



Home range size, movements and habitat use of bobcats in a prairie rangeland environment  
by Brian Joseph Giddings

A thesis submitted in partial fulfillment of the requirements for the degrees of Master of Science in  
Fish and Wildlife Management  
Montana State University  
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**Abstract:**

A radio telemetry study of bobcats (*Felis rufus*) was conducted in eastern Montana between June 1983 and September 1984 to determine home range size, movements, and habitat use. A total of 154 radio locations were obtained on one adult male and four adult female bobcats. Calculated mean home range size was 27.6 km<sup>2</sup> for the females and 4.3 km<sup>2</sup> for the male. Seasonal movements were greatest during winter months, probably as a result of breeding activity. Use of badlands, creek bottoms, and stock reservoirs was greater than expected while the open sagebrush/grassland habitat appeared to be avoided. Characteristics of the badlands habitat suggest it served as security cover for bobcats. Bobcat harvest levels in the study area during 1977-85 seemed to be within sustainable yield limits. Decreases in bobcat numbers due to a decreased prey base or increases in numbers of trappers could change this relationship. A bobcat population trend index was developed and initiated in conjunction with lagomorph head light surveys. The advantages of eliminating outliers and identifying core areas when accessing annual and seasonal range delineations and habitat utilization are discussed.

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Brian Joseph Giddings

This thesis has been read by each member of the thesis committee and has been found to be satisfactory regarding content, English usage, format, citations, bibliographic style, and consistency, and is ready for submission to the College of Graduate Studies.

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## TABLE OF CONTENTS

	Page
APPROVAL . . . . .	ii
STATEMENT OF PERMISSION TO USE . . . . .	iii
VITA . . . . .	iv
ACKNOWLEDGMENTS . . . . .	v
TABLE OF CONTENTS . . . . .	vi
LIST OF TABLES . . . . .	vii
LIST OF FIGURES . . . . .	ix
ABSTRACT . . . . .	x
INTRODUCTION . . . . .	1
DESCRIPTION OF STUDY AREA . . . . .	4
Hook Ranch . . . . .	4
METHODS . . . . .	11
RESULTS . . . . .	18
Trapping and Density Estimates . . . . .	18
Home Range Size and Movements . . . . .	18
Habitat Use . . . . .	25
Population Trend Analysis . . . . .	33
DISCUSSION . . . . .	38
Population Density . . . . .	38
Home Range Size . . . . .	40
Movements . . . . .	44
Habitat Use . . . . .	44
Population Trend Analysis . . . . .	47
Management Considerations . . . . .	48
LITERATURE CITED . . . . .	51
APPENDIX . . . . .	57

## LIST OF TABLES

Table		Page
1	Physical characteristics, number of locations, and fate of bobcats captured on the Hook Ranch study area . . . . .	19
2	Individual home range sizes (km <sup>2</sup> ) of instrumented bobcats . . . . .	21
3	Estimated bobcat home range sizes (km <sup>2</sup> ) based on the number of animal locations (N) . . . . .	23
4	Individual bobcat home range sizes (km <sup>2</sup> ) by seasonal period (breeding-non/breeding) . . . . .	26
5	Distribution of distances between consecutive radio locations of 14 days or less and average distance traveled by adult bobcats by sex and season . . . . .	27
6	Distribution of distances between consecutive radio locations of 14 days or less and average distance traveled by adult bobcats by sex and seasonal period . . . . .	28
7	Cover type categories, percent availability, and percentage of bobcat locations falling within the cover types for all bobcats . . . . .	30
8	Analysis of all bobcat home ranges comparing habitat availability and use based on 100%, 90%, and 50% of relocations . . . . .	32
9	Comparisons between roughness availability and use within individual bobcat home ranges within areas of increasing use . . . . .	33
10	Productivity of bobcat lures used in scent-post survey with visitation rate/lure type . . . . .	35

## LIST OF TABLES-Continued

Table		Page
11	Monthly lagomorph densities estimated from head light surveys . . . . .	36
12	Bobcat harvest numbers by region, hunting district, Hook Ranch, and study area for the period 1977-1985 . . . .	37
13	Home range size estimates for bobcats from several regions of the United States . . . . .	39
14	Mammal species present on the Hook Ranch study areas (Burt and Grossenheider 1976, Hoffman and Pattie 1968) . . . . .	58
15	Physical measurements of bobcats captured in eastern Montana, Hook Ranch, Montana, 1983 . . . . .	59
16	Vegetational characteristics and species composition of delineated cover types from Pfister plots, shown in % <sup>a, b</sup> . . . . .	60
17	Vegetational characteristics of delineated cover types from Daubenmire plots, percent canopy coverage) <sup>a, b</sup> . . . . .	61
18	Species list and species composition of plants identified in 0.1 m <sup>2</sup> Daubenmire plots per cover type on the Hook Ranch Study Area, Montana . . . .	62

## LIST OF FIGURES

Figure		Page
1	Location of study area in eastern Montana . . . . .	5
2	The Hook Ranch study area . . . . .	6
3	Home ranges of study animals in the Hook Ranch study area between March 1983 and January 1985 . . . . .	22
4	Bobcat F1637 home range illustrating areas of intensive use based on the percentage (100%, 90%, 50%) of locations used (Harestad, 1981) . . . . .	24

## ABSTRACT

A radio telemetry study of bobcats (Felis rufus) was conducted in eastern Montana between June 1983 and September 1984 to determine home range size, movements, and habitat use. A total of 154 radio locations were obtained on one adult male and four adult female bobcats. Calculated mean home range size was 27.6 km<sup>2</sup> for the females and 4.3 km<sup>2</sup> for the male. Seasonal movements were greatest during winter months, probably as a result of breeding activity. Use of badlands, creek bottoms, and stock reservoirs was greater than expected while the open sagebrush/grassland habitat appeared to be avoided. Characteristics of the badlands habitat suggest it served as security cover for bobcats. Bobcat harvest levels in the study area during 1977-85 seemed to be within sustainable yield limits. Decreases in bobcat numbers due to a decreased prey base or increases in numbers of trappers could change this relationship. A bobcat population trend index was developed and initiated in conjunction with lagomorph headlight surveys. The advantages of eliminating outliers and identifying core areas when accessing annual and seasonal range delineations and habitat utilization are discussed.

## INTRODUCTION

In response to the recent reclassification of the bobcat (Felis rufus) from predator to furbearer status in most western states, the bobcat has become a target species for intensive research efforts by state wildlife management agencies. According to McCord and Cardoza (1982), recognition of the bobcat's predatory role in ecosystems, a tremendous increase in the value of bobcat pelts, and listing of the bobcat in Appendix II of the Convention on International Trade in Endangered Species (CITES) have all contributed to the need for careful management of the species. State wildlife management agencies were, therefore, politically and economically motivated to reclassify the bobcat to justify harvest regulations under CITES and to obtain federal financial support for research. The Bobcat Research Conference Proceedings (1979), Stiver (1982), and McCord and Cardoza (1982) provide current reviews of federal authority over state bobcat management and describe the intensity of current research.

The bobcat received furbearer status in Montana in 1977, prior to which bobcat research in the state was limited. In the late 1950's, bobcat and coyote movements were compared (Robinson and Grand 1958), and during the 1970's an uncompleted telemetry study was attempted in

southeastern Montana (Phillips 1976 in Knowles 1981). These efforts were deemed inadequate to satisfy CITES requirements.

The Montana Department of Fish, Wildlife and Parks (MDFWP) initiated bobcat research in 1977 with the appointment of the first state furbearer biologist and a mandatory bobcat pelt tagging program. Hash (1981) is developing maps illustrating gross habitat characteristics along with corresponding bobcat population densities and distribution in Montana from harvest and observation data. A 5-year mandatory bobcat carcass collection program was in operation from 1978-82 to determine sex and age structure, food habits, reproductive status and history, general condition, and disease and parasite loads in Montana bobcats (Hash 1981, Greer and Palmisciano 1981). From 1979-81 a study of habitat selection, home range size and movements was conducted in the Charles M. Russell National Wildlife Refuge (CMR) in northcentral Montana (Knowles 1981). A 5-year study examining the ecology of bobcats and lynx (Felis lynx) in a coniferous forest environment in western Montana was also initiated in 1979 by the MDFWP. The first 3 years of this study concentrated on investigating habitat use, home range size and movements of bobcats and lynx (Smith 1984). The last 2 years emphasized bobcat and lynx breeding ecology and an analysis of bobcat carcass data collected between 1978-82

























































































































