

## Distribution and Population Dynamics of Bobcats in Iowa

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**Goals and Objectives:**

- Determine local habitat selection by bobcats, including home range characteristics and dispersal patterns in relation to forest, grassland, and agricultural land and the configuration of these habitats.
  - Evaluate population monitoring techniques that can be reliably and efficiently used to survey bobcats both at the local scale and also across Iowa.
  - Determine demographic rates of bobcats in Iowa, including recruitment and survival.
  - Evaluate genetic similarity of the Iowa population in relation to potential dispersal linkages with other populations.
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### Progress:

Distribution of bobcat sighting post cards to Iowa DNR personnel and the general public continues. To date, 519 sightings/tracks have been reported throughout Iowa. The second annual bowhunter survey tallied 67,066 hours of observation of wildlife. Bobcats observed/1000 hours ranged from 6.5-7.0 across southern Iowa but were sparse or not reported in other regions of the state. We are investigating means to insure continued hunter participation and statistical means to detect trends. We continue testing the applicability of a survey based on track observations under road bridges as a means to locally detect bobcats.

Since November 2005, 25 bobcats were radio collared throughout the study area. To date, over 11,000 ground and aerial locations have been collected on 69 bobcats. GPS collars have been recovered from 7 bobcats with a total of 3,208 locations. Only 17 mortalities of radio collared bobcats have occurred, which yields an estimated annual survival of 0.82 of both sexes. We also collected 380 bobcat carcasses from at least 33 Iowa counties, most of which were incidentally trapped or killed by automobiles. Carcasses were analyzed to produce demographic parameters (see below).

Stephanie Koehler graduated with an M.S. in August, 2006. Her thesis was titled "Habitat selection and demography of bobcats in Iowa" (abstract follows). She is working on phase II of the project as a Research Associate (see related project report).

### Conclusions and Recommendations:

Since the mid-1900s, bobcats have been rare throughout the Corn Belt of the Midwest because of historic habitat loss and unregulated harvest. Recently, reports of bobcat occurrences have increased in Iowa, motivating study of the mechanisms enabling them to recolonize this fragmented, agricultural landscape. I determined habitat selection of bobcats by radio-collaring 44 bobcats in south-central Iowa during 2003-2005. Annual home range size of males (56.36 km<sup>2</sup>) was larger than that of females (20.16 km<sup>2</sup>). Females used smaller home ranges during April-September (15.64 km<sup>2</sup>), as compared to October-March (26.30 km<sup>2</sup>). Similarly, core size of males (8.75 km<sup>2</sup>) was larger than that of females (2.26 km<sup>2</sup>), and females used smaller cores in the April-September (1.66 km<sup>2</sup>) as compared to October-March (3.09 km<sup>2</sup>). Compositional analysis along with standardized selection ratios illustrate that bobcats were selecting forest habitat about twice as frequently than any other habitat class, including grassland and CRP, at both landscape and within home-range scales. Predictive models indicated that home range and core area was smaller in landscapes where forest and grassland habitat was less fragmented. Predictive models indicated home range shape was more circular in landscapes with low forest patch density within the home range. I estimated demographic parameters from 265 bobcat carcasses and the live-captures. The proportion of females in the population was 0.46. Mean age was 1.29 years and the oldest bobcat was aged at 9 years. Bobcats >2 years of age comprised 66% of the age distribution. Mean litter size as determined from placental scars ranged from 2.50-3.00. Pregnancy rates of adult females ranged from 0.76-1.00. Annual survival of 44 radio-collared bobcats was 0.82. Automobile collisions (33%) and incidental trapping (22%) were the 2 most common causes of death. Annual survival as calculated from the age distribution (0.56) was considerably lower than that estimated from the radio-collared bobcats. Population growth estimates determined from life table analysis indicated a rate of annual growth ranging from 1.13-1.52, depending on assumptions.