

Keeping of Giant horned lizard (*Phrynosoma asio* Cope, 1864) at BION Terrarium Center

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Phrynosoma asio Cope, 1864 is a Phrynosomatidae species which is endemic to the Pacific coast of southern Mexico. It is the largest horned lizard (Fig. 1) and is also the slenderest, having a typical lizard-like appearance and inhabiting desert areas within their native range (Fig. 2). The spines on its back and sides are made from modified scales, whereas the horns on its head are true horns (i.e., they have a bony core) (https://en.wikipedia.org/wiki/Giant_horned_lizard).



Figure 1. *P. asio* inside their vivarium.

P. asio is distributed in Mexico occupying such states as Oaxaca, Guerrero, Michoacán, Colima, Chiapas, Morelos, Jalisco; Guatemala (gbif.org/species/5222411; Schmidt, Shannon, 1947; Castro-Franco, Guadalupe Bustos Zagal, 2004; Aguilar-López et al., 2021). They thrive in local dry tropical deciduous forest, blackthorns, semi-deserts and other arid and semi-arid types of habitats. Sometimes they can be found in secondary

forests and agricultural areas. These lizards are active during the day after morning basking, when they can be seen on flat stones, using their disguise to avoid attracting predators. They are distributed on the elevations up to 750 m above sea level (a.s.l.).



Figure 2. *P. asio* native range (<https://www.iucnredlist.org/species/198393/2524363>).

These lizards are very interesting part of any reptile collection thanks to their unusual physical appearance. *P. asio* is the largest species of horned lizards, reaching a snout-to-vent length (SVL) of 11.5 cm (4.52 in) and a total length of up to 20 cm (7.87 in). Their most distinctive features are: two rows of abdominal scales; three rows of large conical scales, widely spaced on the back; keeled scales arranged in serrated longitudinal rows; large keeled ventral scales numbering 30-35 across the widest point, constituting the "armor". The coloration is sandy, with spikes, stripes and masking patterns. They have a broad, flattened body shape that is well suited for camouflage and their habits. Horned lizards are noticeably spiky with a crown of «horns» adorning the back of their heads and various spines on their bodies. The spines on the back and sides are made of modified scales, while the horns on the head are true horns (that is, they have a bony core) (Fig. 3). Males have a row of yellowish femoral pores and hemipenial bulges at the base of the tail, while females don't have these features.

The coloration of the body matches the substrate, breaking the silhouette of the shadow due to spines and scale stripes. When approached, it remains motionless. Their "armor" also poses a serious danger if the animal is in the mouth of a predator. Shedding takes 2-3 days. Their average lifespan is about 10 years and much longer in captivity (Baur, 1986; Pareja et al., 2017).

P. asio is listed in IUCN Red List as a species with LC mark, indicating that it is of Least Concern (<https://www.iucnredlist.org/species/198393/2524363>). In November 2022

this species was proposed to be included in Annex II of CITES list (<https://cites.org/sites/default/files/documents/E-CoP19-Prop-18.pdf>). According to recent research *P. asio* is a very common species, and its population appears stable at present.

We keep *P. asio* in BION Terrarium Center since 2011 and start to breed them in 2013. We strongly believe that this unusual and still rare species should take soon the important place in herpetoculture (expecially among enthusiasts passionate about for desert lizards) together with *Uromastyx*, *Xenagama*, *Petrosaurus*, *Ctenosaura*, *Crotaphytus*, *Pogona*, etc.

We imported the first breeding group from Mexico in 2011; the second group was imported from Switzerland in 2012. For October 2014, we have 6 adult males, 12 adult females and 12 captive bred babies.

Keeping and breeding requirements

Terrarium. We keep adults in groups of 5-6 individuals (both sexes, sometimes even 2 or 3 males in the group (2.4; 1.5; 3.3) or individually.



Figure 3. Our outdoor facility for *P. asio*.

They are mostly calm in terrarium conditions and get along well in a group, tolerating even individuals of same sex. They interact with each other by nodding their heads, waving their paws and tail. They shed by rubbing their body against decorative elements, so the latter should be presented inside the terrarium in quantities. We keep adult lizards in horizontal type terrariums 160x60x50 cm (63.0x23.62x19.68 in). Thick layer of fine sand

(depth from 3 to 12 cm (1.81-4.72 in) as they like to burrow themselves) mixed with small pieces of wood or without them is a good choice when it comes to choosing the substrate.



Figure 4. *P. asio* moving on the decoration elements inside the enclosure.



Figure 5. *P. asio* waiting for a feeding session with ants.

The bottom's lay of the substrate should be kept a little bit humid. Interior decoration includes shelters (i.e. ceramic sherds), stones, artificial plants, driftwood, twigs, pieces of bark, elements of rocks and flat stones, especially in basking places. An area of sand fenced with stones (if the rest of the substrate is loamy) serves as a place for oviposition. If possible, during summer time, we keep them in outdoor enclosures, constructed of wooden plates, with the same parameters and decoration (Fig. 3-5). Outdoor keeping allows the animals being exposed to natural sunlight and benefit from it.

Lighting. Lighting period is 13-14 hours (from 7:00 a.m. to 9:00 p.m.) during breeding period and 6 hours at wintertime (during hibernation, 2 months in winter). We use 2 types of lamps: full spectrum ZooMed lamp “ReptiSun UVB 10.0” and a 100W incandescent lamp for heating and basking spot. UVB is essential for these animals as they spend a lot of time basking.

Temperature. Daytime temperatures are +28 - +30 °C (82.4 - 86.0 F), at basking place – up to +45 °C (113.0 F). Nighttime temperature is +16 - +22 °C (60.8 - 71.6 F).

Humidity. Required humidity level is 50-60%. We spray intensively terrarium for adults every other day before feeding at 3:00 p.m. Two water dishes are placed inside the terrarium with regularly changed fresh drinkable water (García, Martínez García, 2013).

Die. Diet for adults includes crickets, Dubia cockroaches, Turkestan cockroaches and especially ants. Among all *Phrynosoma* species *P. asio* consumes the smallest amount of ants, which form only about 30% of their diet. For some *Phrynosoma* species this figure is obligatory 80-90% (Meyers al., 2006; García, 2014). We give living ants (wild caught) in summer regularly. In other time of the year, we feed them with other available insects, dusting them with Repashy “Formic-Cal Plus” vitamin supplement. We feed the lizards every other day (5-7 insects per head). We do not offer our animal any mealworms or zophobas (only in rare cases, once a month as a treatment we can offer freshly molt mealworm (1 per head)). It is better to feed animals from 3:00 to 4:00 p.m. after lizards are well heated. We spray the terrarium before feeding.

Each feeding we sprinkle insects with calcium and vitamins. Also, we use Repashy Superfood “Formic-Cal Plus” 2 times per week when feeding the lizards with other insects than ants.

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