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GECKOS

Leopard gecko

Eublepharis macularius

A calm, ground-dwelling gecko from the dry rocky and grassy areas of southern Asia, with true eyelids, a thick tail full of fat reserves and the spotted pattern to which the species name *macularius* refers. It is one of the most commonly kept reptiles in the world and an obvious first choice, provided it gets heat from below and a dry enclosure.

Family: Eublepharidae Former name: *Cyrtodactylus macularius; Eublepharis fasciolatus*

KEY FACTS

THE ANIMAL

Adult size	**17-25 cm** total length incl. tail
Weight	**45-80 g**
Lifespan	**15-20 years**
Active	**At dusk and at night**
Lifestyle	**Rock-dwelling and terrestrial**
Habitat	**Semi-desert and rocky terrain**
Difficulty	**Beginner**

CARE

Min. enclosure	**90 × 45 × 45 cm** L × W × H for 1 adult
Temperature, day	**22-30 °C**
Basking spot	**32-35 °C**
Temperature, night	**18-22 °C**
Humidity	**30-40%**
UVB	**Recommended** Ferguson zone 2
Diet	**Insects**
Kept	**Singly or one male with several females**

BREEDING

Reproduction	**Egg-laying**
Sexually mature	**10-18 months**
Clutch size	**1-2 eggs**
Clutches per year	**6-10**
Incubation	**35-89 days** at 26-32 °C

PROTECTION AND PAPERWORK

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

About the species

Eublepharis macularius is a sturdy, short-legged gecko, and unlike most other geckos it has no adhesive lamellae under the toes. It therefore cannot climb glass, but lives on the ground and among rocks. In return it has true eyelids, which it can blink with, and this gives it its mild expression. The eyelids are the hallmark of the family: it belongs to the Eublepharidae, the eyelid geckos.

The species was described by the English zoologist Edward Blyth in 1854 and has changed genus name a couple of times since. Wild animals are yellow with dark brown spots. The young are banded, and the bands break up into spots as the animal grows. Decades of breeding have produced a wealth of colours and patterns, from albinos to almost patternless animals, and all animals in the trade come from captive breeding. It is often called the first reptile to have truly become a domestic pet.

An adult measures 17-25 cm including the tail. Males are the largest and typically reach 20-25 cm, while females mostly stay around 17-20 cm. The weight is usually 45-80 g. The thick tail is the animal's pantry, where it stores fat for lean times, and a thin tail is therefore a warning sign. The tail can be dropped if the animal is grabbed or frightened. It grows back, but ends up

shorter, broader and smoother than the original.

The temperament is calm, and most animals get used to gentle handling. The species is hardy, but it needs heat from below and a dry enclosure, and this is exactly where most beginners go wrong.

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

Distribution and habitat

Eublepharis macularius occurs naturally in southern Asia: in eastern Afghanistan, in Pakistan, in north-western India and in Nepal. In India it is found in, among other places, Rajasthan, Punjab and Jammu. The type locality, where the species was first collected, is the Salt Range in Punjab in present-day Pakistan.

Its occurrence in Iran is uncertain. Eastern Iran has been mentioned, but reliable records have not been confirmed, and the country is therefore not shown on the map. The species is often divided into several subspecies, but that division is uncertain. Records outside southern Asia on the map come from captive animals.

> **Native range:** Afghanistan, Pakistan, India and Nepal.

HABITAT

Eublepharis macularius lives in dry, open country: rocky grassland, stony slopes and semi-desert with sparse vegetation and firm clay or gravel soil. It is especially fond of old stone walls. By day it lies hidden in crevices, under stones or in old rodent burrows, where temperature and humidity are more stable than on the surface. At dusk and at night it comes out to hunt insects, spiders, scorpions and other small animals, and now and then it also takes a small vertebrate.

The summers are hot and dry, and the winters cool. In winter the nights can fall below 10 °C, and the geckos then withdraw into their hides and go into a kind of winter dormancy, living off the fat reserves in the tail. Even in the dry landscape they find humid nooks down in the ground, and that is why the enclosure needs both a warm and a cool side and a humid hide for shedding.

Read more: Humidity, misting and ventilation Read more: Brumation and the seasons

Care

THE ENCLOSURE

An adult needs an enclosure of at least 90 × 45 × 45 cm (length × width × height), and bigger is always an advantage. *Eublepharis macularius* lives on the ground, so floor area matters far more than height. For the first few months, young animals can live in a smaller box of about 60 × 30 cm, where they find their food more easily, and are moved to the large enclosure when they are 5-6 months old. The lid must fit tightly, both for the gecko's sake and for the feeder insects.

Furnish it with at least three hides: one on the warm side, one on the cool side and a humid hide with slightly damp sphagnum, which the gecko uses when shedding. Flat stones, cork bark and roots give it something to climb on and create several levels. Place stones directly on the bottom, so that the gecko cannot dig under them and make them topple.

As substrate, a firm mixture of soil, sand and clay that binds as it dries works well. For young animals, kitchen roll is the safest. Avoid fine, loose sand and loose shavings, especially for young animals, because they can swallow it with their food and become impacted. Good ventilation keeps the air dry.

TEMPERATURE

Eublepharis macularius needs a temperature gradient, so that it can choose for itself. The basking spot under the heat source should be 32-35 °C measured on the surface, and the air at the warm end 28-30 °C. The cool end should stay at 22-25 °C. At night the temperature may fall to 18-22 °C, and that night-time drop is healthy.

The heat is best supplied from above by a heat lamp or a ceramic heat emitter, controlled by a thermostat. The lamp warms a flat stone or slate tile, and the gecko lies on it and takes in the heat through its belly, just as on a sun-warmed rock in the wild. Never use the electric heat rocks sold for reptiles, because they can cause serious burns. Measure the surface temperature with an infrared thermometer and the air temperature with a digital thermometer at both ends. A gecko that lies stretched out flat and gapes is too hot, while a gecko that never leaves the cool hide and does not eat may be too cold.

Use the figures as reference points, and let the animal's behaviour be the final guide.

Read more: Heat and temperature

HUMIDITY AND WATER

The humidity should be low, around 30-40 %. The enclosure should not be misted daily, because constant moisture causes skin problems, fungus and respiratory infections. Keep the substrate dry, but make sure the humid hide is always slightly damp. Moisten the sphagnum a couple of times a week, and change it regularly so that it does not go mouldy.

Put in a shallow bowl of fresh water, and change the water every day. The gecko drinks from the bowl, but also likes to lick droplets off stones after a light misting. A hygrometer shows whether the humidity is right. If in doubt, better too dry than too damp, as long as the humid hide is there.

LIGHTING AND UVB

Eublepharis macularius is active at dusk and at night and for many years was kept without UVB. Today, however, a weak UVB light is recommended, because it gives safer calcium metabolism and a more natural daily rhythm. Use a weak tube, for example a 5-7 % T5 tube (Ferguson zone 2), over the warm end, so that the UV index at the basking spot is around 1-3, and leave the rest of the enclosure in shade with plenty of hides.

Keep the light on for 12 hours a day in summer and 10 hours in winter, ideally controlled by a timer. At night it should be dark, with no red or blue night lights either.

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

FEEDING

Eublepharis macularius lives entirely on live insects and other small animals. Good staples are crickets, dubia roaches, mealworms and silkworms. Waxworms and superworms are fatty and are best as a treat or for fattening up a thin gecko. The insects should be no larger than the distance between the gecko's eyes, and they should have fed well for a couple of days before being offered (gut-loaded).

Young animals are fed every day or every other day with small insects, half-grown animals 3-4 times a week and adults 2-3 times a week, so that they do not get too fat. The tail shows whether the amount is right: it should be plump, but not broader than the body. Dust the insects with calcium at every feeding and once a week with calcium with vitamin D3 and a multivitamin. If you use UVB, the animal needs less D3 from its food. A small dish of pure calcium without D3 can also be provided for the gecko to lick as needed.

Never give wild-caught insects, which may contain parasites or pesticides, and do not let mealworms be the only food.

Read more: Feeder animals: keeping and breeding

BEHAVIOUR AND HANDLING

Eublepharis macularius is calm and curious and can become very tame if handled gently. Lift it from the side with your hand under the body, never by the tail. Give new animals a week's peace before you start, and keep sessions short, 5-10 minutes. Let it walk from hand to hand, and sit low so that a fall does no harm.

By day it sleeps in its hide and comes out at dusk. When it hunts or is excited, it vibrates the tip of its tail, and if it feels threatened it may give a short squeak or scream.

Males must never be kept together, because they fight until they draw blood. One male can be kept with one or more females, but all animals are often kept separately, because bullying and stress can also arise between females and are not always easy to see. If you keep them together, there must be plenty of space and many hides, and you must be ready to separate them.

Breeding

SEXUAL MATURITY AND SEXING

The sex can usually be seen from 3-4 months of age. Males have a clear V-shaped row of pores in front of the vent and two bulges at the base of the tail, where the hemipenes sit. Females lack the pores or have only faint ones. Females can mature as early as about 10 months, but wait until they are at least 18 months and weigh 45 g or more. Weight matters more than age, because each clutch draws on the female's calcium reserves, and a young or light female can suffer lasting harm.

MATING

The breeding season follows light and warmth and in the northern hemisphere typically runs from January to September. The animals are often given a winter rest of 1-3 months beforehand, with lower temperatures and shorter days. It is not strictly necessary, but it gives a more natural rhythm. The female should be in good condition before the season begins.

Put the male in with the female, and keep an eye on them the first nights. The male vibrates his tail and bites the female on the neck. It looks violent, but is normal. If the female flees and the male persists, they should be separated. The female can store sperm for months, so a single mating can give several clutches, and the male can be removed once mating is over.

EGG-LAYING AND CLUTCHES

The first clutch comes 2-3 weeks after mating. Each clutch is 1-2 eggs, and the first is often only a single egg. After that the female lays a new clutch every 15th-22nd day for 4-5 months, typically 6-10 clutches in the season. The eggs are white, soft and leathery and about 2-3 cm long.

Put a lay box with damp vermiculite, sphagnum or coconut fibre in the enclosure, for example a plastic box with a hole in the lid. Otherwise the female lays in the substrate or in one of the hides. Give her calcium and plenty of insects throughout the season, and stop breeding if she loses a lot of weight or the tail becomes thin.

INCUBATION

Carefully move the eggs to a box with slightly damp vermiculite or perlite, without turning them. Mark the top with a pencil, lay the eggs half-buried in the substrate, and put the box, with a couple of small air holes, in an incubator with a thermostat.

The sex depends on the temperature. At 26-28 °C almost all the hatchlings become females, around 30 °C you get a mixture, and at 32 °C most become males. Below about 23 °C the embryos can die, and very high temperatures give more deformities.

The incubation period is 35-89 days, short at high and long at low temperature. At 28-30 °C the eggs typically hatch after 50-60 days. Eggs that collapse or turn brown and mouldy are usually dead, but leave them until you are sure.

Read more: Incubating eggs

REARING THE YOUNG

The hatchlings measure 7-10 cm at hatching and weigh 2-5 g. Give them a small box of about 30 × 20 cm with kitchen roll as substrate, a dry and a humid hide, a small water bowl and a calcium dish. Keep the hatchlings separately, because a larger youngster can easily bite the tail off a smaller one.

The hatchlings shed after a couple of days and begin to eat afterwards. Give small crickets or dubia roaches every day or every other day, dusted with calcium, and once a week with vitamin D3. Weigh them every other week, and offer larger insects as they grow. At 5-6 months they can move into an adult enclosure, and they are fully grown after 12-18 months.

Health and common mistakes

Eublepharis macularius is hardy, and most illnesses are caused by wrong heat, humidity or food. The typical problems are:

- Too little calcium and vitamin D3, especially in young animals and breeding females. It causes metabolic bone disease with soft jaws, bent legs and tremors. Dust all feeder insects with calcium, and use UVB.
- Too low a temperature, which causes poor digestion, loss of appetite and regurgitation.
- Impaction after swallowing sand, shavings or oversized insects. Use a firm substrate and insects of a suitable size.
- Shed skin on toes and tail tip, which can cut off the blood supply. Provide a humid hide, and gently loosen the remnants with lukewarm water.
- Cryptosporidium, a parasite that causes weight loss and a thin tail despite a good appetite. There is no reliable treatment, so quarantine new animals, and have a vet examine a faecal sample.
- Respiratory infections and skin fungus in an enclosure that is too humid.
- Obesity in animals that get too many fatty grubs.

A healthy animal has clear eyes, a plump, firm tail and eats willingly. See a vet experienced with reptiles if the gecko loses weight, the tail becomes thin, it does not eat for several weeks or seems limp.

Read more: Quarantine and hygiene Read more: Common diseases and signs of illness

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.