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SNAKES

Western Hognose Snake

Heterodon nasicus

Heterodon nasicus is a small, stocky colubrid from the North American prairies with an upturned snout that it uses to dig in loose soil. When threatened, it puffs itself up, hisses and finally plays dead. It is active by day, calm and easy to keep, which makes it a good first choice among snakes. It is rear-fanged with a mild venom; bites are rare but can cause marked swelling.

Family: Colubridae Former name: *Heterodon gloydi*

KEY FACTS

THE ANIMAL

Adult size	**35-90 cm** total length incl. tail
Weight	**80-400 g**
Lifespan	**15-20 years**
Active	**By day**
Lifestyle	**Terrestrial and burrowing**
Habitat	**Semi-desert and savanna**
Difficulty	**Beginner**

CARE

Min. enclosure	**90 × 45 × 40 cm** L × W × H for 1 adult
Temperature, day	**23-27 °C**
Basking spot	**31-35 °C**
Temperature, night	**16-22 °C**
Humidity	**30-60%**
Water	**Water dish**
UVB	**Recommended** Ferguson zone 2
Winter rest	**5-15 °C** 4-12 weeks
Diet	**Vertebrates**
Kept	**Singly**

BREEDING

Reproduction	**Egg-laying**
Sexually mature	**24-36 months**
Clutch size	**2-23 eggs**
Clutches per year	**1-2**
Incubation	**51-64 days** at 26-28 °C

PROTECTION AND PAPERWORK

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

About the species

Heterodon nasicus is a stocky colubrid with a broad, thick body, keeled scales and a sharp, upturned rostral scale used for digging in loose soil. The ground colour is greyish brown, pale olive green or sandy, with about 40 dark blotches along the back and distinct dark bands across the head and behind the eyes. The belly is white, yellow or orange, and black under the tail. The female is larger and heavier than the male and has a shorter tail.

The species is known for its defensive display. When threatened, it spreads its neck like a cobra, hisses loudly and strikes repeatedly with its mouth closed. If that does not work, it rolls onto its back with its mouth open and tongue hanging out and plays dead. If turned back over, it rolls onto its back again. It will often also release a foul-smelling secretion from the anal glands. It is all bluff.

H. nasicus is a rear-fanged snake. It has enlarged teeth at the back of the upper jaw and a mild venom that helps it subdue toads and other prey. The venom is not life-threatening to humans, but a bite in which the snake holds on and chews can cause pain and marked swelling. Bites are rare; see the section on behaviour.

Adult males reach 35-60 cm in length, and females can reach 90 cm. Hatchlings are 14-18 cm long. Many colour varieties and patterns have been bred in captivity, but this guide deals with the species itself. The species name *nasicus* comes from the Latin *nasus*, nose, and refers to the upturned snout.

Distribution and habitat

Heterodon nasicus lives in central North America, from the southern prairie provinces of Canada (Alberta, Saskatchewan and Manitoba) through the Great Plains of the United States. It is found from Montana, North Dakota and South Dakota in the north to Texas in the south, and from Illinois, Iowa and western Minnesota in the east to eastern Wyoming, eastern Colorado and New Mexico in the west. The form *gloydi* from Texas and Oklahoma, which was formerly regarded as a separate subspecies or species, is now included in *H. nasicus*.

In Mexico lives a close relative, *Heterodon kennerlyi*, which was formerly included in the species. Reports of occurrence in Arkansas are errors.

> **Native range:** United States and Canada.

HABITAT

H. nasicus lives on prairie plains, in short-grass prairie, in dry, stony areas, along river floodplains and on sandy and clay soils. It prefers dry, sandy, loose soil where it can dig for food and hide. It is found from about 90 to 2,400 m above sea level.

It is active by day, uses abandoned rodent burrows and grass tussocks as shelter, and catches toads and other amphibians, lizards, rodents, birds' eggs, nestlings and reptile eggs. Juveniles eat mainly lizards, amphibians and reptile eggs. The climate is continental with hot summers and cold winters, and the snake hibernates from about September to March. The southern part of the range has milder winters, but the animals hibernate there too.

Care

THE ENCLOSURE

An adult needs an enclosure of at least 90 × 45 × 40 cm (length × width × height). This is the minimum for an adult female; an adult male can manage with 75 × 35 × 35 cm, but larger is better for both, and floor area matters more than height. The lid must close tightly and be lockable, because the snake pushes and digs, and small juveniles in particular escape through tiny gaps. Never use tape. Juveniles are kept in a small enclosure or a plastic box of 30-40 cm until they weigh 15-20 g, and are then moved up. Juveniles in oversized boxes are more likely to go off their food.

The species digs and wants something to investigate. Give it a deep, loose substrate that it can burrow completely into, one or two hides of snug, round-edged shape, a shallow water bowl, and preferably cork, rocks and artificial plants. It prefers a furnished half with diggable substrate to a bare set-up with paper. Hides and pots must not have openings or holes in which the snake can get stuck. Live plants are often dug up, so use them with care.

Suitable substrates are coarse aspen, a mixture of coconut fibre and coarse sand, or a bioactive substrate. Do not use fine sand alone, and avoid cedar and pine. Juveniles can with advantage be kept on kitchen roll or newspaper for the first few weeks so that they do not swallow substrate.

Read more: Terrarium construction and bioactive substrate

TEMPERATURE

Provide a clear gradient. The warm end should have a basking spot of 31-35 °C, measured on the surface, while the air temperature is otherwise 23-27 °C. At night the heating is switched off, and the temperature may fall to room temperature, but not below 16 °C.

Use a heat lamp from above over a flat, pale rock, or a heat mat under no more than a third of the floor. Both must be controlled by a thermostat. Measure the surface temperature at the basking spot and the air temperature at the cool end with digital thermometers. Do not use pharmacy heating pads, which can get too hot, and no heat rocks. A gradient helps the snake digest its food, and juveniles need it especially.

Read more: Heat and temperature

HUMIDITY AND WATER

The humidity should be around 30-60 %. The species comes from dry regions and does not need humid air, but air that is too dry and a dusty substrate lead to grime in the nostrils and stuck sloughs. Therefore provide a humid hide, a box filled with lightly moist coconut fibre, sphagnum or sand that the snake can crawl into, especially when it is about to shed. If the air becomes very dry, the substrate at the cool end can be lightly misted.

Place a wide, shallow bowl of fresh water at the cool end. Tall bowls can make the snake avoid them and dry out. Change the water at least once a week and immediately if it is dirty. Shedding typically takes place every 3-5 months.

Read more: Humidity, misting and ventilation

LIGHTING AND UVB

The species is active by day and benefits from bright daylight. The light can be on for 12 hours a day all year round, or follow the seasons with 14-16 hours in spring and summer and 8-10 hours in autumn and winter.

UVB is not strictly necessary, but is recommended. The species belongs to Ferguson zone 2, and the aim is a UV index of 2-3 at the basking spot. A T5 HO tube of 5-6 % UVB, covering half to two thirds of the length of the enclosure, should sit 25-35 cm above the snake's back at the basking spot when mounted above mesh, and 35-45 cm without mesh. Check with a UV meter if possible, and replace the tube every 12 months. There must be shade and hiding places in the rest of the enclosure, and it must be dark at night.

Read more: Lighting and UVB

FEEDING

In the wild, *H. nasicus* eats mainly toads and other amphibians, but also lizards, rodents, reptile eggs, birds' eggs and occasionally other snakes. In captivity, the staple food is frozen, thawed mice. The prey must not be thicker than the snake's thickest point, and two small prey items are better than one large one, because oversized meals easily lead to regurgitation. Feed with tongs, because the snake strikes at prey from all sides.

Juveniles will often take a thawed pinkie straight away. If a juvenile refuses, it helps to dip the mouse in water, let the snake drink from it, or scent it with a little tuna or salmon water. Avoid using toads as a scent, because they can spread parasites. Mice are a fatty diet, so vary it with quail eggs, pieces of hard-boiled hen's egg and frogs' legs. The first meal is offered about a week after hatching.

Juveniles and young animals are fed every 5-7 days with pinkies, later fuzzies and hoppers. Adult males do well on one or two small mice every 10-14 days, and females are fed every 10-14 days, more often only in the breeding season and while carrying eggs. The species easily becomes overweight in captivity. Do not handle the snake for the first 1-2 days after a meal. A balanced vitamin and mineral supplement can be lightly dusted on the prey in the breeding season.

BEHAVIOUR AND HANDLING

Heterodon nasicus is calm and easy to handle. The threats are bluff, and the snake almost never bites in defence. Let it settle after a display, and do not disturb it while it is playing dead.

Bites almost only happen when the snake mistakes a hand for food, typically at feeding, or when the hands smell of mice or amphibians. Therefore always feed with tongs, and wash your hands after touching feeder animals before handling the snake. The snake has enlarged teeth at the back of the upper jaw and glands that release a mild venom. A short bite usually causes only small lacerations. If the snake holds on and chews, more venom enters the wound, and it can cause pain, marked swelling, bruising and blisters, which can take weeks or months to disappear. Effects on the rest of the body are very rare. Release the snake calmly instead of tearing it off; a jerk can damage the jaws and often makes it bite harder. Clean the wound with soap and water, and see a doctor in the case of heavy swelling.

Keep the animals singly, except during mating. Females can eat males, so matings are supervised.

Read more: Feeder animals: keeping and breeding

Breeding

SEXUAL MATURITY AND SEXING

The female is larger and heavier and has a shorter tail than the male. Juveniles can be sexed by probing, which only an experienced keeper or a vet should carry out. Males can be sexually mature at around 30 g and 33 cm. Females become sexually mature at 37-38 cm from snout to vent and breed for the first time in their third year. For breeding, a female should be at least two years old, preferably three, and weigh 150-200 g.

MATING

A cooler period triggers mating behaviour. Juveniles under one year should not be given a winter rest. Do not feed for about three weeks while the heating is still on, so that the gut is empty. Then switch off the heating for about a week at room temperature, and then keep 5-15 °C in darkness for about two months for females and one month for males; up to three months is also fine. The snake must not dry out: provide access to water, and keep the substrate lightly moist. Weigh the animal every week or every other week, and end the rest if it loses more than 10 % of its weight.

Take the animals out, keep them at room temperature for a few days, and start warming up slowly. Feed once or twice, and start the pairing about two weeks after the hibernation. The male should not have food in his stomach at pairing, because he easily regurgitates. Put the male in with the female. A receptive female waves her tail, and the male follows her. Mating typically lasts 1-6 hours. Watch them during the first hour, because the female may eat the male, and make sure she is well fed.

Read more: Brumation and the seasons

EGG-LAYING AND CLUTCHES

The eggs are laid about a month after ovulation. The female sheds 7-11 days before laying and in captivity typically lays 4-23 eggs, occasionally up to about 30. Wild females are smaller and lay 2-16 eggs, 8 on average. In the wild, females do not necessarily breed every year, whereas females in captivity can lay two clutches in a year.

Provide a laying box with moist soil, coconut fibre or sphagnum, for example a plastic box with a hole in the lid, as soon as the female is clearly thick towards the rear. Feed her every 4-6 days while she is carrying eggs and after laying, so that she can rebuild her strength.

INCUBATION

Move the eggs carefully to a box with moist coconut fibre and a little sand, with two small air holes. The eggs may lie partly buried. Incubate at 26-28 °C. The eggs hatch after 51-64 days, and the hatchlings cut their way out.

Eggs that go mouldy or collapse are usually infertile. Remove them only when they are clearly dead.

REARING THE YOUNG

The hatchlings are 14-18 cm and 4-7 g at hatching and shed during the first few days. Keep each hatchling singly in a small box with kitchen roll, a hide, a shallow water bowl and a warm end. Offer the first meal after about a week.

Give thawed pinkies with tongs every 5-7 days. If a hatchling refuses, try dipping the mouse in water or scenting it with a little tuna or salmon water. When the hatchlings weigh 15-20 g, they can be moved to a larger enclosure. Females grow fast, and growth that is too fast produces large, fat animals, so do not feed them too often.

Health and common mistakes

The species is hardy, but several problems recur:

- Dry nose with dust and grime in the nostrils and around the mouth. This is caused by a dry, dusty substrate or too low humidity. Provide a humid hide, switch to a less dusty substrate and mist lightly.
- Stuck sloughs when it is too dry. Provide a humid hide.
- Roundworms and other intestinal worms: bloody faeces, varying appetite. Have a faecal sample examined by the vet.
- Bacterial infections from dirty water, dust and poor air circulation: lethargy, weight loss, lack of growth and appetite. They are hard to diagnose, so contact a vet early.
- Mites. Do not use products containing permethrin. Diatomaceous earth in and around the set-up and thorough cleaning are a safer choice; talk to a vet about treatment.
- Obesity from feeding too often, especially in females.
- Getting stuck in hides or pots with narrow openings.

See a vet experienced with reptiles if the snake loses weight, refuses food for several weeks, has its mouth open or has altered faeces.

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.