MOVEMENT PATTERNS AND PREY HABITS OF HOUSE CATS *FELIS CATUS* (L.) IN CANBERRA, AUSTRALIA.

by

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ABSTRACT

House cat movements in Canberra suburbs adjacent to grassland and forest/woodland areas were examined using radio–telemetry over 9 months. Information on the composition of vertebrate prey caught by house cats in Canberra was also collected by recording prey items deposited at cat owners' residences over 12 months.

Home range areas of 10 suburban house cats, and a colony of seven farm cats, were examined using 95% convex polygons. Nocturnal home range areas of the suburban cats varied between 0.02 and 27.93 ha (mean 7.89 ha), and were larger than diurnal home range areas (range 0.02 to 17.19 ha – mean 2.73 ha). Nocturnal home range areas of cats from the farm cat colony varied between 1.38 and 4.46 ha (mean 2.54 ha), and were also larger than diurnal home range areas (range 0.77 to 3.70 ha – mean 1.70 ha). Activity levels were greater at night than during the day, though diel activity patterns varied seasonally in response to ambient temperature. Four suburban house cats moved between 390 m and 900 m into habitat adjoining the suburb. Movements further than 100–200 m from the suburb edge were always made at night. Polygons describing the home ranges of these animals were strongly spatially biased away from the suburban environment, though the cats spent the majority of their time within the bounds of the suburb.

In addition to nocturnal and diurnal effects, home range areas, and subsequently habitat utilisation, appeared primarily determined by the density and spatial distribution of cats utilising separate food resources, and the dominance of individual cats in local social hierarchies, rather than gender or neutering effects. Home ranges of cats in the farm cat colony overlapped extensively, as did those of cats living at the same suburban residence. There was little or no overlap between the home ranges of cats from different residences. Barriers, in the form of busy roads, appeared to also significantly influence home range size and shape.

Within home range areas, house cat movements during the day appeared strongly influenced by available cover (drains, tall grass, fences and shrubs etc.), and the location of resting/sunning spots and hunting sites close to home. At night, movement patterns appeared influenced by the location of favoured hunting sites toward the outer edges of home range areas (in this study, tall grass and scrub/forest habitat, and farm buildings).

Nineteen hundred and sixty one prey items representing 67 species were reported or collected. Sixty–four percent of the prey items were introduced mammals, with native birds comprising 14%, introduced birds 10%, unidentified birds 3%, reptiles 7%, amphibians 1% and native mammals 1%. Predation appeared to be largely opportunistic with respect to spatial and temporal (daily and seasonal) prey availability and accessibility. All amphibians and 62% of mammals taken by cats not confined at night, were caught at night. In contrast, 70% of birds caught, and 90% of reptiles, were taken during the day (45% of birds between 0600 h and 1200 h, and 61% of reptiles between 1200 h and 1800 h). There was some evidence that small mammals are preferred prey of house cats.

The mean number of prey items reported per cat over 12 months – 10.2 ± 2.66 (2SE, n=138) – was significantly lower than mean predation per cat per year – 23.3 ± 6.16 (2SE, n=138) – estimated by cat owners before the prey survey began. Seventy percent of cats were observed to catch less than 10 prey items over 12 months, but for 6% of cats, more than 50 prey items were recorded. Because counts of the amount of prey caught per house cat per unit time were highly positively skewed, data assumptions and statistical parameters used to extrapolate results from the study sample of cats, to the house cat population of Canberra, had a significant effect on estimates of total predation in Canberra. The precision of the total predation estimate was low (± 25%), from a sample of 0.3% of the Canberra house cat population. The accuracy of such estimates are dependent on how representative the study cat sample is of the wider house cat population, and on the proportion of prey items not observed by cat owners.

The total amount of prey taken was not significantly influenced by cat gender, age when desexed, or cat breed. Nor did belling or the number of meals provided per day have a significant influence on predatory efficiency. Cat age and the proportion of nights spent outside explained approximately 11% of the variation in the amount of prey caught by individual cats. House cat density and distance to prey source areas (rural/grassland habitat) explained 43% of variation in predation on introduced mammals and birds.

The impact of predation beyond suburb edges is likely to be most significant on populations of small to medium sized arboreal and ground–dwelling mammals, because of their nocturnal nature, and because they appear to be preferred prey types of house cats. Impacts on diurnally active prey, such as most birds and reptiles, are likely to be confined to within 200 m of residential housing (possibly further where good cover is available). Properly enforced nocturnal confinement should restrict the range sizes of cats that roam widely and utilisation of habitat beyond suburb edges, and also reduce predation on mammals and amphibians. Night–time curfews however, are unlikely to greatly reduce predation on diurnally active species, including most birds and reptiles. Curfews are currently neither widely adopted nor effectively practiced in Canberra.

Estimates of predation by house cats, particularly extrapolated estimates, should be treated with caution. They do not necessarily reflect relative impacts on different prey types. Nor do high rates of predation prove prey populations are detrimentally effected, particularly in urban environments. Nonetheless, on a small (backyard) scale in suburban environments, and in habitat within 1 km of residential housing, including isolated private properties, predation by individual cats may threaten populations of native wildlife. Hunting by house cats is particularly undesirable in relatively undisturbed habitat because of fundamental differences in the ecological processes operating in these areas (especially isolated remnants) compared with contrived and modified suburban environments. Adverse impacts on native fauna will always be potentially greatest in undisturbed habitat adjacent to new residential developments.

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