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EFFECTS OF FREE-RANGING CATS ON WILDLIFE: A PROGRESS REPORT
by J. S. COLEMAN¹/ AND S. A. TEMPLE¹/

INTRODUCTION

We have embarked upon a three-year study to determine the density and distribution of free-ranging cats (*Felis catus*) and their effects on prey populations in rural Wisconsin. The effects of predation by free-ranging cats on wildlife populations are potentially great and have not been adequately accounted for in wildlife management programs. In rural Illinois there was an average of 5.6 free-ranging cats per farm (Warner 1985). If densities elsewhere are similar, then a state such as Wisconsin, with over 200,000 active and retired farms, could have over 1 million free-ranging cats on farms. In other studies (Bradt 1949, George 1974), individual free-ranging cats have been found to capture 100-1000 prey per year. This could mean that hundreds of millions of prey are killed annually by cats in Wisconsin alone. We define free-ranging cats as tame, semi-tame, and feral domestic cats that are not restrained in their movements.

Funding for this study has come from the Wisconsin Department of Natural Resources, the U.S. Department of Agriculture, and the University of Wisconsin, Madison Agricultural Experiment Station.

RESEARCH SUMMARY

In our study we have taken a two-pronged approach. We sent a mail survey to 1300 rural residents to find out about rural cats and their farm homes, and we are intensively studying 150-200 cats on 20-30 farms and rural residences. The survey is providing information on cat distribution and densities around the state, the type of care given these cats, and on attitudes of rural residents towards cats. Based on 800 responses received so far, we

found that 20% of respondents had no cats. The remaining 80% had from 1 to 60 cats. Average density was approximately 5 cats per farm or rural residence. Pest control was a very important reason why 90% of cat owners had cats. Having cats as pets was very important to 70% of cat owners. Twenty percent of cat owners felt that they had too many cats. These people tended to have more cats than those who felt they had the right number or too few cats. This group of people could benefit from information on humane methods of cat control. Eighty percent of cat owners fed their cats daily, and there was a strong relationship between the frequency people fed cats and the number of cats on their property. In contrast, 8% of respondents that had cats said that they never fed them. These people had an average of 3 cats. Based on our field work, we suspect that these cats are stealing food from neighboring residences and hunting wildlife.

Disease and automobile accidents were listed as the most important factors in limiting cat numbers. Thirty percent of respondents felt that their own cat control efforts were very important in limiting cat numbers. Our field work supports the conjecture that disease and automobile accidents are major mortality factors. We documented major disease outbreaks during the winter of 1988-89. Inexperienced young cats and sexually active males seemed most susceptible to automobiles. Forty percent of respondents expressed a willingness to reduce or limit the number of cats on their property to benefit wildlife. There was a greater willingness to control cat numbers to benefit prey species than to reduce competition with other predators.

Because of our interest in the relationship between the landscape and predation, we chose field study areas with a diversity of habits and habitat block sizes. We have tried to observe

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hunting and prey capture in the field, but this is often difficult while plants are in leaf. We have collected scat by placing trays of sand in locations frequented by free-ranging cats. Rural residents have recorded their observations of prey captures.

Through automated activity monitoring we found that the level of cat activity fluctuates throughout the day and night, with no clear indication of greater activity at night. We suspect that cat activity is tied to times when humans make food available.

Table 1. 95% contour harmonic mean home ranges of 8 female and 9 male free-ranging cats.

Sex	Home range (ha) during:	
	Summer	Winter
Female	31	8
Male	119	46

With radio-telemetry we have monitored cat movements and use of habitats. Because we are interested in the extent of predator penetration into blocks of habitat we have monitored home range size and distance that cats are located from ecological edges. We have found that males and females have smaller ranges in the winter months than during other months and that males had larger ranges than do females (Table 1). Ninety five percent contour harmon mean home ranges varied from 8 ha for females in winter to 119 ha for males in summer. The larger male ranges were probably due to sexually motivated visits to areas where sexually active females resided. Warner (1985) in his summer study of farm cats in Illinois also found smaller home ranges for females.

We have found that 66% of our summer locations of radio-tagged cats were in the vicinity of human habitation or farm buildings (Table 2). This

increased to 83% during winter. In winter cats not only used forest, brush, and non-woody vegetation habitats less, but they also penetrated into these habitats less.

In review of the literature we found that in separate analysis of 483 stomachs collected in Texas, Oklahoma, Pennsylvania, California, Wisconsin, and Australia, mammals ranked as first in dietary importance with birds and insects competing for second (Table 3). In analyses of 2,146 scat and 2,780 observations of captured prey (Table 3) mammals were also the most common prey. Birds and insects were second or third in importance, depending on the method of data collection and analysis. The difficulty of detecting insects in scat and during observation of captures could distort the importance of insects in a cat's diet.

Table 2. Habitat use by free ranging cats. Percent of locations in 2 habitats and mean distance in meters to edge from cat locations.

Habitat	Summer		Winter	
	%	m	%	m
Farm yard & residential	66	17	83	19
Forest, brush & non-woody veg.	35	13	17	11

Cat owners recorded 279 observations of prey captures in our study area. These indicated that mammals made up 68% of the prey. Of this, 69% were mice, shrews, and voles and 6% were cottontail rabbits. Birds made up 23% of the captures, of which 91% were song birds.

We are only midway through our study, and although results are very preliminary, some trends are emerging. Clearly cats can be efficient

Table 3. Ranking of prey in the diet of free-ranging cats^{1/}.

Location	Small Mammals	Lagomorphs	Birds	Insects	Reptiles, Amphibians, Fish
Maryland ^{2/}	1	3	2	-	-
Pennsylvania ^{2/}	1	4	2.5	2.5	-
Pennsylvania ^{4/}	1	3	2	4	-
Wisconsin ^{2/}	1	4	2	3	-
Michigan ^{3/}	1	3	2	-	-
Ontario ^{3/}	1	-	2	-	-
Missouri ^{3/}	1	2	3	-	4
Oklahoma ^{2/}	1	2.5	4	2.5	5
Texas ^{2/}	1	4.5	4.5	2	3
California ^{2/}	1	4	2	3	5
Australia ^{2/}	1	2	4	3	5
Australia ^{2/}	1	2	4	3	5
New Zealand ^{4/}	1	3	4	2	5
England ^{3/}	1	3	2	-	-
Sweden ^{4/}	2	1	3	-	-
Mean rank	1.1	2.9	3.1	2.8	4.7

^{1/} From Bradt 1949, Churcher and Lawton 1987, Coman and Brunner 1972, Eberhard 1954, Errington 1936, Fitzgerald and Karl 1979, George 1974, Hubbs 1951, Jones and Coman 1981, Korschgen 1957, Liberg 1984, Llewellyn and Uhler 1952, McMurry and Sperry 1941, Parmalee 1953, Toner 1956.

^{2/} From analysis of stomachs.

^{3/} From observations of predation.

^{4/} From analysis of scat.

predators. Given their clumped distribution around farms and rural residences, their effect on prey populations will be highly dependent on the distribution of human population. Any attempts to reduce the effects of cat predation on wildlife will, therefore, be primarily a human management problem.

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