Submission No 356

INQUIRY INTO MANAGEMENT OF CAT POPULATIONS IN NEW SOUTH WALES

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Submission to the NSW Legislative Council inquiry 'Management of cat populations in New South Wales'

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About me

I am an animal ecologist with 25 years' experience researching the relationships between cats and wildlife. Over that time, I have published 35 peer-reviewed scientific papers in the field and supervised five graduate students researching cat-related topics. The research my students and I have undertaken covers feral cats remote from human habitation, the management of pet cats to reduce their interactions with wildlife, and ways to reduce the numbers of unowned cats in cities and suburbs. Over the years I have owned three cats myself and I am a life member of the Cat Welfare Society of Western Australia, although I stress that this is my personal submission and is not intended to represent the views of the Cat Welfare Society of Western Australia.

Publishing the submission

I consent to my submission, including my name, being published on the inquiry website.

Terms of reference

My submission focuses on TORs:

(a) The impact of cats on threatened native animals in metropolitan and regional settings.
(c) Welfare outcomes for cats under contained conditions.

Recommendations

Based on the evidence provided in the discussion of TORs (a) and (c), I recommend that the NSW government legislate to:

- Enable local councils to implement cat containment requirements. This will have significant benefits for cat welfare because of a reduction in injuries to pet cats, as well as curtailing opportunities for cats to attack wildlife.
- Allocate funding to local councils to support compliance with existing desexing, ID and registration regulations, as well as with containment in those jurisdictions where councils mandate the practice. Desexing, ID and registration complement containment by reducing behavioural problems in contained cats and improving the likelihood of returning escaped cats to their owners. Particular attention should be given to subsidizing costs for low-income owners, who are often

unable to comply with these valuable initiatives for financial reasons. Not to support them risks increased abandonment of pet cats.

Evidence in support of these recommendations follows, organized under the headings of TORs (a) and (c).

(a) The impact of cats on threatened native animals in metropolitan and regional settings.

I consider regional settings first, because the approaches undertaken by ecologists to establish cat impacts on wildlife in regional settings translate well to undertaking assessments in metropolitan settings. The main steps are: (i) establish that predatory actions are occurring, (ii) establish that predation is related to observed patterns of fauna decline and consistent with the biology of prey species, and (iii) experimental tests of the removal of cats on population numbers of prey species, or of the response of prey species introduced to areas where cats are present compared to where they are absent.

Regional settings

Cats remote from human habitation opportunistically hunt thousands of species, killing billions of animals annually (e.g., Fleming et al. 2022, Stobo-Wilson et al. 2022). While evidence of predation alone does not establish population impacts (Bomford et al. 1985), dietary studies are reinforced by:

- correlations between cat introductions, their spread, and fauna decline (Dickman et al. 1993; Burbidge and Manly 2002)
- the ecology and life history of declining species, confirming their susceptibility to cat predation (Fisher et al. 2014; Fleming et al. 2022)
- experiments in which prey numbers recover after removing or excluding cats (Risbey et al. 2000, Frank et al. 2014, Cove et al. 2018, 2019, Tuft et al. 2021), or where faunal reintroductions fail where cats are present, but succeed elsewhere.

In combination, the evidence from these approaches indicates that cats remote from human habitation are implicated in multiple fauna extinctions and threaten many extant species (Doherty et al., 2016, 2017). While cats' impacts may interact with environmental disturbances (Stokeld et al. 2018, 2022), cats are a significant threat because of high population densities, diverse habitat use and intense activity within their home ranges (Hamer et al., 2021).

Metropolitan settings

Cities are important globally for biodiversity conservation (Yencken et al. 2000, Gaston et al. 2005; Ives et al. 2016; Lepczyk et al., 2023), which highlights the importance of considering cat predation as a source of mortality. Studies on the relationship between pet cats and urban wildlife follow broadly the methods used in studying cats in regional settings, first establishing the extent of hunting and then going further to establish specific impacts on urban wildlife populations.

Significant points relating to the potential impact of cat predation in metropolitan settings are:

1. There is no doubt that many pet cats hunt:

    - Human subsidies maintain cats at high densities near habitation, causing high predation pressure (Lepczyk et al. 2003), compounded by indirect pressures caused when wildlife avoid cats (Bonnington et al. 2013).
    - Initial studies recorded animals brought home by cats, although later studies using collar-mounted cameras confirmed that cats only return small, unrepresentative fractions of their kills (Seymour et al. 2020).
    - Some owners fit collar-worn anti-predation devices or use other husbandry practices to reduce hunting (Pemberton and Ruxton 2020). Similarly, some non-owners deter roaming cats with motion-activated alarms or sprinklers (Nelson et al. 2006). This is evidence that at least some owners are concerned about their cat's hunting activities and that some non-owners are either concerned about cats' hunting behaviour or are annoyed by incursions of cats on their property.

2. Documented cases of impacts on wildlife caused by predation by pet or stray cats in cities and towns include:

    - Predation by a single stray, desexed cat and one pet cat caused the total breeding failure of a colony of endangered Fairy terns, negating all conservation efforts to protect and support the colony (Greenwell et al. 2019).
    - A suburban garden population of the lizard *Ctenotus fallens* was extirpated in a few months by a single pet cat (Bamford and Calver 2012).
    - Over a 15-year study in the Perth hills, Western Australia, c. 10% of nests of the Splendid Fairy-wren were destroyed by cats (Rowley et al. 1991).
    - Cat predation caused 17.8% of mortality of Eastern barred bandicoots, mostly juveniles and sub-adults (Dufty 1994).
    - One pet cat extirpated a local NSW population of the Feather-tailed glider (Paton 1993).
    - In Europe, bird banding data in France and Belgium show bird mortality from cat predation increased 50% between 2000 and 2015, coinciding with growth in the pet population – as significant a mortality as striking windows (Pavisse and Vangeluwe 2019).
    - There are also exceptions – e.g., Lilith et al. (2010) found that vegetation structure, not cat presence, drove small mammal numbers in Armadale, WA. They did not, though, test if other small mammals could be reintroduced successfully in areas of the most favourable vegetation structure, nor did they assess possible impacts on other fauna such as birds or lizards.

Overall, the plausible risk of significant impacts from cat predation (with major problems identified clearly in some cases and uncertainty in others) justifies precaution (Calver et al. 2011). Requiring conclusive evidence before action in each locality risks local extinctions

before intervention. Appropriate precautionary activities can be implemented at considerable benefit to the welfare of pet cats, as discussed under TOR (c).

(c) Welfare outcomes for cats under contained conditions.

Cats are one of the very few domestic animals where it is socially acceptable for owners to allow them to roam at will, the others being homing pigeons and honeybees. Thus, the common concern that it is cruel to contain a cat implies cruelty to all other pets that are contained. Rather, I argue that the welfare of pet cats is enhanced under containment. Animal welfare bodies such as The Humane Society of the United States (HSUS 2024), People for the Ethical Treatment of Animals (PETA undated) and RSPCA (2022) also recommend containing pet cats on their owners' properties to reduce the well-known risks.

1. Risks of the free-roaming lifestyle for pet cats include:

    - predation by dogs, foxes (more common in suburbia than many people realise), coyotes (in the USA), raptors and even pythons (Gehrt et al. 2013, Nation et al. 2019)
    - human persecution (CBC News 2015),
    - accidental ingestion of rat poison, household chemicals or other toxins (Moreau et al. 2003),
    - accident trauma (Calver et al. 2013),
    - exposure to infectious disease (Crawford et al. 2019)
    - fighting injuries (Calver et al. 2007).

2. Internationally, numerous studies quantify the risks:

    - Of 4,591 Swedish cats registered for life insurance, Egenvall *et al* (2009) reported that 9% were killed in traffic accidents.
    - In Cambrésie, France, Moreau *et al* (2003) reported that 66 of the 259 cat deaths they investigated were accidental, including 27 road fatalities and 26 poisonings.
    - In a Pennsylvania, USA, emergency veterinary hospital, Kolata *et al* (1974) found that the most common causes of trauma in 121 cat cases were motor vehicles (16.3%), animal interaction (14.7%), falls (13.9%), crushes (10%) and unknown causes (39.5%).

3. Data from Western Australia quantify the risks to cat welfare of allowing pet cats to roam in a specifically Australian context:

    - In one WA survey of 63 cat owners, 22% reported cats needing veterinary care following road accident trauma, 53% reported cats needing veterinary care for fighting injuries and 62% had owned cats killed in traffic (Calver et al. 2013).
    - In another WA study, over a monitoring period of six weeks in late spring/early summer 11 of the 62 outdoors cats were injured in fights. When 55 of these cats were followed over eight months two were poisoned, one lost a leg in a road accident, one broke her canines falling from a roof and four needed treatments for fighting injuries (Calver et al. 2007).

- Statistics such as these underpin the estimate that free-roaming cats live for an average of four years, compared to 15 years or more for cats contained on their owner's property (Barrows 2004).

4. Compelling as the figures are, they lack the raw emotional impact of the many videos posted online showing trauma to free-roaming cats, for example:

   - https://www.newsflare.com/video/147046/animals/cat-killed-by-van-caught-on-cctv
   - https://www.youtube.com/watch?v=D5tCTtJUZL0
   - https://www.youtube.com/watch?v=j5zp3vjDyQI
   - https://www.youtube.com/watch?v=eYdUZdan5i8

   All too commonly, these are the fates for cats wandering off their owners' premises.

5. Contained cats may not perform a range of natural behaviours such as hunting, exploring, interacting with other cats or exercising (Tan et al. 2020). Containment is a risk factor for obesity and diabetes (Rochlitz 2005), as well as behavioural problems such as inappropriate urination (Amat et al. 2009; Sandøe et al. 2017). These risks can, though, be overcome. Cats can enjoy high quality of life when contained:

   - When care is taken to enrich the lives of contained cats, their quality of life (QOL) is not impaired (Kasbaoui et al. 2016) and QOL scores may exceed those of outdoor cats (Henning et al. 2023). Examples of enrichment activities for contained cats are listed in Appendix 1.
   - Desexing contained cats may prevent some behavioural problems such as urine spraying and fighting in multi-cat households.
   - ID and registration are still important for contained cats, because if a cat escapes these measures will facilitate its prompt return.
   - In assessing the responses of owners and cats to a commercial containment system that allowed contained outdoor access for pet cats, de Assiss and Mills (2021) claimed improvement QOL for both owners and pets, which they attributed to the owners' perception of increased security.
   - When evaluating cat husbandry in Brazil, (Oliveira et al. 2023), concluded that '… caretakers who practice indoor management are more likely to have a positive relationship with their cats than those who practice outdoor management.' Surely, that would benefit cat welfare.

6. Finally, containment reduces greatly the risk that a pet cat will attack wildlife, while simultaneously improving its welfare.

Appendix 1. Examples of enrichment activities for contained cats.

Enrichment activity	Reference
Outdoor enclosure, sometimes called catios	(Richards 2004; Rochlitz 2005)
Exercise on a leash or harness	(Richards 2004; Ellis et al. 2022)
Vertical structures for climbing	(Rochlitz 2005; Jongman 2007)
Elevated platforms for sitting	(Rochlitz 2005; Jongman 2007; Ellis et al. 2022)
Soft bedding	(Rochlitz 2005; Ellis et al. 2022)
Scratching surfaces	(Rochlitz 2005; Jongman 2007; Ellis et al. 2022)
Areas to hide	(Rochlitz 2005; Jongman 2007; Ellis et al. 2022)
Access to multiple rooms	(Rochlitz 2005; Ellis et al. 2022)
Outside views	(Ellis et al. 2022)
Multiple environmental features to share in multi-cat households	(Jongman 2007)
Toys	(Rochlitz 2005; Strickler and Shull 2013; Ellis et al. 2022)
Play with the cat	(Rochlitz 2005; Strickler and Shull 2013)
Training	(Ellis et al. 2022)
Type of food fed and method of feeding (e.g., problem solving for a food reward)	(Rochlitz 2005; Ellis et al. 2022)
Companionship of other cats, other animals, or humans	(Rochlitz 2005; Ellis et al. 2022)
Olfactory enrichment	(Rochlitz 2005; Ellis et al. 2022)
Aural enrichment (cat music)	(Ellis et al. 2022)

References

Amat M, de la Torre JLR, Fatjó J, Mariotti VM, Van Wijk S, Manteca, X. 2009. Potential risk factors associated with feline behaviour problems. Applied Animal Behaviour Science **121**: 134-139.

Bamford MJ, Calver MC. 2012. Cat predation and suburban lizards: a 22 year study at a suburban Australian property. Open Conservation Biology Journal **6**:25-29.

Barrows PL. 2004. Professional, ethical, and legal dilemmas of trap-neuter-release. Journal of the American Veterinary Medical Association **225:** 1365-1369.

Bomford M, Newsome A, O'Brien P. 1995. Solutions to feral animal problems: ecological and economic principles. Pp. 202–209 in Bradstock RA, Auld TD, Keith DA, Kingsford RT, Lunney D, and Silversten DP, editors. Conserving biodiversity: threats and solutions. Surrey Beatty and Sons, Chipping Norton, New South Wales.

Bonnington C, Gaston KJ, Evans KL. 2013. Fearing the feline: Domestic cats reduce avian fecundity through trait-mediated indirect effects that increase nest predation by other species. Journal of Applied Ecology **50**:15-24.

Burbidge AA, Manly BFJ. 2002. Mammal extinctions on Australian islands: causes and conservation implications. Journal of Biogeography **29**:465–473.

Calver M, Thomas S, Bradley S, McCutcheon H. 2007. Reducing the rate of predation on wildlife by pet cats: the efficacy and practicability of collar-mounted pounce protectors. Biological Conservation **137**:341–348.

Calver MC, Grayson J, Lilith M, Dickman CR. 2011. Applying the precautionary principle to the issue of impacts by pet cats on urban wildlife. Biological Conservation **144**:1895–1901.

Calver MC, Adams G, Clark W, Pollock KH. 2013. Assessing the safety of collars used to attach predation deterrent devices and ID tags to pet cats. Animal Welfare **22**:95–105.

CBC News (2015). Police Investigating Mutilated Cats Found in St. Albert. Available online: https://www.cbc.ca/news/canada/edmonton/police-investigating-mutilated-cats-found-in-st-albert-1.3210965.

Cove MV, Gardner B, Simons TR, O'Connell, AF. 2018. Co-occurrence dynamics of endangered Lower Keys marsh rabbits and free-ranging domestic cats: Prey responses to an exotic predator removal program. Ecology and Evolution **8**:4042–4052.

Cove MV, Simons TR, Gardner B, O'Connell AF. 2019. Towards recovery of an endangered island endemic: distributional and behavioral responses of Key Largo woodrats associated with exotic predator removal. Biological Conservation **237**:423–429.

Crawford HM, Calver MC, Fleming PA. 2019. A case of letting the cat out of the bag—why trap-neuter-return is not an ethical solution for stray cat (*Felis catus*) management. Animals **9:**(4).

de Assis LS, Mills D]S. 2021. Introducing a controlled outdoor environment impacts positively in cat welfare and owner concerns: The use of a new feline welfare assessment tool. Frontiers in Veterinary Science **7**: doi: 10.3389/fvets.2020.599284.

Dickman CR, Pressey RL, Lim L, Parnaby HE. 1993. Mammals of particular conservation concern in the Western Division of New South Wales. Biological Conservation **65**:219–248.

Doherty TS, Dickman CR, Johnson CN, Legge SM, Ritchie EG, Woinarski JCZ. 2017. Impacts and management of feral cats *Felis catus* in Australia. Mammal Review **47**:83–97.

Doherty TS, Glen AS, Nimmo DG, Ritchie EG, Dickman CR. 2016. Invasive predators and global biodiversity loss. Proceedings of the National Academy of Sciences of the United States of America **113**:11261-11265.

Dufty AC. 1994. Population demography of the eastern barred bandicoot *(Perameles gunnii)* at Hamilton, Victoria. Wildlife Research **21**: 445-457.

Egenvall A, Nødtvedt A, Häggström J, Ström Holst B, Möller L, Bonnett BN. 2009. Mortality of life-insured Swedish cats during 1999-2006: age, breed, sex, and diagnosis. Journal of Veterinary Internal Medicine **23**:1175–1183.

Ellis JJ, Miller K, Watts K. 2022. Feline enrichment, In Animal Behavior for Shelter Veterinarians and Staff. eds B.A. DiGangi, V.A. Cussen, P.J. Reid, K.A. Collins, pp. 423-444. John Wiley and Sons, Hoboken NJ.

Fisher DO, et al. 2014. The current decline of tropical marsupials in Australia: is history repeating? Global Ecology and Biogeography **23**:181–190.

Fleming PA, et al., 2022. Distinctive diets of eutherian predators in Australia. Royal Society Open Science **9**:220792.

Frank ASK, et al., 2014. Experimental evidence that feral cats cause local extirpation of small mammals in Australia's tropical savannas. Journal of Applied Ecology **51**:1486–1493.

Gaston KJ, Warren PH, Thompson K, Smith RM. 2005. Urban domestic gardens (IV): the extent of the resource and its associated features. Biodiversity and Conservation **14**:3327–3349.

Gehrt SD, Wilson EC, Brown JL, Anchor C. 2013. Population ecology of free-roaming cats and interference competition by coyotes in urban parks. *PLoS ONE* **8:**(9).

Greenwell CN, Calver MC, Loneragan NR. 2019. Cat gets its tern: a case study of predation on a threatened coastal seabird. Animals **9**:445.

Hamer RP, Gardiner RZ, Proft KM, Johnson CN, Jones ME. 2021. A triple threat: high population density, high foraging intensity and flexible habitat preferences explain high impact of feral cats on prey. Proceedings of the Royal Society B **288**:20201194.

Henning J, Nielsen T, Fernandez E, Hazel S. 2023. Cats just want to have fun: Associations between play and welfare in domestic cats. Animal Welfare 32. doi: 10.1017/awf.2023.2.

HSUS 2024. 10 tips to keep your cat happy indoors. Available online: https://www.humanesociety.org/resources/10-tips-keep-your-cat-happy-indoors.

Ives CD, et al. 2016. Cities are hotspots for threatened species. Global Ecology and Biogeography **25**:117–126.

Jongman EC. 2007. Adaptation of domestic cats to confinement. Journal of Veterinary Behavior: Clinical and Applied Research **2:** 193-196.

Kasbaoui N, Cooper J, Mills DS, Burman O. 2016. Effects of long-term exposure to an electronic containment system on the behaviour and welfare of domestic cats. PLoS One **11:**(9). doi: 10.1371/journal.pone.0162073.

Kolata RJ, Kraut NH, Johnston DE. 1974. Patterns of trauma in urban dogs and cats: a study of 1,000 cases. Journal of the American Veterinary Medical Association **164**:499–502.

Lepczyk CA, Aronson MFJ, La Sorte FA. 2023. Cities as sanctuaries. Frontiers in Ecology and the Environment **21:** 251-259.

Lepczyk CA, Mertig AG, Liu J. 2003. Landowners and cat predation across rural-to-urban landscapes. Biological Conservation **115**:191–201

Lilith M, Calver M, Garkaklis M. 2010. Do cat restrictions lead to increased species diversity or abundance of small and medium-sized mammals in remnant urban bushland? Pacific Conservation Biology **16**:162–172.

Moreau D, Cathelain P, Lacheretz A. 2003. Comparative study of causes of death and life expectancy in carnivorous pets (II). Revue de Médecine Vétérinaire **154**:127–132.

Nation PN, St Clair CC. 2019. A forensic pathology investigation of dismembered domestic cats: Coyotes or cults? Veterinary Pathology **56:** 444-451.

Nelson SH, Evans AD, Bradbury RB. 2006. The efficacy of an ultrasonic cat deterrent. Applied Animal Behaviour Science **96**:83–91.

Oliveira IDA, Viana-Junior AB, de Azevedo CS. 2023. Indoor and outdoor management for cats: inferences about the welfare and cat-caretaker relationship. Journal of Veterinary Behavior **60**: 70-78.

Paton DC. Impacts of domestic cats on wildlife. In 'Cat Management Workshop Proceedings.', 1993, Queensland Department of Environment and Heritage. (Ed. C Potter).

Pavisse R, Vangeluwe D. 2019. Domestic cat predation on garden birds: an analysis from European ringing programmes. Ardea **107:** 103–109.

Pemberton C, Ruxton GD. 2020. Birdsbesafe® collar cover reduces bird predation by domestic cats (*Felis catus*). Journal of Zoology **310**:106–109.

PETA. Undated. Why All Cats Should be Indoor Cats. Available online: https://www.peta.org/living/animal-companions/caring-animal-companions/caring-cats/indoor-cats/

Richards JR. 2004. The 2004 American Association of Feline Practitioners position statement on free-roaming abandoned and feral cats. Journal of Feline Medicine and Surgery **6:** vii-ix.

Risbey DA, Calver MC, Short J, Bradley JS, Wright IW. 2000. The impact of cats and foxes on the small vertebrate fauna of Heirisson Prong, Western Australia. II. A field experiment. Wildlife Research **27**:223–235.

Rochlitz I. 2005. A review of the housing requirements of domestic cats (*Felis silvestris catus*) kept in the home. Applied Animal Behaviour Science **93:** 97-109.

Rowley I, Brooker M, Russell E. 1991. The breeding biology of the Splendid fairy-wren *Malurus splendens*: the significance of multiple broods. *Emu* **91**: 197-221.

RSPCA. 2022. Is it okay to keep my cat at home all of the time? https://kb.rspca.org.au/knowledge-base/is-it-okay-to-keep-my-cat-at-home-all-of-the-time/.

Sandøe P, Nørspang AP, Forkman B, Bjørnvad CR, Kondrup SV, Lund TB. 2017. The burden of domestication: A representative study of welfare in privately owned cats in Denmark. Animal Welfare **26:** 1-10.

Seymour CL, Simmons RE, Morling F, George ST, Peters K, O'Riain MJ. 2020. Caught on camera: the impacts of urban domestic cats on wild prey in an African city and neighbouring protected areas. Global Ecology and Conservation **23**:e01198.

Stobo-Wilson AM, Murphy, BP, Crawford, HM, Dawson, SJ, Dickman, CR, Doherty, TS, Fleming, PA, Gentle, MN, Legge, SM, Newsome, TM, Palmer, R, Rees, MW, Ritchie, EG, Speed, J, Stuart, JM, Thompson, E, Turpin, J, Woinarski, JCZ 2021. Sharing meals: predation on Australian mammals by the introduced European red fox compounds and complements predation by feral cats. Biological Conservation **261**:109284.

Stokeld D, Fisher A, Gentles T, Hill B, Triggs B, Woinarski JCZ, Gillespie GR. 2018. What do predator diets tell us about mammal declines in Kakadu National Park? Wildlife Research **45**:92–101.

Stokeld D, Fisher A, Gentles T, Hill BM, Woinarski JCZ, Gillespie GR. 2021. No mammal recovery from feral cat experimental exclusion trials in Kakadu National Park. Wildlife Research **49**:335–346.

Strickler BL, Shull EA. 2013. An owner survey of toys, activities, and behavior problems in indoor cats. Journal of Veterinary Behavior: Clinical and Applied Research **9:** 207-214.

Tan SML, Stellato AC, Niel L. 2020. Uncontrolled outdoor access for cats: An assessment of risks and benefits. Animals **10:**(2). doi: 10.3390/ani10020258.

Tuft K, et al. 2021. Cats are a key threatening factor to the survival of local populations of native small mammals in Australia's tropical savannas: evidence from translocation trials with *Rattus tunneyi*. Wildlife Research **48**:654–662.

Yencken D, Wilkinson D. (2000). *Resetting the compass : Australia's journey towards sustainability*. CSIRO Publishing: Clayton South, Victoria.