

Action Statement

Flora and Fauna Guarantee Act 1988

No. 80

Predation of Native Wildlife by the Cat *Felis catus*

Description and Distribution

The Cat, *Felis catus* (Linnaeus, 1758), is the only species of the cat family Felidae with wild populations in Australia, but it is not indigenous. It is probable that Cats were present in Australia long before European settlement, although their distribution and abundance at that time is not known. It is speculated that Cats were introduced to northern Australia by fishermen or traders from Indonesia. They could also have been survivors from 17th-century Dutch shipwrecks on the western coastline. Cats were certainly known to central Australian Aborigines by the time the first explorers penetrated to that part of the continent (van Oosterzee *et al.* 1992).

Cats accompanied the First Fleet in 1788 and were part of Edward Henty's livestock brought to Portland Bay in 1834. Settlers also brought Cats as pets and to control rodents. At times of mouse plagues, and later rabbit plagues, governments encouraged and even assisted with the introduction of Cats to remote areas (Seebeck *et al.* 1991). Cats spread rapidly throughout Australia, and now occur in a wide range of habitats, from rainforest to desert, including alpine areas (Jones 1983). Paton (1993) noted that Cats have been present in most habitats in Australia for over a century.

All Cats are biologically the same, whether they are domestic (owned) pets, roaming unowned Cats (strays) or feral Cats. Domestic (pet) Cats are those that live in close association with humans who supply the Cat's needs for food, shelter and health; roaming unowned Cats are opportunistically dependent; feral Cats are free-living, generally independent of humans and obtaining their food by hunting and scavenging. During times of environmental stress, feral Cats may become semi-

dependent on humans. Conversely, rural domestic Cats (particularly farm Cats) may be semi-independent.

Cats can produce three litters per year, of between 2 and 9 kittens. Births may occur throughout the year although most are in spring and late summer. Males reach sexual maturity at 12-14 months, females at 10-12 months (Menkhorst 1995) or earlier. Populations of Cats can increase very rapidly given favourable conditions (Pettigrew 1993, CNR 1994a, b). With an average lifespan of three years, one female Cat and her female offspring could potentially produce 108 young; survival for another year would boost the figure to nearly 350 (CNR 1994a). For example, five Cats were introduced to Marion Island, South Africa in 1948; by the early 1970s there were 2000 Cats present, taking about half a million seabirds each year (van Aarde 1979).

It is estimated that there are about three million owned Cats in Australia. The number of domestic Cats in Victoria is estimated to be between 725 000 (Seebeck *et al.* 1991) and 900 000 (McCroory 1988). The number of feral Cats in the State is estimated at about 300 000 (McCroory 1988, Seebeck *et al.* 1991).

Population densities vary with environmental factors, including season, habitat type and food availability. Cats are most abundant near human habitation or where there is the greatest abundance of rabbits. Densities in urban areas may be very high, up to 40 per ha, although in rural or bush areas they are much lower. In farmland, densities range from 1 to 20 Cats per km², and in south-eastern Australia densities between 0.7 and

2.4 Cats per km² are recorded (CNR 1994a). An estimate of the number of feral Cats in Australia can be made using these figures; based on the conservative estimate of one Cat per 150 ha, then Australia supports over 5 million feral Cats.

Cats are opportunistic feeders, varying their diet according to the availability of prey. An adult feral Cat of average weight (about 4 kg) requires about 300 g of flesh daily to survive. Cats do not need drinking water as they can obtain sufficient moisture from their prey. They are the most specialised meat eaters among the carnivores, requiring a much higher proportion of protein in their diet than almost any other mammal. They can utilise very high levels of fat in their diet and do not need carbohydrate if their diet contains both proteins and fats. Most food is highly digested; the gut, short relative to the body length, is a reflection of this. Their kidneys produce very concentrated urea, which is possibly an adaptation to the arid habitat of ancestral Cats. This ability makes it possible for Cats to survive in arid parts of Australia.

Cats are active during the day and at night, with peaks of activity around dusk and dawn, although domestic Cats may sleep for most of the day. Feral and unowned adult Cats usually live alone (except when mating or caring for young) and are territorial. However, groups may be formed where there are abundant or localised sources of food. These may be close to human activity, or in areas where wildlife is concentrated, such as a bird colony or tips. Adult females and young form groups and share territories which are maintained by interactive behaviour. Adult males visit groups, but do not control them. Groups are normally only developed among Cats in urban or farm situations.

Legal Status

Victoria

Predation of native wildlife by the Cat' is listed as a potentially threatening process under the *Flora and Fauna Guarantee Act* 1988. The *Domestic (Feral and Nuisance) Animals Act* 1994 provides legislative recognition of Cats and their management in relation to animal welfare, responsible ownership and the protection of the environment. .c.Australia 'Predation of native wildlife by the introduced Cat' is listed as a key threatening process under the *Endangered Species Protection Act* 1992.

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Reasons for the Significance of the Process

A range of processes threaten native wildlife in Victoria and other parts of Australia. Kennedy (1992) suggested that the interaction of introduced herbivores, introduced predators and altered fire regimes has played the most significant part in the large number of mammal extinctions in Australia. The impact of processes such as habitat loss, change and fragmentation can be exacerbated by Cat predation on remnant, isolated, populations. When a species exists only as small populations, there is the potential for loss of genetic variation and potentially a decreased resilience to cope with environmental change and stochastic events. Cat predation has the potential to depress local wildlife population sizes and cause local extinctions of species; and in conjunction with other threats, it has a significant impact on the survival of species.

Because Australian fauna did not co-evolve with the Cat, potential prey species have few adaptive strategies. Those species most at risk from Cat predation are those that:

- have very localised and/or fragmented distributions;
- occur in low densities;
- have low reproductive rates and slow growth rates;
- have behavioural characteristics which make them more vulnerable, including inappropriate avoidance behaviour;
- occur in colonies or are colonial breeders;
- occur in areas where Cat numbers are high; and
- occur in specific habitats which have been largely destroyed or modified by humans.

The threat of predation of native wildlife by Cats exists over much of Australia since the Cat is well adapted to survive in a broad range of habitats, modifying its diet to whatever prey species are available and most abundant. In forested areas Cats mainly take native animals because they are most abundant, while in cleared or disturbed areas, Cats mainly take introduced animals (Coman and Brunner 1972). In such environments, rabbits are often the major prey (Jones and Coman 1981). With the spread of Rabbit Calicivirus (RCV) and the reduction in rabbit numbers, the potential for Cats to prey on native species may increase.

Cats prey on a large number of native fauna species. The current inventory of species on which the Cat is known to feed includes 186 birds, 64 mammals, 87 reptiles, at least 10 amphibians and numerous invertebrates (Paton 1993). Paton (1993) noted that the Cat's prey consists mostly of small to medium-sized animals (less than 10 to 3-4 kg) with the majority being less than 100g. Cats are known to eat animals up to their own body weight,

which includes most endangered and vulnerable mammal species in Australia.

Regardless of how well-fed a domestic Cat is, it may prey on live animals. Paton (1990, 1991) estimated that an average domestic Cat kills at least 32 vertebrates per year (8 birds, 16 mammals, 8 reptiles). It is likely that this estimate of the number of native wildlife taken by domestic Cats is conservative as one study in the USA suggested that owned Cats brought home only 50% of their dead prey (George 1974).

The impact of Cats has been exacerbated because many are kept as pets or as rodent-controllers. Over 60% of urban householders 'own' Cats, and few farms are without them. In most situations, particularly on farms, reproduction of Cats is not controlled and so unwanted litters contribute to the stray (potentially feral) Cat population. Feeding of stray Cats by well-meaning humans, particularly in urban environments, increases the problem. Cats are often able to take advantage of refuse dumps in rural areas and regional towns and cities to establish high density populations. In semi-urban areas, improperly managed pet and farm Cats often come into contact with wild populations.

It is often difficult to assess the impact of Cat predation on species' survival. The majority of clear evidence comes from island situations, particularly where other predators and threats are not present. For example, the entire population of the Stephen Island Wren (*Traversia lyalli*), which inhabited Stephen Island in New Zealand's Cook Strait, was killed by a lighthouse-keeper's Cat which arrived on the island in 1894 (King 1984). There are other examples of the loss or decline of species from other islands which have been partly or wholly attributed to Cat predation: Brush-tailed Bettongs (*Bettongia penicillata*) from St Francis Island (off South Australia) (Delroy *et al.* 1986), Golden Bandicoots (*Isoodon auratus*) and Spectacled Hare-wallabies (*Lagorchestes conspicillatus*) from Hermite Island, Western Australia (Department of Environment and Planning 1992), Dibblers (*Parantechinus apicalis*) from Dirk Hartog Island, Western Australia (Dickman 1993), and White-breasted Storm Petrel (*Fregatta grallaria*) from Lord Howe Island (Recher and Clark 1974).

At the time of writing there are 27 species of wildlife in Victoria that have been listed or recommended for listing under the *Flora and Fauna Guarantee Act* 1988, and for which the issue of Cat predation or 'introduced predators' has been identified as a threat. These include 14 bird, 11 mammal and 2 reptile species. There are records of Cats taking threatened species such as Brush-tailed Phascogale (*Phascogale tapoatafa*), Paucident

Planigale (*Planigale gilesi*), Common Bent-wing Bat (*Miniopterus schreibersii*), Striped Legless Lizard (*Delma impar*), Grey-crowned Babbler (*Pomatostomus temporalis*), Freckled Duck (*Stictonetta naevosa*) and Blue-billed Duck (*Oxyura australis*). Cats are considered as significant a problem as foxes to colonies of Brush-tailed Rock Wallabies (*Petrogale penicillata penicillata*) (J. Reside, *pers. comm.*).

The best documented example of the impact of Cat predation on species' survival in Victoria concerns the Eastern Barred Bandicoot (*Perameles gunnii*). This species, which is one of the State's most endangered mammals, has undergone a catastrophic decline in range and abundance. Cat predation was considered one of the major causes of death at Hamilton (Seebeck *et al.* 1991). Owned and stray urban Cats at Hamilton have been shown to selectively prey on juvenile bandicoots (Brown 1989, Seebeck *et al.* 1991).

There was a report of a Rabbit-eared Tree Rat (*Conilurus albipes*) being taken by a Cat in 1839 near Nagambie (Seebeck *et al.* 1991). This species was last recorded in 1875. There are only a handful of records for the species in Victoria, although Peake (1990) and Williams and Menkhorst (in Menkhorst 1995) note that it was familiar to many of the early colonists.

Reintroduction Programs

Cats have been a factor in the failure of reintroduction experiments concerning endangered mammals in Australia. Of 81 Mala (*Lagorchestes hirsutus*) released in central Australia, over one-third have died, most having been killed by Cats (Gibson *et al.* 1995). Despite an intensive control program, Cats remain the major limiting factor in this experiment. In a novel attempt to improve survivorship skills, captive-reared Mala are being conditioned to fear model predators (McLean *et al.* 1995). Similar experimental reintroductions in Western Australia of Golden Bandicoot (*Isoodon auratus*) and Burrowing Bettong (*Bettongia lesueur*) (Christensen and Burrows 1995, Short *et al.* 1995) have encountered problems with Cats, as well as foxes. In Victoria, Cat predation has been shown to be a significant factor affecting the success of reintroduction programs for Eastern Barred Bandicoots.

Disease

Toxoplasmosis is a disease which affects the central nervous system and other organs, and can lead to organ failure, blindness, abortion and death in native wildlife (Obendorf 1992); humans and stock may also be similarly affected. It is caused by infection with the sporozoan parasite *Toxoplasma gondii*. Marsupials are very susceptible to the

disease, and a number of species, have been reported to have been affected (Obendorf 1992). Cats are an essential part of the life cycle of the disease. Oocysts are formed in the Cat's digestive system and shed in the faeces, to be ingested directly by grazing marsupials or via soil invertebrates or in conjunction with digging for fungal, plant or animal food.

Obendorf and Munday (1990) found toxoplasmosis in Eastern Barred Bandicoots in Tasmania, and Miller *et al.* (1994) have also reported the disease in the same species in Victoria. It is highly probable that toxoplasmosis infection causes bandicoots to become disoriented and atypically active during the day, thus predisposing them to predation and to being killed on the road. Miller *et al.* (1994) noted that it is possible that toxoplasmosis has contributed to the species' decline in Victoria and that it could also limit reintroduction efforts. Dickman (1993) suggested that the disappearance of Eastern Quolls (*Dasyurus viverrinus*) from eastern Australia may be linked with toxoplasmosis.

In its final recommendations, the SAC (1995) determined that predation of native wildlife by the Cat *Felis catus* poses, or has the potential to pose a significant threat:

- to the survival of a range of flora or fauna; and
- to the survival of two or more taxa.

Major Conservation Objectives

The long-term objectives are to reverse the decline in the conservation status of any Victorian native species subject to predation by the Cat, and to address any associated detrimental impacts of Cats on native wildlife.

The short-term objective is to minimise the impact of Cat predation on populations of native wildlife; specifically, to:

- increase community understanding and acknowledgement of the significant issue of predation of native wildlife by Cats and commitment to responsible pet ownership;
- decrease the unowned Cat population by 30–50% within five years so that the continuing input of these Cats into the feral population is significantly reduced; and
- provide adequate protection to populations of threatened species in and around key areas so that local populations are secured and expansion in the species' range facilitated.

Management Issues

Wider Conservation Issues

Feral Cats could play a role in the spread and maintenance of rabies if it were ever to appear in

Australia (DEP 1992). This would be more likely to be a concern in urban situations, with Cats capable of spreading rabies to other animals and humans (Clive Marks, KTRI, *pers. comm.*). Thompson and Cross (1993) noted that, while only 25% of infected dogs contract the furious form of rabies, about 75% of Cats do so.

Pilchards (*Sardinops neopichardus*) are a food item of penguins. Hobday (1992) noted that the commercial fishery of Pilchards in Port Phillip Bay has undergone a rapid expansion, from less than 100 tonnes prior to 1960 to 1300 tonnes in 1986–7, because of the greatly increased domestic and export demand from the pet food industry. Hobday (1992) recommended that the increased magnitude of the commercial fishery, the declining anchovy catches, and possible interactions with penguins should be monitored.

Predation can also be potentially detrimental to populations of more secure species. For example, wrens, robins, honeyeaters, thrushes and many other species of urban and suburban birds must cope with high Cat densities. Paton (1992) noted that, in cities such as Adelaide and Melbourne, there are many bird species with inherently low reproductive rates, which no longer occur locally (e.g. robins and flycatchers) and suggested that Cats were implicated in this phenomenon. It was calculated that Cat predation may account for 80% of the annual productivity of birds in an area, effectively killing the 'standing crop' each year. Dowling *et al.* (1994) reported Cats systematically preying on whole colonies of species such as Common Ring-tail Possums (*Pseudocheirus peregrinus*) and Sugar Gliders (*Petaurus breviceps*), which could hasten local extinctions.

Greenwood (1993) suggested that the reduction in numbers of species such as honeyeaters has the potential follow-on effect of lowering pollination rates of native plants.

It is not known what impact the existence of Cats has had on populations of native carnivores which have a similar diet. Dickman (1993) suggested that Western Quolls were possibly less abundant and less efficient predators than Cats. Nattrass (1993) questioned suggestions that competition from Cats may have caused the serious declines, massive reductions and local extinction of quoll species that have occurred on mainland Australia and pointed out that the Eastern and Spot-tail Quolls were secure in Tasmania, where the feral Cat is widespread and abundant.

The Cat is not the only introduced predator that is a threat to native wildlife. The threat from the Red Fox *Vulpes vulpes* has been acknowledged in Victoria and Australia, and has been listed under both the *Flora and Fauna Guarantee Act* 1988, and the federal *Endangered Species*

Protection Act 1992. An Action Statement has been prepared in Victoria (DCE 1993).

Social and Economic Issues

There are several important social issues associated with achieving the conservation objectives of this Action Statement. The impacts involve both private and public land and variously affect Cat owners, people who prefer to live without Cats, animal welfare organisations, land managers, local governments, and a range of Cat interest groups.

There are two principal approaches to reducing the predation of native wildlife by Cats. Firstly, the number of feral and unowned Cats can be reduced by control programs in particular areas. Secondly, responsible Cat ownership can limit the number of pets taking native wildlife through the enforcement of curfews, keeping Cats primarily indoors or within Cat enclosures, and by desexing Cats. This can also reduce genetic drift into feral and unowned populations.

Most people recognise the threat of Cat predation on native wildlife and support the control of feral and unowned Cats both inside and outside the urban environment. However, the control and management of owned Cats within the urban environment is a significant and complex issue. Cats have been a part of human lifestyles for thousands of years. They can be ideal pets, particularly for the elderly or for people with busy lifestyles. The enjoyment of a pet can reduce stress and thereby improve health. Australian society consists of a mixture of people who love pets and those who do not. People can drift in and out of pet ownership throughout their lives.

The majority of Cat owners are primarily concerned about the safety and happiness of their pets. There are many benefits to keeping Cats indoors either all or part of the time. These include protection from fights with other Cats and thus protection from catching diseases and parasites, from being run over by cars, being caught in traps or accidentally poisoned. There is evidence that indoor Cats live longer (CNR 1994a,b). Cats kept indoors between dusk and dawn hunt significantly less than Cats allowed to roam at will (Paton 1995). Some Cat owners have a long-held view that Cats should be free-roaming and independent animals, and do not believe that anyone has the right to tell them to confine their animals.

There are health issues associated with the presence of Cats in both urban and rural environments. Toxoplasmosis can cause abortions in humans and can also affect domestic stock.

Under the Social and economic issues, Cat owners are required to register Cats and councils are

required to fix fees for the registration and renewal of registration of Cats. Fees are intended to cover any costs associated with implementing the Act. Landowners experiencing problems with wandering Cats may apply to their municipality for remedial actions to be taken.

Animal ethics organisations are consulted about developments in control methods where appropriate, and will continue to be consulted.

Previous Management Action

Control Programs

Until the passing of the *Domestic (Feral and Nuisance) Animals Act 1994*, legal management action for Cat control and management was restricted to specified areas under various Acts of Parliament and Regulations under those Acts. In areas managed under the provisions of the *National Parks Act 1975*, Sections 17 and 18 provided for the extermination or control of non-indigenous fauna. In practice this meant that some National Park Rangers shot or trapped Cats when the opportunity arose, but there was no planned effort in most parks to control Cats.

Section 50 of the *Forests Act 1958* provides for the declaration of Forest Parks; regulations for the control of Cats in these parks can be made. Some controls were possible in reserves administered under the *Crown Land (Reserves) Act 1978*, but no provision for the destruction of Cats was included in the regulations. Parks managed by Melbourne Parks and Waterways and its predecessors had regulations which permitted the control and seizure of Cats, but not their destruction. It is certain that opportunistic control of Cats perceived as 'feral' was undertaken by officers of NRE and its predecessors, including Fisheries and Wildlife Officers, Lands Department rangers and pest control officers, despite the clouded legal basis for such activities. Cats have never been declared vermin. Proposals to declare Cats as vermin under the appropriate Act were not acted upon due to the perceived difficulty of distinguishing between feral and owned Cats.

Limited direct control of Cats has been undertaken to protect threatened species, where Cat predation had been identified as a significant problem. For example, before Eastern Barred Bandicoots were reintroduced to 'Mooramong', near Skipton, approximately 100 feral Cats were shot over a five-year period. Cat control continues at this site. Similarly, at Hamilton local control was instituted at one study site, and more than 50 Cats were removed.

The *Local Government Act 1989* (and earlier versions) provided for the enactment of by-laws under which Cat control could be carried out. The

City of Hamilton and the Shire of Sherbrooke developed local legislation which was directed at improved Cat management in specified areas for the protection of wildlife. Similar legislation was proposed for the former Shire of Phillip Island, although this never eventuated (A. Crouch, *pers. comm.*). Relevant local laws in most other municipalities were concerned only with the number of Cats that could be kept on individual properties.

It is clear that previous legislation and associated management programs for the control of unowned and feral Cats have not been integrated or effective in Victoria. Control techniques have never been assessed for efficacy (C. Marks, KTRI, *pers. comm.*). Trapping programs vary greatly in their success, and feral Cats are often trap-shy. It is probable that trapping and shooting Cats are ineffective ways of controlling Cat populations, and in any case are too expensive to implement over large areas. The ultimate conclusion is that no effective technique for Cat management has been developed.

The *Domestic (Feral and Nuisance) Animals Act* was declared in 1994, after an extensive program of consultation, and followed earlier, unsuccessful, attempts to introduce a *Companion Animals Act* by the previous State Government. That Act had been drafted in response to recommendations of the Social Development Committee (Parliament of Victoria 1989), but had not passed through the legislative process before the change of government in October 1993. Many of the proposals contained in the present Act are similar in intent, with the onus for implementation also being placed on local government.

The provisions of the present Act have been developed by the Bureau of Animal Welfare, the former Department of Agriculture, with input from animal welfare agencies, fanciers and the former Department of Conservation and Natural Resources. (The Department of Agriculture and the Department of Conservation and Natural Resources now form parts of the Department of Natural Resources and Environment, NRE.)

Animal welfare legislation (Prevention of *Cruelty to Animals Act* 1986) provided a legal framework for the management of Cats in shelters and pounds. Animal welfare agencies also conducted stray Cat management programs across urban and urban-rural fringe areas.

Poisoning programs specifically targeting Cats have not been carried out in Victoria. 1080 poison is used for fox control programs as a buried bait. It is not registered as a poison for Cats, although it is toxic to them. NRE protocols require that 1080 baits be buried to minimise threats to non-target species (Verminpac, DCE 1991). The cues used by

Cats to locate food are visual and auditory rather than olfactory. Buried baits are not taken by Cats.

Research

Almost all research in Victoria before 1992 was directed at establishing base-line information about Cats, particularly feral Cats, with the ultimate aim of improving control methods. Jones and Coman (1981, 1982a,b) studied the ecology of the feral Cat in south-eastern Australia to investigate diet, reproduction and population ecology. Their work was done in response to concerns about the effects of Cats on wildlife expressed in the mid-1970s (Jones and Coman 1975) and was largely funded by the former Australian National Parks and Wildlife Service.

Further research on ecological aspects of Cats and wildlife interactions in other parts of Australia was instigated in the late 1980s and early 1990s: see Potter (1991) for an overview. In Victoria, Ward (1994) studied the ecology of farm Cats. Two-thirds of farms that were surveyed maintained Cats. The Cats were not totally dependent on the owners and were kept primarily for vermin control, but they also preyed upon local wildlife. In fragmented habitats, farm Cats were considered to present a threat to wildlife. Studies presently underway in South Australia, New South Wales and Canberra are designed to clarify the particular effects of Cats on wildlife populations, rather than merely being an inventory of opportunistic predation.

A survey of the incidence of toxoplasmosis in Victorian wildlife demonstrated that the parasite was present in a number of mammal species and was particularly of concern as a threat to the Eastern Barred Bandicoot (Miller et al. 1994).

In 1993-94 the Department of Conservation and Natural Resources undertook a survey of the wildlife admitted for care to Victoria wildlife agencies between 1987 and 1992. Cats were responsible for 75% of the attacks by introduced predators, involving at least 97 species (70 bird, 22 mammal and 5 reptile species) (Dowling *et al.* 1994).

During 1994, funding from ANCA enabled the Keith Turnbull Research Institute (KTRI) to undertake a review of an extensive range of toxins with the potential for use in Cat control taking into account target specificity, toxicity to target species, humaneness and human safety (C. Marks, *pers. comm.*). Several compounds and synergists showed promise. Pen trials commenced in 1996.

The Department of Conservation and Land Management in Western Australia has been testing a variety of Cat baiting techniques in a project funded by ANCA. Some baiting strategies have

shown promise, and their assessment in Victoria should be undertaken in the near future.

At present, no known biocontrol agents meet acceptable community standards of effectiveness and humaneness.

Community Education

In early 1991, in response to recommendations from a 'Cats and Wildlife' workshop held by CNR, a community education program was initiated. The aims were to raise community and CNR officer awareness of the threats posed by Cats to wildlife and to increase public support for local government controls to better protect both pets and wildlife. The campaign was called 'Protect Your Cat, Protect Your Wildlife', and was launched formally in May 1992. A series of pamphlets were prepared, to assist in spreading the message widely, and a resource manual, the *Cat Kit* (DCE 1992) was compiled and distributed within the Department. The program called for nominated regional officers to hold local workshops at which the campaign could be explained and actions implemented.

This very innovative concept was carried to several national workshops and conferences over the following year. Federal funding through ANCA's Feral Pests Program enabled the revision and refinement of the manual to a format which was readily available to the community. Schools and local government were specifically targeted (CNR 1994a,b). The passage of the *Domestic (Feral and Nuisance) Animals Act* 1994 resulted in the extension of the Community Education program to provide for strategic planning support to CNR, Bureau of Animal Welfare and local government, monitoring of the implementation and effectiveness of the Act and the coordination of community education programs under the Act. It is intended that funds will continue to be available for this program to continue. Councils must pay a portion of registration fees to provide for the promotion of responsible Cat and dog ownership, animal welfare and administration of the Act.

National

As a result of the listing of 'Predation of native wildlife by the introduced Cat' under Commonwealth legislation in 1992, a Threat Abatement Plan is being prepared. This plan will clarify the scale, impact and identity of the problem, identify methods to abate the threat posed by Cats, evaluate the socio-political issues and determine the economics of Cat management. It will also identify appropriate and relevant research priorities, including experimental management for control and impact assessment, development of appropriate control techniques,

socio-economics and the links between domestic and feral Cat populations. Dickman (1996) reviewed the impacts of feral Cats on Australian native fauna as part of the development of the Threat Abatement Plan.

Intended Management Action

- The following organisations will be involved in implementing the management actions. Their involvement is indicated at the end of each action.
- Flora and Fauna Program, NRE (FF)
- Bureau of Animal Welfare (BAW)
- Catchment Management and sustainable Agriculture, NRE (CMSA)
- NRE Regions (Reg)
- Universities (Uni)
- local councils
- veterinarians
- Fisheries Program, NRE (Fish).

Community Education

1. Develop and implement a strategy on how funding obtained by registration fees may be best used to assist in community education. (BAW)
2. Provide continuing community education about responsible Cat ownership to increase compliance with the legislative provisions; provide strategic planning support to NRE to assist implementation of the *Domestic (Feral and Nuisance) Animals Act* 1994, assist local government with administrative and community education planning for the implementation of the *Domestic (Feral and Nuisance) Animals Act* 1994, and provide co-ordination of community education programs about the Act. (BAW)
3. As RCV becomes effective, the impact of semi-dependant Cats may become more significant. Education programs should include methods of reducing the unintended 'comfort' given to semi-dependant Cats. (BAW)

Liaison

4. Liaise with other state and federal agencies, and universities, regarding continuing research into the control and appropriate management of Cats to minimise their impact on native wildlife. (FF, BAW)
5. Continue to liaise with animal welfare organisations such as the RSPCA, Cat Protection Society, as well as PetCare, Cat fanciers, and local government regarding increasing awareness of responsible Cat

ownership and the impact of Cat predation on native wildlife. (FF, BAW)

6. Liaise with pet-food manufacturers and marketers to ensure that support for Responsible Pet Ownership becomes a community standard. (BAW) s RCV becomes effective, the impact of semi-dependant Cats may become more significant. Education programs should include methods of reducing the unintended 'comfort' given to semi-dependant Cats. (BAW)

Control

7. Undertake control programs where necessary to protect populations of wildlife where Cat predation is expected to be a significant threat; priority will be given to threatened species, particularly the Eastern Barred Bandicoot and the Brush-tailed Rock-wallaby. (Reg, CMSA)
8. Undertake appropriate control programs of unowned and feral Cats on public land according to the provisions of the *Domestic (Feral and Nuisance) Animals Act 1994*, Section 31. Areas designated under this section are control zones within management plans under the *National Parks Act 1975*, the *Wildlife Act 1975*, the *Forests Act 1958* and the *Flora and Fauna Guarantee Act 1988*. (Reg, CMSA)
9. Encourage the use of Section 42 of the *Domestic (Feral and Nuisance) Animals Act 1994*, under which local government can enact local laws to regulate or prohibit the keeping of Cats in areas where threatened native fauna are at risk of attack. (BAW)
10. Monitor the success of local government in reducing unowned and feral Cat populations through the implementation of controls under the Act. (BAW)
11. Investigate the possibility of declaring feral Cats as an 'established pest animal' under the *Catchment and Land Protection Act 1994* (Section 67). (CMSA)
12. Encourage responsible Cat ownership in conjunction with local government in outer suburbs, semi-rural and rural areas. (BAW, local councils)

Research

13. Further investigate the impact of Cat predation on populations of both threatened and common species of wildlife. This research should compare the patterns and significance of predation by domestic, unowned and feral Cats. (FF, BAW, Uni)

14. Continue research into Cat-specific toxins and bait delivery methods, so that control programs using poisons do not pose threats to non-target species. (CMSA)
15. Develop links with RCV researchers involved in ecological monitoring and control programs to determine the impact of RCV on native wildlife and feral Cat numbers. (CMSA, FF)

Other Desirable Management Action

16. Encourage research to determine whether the increased commercial fishery for Cat pet-food is affecting fisheries stocks and fish predators such as penguins and other seabirds and fur seals. This research could encompass the issue of food sources alternative to Pilchards. (Reg, Fish, FF)
17. Encourage students from tertiary institutions to undertake research on Cats, particularly relating to behaviour in different environments and under different management regimes. (FF)
18. Monitor the incidence of Toxoplasmosis and other Cat-transmitted diseases in wildlife e.g. by analysis of animals that are presented dead or that die in wildlife shelters. (BAW, vets, Uni)
19. Prepare article for the Australian Veterinary Journal to advise vets of changed legislation. Encourage their participation in reporting Cat injuries to wildlife and their potential role in educating Cat owners. (FF)

Legislative Powers Operating

Legislation

Wildlife Act 1975 — Cats may be controlled through regulations determined for State Wildlife Reserves and State Game Reserves under Sections 14, 15, 16 and 87.

National Parks Act 1975 — Cats must be exterminated in areas gazetted under Section 17.

Forests Act 1978 — Cats may be controlled through regulations determined for Forest Parks declared under Section 50.

Crown Land (Reserves) Act 1978 — Cats may be controlled through regulations determined for reserves declared under Section 13.

Cats may be controlled through a by-law which applies to parks administered by Melbourne Parks and Waterways.

Domestic (Feral and Nuisance) Animals Act 1994 — Cats are subject to various relevant provisions of the Act, including community education.

Local Government Act 1989 — Cats are subject to particular *specified* provisions of local by-laws in certain municipalities.

Consultation and Community Participation

The range of organisations involved in addressing the issue of responsible Cat ownership include the Bureau of Animal Welfare in NRE, RSPCA, Cat Protection Society, Lost Dog's Home and Western Suburbs Cat Shelter, PetCare, Cat breeders and fanciers, and local government.

Implementation, Evaluation and Review

Implementation of this action statement is the responsibility of all regions and relevant branches of NRE. The actions will be reviewed annually by the Flora and Fauna Branch and the Bureau of Animal Welfare. The action statement will be reviewed in 2002. Catchment and Land Protection Boards will be kept informed of progress in the implementation of this action statement.

Contacts

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