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GECKOS

Spotted ground gecko

Goniurosaurus orientalis

A small, dark, nocturnal eyelid gecko from the limestone forests of a few Japanese islands near Okinawa, with blood-red eyes and pale crossbands over an almost black ground colour. It lives hidden in rock crevices and prefers cool, humid conditions. The species is threatened in the wild and rarely kept, so very little is known about its care.

Family: Eublepharidae Former name: *Eublepharis orientalis; Goniurosaurus kuroiwae orientalis*

KEY FACTS

THE ANIMAL

Adult size	**14-16 cm** total length incl. tail
Lifespan	**10-15 years**
Active	**At dusk and at night**
Lifestyle	**Rock-dwelling and terrestrial**
Habitat	**Rainforest and rocky terrain**
Difficulty	**Intermediate**

CARE

Min. enclosure	**60 × 45 × 45 cm** L × W × H for 2 adults
Temperature, day	**22-26 °C**
Temperature, night	**18-22 °C**
Humidity	**60-90%**
UVB	**Optional** Ferguson zone 1
Diet	**Insects**
Kept	**Singly or in pairs**

BREEDING

Reproduction	**Egg-laying**
Clutch size	**1-2 eggs**
Clutches per year	**1-3**
Incubation	**45-80 days** at 24-27 °C

PROTECTION AND PAPERWORK

CITES	**Appendix III**
EU annex	**Annex C**
IUCN	**Endangered (EN)**

About the species

Goniurosaurus orientalis belongs to the tiger geckos, a genus of eyelid geckos from China, Vietnam and Japan, and is one of the small group of species that live in the Ryukyu Islands of Japan. It is a slender, small gecko with a distinct head, long legs and large eyes with vertical pupils and movable eyelids. The iris is blood red. The ground colour is dark brown to almost black, and distinct crossbands run across the back between the neck and the base of the tail. The species reaches about 14-16 cm including the tail.

The species can be told from its closest relatives on three points. The males lack the rows of pores in front of the vent that males of the mainland Asian tiger geckos have. The claws sit free and are not covered by scales. And unlike the closely related *Goniurosaurus sengokui*, its pattern and iris have no reddish or pink tone.

Goniurosaurus orientalis was described in 1931 as *Eublepharis orientalis* from animals from the island of Tonaki. The scientific species name is the Latin word for eastern and refers to its distribution. For many years the gecko was regarded as a subspecies of *Goniurosaurus kuroiwae*, and in more recent work from 2017 and 2024 it is treated as a separate species. Genetic studies suggest that it and *Goniurosaurus yamashinae* diverged about three million years ago, when the islands were isolated by the sea. The Japanese species are often confused with one another, also in the trade.

The gecko is shy and cautious and not an animal for handling. In return it comes out after dark and hunts actively when it feels secure.

Distribution and habitat

The species is found only on a few small islands in the Ryukyu Islands west and north of Okinawa's main island in Okinawa Prefecture, Japan: Tonaki, which is the type locality, as well as Kume, Ie and Iheya. The populations on Tokashiki and Aka, which were formerly counted here, belong to *Goniurosaurus sengokui* under the more recent classification.

The populations are small and isolated on separate islands, and each island has only a limited range. The species is assessed as threatened.

> **Native range:** Japan.

HABITAT

The gecko lives in mountainous and limestone areas covered by evergreen broadleaf forest on subtropical islands. The species is not common. By day it hides in crevices and caves in the limestone, and at night it comes out and hunts small invertebrates in the leaf litter and on the rock faces. The closely related *Goniurosaurus kuroiwae* hunts in the leaf layer on the forest floor.

The climate on the islands is subtropical and humid, with hot, rainy summers and mild winters. Temperature and humidity have not been measured at the species' own habitats. The Japanese tiger geckos are active in the summer half of the year and keep a cool, quieter period in winter. That rhythm is reproduced in the terrarium.

Read more: Humidity, misting and ventilation

Care

THE ENCLOSURE

Little is known about the care of *Goniurosaurus orientalis*. The figures in this guide are borrowed from the other Japanese tiger geckos, for example *Goniurosaurus kuroiwae*, and from the genus, which is far better known in captivity, including *Goniurosaurus luii* and *Goniurosaurus hainanensis*. A single animal or a pair needs a terrarium of at least 60 × 45 × 45 cm (length × width × height).

The terrarium should work as a landscape of hiding places, because the species shows itself only when it feels secure. Use a back wall of cork or textured panel, cork tubes, flat stones, branches and plenty of crevices. Tiger geckos climb well on rocks and branches, so they need a back wall and something to climb on. A humid hide with sphagnum helps during shedding.

Coconut fibre or a mixture of fertiliser-free soil and sand with a layer of leaves on top suits as substrate. The substrate must hold moisture without being constantly wet, so use a drainage layer and good ventilation. Everything in the terrarium must sit securely so nothing can fall on the animals. Keep a fixed toilet spot clean, and place the terrarium somewhere quiet, away from foot traffic.

Newly acquired animals are quarantined in a simple, easily cleaned terrarium with kitchen paper as substrate, so disease does not spread to the animals already kept.

Read more: Terrarium construction and bioactive substrate

TEMPERATURE

The species likes it cool and needs no basking spot. By day the temperature should be 22-26 °C, and at night 18-22 °C. In a typical living room most terrariums manage without extra heating.

Heat is the greatest danger. Above 27-28 °C tiger geckos become stressed, and prolonged high heat can kill them. Place the terrarium away from sunny windows, and measure the temperature with a digital thermometer both at the top and at the bottom.

In winter the temperature is lowered by about 4 degrees, so it sits at 18-22 °C by day. The cool period follows the season in the wild and triggers breeding. A precise winter schedule is not documented for the species.

Read more: Heat and temperature

HUMIDITY AND WATER

The humidity should be 60-90%, and the air must not stand still. Mist the terrarium in the evening so droplets form on the back wall, plants and hides, and let it dry out a little during the day. Tiger geckos lick water from the substrate and the back wall, and misting is often the most important drinking water.

Still provide a shallow dish of fresh water, changed daily. If the air is dry for long periods, the animals have problems with shedding. If the substrate is constantly wet, mould and bacteria develop. Best is a substrate that is moistened regularly and a humid hide where the humidity is higher than in the rest of the terrarium. A hygrometer shows whether the rhythm holds.

LIGHTING AND UVB

The gecko is active at dusk and at night and needs only weak light from LED strips or T5 tubes, which give a fixed daily rhythm. Give about 12 hours of light in summer and about 8 hours in winter. Use a timer, and keep the night completely dark.

UVB is not necessary when the food is dusted with calcium and vitamin D3. A weak UVB light may be an advantage for calcium metabolism. If you choose one, use a tube for shade-dwellers (Ferguson zone 1) over part of the terrarium, so there is always shade and cover.

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

FEEDING

Goniurosaurus orientalis is an insect eater. Give crickets, dubia roaches and locusts as the staple, and now and then mealworms, wax moth larvae or silkworm pupae. Prey must be smaller than the distance between the animal's eyes, and everything is dusted with calcium and a vitamin-mineral supplement. Adults are fed two to three times a week.

Juveniles get small crickets from about three days after hatching and are fed every other day or three times a week for the first months. A small dish of calcium that the animals can lick is an advantage and must be changed often, because calcium absorbs moisture. Wax moth larvae and other fatty larvae should only be a treat, because adults easily become too fat.

Read more: Feeder animals: keeping and breeding

BEHAVIOUR AND HANDLING

The gecko is shy and secretive and spends the day in hiding. It should not be handled. Never grab the tail, which can be shed and regrows in a different form. Give new animals a couple of weeks in peace, and keep disturbances to a minimum.

The species can be kept alone or in pairs if there is space and plenty of hides. Two males must never be kept together, because they fight. The male is removed if the female is stressed or loses weight. As in other eyelid geckos, the animals lick their eyes and mouth clean with the tongue and eat their shed skin.

Breeding

SEXUAL MATURITY AND SEXING

The sex can be seen from the hemipenal bulges at the base of the tail in subadult and adult animals. The males lack the pores in front of the vent that are used to determine the sex of the mainland tiger geckos, so the Japanese species can be harder to sex as juveniles. When *Goniurosaurus orientalis* reaches sexual maturity is not documented.

Wait until the female is fully grown and in good condition before she is bred. The eggs draw on her calcium reserves, and breeding too early can cause calcium deficiency and lost eggs. Use only animals of known origin, and never cross different species or island populations of the Japanese tiger geckos.

MATING

The breeding season follows the summer half of the year. Beforehand the animals must have a cool winter with shorter days, 18-22 °C by day and less food. Afterwards the temperature is raised slowly to the spring level, and more food is given. Without the winter pause many tiger geckos do not come into breeding condition.

Introduce the male to the female, and let them stay together as long as it stays calm. Remove the male if the female seems stressed or loses weight, and give her breaks during the season. Breeding of this particular species is rare in captivity.

EGG-LAYING AND CLUTCHES

As in the closely related Japanese species, the female lays one to two eggs at a time and up to three clutches a year. The figures are borrowed from *Goniurosaurus kuroiwae*. The female buries the eggs in the substrate.

Place a laying box with at least 5 cm of moist sphagnum, coconut fibre or vermiculite in the terrarium. Give the female plenty of calcium and insects throughout the season.

INCUBATION

Move the eggs carefully to a closed plastic box with slightly moist vermiculite and a few small air holes, and place them about a third of the way into the substrate. Mark the top side, and do not turn them. Incubate the eggs at 24-27 °C. The time is not documented for the species. In the other tiger geckos it takes 45-80 days, and the cooler it is, the longer it takes.

Whether temperature determines the sex has not been settled. The sex ratio in juveniles of the Japanese species suggests it does, but this is not certain.

REARING THE YOUNG

The young shed their skin shortly after hatching. Once that is over, they are moved to a small plastic box with moist kitchen paper as substrate, a hide and a shallow water dish. Kitchen paper for the first weeks makes it easy to see whether the juvenile is eating and passing normal droppings. Once the young eat and digest well, the substrate can be changed to coconut fibre, and cork bark is added for climbing.

The first meal is small crickets after about three days, then every other day or three times a week, always dusted with calcium and vitamins. Keep track of origin, because juveniles of different Japanese tiger geckos look alike. Separate the animals before they reach sexual maturity, especially the males.

Health and common mistakes

Tiger geckos are hardy when the climate is right, but there is one serious problem that anyone who keeps eyelid geckos must know: an intestinal parasite that can be fatal in eyelid geckos. It is found in wild Japanese tiger geckos, and no treatment works well. That is why quarantine, cleaning and distance between terrariums are important.

The typical faults are:

- Cryptosporidium. The signs are vomiting, diarrhoea, weight loss and a thin tail. Wash hands and equipment between terrariums, and keep new animals separate for several weeks.
- Too much heat. Above 27-28 °C the animals become stressed, and prolonged high heat can kill them.
- Dry periods, which cause problems with shedding and skin remnants on the toes and tail tip. A humid hide helps.
- Calcium deficiency, especially in juveniles and females in the breeding season. It causes soft bones and lost eggs. Dust all food with calcium and vitamins.
- Mould and bacteria in a constantly wet substrate without drainage and ventilation.

Warning signs are loss of appetite for several weeks, weight loss, a thin tail and a limp posture. Contact a vet with reptile experience if the animal does not eat or seems ill.

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.