

Companion Animal Hospital Exotic Animal Care



The Common Leopard Gecko, *Eublepharis macularius*, is a wonderful pet lizard species, often recommended as a good first pet reptile. They belong to the family Eublepharidae, or “true eyelid geckos,” as unlike most gecko species they possess moveable eyelids instead of a transparent, immovable spectacle. Also unlike the majority of geckos, they lack adhesive toepads and are not very good at climbing, being predominantly terrestrial. Wild Leopard Geckos are found in dry grasslands and deserts of south-west Asia, including Afghanistan, Pakistan, north-west India, and Iran.

This species has been bred in large numbers for the pet trade, and there are many colour and pattern morphs available today. Leopard Geckos are relatively long-lived and may easily surpass 20 years of age with proper care. Like with all reptiles, good husbandry and preventative health care are important for a long and healthy life.

Leopard Geckos are most easily sexed as adults. These lizards are sexed by the presence or absence of copulatory (sex) organs, the hemipenes, which may be detected in males as a “bulge” at the base of the tail. Males also have a row of small, pheromone-secreting pores just in front of the vent called pre-cloacal pores. Determining an animal’s sex should consider both of these features: There exist “hot females” who are incubated close to the temperature range that results in male offspring¹ who will possess pre-cloacal pores, however these females will lack hemipenes.

1. Environment: Enclosure

There are many suitable reptile terrariums available on the market today. Most are made of glass with screen paneling for ventilation, but an aquarium with a securely-fastened screen lid is also a suitable enclosure. These geckos are surprisingly adept climbers, and a secure lid will keep them inside and other pets out.

Leopard Geckos, like most reptiles, do best when housed alone because of their solitary nature. In a terrarium with adequate space and resources they can be housed in groups of multiple females, or one male and several females (however the pet owner must be careful to monitor for signs of breeding aggression). The minimum floor space required for one to two geckos is about 1300 cm² (200 in²), or the floor space in an average 76 L (20 gallon) aquarium.

¹ Leopard Geckos have temperature-dependant sex during incubation: While eggs are being incubated, certain temperature ranges will result in males or females developing due to specific hormones being activated or deactivated by these temperatures.

2. Environment: Heating

Reptiles are ectothermic: They rely on external heat to maintain their bodies at a preferred temperature. All reptiles need an external heat source so that they may thermoregulate by shuttling within a heat gradient in their enclosure. Basically, when a reptile is too cool he will move to somewhere warm, and when he is too warm he will move somewhere cooler. Reptiles will move around in the gradient throughout the day to try to stay at a target body temperature.

To create a thermal gradient in the enclosure, a primary heating device should be placed on one end. In some homes, a secondary heating device may be necessary to maintain temperatures warm enough. The primary heating device can be a heat lamp left on during the day. Heating pads make excellent secondary heating devices if needed at night. Ceramic heat emitters and radiant heat panels may also be used for nighttime heating as they do not produce light. Red coloured incandescent bulbs, sometimes called “infrared” bulbs, should not be used for nighttime heat as reptiles certainly see the red light, contrary to what they often advertise.

The preferred optimum temperature zone for Leopard Geckos is 24-32 °C (75-89 °F) during the day, and no cooler than 18 °C (65 °F) at night and the cage environment should reflect this. Two thermometers are required for monitoring temperatures: One to monitor the warm end of the gradient to ensure that it is warm enough, and one to ensure that the cool end is cool enough to allow for thermoregulation.

3. Environment: Substrate and cage furnishings

Substrate is the medium covering the floor of the enclosure. Generally, it is safest to use a substrate that cannot be accidentally eaten, such as ceramic or slate tile, reptile-safe carpeting, or even paper towels. Inappropriate and/or dangerous substrates that are commonly associated with gastrointestinal impaction include calcium carbonate sand, crushed walnut shell, crushed corn cob, wood chips, wood shavings, and gravel. Washed playsand may be used as substrate for adult geckos, however some geckos will eat sand if their diet is lacking in minerals like calcium. If you notice that your gecko is eating sand, or you notice that there is sand in the stool, it is safest to switch to another substrate before a gastrointestinal blockage occurs.

Reptiles need hiding spots so that they may hide to feel secure. There are many commercially-available caves and other hides made out of resin that are easy to clean and disinfect, but simple hides can be made out of plastic food containers or plant saucers. Hiding spots should be just large enough for the gecko to enter and turn around, as larger hides do not offer the same sense of security.

A moist or humid hide is essential so that the gecko can retreat to a refuge with higher humidity, important for hydration and shedding. This can be any hide filled with moist paper

towels or sphagnum moss. The hide should be cleaned and moist substrate changed regularly to avoid mold growth.

The minimum number of hides is three: One “dry” hide in both the warm and cool ends of the enclosure, and at least one humid hide. This allows the gecko to hide in both ends of the gradient for thermoregulation. Other cage furnishings such as rocks, branches, and fake plants add behavioural enrichment and aesthetic value to the enclosure.

4. Nutrition

Leopard Geckos are insectivores and will readily eat many different kinds of insects. The most commonly available feeder insects include:

- House Cricket, *Grylloides sigillatus* and *Acheta domestica*: Crickets are bred by the tens of thousands in commercial facilities, and are available in many pet shops in multiple size categories to feed to different species. Crickets are a good staple feeder and offer an opportunity for the gecko to exercise as they chase them. Crickets tend to be poorly fed in most pet shops and need gut-loading and supplementation to make them a more nutritionally complete meal.
- Mealworms, *Tenebrio molitor*: Mealworms are the larvae of a species of darkling beetle. They also need gut-loading and supplements to make them more nutritious.
- Superworms, *Zophobas morio*: Superworms are the larvae of a different species of darkling beetle. Although they are “meatier” and larger than mealworms, they still require gut-loading and supplements.
- Waxworms, *Achroia grisella* and *Galleria mellonella*: Two species of wax moths are commonly bred as feeders and bait. Their larvae, or caterpillars, are waxworms. These feeder insects are naturally calcium-rich, but also have a high fat content. They should be fed only occasionally to avoid obesity.

As these geckos are nocturnal, they should ideally be fed at dusk so that they may hunt during the night when they are normally active. Leopard Geckos may be fed several times a week, and any uneaten prey should be removed from the enclosure in the morning.

Fresh water should be available in a dish at all times.

Please see our handout on insectivorous reptile nutrition for further information on gut-loading insects and using supplements.

5. Health

Good husbandry helps prevent most health problems in reptiles. As ectotherms, their immune system function is directly affected by both stress and their ability to thermoregulate, so proper

environmental temperatures are critical. There are some other common health problems that you can avoid with the right precautions.

Parasites are unfortunately very common in captive reptiles due to overcrowded, stressful conditions and poor hygiene in pet stores and some breeding operations. Many parasites that affect Leopard Geckos have a direct life cycle, meaning that they require no other species to help transmit them. Parasites like this tend to accumulate in captive reptiles and cause disease. Fecal testing is required to determine what kind of parasites your gecko may have so that the appropriate medication can be prescribed.

These lizards may drop their tails when grabbed or otherwise startled, a defensive behaviour called caudal autotomy. The self-amputated tail will twitch with the purpose of distracting a predator so that the lizard may escape. Never grab a lizard by the tail, and always handle them gently with open hands. Autotomized tails will regrow with a cartilaginous rod instead of bones, and the scale texture and colour will not be the same as the original tail. As Leopard Geckos use the tail for fat storage, tail loss can seriously affect an animal if their health is otherwise compromised.

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Insect-eating Reptile and Amphibian Nutrition

Insectivores are animals that eat insects and other arthropods. Captive insectivores require special attention to their nutrition, as commercially-available insects do not match the nutrition that a wild animal obtains from eating hundreds if not thousands of different prey species.

1. Gut-loading prey

Most commercially-raised insects are nutrient-poor until they have been fed a nutritious meal. This is partially for cost-effective insect breeding (they do not need optimal nutrition to breed in vast numbers), and partially because feeding nutrient-rich foods can affect their lifespan.

There are a number of gut-loading diets available commercially. Please consult with our staff for product recommendations. Most diets are recommended to be fed to insects for 24-48 hours before those insects are then fed to your reptile or amphibian.

Feeding cat and dog food as a gut-load is not recommended. While they are an excellent source of some nutrients, they are a significant source of cholesterol. Insects cannot synthesize their own sterol molecules (including cholesterol), and are not a common natural source of cholesterol unless they eat other cholesterol-containing animals. Dogs and cats need dietary

cholesterol, but it can lead to serious health issues in insectivores that have not adapted to needing it in their diet.

Prey insects should always be kept in clean, well-ventilated containers to prevent mold growth. Feeding prey raised in moldy, unsanitary conditions will contribute to disease in your pet.

2. Supplements

Even with an excellent gut-load product, supplements are strongly recommended to ensure that your reptile or amphibian is getting balanced nutrition. Powdered supplements are dusted onto insect prey before they are offered to your pet. Because the powder can fall off in the enclosure, it is important to offer dusted insects when your reptile or amphibian is most active.

Arguably the most important supplement is calcium. Most insect species commonly fed as prey (including crickets, mealworms, superworms, and others) have very poor calcium content, and an inverted calcium-to-phosphorus ratio (Ca:P). This is the proportion of calcium and phosphorus in any food, an important value to consider as these two mineral nutrients have a close relationship. The target dietary Ca:P for insectivores is 1.5-2.0:1 (one and a half to twice as much calcium compared to phosphorus). Few commercial insects naturally have this calcium content, so supplements are necessary.

It is recommended that every insect meal with naturally poor calcium content be dusted with a calcium supplement, unless you are feeding a very high-calcium gut-load meal to your insects. Calcium carbonate is the most common supplement form, and there should be no added phosphorus or vitamin D₃.

For insectivores that do not have any broad spectrum (UV-B) lighting, a calcium supplement with vitamin D₃ should be used regularly as this vitamin is necessary for calcium metabolism. Most reptiles and amphibians can manufacture their own vitamin D₃ from this special artificial light that replaces sunlight, and this is the safest way to provide vitamin D₃. Oral vitamin D₃ supplements can be used cautiously; over-supplementation causes vitamin toxicity which will lead to organ failure and death. There is very little data available on minimum vitamin D₃ requirements and how much is required to cause toxicity in the thousands of reptile and amphibian species. Using a calcium plus D₃ supplement is generally recommended every 5-10 meals; however this is only a general guideline. When UV-B lighting is available, there may be no need for oral supplementation. Note that no toxicity can occur from using UV-B lighting, and is much safer than “guessing” at oral D₃ supplementation.

A general multivitamin and mineral supplement can help ensure that your pet is not missing any micronutrients (nutrients that are needed in small quantities, and may not be found in every meal). Like with vitamin D₃-containing supplements, over-supplementation can cause toxicities.

Unfortunately, there are many products available in the pet industry that do not offer a guaranteed analysis of the nutrient content. Please consult with our hospital staff for product recommendations.