TECHNICAL CONTRIBUTION

ENVIRONMENTALLY ENRICHED HOUSING FOR CATS WHEN HOUSED SINGLY

G G Loveridge, L J Horrocks and A J Hawthorne

Waltham Centre for Pet Nutrition, Waltham-on-the-Wolds, Melton Mowbray
Leicestershire LE14 4RT, UK

Abstract *Animal Welfare 1995, 4:* 135-141

It is generally accepted that to carry out certain trials or procedures, particularly metabolism or digestibility studies, it is necessary to house animals singly, often in sterile metal cages which differ greatly from the animal's normal living accommodation. The lack of choice, mental and physical stimulation and general 'creature comforts' increases the stress of isolation.

The design of the buildings at the Waltham Centre for Pet Nutrition aim to ameliorate these unsatisfactory conditions and provide environmental enrichment, freedom of choice and mental and physical stimulation, in housing as similar as possible to the normal housing of domestic pets.

Keywords: *animal welfare, cats, housed singly, companion animals, environmental enrichment, human-animal contact*

Introduction

The Waltham Centre for Pet Nutrition (WCPN) has maintained colonies of cats (*Felis silvestris catus*) and dogs (*Canis familiaris*) since 1965. From 1973, the colonies were moved into converted and new buildings on our present site. Following a recent review of WCPN needs and future requirements, it was decided to accommodate our dogs (Loveridge 1994a) and cats in surroundings which would make them more representative of pets being kept in the public domain. This rehousing would make the data obtained from their study more directly applicable to domestic pets and working dogs.

The present paper is a qualitative description of cat housing which was built to a design using the many years of experience at WCPN, the information gathered from visits to other establishments housing cats, information from relevant scientific symposia and conferences, and extensive discussions with several cat colony managers.

Individual housing is needed when animals are: mature males; post/pre-parturition females; sick or injured; quarantined to meet specific legislation; to be assessed during behavioural, or nutrition related digestibility and metabolism studies. The most specialized or extreme version of animals housed singly is probably the metabolism cage, where the collection and assessment of faeces and urine is required. These cages differ greatly from accommodation familiar to the animal, as they are usually made of metal, often stainless steel with mesh floors, enabling reliable collection of urine and faeces. They usually lack space for normal movement-related behaviour; are devoid of facilities providing physical and mental stimulation; lack the requirements for comfort; and possibly cause stress to animals that are

used to social contact, through the enforced isolation in a strange, barren environment.

The major challenges for the WCPN were to provide surroundings for animals which needed to be housed singly but which still provided them with environmental enrichment, freedom of choice, mental and physical stimulation and housing as similar as possible to 'normal' living conditions.

Design and construction

The buildings consist of two wings joined by central stores, handling room and staff facilities. Each wing is formed by a series of modules separated by kitchen and service areas. Each module comprises a central court (Figure 1), top lit with natural light, around which are arranged a series of two-roomed lodges, social rooms for group housing, food preparation kitchens and general service rooms.

Figure 1 **A top lit central court.**

When individual housing is required each cat is placed in a two-roomed lodge (2.6m^2) consisting of an inner room entered from the central court and an outer glazed conservatory (Figure 2). The floor covering of both rooms is welded seam vinyl, extending 40cm up the walls and coved at the corners for easy cleaning. The walls are glazed above the vinyl to the ceiling for two metres. The use of glass for all walls and doors enables the cat to be visually stimulated by the cats on each side and by activities in the gardens that surround each building. These extensive gardens provide varied views with an abundance of flowering plants to attract butterflies, and water baths and bird feeders to attract birds. There are wind chimes to provide further stimulation. Regular use of these gardens for adult dog and puppy socialization, training and play provides additional interest for the cats. Also, the glazed door from the lodge to the central court enables the cat to be visually stimulated by procedures such as weighing, feeding and cleaning and by the activities of researchers and visitors.

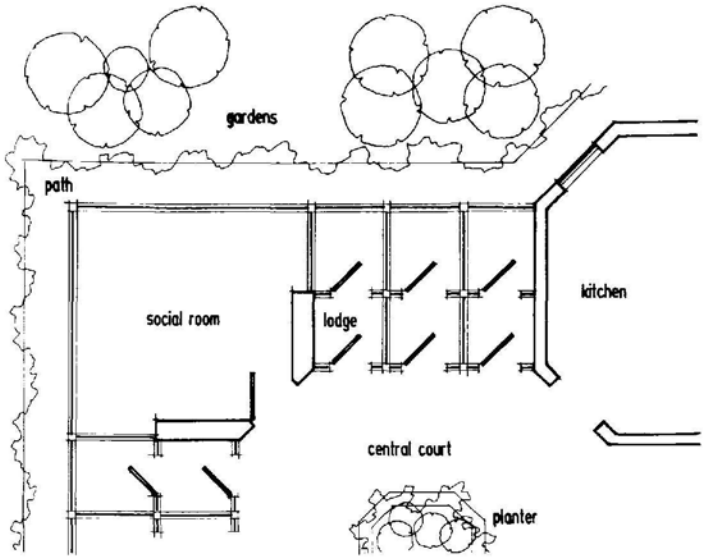

Figure 2 **Two-roomed lodges entered from the central court.**

Cats have highly specialized olfactory senses (Bradshaw 1992) which allow them to communicate without physical contact. Holes have therefore been drilled, at ear and nose level, through the frame of the screen separating each lodge, allowing the cats in each lodge to hear, smell and communicate with their neighbours.

One corner of the inner room contains a tray (Figure 3) where, using the cats habitual cleanliness, they are trained to urinate and defaecate so that the rest of the lodge is unsoiled. The outlet of the tray is connected to a glass collecting bottle in the central court, enabling urine to be collected separately from faeces.

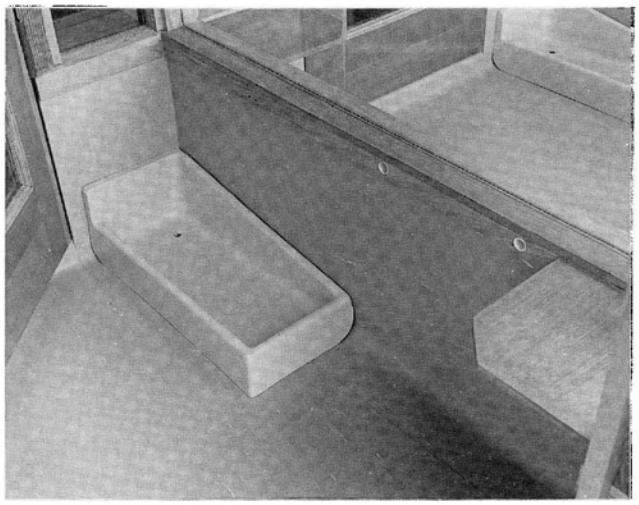

Figure 3 **A tray in one corner of an inner room.**

https://doi.org/10.1017/S0962728600017553 Published online by Cambridge University Press

In both inner and outer rooms, wooden scratch posts and shelves have been provided. The shelves are positioned at varying heights and positions within the lodges to provide a choice of vantage point and a resting place for the cat. This allows the cat to separate the available space into functional areas (McCune in press). Additionally, in the outer room there is a bell rope used for play and for claw sharpening (Figure 4).

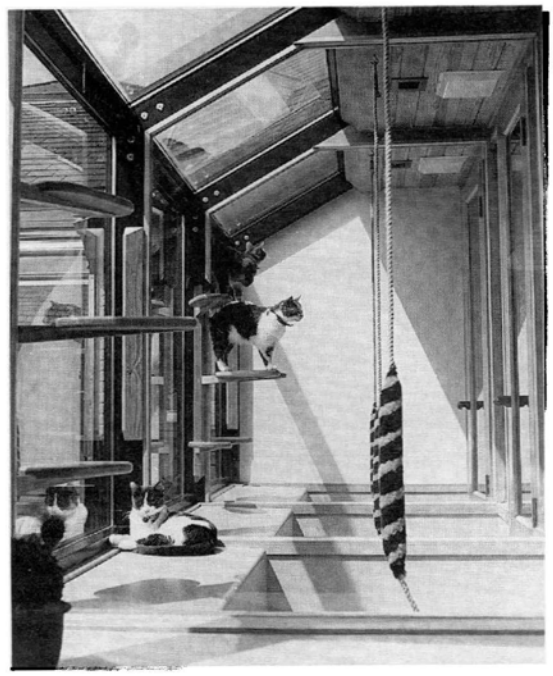

Figure 4 **Outer conservatories with bell ropes and choice of shelving.**

Cats accommodated in the social room, which is provided in each module, are exchanged with the cats housed singly at the end of each trial, allowing each cat to have periods of social contact with conspecifics and group activity between trials. Approximately half of a cat's time is spent in a social room. Each of these social rooms is equipped with an electrically heated bed around the perimeter of the room, with a shelf above it against the glass. This allows the cats a choice of temperatures and a choice of a location in the sun or the shade. Scratch pads, climbing poles and ropes are provided to allow a choice of height and play area.

Heating and ventilation

There is a separate heater unit for each module, with a parallel extract system. This provides a separate supply and extract for each lodge and individual modules can, if required, be set at different temperatures. The warm air is supplied to the inner room and extracted from the outer conservatory. This allows a controlled temperature in the inner room while the outer conservatory is affected by fluctuations in outside temperatures. This ensures the cat has a choice of thermal environments.

Social contact

In order to ensure a balanced animal resource of cats representative of household pets, we have a dedicated husbandry team whose major objectives are the care and welfare of our animals (Loveridge 1994a). Cats which are friendly and confident are less likely to be disturbed and more likely to settle quickly and behave normally when housed individually (McCune 1992). Therefore an integral part of this work is a kitten socialization programme (Loveridge 1994b) where kittens are handled frequently during the period sensitive for socialization, which is between two to seven weeks of age (Karsh & Turner 1988). Human-cat interactions continue throughout adult life to ensure that cats are confident whilst being handled.

Cats are capable of social interaction with conspecifics (Kerby & MacDonald 1988), but when kept in relatively restricted environments seek out, and therefore enjoy, the attention of humans (Turner & Stammbach-Geering 1990). As a result, human-cat contact is an important component of the care of individually-housed cats.

The two-metre high construction enables the pet carers to enter the lodge and be with the cats during daily, routine activities, thus providing an increased number of opportunities of human-cat interaction. In the morning these activities include faeces collection, cleaning and drying the lodges, removal of bedding, cleaning of water bowls and feeding. Whilst the pet carers are encouraged to interact with the cat on each of these occasions, the design of the two-roomed lodge allows the cat to move away if it wishes. Longer periods of time are spent with the cats during weekly weighing, health check and grooming sessions. These events are scheduled to take place on different days, thus ensuring the cats are handled individually on as many occasions as possible. There is also the benefit of identifying any problems requiring veterinary assistance.

In addition to the social interaction during work routines, time is set aside each afternoon to give individual cats a minimum of 20 minutes personal attention (Figure 5). A number of

Figure 5 **Socializing with individual cats.**

https://doi.org/10.1017/S0962728600017553 Published online by Cambridge University Press

different carers take part in regular sessions of intense human-cat interaction, to ensure the cats meet and play with as many different people as possible. During this time the carer will vary the activities to take into account the personality and responses of individual cats. The activities range from simply sitting quietly talking to the cat and stroking it, to interactive play with a variety of toys. These toys include balls, clockwork mice or devices incorporating fur and feathers. Toy 'fishing rods' are particularly popular with younger cats. Whilst the cats are in the social rooms between trials, the scope for social interaction widens as larger and more complex climbing frames and slides can be used (Figure 6), in addition to the small toys used in the lodges. Interaction between humans and groups of cats is encouraged in the social rooms.

Figure 6 **A climbing pole and slide in a social room.**

Conclusions and animal welfare implications

The WCPN decision to eliminate the need for metabolism cages has allowed us to design a lodge system which provides housing for cats in environmentally enriched, 'animal-friendly' conditions, but which permits us to run nutritional and behavioural research programmes which require cats to be studied individually. WCPN cats are representative of domestic pets and whilst the results of our studies are directly applicable to pet cats, the type of accommodation we have provided for our cats could be adopted in other animal centres. We would not expect other centres needs and requirements to be identical to our own, but we hope this paper will stimulate a review of some elements of the traditional management of cats housed singly. Our decision to avoid the use of cages and provide comfortable housing closely resembling that of group-housed cats at WCPN, incorporating choice of environment, sensory stimulation, physical and mental exercise and emphasizing feline companionship and human-cat interaction, has given WCPN a population of friendly, adaptable, visibly demonstrative and confident animals.

References

Bradshaw J W S 1992 *The Behaviour of the Domestic Cat.* CAB International: Wallingford, UK

Karsh E B and Turner D C 1988 The human-cat relationship. In: Turner D C and Bateson P (eds) *The Domestic Cat: the Biology of Its Behaviour* pp 159-177. Cambridge University Press: Cambridge, UK

Kerby G and Macdonald D W 1988 Cat society and the consequences of colony size In: Turner D C and Bateson P (eds) *The Domestic Cat: the Biology of Its Behaviour* pp 67-81. Cambridge University Press: Cambridge, UK

Loveridge G G 1994a Provision of environmentally enriched housing for dogs. *Animal Technology 45:* 1-20

Loveridge G G 1994b Provision of environmentally enriched housing for cats. *Animal Technology 45:* 69-87

McCune S 1992 *Temperament and the Welfare of Caged Cats*. PhD Thesis, University of Cambridge, UK

McCune S (in press) Environmental enrichment for the laboratory cat. In: Animal Welfare Information Centre and Universities Federation for Animal Welfare. Bibliography of Environmental Enrichment Techniques for Non-primate Laboratory Animals

Turner D C and Stammbach-Geering K 1990 Owner assessment and the ethology of human-cat relationships. In: Burger I H (ed) *Pets, Benefits and Practice* pp 25-30. British Veterinary Association Publications: London, UK