Understanding Rabbit Behaviour – key to good quality care?

To adequately manage any species under our care we must understand its origin, how biology and environment shaped the behaviour and needs of the ancestors of the pets we have today and whether our companion animals have the ability to cope with their very different current circumstances. The medical and behavioural consequences when we fail can prove catastrophic.

The presentation will therefore include:

- Significant issues related to species natural behaviour
- How they should influence our management of rabbits as pets and patients
- Suggested reading

What is a pet rabbit?

Oryctolagus cuniculus, our domesticated equivalent of the European wild rabbit, is the UK’s third most popular pet but regrettably the species is frequently misunderstood and commonly inadequately catered for. They are for example a social species but are often kept individually. This is a significant cause for concern, especially as the popularity of the indoor rabbit is increasing.

Pet rabbits are often cross bred and selection, based on colour, size and ear position, began relatively late, around 1500 years ago (dogs 12,000). Selection for temperament and/or behaviour may be made by some breeders but they are generally still in the minority.

Important characteristics of the rabbit – these should influence our care, particularly in the clinic and veterinary hospital

- Prey species – often called ‘Nature’s take out for one’ – therefore the rabbit does not draw attention to illness, injury or debilitation and they can be overlooked until the problem is advanced
- For rabbits living naturally threat comes from above, below and at ground level – they are sensitive to movement, especially abrupt and clumsy approaches from above – a human hand is little different from a swooping bird of prey
• Everything they do is aimed at staying safe, staying alive and breeding quickly – their anatomy and lifestyle are adapted for this

• They burrow underground – less time in view lowers risk – therefore they need to dig – this can result in conflict with owners who value lawns and carpets!

• Rabbits are a social species – there is safety in numbers because more eyes and ears are available to detect threat – solitary existence is therefore a welfare issue

• Rabbits live in relatively stable groups, comprising 2 – 14 usually related individuals but multiple groups maintain larger warrens. These consist of interconnecting burrows with many junctions and a number of entrances, which provide easier access and increase the chances of confusing and evading following predators

**Males** tend to form a linear hierarchy with one high ranking male which:

- mates with females in oestrus
- defends the group
- often associates with a preferred female outside the mating season

**Courtship** includes:

- Chasing
- Tail flagging
- Circling
- Enurination – buck sprays urine at does

**Females** – are generally tolerant of each other and have no obvious hierarchy.

However, they will compete for the best nest sites and fight to the death if necessary.

**Domestic & wild rabbits** – breed throughout the year but peak in Spring (determined by daylight length).

Rabbits are reflex ovulators (ovulation 10 hours after mating) but they have no definitive oestrus cycle (highly variable – periods of receptivity approximately 12 - 14 days long followed by 2-4 days for follicular maturation)
– Infertile mating or does mounting each other leads to pseudo-pregnancy
– Gestation is 30 - 32 days with variable litter size of between 4 – 12 kits
– The young are altricial and urinate without maternal stimulation

Parenting is the unique system of ‘Absentee care’ consisting of:

– Nursing visits, which are variable but last approximately 3 - 5 minutes once every 20 - 24 hours. This is when females suckle, otherwise the kits are left alone in separate fur and/or grass lined nests. The entrances are plugged
– This system avoids drawing attention to the young, which emerge around 18 days of age
– Their activity is synchronised e.g. surface urination after nursing

The young are weaned around 24 days.

Sexual maturity

– Females – 4-5 months
– Males – 5-8 months
– (Domestic rabbit – smaller breeds mature earlier)
– Rabbits are fully grown around 9 months of age

Not uncommonly mortality is high and immediate conception takes place post-partum so females are continually pregnant and lactating.

Important behaviours

• Rabbits are territorial – territorial boundaries are patrolled and marked e.g. with latrines

• They have a crepuscular/nocturnal lifestyle – they are active between sunset and sunrise. Being on view in dimmer light is safer but this makes them questionable as pets, especially for children

• They are also herbivorous – they are hind gut fermenters adapted for consuming and digesting large quantities of low quality herbage. This activity takes time and energy and fills a rabbit’s ‘time budget’ with meaningful activity. Poorly constituted modern diets can have medical and behavioural consequences by for example leading to boredom and related problem behaviours
• **Rabbits maintain constant vigilance when above ground** – eyes on side of the head ensure rabbits can see ahead, to the side and behind. This also means there is a blind spot in the area beneath the mouth.

• Constant scanning/spotting, which increases with distance from the entrance to burrow, takes up 70% of above ground activity.

• Below ground ‘refection’, also termed ‘pseudoruminatation/caecotrophy/coprophagy’, takes place. 3-8 hours post ingestion soft, mucus covered pellets are passed and swallowed (not chewed) for further digestion.

• Caecotrophs stay in stomach for up to 6 hours and then faecal pellets are passed and distributed throughout the territory. ‘Refection’ reduces the time spent above ground foraging.

**Communication**

Rabbits’ communication is subtle because as a prey species they do not want to draw attention to themselves. It is:

- Adapted for underground living

- Involves:
  - body posture
  - discreet sounds
  - olfactory signals

Rabbits are also sensitive to vibration – thumping with their hind legs signals potential threat (inter- and intra-species).

**Body language**

- Is mainly used above ground and includes facial muscle tension, ear and tail position and gait
  - Scanning – standing up on hind legs surveying the environment – survival strategy
  - Ears forward, leaning towards individual – inquisitive
  - Thumping with hind legs – warning/aggression
  - Lying down on side – when relaxed
  - Ears back, flattened, very still – fear

- Tonic immobility – ‘trancing’ – is a reaction to extreme fear and distress

**Aggressive behaviours – usually intra-sexual** – include:
– Chasing
– Bouncing
– Leaping
– Paw scraping
– Parallel running – ‘sussing each other out’
– Spraying urine – males to conspecifics
– Kicking
– Biting

**Vocalisation**

Is limited as an anti-predator device but includes:

– Purring when relaxed and they may quietly grind teeth
– Humming
– Soft clicking when eating something nice
– Loud grinding of teeth, grunting, growling, hissing – when aroused/aggressive
– Screaming when terrified
– Loud grinding of teeth when in pain

**Olfactory communication** is important underground and because scent endures in the signaler’s absence.

Therefore, removal of all reassuringly familiar odours and scent challenge in a home or clinic environment is potentially stressful. This should influence how we examine, treat and nurse rabbits.

Olfactory communication includes:

- Chin marking (‘chinning’) – usually seen in dominant males, where scent secretions from the submandibular gland are deposited on territorial objects and conspecifics

- Anal gland secretions – deposited with faecal pellets at latrine sites used by all members of the group. This probably not only indicates ‘ownership’ but provides information about individuals and enhances confidence

- Urine marking plus inguinal gland secretions is usually performed by the dominant male and targets include:
  – inanimate objects
  – conspecifics
  – favoured individuals during courtship/agonistically (positive)
In response to threat, which may be real or perceived, rabbits can adopt a number of strategies:

- **Freeze** – may confuse predator unable to see the rabbit
- **Flight** – from predator and/or competitor
- **Fight** – competitor
- **Tonic immobility** – ‘trance-like state/feigning death’ – this is not a relaxed rabbit!
- **Faff/fiddle** – displacement activity

**Effects of domestication** include:

- Increase in body weight
- Increased tolerance of humans but rabbits are not usually bred for temperament/sociability
- Individuals have distinct ‘personalities’ – breeds have less distinct individual characters than are seen in other companion species but some believe small breeds are more reactive/highly strung
- Rabbits do appear to have the ability to distinguish between familiar and unfamiliar people and between human genders

**Management issues**

The Five Freedoms form the basis of good welfare. They are:

- Freedom from thirst, hunger and malnutrition
- Freedom from discomfort
- Freedom from pain, injury and disease
- Freedom to express normal behaviour
- Freedom from fear and distress

**Protection from stressors**

The rabbit’s natural life may be short and tough but it has evolved to cope with its Environment of Evolutionary Adaptation (EEA). Although this is often fear-inducing it is relatively predictable and consistent. ‘Captive’ environments rarely are and people frequently overlook the negative effects of commonly encountered stressors.

Inside the home rabbits encounter:

- Domestic appliances
- Artificial odours
- Constant changes to the home scent profile
- Slippery surfaces
- Audio-equipment
- Other pets
- Social gatherings – especially of unfamiliar individuals (smelling of their pets!)
- Owner absences and handling by unfamiliar people – use remote prior ‘scent’ introductions and for owners to leave articles with their scent to maintain bonds
- Preferred handlers leaving home
- Ownership changes
- New pet acquisition – loss of attention plus scent challenge etc.

Outside stressors include:

- Cold weather, rain, draughts
- Rodents/predators – urban fox, domestic cats, dogs
- Fireworks
- Building works
- Gardening activities
- Noisy games – especially if poorly socialised with children
- Rubbish/recycling collections
- Veterinary visits

**If carers are unaware of these issues or are insensitive** all too often the result is:

- Physical injury and/or disease
- Stress/distress
- Behaviour problems

**Hospitalisation** – important issues are:

- Good knowledge of natural behaviour – the need to hide/burrow and for refection etc.
- Constant awareness of the prey status of rabbits
- Appropriate housing
- Seeking information from owners about routine management to minimise change – food, litter, bedding, treats etc
- Planning and preparing ahead of procedures to minimise stressful exposure to personnel and environmental stressors – noise etc.
- Darkening the environment
- Reducing the impact of stressful odours, which may be:
– Environmental e.g. strong cleaning solutions, disinfectants etc
– Personal e.g. perfumes, hand washes etc
– Odours of other pet species, especially predators e.g. dogs, cats, ferrets, birds of prey

• Appropriate handling
  – Support back end
  – Do not ‘simulate predators’
  – Always introduce yourself – use vocal interaction and handle gently avoiding startling the patient or inadvertently simulating predators e.g. by ‘swooping down from above’

• Reduce change/disruption – predictability helps diminish stress
• Do not remove all bedding material at once – familiar scent is important, for example leave some droppings, an important territorial marker
• Use owners’ scent to maintain bonds

• Advise owners to exercise care when bonded rabbits return home
  – ‘?Normalise?’ patient’s scent ahead of arrival
  – Prepare environment
  – Conduct re-introductions carefully

Suggested reading

• How to have a relaxed rabbit Magnus E APBC www.apbc.org.uk
• Rabbit welfare fund http://www.rabbitwelfare.co.uk

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