herpy

GECKOS

Thick-tailed gecko

Underwoodisaurus milii

Underwoodisaurus milii is a small, broad-headed gecko from southern Australia with a thick, carrot-shaped tail and a defence you will not forget: when threatened it rises high on its legs, opens its mouth wide and barks. It lives on the ground, takes ordinary feeder insects and is a good choice for anyone who wants to try a nocturnal terrestrial gecko.

Family: Carphodactylidae Former name: *Phyllurus milii; Gymnodactylus milii; Nephrurus milii*

KEY FACTS

THE ANIMAL

Adult size	**8-10 cm** snout-vent length
Weight	**14-25 g**
Lifespan	**10-15 years**
Active	**At night**
Lifestyle	**Rock-dwelling and terrestrial**
Habitat	**Semi-desert and rocky terrain**
Difficulty	**Beginner**

CARE

Min. enclosure	**60 × 40 × 30 cm** L × W × H for 1 adult
Temperature, day	**22-26 °C**
Basking spot	**28-32 °C**
Temperature, night	**15-20 °C**
Humidity	**30-50%**
UVB	**Optional** Ferguson zone 1
Diet	**Insects**
Kept	**Singly or one male with several females**

BREEDING

Reproduction	**Egg-laying**
Clutch size	**1-2 eggs**
Clutches per year	**5-9**
Incubation	**58-65 days** at 27-29 °C

PROTECTION AND PAPERWORK

CITES	**Appendix III**
EU annex	**Annex C**
IUCN	**Least Concern (LC)**

About the species

Underwoodisaurus milii is a compact gecko with a large head, large lidless eyes and a tail that looks like a little carrot. The tail is the animal's fat store, and a well-fed animal has a thick, plump tail. The legs are slender and the toes long and thin, without the adhesive lamellae that many other geckos have. It therefore cannot climb glass, but runs quickly across rock and soil.

The back can be dark purplish brown, reddish brown or pale sandy with small white, yellow and black spots, and the belly is white. An original tail is often dark with pale bands, while a regrown tail is smoother and more uniformly coloured.

Size varies between populations. Adults reach 12-14 cm including the tail and about 8-10 cm from snout to vent, and animals from the east are usually slightly smaller than animals from the west. In captivity, adults typically weigh 14-25 g. Young males and females look alike, and sex can only be determined reliably after several months.

The species was described by Bory de Saint-Vincent in the 1820s and has since been placed in several genera, including *Phyllurus*, *Gymnodactylus* and *Nephrurus*. The genus name *Underwoodisaurus* dates from 1965, and today the genus is placed in the family Carphodactylidae together with the knob-tailed geckos. The species name honours the French naval officer Pierre

Bernard Milius. The genus's other species, *U. seorsus* from the Pilbara, was described in 2011.

The best-known feature is the defence. If the gecko feels threatened, it rises high on its legs, arches its back, opens its mouth wide, barks and throws itself forward. This is mostly bluff, and the tail is normally only shed when the animal is really seized. Many juveniles are aggressive, but most calm down with age. Like other geckos without eyelids, it licks its eyes clean with its tongue.

Distribution and habitat

The species occurs only in Australia and has a large range across the southern half of the continent. It is most common in Western Australia, where it lives in the south-west, in the Wheatbelt and on the goldfields, across the Nullarbor Plain and north to Shark Bay. It is also found on the Houtman Abrolhos islands and in the Recherche Archipelago off the coast. To the east the range continues through South Australia, including Kangaroo Island, and Victoria to New South Wales and southern Queensland.

The outer limits are not entirely clear. A record from the Northern Territory is uncertain. The frame of the map is therefore an estimate, and the recorded finds give a more precise picture of where the species has been seen.

> **Native range:** Australia.

HABITAT

The gecko lives on the ground in an unusually wide range of habitats: rocky slopes, stony eucalypt forest, open woodland, dry scrub and semi-desert. It tolerates cold better than many other Australian geckos and is active in cool weather, when other species lie still.

By day it hides under rocks, fallen branches and bark, in crevices or in holes in the ground. Several animals often share the same shelter, sometimes for a long time. After sunset they come out and hunt small arthropods and, now and then, smaller geckos. Activity is greatest in the warm months, and in the cool season the animals keep more hidden.

The breeding season follows the seasons and runs roughly from July to February, that is spring and summer in the southern hemisphere.

Care

THE ENCLOSURE

An adult can be kept in a low enclosure of at least 60 × 40 × 30 cm (length × width × height), and bigger is always better. For a male with two females, the enclosure must be correspondingly larger, because each animal needs its own hide. Floor area matters more than height, but the lid must fit tightly, because the gecko can climb a branch and escape.

The substrate should retain moisture and at the same time be suitable for digging. A mixture of roughly half fine, washed sand and half unfertilised soil or coconut fibre in a layer of 3-5 cm works well. Avoid calcium sand. Make a dry, warm zone at one end and a cooler and slightly damper one at the other.

Provide at least two hides, one at each end, and a damp hide with moist moss in the cool end, so that shedding goes easily. Stones, bark and cork tubes provide hiding places and a natural look. Place stones directly on the floor of the enclosure or glue them in place, so that they cannot topple when the animal digs beneath them. Ventilation should be good, but not so strong that the moisture disappears completely. Damp and stagnant is the worst combination.

Read more: Calcium, vitamins and supplements

TEMPERATURE

The species needs a clear temperature difference between the two ends. Keep the cool end at 22-26 °C and the warmest spot at the floor at 28-32 °C. At night the temperature may fall to 15-20 °C. The animal's behaviour is the best guide: if it lies in the warm end all the time, the enclosure is too cool, and if it always hides in the cool end, it is too warm.

Preferably heat from below with a heat mat under one end, controlled by a thermostat. A lamp from above mostly heats the air and dries out the substrate. Measure with a digital thermometer at both ends, and do not let the temperature stay above 32 °C for long.

The animals can be given a 6-12 week cool winter with 18-20 °C by day and 12-15 °C at night. It has not been shown that this is necessary for breeding, but it does no harm to a healthy, well-fed animal.

Read more: Heat and temperature

HUMIDITY AND WATER

The species comes from dry regions and thrives at a humidity of 30-50 %. The enclosure should be neither constantly damp nor completely bone dry. Mist the cool end lightly two or three times a week, so that the gecko can lick droplets from the glass and stones. The substrate in the warm end should be dry, so that mould does not develop.

The damp hide with moss is most important during shedding. If the animal has difficulty shedding, keep the moss a little wetter for a week or so. Provide a shallow, stable water bowl and change the water regularly, even though many animals prefer to drink droplets. A hygrometer shows whether you are hitting the right level.

Read more: Humidity, misting and ventilation

LIGHTING AND UVB

The species is nocturnal and manages without UVB as long as the animal gets calcium with vitamin D3 through the food. A weak UVB tube for shade-dwelling species (Ferguson zone 1) can nevertheless be used, so that the UV index is at most 1-2 at the most brightly lit spot, because it gives a clearer day-night rhythm and an extra safeguard for the bones. If you choose UVB, there must always be shade and hides in the rest of the enclosure, and the tube must be replaced according to the manufacturer's instructions, typically after 6-12 months.

Keep the light on for about 12 hours a day and dark at night. Avoid direct sunlight and strong spotlights, which stress the animal and dry out the enclosure. Coloured night light is unnecessary.

Read more: Lighting and UVB

FEEDING

The gecko lives exclusively on insects and other small arthropods. Offer a varied mix of crickets, locusts, dubia roaches and soldier fly larvae, and now and then mealworms or zophobas. Prey must be no larger than the distance between the animal's eyes, and the feeder insects must have been fed nutritious food themselves during the last day.

Juveniles get two or three small insects every day. Adults get four or five larger insects every third day. The tail shows whether the amount is right: if it is thin, give more, and if it is very broad, cut back.

Dust the insects with calcium at every other feeding, with calcium containing vitamin D3 for juveniles and egg-laying females, and give a multivitamin once a week. Feed with tweezers or in a shallow dish so that the insects cannot hide, and remove live insects that are not eaten.

Read more: Feeder animals: keeping and breeding

BEHAVIOUR AND HANDLING

Many young animals are suspicious and bark, lunge forward and try to bite, but this is mostly bluff, and most calm down. Adults often become trusting and tolerate calm handling. Approach from below with a flat hand rather than grabbing from above, and let the animal walk up by itself. Never grab the tail, because it is easily shed and regrows shorter and more uniformly coloured. Keep handling short, and leave the animal alone while it is shedding.

The species is peaceful and happily shares hides with conspecifics. An adult male can be kept with one or more females, and females can usually be kept together. Two adult males must never be kept together, and juveniles should not be kept with adults or other species. Make sure all animals get food and are not crowded out, and separate them if unrest arises.

Breeding

SEXUAL MATURITY AND SEXING

Males can be recognised by a distinct bulge at the base of the tail, where the hemipenal pouches are. The species grows slowly, and sex can only be determined reliably when the animals are about 9-10 months old. The age at sexual maturity is not documented, so use size and condition as a guide. Do not breed a female until she is fully grown, weighs well over 14 g and has a plump tail. Small and slender females are drained of calcium by egg-laying.

MATING

In the wild the species breeds in the southern spring and summer, but in captivity the season can stretch over most of the year. A 6-12 week cool winter or a varying day length can kick-start breeding. It has not been shown that the cooling is necessary, so if your animals already breed, you can skip it.

Introduce the male to the female, and watch them at the start. The male bites the female on the neck during mating, and there may be small scratches. Both sexes can bark during the mating period. The female can lay several clutches after one mating, but the pair can also stay together throughout the season. Give the female a rest if she begins to lose weight.

EGG-LAYING AND CLUTCHES

The female usually lays two eggs at a time, occasionally only one. The eggs can be seen through the belly skin one to two weeks before laying. She then lays a new clutch about every 30 days during the season. This can amount to up to 9 clutches in a long season, but often fewer, and the first clutch is often infertile.

Place a laying box in the enclosure, for example a plastic tub with a hole in the lid and damp, but not wet, soil or sphagnum. Otherwise the female buries the eggs under a hide. Give her plenty of calcium and vitamin D3 throughout the season, and keep an eye on her weight.

INCUBATION

Carefully move the eggs to a small box with damp vermiculite or perlite without turning them. Roughly equal parts water and substrate by weight is a good starting point. Mark the top with a pencil, place the eggs half-buried in the substrate, and air the box once a week.

At 27-29 °C the eggs hatch after 58-65 days, and at lower temperatures it takes longer. It has not been studied whether temperature determines sex in the species. Eggs that collapse and go mouldy are infertile or dead.

REARING THE YOUNG

The young are 3-4 cm long and weigh about 1 g at hatching. Keep them singly or in small groups of the same size in small plastic boxes with damp kitchen paper, a hide and a water dish. They begin to eat after the first shed. Give two or three small crickets or dubia nymphs of about 6 mm every day, dusted with calcium containing vitamin D3.

The young grow slowly. Keep them apart from adults, weigh them regularly, and separate young males once the sex is certain. Move them to a larger enclosure when they are about half grown.

Health and common mistakes

The species is hardy, and most problems are caused by wrong humidity, wrong heat or too little calcium. The typical faults are:

- Stuck shed on toes and the tail tip when the air is too dry. Provide a humid hide with moss and loosen the remains gently with lukewarm water.
- Too little calcium and vitamin D3, especially in juveniles and egg-laying females. This causes soft jaws, bent limbs and tremors.
- Being overweight or underweight. A thin tail means that the animal is not getting enough or is ill, a very broad tail that it is getting too much.
- Mould and fungus when the substrate is constantly wet and ventilation is poor.
- Lost tails after handling or fighting. The tail grows back, but is shorter and more uniform in colour.
- Sand swallowed with prey. Feed from a dish.

A healthy animal has clear eyes, a plump tail and is curious in the evening. 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.

The full guide with map and updates: herpy.org/en/geckos/underwoodisaurus-milii