The Rabbit - An Exotic Pet With Behaviour Problems

E.A. McBride\(^1\) and S.M. Wickens\(^2\)

\(^1\) Anthrozoology Institute, University of Southampton, Southampton, SO16 7PX, UK.
\(^2\) Merrits Wood College, Worpleston, Surrey, GU3 3PE, UK.

Introduction

The Companion Rabbit.

The rabbit is a species which has traditionally been regarded as a pet for children, an introduction to a lifelong habit of pet-ownership. This status is rapidly changing with the increasing popularity of rabbit shows and of the rabbit as an indoor pet. The rabbit is becoming an accepted and appreciated pet for all ages. Indeed, it is the third most popular companion mammal in the United Kingdom. In 1995 rabbit ownership was reported as 1.4 million according to the Pet Food Manufacturer's Association.

Veterinary medicine is gradually beginning to reflect this interest in this 'exotic'. An increasing number of veterinarians are willing to neuter rabbits and to expend effort in the treatment of illness and injury. Vaccination against myxomatosis and VHD (Viral haemorrhagic disease) is becoming standard practice. However, the realisation that rabbits can have behaviour problems, let alone that these can be resolved, is still in its infancy. Many thousands of rabbits are given up for rescue or are euthanased every year because of behaviour which is problematical to the owner. Some may even end up in a different relationship with the owner via the cooking pot! To misquote Robert Holmes, this technique, as well as euthanasia, is at least guaranteed to stop the problem behaviour.

Like the more popular dog and cat, rabbits are sociable animals and owners can develop interactive and rewarding relationships with this species (Robinson and McBride, 1995). However, unlike the dog and cat, the rabbit is not a predator but a prey species. This obvious fact is often overlooked and yet is fundamental to an understanding of the rabbit.

Rabbit Behaviour

Functionally, the behaviours displayed by a prey species are very different to those shown by a predator. In general terms the behavioural repertoire of prey species is more restricted and more subtle. This is because evolution has selected against obvious behaviours, such as extravagant greeting displays or signs of pain or fear as such behaviours are costly in that they:

a. draw attention to the signaler and
b. may indicate that that individual is in some way vulnerable, at the very least because it is not alert the potential presence of a predator.

Little popular attention has been paid to the behaviour of prey species kept as companions. This has led to a wealth of misinformation in popularist pet publications. The behaviour of the more familiar cat and dog is used as the starting point for many explanations of rabbit behaviour. For example, a common misconception is the phenomenon referred to by some as 'trancing'. This behavioural state can be triggered through the simple expedience of placing the rabbit dorsally. Initially the rabbit may struggle but soon the muscles relax, and the animal enters an apparent trance-like state, in which the only movement is an occasional quivering of one or both hindlimbs. Loss of this state occurs as rapidly as it is attained;
characterised by a sudden righting reflex and forward movement. If restraint is continued at this point the animal will struggle and may become aggressive.

The popular explanation for this behaviour, based upon the canine/feline paradigm, is that the rabbit is in a state of 'total bits' (Hunter, 1991 pp46). The change to activity is considered as anomalous. However, viewing the behaviour in the light of what is known about rabbit ethology, and the fact that it is a prey species, a completely different and more parsimonious interpretation is derived.

When seized by a predator many prey species freeze, entering a state of catalepsy. Immobility increases the probability of the individual escaping uninjured, or only lightly injured, through its resemblance of a successfully killed prey item. This in turn causes the predator to relax its hold in order to manipulate the prey into a position where it can be more easily ingested. A change in grip stimulates the flight response in the prey as described above. If thwarted the flight behaviour switches to fight, a last attempt to escape death (McBride, 1988).

As this example clearly demonstrates, the basic biology and ethology of prey species, like rabbits, are at variance to those shown by predatory species such as cats and dogs. An understanding of these issues is central to both an accurate diagnosis and the application of appropriate behavioural modification protocols. This is true whatever the behaviour problem, be it attention seeking, destruction or aggression. The remainder of this paper describes the aetiology of two cases of aggression and avenues for their resolution.

Aggression in Rabbits

Aggression is a frequently reported problem behaviour in rabbits and is often the reason for the animal being neglected, given up for rehoming, abandoned or euthanased. Aggression in rabbits, as in other animals, can be multi-factorial. Poor socialisation, fear, territoriality, inappropriate handling, inadequate housing, nutritional imbalance as well as breed characteristics may all be contributing factors (Robinson and McBride, 1995).

Case History One
Name: Bertie
Breed: Dwarf Lop
Sex: Male, unneutered
Age: < 1 year
Weight: 1 kg

Behaviour Problem:
Aggression to adult female owner and 13 year old son, not aggressive to adult male owner.

History:
Obtained from breeder as a companion for the son. Was the son's first rabbit. Fed commercial feed and some greensstuff. Maintained in a hutch and run complex. The animal had always been easily handled by the husband but had always shown aggression to the wife and son. This took the form of lunging and biting when they put their hands in his cage. The final occasion which prompted action was when the boy went to put Bertie away in his hutch. The rabbit was under the hutch and the boy lay down and reached in to get him. The rabbit pounced on his arm, biting hard and not letting go. At the same time Bertie kicked the arm with his back legs (Anon.1995). Unfortunately, this last incident prompted the owners to euthanase Bertie before his case came to the authors' attention (Anon, 1995).
Possible Diagnoses:
There are several possible factors contributing to the reported behaviour:

A. Socialisation
The selective aggression shown by Bertie may indicate inadequate socialisation. It is possible that he had been bred by a man and had not had much, if any, handling by women or children.

A young animal, especially those which are to some extent social, must develop a species identity. This process is known as socialisation. If the animal is exposed to members of more than one species during the sensitive period for socialisation then a multiple species identity can develop. This is of importance to companion animal species which are expected to co-habit with humans, their own and, possibly, other species. In addition, animals which live in social groups, such as the rabbit, must possess the ability to recognise individuals and distinguish between the sexes. Individual recognition is imperative if stable social relationships are to be maintained.

If Bertie had only been handled by men during the important socialisation period, then it is possible he would not recognise women and children as familiar and would thus be nervous of them and tend to show fear-aggression. Men, women and children emit different pheromones and sound different and thus are likely to be easily distinguished from each other.

B. Pain
Another possible contributory factor is the pain caused by inappropriate handling technique. This can be exacerbated by differences in hand size. Men tend to have larger hands and not 'grip' so hard. Women and children tend to naturally grip harder. For a small animal such a grip may be uncomfortable, painful, through the pulling of fur, or even injurious to delicate ribs and internal organs.

C. Diet
The rabbit digestive system has evolved to be extremely efficient at extracting the maximum amount of nutrition from low quality foods available in the scrubland vegetation of its native Iberia (McBride, 1988). This means that much of the time a rabbit spends awake would, in natural circumstances, be spent eating. However, in captivity most rabbits are fed primarily commercial diets, which provide high quality feed in a concentrated form. The energy values for grass are 11 MJ ME/kg DM whilst an average commercial rabbit feed can have triple this value. The effect of feeding concentrates are twofold:

a) they reduce the time the animal spends foraging and
b) they increase energy intake.

These two factors in combination can easily lead to increased aggression. The concentrated feed distorts the normal time budget allocated for foraging which can lead to stress which in turn can lower thresholds for other behaviours, including aggression. In addition, the high quality feed may cause changes in blood chemistry which directly lower physiological thresholds.
D. Mental Stimulation

Many rabbits spend virtually their whole lives in the confines of their cage which is often limited in size and lacks cage furniture. In contrast, their natural environment is one of varied stimulation, both from conspecifics, other species and inanimate features.

Chronic lack of stimulation can result in an over-reaction to relatively small changes in the environment. Such changes are likely to be a source of stress for the animal and may be coped with by flight, if possible, or aggression if not.

E. Reinforced Aggression

Through trial and error Bertie could have learned that he could not escape from the hutch and that freezing in the presence of humans only resulted in him being handled. Thus, aggression became his appropriate coping strategy. By showing aggression he would ensure the removal of the frightening stimulus, the hand. Such reinforcement of this coping strategy combined with repeated attempts to handle him, would serve to decrease his threshold for aggression and increase its intensity.

Reinforcement of aggression can occur whatever the original cause of the behaviour. In this particular case, the rabbit was able to discriminate between handlers and the aggression displayed may have been due to inadequate early experience as discussed in point A.

Case History Two
Name: Bandit
Breed: Flemish Giant
Sex: Male, neutered
Age: 2 years
Weight: 11 kg

Behaviour Problem:
Severe aggression when handled.

History:
Obtained from breeder along with his litter brother at 7 weeks of age. Both rabbits had been extensively handled from 3 weeks of age. The rabbits had been housed together throughout their lives and were very compatible, with Bandit being the more dominant of the two. The main bulk of the diet comprised hay, varied fruit and vegetable matter and some commercial feed. The rabbits were carried every morning from a large hutch to an extensive run and returned in the evening. Whilst the brother showed no problem behaviour towards humans, Bandit had always been reserved and resented being restrained. His behaviour had gradually deteriorated, leading to displays of aggression when being carried which resulted in several serious bites to his owner’s arms.

Possible Diagnoses:

A. Dominance

The rabbit social system is hierarchical but there is little evidence whether or not this is extended to include humans. It certainly is a diagnosis to be considered, particularly with respect to intra-specific aggression.
B. Territorial Aggression
Rabbits are territorial, showing peaks in aggression during the reproductive season. Both females and males show this behaviour which is usually displayed towards members of the same sex (McBride, 1986).

C. Pain
Inappropriate handling of a large breed can cause pain, as it does in the smaller breeds, particularly if the weight of the animal is not properly supported. In addition, inadequate caging can result in muscle and bone deformation which is likely to have concomitant pain which may be aggravated by handling (Drescher, 1992). As with all behaviour problems a veterinary examination is indicated before any programme of behavioural modification is initiated to ensure that any such underlying cause is excluded.

D. Trauma
Rabbits are capable of associative learning both classically and operantly. Negative associations can be learnt with a single exposure to an aversive stimulus. The resulting fear response can become generalised to a variety of stimuli.

E. Reinforced Aggression
As explained in the previous case, aggression can be intensified with repeated exposure to negatively associated stimuli.

The Final Diagnosis
When the hutch door was opened, Bandit would approach humans with his ears forward and nuzzle the offered hand. He would remain relaxed if his head was scratched. However, movement of a hand toward his back caused him to flatten his ears and move away. Continued attempts would result in him growing and running around the hutch, occasionally showing some aggression to his litter brother. On being caught, Bandit would remain quite still for a few seconds and then bite and kick. This usually resulted in him quickly being put down on the ground.

The behaviour indicated extreme fear of being lifted, but not of human hands per se. It is likely that at some point Bandit had suffered some trauma such as being dropped or squeezed too hard. This possibly occurred prior to his purchase at 7 weeks of age, as suggested by his early nervous demeanour.

Behaviour Modification Protocol
1. Redesign the cage and hutch so that they were an integral unit, thereby reducing the need to lift the rabbit every day.
2. Introduce a programme of desensitisation and counter-conditioning including a discriminative stimulus word such as ‘touch’, given when the owner was about to handle the rabbit.

A baby brush was attached to a piece of dowel approximately 45cm long. Stroking around the head and gradually along the back with the brush was associated with favourite foodstuffs such as dandelion leaves (Taraxacum officinale) and the stimulus word. Any aggression displayed was put on an extinction schedule as the gentle stroking continued over a period of several days the dowel was shortened and replaced by holding the brush.
Eventually, the brush was discarded and the rabbit stroked by hand. The process was continued gradually by gently lifting the hind quarters a few centimetres off the ground and putting them back down, then guiding the rabbit on to the owner's lap, with food, and finally the complete lifting of him.

Within three weeks Bandit could be picked up without any show of aggression.

General Approaches to Consider

Socialisation
Rabbit breeders should be encouraged to handle gently kittens on emergence from the nest. Some bedding in the nest should also be handled at this point so that scent is transferred, thereby reducing any chance of rejection by the doe. Handling should be done by several people of both sexes. It is important that the weight of the animal is fully supported but that handling does not cause pain.

Diet
Diet should be nutritionally balanced and this is a major concern of the manufacturers of commercial concentrates. However, as previously described the rabbit gut is extremely efficient with food. Reducing the feed quality, by providing hay, greenstuff and hard food items such as carrots as forage, can substantially reduce aggression by giving the animal both a more appropriate diet and a way of filling its time, by forcing it to spend longer foraging in order to meet its energy requirements.

Mental and Physical Stimulation
Many companion rabbits spend their lives in a cage, often without access to a run. Limited space means that these animals cannot move freely and this leads to spinal deformities and other skeletal and muscular problems (Drescher, 1992). Apart from basic welfare issues, lack of physical stimulation is often associated with limited mental stimulation.

The behaviourally sterile environment provided by most cages and runs can be enriched easily and cheaply. Provision of pipes for rabbits to sit in/stand on, ledges, logs to gnaw, hay in a hayrack and suspended items of food such as apples and carrots can all serve to enrich the environment. Adding novel objects such as cardboard boxes or balls from time to time can enhance mental stimulation.

Rabbits are social animals, yet they are often kept alone. This means they rely on human company which may not always be forthcoming, especially during the winter months for outdoor housed animals. Rabbits can be successfully housed in groups, neutered if breeding is to be avoided (McBride, 1986; StaubFacher, 1992). Social groupings are most successful if the animals are introduced at an early age. It is not advisable to house more than one male with a single female, nor males together where they can smell unneutered females. Rabbits can also be housed with members of other species such as guinea pigs. For any social grouping to be successful sufficient space must be provided, with plenty of refuges to which individuals can retreat out of sight and reach of the others if they so choose. Rabbits can live for a decade or more and can provide a great deal of pleasure to owners (McBride, 1996). It is the responsibility of veterinary surgeons to be aware of the needs of these popular lagomorphs and to educate owners of their physical and mental requirements. In this way veterinarians will be doing their best for the welfare of these animals and will also ensure that
they have a contented client who will bring their pet to them for regular vaccination and nail clipping for many years to come.

References
Anon. (1995) 'Biting the hand that feeds' Fur and Feather Magazine, 4 (72), 16
Drescher, B. (1992) 'Housing of rabbits with respect to animal welfare' J. Applied Rabbit Research, 15, 678-683
Hunter, S. (1991) 'Hop To It - A guide to training your pet rabbit.' Barrons Educational Series