

MEASURING AND MINIMIZING SOUND IN SHELTERS TO IMPROVE CAT WELFARE



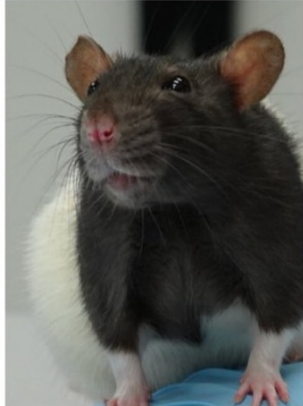
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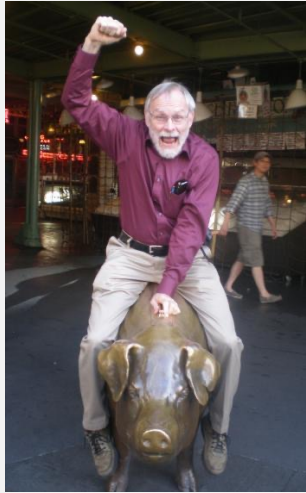
THE UNIVERSITY OF BRITISH COLUMBIA

Faculty of Land and Food Systems
Animal Welfare Program

UBC ANIMAL WELFARE PROGRAM



UBC ANIMAL WELFARE PROGRAM & BC SPCA



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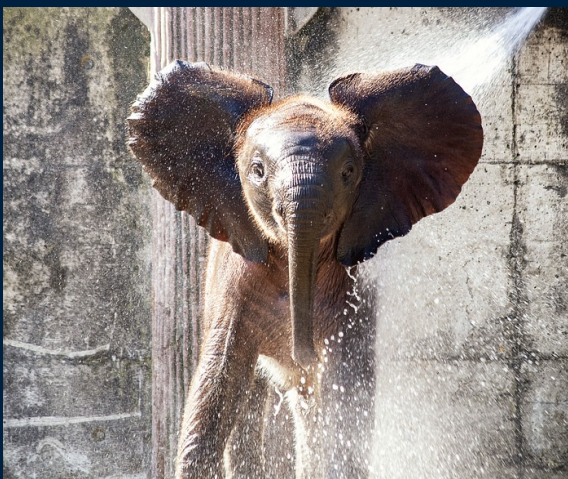




OUTLINE

- How animals hear
- The effect of animal shelter sound on cat behaviour and welfare
- Decreasing decibels in shelters





Hearing Ranges of Laboratory Animals

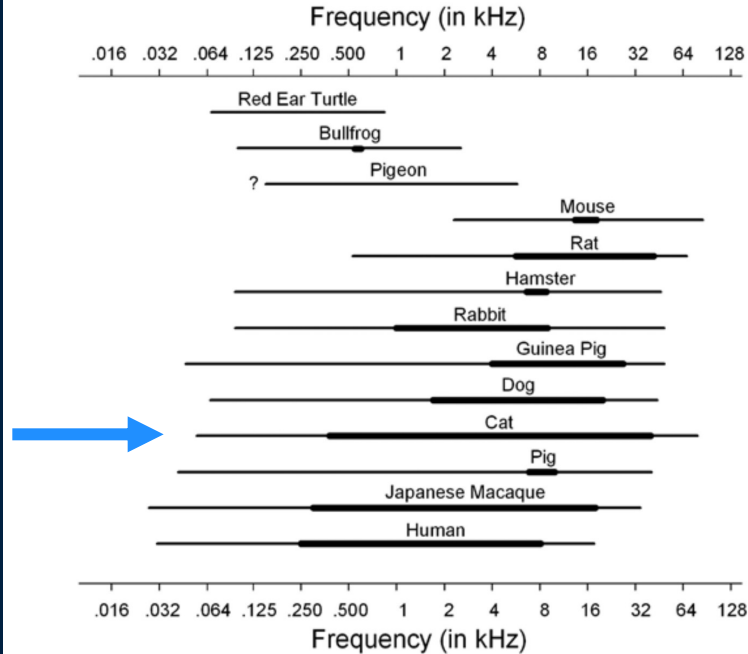
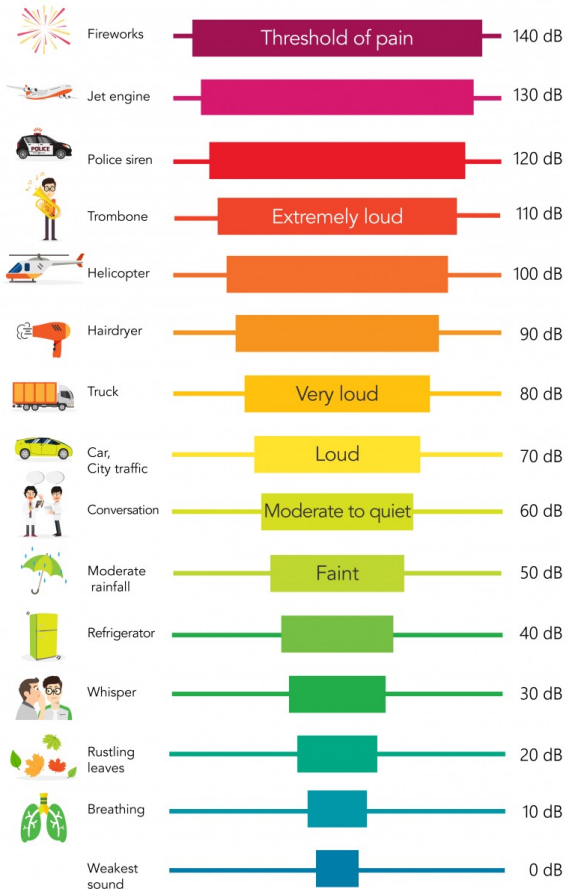


Figure 2. The hearing ranges of laboratory animals compared with those of humans. Thin lines indicate the range of frequencies that can be detected at 60 dB SPL; thick lines indicate the range that can be detected at 10 dB SPL. The low-frequency hearing of the pigeon has not been completely determined (as indicated by ?). Data obtained from references 5, 6, 10, 12–16 20, 22, and 23.

Decibal Scale (dB)

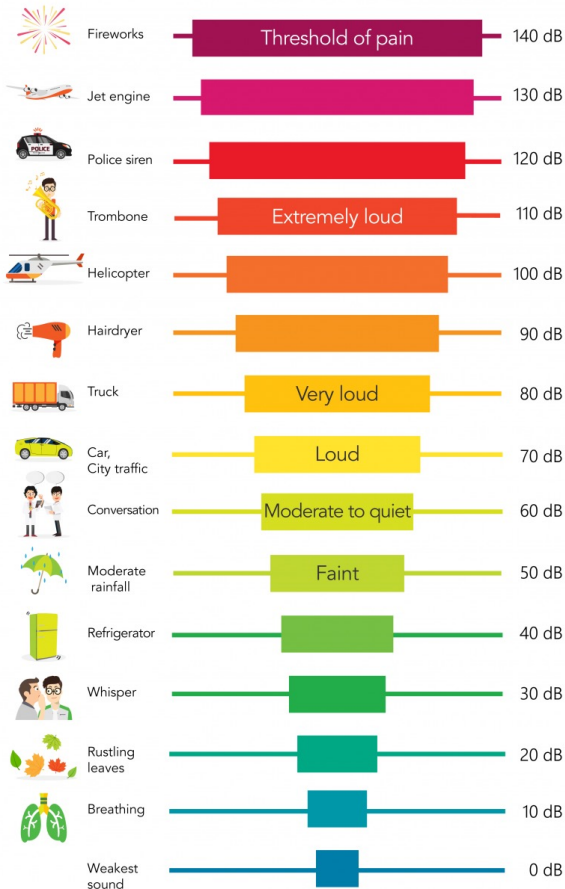


Immediate harm to human hearing →

Hearing protection for humans →

Hearing damage with prolonged exposure in humans →

Decibal Scale (dB)



Immediate harm to human hearing →

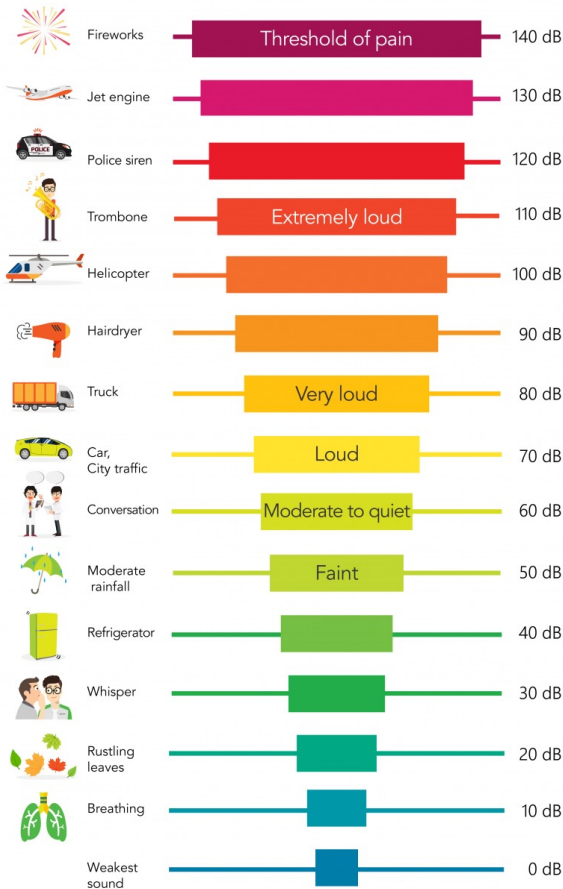
Hearing damage in dogs at prolonged exposure →

Hearing protection for humans →

Stress response in rats →

Hearing damage in rodents and rabbits →

Decibal Scale (dB)



Immediate harm to human hearing →

Hearing damage in dogs at prolonged exposure →

Hearing protection for humans →

Stress response in rats →

Hearing damage in rodents and rabbits →

← Animal Shelters and Grooming Facilities

← Dog Kennels

← Veterinary ICUs



CATS IN SHELTERS

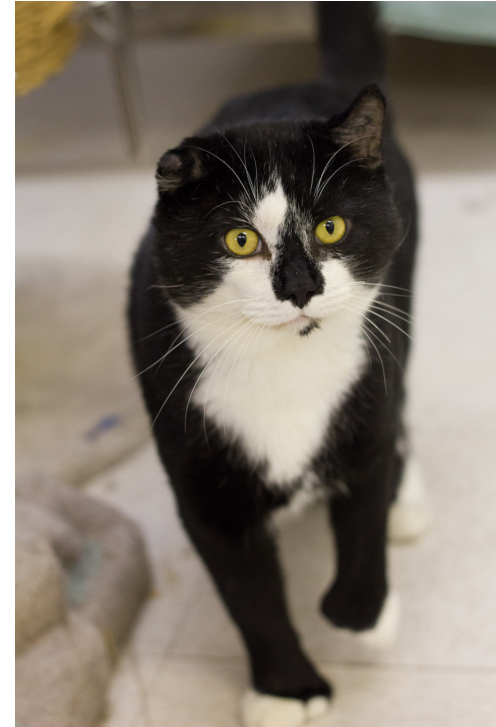


- Environmental change when entering a shelter:
 - Can cause fear and stress
 - Can lead to illness and behavioural changes
 - Can ↓ adoption and ↑ euthanasia
- “the quality of housing can literally be a matter of life or death for a cat entering a shelter” (pg. 635)



CATS AND NOISE

- Exposure to dogs was biggest factor affecting cat stress levels
- The “macroenvironment” likely at least as relevant as the “microenvironment”



THE EFFECT OF ANIMAL SHELTER SOUND ON CAT BEHAVIOUR AND WELFARE

Eagan BH¹, Gordon E², and Fraser D¹

1. Animal Welfare Program, Faculty of Land and Food Systems, University of British Columbia

2. British Columbia Society for the Prevention of Cruelty to Animals



STUDY AIMS

1. Understand common sources and patterns of sound in the shelter
2. Understand how shelter cats behave during quiet and loud periods
3. Understand behavioural responses to sound transitions

METHODS

- Singly housed shelter cats (n = 98) observed in Vancouver BC SPCA
- 30-minutes twice daily
- SPLnFFT Sound Level Meter app
 - Present if audible in closed room (>15 dB \uparrow)
 - Classified by type



METHODS

Fear behaviours:

- Hide
- Crouch
- Ears back or flat
- Alert
- Startle



HIDING BEHAVIOUR

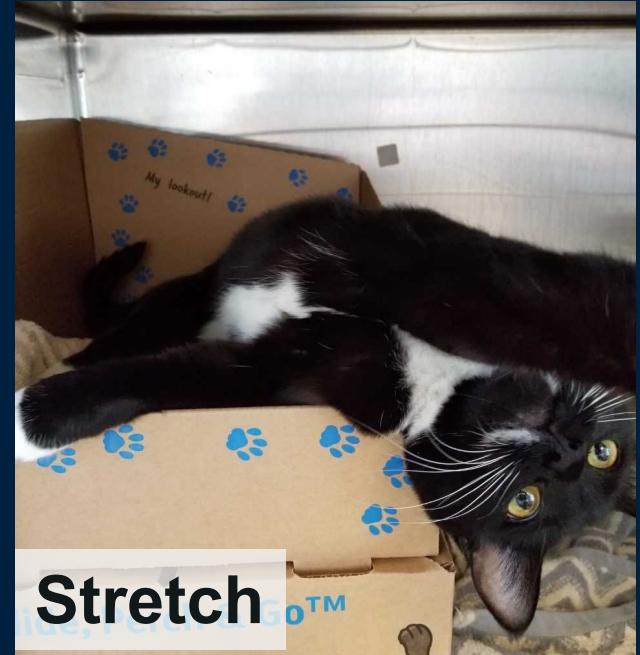
- Hidebox
- Behind Hidebox
- Under and behind bed



METHODS

Maintenance-related behaviours:

- Groom
- Play
- Stretch
- Eat
- Drink
- Yawn
- Knead
- Defecate
- Urinate
- Scratch



10 CATS WITH HIGHEST FEAR BEHAVIOUR

Fear Total (%)	100	100	100	100	100	100	100	100	90	77.5
Maintenance Total (%)	0	0	0	0	0	0	0	0	0	0

10 CATS WITH HIGHEST MAINTENANCE BEHAVIOUR

Fear Total (%)	5.1	2.1	1.6	0	3.3	4.7	0	0	0	0
Maintenance Total (%)	8.3	5.7	7.5	25.0	6.7	15.0	1.7	5.0	5.0	25.0

Negative correlation between fear and maintenance behaviour
 $(r_s(70) = -0.353, p < 0.05)$

HIDE BOX

- 28.7% of observation intervals in Hidebox
- 77% observed in other studies
- Cage size $> 0.74\text{m}^2$ = lower URI rates



Kry K and Casey R 2007 The effect of hiding enrichment on stress levels and behaviour of domestic cats (*Felis silvestris catus*) in a shelter setting and the Implications for adoption potential. *Animal Welfare* 16: 375–383.

Stella J, Croney C and 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.

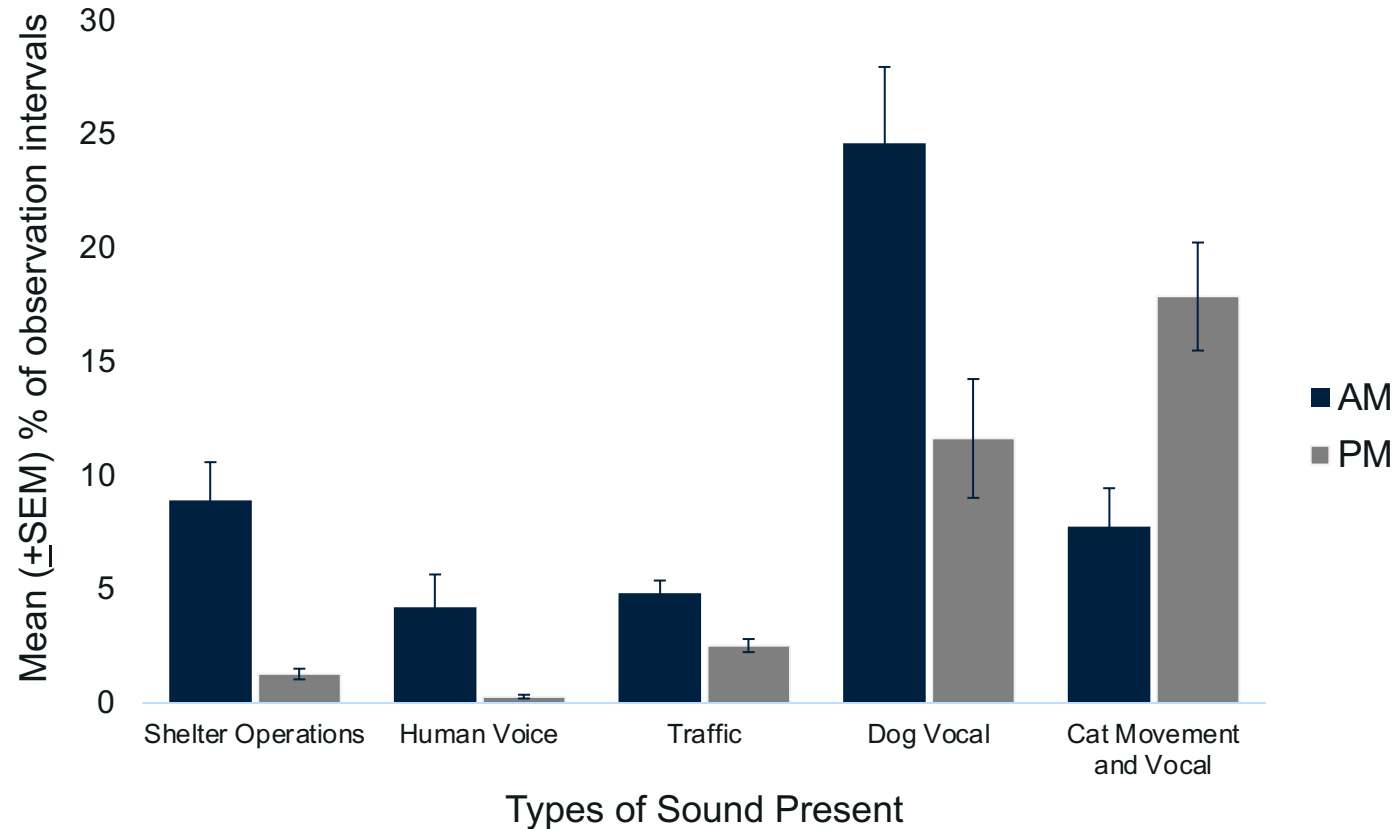
Wagner DC, Kass PH and Hurley KF 2018c Cage size, movement in and out of housing during daily care, and other environmental and population health risk factors for feline upper respiratory disease in nine North American animal shelters: *PLOS one* 13:1–15.

HIDING BEHAVIOUR

- Level of concealment
- Manipulable objects in the environment are likely important
- More concealment did not appear to impact adoption



SOURCES OF SOUND IN AM AND PM



SOUND AND CAT WELFARE



- More sound in AM than PM
- More fear behaviour in the AM, more maintenance behaviour in the PM
- More fear behaviour in loud AM than quiet AM
- Sound transitions elicit fear behaviour
- Results suggest that sound affects the behaviour and likely the welfare of many cats and should be controlled as much as possible

DECREASING DECIBELS

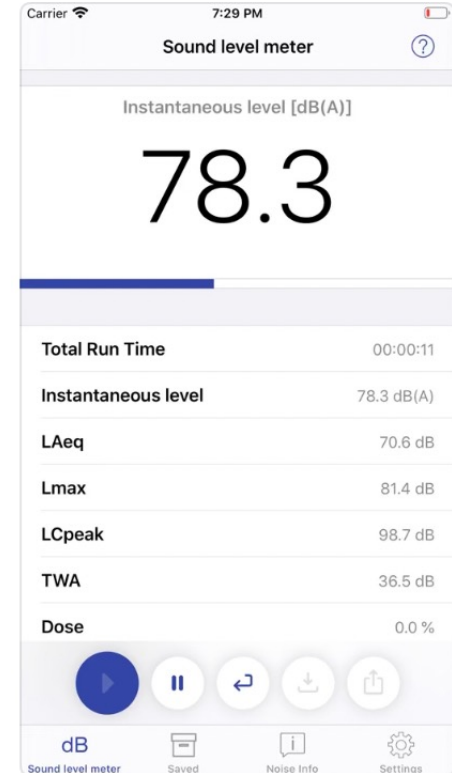


- Stella & Croney (2016) state that “it is likely that reducing noise levels and maintaining sound intensity around 60 dB (quiet conversational level) may be beneficial to cats” (pg. 3).
- Wagner et al (2018) state “Limiting noise exposure for cats through shelter design and housing choice is an important component of stress management.”
- The Standards of Care in Animal Shelters state that “an appropriate acoustic environment is essential for good animal health and welfare” (Newbury et al. 2010, pg. 11)

MEASURE SOUND USING YOUR PHONE






- Multiple validated apps available
- iOS - NIOSH Sound Level Meter (EA Labs)
- Android – Sound Meter Pro (Smart Tools)



FIXED STRUCTURES: DOORS + CUPBOARDS



Item		~ Cost
Silicone or felt pads		\$5
Weatherstripping tape		\$5
Commercial Door Closer		\$100

FIXED STRUCTURES: ENCLOSURES



Item	~ Cost
<p>Quiet-Closing Latch (ShorLine)</p> 	<p>\$95/ enclosure</p>



FIXED STRUCTURES: ENCLOSURES



FIXED STRUCTURES: ENCLOSURES



Item	~Cost
Quiet-Closing Latch 	\$95/ enclosure
Plasti-Dip 	\$2/ enclosure



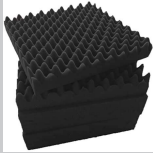

LOOSE ITEMS: DISHES



Item	~ Cost
Rubber coated dish	\$15
Towel under food dish	\$0-5

LOOSE ITEMS: GARBAGE BINS

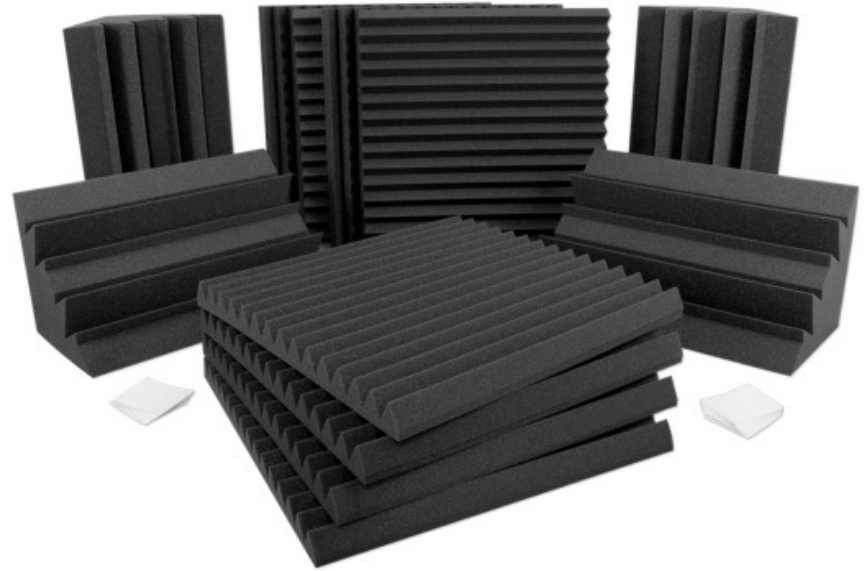


Item		~ Cost
Foam Pads		\$2
Dolly		\$30

OTHER SOUNDPROOFING OPTIONS



- Acoustic dampening material
- Acoustic blankets
- Portable sound walls
- Acoustic tiles
- Sound-blocking doors
-



OUR BEHAVIOUR



- Keeping doors closed
- Carrying items instead of dragging
- Low volume radio
- Keeping voices low and encouraging staff, volunteers and visitors to do the same



THANK YOU

- The BC SPCA staff and volunteers
- Zoetis Canada and Mitacs Accelerate Fellowship
- Thank you for having me!



