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AGAMAS

Hardwick's Spiny-tailed Lizard

Saara hardwickii

Saara hardwickii is a robust, herbivorous spiny-tailed lizard from the Thar Desert and the surrounding arid plains of India and Pakistan. It grows to 34-49 cm, digs deep burrows in firm ground and lives in loose colonies. It needs a large, warm, dry enclosure with a deep substrate and strong UVB. The species is rarely seen in the trade, and its care is largely based on experience with the genus *Uromastyx*.

Family: Agamidae Former name: *Uromastyx hardwickii; Uromastyx hardwicki; Uromastyx griseus; Uromastyx reticulatus; Centrocercus similis*

KEY FACTS

THE ANIMAL

Adult size	**34-49 cm** total length incl. tail
Lifespan	**15-20 years**
Active	**By day**
Lifestyle	**Terrestrial and burrowing**
Habitat	**Desert and semi-desert**
Difficulty	**Experienced**

CARE

Min. enclosure	**150 × 70 × 60 cm** L × W × H for 1 adult
Temperature, day	**27-32 °C**
Basking spot	**45-50 °C**
Temperature, night	**18-22 °C**
Humidity	**20-30%**
Water	**Water dish**
UVB	**Essential** Ferguson zone 3
Winter rest	**16-22 °C** 8-12 weeks
Diet	**Plants**
Kept	**Singly**

BREEDING

Reproduction	**Egg-laying**
Clutch size	**8-15 eggs**
Incubation	**60-70 days** at 33-34 °C

PROTECTION AND PAPERWORK

CITES	**Appendix II**
EU annex	**Annex B**
IUCN	**Vulnerable (VU)**

About the species

Saara hardwickii is a broadly built, flattened agamid with a rounded head, a flat snout, wrinkled skin and a short, heavy tail covered in whorls of pointed scales with large spines at the sides. The ground colour is yellowish brown, sandy or olive green, often with black spots and swirls and a distinct black patch on the front of the thigh. The colour varies and is darker during cold periods.

The male reaches 40-49 cm including the tail and the female 34-40 cm. The male has a longer tail and more prominent femoral pores.

The species was described in 1827 and was long placed in *Uromastyx*, and it is still sold as *Uromastyx hardwickii*. In 2009 the genus *Saara* was reinstated for the three species *S. hardwickii*, *S. loricata* and *S. asmussi*. The scientific name honours the English officer and naturalist Thomas Hardwicke.

S. hardwickii is alert and vanishes quickly into its burrow at the slightest danger. The species is rarely seen in the trade, and there is very little documented experience of keeping and breeding it in captivity. The recommendations are therefore based on the biology of the species and on figures borrowed from *Uromastyx*, and the species is best suited to a keeper who has already had success with spiny-tailed lizards.

Distribution and habitat

Saara hardwickii lives on the arid plains of north-western India and Pakistan: from Uttar Pradesh in the east through Rajasthan to Gujarat, including Kutch, and in Pakistan in Sindh and Punjab, among other areas. The species also occurs in the border region of Afghanistan. The Thar Desert is its stronghold, and the type locality lies in the Kannauj district of Uttar Pradesh. In many places the populations are now small and scattered.

The species is listed as Vulnerable on the IUCN Red List. Populations are declining because the animals are caught for food, folk medicine and the terrarium trade, and because their habitat is disappearing through cultivation, irrigation and the spread of invasive plants.

> **Native range:** India, Pakistan and Afghanistan.

HABITAT

Saara hardwickii lives on dry, open plains with firm, sandy or gravelly ground and sparse vegetation, in semi-arid grassland and scrub and at the edges of dry deciduous forest. It prefers firm ground to loose dunes. The species lives in colonies, sometimes on the outskirts of villages, and in Kutch on raised islands of sandy soil that rise above the monsoon floods. The climate is harsh: in summer the air can reach 50 °C, in winter it drops to around 0 °C, and 100-450 mm of rain falls per year, mostly in July and August.

The animal digs a sloping, winding or spiral tunnel 6-8 cm in diameter and more than 2 m long, with an entrance at ground level and a small chamber at the end. The burrow is cooler than the surface and is the animal's main protection against the heat. The animal basks close to the entrance and slips down into the burrow at the first sign of danger. Each adult has its own burrow, but newly hatched young stay close to the adults for a period and forage alongside them. The animals are active from February to October and hibernate from November to February; before that they build up fat in long strips along the spine.

The diet is monotonous. Grass of the genus *Dactyloctenium* makes up most of it, supplemented with herbs such as *Heliotropium*, *Euphorbia* and *Aerva*. Elsewhere the species eats flowers and fruits of *Capparis aphylla*, pods of *Prosopis cineraria*, fruits of *Salvadora persica*, saltbushes and grass tubers. Insects are eaten almost only around the breeding season. Birds of prey such as falcons and eagles take many animals.

Care

THE ENCLOSURE

An adult needs an enclosure of at least 150 × 70 × 60 cm (length × width × height), and bigger is better. Choose an enclosure made of wood, PVC or plastic with a glass front and preferably a mesh lid.

The substrate is dug through and must be deep: at least 15 cm, preferably more, of fine sand mixed with soil and clay so that the tunnels hold. Keep the top few centimetres dry and dampen only a little at depth. Avoid calcium sand and crushed walnut shells, which can cause impaction. Faeces and urates are removed daily, and the substrate is replaced completely every 3-4 months.

Build the basking area from flat stones or slate under the heat lamp, preferably as a stack with gaps so that the animal can crawl in and choose its temperature. Fix the stones in place so that they do not topple when the animal digs underneath them. Provide at least three hides, spread between the warm and the cool side. Heat lamps are guarded. Keep one animal in each enclosure.

Read more: Calcium, vitamins and supplements

TEMPERATURE

The basking area must have a surface temperature of 45-50 °C, measured with an infrared thermometer directly under the lamp. The species prefers a body temperature of 38-40 °C and tolerates more than about 46 °C only briefly, so there must be a clear gradient down to a cool side of 27-32 °C and a cool hide to which the animal can retreat. The heat must come from

above, for example from a halogen spot, never from a heat mat under the substrate. If the basking area is too hot or too cold, adjust it with a dimmer or by raising or lowering the stones.

At night the heat is switched off, and the temperature may fall to 18-22 °C.

In the wild the species hibernates from November to February and lives on its fat reserves in the meantime. In the enclosure the animal can be given a cool rest of 8-12 weeks with shorter days of 6-8 hours and a room temperature of 16-22 °C, while the basking area is kept at around 30 °C. The figures for the rest period are borrowed from *Uromastyx*. Give a winter rest only to healthy, well-nourished animals, and weigh them before and during the rest.

Read more: Heat and temperature

HUMIDITY AND WATER

The humidity must be low, 20-30 %, measured at the substrate on the cool side. Persistently high humidity makes the animal ill, so do not spray the enclosure. The substrate is dampened only a little at depth so that the tunnels hold, while the top centimetres stay dry.

The animal gets most of its water through its food. A small dish of fresh water does no harm in a well-ventilated enclosure. Change the water daily.

Read more: Humidity, misting and ventilation

LIGHTING AND UVB

The species is diurnal and needs strong light. Use an LED lamp or a fluorescent tube of about 6500 K as daylight, separate from the heat. UVB is essential: a T5 HO tube of 12-14 % over roughly half the length of the enclosure on the warm side should give a UV index of 4.5-6 at the basking area, corresponding to Ferguson zone 3. Check with a UV meter, and replace the tubes after 6-12 months or according to the manufacturer's instructions. The day is 12 hours in summer and shorter in winter.

Read more: Lighting and UVB

FEEDING

Saara hardwickii is almost purely herbivorous, and in the wild grass is the most important food. Give fresh grass and good hay as a regular part of the diet, supplemented with salad mixes, rocket, dandelion leaves, endive, pak choi and turnip greens and edible flowers such as dandelion and hibiscus, always free of pesticides. Hard vegetables are finely grated.

Seeds and pulses, for example crushed lentils and white millet, are given in small amounts at most once a week, because they cause obesity. Fruit is a rare treat. Insects are not necessary, but a single mealworm or superworm can be given now and then, especially to females in the breeding season.

Young animals are fed every day, and adults are fed 4-5 times a week. Dust the food with calcium and a vitamin supplement a couple of times a week.

BEHAVIOUR AND HANDLING

The species lives alone in its burrow and must be kept singly. A new animal needs peace for the first few weeks and can take a long time to begin eating, especially if it is wild-caught. Do not handle the animal during acclimatisation, apart from weighing, and seek a vet if it has not eaten after two weeks. Approach slowly and always from below, never from above. Weigh the animal once a month, and wash your hands after contact, because reptiles can carry salmonella.

Read more: Quarantine and hygiene Read more: Buying animals: captive-bred, wild-caught and transport

Breeding

SEXUAL MATURITY AND SEXING

The male is larger than the female and has a longer tail and more prominent femoral pores. Age and size at sexual maturity are not documented for the species. Breed only fully grown, well-nourished animals.

MATING

In the wild the animals mate in the warm season from April to September. Breeding in the enclosure is not described for the species. In *Uromastyx* breeding follows a cool winter rest, and after the rest day length and temperature are increased step by step before female and male are put together. Watch the animals, and be ready to separate them.

EGG-LAYING AND CLUTCHES

The female lays white eggs, and the clutch is 8-15 eggs. She needs a deep nest box with a moist mixture of sand and soil so that the tunnel holds and she can dig herself in. Give her peace and plenty of food after laying.

INCUBATION

Incubation time and temperature are not documented for the species; 60-70 days at 33-34 °C is borrowed from *Uromastyx*. Place the eggs in the same orientation as they lay, in a closed container with moist perlite that clumps when squeezed, and weigh the container once a week.

In the wild the young emerge from May to July, before the monsoon.

Read more: Incubating eggs

REARING THE YOUNG

Newly hatched young are 7-9 cm long and have dark brown swirls on a clearly brown background, more contrasting than the adults. Rearing in captivity is not documented. Keep the young following the same principles as young *Uromastyx*: the same basking area and temperature gradient as the adults, many hides, finely chopped greens and grass every day, and seeds only from the age of six months. Separate the young in good time before they reach sexual maturity.

Health and common mistakes

Health problems are not documented specifically for the species; the following applies to spiny-tailed lizards in enclosures:

- Bone loss (secondary nutritional hyperparathyroidism) from too little UVB, calcium and D3.
- Respiratory infection and mucus in constantly high humidity.
- Obesity from too many seeds and too much protein.
- Impaction from calcium sand, walnut shells and too low a temperature.
- Burns from heat mats and unguarded lamps.
- Parasites in newly imported, often wild-caught animals. Quarantine new animals for 3-6 months.
- Crusted sores on the lips and skin, which may be caused by the bacterium *Devriesea agamarum*. It spreads between agamids and requires veterinary treatment.

A healthy animal is rounded and firm, has clear eyes and eats regularly. Weight loss, loss of appetite and lethargy require a vet experienced with reptiles.

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.