

Leopard Gecko

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Updated 2021

Natural History

The leopard gecko (*Eublepharis macularius*) is one of the most popular pet reptiles in the United States. They are ground-dwelling, nocturnal lizards found in the arid grassland and desert regions of Afghanistan, Pakistan, Iran, Nepal, and India. During the day, Leopard geckos mostly stay in burrows and shade, or under loose stones and bark. Despite leopard geckos being more active at low light, it has been shown that they do require diurnal basking temperatures for optimal growth. They likely experience these temperatures while in their burrows during the day.

Characteristics and Behavior

Leopard geckos are popular pets due to their docile nature and moderate care requirements. They rarely bite, and are often not as wiggly as other geckos when handled regularly. Unlike many other geckos, leopard geckos have eyelids and aren't able to stick to vertical surfaces. They do, however, have tail autotomy and can drop their tail if grabbed as a predator defense mechanism. Leos are known for their characteristic spotted pattern, but have been bred for a variety of color morphs that have made them valuable in the pet trade. With their smaller size and charismatic faces, leopard geckos are a popular choice for a first reptile. Leopard geckos are very commonly captive bred and are preferred over wild caught individuals.

It should be noted that the enigma morph has been associated with neurologic defects in leopard geckos. These defects can range from star gazing and a mild head tilt to seizures and rolling. This condition is called Enigma Syndrome. For this reason, it is recommended not to purchase enigma morph geckos.

Lifespan

Reports of individuals living over 20 years are not unheard of, but most leos live 6-10 years. The oldest recorded leopard gecko was 32 years old.

Adult Size

7-10 inches with females typically smaller than males.

Housing

It is a common misconception that reptiles will get stressed by too much space. Reptiles are not stressed by too much space, but by too much exposure. A leopard gecko housed in a spacious enclosure with plenty of cover to feel safe will utilize all of its space. Therefore, a 30-40gal (approximately 30"x16"x16") is the minimum size recommended for a leopard gecko. Leos should be housed alone, as they can seriously injure each other. Cage accessories, such as plants (live or fake), branches, ground clutter, caves, and logs will all enrich a leo's environment. Keep in mind that they are primarily a ground dwelling lizard when designing a leo's environment, but they should still have an elevated basking area. Reptiles should have at least one hide on the warm end of their enclosure and one on the cool end of their enclosure so they don't have to choose between thermoregulation and security.

Like bearded dragons, there is a debate amongst the reptile community about which substrate is the best choice for leopard geckos. There is no "best" substrate; all have pros and cons. Loose substrate, when combined with improper husbandry, can lead to life threatening impactions. Tile and newspaper have no risk of impaction, but do not allow natural burrowing or digging behavior. Newspaper may be placed on top of tile to allow the lizard to burrow between layers. Tile offers the benefit of acting as a filing surface for a leo's nails.

Wild leopard geckos do not live on shifting dunes, they live on packed earth and clay that may be covered by sand. Therefore, it is better to use packed substrates that imitate a leo's natural habitat rather than 100% loose sand. Lugarti's Natural Reptile Bedding (a mixture of fine sand, clay, and sphagnum moss) can be packed down to create burrows. Similarly, ZooMed Excavator Clay is packed down and allows the formation of burrows and tunnels, but it can be messy and a little bit pricey. The BioDude TerraSahara can also be used for leopard geckos, particularly for those wishing to provide bioactive enclosures. If DIY sand mixtures are used, use silica-free washed play sand to cut down on dustiness. It is recommended not to keep juvenile leopard geckos on loose substrate.

Avoid CalciSand, VitaSand, crushed walnut, gravel, and corncob as these substrates carry a much higher risk of impaction. Always talk to your veterinarian before using loose substrate to ensure your lizard is healthy and your husbandry is correct. When using loose substrate, food should also be offered on a feeding dish to avoid ingestion of substrate. Live prey can also be offered with tongs.

Lighting

Like all lizards, leopard geckos require UVB light to synthesize vitamin D3 in their skin. Vitamin D3 is needed for proper metabolism of calcium and prevention of metabolic bone disease. It is a myth that leopard geckos do not utilize UVB; research has shown us that leopard geckos exposed to UVB have higher levels of vitamin D3 in their skin. This myth likely comes from the idea that since leopard geckos are more active during low light, they aren't as exposed to the sun. However, wild leopard geckos are still exposed to natural light at dawn and dusk and even in their burrows during the day.

Arcadia's T5 7% ShadeDweller and T5 6% Forest are both acceptable choices, depending on where you set up your leo's basking spot. Arcadia provides a guide as to where to place your UVB fixture in relation to your leo's basking spot. UVB fixtures should be roughly as long as half your reptile's enclosure length. It is important to note that UVB cannot penetrate glass, so natural sunlight through a window will not be sufficient for a lizard to synthesize vitamin D3. Allowing safe outdoor time is also an excellent source of UVB and visible light. Leos taken outdoors should be kept in an escape-proof and predator-proof, non-glass enclosure. Provide shade and basking spots so your leo can regulate their temperature.

Sunlight is made of ultraviolet, near infrared (IR), mid IR, far IR, and visible light. It is our job as keepers to provide full spectrum lighting, which means as close to sunlight as possible. Unfortunately there is not one source for all of these components, so we must provide multiple types of lighting. For visible light, LED or halide bulbs should be provided.

UVB is NOT optional for lizards. Lack of proper UVB can lead to impaired skeletal, muscle, and immune function. Replace UVB bulbs every 6 months, as they can continue to give off light even when not producing UVB. Lights should be turned off at night to maintain normal day/night cycles. For this reason, red or black nightlights should not be used as they can disrupt normal day/night cycles.

Arcadia UVB guide: <https://www.arcadiareptile.com/lighting/guide/>

Heat

Unlike mammals, reptiles cannot internally regulate their temperature and rely on their environment to heat and cool themselves. Therefore, it is important that we provide captive reptiles with a temperature gradient so they can warm up or cool down as needed. Reptiles have three temperatures to measure: basking spot, warm ambient, and cool ambient. The basking spot is the hottest area in the enclosure where they

bask, the warm ambient is the air temperature on the warm side of the enclosure, and the cool ambient is the air temperature on the cool side of the enclosure. Ambient temperatures are best measured with digital thermometers (one on the warm end and one on the cool end), as analog thermometers are often inaccurate. Basking temperatures can be measured with a digital infrared thermometer.

Leopard geckos need a basking spot of 95-100F, a warm ambient of 85-90F, and a cool ambient of 70-80F. Any light emitting sources should be turned off at night and temperatures can drop to the low-mid 60s. If needed, a non light emitting source like a ceramic heat emitter, radiant heat panel, or deep heat projector can be used to maintain temperature. Sunlight is made of UV, near IR, mid IR, far IR, and visible light. Flood tungsten-halogen bulbs are the most efficient at producing near IR, which is the most abundant IR in sunlight, and they also produce significant mid IR and some far IR. Far IR is the least abundant in sunlight, but is most often produced in large amounts by sources like ceramic heat emitters, heat pads, and radiant heat panels. Tungsten-halogen bulbs should be the flood type to ensure a wide enough basking site. These heat producing bulbs can be found as reptile specific bulbs or at hardware stores. Avoid hot rocks as these can easily burn reptiles.

Humidity

Humidity should be kept around 30-40% and a humidity hide should be provided to create a humid microclimate that the gecko can enter at will. A humidity hide can be as simple as a tupperware container with a hole cut out filled with damp moss, a wet sponge, or damp Eco Earth substrate. Ambient humidity should be measured with a digital hygrometer. Shedding issues are extremely common in leopard geckos, so providing a humidity hide is important to help them shed normally. Leos often have shed stuck around their toes that can constrict and lead to necrosis of tissue and eventual digit loss. Be sure to check your leo's toes to ensure the lizard is not accumulating any stuck shed.

Feeding

Leopard geckos are insectivores, meaning they eat only insects. Variety is key to avoid nutrient deficiencies! Leos can be offered crickets, dubia roaches, silkworms, phoenix worms, and the occasional mealworms, waxworms, and superworms. Juveniles (under 6 months) should be fed 2-3 food items daily, and adults should be fed as many insects as they can eat in 10-15 minutes every 2-3 days. Food should be live, as dried feeders may not elicit a feeding response, and no larger than half the width of your leo's head.

Remove uneaten feeder insects as they can bite your leo. A multivitamin with vitamin A should be offered weekly to juveniles, and every other week for adults.

Insects are naturally deficient in calcium and low in nutritional value. In order to make them nutritious for reptiles, all insects should be gutloaded (fed a highly nutritious meal 24-48 hours before feeding). Repashy BugBurger or Arcadia InsectFuel are good choices for feeding feeder insects. Insects should also be dusted with calcium powder 2x/week. Calcium powders should be calcium carbonate based and should not have any phosphorus. If you are providing adequate UVB, calcium powder does not need to contain D3. Arcadia, Repashy, and ZooMed all have good products. Follow your brand's recommendations to avoid overdosing.

Water

Provide a dish that is large enough for the lizard to soak in. Leos may defecate in their bowl so it should be changed and disinfected regularly.

Sexing

Leos reach maturity around 9-18 months. Males can be distinguished from females by their more prominent femoral pores and hemipenial bulge.

Zoonosis

Like other reptiles, leopard geckos can carry *Salmonella*. Always wash your hands after handling reptiles or items from their enclosure.

Health

Leopard geckos are prone to substrate impaction, nutritional-secondary hyperparathyroidism (metabolic bone disease), dysecdysis (difficulty shedding), obesity, parasites (often present thin and/or with diarrhea), and reproductive disorders. Never pull on a leopard gecko's tail or purposefully make them drop their tail; their tail is their energy reserve and it takes weeks to regrow. Leopard geckos should be examined every 6-12 months by your veterinarian.

Sources and Further Reading:

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- ARAV Leopard Gecko Companion Reptile Care Series
- *Mader's Reptile and Amphibian Medicine and Surgery*
- *The Arcadia Guide to Reptile and Amphibian Nutrition*
- Facebook: Advancing Herpetological Husbandry
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