



Clare Louise Oldfield BA(Hons) RVN

Clare is a Registered Veterinary Nurse who qualified from Myerscough College in 2013. She has worked at Birch Heath Veterinary Clinic, a small animal and exotic specialist practice in Cheshire, for nearly five years. Clare has particular interests in reptiles, fundraising and running puppy clinics and weight clinics. She has a handsome black Labrador and two bouncy Springer Spaniels.

Bearded Dragons: common husbandry and nutrition-related problems

Clare Louise Oldfield BA(Hons) RVN
Birch Heath Veterinary Clinic, Birch Heath Rd, Tarporley, Chester CW6 9UU, UK

ABSTRACT: Bearded Dragons are one of the most popular reptiles kept as pets. They are regarded as low maintenance, friendly and inquisitive animals and, because of this, are highly desired. However, they are often presented for a variety of illnesses which, with the correct understanding of this species, could have been prevented. This article aims to inform the veterinary nurse about the common problems associated with keeping Bearded Dragons and about simple husbandry and dietary advice that they can give to owners to promote a healthier lifestyle.

Introduction

Bearded Dragons (*Pogona vitticeps*) are becoming one of the most popular exotic pets due to their reputation of being one of the easier reptiles to care for. However, they are presented at the veterinary surgery for a variety of problems, some of which may have gone unnoticed for several months. The scarcity of exotic specialist veterinary practices can also result in owners having restricted access to knowledgeable advice. As many healthcare issues are husbandry-related and dietary in origin, the veterinary nurse can play a vital role in advising owners of the correct way to keep their Bearded Dragons healthy and disease free (Figure 1).

Bearded Dragons: a basic overview

Bearded Dragons are native to the semi-desert areas of Australia. Like all reptiles, they are ectothermic, regulating their internal temperature by external environmental heat sources. They are heliotherms, warming themselves by basking on branches and rocks, exposing themselves to the heat and ultraviolet (UV) light they require. Being primarily herbivorous, vegetation and green, leafy plants make up approximately 85% of their diet, with 15% being insects such as crickets and mealworms (Raftery 2002). They can live for 12–15 years and can grow to 50–60 cm in length (Vella 2014).



Figure 1. A healthy Bearded Dragon (Photograph provided by Zoe Wilkinson)

To cite this article, use either
DOI: 10.1111/vnj.12190 or Veterinary Nursing Journal
VOL 29 pp354–357

Common illnesses

Indications of illness include: anorexia, weight loss (**Figure 2**), closed eyes, anuria, dyschezia, constipation, lethargy, ataxia, dehydration, depression and respiratory signs.



▲ **Figure 2.** An anorexic and emaciated Bearded Dragon with prominent skull and ischial tuberosities visible (Photograph provided by Vicki Baldrey)

Diseases commonly seen include: metabolic bone disease (MBD) (also known as nutritional secondary hyperparathyroidism or NSHP) (**Figure 3**), dystocia, follicular stasis, hepatic lipidosis, gastrointestinal impactions and endoparasite burden. Many of these diseases arise because of husbandry and dietary insufficiencies. It is therefore important that the owner is well informed and understands the husbandry and dietary needs of the Bearded Dragon and how these affect their physiological processes.



▲ **Figure 3.** Individual showing unnatural curvature of the spine due to MBD/NSHP

Common husbandry mistakes

Basking behaviour in the pet Bearded Dragon should be encouraged, and the use of a *combined* heat and UV lamp allows them to bask and absorb both heat and UV as they would naturally (**Figure 4**). They should be provided with combined heat and UV light for 12 hours during the day and with 12 hours' night-time heat. The temperature hot spot should be around 40°C but the range should be 27–31°C. At night the temperature should be reduced to mimic the lower temperatures that would be experienced



▲ **Figure 4.** A heat and UV combined lamp



▲ **Figure 5.** A ceramic lamp used to provide heat at night time, and a digital thermometer probe

in the wild, and a minimum night-time temperature of 24°C is recommended. A ceramic lamp with a thermostat can be useful to select the required night-time temperature (**Figure 5**).

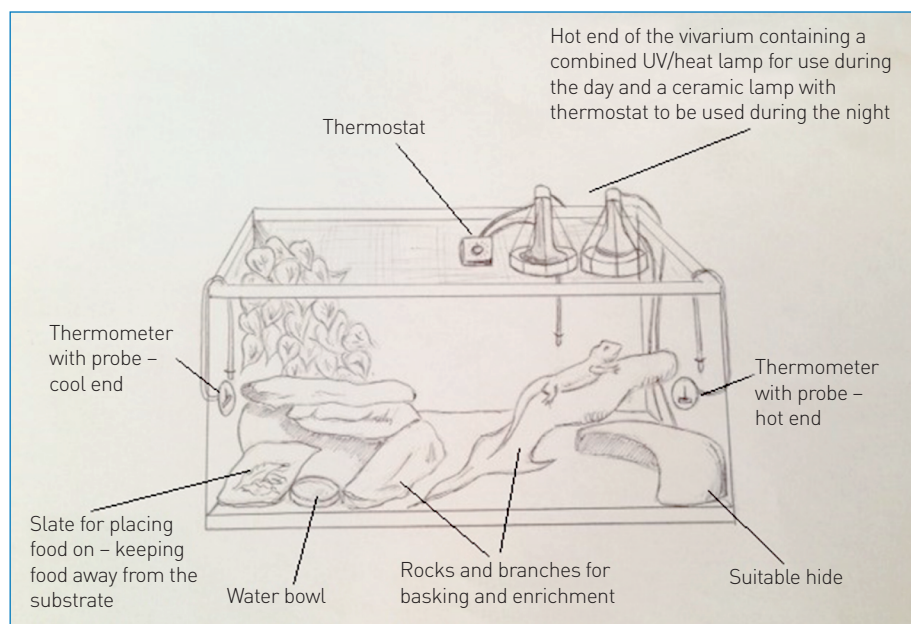
One end of the vivarium should contain the heat/UV lamp, allowing the other end to remain cool, giving ample room for the Bearded Dragon to select its desired temperature (**Figure 6**).

Owners will often place a heat lamp at one end of the vivarium and a UV light at the other. This means that the Bearded Dragon has access to only heat *or* UV at any one time. Heat is essential because reptiles have a preferred body temperature (PBT) and, if this is not met, their physiological and metabolic processes begin to shut down, leading to anorexia, weight loss and nutritional illness. UV is also essential: it enables production of vitamin D3, which is vital in the metabolism of calcium, lowering the risk of MBD/NSHP and promoting a healthy immune system.

Note that lamps emitting UV must be *inside* the vivarium because plastic and glass filter out UV light.

UV measurement

Owners may insist that their lamp is brand new and could not be contributing to illness. However, four years of experience advising clients about the husbandry of these reptiles has shown me that around half of every batch of new lamps ordered are returned due to insufficient UV being produced. Owners should be advised to keep a UV meter in order to test lamps. These can be obtained from most reptile shops and online (**Figure 7**, p. 356). The lamps should be allowed to warm up for 10–15 minutes and should then be measured with the UV reader at a distance of 30 cm. The minimum acceptable reading is 50 uW/cm² but ideally it should be



▲ **Figure 6.** An example of a vivarium layout with combined heat/UV (for use during the day) and a ceramic lamp with thermostat (for use during the night) at one end. Thermometer probes are used to observe the temperature readings of the hot and cool ends of the vivarium



Figure 7. A UVB solarmeter used to test UV lamps

over 100 uW/cm² as the lamp will start to deteriorate with age. All UV lamps should be changed every 3–6 months if not regularly checked by a UVI meter such as a Solarmeter 6.5.

Temperature measurement

Temperatures within the vivarium should be read at either end with a digital thermometer. A daytime temperature range of 27–31 °C, with a basking temperature of 40 °C, is required. At night the temperature should not drop below 24 °C.

Owners who do not use thermometers will be unaware of the range of temperatures that their Bearded Dragon is exposed to. This can be detrimental as Bearded Dragons rely heavily on the correct ambient temperatures for the normal function of their physiological processes.

Substrate requirements

Substrate choice can be confusing due to the variety available. Newspaper is advised, as this is easy to clean out, prevents the possibility of impaction and allows for observation of faecal and urine output. Aesthetically, though, it can make for an unattractive and unnatural-looking habitat. Owners may prefer Reptigrass, which is a more aesthetically pleasing alternative.

Other popular substrates are Calci-sand, cat litter and woodchip, but the owner must consider the likelihood of gastrointestinal impactions if these are consumed at the same time as food (Girling 2003). Placing vegetation on a slate raised off the substrate helps to reduce this possibility and it is also advisable to feed live insects in an area away from the substrate.



Figure 8. A Bearded Dragon being weighed on digital scales (Photograph provided by Kathryn Perrin, Copenhagen Zoo)

Weighing the Dragon

Weighing the Bearded Dragon on a daily basis and keeping a record of its weight should be strongly recommended to clients, as this can quickly indicate if there are any problems. This record should be made available to the veterinary surgeon whenever the reptile is presented for examination (Figure 8).

In reality, owners rarely weigh their Bearded Dragons and therefore often miss the first signs of illness, which are usually weight loss and anorexia. The longer they are left to deteriorate, the lower the chances of recovery. All practices must have suitable scales to weigh these patients accurately in grams. Inexpensive digital household scales are useful for weighing smaller animals accurately.

Bathing

Bearded Dragons need a supply of fresh water for drinking and to enable regular bathing. Owners may say they have been told that their Bearded Dragon does not require water to drink or for bathing as they are desert animals. This is not the case and daily bathing in warm water is highly beneficial for hydration.

Bearded Dragons have a urinary bladder that differs from that of mammals in that the ureters first pass to the cloaca and then to the bladder. It is believed that the bladder acts as a store, reabsorbing fluid when necessary (Girling 2003). Being desert animals, this helps them to retain as much fluid as possible, maintaining hydration levels. Bearded Dragons are uricotelic, i.e. they produce a white chalky substance called uric acid instead of urea as a way of conserving water (Rendle & Cracknell 2012).

Dietary requirements

Bearded Dragons are omnivorous, eating both plants and insects (Table 1). The juvenile Bearded Dragon is a true omnivore as its diet consists of 50% plants and 50% insects. The ratio for adults, however, should be around 85–90% vegetation (Rafferty 2002).

Table 1. Suitable food for Bearded Dragons

Vegetation	Insects (in moderation)
Parsley	Crickets
Dandelion	Mealworms
Spinach	Wax worms
Dark leafy salads	Locusts
Coriander	
Watercress	
Clover	
Bok choy (Pak choi)	
Broccoli	
Curly kale	

Common dietary problems

Insects have an exoskeleton rather than a bony endoskeleton and they are therefore low in calcium. Because insects often make up the main part of the diet fed to Bearded Dragons, hypocalcaemia, follicular stasis and fatty liver disease can result (Figure 9). Vegetation is vital to ensure that appropriate levels of calcium are ingested, and foods such as curly kale and watercress are suitable, containing around 150–170 mg of calcium per 100 g (Food Standards Agency 2002). Care should be taken with the feeding of brassicas such as kale, however, as they also contain high levels of oxalates which inhibit the uptake of calcium within the body (Paws for Thought 2014).

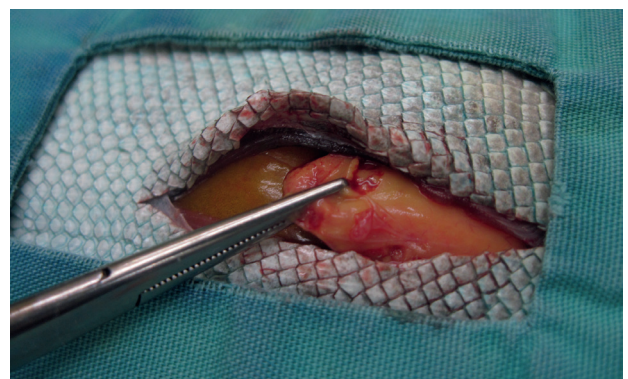


Figure 9. In patients with hepatic lipidosis, seen commonly with incorrect diets, the liver is yellow and pale

Other options are to dust the food with calcium and mineral supplements or 'gut load' the insects that are fed. Gut loading is the practice of having the insects eat and absorb nutrients such as calcium by supplementing their food. The Bearded Dragon will then eat the insects, which contain enhanced levels of calcium and minerals.

Calcium deficiency is one of the major problems seen in reptiles fed diets of low nutritional value or an all-insect diet. It is also common in gravid females, which require extra calcium support for egg production. It is important to note that a healthy gravid female may show signs of anorexia but she should be alert and active. Signs of depression, lethargy, ataxia and collapse associated with possible dystocia or follicular stasis should be considered an emergency (DeNardo 1996).

A variety of supplements are available to add further minerals and vitamins to the diet (Figure 10). These are given following signs of illness or when the individual is in need of extra dietary support (Table 2).



Figure 10. A variety of the Vetark supplements available

Table 2. Recommended Vetark supplements (Storage requirements: keep at room temperature; do not store above 25 °C)

Product	Description	Use
Zolcal-D	A liquid formulation of calcium and vitamin D3	Suitable for animals where additional calcium and vitamin D3 are required Can be given directly or in drinking water
Reptoboost	An electrolyte, probiotic and energy drink	Used by mixing into baths where drinking is more likely It is important to wash this off following bathing, as it is a food and therefore encourages bacterial growth on the skin A good pick-me-up for debilitated reptiles
Arkvits	A powdered vitamin and mineral supplement containing calcium and vitamins D3, A, C and E	Good for dusting live insects

Parasites

Parasites such as coccidians, flagellates and oxyurids are commonly seen in Bearded Dragons, with the animals presenting with signs such as anorexia, weight loss and diarrhoea. Treatment depends on the particular parasite, and it is therefore advisable to ask the owner for a faecal sample from the animal to be sent off for laboratory analysis. It is advisable to request a faecal sample for a routine check of any reptile.

Use photographs

Asking clients to provide photographs of their Bearded Dragon's housing can be a useful tool when presented with an animal. This gives an opportunity to discuss any problems with the environment and enables owners to feel more involved with the ongoing care of their pet.

Conclusion

The health and well-being of a captive Bearded Dragon rely heavily on the animal having the correct husbandry, including housing, and the correct diet. If any one aspect of its husbandry is incorrect, the Bearded Dragon can become sick, get progressively worse and may even die.

The role of the veterinary nurse in educating clients on the good husbandry and care of the Bearded Dragon is extremely important. Promoting responsible pet ownership and encouraging owners to understand and research their chosen species of animal can make all the difference to that animal's well-being. [vni](#)

Acknowledgements

I would like to thank Matthew Rendle, Senior Clinical Veterinary Nurse of ZSL London Zoo, for revising this article for me. His input has been very gratefully received.

References

DENARDO, D. (1996). Dystocias. In: MADER, D. R. Ed. *Reptile Medicine and Surgery*. Philadelphia, Pennsylvania. W. B. Saunders.

FOOD STANDARDS AGENCY. (2002). *McCance & Widdowson's The Composition of Foods, 6th Summary Edition*. Cambridge. Royal Society of Chemistry.

GIRLING, S. (2003). *Veterinary Nursing of Exotic Pets*. Oxford. Blackwell Publishing.

PAWS FOR THOUGHT. (2014). *Bearded Dragon Caresheet*. [Online] Available from: <http://www.pawsforthought.co.uk/reptile-caresheets/bearded-dragon-caresheet> [Accessed: 23 September 2014].

RAFTERY, A. (2002). *Pet Owner's Guide to the Bearded Dragon*. Surrey. Ringpress Books.

RENDLE, M., & CRACKNELL, J. (2012). Reptiles: Biology and husbandry. In: VARGA, M., LUMBIS, R., & GOTT, L. Eds. *BSAVA Manual of Exotic Pet and Wildlife Nursing*. Gloucester. BSAVA.

VELLA, D. (2014). Sydney Exotics and Rabbit Vets: Reptiles: Bearded Dragons. [Online] Available from: <http://www.exoticvet.com.au/petcare.html> [Accessed: 23 September 2014].

NEWS REVIEW

by Jean Turner

Dangerous tweets: using social media responsibly

A survey this year has revealed that 43% of employers have had to deal with the misuse of social media, and nearly a third (31%) have had to take disciplinary action against an employee.

Veterinary surgeons and nurses have a duty to behave responsibly and professionally both offline and online, and not to bring the veterinary profession into disrepute. Inappropriate use of social media can have serious consequences and can be taken into consideration in discussions about fitness to practice during disciplinary hearings. Students who misuse social media risk losing their place at university as well as their eligibility to be placed on the Register.