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AGAMAS

Central Bearded Dragon

Pogona vitticeps

Pogona vitticeps is a sturdy, diurnal agamid from the dry interior of Australia with a spiny beard, which it flares and turns black when threatened. It grows to 45-60 cm and is one of the most commonly kept reptiles in the world. It forgives many mistakes, but needs a large enclosure, strong heat and UVB, greens for most meals and a keeper who is ready for 10-15 years.

Family: Agamidae Former name: *Amphibolurus vitticeps*

KEY FACTS

THE ANIMAL

Adult size	**45-60 cm** total length incl. tail
Lifespan	**10-15 years**
Active	**By day**
Lifestyle	**Rock-dwelling, terrestrial and burrowing**
Habitat	**Semi-desert and savanna**
Difficulty	**Intermediate**

CARE

Min. enclosure	**180 × 60 × 60 cm** L × W × H for 1 adult
Temperature, day	**22-37 °C**
Basking spot	**42-45 °C**
Temperature, night	**12-24 °C**
Humidity	**30-60%**
Water	**Water dish**
UVB	**Essential** Ferguson zone 3
Diet	**Insects and plants**
Kept	**Singly**

BREEDING

Reproduction	**Egg-laying**
Sexually mature	**12-24 months**
Clutch size	**15-30 eggs**
Incubation	**55-75 days** at 28-30 °C

PROTECTION AND PAPERWORK

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

About the species

Pogona vitticeps is a large, flattened and heavily built agamid with a broad, triangular head, short, strong legs and a thick tail. Under the throat there is a beard of skin with pointed scales, which the animal can flare out using the hyoid bone. The beard turns black when the animal is excited or when the male wants to impress. The scales are mostly soft, but can be tightened into sharp spines in defence.

The natural colour is dull brown or greyish brown with red or golden tones, matched to the colour of the soil at the locality. The animal shifts between darker and lighter tones: a cold animal is dark and tired, and only when the sun has warmed it does the colour lighten and the animal go hunting. Adults reach 45-60 cm in total, and about half is tail. Males have a broader head, a thicker tail base and larger pores on the underside of the thighs than females.

Many colour and scale variants are found in the trade, for example citrus, tiger and the scaleless silkbacks. This guide is about the species as such. Variants with little pigment or without scales are more sensitive to strong UVB, and some forms, for example the translucent and the scaleless, are linked with health problems.

P. vitticeps belongs to the Amphibolurinae, the large group of Australian agamids. The species name probably comes from Latin vitta (band) and ceps (head) and refers to the stripes over the temple. The species can be confused with the far smaller *Pogona henrylawsoni*, and the two species can hybridise.

P. vitticeps is curious and calm and is easily tamed. The animals recognise their keeper and tolerate gentle handling, and this has made the species one of the most popular terrarium animals. All animals in the trade outside Australia are captive-bred.

Read more: Lighting and UVB Read more: Buying animals: captive-bred, wild-caught and transport

Distribution and habitat

Pogona vitticeps lives in eastern and central Australia. The range covers south-western Queensland, the south-eastern Northern Territory, western New South Wales, north-western Victoria and eastern South Australia.

The animals are smaller towards the southern limit of the range, and the smallest live in the Big Desert in western Victoria. The population there is not a separate form. The species does not occur in the wild outside Australia.

> **Native range:** Australia.

HABITAT

Pogona vitticeps lives in semi-arid regions: open scrub, dry woodland, grassland and stony or sandy desert with scattered vegetation. It chooses places with plenty of sun and sits on rocks, fallen trunks, branches and fence posts, where it has a view and can bask, from about 20 cm to several metres above the ground. It hunts and basks during the daytime. Although it lives on the ground, it climbs well and digs burrows, where it seeks shelter from heat, cold and predators.

Heat governs the day: the animal basks until its body temperature reaches about 36 °C, leaves the sun when it is warm enough, and seeks shade and gapes with an open mouth if it gets too hot. In winter, when the temperature falls below about 20 °C, the animal withdraws for about two months to a sheltered hide. It does not sleep continuously, but may come out, eat and move around for shorter periods.

Central Australia is not bone dry. It rains, and the humidity occasionally rises, especially at night and in the burrows, where it can reach about 80 %. The diet is mixed: young animals eat mostly small animals, while adults get about 80 % of their food from seeds and plant parts and 20 % from insects and other small animals.

Read more: Humidity, misting and ventilation

Care

THE ENCLOSURE

A single adult needs an enclosure of at least 180 × 60 × 60 cm. The height should be 90 cm if possible, because the species climbs a lot. Less gives too little space for both exercise and a temperature gradient. The enclosure must have good ventilation and a lid or mesh so that the animal cannot climb out.

Furnish the enclosure with a basking spot at one end, where flat, light-coloured stones or solid branches make it easy for the animal to climb up. The basking spot must be the highest point and be closest to the lamps. Provide several hiding places, at least one in the warm and one in the cool end, as well as branches and stones to climb on.

The substrate should be diggable. A 10-15 cm layer of fine-grained sand mixed with pure topsoil and clay (e.g. 50 % sand, 30 % topsoil and 20 % clay) resembles the soil in the wild and does not cause sand impaction in healthy animals. A loose, diggable substrate also gives greater temperature differences in the substrate than paper, so the animal has more temperatures to choose from. A solid substrate such as unglazed tiles, slate or kitchen roll warms up well and is easy to clean, but gives no opportunity to dig. Calcium sand, vitamin sand, crushed nutshells and bark or wood shavings are unsuitable, because they can cause constipation if swallowed. A loose substrate is replaced completely every 3-6 months.

Keep the animals separately. Two males must never share an enclosure, because they fight. Two females can live together, but they quarrel over the basking spot, and the subordinate one becomes stressed. A male and a female will breed, and a female can have up to 100 young after a single mating. Adults and juveniles must always be kept apart.

Read more: Heat and temperature Read more: Calcium, vitamins and supplements

TEMPERATURE

Heat with at least two halogen spots above the basking spot. The surface there should be 42-45 °C measured with an infrared thermometer and need not exceed 50 °C. The hot spot should be at least as large as the whole animal including the tail. The air in the enclosure should be 22-37 °C, warmest at the basking end and coolest at the opposite end. The surface at the cool end should be 25-29 °C.

Use an infrared thermometer for the surfaces and a digital thermometer with a probe for the air, and measure only after the lamps have been on for about three hours. Halogen bulbs give short-wave infrared heat like the sun. For an enclosure of 180 × 60 cm, 90-100 W is usually suitable; if the basking spot is too cold, move it closer to the lamp. If the cool end gets too cold in a tall enclosure, a radiant heat panel can help.

At night the temperature can fall to 12-24 °C, and down to 10 °C is tolerated when the animal gets enough heat by day. A night-time drop makes the animal bask earlier in the morning. If there is too little heat by day, however, cold nights can send the animal into winter rest or make it ill. Connect the lamps to a thermostat with the probe at the cool end, so they switch off if the cool side goes above 37 °C.

HUMIDITY AND WATER

Humidity should average 30-60 %, measured at the cool end. It naturally fluctuates: lower at the basking spot, higher at night and near the water. Periods of high humidity do no harm as long as the air is moving and the enclosure can dry out again. Stagnant, wet air and a wet substrate, on the other hand, cause illness. If the humidity is constantly too high, a small fan over the mesh at the cool end helps. Too low humidity causes dehydration, problems with shedding and lethargy.

Always offer fresh water in a shallow bowl. The animal gets most of its water through its food, so greens that have been rinsed and left in water help. A light shower over the furnishings provides droplets that the animal can lick. A damp hide at the cool end, for example a cave with slightly damp soil, imitates the burrows in the wild and helps during shedding.

LIGHTING AND UVB

Pogona vitticeps depends on strong, white light: it promotes appetite, activity and wellbeing, and the species also sees UVA. The enclosure must therefore be very bright. The brightest place should be the basking spot with 30,000-60,000 lux measured with a lux meter, and 75-100 % of the length of the enclosure should be lit. This usually requires several lamps.

UVB is necessary, and the species belongs to Ferguson zone 3. Use a T5 HO tube with 10-14 % UVB in a reflective fitting over the warm side, parallel to the heat lamps. The aim is a UV index of 4.0-4.5 at the basking spot, falling to 0 at the cool end. Over mesh this typically gives a distance of 27-30 cm from tube to basking spot, but the distance depends on the tube, fitting and mesh, so preferably measure with a UV meter. Glass and plastic between tube and animal block UVB. Good T5 HO tubes are replaced after about 12 months, even if they still light up, because the UVB output falls.

LED lamps with UVB are not yet considered safe for reptiles. Animals with little pigment and scaleless animals should have a UV index of no more than 3.0. The light is on 12-14 hours a day in summer and about 10 hours in winter, controlled by a timer.

FEEDING

Pogona vitticeps is omnivorous. Young animals eat mostly insects, adults mostly plants. As a rule of thumb, animal food makes up about 60-80 % for hatchlings, 60 % for young and 15-30 % for adults. This prevents obesity and gout, which are common in overfed animals.

- Hatchlings (0-3 months): insects once daily, as many as the animal will eat, and greens daily.
- Young animals under 25 cm: 5-6 insects the size of the head daily and greens daily, about three times as much as the insects.
- Adults over 25 cm: 3-4 insects twice a week and greens three times a week, a portion the size of the head.
- Gravid females: 4-5 insects twice a week.

Good feeders are dubia roaches, grasshoppers, crickets, black soldier fly larvae, silkworms and tobacco hornworms (captive-bred only; wild ones are toxic). Fatty insects such as mealworms, hornworms and wax worms are treats. The insects must be no larger than the distance between the animal's eyes and must have been fed a good diet for at least 24 hours before being passed on. Wild insects may be sprayed or toxic and should be avoided.

Greens include rocket, pak choi, kale, mustard greens, Chinese cabbage, dandelion, watercress and cactus pads, as well as flowers and weeds from places without pesticides. Cut the leaves into narrow strips. Spinach is given less often. Avocado is toxic. Fruit is a rare treat, no more than about once a month, because fruit is the main risk factor for dental disease and causes

obesity.

Dust all insects and all salad with calcium. Sprinkle multivitamin on the salad twice a week for young and gravid animals and once a week for adults. The calcium is sprinkled as you would salt food, not like a snowfall.

Read more: Feeder animals: keeping and breeding

BEHAVIOUR AND HANDLING

Pogona vitticeps is calm, curious and tolerates handling better than most lizards. Let a new animal get used to the enclosure for about two weeks before you pick it up. Then feed from tweezers, and let your hand rest in the enclosure until the animal is calm. Lift the animal with support under body and legs, move slowly, and do not pull at loose skin during shedding.

The animal uses its beard and body language to signal. A black, flared beard and an open mouth are threat or display behaviour, especially in males. Quick head bobs up and down show dominance. Arm waving, where the animal stands on three legs and slowly rotates one foreleg, is a sign of submission, which females and young animals use towards larger animals. Dark colour and withdrawn behaviour suggest cold or stress.

The animals need peace and a fixed daily rhythm. Keep them singly: animals that share an enclosure quarrel over rank, and the subordinate animal gets less food and a poorer basking spot and falls ill more easily.

Breeding

SEXUAL MATURITY AND SEXING

Pogona vitticeps is sexually mature and fully grown after 1-2 years. Males are recognised by a broader head, a thicker tail base and distinct femoral pores; females have a narrower tail base. Animals for breeding must be fully grown and in good condition, and the female must have had plenty of calcium.

Sex is determined by sex chromosomes (the female has two different ones, ZW), but very high incubation temperatures can cause genetic males (ZZ) to develop into functional females. This also happens in the wild. An animal that looks like a female can thus be a genetic male.

Read more: Incubating eggs

MATING

In Australia the animals mate in spring and summer, from September to March. In captivity the species is not strictly seasonal, but a cool rest period in winter matches the wild and is used to bring the animals into breeding condition. It is given only to healthy, well-nourished animals.

Put the female in with the male for a short period, and separate them afterwards. The mating is violent: the male bobs his head, turns the beard black and bites the female on the neck. The female can store sperm and lay several clutches of fertilised eggs after a single mating. She needs extra food and calcium during the breeding season.

EGG-LAYING AND CLUTCHES

A female lays 15-30 eggs in a pit that she digs herself. She can lay several clutches in a season, in rare cases up to nine, and this takes a heavy toll on her calcium reserves. Give her a laying box with a layer of damp, diggable sand and topsoil 30-40 cm thick, where she can dig.

A female that does not find a suitable site may retain the eggs. This is an emergency that requires a vet. Egg yolk that ends up in the abdominal cavity (yolk peritonitis) is another serious condition in females.

INCUBATION

The eggs hatch after 55-75 days at 28-30 °C, most often about 65 days. Place them in an incubator in damp, loose material such as vermiculite or perlite, and do not turn them. Between 22 and 32 °C equal numbers of males and females result. From about 34 °C more and more females result, because the heat turns genetic males into females, so the temperature must be kept stable and below 32 °C.

REARING THE YOUNG

The hatchlings are independent from hatching and measure about 10 cm. Keep them on solid substrate, for example kitchen paper, until they eat reliably, and give insects and greens daily. They need the same light and heat as adults: a basking spot, UVB and calcium on all food.

Young kept together bite each other's toes and tails, especially when they are hungry, and the largest take most of the food. Sort them by size, therefore, and split them up as soon as they grow unevenly. They grow quickly and are fully grown after 1-2 years.

Health and common mistakes

Most diseases are caused by faults in husbandry. Sick reptiles hide for a long time that they are ill, so weigh the animal every week, and keep notes on weight, appetite, faeces and shedding. Sudden weight loss is often the first sign.

- Metabolic bone disease from too little UVB, too little calcium or too low a temperature. Signs are soft or crooked jaws and legs and tremors.
- Obesity and gout from too much animal food and too little water.
- Dental disease and stomatitis; fruit is the main risk factor.
- Constipation from too low a temperature, dehydration or many parasites.
- Intestinal parasites are very common: as many as four out of five captive animals have them, most often pinworms (oxyurids) and coccidia (*Isospora amphiboluri*), and single-celled parasites affect young animals in particular. Have a faecal sample examined when the animal is new, and regularly after that.
- Mites, respiratory infection, problems with shedding, tail rot, rectal prolapse and skin fungus ("yellow fungus").
- Eggs that are not laid, and yolk inflammation in females.
- Atadenovirus is a serious viral disease, especially in hatchlings.

Loss of appetite, lethargy, swollen joints, open-mouth breathing when the animal is not hot, and an animal that stops eating are reasons to see a vet with reptile experience. The species often carries salmonella, and small children in particular are infected, even without direct contact. Wash your hands after touching animals, enclosure and equipment, and keep the animal and its things away from the kitchen.

Read more: Quarantine and hygiene 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.