

Keeping of Smooth knob-tailed geckos

De Vis, 1886 at BION Terrarium Center

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Nephrurus levis (three-lined knob-tailed gecko, smooth knob-tailed gecko or common knob-tailed gecko), is a native Australian gecko species from Carphodactylidae family. There are multiple sub-species of *N. levis*, these include *Nephrurus levis levis* De Vis, 1886, *Nephrurus levis occidentalis* Storr, 1963 and *Nephrurus levis pilbarensis* Storr, 1963 (Fig. 2-4). Aboriginal name of the gecko sound like “Illchiljera”.

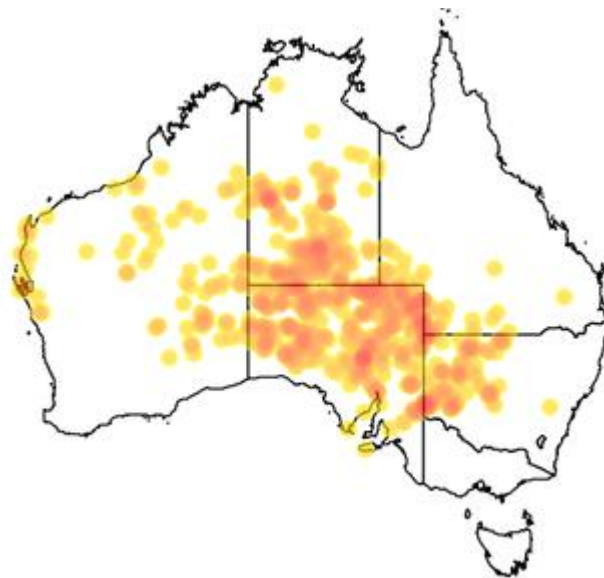


Figure 1. *Nephrurus levis* natural distribution (https://upload.wikimedia.org/wikipedia/commons/thumb/8/88/Nephrurus_levis_distribution_map.png/330px-Nephrurus_levis_distribution_map.png).



Figure 2. *N. l. pilbarensis*: adult captive-bred male. © Lutz Obelgönner (<http://www.reptile-care.de/species/Gekkota/Carphodactylidae/Nephurus-levis.html>).



Figure 3. *N. l. occidentalis*: adult captive-bred female. © Lutz Obelgönner (<http://www.reptile-care.de/species/Gekkota/Carphodactylidae/Nephurus-levis.html>).



Figure 4. *N. l. levis*: adult captive-bred female. © Lutz Obelgönner (<http://www.reptile-care.de/species/Gekkota/Carphodactylidae/Nephurus-levis.html>).

N. levis is a sturdy gecko of medium size, characterized by a large, triangular head and a short, flattened, carrot-shaped tail that ends in a knob. This tail can be autotomized to distract predators, but unlike other lizards, it possesses only one cleavage point at the base, resulting in the loss of the entire tail when sacrificed. Its snout-to-vent length (SVL) is around 8-10 cm (3.1-3.9 in), while the tail is usually about 2 cm (0.79 in) long. Its long, slender limbs have non-retractile claws on digits, with the outermost one being opposable. The gecko features very large eyes with vertical pupils. On the dorsal side, it exhibits a generally pinkish-grey to purplish-brown coloration with a distinctive pattern of darker and lighter spots, bars, or lines, while the underbelly is white. *N. levis* is speckled with pale and dark tubercles on the body and tail, often forming bands. The name "levis" stems from its smooth skin, in contrast to the rough skin of *Nephrurus asper* Günther, 1876 ("asper" meaning rough). Males tend to be smaller than females, and are easy to be sexed thanks to obvious hemipenial bulges at the tail base, which can be seen already at the age of 6 months (Wagner & Lasik, 1996). Both genders can live up to 15 years in captivity.

The smooth knob-tailed geckos have a widespread distribution across the arid interior of Australia, being present in all mainland states and territories except Victoria and the ACT. They are particularly abundant in South Australia, even as far south as Adelaide. Their range extends from as far north as Tennant Creek in the Northern Territory to as far east as Bourke in New South Wales, and as far west as the coastline of Western Australia (Fig. 1). These geckos inhabit various habitats, including arid, semiarid regions, open woodlands, arid scrubs, spinifex-covered deserts, sand-plains, and dune-fields (<https://www.inaturalist.org/taxa/34191-Nephrurus-levis>).



Figure 5. One of our *N. levis*.

N. levis is a nocturnal and ground-dwelling species that seeks shelter during the day in self-made burrows or those of other animals, which it has the ability to seal. At night, especially after rainfall, it actively hunts for prey in open areas between shrubs or spinifex. This species has a unique advantage over other geckos in the region as it can endure lower temperatures and for longer periods. This capability gives it an edge during nighttime hunting when it remains less affected by the cold temperatures, allowing it to be faster than its "cold-blooded" prey. However, on very cold nights, *N. levis* resort to burrowing.

When feeling attacked or scared the gecko may make a whistle or squeak, mainly to scare away predators. It also rises on its paws. *N. levis* is one of the few gecko species that does not eat its own molt. It is important to monitor its correct discharge, especially in the area of fingertips and eyes. The presence of shedding residue can cause loss of fingertips or eye problems. Normal shedding occurs every 3-4 weeks. The first molt usually occurs immediately after hatching.



Figure 6. Differences between male and female in the age of about 1 year.

N. levis are listed as 'Least Concern' by the IUCN's Species Red List due to its large range of distribution and lack of any major threats, at the current time. Localized threats for this species are grazing of livestock and land clearing, however unless there is large-scale decline in their abundance there is no need for a higher threat category (<https://www.iucnredlist.org/species/178578/83326068>).



Figure 7. Lab with volumes for *N. levis* breeding.

Keeping and breeding requirements

Keeping. We keep adult geckos in horizontal terrariums. Required space is 50x50 cm (19.68x19.68 in) per individual. We use 2-4 cm (0.79-1.57 in) layer of coarse sand as a substrate or paper instead of substrate, but in this case we place a moist chamber filled with 1:1 mix of coconut substrate and sand, which is used also as an egg-laying chamber. Decoration includes several ceramic or wooden shelters and a water dish.

Lighting. When it comes to lighting there are two options. The first one includes simple lighting lamps or UV lamp (5.0) that are used for day lighting (from 7:00 am to 9:00 pm (14-hour daylight during breeding season) and 10-12-hour daylight hours (from 7:00 to 19:00) the rest of the time until wintering. No basking lighting is used, but on one corner of the terrarium (usually under one of the shelters) we have a heat cable (30W), that provides +30 - +32 °C (86.0 - 89.6 F). In the second variant we use no lamps at all, except general lighting of the laboratory, leaving only a heating cable as a basking

option. The cable is equipped with thermo-regulator as the geckos don't like over-heating.



Figure 8. *N. levis* breeding box.

Temperature. Daytime temperature is +26 - +28 °C (78.8 - 82.4 F), nighttime - +22 - +24 °C (71.6 - 75.2 F). Temperature at the wintering time (2-4 weeks) is +18 °C (64.4 F). After slight hibernation we smoothly increase temperature to +26 - +28 °C (78.8 - 82.4 F) and the daylighting period to 14 hours.

Humidity. Humidity level is 50-60% with 2-3 spraying sessions per week.

Water. Water dish is mandatory with regular change of the water.

Diet. Their diet should be as varied as possible. The set of food objects includes house cricket (*Acheta domesticus* Linnaeus, 1758), banana cricket (*Gryllus locorojo* Weissman & Gray, 2012), two-spotted cricket (*Gryllus bimaculatus* De Geer, 1773), wax moth and mealworms (but no more than 1 time per week as due to the high fat content, the gecko's liver can be harmed). Some animals are used to be fed with tweezers, which can be useful if you want to track the feeding process. All insects must be gut-loaded before being offered to the geckos. Feeding sessions: adults (every other day we give 3-4 food objects, depending on the condition of the animal); babies (every day, 3 food objects). Uneaten food must be removed from the terrarium on the next day.

References

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