely to appear under the microscope.

Once detected, I make an effort to eliminate parasites to avoid future problems. Consultation with a reptile vet is very important when dealing with parasites or any other health issues. Treating for multiple parasites at the same time can stress and possibly kill the geckos, therefore I've found it best to wait a few days between giving different medications. Geckos can be quarantined in small glass or plastic vivaria that can be easily disinfected if parasites are detected.

Another method of dealing with parasites, involves initially shotgun treating new arrivals with two types of dewormer, panacur (Fenbendazole) and Droncit (Praziquantel) and spot cleaning daily and combined with regular substrate changes to keep parasite levels low.

Bat gecko!



2-3 month old juveniles



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## CARE & BREEDING

The most common parasites are *Oxyurus* sp. (pinworms) and coccidia. Various nematodes which occasionally appear are *Oswalocruzia* sp. (hookworms) and roundworms. *Cestodes* (tapeworms) are sometimes detected as well.

Coccidia deserves special attention here, as it is such a common group of protozoa. In my experience, the majority of imported *Uroplatus* will be carrying coccidia. There are many species of this parasite—some can cause serious problems if they get out of control. Stressed animals seem to have a reduced ability to deal with coccidia. They often become dehydrated and start to regurgitate food and/or have runny stools. In severe cases, the gecko will stop feeding and become very weak. I have successfully treated coccidia with Albon (sulfadimethoxine) several times, with no recurrence. However, I have also taken some animals through up to 3 consecutive courses of treatment, with coccidia still being present, but at lower levels.

By contrast, many healthy *Uroplatus* will also be carrying coccidia. The best course of action I have found is to treat the infected geckos daily for a period of at least 12 days (per recommendation of Ken Lopez, DVM). If the geckos show no symptoms, but still have low levels of coccidia, they are not re-treated as long as they appear healthy. If the levels of coccidia are low to begin with, and the geckos don't have any symptoms, it may be best to not treat them at all.

Bacterial infections are another common problem. Unfortunately it is often not diagnosed until

a necropsy is performed. In most *Uroplatus* I have sent for necropsy over the past 25+ years, bacteria have been cited as the cause of death. Baytril has been used to successfully treat bacterial infections in *Uroplatus*. However, using antibiotics alone is not always the answer. Treating the bacteria without correcting stress factors that may be suppressing the the gecko's immune system is likely to fail.

The best approach is to avoid unnaturally high levels of harmful microorganisms through good ventilation, frequent spot-cleaning, and by avoiding over-saturating the substrate with water.

### TEMPERATURE AND HUMIDITY

*Uroplatus* in general have a reputation for being difficult, short-lived captives. Initially this was true due to a poor understanding of their environmental requirements. The Fantastic leaftail will not fare well in the average reptile room. When the I first started working with this species, a temperature range of 21–27°C (70–80°F) night/day was considered adequate. Based on experience and advice from other herpetoculturalists, a range of 3°C (5°F) cooler, both day and night, has proven to be more accurate. In fact, *U. Phantasticus* are active and breeding with night temperatures dropping to 12–15°C (54–59°F) and daytime highs between 22–24°C (72–75°F).

I cool my gecko room down to these levels from late December to around the end of February.

High humidity is very important. 75–85% during the day and 90–95% at night, increasing to near 100% after misting works well.

I mist one-to-three times per day, depending upon ambient humidity. Humidity can be a bit lower during the cooler winter period. The enclosure should dry between mistings, the idea is to keep the air humid without making the substrate too wet. Low humidity can result in retained shed, especially on toes.



Bloating and shed retention can be signs of bacterial infection.



## HOUSING

Screen, glass or acrylic vivaria may be used. Good ventilation is required, but all-screen cages may not retain enough humidity if the surrounding air is dry. I've had success with tall glass vivaria fitted with screen tops. A 57 litre (15 gallon) high aquarium is suitable for a pair or trio of adults, although a larger size would be better. Exo terra® or Zoo Med glass vivaria of 45 x 45 x 45 cm (18"x18"x18" in) size or larger are ideal for adult *phantasticus*. As there is little aggression between males, I have kept and bred 2.2 *U. phantasticus* in custom vivaria of approximately 114 litres (30 gallons) in volume. Enclosures should be a minimum of 45 cm (18") tall. Constructing taller vivaria will allow the geckos more room to climb and will be more interesting to view. The substrate can be soil or a vivarium mix of coconut coir, reptile bark and leaf litter covered with dry leaves or moss. A complex environment of various-sized branches and live plants will make these species feel at home. Some useful plants are pothos, *Epipremnum aureum*, weeping fig *Ficus benjamina* and vining *Philodendron* species.

## DIET

Small insects including crickets, waxworms, small cockroaches, etc. make up the bulk of the diet. Bean weevils and flightless fruit flies (*D. hydei*) are useful for hatchling geckos. If a feeding dish is used, it should not be too rigid or the geckos may dam-

age their snouts when diving for food. Plastic deli or margarine containers with a bit of soil in the bottom usually work well. Cover the sides of clear containers with paper or masking tape so that the geckos do not try to attack prey through the sides. I dust prey with Miner-All Indoor at nearly every feeding and add Herptivite® once every week or so. Alternatively, Calcium Plus and Supercal LoD (Repashy Superfoods) can be used in a similar fashion. Breeding females will often eat small land snails to add extra calcium to their diet. If snails cannot be provided, oral supplements, such as calcium mixed with water, should be given with a dropper once every 1–2 weeks. They will not as readily take calcium powder or ground eggshells from a dish like many other geckos, but sprinkling calcium powder on branches or cork bark may work. Males do not need extra calcium supplements.

Other foods to consider are cultured isopods (sow bugs) which are high in calcium. Uneaten isopods will often live and breed in the vivarium, becoming part of a bio-active system.

## LIGHTING

Flourescent full-spectrum lighting is recommended. Although *Uroplatus* are nocturnal, they sometimes sleep fully or partially exposed to the sun's rays and will benefit from a little UVB. I have kept *U. phantasticus* without UVB with no apparent ill-effects.



Incandescent lighting is unnecessary and due to the heat generated, not recommended unless the room temperature is quite cool.

### BREEDING

Pairs or small groups of both species can be housed together. Males are not particularly aggressive unless housed in large enclosures where they may become territorial. Seasonal temperature and humidity fluctuations seem to trigger breeding. Wild-caught animals may breed right away if they are already cycling and are in good condition. However, it is not uncommon for imported animals to

take one to two years before breeding regularly. Mating is non-violent in nature, typical of this genus, and can be prolonged, often lasting one to three hours! Sometimes males will employ a neck bite to the female during mating. Often I've observed them mating without a neck bite, suggesting that it may not always be used or that they release the bite part way through copulation.

Females lay clutches of 2 individual eggs approximately every 4 weeks. Sometimes single eggs are laid. Although eggs have been found in every month of the year, I have had the highest egg production in spring and fall. Usually a female will either skip



laying or lay infertile eggs for one to three months in mid-winter or mid-summer.

Females roll the eggs in substrate as they are laid, to camouflage them. Eggs are not buried, but are usually concealed under leaf litter or moss. These are small hard-shelled eggs, 9–11 mm (0.35–0.43") in diameter. They are tougher than they look. I once accidentally dropped an egg 40 cm (16") onto the floor of the vivarium while removing it and it still hatched out a perfect baby! Soft, goopy eggs laid in the open are infertile. It is not unusual for a new female to lay a couple of these infertile eggs before starting to lay good ones. Some long-term females will also do this on occasion.

Incubation temperatures should be similar to those preferred by adults. Temperatures over 24°C (75°F) for any length of time, should be avoided. I've had the best results when temperatures fluctuate between 17–19°C (63–67°F) at night and 22–23°C (71–74°F) during the day. The eggs need high humidity, but should not be wet. One incubation method is to use a thin piece of aquarium filter foam with indentations pinched out to hold the eggs. The foam is then placed on top of a wet substrate such as saturated perlite or vermiculite inside a deli container with 2 pinholes in the sides and 2 in the lid. Other methods that provide high humidity while not allowing direct contact between eggs and wet substrate should work.

Incubation is approximately 90–100 days, but will vary depending upon the temperature. Hatchlings that emerge after only 80 or so days are more

likely to be weak. Lowering incubation temperatures and making sure adults are in top condition for breeding will produce stronger offspring. I've noticed some incidences of spinal deformity in when eggs were incubated at higher temperatures.

Hatchling *U. phantasticus* can measure up to 28 mm (1.1") SVL, 43 mm (1.7") TL. There is some variation in size. Sometimes noticeably smaller hatchlings are strong and healthy.

### CARE OF JUVENILES

Housing is similar to that of adults. I use 40–51 cm (16–20") tall 57 litre (15 gallon) planted vivaria for small groups. Hatchlings will usually begin feeding actively after a few days. Small crickets up to 4mm and small waxworms are taken readily. Feeding should be every second day. 5–10 insects per feeding per animal is adequate. Juveniles must be misted regularly as they can easily dehydrate given their small size. A calcium D<sub>3</sub> supplement should be used at each feeding, as not all insects are eaten right away, and some will lose most of the supplement coating. Use a multivitamin once or twice per week.

A combination of cork bark and twigs with leaves still attached and/or ferns (live or dried) will allow the hatchlings to hunt effectively. The idea is to create an environment where insect prey will wander within striking distance of hunting geckos as the hatchlings tend to ignore prey that is too far away or moving too fast.

Another method that I've used with great success is to house individual hatchlings in well-ventilated



950 ml (32 oz) tall plastic containers sometimes used to sell small quantities of crickets. The top is replaced with a screen top (also available for shipping insects). Some substrate, twigs, moss and a plastic plant complete the set-up. The advantages of doing this are reduced tail-loss from feeding accidents, space savings, and easier monitoring of feeding.

Hatchlings that fail to attempt to remove their initial shed rarely fare well. If the gecko removes most of the shed, it will likely be fine with a little assistance. Damp paper towel and a pair of fine forceps can be used to remove any retained skin.

A word of caution regarding spiders is in order. I once found, much to my dismay, a newly-hatched *U. phantasticus* dead and soundly trussed-up in the web of a fairly small spider that had made its way into the vivarium. On another occasion I extricated a more fortunate live hatchling from a spider web. In both cases, the hatchlings had not yet shed, which

may have hampered them somewhat from escaping on their own.

With good feeding, adult size can be reached in 8–10 months.

### CONCLUSION

Although these fascinating little gems of the gecko world are not for the novice and are more work than the hardy leopard or fat-tail gecko, they do deserve a place in herpetoculture and in our hearts. With the advances in naturalistic vivaria in recent years, and better understanding of captive requirements, satanic leaftails are quite possible to keep and breed.

Life on our planet can take some truly bizarre forms. Taking time to observe those such as the smaller leaftails can only strengthen our respect for the wonder that is nature.

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