

Lions, Tigers and Bears! What the animal management officer can learn from Zoos

S Neill

Introduction

Many of the problems investigated by Animal Management Officers appear to have arisen due to the pet owner's lack of knowledge or misunderstanding of their pet's behaviour. Instead of relying on enforcement as a tool to manage such problems, local governments are becoming more committed to working proactively in assisting pet owners in dealing with their pet problems by providing them with the latest advice and information.

Much of this information is usually based on popular training methods and research of domestic animals. However in 2003, the Gold Coast City Council's Animal Management Section decided to start thinking 'outside the square'. With the assistance of Sea World and Dreamworld on the Gold Coast, we commenced research of the methods used in the management of other animal species such as tigers, cougars and marine mammals, in order to develop new work practices.

This paper presents a snapshot of some of the facilities at the above noted zoos. It explores what these and other like facilities have to offer to Animal Management Officers and local governments in terms of enhancing knowledge and introducing new techniques in animal behaviour, animal husbandry & handling, environmental enrichment, and public awareness & education.

Why Zoos?

There are many parallels that can be drawn between the zoo environment and that imposed on our companion animals. We control and constrain the environment of our pets, their enclosures, food and feeding patterns, their social activities and sexual behaviour, just as zoos do with their captive animals. We are required to develop a good management program (although we may not think of it in those terms) to ensure that our pets are healthy, active and not causing a nuisance to others. However, when it comes to the management of domestic animals, we often hit a stumbling block. We can become too familiar with them.

When we become familiar with something we often stop paying attention to it. We do not see new things because we are not expecting to see them (Grandin & Johnson 2005). We develop set expectations about animal behaviour and resist, either consciously or unconsciously, alternate ways of thinking.

Zoos have a tremendous amount of knowledge and experience to impart on animal behaviour, handling and general management. Furthermore, they offer the opportunity to Animal Management Officers to "blow away the cobwebs" and get a fresh perspective on things. Because the officers are learning about a new species of animal they are more attentive to the experience. At the Gold Coast City Council we have found that we subsequently become more perceptive in our interaction with companion animals and have more to offer to pet owners in terms of problem solving.

Responding to natural behaviour and instincts

Lessons from Tiger Island, Dreamworld

The Gold Coast theme park Dreamworld is the home of *Tiger Island*, a facility that features six Bengal tigers, one Sumatran tiger and two cougars. Dreamworld promotes *Tiger Island* as 'an education conservation-based experience that enables people to get up close with and appreciate these species.

The tigers play, wrestle and swim with their handlers each day without the constraints of enclosures, enjoying a relationship that is based on trust, respect and affection' (Dreamworld 2005).

Peel back the glossy public relations layers and you will find that the success of *Tiger Island* relies on constant, intensive management, grounded to a commitment in understanding & responding to the tigers' natural behaviour and instincts. Herein lies the ultimate lesson of *Tiger Island* and one that directly relates back to urban animal management: to get the most out of the human-animal relationship you must firstly acknowledge and respect the animal's natural behaviour.

To explore this concept further, let us examine a common experience for today's Animal Management Officer: the pet owner that finds it difficult to grasp or accept that their dog is just that – a dog. The owner humanises the dog and by denying the existence of the dog's natural behaviour, the owner is ill prepared for problems such as excessive barking or aggression. In particular, many dog owners refuse to acknowledge that aggressive behaviour in dogs is natural, eg: "Fido would never bite anyone!"

This type of thinking frequently has tragic consequences as the owners do not put any safeguards in place with regard to the management of their dogs and do not react appropriately to the predictors that signal something is about to happen. However, the handlers at *Tiger Island* do not have the luxury for such narrow thinking. Their lives depend on acknowledging that the animals they work with, although trained, are essentially wild and by nature, very aggressive. This aggression should not be viewed as a negative concept. The tiger's success as a species in its natural habitat depends on aggression. A tiger with no aggression very quickly becomes a very hungry tiger.

By acknowledging that aggression is a natural part of the tigers' behaviour, the handlers can be proactive in ensuring the tigers are managed so that opportunities for such behaviour are appropriately channelled. In their unique relationship, the handlers at *Tiger Island* eloquently demonstrate that knowledge of the animal and its natural drives and instincts is the key to ensuring that it is managed to the benefit of all.

A number of parallels can be drawn between the management of the tigers & cougars at *Tiger Island* and urban animal management. To manage various behaviour issues *Tiger Island* may implement a number of measures including:

- Behaviour modification;
- Removal of stimuli;
- Environmental enrichment & modification; and
- Veterinary intervention.

The following table shows several problems that Tiger Island staff had to overcome and the management strategies that were implemented. What is striking is the similarity between the problems and resulting strategies with the tigers, with those we experience with dogs.

Identified Problem	Management Strategy	Category
One of the male tigers had developed a habit of staying at the back of the exhibit near the access gate. In this position not only was he difficult for the park visitors to see, but he posed a danger to handlers entering the exhibit.	Syringes of vinegar were kept by the access gate and the tiger was squirted every time he skulked at the gate. He was rewarded when he moved away from the gate.	Behaviour modification
The cougars were being temporarily housed in the western wing of the complex while their new enclosure was under construction. The tigers were 'eyeballing' the cougars, making the cougars nervous. Handling of the tigers became more difficult in the area as they became increasingly fixated with the cougars' presence.	The handlers solved the problem by covering the cougars' enclosure with shade cloth.	Removal of stimuli
The tigers are attracted to strong scents such as insect repellent, juniper and Singapore daisy. They may react by immersing themselves in it or licking the source. The longer they do this the more 'goofy' they act and they can become very possessive of the source.	Recognising the scents that have this affect and limiting the tiger's exposure to them.	Environmental modification
Female cougars are extremely noisy callers during oestrus.	As there were no plans to breed the cougars they were de-sexed to prevent this noise nuisance.	Veterinary intervention

Table 1: Some behavioural problems & strategies at Tiger Island

The level and quality of the interaction between tiger and handler that can be seen at *Tiger Island* demonstrates what can be achieved when you commit to understanding and responding to the animal's natural behaviour. There is no superhuman animal handling skills involved – the only thing that is extraordinary with the methods employed is their level of application. When most pet owners give up or find that ignoring the problem is easier, *Tiger Island* perseveres, and the results are awesome.

Environmental enrichment

Lessons from Polar Bear Shores, Sea World

One problem that zoos must battle is the development of stereotypic behaviour in their animals. A stereotypy is a repeated, relatively invariant sequence of movements, which has no obvious purpose (Fraser & Broom 1997), eg: pacing, wind-sucking, head-shaking, etc. It can be observed in a wide range of animals, most of which are held in captivity including horses, pigs, chickens, primates and carnivores. To relieve stereotypic behaviour, zoos strive to employ appropriate environmental enrichment strategies.

In general, "environmental enrichment" means providing a complex and diverse environment that increases the possibility that the captive animal's own behaviour will produce what it needs: finding food, demarcating a territory, building a nest, maintaining its physical conditions, escaping conspecifics, or hiding. An animal with behavioural options will be better able to cope with stressful events in its surroundings or alleviate boredom. Behavioural options can be improved by increasing the complexity and variability of the environment physically, sensorily and socially (Carlstead 1996). Zoos have recognised that enrichment strategies improve the psychological well being of their animals as well as relationships between the animals and the keepers (Gregory & Tribe 2003) and have embraced the concept with considerable enthusiasm.

Environmental enrichment has become a buzz term for the companion animal world too. It is seen as a management strategy for unwanted behaviours such as barking, digging and fence pacing. However, the enrichment strategies implemented by the average pet owner appear to be limited to physical enrichment objects. There is a large commercial market for these items and one needs only to visit a pet store to see a dizzying array of chew toys, throw toys and food puzzles.

Unfortunately, the novelty of these objects tends to wear off if the item is used too frequently or remains in the enclosure for long periods of time (Gregory & Tribe 2003). Furthermore, environmental enrichment is not just about throwing a few toys to the animal. The concept also encapsulates social enrichment, sensory stimulation, feeding strategies and behavioural conditioning and training.

Sea World on the Gold Coast has world-class facilities & management programs for their marine mammals. One of their latest attractions, *Polar Beach Shores*, is a prime example of environmental enrichment at its best.

Enclosure furnishings and sensory stimulation

The *Polar Bear Shores* complex includes an outdoor exhibit that provides viewing for the public, an outdoor off display yard and five air-conditioned pens. The outdoor exhibit has been constructed to resemble the natural tundra environment in the summertime. It covers various elevations and includes a large, main saltwater swimming pool as well as three smaller freshwater pools. The freshwater pools include waterfalls and are connected by a stream. Aromatic spices and other stimulators may be smeared and distributed at varying elevations throughout the exhibit and novel objects are regularly rotated throughout the facility, including off exhibit areas.

The exhibit has a number of environmental enhancements that can all be controlled from the keeper office. Chilled water vapour can be deployed from 270 nozzles in different areas and rain can be generated across the entire exhibit anywhere from a heavy pour to a light mist. Winds up to 25 kilometres per hour can be generated throughout the exhibit by six giant fans recessed into the walls (Nicosia & Haynes-Lovell 2003).

Feeding strategies

Many wild animals spend much of their time feeding and foraging. By contrast, captive mammals often receive their food in a single daily serving and are largely inactive as a result. It is possible to alter the way in which captive animals are fed and thereby increase their activity levels to approach wild norms. Individual feeding bouts can be prolonged by the provision of food that is difficult to process. More frequent feedings and distribution of food throughout an enclosure effectively provide diversion and relieve boredom (Maple & Perkins 1996).

At *Polar Bear Shores* an assortment of food is scattered throughout the exhibit in the morning before access is permitted to the bears. Foods such as watermelon are frozen into giant ice blocks and may be presented in a variety of containers that can be manipulated or floated in the pools and other snacks are concealed in toys. Sometimes live fish are added to the exhibit pools, giving the bears a positive hunting experience.

Behavioural conditioning and training

Training is another type of enrichment event offered to the bears. In an environment with superabundant food resources and in the absence of predator or prey, zoo animals are often inactive and/or exhibit stereotypic behaviours. Biologically suitable training can provide a "new interest in life" thus increasing activity levels and/or decreasing stereotypy (Mellen & Ellis 1996). The bears and the keepers work in protected contact, meaning that they are not in the same enclosure and proximity. Husbandry training is therefore conducted via operant conditioning, which means the bears "operate" on the environment to bring about some change that leads to a reward.

The enrichment strategies employed by Sea World were successful in reducing the stereotypic behaviour of Kanook, a polar bear that had come to the facility with a long history of stereotypy. At her original home in Arizona, Kanook spent more than 50% of her time on exhibit engaged in stereotypic behaviour, pacing on average 3-4 hours per day. After a year at Sea World, Kanook's chronic stereotypy had reduced by 99.8% (Nicosia & Haynes-Lovell 2003).

Application in urban animal management

The parallels between the above examples and urban animal management is that the Animal Management Officer will often come across problems that can be improved by adequate environmental enrichment. It would be hugely advantageous if the officer were able to develop appropriate problem solving strategies and communicate these methods to the pet owner in order to alleviate the problem being experienced by the community.

Custom built enclosures are obviously not within the financial scope of the average dog owner and certainly it is not necessary considering the species has adapted to living with humans and most enjoy regular time outside their enclosures, eg: walking with their owner. However, some consideration and imagination should still be given, particularly to those companion animals kept in restrictive conditions such as birds or indoor cats. All pet owners can easily adopt some of the methods used at zoos in order to provide a stimulating environment for their pets and subsequently alleviate boredom and associated nuisance activity.

The following table gives some basic examples of enrichment activities for dogs. This kind of information could be presented by councils in a brochure or fact sheet and made available to dog owners to enhance their current management strategy.

TYPE	EXAMPLES
Social enrichment	<ul style="list-style-type: none"> - Provide opportunities for the dog to interact with other dogs, animals and people; - Take the dog walking in public areas; - Regularly attend obedience training classes; - Allow the dog to interact with guests.
Sensory stimulation <ul style="list-style-type: none"> - visual - auditory - olfactory - physical - taste 	<ul style="list-style-type: none"> - Provide toys and rotate their use to retain novelty-value; - Stuff food toys, eg: Kongs, with different foods each day to provide a range of tastes, smells and textures; - Provide regular outings in different environments, eg: dog can experience salt water swimming, fresh water swimming, bush settings, long grass, etc.
Feeding strategies	<ul style="list-style-type: none"> - Make the dog work for its food. Instead of serving up its morning meal in a bowl, distribute kibble throughout the enclosure and let the dog forage for its food; - Freeze bits of meat on a string in ice and hang from the washing line. When the ice melts, the meat will drop to the ground.
Behavioural conditioning & training	<ul style="list-style-type: none"> - Provide regular training. From getting the dog to settle quietly on a mat to performing a "high-five", training is fun, stimulating and beneficial for both dog and owner; - Practice for visits to the vet. Get the dog used to standing for examinations, having eyes, ears, mouth and paws checked.

Table 2: Examples of environmental enrichment for dogs

Somatic communication

Lessons from the pinniped facility, Sea World

Keepers at the pinniped (seals, sea lions) facility at Sea World have observed physical forms of communication that assist them when performing general care and conditioning of the animals. The keepers work in free contact (in the same enclosure and within close proximity) with the animals, some of which can grow to a massive 200 kg+ and measure over 200 cm tall.

Despite their benign appearance, seals and sea lions are quite capable of aggressive behaviour and the males are particularly reactive to perceived challenges to their dominance. It is therefore crucial that the keepers be perceptive to every nuance and signal given by the animals to ensure their safety.

Sea World has subsequently researched somatic communication in pinnipeds, leading to the development of broad working concepts that are listed by McAuliffe & Smith (2003) as:

1. Unbroken eye contact often signals aggressive intent/fear;
2. Breaking eye contact by blinking or head turning often elicits a reciprocal response;
3. Moving the mouth away from a person or animals is usually a signal of non-aggressive intent. This includes such behaviours as head turning, often with an exaggerated mouth open. Apparent preoccupation of an object or scent on the ground is an obvious signal on occasion; and
4. Movements that place an animal's body in the posture from which an efficient attack or defence can be made, can often be defused by offering calming signals such as breaking eye contact and head turning.

McAuliffe & Smith (2003) report that Californian Sea Lions respond to blinking and head turning by increasing the frequency with which they perform these behaviours. Often when the sea lions are anxious they will appear to relax when the keepers present these behaviours. Reducing the time that direct eye contact was made with an Australian Sea Lion appeared to cause it to appear more relaxed during training sessions. The benefit of these developments is that the keepers have been able to improve their ability to communicate to these animals concepts such as lack of aggressive intent and defuse anxiety levels.

These methods are not new, having first been described by Rugaas (1997) in her work on calming signals in canines. However, we have found it ironic that we went to zoos in order to learn techniques outside the canine training world and ended up being guided back to dogs!

The benefits to Animal Management Officers in learning more about somatic communication are as follows:

- Officers can defuse aggressive dogs in the field by signalling confidence and lack of aggressive intent through posture, head turning, rear approach and yawning;
- Capturing stray animals and caring for shelter animals is made easier by using species specific calming signals to reduce the animal's anxiety levels and convey lack of aggressive intent;
- Somatic communication techniques can be incorporated into bite prevention presentations and educational material for the community.

Not only do somatic communication techniques improve the efficiency and effectiveness of field tasks such as impounding and complaint investigation, but they benefit organisational workplace health and safety too.

Public awareness and education

Zoo signs

The collections of animals found in zoos have the potential to provide the public with unique educational opportunities not readily available elsewhere. The declines of wild populations of many species now preclude their observation in the wild, thus imparting great import to the information a zoo can provide. As such, modern zoos have the ability as well as the responsibility to provide visitors with synthesized lessons about animal anatomy, physiology, ecology, and behaviour, ultimately instilling an appreciation of each species and its particular adaptations to the natural environment (Mellen & Ellis 1996).

Walk around your local zoo and you will notice a number of educational signs distributed throughout. These signs generally convey some kind of basic information about a particular species on exhibit, their natural habitat, population, feeding habits, etc. However, the more engaging signs for the zoo visitor are those that provide a broader learning experience about the animal, making the zoo visitor an active participant. For example, a sign may depict the binocular vision range or colour vision of a particular species in comparison to that of a human's, so that the viewer may experience things and thus gain an appreciation of, the animal's perspective.

Councils too have a number of important animal management messages to convey to the community and have an incidental audience in those frequenting public areas such as parks. It is suggested that councils adopt a similar signage strategy to zoos by installing educational signs in these public areas, particularly in the popular dog parks. The objective of the signage is to educate the public on various companion animal management issues, promoting improved management of pets at home and in the community.

Some suggestions include:

- An explanation of some canine body postures (particularly useful in designated off leash areas where an array of body postures are likely to be seen and need to be understood by the handler);
- Environmental enrichment strategies;
- Tips to manage barking; and
- Basic obedience lessons, eg: sit, drop, stay, leash manners.

Conclusion

In the classic movie *The Wizard of Oz*, the characters Dorothy, Scarecrow and Tin Man are required to walk through a dark forest in order to get to the fabled city of Oz. The characters fear that there may be wild animals in the forest that will harm them – animals such as “lions, tigers and bears!” This line is repeated like a mantra as they venture deeper into the forest. Of course they end up meeting a lion, which, contrary to their fears, ends up helping them.

Innovation and change can cause anxiety for some. However, far from being frightening, the lions, tigers and bears that we have met (both literally and figuratively) have opened up a tremendous new world for us. Our scope as Animal Management Officers, with our roles in animal handling, animal behaviour and public education, has increased greatly.

To Animal Management Officers and councils who are interested in learning new ways to approach old situations, it is definitely worthwhile to take the time to approach facilities such as zoos and wildlife sanctuaries to learn how they manage their animals. Most facilities are very accommodating and appreciate the opportunity to promote awareness of their activities.

Acknowledgements

The author would like to thank Dreamworld and Sea World for their assistance with this project. Special thanks to all the keepers involved, particularly Patrick Martin-Vegue, Kerrie Haynes-Lovell and Darryl Pearce.

References

- Carlstead, K. (1996). 'Effects of captivity on the behaviour of wild animals'. In: Kleiman, G., Allen, M., Thompson, K. & Lumpkin, S. (eds) *Wild Mammals in Captivity: Principles and Techniques*. The University of Chicago Press: Chicago.
- Dreamworld (2005). Website. Viewed 24 October 2005
<<http://www.dreamworld.com.au/content/standard3.asp?name=TigerIsland>>
- Fraser, A. and Broom, D. (1997). *Farm Animal Behaviour and Welfare*. In: Nicosia, E. & Haynes-Lovell, K. (2003). *Using management as a method to decrease stereotypic behaviour in captive*

Selina Neill

Selina Neill is the Project & Public Awareness Officer for the Animal Management Section of the Gold Coast City Council. She has been in Local Government for eleven years and has held previous positions as an Animal Management Officer and Animal Management Inspector. She is currently studying for a graduate qualification in Public Sector Management. She was the team leader of the AMO Team of the Year 2002 and was awarded AMO of the Year 2004.