

# Enhancing the welfare of caged cats through environmental management: **The housing room**

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## The housing room

Management of the room where cat cages are located, as well as the surrounding area, appears to be at least as important as the cage environment in protecting cat welfare. Enhancing caged cat welfare may require modifications to husbandry protocols, management changes — such as decreasing noise levels — and housing cats in areas away from dogs. For example, providing a quiet room, a consistent care schedule and an enriched cage has been reported to result in quicker acclimation of cats to confinement than provision of an enriched cage alone (Stella et al., 2014). Additionally, cat housing should minimize auditory and olfactory exposure to dogs, as much as possible. McCobb et al. (2005) reported that cats in shelters with the greatest exposure to dogs exhibited the highest levels of stress, as measured by cortisol, compared to cats housed with the least exposure to dogs.

## Noise

Loud noises affect the behavior and physiology of many species, resulting in increased vigilance, heart rate and activity (Morgan and Tromborg, 2007) as well as alter aspects of the gastrointestinal, immunological, reproductive, nervous, and cardiovascular systems (Castelhano-Carlos and Baumans, 2009). In shelters, noise levels often exceed 100 dB, especially during feeding and handling times. In rats, exposure to noise that ranges from 80 to 100 dB for 30 minutes caused an increase in stress hormones (Burow et al., 2005). For cats, it is likely that similar noise levels may result in similar stress responses.



Care should be taken to provide cats with a quiet, calm environment. To create such an environment, conversations should be conducted in soft voices, cage doors should be closed quietly, and loud music should be avoided. Dogs should be housed separately and audibly separated from cats. It is particularly important to

control noise levels in confinement because when animals are unable to move away from loud, undesirable noises, distress may be exacerbated. Based on available data, we recommend that noise in housing areas be kept below 60 decibels. Decibel meters are available as an app for most smartphones.

## Odors

Familiar smells should be maintained within individual cages, and exposure to aversive smells should be minimized (Rochlitz, 2013). Bedding should be changed only when soiled, and cages spot-cleaned or wiped down when dirty rather than on a regularly scheduled basis. Potentially aversive odors to be avoided include alcohol, cleaning products, fragranced laundry detergent, and the smell of dogs and unfamiliar cats. To avoid unnecessary distress in cats, animal caretakers should at minimum wash their hands between working with different cats and between handling cats and dogs. If possible, caretakers should work with cats prior to handling dogs.

## Pheromones

Pheromones are chemical cues emitted and detected by animals of the same species for communication (Johnston, 2003). Feliway® is a synthetic analogue of feline facial pheromone thought to have a calming effect and reduce



distress in a variety of settings (Pageat and Gaultier, 2003). Consequently, pheromone products such as Feliway® may be used to improve cat welfare while in confinement. The synthetic pheromone can be applied to the whole room by using a diffuser, or it can be sprayed on a towel to be placed in the cage or on the cage door.

### Light

Overhead lights should be turned off and on at the same time each day, either manually or by timer, where natural light is not available. Variable light conditions have been shown to disrupt sleep, increase levels of cortisol/corticosterone, and increase aggression in a variety of animals (van de Meer et al., 2004).

### Temperature

Cats prefer room temperatures that range from 85-100° F (NRC, 1996) which is much warmer than cat housing areas are typically maintained. Therefore, provision of blankets, towels, shredded paper, heating pads, or heat lamps will allow cats to control their thermal environment through behavior. When using a heating pad or lamp, ensure that the cat can move away from the heat source if he or she chooses to do so. If bedding is not provided, cats may be subjected to cold stress, which in mice has been shown to increase metabolism, decrease growth and organ weight, and impair immune function (Gaskill et al., 2013).

### In conclusion

Cats confined to cages are confronted with multiple stressors that they need to acclimate to when admitted to a shelter, veterinary hospital or research facility. If attention is not paid to all aspects of the housing environment, cat welfare cannot be adequately protected. While focus is often on aspects of the cage, cat caretakers cannot forget to assess and manage aspects of the room as well.

### References

- Burow, A., Day, H.E.W., Campeau, S., 2005. A detailed characterization of loud noise stress: intensity analysis of hypothalamo–pituitary–adrenocortical axis and brain activation. *Brain research* 1062, 63-73.
- Castelhano-Carlos, M.J., Baumans, V., 2009. The impact of light, noise, cage cleaning and in-house transport on welfare and stress of laboratory rats. *Laboratory animals* 43, 311-327.
- Gaskill, B. N., Gordon, C. J., Pajor, E. A., Lucas, J. R., Davis, J. K., & Garner, J. P. 2013. Impact of nesting material on mouse body temperature and physiology. *Physiology & behavior*, 110, 87-95.
- Johnston, R.E., 2003. Chemical communication in rodents: from pheromones to individual recognition. *Journal of Mammalogy* 84, 1141-1162.
- McCobb, E.C., Patronek, G.J., Marder, A., Dinnage, J.D., Stone, M.S., 2005. Assessment of stress levels among cats in four animal shelters. *Journal of the American Veterinary Medical Association* 226, 548-555.
- Morgan, K.N., Tromborg C.T., 2007. Sources of stress in captivity. *Applied Animal Behaviour Science* 102, 262-302.
- NRC, National Research Council, 1996. *Guide for the Care and Use of Laboratory Animals*. Washington, D.C., National Academy Press.
- Pageat, P., Gaultier, E., 2003. Current research in canine and feline pheromones. *Veterinary Clinics of North America: Small Animal Practice* 33, 187-211.
- Rochlitz, I., 2013. Feline welfare issues. *The domestic cat: the biology of its behaviour*, 207-226.
- Stella, J., Croney, C., & Buffington, T., 2014. Environmental factors that affect the behavior and welfare of domestic cats (*Felis silvestris catus*) housed in cages. *Applied Animal Behaviour Science*, 160, 94-105.
- Van der Meer, E., Van Loo, P.L.P., Baumans, V., 2004. Short-term effects of a disturbed light–dark cycle and environmental enrichment on aggression and stress-related parameters in male mice. *Laboratory Animals* 38, 376-383.