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GECKOS

Giant ground gecko

Chondrodactylus angulifer

A large, robust ground gecko from the deserts of south-western Africa. It has no adhesive pads, but short, spiny toes that give it grip in loose sand and make it a skilled digger. By day it sleeps in a burrow of its own making, and at night it hunts termites and other arthropods. In the terrarium it needs a deep layer of sand and a humid hide.

Family: Gekkonidae Former name: *Chondrodactylus angulifer namibensis*

KEY FACTS

THE ANIMAL

Adult size	**15-18 cm** total length incl. tail
Lifespan	**10-11 years**
Active	**At night**
Lifestyle	**Terrestrial and burrowing**
Habitat	**Desert**
Difficulty	**Intermediate**

CARE

Min. enclosure	**60 × 40 × 40 cm** L × W × H for 2 adults
Temperature, day	**27-30 °C**
Basking spot	**35 °C**
Temperature, night	**18-24 °C**
Humidity	**35-50%**
UVB	**Optional**
Diet	**Insects**
Kept	**Singly, in pairs or one male with several females**

BREEDING

Reproduction	**Egg-laying**
Sexually mature	**10-12 months**
Clutch size	**1-2 eggs**
Clutches per year	**1-4**
Incubation	**55-65 days** at 28-30 °C

PROTECTION AND PAPERWORK

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

About the species

Chondrodactylus angulifer is a broad-headed, sturdy gecko built for life on loose sand. It is the only one in its genus without adhesive pads under the toes. Instead the digits are short and thick, with small, pointed scales on the underside that give grip in the sand and help when the animal digs. Adults reach 15-18 cm including the tail, and the tail is shorter than the body. The largest known snout-vent length is 113 mm. The ground colour ranges from light orange to reddish brown with a pattern of overlapping bands, a dark saddle across the shoulders and light stripes from the snout across the eye.

The male is larger than the female, has a broader head and two bulges under the base of the tail, where the hemipenal pouches sit. Most males also have white spots with a dark edge on the sides at the shoulders. The tail can be shed if the animal is grabbed. If the gecko feels threatened, it rises on stiff legs and curls the tail forward over its back like a scorpion, and in its home range many believe that it can sting. It is normally silent, but a frightened animal may squeak.

The species was described by Wilhelm Peters in 1870 and was for a long time the only one in the genus *Chondrodactylus*. Two subspecies used to be recognised, the nominate form and *namibensis* from the Namib Desert, described by Haacke in 1976. Genetic data from 2021 show no clear difference between them, and today the species is regarded as one single species. The difference appears to be a gradual change in markings from west to east in the driest regions. The other species of the genus, for example *Chondrodactylus bibronii* and *Chondrodactylus turneri*, have adhesive pads and climb on rocks and trees.

In captivity the species can live almost 11 years, and around 10 years is realistic with good care. The gecko is calm and fascinating to watch, but it is a nocturnal burrowing animal and not an animal for handling.

Distribution and habitat

The species lives in the arid western part of southern Africa, mostly in regions with less than 300 mm of rainfall a year. In Namibia it is found across large parts of the country south of the Tropic of Capricorn. North of the lower Kuiseb River it keeps mainly to the westernmost part of the country, and the northernmost record is from Orupembe in the Kunene Region. It has also been found in the Omaheke Region in the east.

In South Africa it lives west of 24° east longitude across most of the Northern Cape, in adjoining parts of the Western Cape and in the far west of the Eastern Cape. The southernmost record is at Touwsrivier. In Botswana it is known only from the south-western corner. The type locality is Hantam at Oorlogsrivier near Calvinia in the Northern Cape. The dots on the map are registered records.

> **Native range:** Namibia, South Africa and Botswana.

HABITAT

The gecko lives on large, open sandy plains: dunes and gravel plains in the Namib Desert and sandy parts of the Kalahari. The climate is harsh. In the Namib, between 2 and 85 mm of rain falls a year, in some years none at all, and temperatures swing sharply both over the day and over the year. Along the coast, fog from the cold Benguela Current drifts up to 50 km inland on 100-200 days a year and is an important source of moisture.

By day the gecko stays in a burrow it has dug itself, or in an abandoned hole left by a scorpion or a small rodent. The burrows it digs itself can be up to 90 cm long and go 25 cm deep. After sunset it comes out and moves slowly around, stopping often to keep watch on its surroundings. It eats termites, moths, beetles and their larvae, grasshoppers, spiders and scorpions, and also eats small geckos. It has many enemies itself, including vipers of the genus *Bitis*, owls, bat-eared foxes and meerkats.

In the wild, eggs are laid mainly from September to January. The combination of cool nights, a warm, dry layer of sand and a little moisture deeper down is what you need to replicate in the terrarium.

Care

THE ENCLOSURE

A pair will manage in a terrarium of at least 60 × 40 × 40 cm (length × width × height), and the same size suits a single animal. If you are keeping a male with two females, a little more floor area is an advantage. It is the floor area and the depth of the sand that count, because the gecko is a burrowing ground-dweller that hardly climbs at all.

Use sand mixed with a little clay, coconut fibre or peat as substrate, in a layer thick enough for the animal to dig its own burrows. When the surface is lightly misted now and then, the sand settles, so the burrows hold, and the bottom layer should be kept slightly damp. Sand is the species' natural substrate, and it is not known for swallowing sand, as *Eublepharis macularius* can, but avoid very fine, dusty sand altogether.

Provide at least two low hides per animal, e.g. cork tubes, half coconut shells or crevices of sandstone and slate. Stones should stand directly on the floor of the terrarium and not on top of the sand, so that they cannot slide down onto an animal digging beneath them. Add a humid box with damp vermiculite or sphagnum for shedding. A couple of dry branches and a root break up the monotonous desert landscape. Everything should be removable and washable, and the terrarium should have good ventilation and a tight-fitting lid.

TEMPERATURE

During the day the background temperature should be 27-30 °C, with a cool zone of 24-25 °C and a local hot spot of around 35 °C. At night the temperature should fall to 18-24 °C. Ordinary room temperature is fine as long as there is a clear drop. With a thick layer of sand, a heat mat or heating cable under part of the floor is useful, supplemented by a spot lamp for the hot spot. Everything should be controlled by a thermostat.

Make sure the animal can always retreat into a cool, deep burrow if it gets too hot. Measure with digital thermometers at both ends of the enclosure.

Breeding animals should have a winter rest. Lower the temperature by 6-8 °C for one to two months and shorten the day to 8-10 hours. This imitates the cool season, and the animals start breeding when the warmth returns.

Read more: Heat and temperature

HUMIDITY AND WATER

The species comes from dry regions and must be kept dry. The humidity should be around 35-50 %, preferably a little lower in winter, and ventilation should be good. Avoid soaking the enclosure.

The animal does, however, need access to moisture. Keep the humid box damp but not wet, and do not let the bottom layer of sand dry out completely. Mist lightly with lukewarm water in the evening a couple of times a week, when the light is off, so the animal can lick the droplets. The gecko seldom drinks from a bowl and gets much of its fluid from its insect prey, but a low, heavy water bowl in the cool end does no harm. A constantly wet floor causes mould and skin problems.

Read more: Humidity, misting and ventilation

LIGHTING AND UVB

The species is nocturnal and spends the day underground, so it gets almost no direct sunlight. Keep the light on for 12-14 hours in summer and 8-10 hours in winter, controlled by a timer, and keep it completely dark at night.

UVB is optional, because there are no measurements of how much UV the species receives in the wild. Growing juveniles and egg-laying females can nevertheless be given a weak UVB tube for shade-dwellers (Ferguson zone 1), because they have a large calcium requirement. Mount the tube over part of the terrarium so the animal can choose shade for itself. Without UVB, calcium and vitamin D3 in the food are even more important.

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

FEEDING

The gecko has a good appetite and is not fussy. Crickets, locusts and cockroaches make a good staple diet, and mealworms and wax moth larvae can be given for variety. Insects must not be larger than the animal's head, and uneaten insects should be removed again. Many adults readily take a newborn mouse, but it is not necessary when the insect diet is varied, and it should be no more than a rare exception.

Juveniles under six months are fed every day, animals of six to twelve months 3-4 times a week and adults 2-3 times a week. Dust the food with calcium at every meal for juveniles and egg-laying females and once a week for other adults. Give vitamin D3 1-2 times a week to juveniles and egg-laying females and otherwise every other week. Also put out a small dish of calcium powder for breeding females, so they can take what they need.

Read more: Feeder animals: keeping and breeding

BEHAVIOUR AND HANDLING

The gecko is calm, but not an animal for handling. It can bite hard if grabbed, and it is best enjoyed by watching. If it has to be moved, do so calmly and close to the ground, and never take hold of the tail. New animals should be left in peace for at least a couple of weeks to settle in.

Males are territorial and must never be kept together, and a male may even attack a new female placed in with him. Therefore keep the animals singly, as pairs or as one male with two females, and be ready to separate them. By day the gecko lies in its burrow and only comes out at nightfall. If it is lethargic or refuses to eat for more than a week, that is a warning sign.

Breeding

SEXUAL MATURITY AND SEXING

The male is larger than the female, has a broader head and two distinct bulges under the base of the tail where the hemipenal pouches sit. The female lacks the bulges. Most males also have white spots on the sides at the shoulders.

The animals can be sexually mature after 10-12 months. Females should, however, wait until they are at least 18 months old and in good condition, because the eggs demand a lot of calcium. If a female lays too early, the eggs may be infertile, and calcium deficiency can cause lasting damage.

MATING

In the wild, the males' sperm production peaks from September to December, and females with mature eggs are found in the same period and again in January and February. In the terrarium, breeding animals are given a winter rest of one to two months with a lower temperature, drier air and shorter days, and afterwards they are fed generously for about a month so they are in top condition. When normal conditions are restored, the animals start mating.

The male and female can be kept together all year. Keep an eye on the laying site, because the eggs are fragile and can be crushed when the animals dig.

EGG-LAYING AND CLUTCHES

The female lays 1-2 eggs at a time, most often 2. The first clutch comes 3-5 weeks after mating, and in captivity a female can lay up to four clutches in a season at intervals of 10-30 days. In the northern hemisphere, females in the enclosure typically lay eggs from January to March.

The eggs are almost round, about 18 × 16 mm, with a hard but thin and very fragile shell. Give the female a deep, slightly damp laying site, for example a box with damp sand, and plenty of calcium and food throughout the season. A female can die from an egg she cannot lay, so keep a close eye on the females (see under health).

INCUBATION

Move the eggs very carefully and without turning them. Place them in a plastic box with small ventilation holes, filled about two thirds with perlite or fine grit, and put the box in an incubator. The substrate should be fairly dry, while the air in the box should be very humid, 90-95 %.

At 28-30 °C the eggs hatch after 55-65 days. The eggs also tolerate lower temperatures: down to 22 °C, and then it takes over 90 days. Temperature-dependent sex determination has not been demonstrated in the species.

Read more: Incubating eggs

REARING THE YOUNG

The hatchlings are 6-7 cm long and weigh 1.75-2.5 g at hatching. They have dark brown and cream-coloured bands and look nothing like the adults. Keep them in small boxes that are easy to clean, with paper towel or a thin layer of sand, a small damp hide and slightly higher humidity than for the adults.

Give small insects, for example small crickets dusted with calcium and vitamins, every day. The growth of the young is not documented, so weigh them regularly and follow their development.

Health and common mistakes

Diseases in this particular species are poorly described, so the advice is based on experience from captivity and general gecko care. The typical mistakes are:

- Too little calcium and vitamin D3, especially in juveniles and egg-laying females, which have a large calcium requirement. This causes soft bones and tremors. Dust the food, and put out a dish of calcium.
- Eggs that become retained, or that are crushed when the female digs. Provide a suitable laying site, and seek a vet if a gravid female seems limp or tries to lay without success.
- Stuck shed, because there is no humid hide. Provide a humid box, and gently loosen the remains with lukewarm water.
- Excessive humidity or a wet substrate, which causes mould and skin problems.
- Overfeeding. The gecko will happily eat more than it needs, so keep an eye on the tail, and do not let it become excessively fat.
- Lost tails after fights or rough handling. The tail grows back, but rarely looks like the original.

A healthy animal has clear eyes and a plump tail. Wild-caught animals have more difficulty settling into captivity and more often develop problems. Seek a vet with experience in reptiles if the animal loses weight, does not eat for more than a week or seems lethargic.

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

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.