Australian Veterinary Association

Submission

Inquiry into the problem of feral and domestic cats in Australia

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Contents

The Australian Veterinary Association (AVA)

The Australian Veterinary Association (AVA) is the only national association representing veterinarians in Australia. Founded in 1921, the AVA today represents 9000 members working in all areas of animal science, health and welfare – including conservation and wildlife. Veterinary roles extend far beyond caring for the health and welfare of our pets and production animals. Veterinarians are the pathologists, field officers and inspectors that secure the safety of our food, ensure market access for our exports, and help to safeguard the human population from zoonotic diseases.

The Australian Veterinary Association is grateful for the opportunity to make a submission to the House of Representatives Standing Committee on the Environment and Energy inquiry into *The problem of feral and domestic cats in Australia.*

Preamble

Cats are intelligent, sentient animals that play a significant role in Australian society. Cats form bonds with people and provide companionship and enjoyment. Studies have shown that relationships with animals are positive and important to many people, contributing to health and well-being. However, cats have wrought a heavy price on Australia's native wildlife.

Invasive species, ecosystem modification and agriculture in Australia are noted as the key threats impacting on many threatened species (Kearney et al. 2019). Worldwide, cats, dogs and rodents are the most damaging invasive mammalian predators. In Australia, introduced species including rabbits, cats and foxes, affect 267 of Australia's 1257 threatened species as listed in the *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*. Feral cats are known to threaten 123 of these listed species. Feral cats are likely to have been a major cause in 57% of Australia's 47 extinctions of reptiles, birds and mammals since European settlement, and that trend continues unabated (Woinarski, Legge, and Dickman 2019)(Woolley et al, 2019). Cats also impact on human health and animal production through the transmission of zoonotic disease.

The untoward effects of cats on wildlife, livestock and transmission of zoonoses are unlikely to be eliminated using current methods, but they can be ameliorated and managed using humane, long-term strategies which reflect a balanced whole-of-community approach.

The management of cats in the Australian context is facilitated by considering them in separate functional groups, while recognising that individuals can move between groups. While the terminology used to describe these groups varies, the underlying concept is generally agreed by the various interested parties [*AVA Policy, Management of cats in Australia* (AVA 2016)*; RSPCA Identifying Best Practice Domestic Cat Management, 2018* (RSPCA Australia 2018)*; Cats in Australia: Companion or Killer* (Woinarski, Legge, and Dickman 2019)*, Threat Abatement Plan for Predation by Feral Cats (TAP-Cats)* (Department of the Environment 2015)].

To aid discussion and analysis of the issues, we have considered the 3 functional subpopulations of cats under the following definitions, derived from the AVA policy on management of cats:

Owned (domestic) cats: These cats live in a domestic household. They are usually named and have a form of identification. Over 90% are desexed (Johnson and Calver, 2014; Baldock 2004) and they may live totally indoors or a mix of indoors and outdoors. Although some may hunt birds and small mammals, they are mainly dependent on their owners for food. For this group, the targets for legislation are around desexing, identification and confinement; this population and their largely responsible owners are not the cause of most complaints about cats.

Stray (semi-owned and unowned cats): These cats are largely dependent on human society for food and shelter. Semi-owned cats are fed by people who do not perceive they are their property. Typically, 1-2 cats are fed, with 3-9% of adult Australians engaged in feeding a semi-owned cat daily (Zito 2015, Rand 2019). Unowned cats are typified by 'factory' cats, cats living around government housing, hospitals, universities, food outlets and rubbish tips. Colonies are maintained by well-meaning members of the public who perceive their only responsibility for semi-owned and unowned cats is to provide food. This population is responsible for most of the complaints about cats in urban areas. Most cats in this category are not desexed, vaccinated or given parasite control, and their numbers expand rapidly when given access to ample resources. They also serve as repositories for many feline specific and zoonotic diseases.

Feral cats: These cats live independently of humans. They are born outside human society and have minimal to no contact with people. They are not reliant on humans for survival and obtain food by hunting and scavenging. They tend to be solitary or live in small family groups of 3–4 guided by a matriarch. Their territory can be large and variable, depending on resources. They are successful survivors in harsh circumstances and are expert at eluding capture. There is growing public awareness that the free-living feral cat is causing damage to populations of small native mammals, reptiles and birds in many parts of Australia, and can be a disease reservoir.

a) The prevalence of feral and domestic cats in Australia

Owned (domestic) cats

The number of owned cats appears to be reasonably well estimated and monitored, mainly via pet industry surveys (eg Animal Medicines Australia, 2019). The social benefits of owned domestic cats are well recognised. Best practice protocols and public education campaigns to minimise the negative impacts of domestic cats on wildlife, and prevent neighbourhood disputes, can be successful provided they are resourced, funded and maintained.

Stray (semi-owned and unowned) cats

The number of stray cats in urban and more closely settled areas can contribute to management issues and wildlife predation (addressed in more detail in section b). The number of cats in this category remains in some doubt and further work in estimating this population and monitoring numbers is urgently needed. (The effective management of cats in this group is addressed further in section c).

Feral cats

The number of feral cats in Australia has been subject to extensive and ongoing study over many years. Recent reviews (Woinarski, Legge, and Dickman 2019) give some confidence that the estimates are now reproducible.

The actual number of feral cats is subject to marked seasonal effects and fluctuates substantially depending on prey availability.

Recommendations/Key Comments

- That further research be directed to determining the number and distribution of stray (semi-owned and unowned) cats in Australia to facilitate their management.

b) The impact of feral and domestic cats including on native wildlife and habitats

Group	Alternative nomenclature	Number (m)	Mammals Killed per Year (m)[1]	Notes
Feral Cats	Cats in Natural environments	2.07[2]	815 (56% native)	Numbers fluctuate by seasonal factors 1.4-4.6
Owned (domestic) cats	Cats in Modified environments	3.88[3]	180 (Low proportion native)	
Stray (Semi-owned/unowned)		0.7[4]	149 (Low proportion native)	Including colony

Table 1: Prevalence of Cats and mammal prey numbers in Australia. Information derived from:
1.Murphy et al. 2019
2. Woinarski, Legge, and Dickman 2019
3. Animal Medicines Australia 2019
4. Legge et al. 2017

Feral Cats – impact on wildlife

The AVA policy *Management of cats in Australia* (AVA, 2016) notes that feral cats may need to be controlled in urban areas that support significant populations of native fauna, or where neighbourhood amenity or health is being affected. The impact of feral cats on native wildlife in natural (non-urban) environments is well documented and has contributed to 27 of 47 extinctions of reptiles, birds and mammals in Australia since European settlement (Woinarski, Legge, and Dickman 2019). Feral cats continue to exert ongoing pressure on threatened species and wildlife generally. Conservation impacts are variable depending on locality, season and the abundance of available prey species, for example, feral cats in northern Australia consume a higher proportion of native mammals than feral cats in southern Australia (Murphy et al. 2019).

The AVA notes that the government's *Threat abatement plan for predation by feral cats* (TAP-Cats) and work by the Threatened Species Recovery Hub (TSR Hub) (https://www.nespthreatenedspecies.edu.au/) has as a main objective to identify and understand the key areas in which threatened species exist. This work also aims to determine what management practices can be used to protect them against predation and disturbance by feral cats. A targeted approach, addressing critical areas and adapted to different landscape management techniques, is recommended.

Stray (semi-owned and unowned) cats – impact on wildlife

Many studies have documented the predation of wildlife by these groups of cats in Australia, as recently reviewed by Murphy et al, 2019 and Woinarski et al, 2019. It is likely that the abundance of native and non-native wildlife, as well as the relative proportions of different species in any given area, are altered by the presence of cats. Cats are opportunistic hunters preying upon species in proportion to their availability. Predation rates are therefore a reflection of prey availability (Thomas, Fellowes, and Baker 2012). There is also a public perception that free-roaming urban cats, whether owned or unowned, contribute to declines in urban native wildlife through predation. In a recent Australian study, 32% of respondents believed cats had a negative effect on native wildlife (Rand et al. 2019).

Several Australian studies have demonstrated that further research is required to understand the connection between the cat density and diversity of native animals in urban areas (Grayson et al 2007; Lilith et al 2010; Maclagan et al 2018; Matthews et al 1999). Research is also needed on the overall and species-specific effects of cat predation on native bird and mammal populations in urban environments. (Sarah Legge et al. 2020).

Owned cats – impact on wildlife

Notwithstanding the issues raised in the previous section, the AVA supports measures which mitigate the impact of owned cats on wildlife including containment, night-time confinement/curfews and desexing as outlined in the AVA policy (2016).

Recommendations/Key Comments

- **Wildlife:** Further research is required to investigate the impact of owned and stray cats on native wildlife populations in urban and peri-urban environments.
- The AVA supports measures which mitigate this impact including containment, night-time confinement and desexing.
- AVA supports work which aims to identify areas in which threatened species exist, and to determine what management practices can be used to protect them against predation and disturbance by feral cats. A targeted approach, addressing critical areas and adapted to different landscape management techniques, is recommended.

Impact of cats on human health – disease

Diseases which can be spread from cats to humans are rare. They require close contact with infected cats, and are transmitted through bites, scratches, or in faeces (Centers for Disease Control and Prevention, 2016). The overall public health risk from cats is small (Chomel, 2014).

Pet cats with close human contact pose a higher risk to humans than urban strays, as strays rarely have direct physical contact with humans. Ringworm (a fungal infection caused by *Microsporum canis),* fleas, mites (*Cheyletiella spp.)* and intestinal worms (*Toxocara spp.)* can all be transmitted from cats to humans, but these are easily treated or prevented. Cat bites and scratches represent a more serious health risk, resulting in wounds that cause localised pain and infection, as well as potential transmission of the bacteria (*Bartonella henselae)* which causes cat scratch fever.

Toxoplasmosis

Toxoplasma gondii, a cat-borne parasite, infects about 25% of the world's human population and, though it rarely causes disease because of its prevalence, is responsible for more fatalities than any

other food-borne disease in North America except Salmonella (Scallan et al 2011). Human infection occurs via ingestion of oocysts directly from the environment (for example, on unwashed vegetables) or improperly cooked meat. Cats are typically infected by Toxoplasma in their first year of life and shed oocysts for 2-3 weeks before becoming immune. Young cats shed 300 times more oocysts than older adults with prior exposure, and 60 times more than older immunologically naïve cats (Dubey 2009; Dawson et al. 2020).

Toxoplasmosis poses direct and indirect threats to the livestock industry. It results in reproductive loss in sheep (occasional abortion storms or a background of low-level abortions which are harder to quantify). These infestations are derived from cat-excreted oocysts.

Toxoplasmosis is a public health problem due to the presence of bradyzoites (tissue cysts) in meat. Globally, bradyzoite ingestion is recognised as an important source of human infection. In Australia this most often affects pork, sheep and chicken meat. Toxoplasmosis, although rare, can result in neurological damage in immunocompromised people and abortion or stillbirth when immunologically naïve women are exposed for the first-time during pregnancy.

Toxoplasma gondii infections in farm cats may result in environmental contamination and contribute to toxoplasmosis in livestock, particularly sheep. Cats predate rodents and produce litters of immunologically naïve kittens, which become infected and shed oocysts around areas where the sheep are corralled for husbandry procedures e.g. shearing sheds and yards.

Research is urgently needed to determine if desexing all farm/barn/shearing shed cats, and trapping and desexing immigrant cats to prevent kitten births, will affect the incidence of toxoplasmosis in livestock, with the aim to reduce economic loss from carcass condemnation, by reducing environmental contamination with *T.gondii* cysts.

Recommendations/Key Comments

- Research is required to determine if desexing all farm cats will reduce environmental contamination with *T.gondii* cysts and subsequently reduce economic loss from carcass condemnation due to the presence of meat cysts

c) The effectiveness of current legislative and regulatory approaches to cat management

Feral Cats

A key review published in 2019 by 12 of Australia's top environmental scientists (Kearney et al. 2019) concluded that "Without governance and legislative support, and committed political leadership, many efforts to conserve Australia's threatened species will be undermined."

The *EPBC Act* is the key piece of Australian Government legislation directed at threatened species and environmental protection. The implementation of this legislation has serious inadequacies as the Australian Government is only empowered in two situations: in matters relating to Commonwealth Land and Matters of National Environmental Significance. Commonwealth land represents a minor proportion of Australia's land mass, making this section of the *Act* of no use for the management of feral animal control within States and Territories.

While 'Matters of National Environmental Significance,' has the potential for the Australian Government to exercise a leadership role on feral cats, through their identification as a key threatening process, the Attorney General has chosen to generally defer these powers to the states. Feral cats are currently only classified as pest species in 5 of the 8 Australian jurisdictions.

This complicates feral cat management and strips the *EPBC Act* of its potential strength. Further, the Attorney General has progressively reduced financial resources to the Department of the Environment at a time of increasing peril to threatened species and environments. "Even where a Threat Abatement Plan exists under the EPBC Act there are no obligations on other governments, landholders or anyone to act." (Booth 2018).

Coordination and funding for cat control has been inadequate and not focussed on outcomes. Currently state governments and local councils have varying approaches in regard to cat management. Control and management of both the feral and urban unowned cat population is currently severely under-resourced and more funds should be dedicated to this.

Owned cats

AVA Policy (2016) recommends that owned cats should be identified, microchipped and have their reproduction controlled, generally by prepubertal desexing. The policy also recommends cats should be contained or at least confined at night.

Owned cats represent the largest single subgroup with 3.88 million cats by current estimates (see Table 1). Most of these cats are desexed and maintained with adequate levels of care. Owners are also supported by well-developed cat management programs supported by most key stakeholder groups. These programs include RSPCA's *Keeping your cat safe and happy at home* (RSPCA Australia 2019) and the Australian Cat Action Plan (Getting to Zero 2018).

However, within this group there are significant socioeconomic groups who struggle to maintain adequate standards of care. Intake of cats and kittens into shelters and pounds is socioeconomic dependent and is higher in suburbs where 20% to 30% of households are classed as low income, which in Australia is often defined as 2.4 people living on less than $650/week.

Stray (semi-owned and unowned) cats

AVA policy (2016) recommends unowned cats should be trapped or reported to the relevant authority. Cats removed should be reclaimed, rehomed or euthanased. A sufficient holding period must be in place before any decision to euthanase – sometimes owned cats have lost their collars or have incorrect or missing microchip details.

People who support unowned or semi-owned cats should be encouraged to take responsibility, and de-sexing should be emphasised.

Trap neuter and return (TNR) strategies for this sub-group are the subject of strong debate (Read et al 2020). Limited studies under Australian conditions at the colony level have shown a reduction in cat numbers using TNR (Tan 2017, Swarbrick 2018) however, other studies (Woinarski 2019, Read et al, 2020) argue that TNR is not an ethical solution to stray cat management, and less successful than responsible rehoming or euthanasia. Effective control requires coordination between researchers, state and territory jurisdictions and government agencies. Cat breeders should be licenced, to allow monitoring of populations and reduce indiscriminate breeding. Research should be ongoing to

optimise the management of unowned and semi-owned cats. Surrender data from shelters should be made available to enable better assessment of the problem, and support research into management options.

Current best estimates of the number of unowned cats in Australia is 700,000 (Table 1), which is substantially less than the number of owned cats, yet this group provides a significant challenge to effectively manage. The Australian Cat Action Plan has a target goal of 90% of cats received at shelters being rehomed or reclaimed - leaving the remaining 10% considered to have medical or behavioural issues being euthanased.

The reasons for difficulties in managing this subgroup of unowned cats relates to the complex legislative tiers, inconsistencies within legislation, social and community perceptions and lack of available leadership and integration between different actors in the sphere.

Control and management of urban semi-owned/unowned cats is currently severely under-resourced. As these issues are ultimately addressed at the local and community level, the ownership of the issues depends on cat management plans, which adopt best practice and are implemented by local community cat management advisory groups. These groups work with key stakeholders such as the RSPCA, municipal shelters and veterinarians. The ultimate aim of these cat management plans is to reduce and stabilise unowned cat numbers and their impact on the urban environment. Current management techniques include trapping, rehoming, desexing and euthanasia (where adoption is not possible). Where alternative opportunities exist, further research should be supported to investigate the usefulness of such methods.

Cat control must be clearly linked to the primary outcome (improvement in threatened species status and increased prevalence of wildlife). Targets linked to the number of cats killed, registered, or desexed can be misleading without also assessing these other factors.

Recommendations/Key Comments

- That the Australian Government assume its proper leadership and coordination role in feral animal control as it impacts threatened species and environments.
- There needs to be consistency across jurisdictions with respect to the status of feral cats as a pest species.
- Ongoing research is required to improve cat management practices particularly for unowned and semi-owned cats. This may require legislative changes, or interim ministerial approval at the state and local government level to permit the research.
- Mandated transparency of intake and outcome data is required from all animal shelters and local government facilities to facilitate further research into best cat management practice.

d) The effectiveness of Commonwealth action and cooperation with states and territories on this issue, including progress made under the Threat Abatement Plan, national framework and national declaration relating to feral and domestic cats in Australia

The Australian Government's Threatened Species Strategy (2015)–identified four key priorities:

- Tackling feral cats
- Safe havens for species most at risk
- Improving habitat
- Emergency intervention to avert extinctions

Progress on these priorities was to have been reported annually since 2015, including actions taken and progress against the original objectives. The Year Four Progress Report (2019) failed to report outcomes against these four key priorities. Publicly available detail is particularly lacking regarding the aim to kill two million feral cats in order to protect a number of threatened and endangered species. The policy to kill two million cats as a target can and should be criticised, as it is focused on the wrong outcome. It is a poor target unless it results in improvements to the long-term survival of a particular species or number of species.

Documentation for this Inquiry has not made clear this Inquiry's connection or integration with the statutory review of the TAP-*Cats* scheduled in 2020 and major revision in 2025.

Assessing the impact of feral, stray and owned cats on wildlife and the environment provides many challenges because of its complexity in the factors and environments involved. Ongoing research is essential to understand and develop the most effective methods and those with long-lasting outcomes. Significant advances in our understanding of the issues have been made over the last decade, allowing decisions on strategy and management to be made on evidence-based research.

Collaboration and financial support for the Threatened Species Recovery Hub (TSR Hub), via the Australian Government's National Environment Science Program, has made a significant contribution to research into the numbers of native wildlife killed by feral and pet cats. To avoid further loss to Australia's threatened species adequately funded work must now focus on implementing and evaluating strategies that will best protect Australia's threatened and endangered wildlife.

Cross-jurisdiction collaboration by all tiers of government have been addressed in section (c) of this submission. We believe the lack of coordination between the Commonwealth and states constitutes a serious impediment to the management of free-living cats within Australia. There is strong evidence that while legislation exists to protect the environment, it is not being used as it was intended (Ward et al. 2019).

Consultation and communication across all sectors and stakeholders should be inclusive. Currently the Feral Cat Taskforce comprises representatives from Commonwealth, State and Territory Governments, NGOs and key feral cat researchers. The AVA, as a key stakeholder, must be included in this Taskforce to ensure inclusion of veterinary expertise in animal health, welfare, and public health in the Taskforce's advice to government.

Recommendations

- A standard national framework is needed for cat management to ensure coordination and consistency of approach across jurisdictions.
- AVA, as a key stakeholder, must be represented on the national Feral Cat Taskforce.

e) The efficacy (in terms of reducing the impact of cats), cost effectiveness and use of current and emerging methods and tools for controlling feral cats, including baiting, the establishment of feral cat-free areas using conservation fencing, gene drive technology

The AVA acknowledges the work led by The Western Australian Biodiversity Science Institute (WABSI) and calls for additional Federal Government funding to further active research. This would include research programs as documented in the WABSI publication 'Increasing Knowledge to Mitigate Cat Impacts on Biodiversity' (Webber, 2020).

Additional funding will allow generation of data in a context-specific way around the efficacy, humaneness and cost effectiveness of these control techniques. Webber, 2020 summarises both current and emerging methods and tools (pages 18 to 21) and the costs, and highlights the further research required (pages 31 to 32).

Feral

A recent review of cats in Australia (Wornarski et al. 2019) has concluded that the overall number of feral cats is stable, and that control programs have had no significant impact on feral cat numbers. Therefore, as their number is essentially self-regulating, lethal control measures should only be applied where their presence is directly impacting on selected threatened wildlife. In situations where lethal control *is* used, success is best measured by improvements in target wildlife numbers rather than the number of cats killed. In all other situations, active management of feral cat numbers in selected areas should be attempted through non-lethal methods such as fire management, rangeland management, control of introduced plants, use of guardian dogs, and top predator management.

The AVA supports the use of baiting programs, combined with shooting and trapping to control feral cats where it can be well targeted, conducted humanely, and where there is a reasonable expectation that it will protect threatened and endangered species at that locality, based on prior data, or data are collected to document this, and inform further expansion of the control program.

AVA Policy (2016) states "There is a pressing need for continuing research into more innovative, effective and humane methods of control and eradication of feral cats." At the time the policy was written, the poison bait Curiosity® was fairly new and appeared to be a step forward in this regard, though it should be evaluated for its effectiveness and any welfare implications.

The AVA supports research to develop new and innovative feral cat control methods as these have the potential to provide humane non-lethal control of cat numbers.

Designated "Cat free areas" - both islands and mainland enclosures - have provided clear evidence of the impact of feral cats and the opportunity to provide sanctuary for threatened species at a time when effective wide-area control or eradication of feral cats is not possible. These methods, while effective, incur a significant maintenance cost to keep them cat free (Webber 2020).

Studies have demonstrated that integrated management practices can have significant success reducing cats' prey success and their impact on the environment. These methods include integration of prey/predator interactions, trophic cascades between the dingo, fox, Tasmanian devil, the use of burning and habitat management, and the appropriate use of guardian dogs (Woinarski, Legge, and Dickman 2019; McGregor et al. 2016; Webber 2020).

McGregor *et al*, 2016 found that in a managed fire model, feral cats from surrounding unburnt areas actively hunted in recent intense fire scars, with greater hunting effectiveness on native wildlife that had managed to survive the wildfire, thus compounding losses. Controlling feral cats needs to part of wildfire response plans - especially in areas where threatened and endangered wildlife species occur. Fire recovery must include feral cat control, and other strategies to improve survival of native species after wildfires.

Gene drive technology is under review, but research is required to demonstrate its potential efficacy and practicality. Public acceptance of the risk and acceptance of 'genetic engineering' without the ability to reverse the effects may prove a difficult hurdle to overcome. Nonetheless, the potential for a humane and effective means to permanently remove unwanted cats and other pest species from the landscape remains an attractive goal.

Feral cats can compound the impact of droughts, floods and fire on native wildlife. Timely tactical response is needed to mitigate these impacts but require a contingency fund support rather that the routine government funding cycle. The advantages of management practices over culling include the relatively low welfare 'cost' involved.

Stray (semi-owned and unowned) cats

The AVA supports cage trapping for semi-owned and unowned cats in urban and peri-urban areas, so that they can be checked for identification and if owned, returned to their owners.

The adverse impact on the mental health of shelter staff in Australia tasked with euthanasing healthy animals is well documented (Rohlf et al 2005, Scotney et al 2015, Rollin 2013). It is important that effective education campaigns around responsible cat ownership are in place, as well as early desexing programs, to reduce the unwanted cat population and shelter euthanasia rates.

Recommendations

- Funding and support for feral cat studies which investigate the efficiency and use of management techniques to control cats and protect wildlife.
- Where lethal control measures are used for feral cat control, the objective of the control must be measured by improvements in threatened species status or wildlife population density, not the number of cats killed.
- Cage trapping for unowned and semi-owned cats to avoid impacting pet cats in urban and peri-urban areas, combined with an effective education campaign and early desexing programs.

f) The efficacy of import controls for high risk domestic cat varieties to prevent the impacts of feral and domestic cats, including on native wildlife and habitats

The efficacy of import controls may be limited by the capacity of Border Force staff to identify high risk cat varieties and the veracity of their import documentation. A robust pest risk assessment must be part of the decision process for the importation of domestic cats.

In Queensland hybrid cats, eg. the Savannah cat, are a prohibited species. Unfortunately, Bengal cats were introduced and too widely spread before this policy was implemented. The prohibition of the importation of Savannah cats by the Australian Government was a timely and positive move.

The AVA strongly supports the prohibition of the importation of high-risk domestic cat varieties and hybrids into Australia to prevent impacts on feral and domestic cats, on native wildlife and habitats. Further, the AVA strongly recommends that states consider prohibiting the possession of high-risk domestic cat species and hybrids. (Bengal cats will provide a legislative challenge and may need to be exempt).

Recommendation

- Prohibit the importation and possession of high-risk domestic cat varieties and their hybrids, and strictly enforce the import control legislation

g) Public awareness and education in relation to the feral and domestic cat problem

The AVA recognises and supports the need for community education to promote responsible pet ownership. Significant progress with key stakeholders in recent years has enabled cat management plans and standard operating procedures to be developed.

Strategies for effective urban cat management developed by stakeholder initiatives including The Australian Cat Action Plan (Getting to Zero 2018) and ACT Cat Plan 2019-29 (ACT Government 2019) and *Identifying best practice domestic cat management in Australia* (RSPCA) and the AVA's PetPep program include:

- Promoting responsible cat ownership
- Provision of affordable desexing in areas of high cat and kitten intake into shelters and pounds
- Reducing the number of semi-owned and unowned domestic cats
- Continuous improvement of domestic cat welfare and management practices, including improved compliance/enforcement
- Expanding cat containment and assisting owners to contain cats where there are threatened and endangered species
- Reducing the impact of feral cats
- Engaging rural landholders in improved cat and land management to protect threatened and endangered species
- Reducing risks to human health

Research which provides a greater understanding of the general public's welfare concerns on current cat control methods is required to direct government funding for education in this area. There should be special consideration for communities where English is a second language, as well as developing a greater understanding of cat ownership in remote communities.

Public awareness programs must be coupled with community support programs to assist cat carers to undertake the recommended actions of desexing, confinement, identification, vaccination etc.

Regulations in apartments, strata titles and rental accommodation often limit the capacity for people to keep cats (and dogs). This leads to owners surrendering their cats to a shelter or pound, or abandoning them when vacating the residence. Twenty-two percent (22%) of cats surrendered in the City of Gold Coast in 2009/10 were due to accommodation issues.

Governments should adequately fund educational resources including printed publications, guides, pamphlets, online content, videos, interpretive signage and community presentations, to educate and inform about the importance of managing cats, to minimise the impact on Australia's unique native wildlife. Education activities should be directed to the general public through local councils, veterinarians (as trusted advocates), and from all state, territory and federal Government agencies. Education in schools is also seen as desirable, as this messaging is then conveyed to the family, and sets up good habits around responsible pet ownership at an early age.

Public Awareness and Education About Desexing

Veterinarians often subsidise the cost of desexing both cats and dogs. Animal welfare groups continue to seek further discounts for the cost of desexing animals in their care, and some run discounted desexing initiatives in conjunction with veterinarians and local Councils, to increase desexing rates.

A recent survey of Queensland veterinarians (Paterson et al, 2020) showed that cost is only one barrier to early desexing, and that other reasons include concerns about the safety of the procedure, or a belief that the cat should be older or should have a litter before desexing. Thus, education campaigns to promote the safety and benefit of early desexing are important to counter these beliefs.

Recommendation

- Public awareness and education programs should be in place and regularly evaluated for effectiveness of messaging. These campaigns should promote all aspects of responsible cat ownership, including identification, registration (where applicable), desexing, and ways to reduce the impact of cats on wildlife.

h) The interaction between domestic cat ownership and the feral cat problem, and best practice approaches to the keeping of domestic cats in this regard

The potential for movement of cats between the subgroups: owned, stray and feral is well recognised. Stray (including semi-owned) cats which depend on human support are more likely to exchange between owned and unowned groups, and exist in higher density (Table 2) than feral cats.

Feral cats living independently of humans exist in a very stringent environment where survival is restricted by available food. The extent to which there is significant augmentation of the feral cat population by the other groups remains largely unknown and is likely to vary from one locality to another. Nonetheless, it is important information to gather, as it provides key knowledge of the relative role of stray and un-desexed cats in contributing further to the feral cat problem.

Density of Cats		
	Number/km2	**Range**
Feral Cats	0.27	0-100
Urban Cats	80 - 380	

Table 2: Density of Cats (Woinarski, Legge, and Dickman 2019)

Best practice approach in this regard

The cat management plans developed in broad consultation with stakeholders have been outlined in Section (g). They provide a comprehensive and generally accepted best practice for cat management. This includes measures to reinforce responsible animal ownership and reduce leakage of cats between owned and unowned subgroups. While these programs are considered best current practice, they also recognise the need to continue research on other techniques, or modifications of existing techniques, which may improve cat management overall.

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