

HOW ENRICHING ENVIRONMENT HELPS EXOTICS' PSYCHOLOGICAL WELL-BEING

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GLEN COUSQUER discusses how enhancing the environment of exotic animals is vital to improving and maintaining their health and welfare

MANY exotic pets are not very far removed from their wild cousins and will have been subject to little in the way of selective breeding.

Such pets cannot be described as domesticated and retain many of the instincts and characteristics of their cousins back in the wild. In the wild, these animals will spend a considerable amount of time and energy engaged in the search for, and processing of, food, the building of nests and the defence of their territory. In captivity, these animals are removed from the environment that they have evolved to live in. Consequently, they are less able to demonstrate their full range of behaviour and this can have a number of implications for their health and well-being.

This article will explore the health and welfare implications of an inappropriate captive environment and introduce the concept of environmental enrichment as a means of enhancing the life of the exotic pet and improving its psychological well-being.

Health and welfare implications

An inappropriate environment is likely to result in the appearance of problems related to the inability of an animal to demonstrate normal behaviour. Some examples include:

- The inability of a prey species to hide and escape from perceived threat or threats is likely to result in considerable stress.
- Failure to provide adequate nesting facilities and materials is likely to result in problems such as egg binding.
- Failure to provide intelligent animals with a stimulating environment is likely to result in the appearance of behavioural problems. Failure to provide birds - for example, particularly intelligent birds such as parrots - with an appropriate environment can lead to feather pecking, resulting in varying degrees of self trauma.
- Failure to provide an area of high humidity is likely to result in dysecdysis in reptiles.
- Failure to provide an appropriate diet is likely to result in gastrointestinal disturbances.
- Failure to provide reptiles with an adequate temperature gradient can result in dehydration, failure to eat, digestive problems and an impaired immune response.
- Social isolation and social conflict can both act as stressors.

What is environmental enrichment?

Environmental enrichment is a term used to describe the means by which a captive animal's environment can be enhanced to encourage behaviours that are appropriate for that species and that satisfy the animal's individual psychological and physical needs.

Environmental enrichment is also termed "behavioural enrichment". This alternative definition emphasises the end result that animal keepers seek to achieve through environmental enrichment. It is a dynamic process that seeks to enhance animal welfare by increasing the behavioural choices presented to animals and, in doing so, encourage them to demonstrate species-appropriate behaviours and abilities.

The goal of environmental enrichment is to increase activity and stimulation levels in the captive environment, thereby stimulating natural behaviour or behaviours, increasing activity levels and decreasing (or eliminating) stereotypical behaviours. It is easier to think of environmental enrichment in terms of its goals and objectives rather than its definition. These goals are listed by Young (2003) as:

- an increase in behavioural diversity;
- a reduction in the frequency of abnormal behaviour;

- an increase in the range, or number, of normal (for instance, wild) behavioural patterns;
- an increase in the positive use of the environment; and
- an increase in the ability to cope with challenges in a more normal way.

Environmental enrichment for hospitalised patients

You may well ask why environmental enrichment is an important consideration for the hospitalised exotic patient. Why, indeed, should you make extra work for yourselves? Is there really any need to “dress up” that perfectly functional kennel, run, vivarium or tank?

In answering this question, we must bear in mind that many of our exotic patients are in some way injured or critically ill. A high proportion of these patients have been subject to poor husbandry practices prior to presentation and these need urgent identification and correction. These patients are all likely to be experiencing considerable stress of one form or another. If we are to help them cope with these stresses, and speed them on the road to recovery, it is essential that we do everything possible to keep them mentally and physically fit.

Environmental enrichment should, therefore, be viewed as an essential part of the nursing care and rehabilitation of any hospitalised exotic patient.

In veterinary practice today, housing systems are primarily designed according to hygienic, economic and ergonomic requirements. While this approach is entirely practical, it tends to ignore the welfare of the animal. Fortunately, however, these housing systems can easily be adapted to better meet the welfare needs of the patient and it is the veterinary nurse who is best placed to introduce, develop and promote this aspect of patient care.

How can we enrich a patient’s environment?

Environmental enrichment can be divided into a number of different categories. Young (2003), for example, groups the different forms of enrichment into social (contact and non-contact), occupational (psychological and exercise), physical (enclosure and accessories), sensory and nutritional groups. These groups overlap somewhat and so, for the purpose of this article, the following forms of enrichment will now be explored further:

- Food-based (nutritional) enrichment. This is probably the most widely used method of enrichment. All animals require food to survive and are, therefore, especially likely to respond to food-based enrichment. The aim of such enrichment is to prolong feeding time. By encouraging animals to actively seek out food in a variety of ways, it is possible to increase activity levels and stimulate natural foraging behaviour. Food can be placed on the outside of a parrot’s cage, for example, thus encouraging the bird to feed across the bars or through the mesh.

Food can also be cut up and scattered to stimulate foraging through the enclosure substrate. Food can also be hidden in boxes, paper bags and similar objects, providing these are all safe to chew. Inquisitive animals, such as ferrets, may benefit from having tasty items of food hidden at the bottom of deep pots or tubes, thus encouraging them to sniff out and seek out their food.

The construction of food puzzles can be as much of a challenge for the carer as for the patient; if you have had to think hard how to hide a pile of nuts from a parrot, then hopefully it will have to put a similar amount of effort into the recovery of that food.

The use of low-calorie food will encourage foraging behaviour and is an important consideration when feeding patients such as rabbits and parrots. It is often not acceptable to simply place food in a bowl and demand nothing else of the patient than that it clear its plate. It may also not be appropriate to prepare food or feed-prepared food. Parrots, for example, should be left to remove peanuts from their shells themselves and will benefit from the provision of other food items that demand a little bit of work - for example, corn-on-the-cob and pomegranates (Evans, 2001).

• **Sensory enrichment.** Enrichment techniques that provide sensory stimulation and encourage an animal to explore and investigate its environment can stimulate a range of natural behaviours. Sensory stimulation can take many forms. The precise senses stimulated will depend very much on the species under consideration. Some species have a highly developed sense of smell (for example, canids and mustelids), while others have a highly developed sense of vision (for instance, birds). Use of olfactory stimuli - such as herbs and spices, catnip for cats and toothpaste or mouthwash - have been used in zoo exhibits and have been found to induce extra scent marking. The use of lighting is often overlooked. Diurnal exotic pets will benefit from access to direct sunlight or provision of UV light. Many birds are able to distinguish the elements of the UV spectrum and this may facilitate the recognition of food items and the plumage of other birds.

Noise can be of benefit to some patients, particularly if they would be used to a noisy environment in the wild. Music, radio or television can be used to provide companionship for single-pet parrots. It should be noted, however, that where an animal's choices are restricted and it cannot avoid a stressor (such as a barking dog or Radio Two) it may find a noisy environment stressful.

Preening and bathing are useful forms of sensory stimulation. Parrots will often appreciate a gentle shower and this can act as an aid to grooming and feather care. The provision of a water bowl in a bird's enclosure will provide it with the opportunity to bathe, should it so desire. Bathing is also a valuable stimulus to many reptiles and the opportunity to bathe should be made available to them.

• **Novel objects.** Novel objects may not necessarily be natural, but are likely to occupy the animal's time in a captive setting. Mice can be given marbles to play with. Other toy items include cuddly toys, kongs, puzzles, shiny or crackly paper, toilet rolls, paper bags and rawhide dog chews. It is important that all toys should be safe. This is particularly true for destructive species, such as dogs and parrots.

Parrots will benefit from the provision of destructible novel toys, such as cereal packets and paper cups, as well as twigs and leaves from non-toxic trees. They can spend some considerable time engrossed in their shredding. Parrot toys must, however, be zinc and lead free.

A commonly seen mistake in the provision of toys is to provide many different types at the same time and to leave them in the enclosure for weeks or months. Toys will often remain attractive for a limited time period, typically less than one day. The effectiveness of such novel objects is best increased by removing toys at the end of the day and introducing different types of toys to the enclosure the following day. This can be repeated for approximately two weeks before the original toy is again reintroduced.

- **The cage environment.** The environment in which an exotic pet is housed should provide it with plenty of opportunity to demonstrate natural behaviour.

Hiding places should be provided for all prey species. Use of boxes, plastic stools, toilet rolls, drain pipes, logs and bedding material can all provide good options for an exotic patient to demonstrate hiding behaviour. Where possible, these hiding places should still allow veterinary staff the opportunity to observe and monitor the patient.

The cage environment should always be considered in three dimensions. Fossorial species, such as moles, gerbils and rats, will benefit from the provision of a substrate that allows them to burrow. Arboreal species will benefit from the provision of plant material, branches or similar items that allow them to climb and perch.

- **Exercise.** Opportunities to exercise should be provided where appropriate. There may be limited scope for this in veterinary practices but, where possible, consideration should be given to the availability of, and scope for, exercise. The provision of climbing material, play areas, exercise balls and wheels can all encourage animals to undertake exercise.

- **Social enrichment.** For most companion animals, human-animal contact (for instance, social enrichment) can be a valuable form of environmental enrichment and can act as a good substitute for housing animals in social groups. Careful consideration should be given to whether such contact is beneficial. In certain domesticated species, handling may be appropriate, but even in these species handling can prove a stressful experience. It is essential that the human has a good understanding of how to touch, stroke and pick up an animal, as animals that are poorly or inappropriately handled are likely to be significantly stressed by the experience.

In certain other species, handling may be completely inappropriate. This is likely to be the case for species that probably view the human as a threat. It should be noted that failure to struggle and attempt to escape does not, of itself, imply that the animal is happy to be handled. Many species feign death or freeze when approached by a predator, so they, therefore, often appear calm when handled. Careful consideration should be given to the handling of exotic veterinary patients.

The housing in isolation of any social species may become necessary where that animal requires hospitalisation. In many cases, it may be appropriate to hospitalise a patient together with its cage mate to ensure the provision of company - where this is desirable.

Mother-rearing of mammals and birds is of the utmost importance for the normal behavioural development of the neonate. Animals that are not mother-reared do not develop normal social behaviour and are likely to demonstrate inappropriate reactions to the social signals of their species. This, too, should be taken into consideration when advising on the hand rearing of an exotic pet.

• **Training.** Training is a well-used technique within modern zoos and can allow necessary procedures (for example, blood sampling) to be performed with the minimum of stress. Training sessions rely on positive reinforcement, are short and should always end on a high for the animal. There is unlikely to be a great deal of scope for this form of environmental enrichment in the veterinary practice.

Nurses should, however, have a good understanding of the training of certain exotic pets - such as rabbits, ferrets and birds - so that advice can be provided to owners in much the same way that behavioural advice is provided to owners of dogs and cats.

Conclusions

Environmental enrichment is a fairly new concept and one that has received little attention outside of the laboratory animal, farm animal and zoo animal environment. Companion animals, and exotic pets in particular, are likely to benefit from such enrichment and this field is likely to receive further attention over the coming years. Hopefully, this feature will have stimulated readers to go away and start thinking about how they can make a positive contribution to the well-being of the exotic animals in their care, through environmental enrichment.

References and further reading

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This healthy bearded dragon is in a well-designed vivarium. Astro turf has been used to provide an attractive and easy-to-clean substrate. Good use has been made of stones and logs to provide hiding places and basking rocks allow a wide range of natural behaviour to be demonstrated. All items of furniture can easily be cleaned. A varied diet is also provided for the creature.



A tortoise hospitalised with post-hibernation anorexia. The tortoise's environment is functional and is easy to clean, maintain and manage, but there is no consideration here of the tortoise's need for environmental enrichment.