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SNAKES

Eastern hognose snake

Heterodon platirhinos

Heterodon platirhinos is a stout colubrid from eastern North America with an upturned snout that it uses to dig in sand. When threatened it spreads its neck, hisses and finally plays dead. In the wild it feeds almost exclusively on toads, which makes it harder to keep than most other snakes: many animals will not take mice without persuasion.

Family: Colubridae English name: Eastern Hognose Snake Former name: *Heterodon platyrhinos; Heterodon browni*

KEY FACTS

THE ANIMAL

Adult size	**50-115 cm** total length incl. tail
Lifespan	**10-15 years**
Active	**By day**
Lifestyle	**Terrestrial and burrowing**
Habitat	**Temperate woodland and meadow**
Difficulty	**Intermediate**

CARE

Min. enclosure	**90 × 45 × 40 cm** L × W × H for 1 adult
Temperature, day	**24-29 °C**
Basking spot	**30-31 °C**
Temperature, night	**16-22 °C**
Humidity	**50-60%**
Water	**Water dish**
UVB	**Recommended** Ferguson zone 2
Winter rest	**12-15 °C** 8 weeks
Diet	**Vertebrates**
Kept	**Singly**

BREEDING

Reproduction	**Egg-laying**
Sexually mature	**18-24 months**
Clutch size	**10-30 eggs**
Clutches per year	**1**
Incubation	**45-90 days** at 28-30 °C

PROTECTION AND PAPERWORK

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

About the species

Heterodon platirhinos is a thick-bodied colubrid with a broad head and a slightly upturned, pointed snout that it uses to dig in loose soil. The colour varies greatly from region to region: from greyish brown, yellow and orange to red, greenish, grey and solid black. Many have dark blotches, checks or bands on a paler ground colour, while others are almost patternless. The belly is grey, yellow or cream, and the underside of the tail is paler than the belly. Young snakes are pale with dark blotches in alternating rows.

Adults are typically 50-75 cm long, and the largest females reach up to 115 cm. The female is larger and heavier than the male, and the male has the longer tail. Hatchlings are 16-21 cm long.

The species is famous for its defensive display. When threatened it raises its head, flattens its neck and the front of its body like a cobra, hisses loudly and strikes with a closed mouth instead of biting. If that fails, it rolls onto its back with its mouth open and its tongue hanging out, releases a foul-smelling secretion and lies perfectly still. If it is turned onto its belly, it rolls over again. It is all bluff, and it works even in newly hatched snakes.

H. platirhinos is a rear-fanged snake. The enlarged teeth at the back of the upper jaw and a mild venom help it to subdue toads and other amphibians. The venom is adapted to amphibians and is not dangerous to humans, although in allergic people a bite can cause local swelling. The species is closely related to *Heterodon nasicus*, but is much harder to keep because it feeds almost exclusively on amphibians.

The name *platirhinos* comes from the Greek *platys*, broad, and *rhinos*, snout, and refers to the broad, flat rostral scale. The genus name *Heterodon* means "different tooth". The species was described in 1801, and no subspecies are recognised.

Distribution and habitat

Heterodon platirhinos lives in the eastern half of North America: from southern Ontario in Canada and southern New Hampshire and Massachusetts along the east coast to southern Florida. To the west the range reaches Minnesota, Nebraska, Kansas, Oklahoma, Texas and New Mexico. Towards the northern limit the populations become thinner.

In the north-eastern part of the range the species has declined because of habitat loss, road traffic and persecution; it is often mistaken for a venomous snake and killed for that reason. It lives at low density and is hard to spot.

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

HABITAT

H. platirhinos lives on dry, well-drained, sandy soil: in open pine forest, on old fields, at woodland edges and on barrier beaches and dunes where toads are plentiful. It occurs from sea level to about 830 m above sea level, and on average at around 330 m.

The species is diurnal and most active around midday. It burrows at night by pushing its snout into the soil and twisting the front of its body from side to side, and can reach a depth of 25 cm or more. It is active from April to September-October, and when the temperature falls to about 19 °C it hibernates alone in dug tunnels or abandoned rodent burrows. Active animals have a body temperature of 23-34 °C. An individual has a home range of about 40-50 hectares.

Its food is mainly toads of the genus *Anaxyrus*; it also takes frogs, salamanders, reptiles and their eggs and, rarely, small mammals and birds. It digs toads out of the soil and holds on to them with its enlarged rear teeth, even when they inflate themselves.

Care

THE ENCLOSURE

An adult needs an enclosure of at least 90 × 45 × 40 cm (length × width × height). Floor area matters more than height, because the species is active and digs. Hatchlings can live in 40 × 20 × 25 cm and young snakes up to one year old in 50 × 30 × 35 cm; a larger enclosure is not a problem for a young snake, as long as there are plenty of hides.

The substrate should be at least 8 cm deep, and 10-15 cm for large females, so that the snake can bury itself completely. A mixture of about 70% untreated topsoil and 30% play sand holds tunnels without collapsing. A little peat in the mixture helps the substrate to hold more moisture. Provide hides at both ends, preferably of cork, and stones, branches and artificial plants to crawl under. Hides and pots must not have small openings in which the snake could become trapped.

The lid must fit tightly and be secured against being pushed open, because even young snakes escape through small gaps. Never use tape, which the snake can become stuck to. Glass enclosures should have three sides covered on the outside so that the snake feels secure. The enclosure should not stand in direct sun by a window, where it easily becomes too hot.

TEMPERATURE

Maintain a clear gradient. The basking spot should be 30-31 °C, and the rest of the enclosure 24-29 °C by day. At night the heating is switched off, and the temperature can fall to 16-22 °C, but never below 16 °C.

Heat is best supplied from above, from a halogen or incandescent bulb over a flat, pale stone, because it imitates the sun and warms both the air and the substrate. All heat sources are controlled by a thermostat. Measure the surface temperature of the basking spot with an infrared thermometer, and keep an eye on the air temperature in the cool end with a digital probe.

Read more: Heat and temperature

HUMIDITY AND WATER

Humidity should be 50-60%. That is slightly more than for the close relative *Heterodon nasicus*, and a hygrometer shows whether the figure holds. The substrate itself must be dry, because damp substrate causes skin problems, but provide a hide with slightly damp sphagnum that the snake can crawl into, especially when it is about to shed.

A wide, heavy bowl of fresh water is placed in the enclosure, preferably large enough for the snake to lie in. If it stands in the warm end, it also raises the humidity. Change the water every day and disinfect the bowl once a week. Use tap water; distilled water is no better.

Read more: Humidity, misting and ventilation

LIGHTING AND UVB

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

UVB is recommended. The species belongs to Ferguson zone 2, and the aim is a UV index of 2-3 at the basking spot. A 6% UVB T5 HO tube covering half to two thirds of the length of the enclosure should be 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. The enclosure must also have shade and hides, and it must be dark at night.

Read more: Lighting and UVB

FEEDING

In the wild *H. platirhinos* eats mostly amphibians, especially toads, but also lizards and other small animals. In captivity feeding is the hardest part of its care: many animals, especially young ones, refuse mice at first. The aim is a snake that takes thawed mice supplemented with other prey. There are several ways to get there, and they can be combined:

- Thawed mice scented with amphibian or fish. Rub the mouse with a thawed frog from captive breeding, for example *Xenopus laevis*, or with fish; a little chicken stock can also mask the smell of the mouse.
- Thawed captive-bred frogs, fish and thawed small lizards.
- Quail eggs as a supplement.

Mice are calorie-rich food, and animals fed only mice easily become overweight. So give mice in sensible amounts, and supplement regularly with frogs, lizards or fish. Do not use wild-caught amphibians as food: they can carry parasites and be poisoned by pesticides.

Prey must be no thicker than the snake's head, or it will regurgitate. Several small prey items are better than one large one. Offer it with long tweezers, because the snake strikes at prey from every direction, and move it slightly so that it looks alive. Thawed prey should be body-warm, about 37 °C. Young animals are fed every 4-5 days, adults once a week. Do not touch the snake for 24-48 hours after a meal. Dust the prey lightly with calcium and vitamins now and then.

Read more: Calcium, vitamins and supplements Read more: Buying animals: captive-bred, wild-caught and transport

BEHAVIOUR AND HANDLING

Heterodon platirhinos is calm, but shyer and more defensive than *H. nasicus*. Keep handling to once a week. Let new animals settle for two weeks, and start only when they are feeding regularly. Wash your hands so that they do not smell of mice or amphibians, and do not pick the snake up if it has eaten within 48 hours or is about to shed. Approach from the side, not from above, and support the whole body.

The lunges are bluff, and bites are rare. The snake bites almost only when it mistakes a hand for food. A bite rarely causes more than small lacerations; only if the snake holds on and chews can the venom cause local swelling, and in allergic people it can cause a stronger reaction. Release the snake calmly instead of pulling it off. Clean the wound with soap and water, and see a doctor if there is marked swelling.

Keep the animals singly; they should be together only for mating.

Breeding

SEXUAL MATURITY AND SEXING

The female is larger and heavier than the male, and the male has the longer tail. In the wild males become sexually mature after 18-24 months at about 40 cm from snout to vent, and females after about 21 months at about 45 cm. There is little documentation of breeding in captivity, and age at sexual maturity in captivity is not documented.

MATING

Mating follows a cooling period. Stop feeding at the beginning of November, and switch off the heat two weeks later so that the snake is at room temperature, 20-22 °C. Move the animal to a ventilated container with a little substrate in a thermostat-controlled cooling chamber at 12-15 °C for about eight weeks, and weigh it every one to two weeks. If it loses more than 10% of its weight, the winter rest is stopped. Young animals under one year should not have a winter rest. The snake must be healthy before it is cooled.

Take the animal out, keep it at room temperature for two weeks, and then switch the heating back on. Feed once or twice, and put the male in with the female when both are eating again. The male follows the female's scent trail. In the wild mating takes place in April-May and can last up to three days. The female can store sperm until the following spring.

EGG-LAYING AND CLUTCHES

The female lays her eggs one to one and a half months after mating, in the wild in June-July. A clutch is typically 10-30 eggs, rarely up to 40, and the average is about 25. The female lays once a year. The eggs weigh 3-12 g.

Place a laying box in the enclosure when the female is clearly thick towards the rear: a plastic box with a hole in the lid, filled with damp sand or damp topsoil so that the female can dig 10-15 cm down. Feed her often while she is carrying eggs and after laying.

INCUBATION

Carefully move the eggs to a box with damp vermiculite or damp sand, and do not turn them. Incubate at 28-30 °C. The eggs hatch after 45-90 days, most often after about 60 days; in the wild, nests lie at 23-26 °C. Eggs that collapse or go mouldy are usually dead.

REARING THE YOUNG

The hatchlings are 16-21 cm long. Keep each baby on its own in a small box with kitchen paper, a hide, a shallow water bowl and a warm end; kept together, they may eat each other. Lightly mist half of the box every day so the young do not dry out, but never let it become wet. Many young eat soon after hatching. Start with small thawed captive-bred frogs or pinky mice scented with frog or fish, and be patient: many refuse mice at first.

Young snakes are fed every 4-5 days and weighed regularly. If they grow too fast they become fat, so do not feed them too often.

Health and common mistakes

The species is hardy as long as it is eating, but several problems recur:

- Loss of appetite is the most common fault, especially in new animals and young snakes. Offer different prey, scent it, and check temperature and hides. Weigh the snake weekly; sudden weight loss is a warning sign.
- Obesity if the snake is fed too often or almost only mice.
- Regurgitation if the prey is too large or the snake has been handled too soon after a meal.
- Respiratory infections with too low a temperature, draughts, dusty substrate or poor ventilation. The species is susceptible, and the signs (wheezing, mucus from the nose) often appear late.
- Stuck shed when the air is too dry. Provide a humid hide.
- Parasites and intestinal worms, especially in animals that have eaten wild-caught amphibians. Have a faecal sample examined.
- Mites in the substrate and on the snake.

See a vet with reptile experience if the snake loses weight, refuses food for several weeks, has its mouth open or has changed droppings.

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.