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GECKOS

Western banded gecko

Coleonyx variegatus

A small, slender desert gecko from the south-western USA and north-western Mexico, with silky-soft skin, movable eyelids and bands of yellow and brown. It reaches only 10-15 cm, swings its tail up over its back like a scorpion when hunting, and needs a warm, dry terrarium with a single humid hide.

Family: Eublepharidae Former name: *Stenodactylus variegatus; Eublepharis variegatus*

KEY FACTS

THE ANIMAL

Adult size	**10-15 cm** total length incl. tail
Lifespan	**5-15 years**
Active	**At night**
Lifestyle	**Rock-dwelling and terrestrial**
Habitat	**Desert, semi-desert and rocky terrain**
Difficulty	**Intermediate**

CARE

Min. enclosure	**40 × 30 × 25 cm** L × W × H for 2 adults
Temperature, day	**24-28 °C**
Basking spot	**30-34 °C**
Temperature, night	**18-22 °C**
Humidity	**30-50%**
UVB	**Not required**
Diet	**Insects**
Kept	**Singly, in pairs or one male with several females**

BREEDING

Reproduction	**Egg-laying**
Clutch size	**1-2 eggs**
Clutches per year	**1-3**
Incubation	**40-50 days** at 27-29 °C

PROTECTION AND PAPERWORK

CITES	**Not listed**
EU annex	**Not listed**
IUCN	**Least Concern (LC)**

About the species

Coleonyx variegatus is a small, slender and elegant gecko that in many ways resembles *Eublepharis macularius* in miniature. It belongs to the eyelid geckos (Eublepharidae) and, like them, has movable eyelids and vertical pupils. The skin is soft with fine, granular scales without tubercles, the head is triangular, the toes are long and thin, and the tail is constricted at the base. It has no adhesive pads and cannot climb glass, but it crawls around in rock crevices and is occasionally seen in bushes.

The ground colour is pale yellow, pink or light grey with light brown to brown crossbands across the body and tail, and the colours vary greatly from region to region. In young animals the bands are distinct and complete. With age they break up into spots, and a few adults have only spots left. The male has a small spur on each side of the base of the tail, and this is the easiest way to tell the sexes apart.

Adults reach 10-15 cm including the tail and rarely measure more than 7-8 cm from snout to vent. Females are often slightly larger than males. Adults weigh on average about 4.6 g, and the newly hatched young are only a couple of centimetres long. The tail can be shed and grows back, but the new tail usually does not get the same banding pattern as the rest of the animal.

When the gecko hunts or feels threatened, it curls the tail up over its back and waves it. It resembles a scorpion, and in Baja California many believe that the animals are venomous. They are not, but they eat small scorpions themselves. If grabbed, they can give a short, squeaking sound.

The species was described by Spencer Baird in 1858 as *Stenodactylus variegatus*. The species name means variegated, and the genus name *Coleonyx* is Greek for sheath claw, because the claws sit in a sheath of scales. Four subspecies are recognised today: *abbotti* from the San Diego area, *peninsularis*, *sonoriensis* and the nominate form *variegatus*. The former subspecies *bogerti* and *utahensis* have been merged with the nominate form, because DNA studies could not separate them. Captive-bred animals in the trade are rarely identified to subspecies.

Read more: Buying animals: captive-bred, wild-caught and transport

Distribution and habitat

The species lives in the south-western USA and north-western Mexico. In the USA it is found in southern California, southern Nevada, the extreme south-western corner of Utah, large parts of Arizona and south-western New Mexico. In Mexico it lives in Sonora and on the whole Baja California Peninsula, and it is also reported from Sinaloa. It is also found on several islands off Baja California.

In California the nominate form lives in the deserts east of the southern mountain ranges and to the north along the eastern side of the Sierra Nevada to the area around Bishop. The subspecies *abbotti* lives in the coastal regions of southern California and northern Baja California. Where the two meet, there is a narrow zone with intermediate forms.

> **Native range:** United States and Mexico.

HABITAT

The gecko lives in dry regions: on plains with creosote bush (*Larrea*), in sagebrush desert, in forests of pinyon pines and junipers and in chaparral. It prefers rocky terrain, but is also found in dunes and dry riverbeds, from below sea level up to about 1,500 metres. The annual rainfall is typically 30 cm or less, and the temperature varies greatly between day and night and between the seasons.

The species is strictly nocturnal and spends the day in burrows and under stones. It comes out only about half an hour after sunset, so it is the darkness that brings it out. It is most active at 27-29 °C, but can be out from below 16 °C on windy spring nights to about 32 °C. In winter, normally from November to February, it goes into dormancy. The species also thrives in cities: in Las Vegas wild animals live in sprinkler boxes and water-meter wells, where it is damp and dark.

Read more: Brumation and the seasons

Care

THE ENCLOSURE

The species stays mostly on the ground, so the floor area matters more than the height. One or two animals need an enclosure of at least 40 × 30 × 25 cm, so that there is room for a clear heat gradient and a choice between dry and damp. Bigger is better. More animals require more space and more hides.

Use a substrate of sand or a mixture of sand and peat in a thin layer, so that the females cannot hide the eggs from you. Provide many hides, both dry ones and a single humid one. Flat pieces of cork are a good choice: they are light, imitate the stones the animals hide under in the wild, and do no harm if they topple. If you use stones, they must lie so stably that they cannot fall onto an animal. Live plants do not benefit the species and can be left out. The lid must fit tightly, because the animals are small and fast. Glass enclosures with mesh lids hold heat poorly and often need to be heated from both below and above.

TEMPERATURE

The species tolerates large fluctuations, but needs a clear gradient so that it can choose for itself. Keep 24-28 °C in the enclosure during the day and a warm area of 30-34 °C. Start at 30-32 °C rather than at the upper limit. At night the temperature may fall to 18-22 °C.

Heat with a heat mat or heat tape under a third to half of the floor rather than with a lamp, because lamps dry the enclosure out. Control the heat with a thermostat, and measure the temperature inside the hides. If you use a lamp, it should be red or lightless, so that it does not disturb the animals.

In winter the animals rest for two to three months, as they do in the wild. Switch off the heat, and let the animals rest at 17-19 °C without food. They must always have water, and it is a good idea to check on them every week.

Read more: Heat and temperature

HUMIDITY AND WATER

The species comes from regions with very little rain and loses only a little water through the skin. Per gram of body weight it evaporates only about a fifth as much water as the closely related *Coleonyx mitratus* and only slightly more than *Eublepharis macularius*. The air in the enclosure must therefore be dry, and the substrate must not be kept wet.

The gecko does, however, need a humid hide, which it uses during shedding and often also as a laying site. Make it from a closed plastic box or a clay pot with an entrance hole and damp substrate, and keep it damp. It is enough to mist a corner of the enclosure once or twice a week. Always provide a shallow dish of fresh water. The humidity is not documented for the species; keep 30-50 % in the rest of the enclosure. The most important thing is that the animal can choose between dry and damp.

Read more: Humidity, misting and ventilation

LIGHTING AND UVB

The species is strictly nocturnal and spends the day in hiding. UVB is not necessary when the insects are dusted with calcium and vitamin D3, and it is not recommended for the desert-dwelling *Coleonyx* species. The heat source can easily be a lightless heating element.

Give the animals a natural daily and annual rhythm with light by day and complete darkness at night. 12 hours of light in summer is a good starting point, and during the winter rest the day length is cut to under 8 hours. Avoid strong light, which makes the animals hide, and do not switch on lights at night.

Read more: Lighting and UVB Read more: Calcium, vitamins and supplements

FEEDING

The gecko feeds on live insects. Medium-sized mealworms can be the staple, and crickets, wax moth larvae and small cockroaches give variety. The prey must be smaller than the distance between the animal's eyes, so the small young need very small insects. Many animals take food from tweezers, and this reduces the risk of them swallowing substrate.

Adults are fed about three times a week with as much as they will eat. Dust the insects at every other feeding with a good calcium and vitamin supplement with vitamin D3. Gut-loading only helps if the feeder insects get a proper powder product, because fruit and vegetables alone do not give them enough calcium. A small dish of calcium powder in the enclosure is also a good idea, because this species likes to lick it. During the winter rest the animals are not fed.

Read more: Feeder animals: keeping and breeding

BEHAVIOUR AND HANDLING

The gecko is shy and fast, especially wild-caught animals, and easily sheds its tail if it feels threatened. It is mostly an animal to watch. In the evening it comes out and hunts with the tail curled up over its back. It can also be curious and active, and some animals take food from the fingers. If you need to handle it, hold it low over the table or floor, and never grab the tail.

Males must not be kept together, because they do not tolerate each other. A male can be kept with one or more females, and groups of females usually work. Females can, however, stress each other, so watch for unrest, and separate the animals if any are doing badly. The safest option is single animals or a pair of known sex. Small young cannot always be sexed, so keep them apart or under supervision, so that young females are not mated too early.

Breeding

SEXUAL MATURITY AND SEXING

The males are recognised by the two small spurs at the base of the tail and a row of pores in front of the vent, which are visible even in young males. The females lack both. The animals can be sexually mature from about 8 months, and animals over about 5 cm from snout to vent are regarded as adults. Females should not, however, lay eggs too early, because they first need to build up body mass and reserves. Therefore wait until the female is fully grown and in good condition before she is put to breeding. An adult typically weighs 4-5 g.

MATING

In the wild the animals mate in April and May after hibernation, and in captivity you get the most eggs if you imitate this. Let the animals rest for two to three months from the end of November at 17-19 °C, with shorter days and little or no food. From the middle of February the temperature and day length are raised again, and the animals are fed freely. Mating takes place at night and lasts only a few seconds. The male bites the female on the neck, and this is normal.

Females can store sperm for several months, and in the closely related *Coleonyx mitratus* fertilised eggs have been laid a whole year after mating. That is a good reason not to let the animals be together at random.

EGG-LAYING AND CLUTCHES

The female lays eggs from May to September. In the wild this amounts to one to three clutches of normally two eggs, and many females lay two clutches a year. The eggs can be seen, and felt as two large, white eggs through the belly, before they are laid. In captivity a good season can give several clutches.

When you can see the eggs, the female should have a laying box, e.g. a small plastic box with a hole in the lid or side and damp, but not wet, vermiculite or sphagnum. Many females also lay in the humid hide. Check the box every morning. The substrate in the rest of the terrarium should be thin, so you can find eggs that have been buried. Give the female plenty of insects and calcium throughout the season, and watch whether she loses weight.

INCUBATION

Move the eggs to a small box with damp vermiculite, and lay them half sunk without turning them. Water is added from the side so that the eggs do not get wet. Incubate at 27-29 °C and at least 80 % humidity, and at that temperature the eggs hatch after 40-50 days. A lower temperature lengthens the time.

At fluctuating temperatures of 24-32 °C only 50-60 % of the eggs hatch, and many young die late in development. At a stable 27-29 °C far more hatch, and the sex ratio is 1:1. The sex is determined by sex chromosomes and not by temperature, so it cannot be controlled, but a stable temperature is important.

REARING THE YOUNG

The young are very small at hatching, and that is the greatest challenge. Both handling and feeding require care, because the insects must be very small. They eat for the first time after the first shed, when they are 5-8 days old. Give them newly hatched crickets or larvae of the confused flour beetle *Tribolium confusum*, dusted with calcium, and always provide a small dish of fresh water and a humid hide.

Keep the young separately or together with animals of the same size, and separate them when the males can be recognised. No growth curves have been published for the species, so weigh them regularly, and judge from condition and activity. Young that do not grow usually get too little heat or too little calcium.

Health and common mistakes

The species is hardy, but there is relatively little experience with it in captivity, and losses often have unknown causes. The typical problems are:

- Constipation after swallowed substrate. Dried sphagnum can be swallowed during shedding and be fatal. Use a firm, even substrate, and feed from tweezers where possible.
- A lost tail through handling or fighting. It grows back, but without the same pattern.
- Weight loss and lack of appetite, which can spread from animal to animal in a stock without the cause always being found. Therefore quarantine new animals, and choose captive-bred animals.
- Too little calcium and vitamin D3, which causes soft bones. Dust the insects.
- Constant moisture throughout the enclosure, which causes skin problems. The species is adapted to dry conditions.

A healthy animal has clear eyes, a plump tail and a stable weight. Seek a veterinarian with experience in reptiles if the gecko loses weight, stops eating or seems limp. The animals are so small that dosing medication requires an experienced veterinarian.

Read more: Quarantine and hygiene

Always ask someone who knows

This guide is a good place to start, but it cannot replace experience. Animals differ, and much of what matters most is learned from people who have kept the species for years. Talk to a breeder, an experienced keeper or a vet who knows reptiles and amphibians before you get the animal - and again if anything looks wrong.