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GECKOS

Carrot-tail viper gecko

Hemidactylus imbricatus

Hemidactylus imbricatus is a small, striped desert gecko from southern Pakistan with a thick, carrot-shaped tail that serves as its fat store. It lives hidden in dry ground by day and hunts at night, needs only a small enclosure and can be kept together in pairs or small groups.

Family: Gekkonidae Former name: *Teratolepis fasciata*

KEY FACTS

THE ANIMAL

Adult size	**7-10 cm** total length incl. tail
Lifespan	**10-15 years**
Active	**At dusk and at night**
Lifestyle	**Rock-dwelling and terrestrial**
Habitat	**Semi-desert**
Difficulty	**Beginner**

CARE

Min. enclosure	**40 × 30 × 30 cm** L × W × H for 2 adults
Temperature, day	**25-30 °C**
Basking spot	**32-35 °C**
Temperature, night	**20-25 °C**
Humidity	**40-50%**
UVB	**Optional**
Diet	**Insects**
Kept	**Singly, in pairs, one male with several females or in groups**

BREEDING

Reproduction	**Egg-laying**
Sexually mature	**10-12 months**
Clutch size	**1-2 eggs**
Incubation	**60-80 days** at 24-27 °C

PROTECTION AND PAPERWORK

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

About the species

Hemidactylus imbricatus is easy to recognise by its tail. It is short, thick and tapered like a carrot or a beet, and it is covered with large, overlapping scales, some of which sit as small plates on the upper side. The species name *imbricatus* refers to the scales that overlap like roof tiles on the back and especially on the tail. The keeled scales resemble the scales of certain vipers. The tail is a fat store, as in many desert geckos, and a plump tail shows that the animal is in good condition.

The pattern consists of beige and black longitudinal stripes from the neck to the base of the tail, interrupted at regular intervals by white spots. The spots run together into pale crossbands. The body is slightly flattened, the legs are long and slender, and the animal grows to about 7-10 cm including the tail. Males have preanal pores and distinct hemipenal pouches at the base of the tail, so the sex is easy to see.

The species was described in 1853 under the name *Homonota fasciata* and, from 1869, was called *Teratolepis fasciata* for almost 140 years. In 2008 the genus *Teratolepis* was merged with *Hemidactylus*. The old species name was then already taken by another *Hemidactylus*, and the species therefore got the new name *Hemidactylus imbricatus*. You will still see the old name in many care guides and at dealers.

The animals are quiet and relatively peaceful towards their own kind. The species is sociable, so males and females can live together, and it is suitable for beginners. It is not an animal to pick up every day, though. Like many geckos it can drop its tail, and the tail does not always grow back in the same shape.

Distribution and habitat

Hemidactylus imbricatus is only reliably known from southern Pakistan, especially the province of Sindh and the area around the Indus River and its delta. It occurs, among other places, at a burial ground between the towns of Gharo and Mirpur Sakro near Karachi. Iran is also listed, but its occurrence there is uncertain.

India and Sri Lanka have also been listed in the past, including the type locality Jalna in Maharashtra as well as Assam and the Khasi Hills. The records from India and Sri Lanka are probably mistaken and may refer to the closely related *Hemidactylus albofasciatus*. The gecko is known from few animals, so the range is poorly defined, and the map shows only Pakistan.

> **Native range:** Pakistan.

HABITAT

Hemidactylus imbricatus spends the day in hiding on dry, loose soil and probably also uses brick walls. It shares its habitat with several other geckos, including *Eublepharis macularius* and several species of the genus *Hemidactylus*.

The landscape is lowland with dry, loose ground, stones and man-made hiding places. The climate in Sindh is hot and dry; temperature and humidity at the habitat itself are not known. During the day the animals hide in crevices and under stones, and they hunt at dusk and at night.

Read more: Humidity, misting and ventilation

Care

THE ENCLOSURE

A pair, or one male with two females, needs an enclosure of at least 40 × 30 × 30 cm (length × width × height). The dimensions can also be turned so that the enclosure is 30 cm long and 40 cm deep. A larger enclosure gives more stable temperatures and more room for several hides, and more animals need more floor area.

Hemidactylus imbricatus is mostly a ground dweller, but it readily climbs rough surfaces. Back the enclosure with a rough rear wall of, for example, cork or stone slabs, and put out low stones, cork tubes and pieces of cork bark as hides on both the warm and the cool side. Young animals can climb glass, so close all gaps.

Use 2-3 cm of fine sand as substrate, preferably a desert mix for reptiles. The animals dig, so heavy stones and slate slabs must stand on the floor of the enclosure and not on top of the sand, otherwise they can fall onto the animals. Give the enclosure ventilation so that it dries again a few hours after misting.

TEMPERATURE

By day the enclosure should be 25-30 °C. Create a warm area of 32-35 °C, measured on the surface with an infrared thermometer, using a heat mat or a small heat bulb controlled by a thermostat. The animal must be able to choose between warm and cool, and the hides must be placed in both areas.

At night the temperature may drop to 20-25 °C. Stay at the warmer end of the range if the animals are young or gravid. In a winter rest of two to three months, the temperature in the enclosure may be allowed to fall by 5-10 °C along with room temperature, and the light is shortened. This stimulates breeding. Measure with a digital thermometer, and do not place heat sources that can burn the animal on the floor.

Read more: Heat and temperature

HUMIDITY AND WATER

Hemidactylus imbricatus comes from a dry area and does best with fairly low humidity of around 40-50 %. Mist the enclosure lightly with water two to three times a week in the evening, so that droplets sit on the walls and hides. The animals lick them up. If the enclosure dries quickly, mist every other day.

The substrate must be dry, and there must be no standing water on the floor. A water bowl is not necessary if you mist regularly, but a small, shallow bowl does no harm. Make a humid hide from, for example, a small box with damp sphagnum or coconut fibre. Here the animals can shed, drink and lay eggs. Use a hygrometer so that you are sure humidity does not stay above 50 % for long periods.

LIGHTING AND UVB

Hemidactylus imbricatus is active at dusk and at night and needs no special lighting. UVB is not necessary. Instead, give the animals calcium with vitamin D3 through their food. If you still want to provide a weak UVB light, choose a tube for shade-dwelling species over one half of the enclosure, and make sure there are plenty of dark hides.

Keep the light or heat lamp on for about 12 hours a day in summer. In the winter rest, day length can be shortened to 8-10 hours for two to three months. Use a timer. At night it should be dark, or have only gentle heat without light.

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

FEEDING

Hemidactylus imbricatus is an insectivore. Give adults live insects once or twice a week: medium-sized crickets, small dubia roaches, waxworms and the occasional house cricket. The insects should be no longer than the distance between the animal's eyes. The animals are greedy and can take quite large prey, and some take food from tweezers. It is best to let them hunt for themselves, though, as long as you can see that all of them get enough.

The feeder insects should themselves have been fed a good diet before being served, and be dusted with calcium and occasionally with a multivitamin powder. Use calcium with vitamin D3 if the animals have no UVB. Animals with a thick, nice tail are in good condition. A thin tail means that the animal needs more or better food.

Young animals need to be fed more often. The young get smaller insects every second to third day, for example small crickets, springtails, fruit flies and small waxworms. This can be a challenge if you do not breed your own feeder insects, because the young are very small.

Read more: Feeder animals: keeping and breeding

BEHAVIOUR AND HANDLING

Hemidactylus imbricatus is quiet and calm and can in time become used to handling, but it is an animal to watch. It can drop its tail if it is frightened or squeezed, so never grab the tail, and let the animal walk from hand to hand for short periods. New animals should have a couple of weeks in peace before you handle them.

The species is nocturnal and comes out when it begins to get dark. Once the animals are used to the enclosure, they are also seen by day, but they are then only slightly active. Keep the enclosure in a room where there is not much noise at night.

Unlike many geckos, the species is rather sociable. Males and females can be kept together without problems, and one male and two females can live together all year. Whether several males can share an enclosure in the long term is not known. Start, therefore, with a pair or one male and two females, and watch for bites, lost tails and animals that withdraw. Separate the animals if there is unrest or a weaker one is kept away from the food.

Breeding

SEXUAL MATURITY AND SEXING

The sex can be seen early. Males have preanal pores in front of the vent, which females lack, and at an age of two to three months an experienced keeper with a good magnifying glass can tell the sexes apart. In adult males the hemipenal pouches at the base of the tail are distinct.

The animals can become sexually mature at around 10 months, but it is best to wait to put them together until they are about a year old. Also wait until the female is fully grown and in good condition with a plump tail.

MATING

Breeding succeeds easily in captivity. A winter rest of two to three months with shorter days and slightly cooler temperatures, or a gradual lengthening of day length in summer, kick-starts mating. The animals can live together all year round, and in that case mating takes place without any need to intervene.

During mating the male bites the female lightly on the neck, and small bite marks can be seen afterwards. This is normal, but make sure the female is not being chased. Give the female plenty of calcium and insects throughout the season, because each clutch draws on her calcium reserves, and take her out of breeding if she loses weight. *Hemidactylus imbricatus* is a prolific egg-layer, so the female must be followed closely.

EGG-LAYING AND CLUTCHES

The female is gravid for about 30 days and then lays two eggs at a time. The female can lay every second to third week during the season, but the number of clutches per year is not known precisely.

The eggs are buried in loose sand or laid in a humid hide. The female often chooses the same spot time after time, so it pays to know where that spot is. Carefully dig the eggs free, and move them to an incubator without turning them.

Read more: Incubating eggs

INCUBATION

The eggs are laid in sand or another substrate in a small box in an incubator. Keep the sand slightly damp along the edge and the temperature at 26.5 °C by day and 24.5 °C at night. This gives an almost even sex ratio. Use 24-27 °C, therefore, and do not turn the eggs when you move them.

At those temperatures the eggs hatch after about 60-80 days. How temperature and humidity affect sex is not known in detail, so stick to the figures above. Eggs that collapse or become discoloured are usually dead, but leave them until you are sure.

REARING THE YOUNG

The young look like their parents in miniature and shed for the first time within a day of hatching. Leave them in the incubator until they have shed. Then move them to small boxes, for example cricket boxes, with a thin layer of sand and a piece of cork as a hide. Mist them lightly every other day so that they can drink.

Give them the smallest feeder insects every second to third day: newly hatched crickets, springtails, fruit flies and small waxworms, dusted with calcium. Young that have been raised together can grow up well in the same box, but separate them if some are bitten or fall behind in growth. The young can climb glass, so close boxes and enclosures carefully.

Health and common mistakes

The advice here applies to small desert geckos in general. Typical mistakes with *Hemidactylus imbricatus* are:

- Too little calcium and vitamin D3, especially in breeding females and young animals. It can cause soft jaws, bent limbs and tremors. Dust all feeder insects, and preferably give the insects a good diet before they go to the gecko.
- Too high humidity and too wet a substrate, which cause skin problems and fungus. The enclosure should dry out a few hours after misting.
- Shed skin stuck on the toes and tail tip. Provide a humid hide, and gently loosen the remnants with lukewarm water.
- A dropped tail. It does not always grow back in the same shape, and the animal loses its fat store.
- Malnutrition and too little water. A thin tail and a sunken body show that the animal needs more and better food.
- Fighting and stress if the animals are housed too cramped. Separate them if there are bites and unrest.

See a vet experienced with reptiles if the gecko loses weight, does not eat for several weeks or seems limp.

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.