The Bearded Dragon, (*Pogona vitticeps)*

by Frances Baines

Introduction: **The Inland Bearded Dragon, Pogona vitticeps, is most often simply called "Bearded Dragon" or "Beardie". It is a member of the Agamidae family, and is a large lizard which has become a very popular reptile pet owing to its gentle nature and engaging personality.**

Suitability as a Pet: **Bearded dragons make excellent and engaging companions if cared for properly. It is important to realise that they are social creatures and have both physical and psychological needs. It is the responsibility of anyone keeping a bearded dragon to meet those needs; but the effort is not great when compared to the rewards which this small relationship can offer.**

Things to consider when thinking of keeping a lizard:

Can you get livefood easily from your local pet shop? Can you deal with keeping and feeding livefood to your pet? Are you prepared to take on an animal that could be with you in ten years time? Is the rest of the family happy to live with a lizard? Who will look after your new pet if you are away, and be confident to handle, feed and clean up after your pet?

Size: **Adults reach full size of 18-24 ins (45-60cm) with s-v length of 8-9ins (20-25cm) in 1-2 years.**

Lifespan (Captive): **About ten years seems to be considered average. However there is one report of a bearded dragon living over 20 years. (Bill Mears: www.geocities.com/borderviewdragons)**

Habitat: **This species of bearded dragon may be found in inland areas of mid-east and south-east Australia, covering a wide range of habitats but typically living in arid scrubland, with a semi-desert climate; hot summers and cooler winters.**

Temperament: **Beardies seem naturally tame though babies are instinctively skittish. Gentle frequent handling is beneficial as beardies learn to recognise their keepers. An aggressive beardie is unusual although a few do exist.**

Setting up the Vivarium

Caging: **Bearded dragons do need space and an interesting environment if they are to thrive. A glass fronted wooden vivarium with good ventilation is ideal. A vivarium measuring 120cm (4ft) in length by 60cm (2ft) deep by 60cm (2ft) high - 120 gallons - is sufficient for a single adult dragon. Groups (with only one male) may live together in larger enclosures but two adult males will fight. Even females develop a "pecking order" and it is advisable to have several basking spots and sheltered areas when several beardies are housed together, to avoid bullying.**

Dragons like to climb and as long as they are fixed securely, and cannot fall onto the dragon even if he tries to dig under them, logs and rocks will make good basking shelves. Hides and shelters must also be provided, so that the dragon can hide from the world when it needs to feel secure or find peace and quiet.

Hatchlings up to 4-5 months old may be kept in a smaller, 2ft – 3 ft. vivarium (eg. 36” x 12” x 12”-22gallon) but they grow very rapidly – about 5cm a month! – and by six months, they will need as

large an enclosure as possible. If in too small an enclosure they can become very lethargic and appear depressed. Their large size relative to the vivarium may mean they cannot move away from the basking area enough to thermoregulate properly, as well, causing health problems.

Substrate: A good substrate for juvenile beardies is kitchen paper towel, as it is clean, easily replaced when soiled and most importantly, inedible. Some keepers use paper towels for adults too. Reptile carpet, brown paper, even newspaper is ideal for all dragons.

Many dragons enjoy digging in sand and children's washed play sand is also suitable for adult dragons, who are less likely than babies to eat quantities of their substrate. This is better than most other types of sand, although all can cause problems if ingested, and fine dusty sand can irritate the eyes. (In particular there are doubts about the new Calci-Sand; there are reports of it causing impactions.) Some keepers place sand in a "dig box" in part of the vivarium, thus keeping sand away from the feeding and water bowls, etc; this can be very effective.

Avoid all wood or bark chippings, corn cob granules etc. as these can be swallowed by dragons of any age and may cause blockages.

Whatever substrate is used, all droppings must be removed and the vivarium cleaned on a regular basis to prevent the buildup of bacteria or parasites which can cause disease.

Temperature: Like all reptiles, bearded dragons require a thermal gradient in their vivarium (one or more basking spots, and cooler areas) to enable them to thermoregulate.

A daytime basking spot temperature of a minimum of 35°C (95°F) and a maximum of 40°C (104°F) is essential, but so are cooler areas ranging from 20 - 29°C (68 - 84°F). At night, no extra heat is needed for adult dragons if the room stays above 16°C (60°F) but hatchlings thrive better if kept warmer, with temperatures up to 27°C (80°F).

A basking lamp is the best daytime heat source as dragons are attracted to light; ordinary household (spot) light bulbs or "reptile basking bulbs" are equally good, set on a timer to give 12 hours light and heat per day. Select the wattage according to the heat needed at the basking spot.

Larger enclosures may need ceramic heaters as well. Wire mesh guards should be fitted over all heat sources so that the reptile cannot burn itself by accidentally touching the heater or lamp surface. A thermostat is essential, to control the heat source within the vivarium and prevent the dragon from becoming too hot or too cold. A dimming thermostat should be used with a basking lamp, and the sensor placed so as to prevent the cooler areas of the vivarium rising above about 28°C (82°F). Digital thermometers should be placed regularly on the basking spot and at the cool end of the vivarium to check the temperatures.

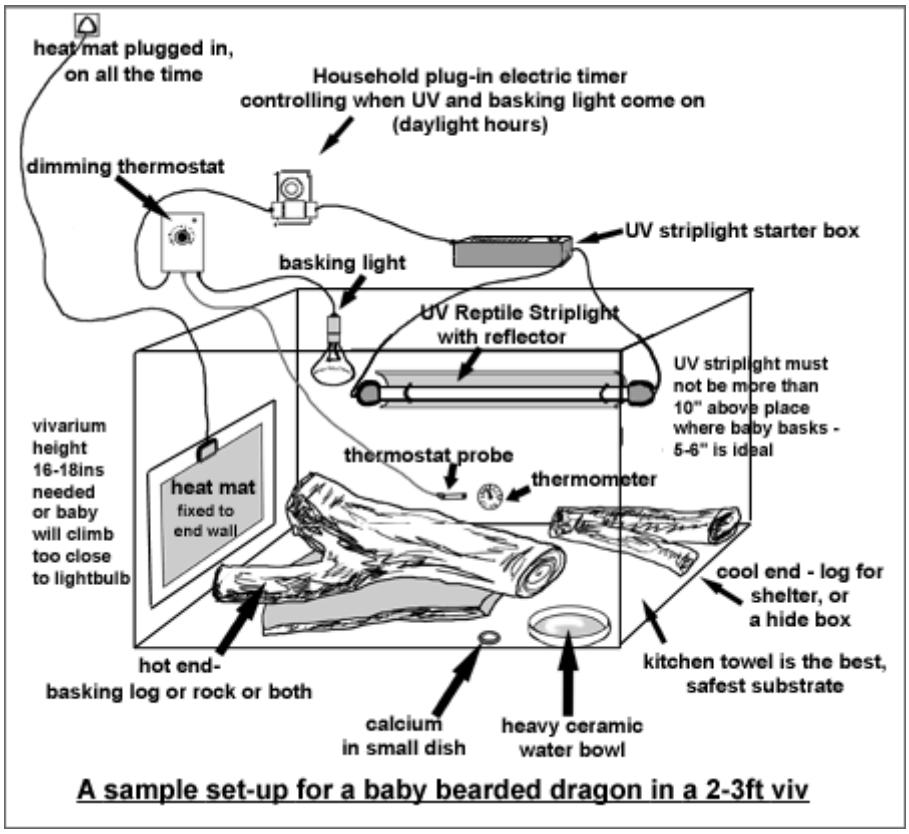
Summary:
Daytime basking spot temperature: 35 – 40°C (95 – 104°F)
Daytime general background temp: 20 – 29°C (68 – 84°F)
Night-time general background temp: around 16 – 21°C (60 – 70°F) for adults; around 26 – 27°C (80°F) for hatchlings.
It is usually necessary to experiment with the wattage of the heat lamps and the setting and position of the thermostat probe to achieve these temperatures when setting up a large new viv; placing max/min thermometers or digital thermometers in key spots is the best way to do this.

"Hot rocks" with built-in heaters are not recommended for bearded dragons; they sense warmth from above, not below, and can burn their bellies from lying on these. Heat mats may be useful for extra warmth at night, for babies; however, these are safest mounted sideways on the vivarium wall, for the same reason.

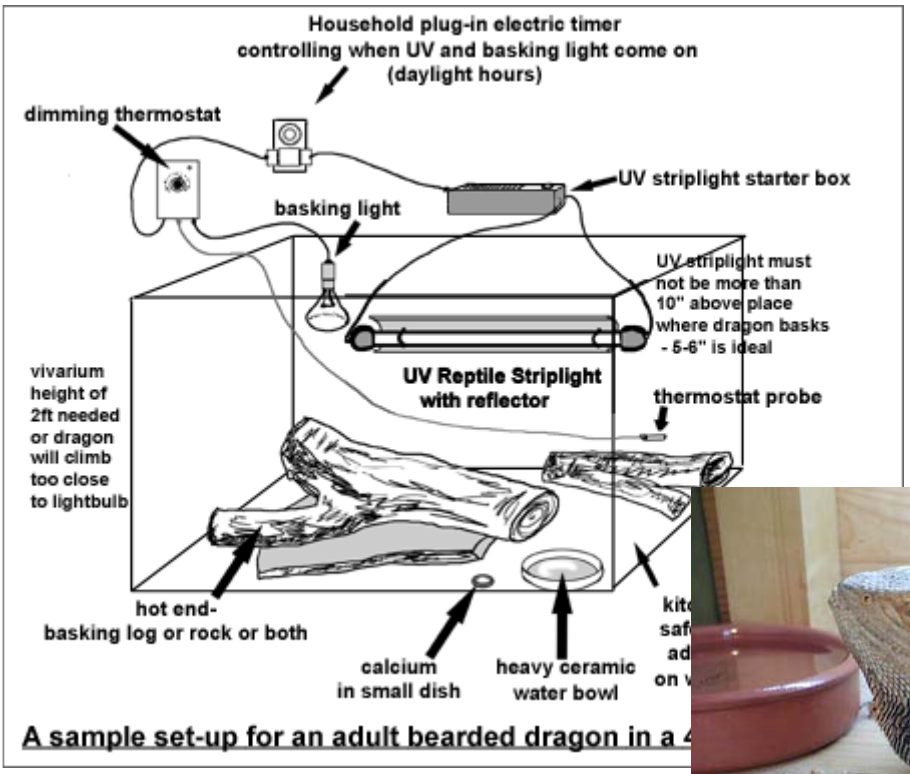
Lighting: **Ultraviolet light (UVA and UVB) is ESSENTIAL for bearded dragons. UVA is needed for normal vision and activity levels. UVB enables them to synthesise vitamin D3 in their skin. Without the UVB component bearded dragons cannot effectively metabolise calcium in their diet, however much this is supplemented, and metabolic bone disease WILL occur.**
Special 5%-10% UV fluorescent tubes such as the ZooMed Reptisun 10.0, the Arcadia D3 5.0 Reptile Lamp and the ExoTerra ReptiGlo 8.0 tube must be set up within 12" of the basking spot - ideally 6-8", hung above it so the lizards do not have to stare into the light. These must be renewed at least once a year. Ideally, to increase the UV even further, these should be fitted with a reflector strip such as the Arcadia Reflector, to direct all possible UV light downwards into the vivarium.
New mercury vapour UV lamps such as the T-Rex Active UV Heat Flood Lamp provide even more UV but also emit much heat and cannot be used with a thermostat; they are thus only suitable for large vivaria which this lamp cannot overheat. A 100watt flood lamp of this type might be suitable, for example, as a daytime heat and light source in a 3-4ft tall vivarium. Unlike the fluorescent tubes, these lamps must not be too close to the lizards. The 100watt lamp, for example, must be at least 12" away from the dragon. Manufacturers' instructions should be carefully noted when these lamps are used. More information about calcium metabolism, UV requirements and suitable types of lighting and heating may be found in the "suggested reading" below - the new website www.uvguide.co.uk contains details of the latest research and lamp test results.
In the UK it is rarely warm enough for beardies to be outside to bask in direct sunlight. However, on days when basking temperatures are reached in the sunshine, a suitable secure outside pen would be ideal for supplying extra UV to a beardie. This must have a cool shaded area and a water bowl. Never be tempted to put a glass fronted viv out in the sun; temperatures would rise to dangerous levels very quickly inside, and UV does not penetrate glass anyway!

Sample vivarium set-ups for Bearded Dragons. Please note: these are only ideas for your consideration; there are many good ways of setting up your vivarium. These designs have, however, been used successfully by the author.

1. A vivarium for a baby bearded dragon (hatchling to 4-5 months)



2. A vivarium for an adult bearded dragon



Feeding: Bearded dragons are omnivorous. A balanced diet must include green leaves (eg. spring greens, kale, dandelion, watercress) vegetables (eg. chopped beans, peas, grated butternut squash,

carrot) and insects (eg. crickets, locusts, morioworms, feeder roaches). All insects should be well cared for and well fed.

Hatchlings require feeding twice a day, with greens and very small insects. For healthy growth, it is important that greens make up a fair proportion of he diet. Finely chopped leaves and vegetables eg. dandelion, spring greens, peas, green beans, should be available daily. Young dragons may take little vegetable food at first; to encourage them, try offering the greens half an hour before the first livefood of the day.
Live food will mainly consist of small crickets, at first. Larger insects and mealworms should never be offered as baby dragons eating these can be seriously impacted (gut blockage); the bulky undigested remains may press on the pelvic spine and cause paralysis. Brown crickets are ideal, they must not be longer than the distance between the hatchling's eyes (2nd instar; "2 weeks old", 6-8mm.) Feed only as many as they will eat in 5 minutes; overfeeding can cause problems. The crickets should be well fed, and dusted with calcium carbonate powder to ensure adequate calcium in the babies' diet. Twice a week, the crickets should be dusted with a vit/mineral supplement such as Nutrobal, instead.

Juveniles are growing very fast and will eat prodigious amounts of both insects and vegetables. Feed daily; it is important to encourage them to eat plenty of greens. Increase the size of the insects gradually, to 3rd instar "3 weeks old"(8-10mm) by about 7-8 weeks old, and so on.

Adults, as growth slows, will reduce their food intake, unless breeding. Fresh greens should be offered daily. Insects (eg. large brown or black crickets; morioworms (*Zophobos morio*, also called Super Worms); locusts; feeder roaches; waxworms for an occasional treat) may be offered every other day. The livefood should always be well fed, and calcium dusted (vit/mineral supplement-dusted once a week).

All bearded dragons of whatever age may benefit from free access to powdered calcium carbonate (also called "limestone flour") or grated cuttlefish bone. Offer this in a small dish which beardies will lick and scratch at. NB. this is pure calcium, not a calcium/vitamin mix such as "Nutrobal", as this could lead to vitamin overdose.

Water requirements: Hatchlings are best offered droplets of water, from a dropper or spray, daily. Some will learn to drink from a dish if they are shown water splashing in it. Older dragons should always be provided with a shallow bowl of clean water that is wide enough for them to lower their chins into it to drink, but not all will do this. They are attracted to water movement and a dripper system may work, or they can be regularly offered a syringe filled with water, dripped on the lizard's head or in front of its nose; they learn to lap from the nozzle. Some beardies enjoy bathing in tepid water, and will learn to drink whilst being bathed; but never leave a dragon in water, unattended.

Social Structure: Bearded dragons have a distinct social structure; they recognise each other and some even seem to form attachments to one another and to their keepers. Both sexes form dominance hierarchies; it is important to provide enough space – especially basking space – to prevent bullying. Two males will fight and should not be housed together. Social responses include head-bobbing and beard display, especially in males; a number of distinct poses, bows and body-tilting gestures; and arm-waving, a submissive gesture shown most often by juveniles and females. Individuals also greet each other by touching the face of the other with the tongue.

Activity period: Bearded dragons are diurnal (awake in the daylight, asleep at night) and timers controlling UV and incandescent light ensure a regular “day” for a beardie. In summer, 14 hours of light (with UV) per day is ideal; this can be reduced over several weeks to 8 hours per day in winter, then back up again in the spring. Some keepers time their daytime lights in keeping with the natural rise and setting of the sun.

Brumation: Adult bearded dragons are responsive to changes in the seasons, even as seen through a window, regardless of the artificial lighting regime being used. Many naturally enter a period of brumation (seeking cooler parts of the viv, ceasing to feed and becoming very inactive) at any time from September onwards. Individuals vary widely in their response, however- some may hardly slow down; others may "sleep" deeply for several months! As long as the adult dragon is in good bodily condition, this is a natural rest period and it is not necessary to prevent its occurrence. In the autumn and winter, as daylight hours shorten, the adult about to brumate will stop feeding, seek cooler areas and dark corners, and become dormant. Once the dragon has begun to sleep all day, background temperatures may be safely reduced to 16 - 21℃ (60-70℉) and basking lamps turned down until the dragon awakens, comes out and starts basking and feeding again in early spring. Brumating dragons do sometimes wake for short periods in the middle of brumation, then resume sleeping. When this happens, they should not be overly encouraged to eat, lest the food remain undigested and cause internal problems. With an increase in light and warmth, as Spring approaches, normal activity and feeding will resume and the breeding season begin. Healthy dragons lose very little weight during brumation and awaken quite rapidly at its end; they may take several days to begin feeding again but normally respond well to a drink and possibly a bath.
Some keepers reduce heat and light quite drastically when their bearded dragons are brumating and turn the heating right off; others leave a basking spot permanently warm at one end of the vivarium lest a dragon awaken and seek warmth at any time without warning. Brumation is often encouraged in breeding dragons as it is believed to enhance fertility the following spring. It should not be encouraged in dragons under a year old, or those in poor bodily condition, however.

Sexing: Before 4-5 months, sexing is unreliable, but males can be identified with increasing certainty as they grow, by gently lifting the tail of a standing dragon and looking for evidence of post-cloacal bulges, the hemipenes, to either side of the midline at the root of the tail. Males also have a wider cloaca. It's often fairly easy to identify a male baby. However, some that appear to be female when small, turn out to be "late developing" males, so it is harder to say with confidence that a certain baby is female.

Once sexual maturity is reached, usually around 8-12 months of age, the differences become more pronounced. Males develop secondary sexual characteristics: enlarged pre-anal and femoral pores,

Sexing baby bearded dragons

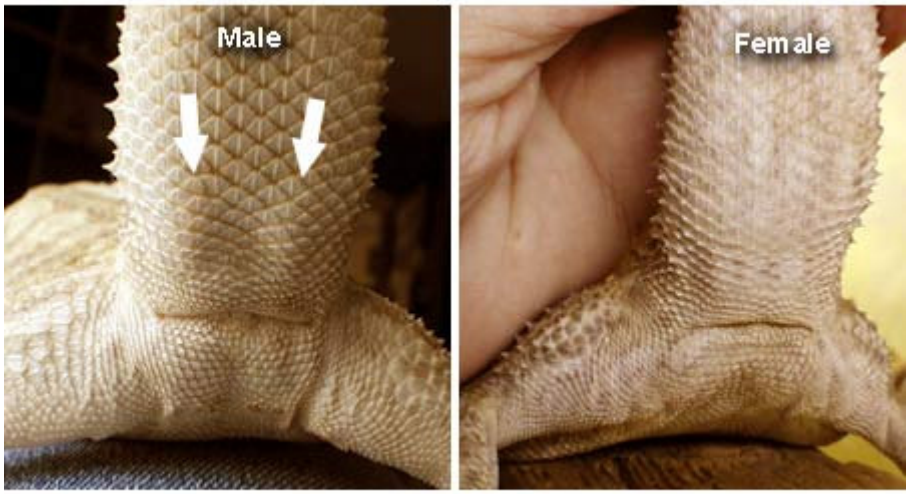
two bulges (hemipenes) with definite groove between them in midline

probably male

single solid bulge at base of tail, no groove in midline

probably female

Sexing adult bearded dragons



two bulges (hemipenes) with definite groove between them in midline

no groove in midline; single solid bulge at base of tail

which can be seen in a row on the underside of each thigh, and a dark beard and bobbing display which is often very noticeable with full maturity. Females can display a dark beard too, but do so infrequently, usually when angry or distressed. They rarely bob in the typical rapid fashion of a male, but bow slowly or arm-wave in response to his presence.

Miscellaneous information: When handling a bearded dragon, never grab the body. Even very young dragons will perch on your fingers if you slide them under the body and let the dragon place his feet on your hand before you lift him. Older dragons may be lifted by scooping your hands under his feet, one hand to each side of his body, so both front and back feet are supported as you lift him. Dragons are very trusting and do not cling hard; if he is perching on your arm or shoulder, keep a hand nearby to prevent a sudden fall.

Bearded dragons sleep very soundly; they will not waken even if being nibbled by uneaten crickets in their viv at night. One way of avoiding this unpleasant possibility is to hand feed the crickets (beardies are easily tamed this way) or to put them in a very wide-necked jamjar such as a 1kg honey jar and hold it so that the beardie can put his head in to feed. Several dragons can be fed this way in a very short time; it also prevents any problems with them bullying each other over live food. Alternatively they could be fed in a separate area, eg. an empty viv, cat litter tray, etc. If uneaten crickets are loose in the viv overnight, leaving a small amount of vegetable food that the crickets can eat may help prevent problems.

References / Suggested Reading: This caresheet is only a very basic outline at best. I would recommend keepers buy one of these inexpensive books: (order from local bookseller, or online eg. Amazon.co.uk)

1. The Bearded Dragon Manual by Philippe de Vosjoli, Robert Mailloux, et al. Herpetocultural Library. 2001. Advanced Vivarium Systems. ISBN 1-882770-59-5. This is really an excellent book in many respects.

2. Pet Owner's Guide to the Bearded Dragon, by Aidan Raftery MVB, CertZooMed, MRCVS. 2002 Ringpress Books, Interpet Ltd. ISBN 1-86054-129-1 A fairly new book by a British reptile vet.

3. The Bearded Dragon by Steve Grenard. Owners Guide to a Happy Healthy Pet Series. 1999 Howell Book House. ISBN 1-58245-012-9

Websites: I would recommend keepers start by exploring the following excellent sites:

1. Kathryn Tosney's website: http://biology.lsa.umich.edu/research/labs/ktosney/file/BDcare.html

2. Jenn Harrell's website: http://www.blackninjakitty.com/herps/dragons.php

3. **Bill Mears' website: http://www.geocities.com/borderviewdragons**

4. **The Reptile Rooms Bearded Dragon Pages: http://www.reptilerooms.com/Sections+index-req-listarticles-secid-1.html**

5. **Pogona : an e-mail based group: http://groups.yahoo.com/group/pogona**