

Keeping of *Nephrurus cinctus* (Storr, 1963) at BION Terrarium Center

Ivan Neizhko¹, Oleksii Marushchak², Yuliia Troshchinkova³

¹ – Laboratory curator, BION Terrarium Center, Kyiv, Ukraine

² – Head, Research and Development Department, BION Terrarium Center, Kyiv, Ukraine

³ – Senior Keeper, Laboratory of Desert Reptiles, BION Terrarium Center, Kyiv, Ukraine

Nephrurus cinctus commonly known as northern banded knob-tailed gecko, is a native Australian gecko species from Carphodactylidae family. Its specific epithet comes from a Latin verb “cingere” or “cinctum” which means “wearing a belt”. This species was formerly known as a subspecies of *Nephrurus wheeleri* Loveridge, 1932 and obtained a true status of a distinct species in 2020 (Kealley et al., 2020). This species typically thrives in habitats characterized by stony soils surrounding granite outcrops and areas with breakaway terrain. This gecko is crepuscular as its usual activity starts at dusk and occurs mainly during the first part of the night. In daylight hours, it seeks shelter beneath tin, flat rocks, scattered across the soil. Sometimes it can make its own burrows or occupy abandoned ones of other animals. *N. cinctus* is endemic of Australia, being found in relatively limited area in the western part of the country (Fig. 1).

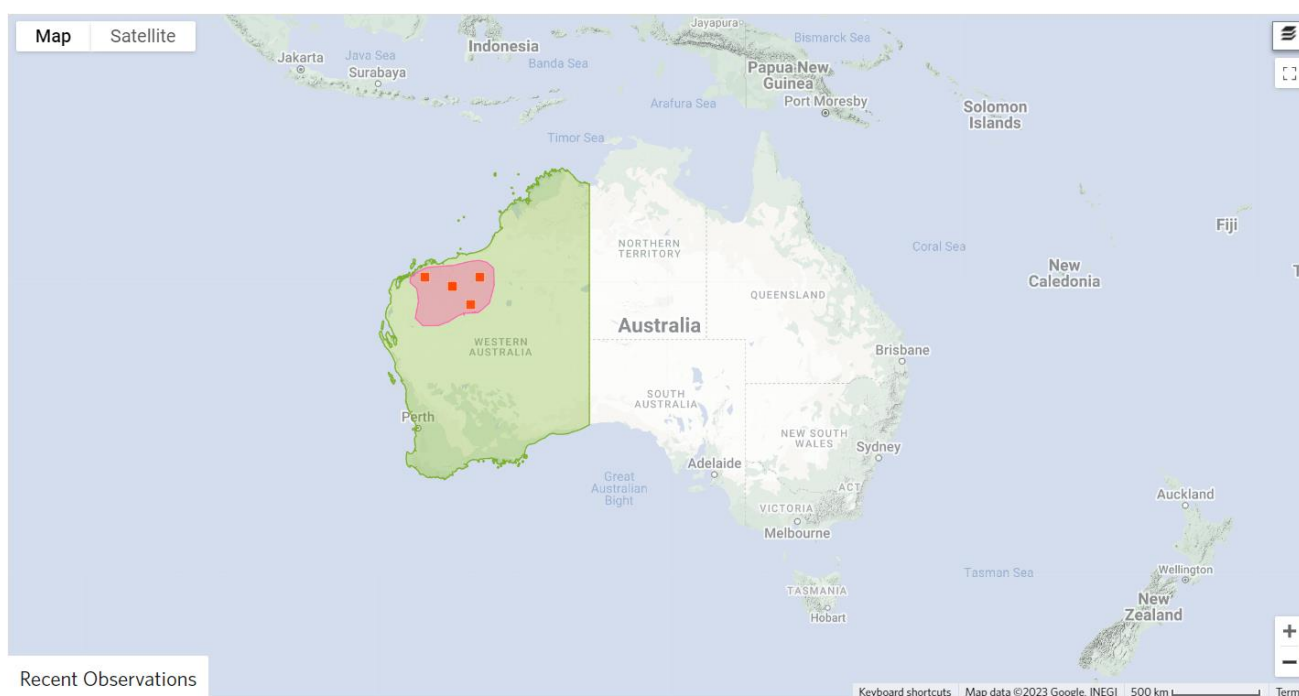


Figure 1. *Nephrurus cinctus* natural distribution (<https://uk.inaturalist.org/taxa/1119911-Nephrurus-cinctus>).



Figure 2. *N. cinctus* young pair.

N. cinctus can be distinguished from other *Nephurus* species through a distinctive set of characteristics: enlarged tubercles dispersed across its body, that are encircled by enlarged scales. Its tail is notably short, broad, and flattened, featuring deep ridges and tapering to culminate in a small knob. Additionally, it displays four dark bands across the nape, dorsum, and tail, with a base coloration of a subdued reddish-brown hue (Fig. 2, 3). However different coloration morphs can occur, up to those completely missing the mentioned bands. Additionally, this species is characterized by a smaller body size and fewer, less pronounced tubercles, particularly noticeable in the gular region. It also exhibits dark markings on the snout and above the mouth. Males can be easily identified due to presence of noticeable hemipenal bulges under the tail base, which become usually seen at the age of about 6 months – the main rule for all *Nephurus* species (Cogger, 1992; Wagner, Lazik, 1996; Swan, 2008; Oliver, Bauer, 2011).

The total length of the body including the tail is 10-12 cm (3.94-3.72 in) with a weight of 20-24 g for females and 7.5-10 cm (2.95-3.94) with a weight of 14-16 g for

males. Life expectancy is up to 15 years. Males are slightly smaller than females of the same age.

They have the unusual habit of licking their eyes after eating, apparently to keep their eyes clean. When trying to scare away a predator, the gecko rises on all 4 legs, lunges towards the source of the threat and growls, squeaks or whistles. *N. cinctus* is one of the few species of geckos that do not eat their molts. It is important to ensure that it is positioned correctly, especially in the area of the fingertips and eyes. The presence of shedding residue can cause loss of fingertips or eye problems. Normal shedding occurs approximately every 25 days.

This gecko is listed in IUCN Red List under the status “Least Concern”. Such harmful impacts as annual & perennial non-timber crops, livestock farming & ranching and energy production & mining tend to be the ones threatening the wild populations of these geckos (<https://www.iucnredlist.org/species/178261/83324444>). Additionally, due to ban of export of Australian species, the only source of healthy and adapted animals is legal herpetoculture. Therefore, sharing information on proper keeping and workable breeding techniques is of particular importance for saving this species *ex situ*.



Figure 3. One of our *N. cinctus* inside the decorated terrarium.

Keeping and breeding requirements

Keeping. We keep adult geckos in horizontal terrariums (Fig. 4). Required space is 40x40 cm (15.74x15.74 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 (Fig. 5) and a water dish with drinkable, regularly changeable water.



Figure 4. Lab with volumes for *N. cinctus*, *N. levis*, *N. amya*e and *U. milii* breeding.

One should pay attention to the type of sand. The problem is that some sand types are formed by particles with sharp edges that can cause traumas on geckos' limbs. Therefore, it is recommended to use special sands for reptiles (calcium sand, reptisand etc.).



Figure 5. *N. cinctus* resting on the ceramic sherd.

Lighting. Lighting period is 12-14 hours during breeding season (from 7:00 am to 9:00 pm) 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). We do not use UVB lighting with no harmful effects on breeding or well-being of the animals, however using UVB 5.0 or 10.0 for several hours a day cause no harm and may be beneficial for the geckos. The cable is equipped with thermo-regulator as the geckos don't like over-heating.

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 about +18 - +20 °C (64.4-68.0 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 30-50% 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

1. Wagner E. & Lazik C. 1996. Husbandry and reproduction of Australian geckos of the genus *Nephurus*. *Reptiles* May: 56-67.
2. Harold G. Cogger. *Reptiles and amphibians of Australia* (fifth edition). – Reed Books and Cornell University Press. – New York. – 1992. – 775p. – with illustrations.
3. Swan M. *Keeping and breeding Australian lizards*. 1st ed. ISBN 978 0 9803667 1 6 (pbk.). – Mike Swan Herp. Books. – Lilydale, Viktoria, Australia. – 2008. – 615 p. with illustrations.
4. Oliver P. M., Bauer A. M. 2011. Systematics and evolution of the Australian knob-tail geckos (*Nephurus*, Carphodactylidae, Gekkota): Plesiomorphic grades and biome shifts through the Miocene. *Molecular Phylogenetics and Evolution*. 59 (3): 664–674.
5. McGill B. 2015. Captive husbandry and breeding of the banded knob-tailed gecko (*Nephurus wheeleri cinctus*) at Perth Zoo. *Herpetological Bulletin*, 134: 6-9.

6. Kealley L., Doughty P., Edwards D., Brennan I. G. 2020. Taxonomic assessment of two pygopodoid gecko subspecies from Western Australia. *Israel J Ecol Evol*, 66 (3-4): 126-141.