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AGAMAS

Thorny Devil

Moloch horridus

Moloch horridus is a small desert agama from inland Australia, covered in cone-shaped spines from snout to tail tip. It feeds almost exclusively on ants, drinks by drawing moisture up through its skin and walks with a characteristic rocking gait. The species is so specialised that it is almost never kept, and little is known about its care.

Family: Agamidae Former name: *Acanthosaurus gibbosus*

KEY FACTS

THE ANIMAL

Adult size	**15-21 cm** total length incl. tail
Weight	**30-90 g**
Lifespan	**6-20 years**
Active	**By day**
Lifestyle	**Terrestrial and burrowing**
Habitat	**Desert and semi-desert**
Difficulty	**Expert**

CARE

Min. enclosure	**120 × 60 × 45 cm** L × W × H for 1 adult
Temperature, day	**25-35 °C**
Basking spot	**38-45 °C**
Temperature, night	**15-20 °C**
Humidity	**10-30%**
Water	**No water dish**
UVB	**Essential** Ferguson zone 3
Diet	**Insects**
Kept	**Singly**

BREEDING

Reproduction	**Egg-laying**
Clutch size	**3-10 eggs**
Clutches per year	**1**
Incubation	**90-132 days** at 27-31 °C

PROTECTION AND PAPERWORK

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

About the species

Moloch horridus is a small, compact agama whose body, legs and tail are covered in large, cone-shaped spines. On the nape sits a spiny hump that works as a false head: when threatened, the animal lowers its head between its forelegs so that the predator meets the hump instead. The spines are made of keratin, not bone, and make the animal hard to swallow.

Adults reach 15-21 cm including the tail. The female is larger than the male and weighs on average about 45 g (33-89 g), while the male weighs about 30 g and never more than 49 g. Weight can fluctuate by up to a third within a few months. The colour is a camouflage of brown, yellow and reddish patches and changes with temperature: in the morning and in the cold the animal is dark brown or olive, and when it warms up it lightens to yellow and red. The species has no femoral pores, which is unusual among Australian agamas.

The spines are not just a defence. Fine channels run between the scales and carry water by capillary action across the whole body to the corners of the mouth. The animal can therefore drink by touching a wet surface with its feet or legs, and dew and damp sand are its most important sources of water.

M. horridus is the only species in its genus. It resembles the North American horned lizards (*Phrynosoma*) in build and way of life, even though the two groups are not closely related: both are slow, spiny ant-eaters. The species can live for up to 20 years, but many wild animals live for only about 6 years.

Distribution and habitat

Moloch horridus lives in the dry interior of Australia: in Western Australia, South Australia, the Northern Territory and Queensland. Its range follows sandy ground: the sand plains and dunes of the desert and the mallee scrub belt in southern South Australia and south-western Western Australia. The species is rarely found on stony ground.

Australia does not permit the export of wild reptiles, so animals outside the country are extremely rare.

> **Native range:** Australia.

HABITAT

Moloch horridus lives in desert and semi-desert: sand plains, dunes and scrub of spinifex grass (*Triodia*), acacia and low bushes on sand or sandy loam. Rainfall is low and irregular, and the difference between day and night is large.

The species is diurnal. It feeds only when the temperature is above 24 °C, and active animals have a body temperature of about 28-33 °C. It is active in the Australian autumn (March-May) and again from late winter to early summer (August-December). In the coldest months (June and July) and the hottest (January and February) it moves very little, and on hot days it retreats into burrows that it digs itself. For most of the year the animal stays within an area of only 6-9 m in each direction, with an ant trail, a fixed spot for defecating and a couple of bushes where it sleeps and seeks shade. During the breeding season it travels far.

Its food is ants, especially of the genera *Iridomyrmex* and *Crematogaster*. The animal sits beside an ant trail and picks up the ants one at a time with its tongue, and a single meal can consist of several hundred to a couple of thousand ants.

Care

THE ENCLOSURE

Little is known about the care of *Moloch horridus*, and the species is not suited to private keeping. The reason is its food: the animal eats almost exclusively ants and needs large quantities every day. Enclosure size, temperatures and set-up are based on the species' habitat in the Australian deserts and on its size and behaviour.

One animal needs an enclosure of at least 120 × 60 × 45 cm (length × width × height). Floor area is what matters: the species uses an area several metres across and travels far during the breeding season. Use a substrate 10-15 cm deep of soft sand mixed with a little soil, slightly damp at depth, so that the animal can dig itself in. Furnish with flat stones, roots and low bushes or tussocks of dry grass that the animal can shelter under. The lid must provide good ventilation. The species is slow and does badly alongside fast, active animals, so it is kept alone.

TEMPERATURE

By day the temperature should be 25-35 °C with a basking spot of 38-45 °C, measured as surface temperature with an infrared thermometer. The animal feeds only when it is above 24 °C, and active animals have a body temperature of about 28-33 °C. The basking-spot temperature is borrowed from other Australian desert agamas. Use a halogen spotlight over a flat stone and a thermostat on all heat sources.

At night the temperature may fall to 15-20 °C. In the wild the species rests buried in the coldest and hottest months; whether a cool period is necessary in captivity is not documented.

Read more: Heat and temperature

HUMIDITY AND WATER

Air humidity should be low, 10-30 %, but the animal must be able to take in moisture through its skin. It does not drink from a bowl, but takes up water by touching wet sand or dew with its feet and legs, and the channels between the scales carry the water to the mouth. Damp sand is the most important source of water. Keep part of the substrate slightly damp, and in the morning mist the stones and the edge of the sand lightly so that dew forms. There must not be a water bowl in the enclosure.

Persistently high humidity causes skin and respiratory problems. Keep the rest of the enclosure dry, and provide good ventilation.

Read more: Humidity, misting and ventilation

LIGHTING AND UVB

Moloch horridus is diurnal and lives in full sunlight, so it needs strong light and UVB corresponding to Ferguson zone 3, for example a T5 HO tube of 10-12 %. The zone is chosen on the basis of the habitat and other diurnal desert agamas. The distance from tube to basking spot depends on the lamp and mesh; check with a UV meter, and provide shade at one end. Give 12 hours of light a day on a timer, and replace the UVB tube according to the manufacturer's instructions.

Read more: Lighting and UVB

FEEDING

Moloch horridus eats almost exclusively ants, especially of the genera *Iridomyrmex* and *Crematogaster*. The animal finds a spot beside an ant trail and picks up the ants one at a time with its tongue, on average about three a minute and up to one a second. Ants contain a lot of chitin, and the animal uses only about 59 % of the energy in them. A meal therefore consists of several hundred to a couple of thousand ants, and the animal has a large stomach.

This is what makes the species so difficult to keep: there must be a stable supply of small ants in large quantities every day. There is no documented substitute diet. Ants of a suitable size are the staple food; whether the species can live on small feeder insects such as springtails and newly hatched crickets is not documented. Dust the food lightly with calcium, and give a vitamin supplement regularly. How often adults and young should be fed is not documented.

Read more: Feeder animals: keeping and breeding Read more: Calcium, vitamins and supplements

BEHAVIOUR AND HANDLING

Moloch horridus is calm, slow and not aggressive. It walks with a characteristic jerky gait, rocking from side to side and often standing completely still in mid-step with one foot raised. When threatened it lowers its head and shows the false hump on its nape, and it can puff itself up. It has no fast escape and is easily stressed by handling.

The species is not territorial, and the animals' ranges overlap in the wild, but in captivity it is kept alone. Keep handling to what is necessary: it is an animal to watch, not to pick up.

Breeding

SEXUAL MATURITY AND SEXING

The female *Moloch horridus* is larger and heavier than the male: 80-110 mm from snout to vent, while the male reaches at most 96 mm. The sexes grow at the same rate in the first year, after which the females grow fastest, and the animals keep growing until they are at least five years old. Age at sexual maturity is not documented.

MATING

Mating takes place from late winter to early summer (August-December), mostly in August and September. During this period the animals travel far and often meet at a bush. The male approaches the female with quick head bobs; if the female is not receptive, she rolls onto her side and shakes him off. Mating is also seen in autumn, so the female can probably store sperm. How mating is achieved in captivity is not documented.

EGG-LAYING AND CLUTCHES

The female lays 3-10 eggs, most often 8, once a year from mid-September to late December. She spends several days digging a tunnel that goes down as far as 22 cm and ends in an air chamber where the eggs are laid, and she carefully fills it in again afterwards. Laying costs her 37-42 % of her body weight, so she must be given plenty of food afterwards. A female with eggs needs a box with at least 25 cm of slightly damp sand to dig in.

INCUBATION

The eggs hatch after 90-132 days, on average 118. The incubation temperature in captivity is not documented; 27-31 °C is an estimate based on the nest in the wild, where the eggs lie in an air chamber about 22 cm below the surface and where it is about 31 °C at hatching. Place the eggs in slightly damp vermiculite in an incubator without turning them.

Read more: Incubating eggs

REARING THE YOUNG

Newly hatched young are 63-65 mm long and weigh about 2 g. They eat their eggshells before digging their way up to the surface. Rearing in captivity is not documented, and it is not known what the young can live on apart from very small ants.

Health and common mistakes

There are no documented health data for *Moloch horridus* in captivity. Based on the biology of the species and related desert agamas, the main problems are:

- Malnutrition and weight loss if the supply of ants is not large and steady enough. Weight can fall by up to a third within a few months, even in the wild.
- Metabolic bone disease from too little UVB and calcium.
- Skin and respiratory problems from persistently high humidity.
- Intestinal worms: almost all wild animals carry many roundworms in the gut, and tapeworms also occur.

A healthy animal has clear eyes and a plump body. Contact a vet with experience in reptiles if the animal loses weight, does not eat or seems lethargic.

Read more: Common diseases and signs of illness

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.