University of Nebraska - Lincoln
DigitalCommons@University of Nebraska - Lincoln

Proceedings of the Fourteenth Vertebrate Pest Conference 1990

Vertebrate Pest Conference Proceedings collection

3-6-1990

ROAMING, STRAY, AND FERAL DOMESTIC CATS AND DOGS AS WILDLIFE PROBLEMS

Bessel D. Van't Woudt
Honorary Ranger, New Zealand Department of Conservation

Follow this and additional works at: http://digitalcommons.unl.edu/vpc14

Part of the Environmental Health and Protection Commons

Van't Woudt, Bessel D., "ROAMING, STRAY, AND FERAL DOMESTIC CATS AND DOGS AS WILDLIFE PROBLEMS" (1990). *Proceedings of the Fourteenth Vertebrate Pest Conference 1990.* Paper 78.
http://digitalcommons.unl.edu/vpc14/78

This Article is brought to you for free and open access by the Vertebrate Pest Conference Proceedings collection at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Proceedings of the Fourteenth Vertebrate Pest Conference 1990 by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

ROAMING, STRAY, AND FERAL DOMESTIC CATS AND DOGS AS WILDLIFE PROBLEMS.

BESSEL D. VAN'T WOUDT, Honorary Ranger, New Zealand Department of Conservation; mailing address: 68 Hone Heke Road, Keri Keri, New Zealand.

ABSTRACT: From several centers of domestication, cats and dogs have become the near-ubiquitous companion of man. Their dependence on man is such that when abandoned in a rural environment most succumb to malnutrition in combination with predation, diseases, parasites, and exposure. Where not subject to predation and where native or introduced prey is adequate, some survive to form feral populations. This applies on oceanic islands, in Australia and New Zealand. Elsewhere, as far as is known today, requirements for survival are met with in parts of the U.S. and Europe only, in remote wilderness areas in the case of dogs, and more widespread, with a tendency to fall back on surplus and waste products of man during hard times in the wild, in the case of cats. Where vermin populations, such as those of rabbits, rats and mice are dense, cats provide inadequate control; they can be useful in keeping small vermin populations small. Away from oceanic islands and desert areas, where their impact on native animals can be disastrous, this makes them sufficiently useful for damage to wildlife (notably to lizards, small marsupials and some birds) to be outweighed, without providing a clear-cut case for a need for control of either roaming, stray or feral cats in rural areas. On the other hand, dogs are potentially destructive animals, whether roaming, stray, or feral; they demand strict control.

Proc. 14th Vertebr. Pest Conf. (L.R. Davis and R.E. Marsh, Eds.)
Published at Univ. of Calif., Davis. 1990.

INTRODUCTION

As potential predators of wildlife and livestock, domestic cats (Felis catus) and domestic dogs (Canis familiaris) can be separated into three categories: 1) roaming ones which normally do not move far from their home and owner, 2) stray or vagrant ones which have no home and no owner but adhere to the human environment for food and shelter, and 3) feral ones which survive and breed in the wild without any support by man.

The last definition applies on oceanic islands, in Australian deserts and the New Zealand bush. Elsewhere, the term "feral" has also been applied to animals which fall back temporarily on garbage when prey is scarce. Stray animals that breed in the human environment, notably cats in cities, have also been referred to as "feral." The terms "house cat" and "house dog" have been used in this report to emphasize that discussed animals are home-associated.

THE ORIGIN OF DOMESTIC CATS AND DOGS

To appreciate the capacity and behavior of domestic cats and dogs, account should be taken of their versatile origin alongside the general effects of domestication on the animals. The European wildcat, Felis silvestris, has been suggested as the ancestor of the domestic cat (Boitani and Bartoli 1986). However, this animal is reputed to remain vicious and dangerous to children in domestication trials, as is the Asian fishing cat (Felis vjverrina). On the other hand, the Afro-Asian wildcat, Felis libyca, and the flat-headed cat, Felis planiceps, of southeast Asia can be made into well-behaved domestic animals, accounting for their early domestication in Asia (as well as in Egypt in the case of Felis libyca) well before B.C.

They did not stay pure-breeds. Apart from any species that has become extinct during the past few thousand years, today there is still a range of small Asian wildcats (most of them now rare) that have kept their identity. Most, and probably all of them, are crossable with the domestic cat, producing fertile offspring. Following encroachment on their habitat as a result of an expanding human population, the opportunity occasionally arose for a wildcat male to mate with a roaming receptive female domestic cat, a process that during centuries ultimately led to the variability and versatility of the domestic cat observed today. Today, at the village level in Asia, a range of domestic cats is encountered that exhibits characteristics of any of the wildcats listed in Table 1, either in coat quality or coloration, length of tail or legs, or of head shape. In Africa and South America there are several small wildcat species (Denis 1964) that can similarly have contributed to the gene pool of the domestic cat.

Regarding dogs, it is generally believed that the dingo, Canis dingo, was introduced into Australia from Asia by the aboriginals, that is as a domesticated dog, presumably a few thousand years ago (Rolls 1969). Today some dingoes still adhere to aboriginals, in a semi-domesticated manner but most have turned truly feral. At the village level in southeast Asia today, some dogs still clearly resemble the dingo which, in fact, is currently the subject of academic study (Rabinowitz, pers. comm.).

Their likely origin in Asia stems from the domestication of the Indian wolf, Canis lupus pallipes, a lowland animal, and C. lupus chanco of the highlands (Table 1), with subsequent mixing with the golden jackal, Canis aureus. the Asian wild dog, misnamed Cuon alpinus, possibly also with such species as Canis simensis (Boitani and Bartoli 1986) and other now extinct species. Elsewhere, the northern wolf, Canis lupus lupus, provided stock for domestication, possibly also with subsequent mixing with other Canis species.

This type of origin accounts for a rich gene pool, accounting for variability, adaptability and survival power (see below) with a retention of predatory urge even though there was no need any longer for domesticated animals to secure prey.

Table 1. Current distribution of small native cats and of native dogs in Asia (Legakul and McNeely, 1977 Bombay Nat. Hist. Soc., 1986).

Genus and species	Common English name	Distribution
Cat Species		
F. libyca	Desert cat	N. W. India, Middle East
F. planiceps	Flat-headed cat	Southeast Asia
F. chaus	Jungle or swamp cat	Throughout South Asia
F. marmorata	Marbled cat	Throughout South Asia
F. bengalensis	Leopard cat	South and East Asia
F. rubiginosa	Rusty-brown cat	South India
F. manul	Steppe or Pallas cat	N. W. India, Central Asia
F. margarita	Sand cat	N. W. India, Middle East
F. badia	Bay cat	Borneo
F. bieti	Chinese desert cat	China
Canid Species		
C. lupus pallipes	Indian wolf	Lowland India
C. lupus chanco	Indian wolf	Highland India
C. aureus	Golden jackal	Throughout South Asia
Cuon alpinus	Asian wild dog	Throughout South Asia

POPULATION SIZE

Pet food consumption leads to some 50 million domestic cats and slightly more domestic dogs in the U.S., 5 million cats and a near equal number of dogs in the U.K. and 4 million cats and 7 million dogs in Japan (Thai Farmers Bank 1989). This suggests that there could be as many as 200 million domestic cats and a somewhat larger number of domestic dogs on a global basis, given that dogs are the near-ubiquitous companion of man. In several places they are also kept as a source of protein. Domestic cats are absent from Papua-New Guinea and probably from a few other rural tropical places. Also cats are less commonly kept for consumption.

For this discussion, however, overall population size is of restricted interest. Today, many animals reside in an urban environment with a restricted opportunity for causing damage to wildlife and livestock. The ones of interest here reside in a rural or near-rural environment, on or near farms and wildlife habitats. The latter can represent a small-to-moderate fraction only of the total cat and dog population. The following example shows how the rural fraction can fare.

On tracing 326 well-fed, farm-associated cats in rural Illinois, U.S., 246 (75%) died before the age of one, 63 (19%) between the ages of one and two, while 20 (6%) only reached the age of three (Warner 1985). Causes of death traced in part of this population are set out in Table 2.

Table 2. Causes and percentages of death in a well-fed, farm associated cat population in Illinois, U.S. (after Warner 1985).

Cause of death	%
Vehicles	37
Diseases	24
Humans	11
Dogs	10
Winter storms	6
Machinery	4
Farm chemicals	4
Old age	3
Livestock	1

Applying the average birth rate ascertained by Warner, 1.4 litters of 4.4 kittens per year, 52 females over the age of one produced 320 kittens per year. Adding surviving ones to

these, a population increase is indicated. Where such an increase is undesirable, it is likely to be offset by human control, given that in the U.S. and Europe millions of cats and dogs are destroyed each year by man. In other places death from malnutrition, diseases, and parasites of stray animals can restrict population increase.

FERTILIZATION

Domestic animals in a rural environment can potentially revert to the wild to become feral ones. Mostly, however, house cats and house dogs merely try to turn feral when abandoned, given that a turning to feral life is curbed by: 1) attachment to owner, food and shelter; 2) incapacity to compete with native predators, even falling victim to them; 3) malnutrition, causing an animal to succumb to exposure, diseases and parasites, given that cats (and probably dogs too) are subject to over 500 diseases and parasites (Wilkinson 1984); 4) relatively low immunity and resistance to diseases and parasites as an outcome of domestication (Nansen 1985); and 5) lack of parental examples and of play conducive towards preparing a young animal for survival in the wild.

Nevertheless, the ones that survive the trauma of abandonment, once established under favorable climatic and prey conditions, can do well. Benefiting from their inherent power of adaptability, they can produce thriving populations of feral animals. This applies in particular to Australia, where at an early stage domestic cats were systematically released on a large scale, with slow withdrawal of feeding support, for the presumed control of rabbits (Rolls 1969). Today, feral cats thrive, or seem to thrive, under the wide range of Australian conditions and this includes near-waterless ones (see below). In southeast Australia, in spite of observed infestations by tape-worms, roundworms, lungworms, protozoa, and feline leukopaenia, caught feral cats appeared healthy at an average weight of 4 kg (Coman and Jones 1986), compared with an average of 2.5 kg for house cats (Boddicker 1983). Verbally, local rangers claim that feral cats can reach double the above weight. On the other hand, the comparable Australian marsupial "cat," Dasyurus maculata, still common at the past turn of the century, is now almost extinct, as are some of the wildcats listed in Table 1, referred to earlier. This makes one ponder about the advantage of a mixed origin.

Regarding dogs, apart from the dingo in Australia, there are relatively few feral dogs. They tend to be exterminated because of their destructiveness. Some survive in remote wilderness areas in North America and Europe as mongrels produced in the wild from several domestic breeds, as reported by Barnett (1986) for the Galapagos islands, or as crosses between house dogs and wild ones.

The known information on the distribution of feral cats and dogs, as well as the gaps in our knowledge, are illustrated by Figure 1, to which the following applies.

Indicated by "c" in Figure 1, feral cats are dispersed over many suburban and rural eastern areas of the U.S. (Boddicker 1983); they are common in central California (Hubbs 1951), central Europe (Goldschmidt and Laps 1976), Australia (Rolls 1969) and New Zealand (Fitzgerald 1988), additionally to the ones on oceanic islands.

Indicated by "a" in Figure 1, there are few feral cats in southwest U.S., locally attributed to control by coyotes (see below); except perhaps for some in swampy and mountainous pockets, they are absent from rural North Africa and the Middle East, on account of widespread vegetation removal for fuel and subsequent prey depletion; from tropical Asia, tropical Africa and tropical America, owing to predation, diseases, and parasites, given that even native animals have to cope with a substantial parasite load (Prakash, pers. comm.; Rabinowits, pers. comm., and own field observations). For the same reasons they appear absent from the rest of Africa. Except perhaps for some in pockets towards the south, they are absent from Eastern Europe, central and temperate-zone Asia (except perhaps Japan), owing to restricted domestication and severe winters or, locally, consumption by man (own field observations; and relative to China, Marsh, pers. comm.). Feral cats are also absent from high northern latitudes, roughly above 50 degrees, owing to severity of winters (Leopold 1931, in Hubbs 1951).

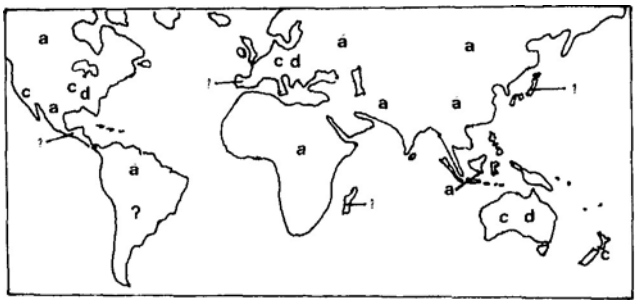

Figure 1. Available information on the general areas where feral cats occur "c," where they are absent "a," and from where no information is available "?". Occurrence of feral dogs indicated by "d." The occurrence of feral cats on oceanic islands has not been plotted. Sources of information in text.

Indicated by "?," information is absent on feral cats in Spain, Italy, Greece, Mexico, temperate-zone South America, Japan, and Madagascar, even though stray cats appear to be common in most places.

Indicated by "d," feral dogs persist in remote wilderness areas in the U.S., including Alaska (Denney 1974, Gipson 1983) and in Europe (MacDonald 1987), additionally to being dispersed throughout Australia as the dingo (Rolls 1969).

Regarding feral cat control by coyotes, following coyote suppression in the Central Valley of California, a rather dense semiferal cat population developed (Hubbs 1951). The control by coyotes (weight 15 to 20 kg) makes one wonder about possible control of the feral cat in Australia by dingoes (weight up to 35 kg) (Boitani and Bartoli 1986). This is not the case (Corbett and Newsome 1987). The dingo needs regular water intake which limits its habitat and numbers in arid Australia. The feral cat, on the other hand, can survive on the body fluids of its prey, so there need not be an overlap in habitat. Where there is, the dingo is likely to prefer easier prey and carrion.

Finally, could the domestic cat turn feral in more places in the future? It could, given more garbage dumps and less predators.

DAMAGE TO WILDLIFE AND LIVESTOCK

In comparison to dogs, the smell of domestic cats is not well developed; they react to movement. A domestic cat can pass a nest on the ground a meter or so away without noticing it provided that any bird in it stays motionless. The slightest movement will make the cat pounce. Also, unlike some of its cousins, the domestic cat is poorly equipped to climb trees and maneuver on branches to get at bird nests.

It is generally unable to crack eggs. However, they do get birds that feed and stay temporarily motionless on the ground, such as blackbirds, thrushes, and sparrows, but not to an extent that they affect long-term population numbers (Mead 1982). In tropical gardens they do not or cannot get the ground-feeding magpie robin, Copsychus sauluris. apparently because this bird is constantly on the move. Waterfowl nests in Maine, U.S., were predated by grey and red foxes, raccoons, minks, skunks, and crows, but not by cats (Bearden 1951). On the other hand, from the Central Valley of California some predation by cats of pheasants, coots, and ducks was reported (Hubbs 1951), perhaps where some movement betrayed presence of otherwise immobile birds.

Domestic cats readily pick up starchy food from garbage dumps (Goldschmidt and Lüps 1976), and at the village level in southeast Asia its staple diet consists of rice, flavored with wok scrapings and, with luck, fish bones. However, preferred prey of the domestic cat consists of young rabbits and microtine rodents, but its diet also comprises a range of other small animals: grasshoppers, crickets, spiders, centipedes, and dragonflies (Fitzgerald 1988), perhaps insignificantly. More serious is its feeding on lizards anywhere. Next to the intake of small marsupials, lizards are staple food in Australian deserts. Here the impact of the domestic cat on the desert biome is as serious as that on biomes on oceanic islands.

On the two main islands of New Zealand, feral cats have spread throughout the bush. They are blamed for the reduction or disappearance of native birds. This can apply to ground-nesting birds, even though introduced rats and possums are likely to deserve more blame. Unfortunately, the feral cat is hardly a match for the half-cat-sized rat or full-cat-sized possum. The cats merely get young ones; this provides insufficient control.

As applies to many animals in the wild, the population size of the feral cat varies with available food, largely through a variable death rate of young animals (see data by Warner 1985). Under periodic favorable conditions, the birth rate of prey well exceeds that of the cats and an explosion in prey numbers results, the periodic mouse plague in Australia being one example (Rolls 1969). Normally, the prey population stabilizes naturally, with cats merely a contributing factor. Cats can keep small prey populations small, but do not control dense ones adequately. Thus in Central Otago, New Zealand, with a persistently dense rabbit population, cats have not and cannot make a dent.

It is impractical to curb roaming by house cats, notwithstanding any repulsion towards their sadistic play with prey that is not even wanted as food. Suffering by stray cats (and dogs) can be shortened by blocking their access to garbage dumps or perhaps even better by replacement of garbage dumps by incinerators. This would also curb an opportunity for feral cats to fall back on them.

The usefulness of feral cats in vermin control versus the damage they inflict on wildlife should vary from place to place. On oceanic islands, the feral cat is surely an undesirable animal (I.C.B.P. 1985).

In rural areas roaming dogs provide a strong case for leash laws and for keeping the animal fenced in. Many roaming dogs chase livestock which, upon fleeing, may drown or be injured by fences. The dogs are likely to tear open a leg or a belly or break a neck, without feeding on any part. In New Zealand, in a prime habitat close to human settlement, a roaming German shepherd bitch, guided by smell and the conspicuous call by the bird, killed some 500 kiwis, out of a total population of some 900 birds, one after the other, without any being eaten, before the onslaught was discovered and the animal destroyed (Taborsky 1988). Roaming dogs also sniff out ground-nesting birds anywhere, destroying nests by pawing, even when no birds or eggs are there.

Solitary stray dogs are poorly equipped for securing prey. When not able to raid garbage, they soon succumb. For successful hunting a domestic dog needs to be a pack member. This applied in South Africa, where "half-starved stray dogs lined up with well-fed roaming house dogs in the pack-killing of livestock" (Hey 1985).

The story of feral dogs, derived from local farm dogs on the Galapagos islands, where they killed young iguanas and tortoises and dug out birds from nest holes (Barnett 1986), is a dramatic one. On continents the story is likely to be less dramatic. The reason for this is that, to escape extermination, feral dogs have to withdraw to remote wilderness areas. In the northern hemisphere deer, and in Australia livestock, kangaroos, and small marsupials are their main prey (Denney 1974, Corbett and Newsome 1987). Sheep farming in eastern and western Australia would not be possible but for dog-proof fencing and fence riders to keep feral dogs out.

ACKNOWLEDGMENT

This study has been made possible by the assistance from Rex E. Marsh, Department of Wildlife and Fisheries Biology, University of California, Davis, California.

LITERATURE CITED

BARNETT, B. D. 1986. Eradication and control of feral and free-ranging dogs in the Galapagos islands. Vertebr. Pest Conf. 12:358-368. Univ. of Calif., Davis.

BEARDEN, J. D. 1951. Identification of waterfowl nest predators. J. Wildl. Manage. 15:386-395.

BODDICKER, M. L. 1983. House cats (feral). Prevention and control of wildlife damage (R. M. Timm, ed.). Univ. of Nebraska pp C-25-29.

BOITANI, L., and S. BARTOLI 1986. The Macdonald encyclopedia of mammals. MacDonald, London.

BOMBAY NATURAL HISTORY SOCIETY. 1986. Encyclopedia of Indian Natural History (R. E. Hawkins, ed.). Oxford Univ. Press.

COMAN, B. J., and E. H. JONES. 1986. Ecology of feral cats in Victoria. Trees and Victoria's Resources 23:20-21.

CORBETT, L. E., and A. E. NEWSOME. 1987. The feeding ecology of the dingo. Oecologia 74:215-227.

DENIS, A. 1964. Cats of the world. Constable, London.

DENNEY, R. N. 1974. The impact of uncontrolled dogs on wildlife and livestock. Trans. 39th N. Amer. Wildl. And Nat. Res. Conf. 2 pp.

FITZGERALD, B. M. 1988. Diet of the domestic cat and their impact on prey populations. The Domestic Cat (D. C. Turner and P. Bateson, eds.). Cambridge Univ. Press: 123-141.

GIPSON, P. S. 1983. Feral dogs. Prevention and control of wildlife damage (R. M. Timm, ed.). Univ. of Nebraska pp C-43-46.

GOLDSCHMIDT-ROTSCHILD, B. VON, and P. LÜPS. 1976. Untersuchungen zur Nährungs-Ökologie "verwilderter" Hauskatzen im Kanton Bern (Schweiz). Revue Suisse Zool. 83:723-735.

HEY, D. 1985. Predators in South Africa. Parasites, Pests and Predators (S. M. Gaafar et al., eds). Elsevier pp 400-403.

HUBBS, E. L. 1951. Food habits of the feral house cats in the Sacramento Valley. Calif. Fish and Game 37:177-189.

I.C.B.P. (International Council for Bird Preservation). 1985. Conservation of island birds (P. J. Moors, ed.). Tech. Pub. 3.

LEGAKUL, B., and J. A. MCNEELY. 1977. Mammals of Thailand. Assoc. for the Conservation of Nature, Mahidol Univ., Bangkok.

MACDONALD, D. W. 1987. Wildlife management. Animal Behaviour (D. McFarland, ed.). Oxford Univ. Press pp 600-608.

MEAD, C. J. 1982. Ringed birds killed by cats. Mammal Rev. 12:183-186.

NANSEN, P. 1985. Importance of immunology in relation to parasites and animal production. Parasites, Pests and Predators (S. M. Gaafar et al., eds.). Elsevier pp 371-383.

TABORSKY, M. 1988. Kiwis and dog predation; observations at Waitangi State Forest. Notornis 35:197-202.

THAI FARMERS BANK. 1989. Results of survey of prospects for pet food exports. Bangkok Post, August 10.

WARNER, R. E. 1985. Demography and movements of free-ranging domestic cats in rural Illinois. J. Wildl. Manage. 49:340-346.

WILKINSON, G. T. 1984. Diseases of cats. Univ. of Sydney Post Grad. Found, of Vet. Sci., T. G. Hungerford Vademecum series for domestic animals, No. 3.