



Bobcats Regaining a Foothold in Iowa

**Stephanie A. Koehler, M.S.,
Research Associate, Iowa State
University, Ames, IA**

Bobcats (*Lynx rufus*) were once widespread in the prairie-woodland complexes of the Midwest, but by the mid-1900s, they were considered rare throughout the Cornbelt region. The loss of bobcats from this region is attributed primarily to habitat loss and unregulated harvest. Iowa was one of the states that suffered

a near loss of the species. Bobcats were listed as “Endangered” in Iowa when the first state list was created in 1977, and legal harvest of the species was banned. Since then, there have been sporadic reports of bobcat occurrences, such as sightings, automobile kills, and incidental trappings. During the 1990s, there was a noticeable increase in these reports so that the status of the bobcat in Iowa was changed to “Threatened” in 2001, and then to “Protected” in

2003.

In 2003, the Iowa Department of Natural Resources and Iowa State University began research on the population and landscape ecology of bobcats in Iowa. Dr. Todd Gosselink from the Iowa DNR and Dr. William Clark from ISU are the principal investigators. Research objectives include determining the distribution of bobcats in Iowa, evaluating population monitoring techniques, estimating reproduction and survival



Above: Author processes live-captured adult male bobcat (No. 144) as trapper Terry Mothershed observes in Decatur County, Iowa.

rates, determining habitat selection, and conducting genetic analysis. An overarching motivation for this research is the question, “Will bobcats maintain viable populations in the agriculturally-dominated landscape of Iowa?” The ultimate research goal is the development of a conservation and management plan for the species that ensures their continued presence in Iowa. Not only will this research be useful to wildlife managers in Iowa, but also to biologists in the Midwest who are faced with similar questions about the conservation of bobcats. This research is also providing scientists with a unique opportunity to study a carnivore population as it expands back into an area of its former range, and may provide insights into the ecological mechanisms that enable dispersal and persistence.

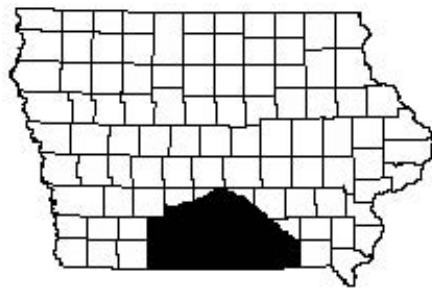


Figure 1: Bobcat research study area in south-central Iowa.



Legend

- Habitat Class**
- Barren
 - CRP
 - Forest
 - Grassland
 - Residential/Industrial
 - Road
 - Row crop
 - Unclassified
 - Water/Wetland



Distribution

Data collected from a bow hunter observation survey, as well as reported sightings and carcass collections, indicate that the largest numbers of bobcats are in southern Iowa, especially the southwestern region of the state. Not surprisingly, few bobcats are sighted in the heavily farmed areas of central and northern Iowa. Bobcats have been confirmed along the Missouri river corridor in western Iowa. However, very few have been documented along the Mississippi river corridor in eastern Iowa.

Habitat Use and Survival

The most time-consuming component of the research includes the live-capture and radio-collaring of bobcats in a focal study area in south-central Iowa. Researchers capture bobcats with live-traps as well as respond to calls from private trappers who have incidentally live-captured a bobcat while trapping for other furbearers. Upon capture, the

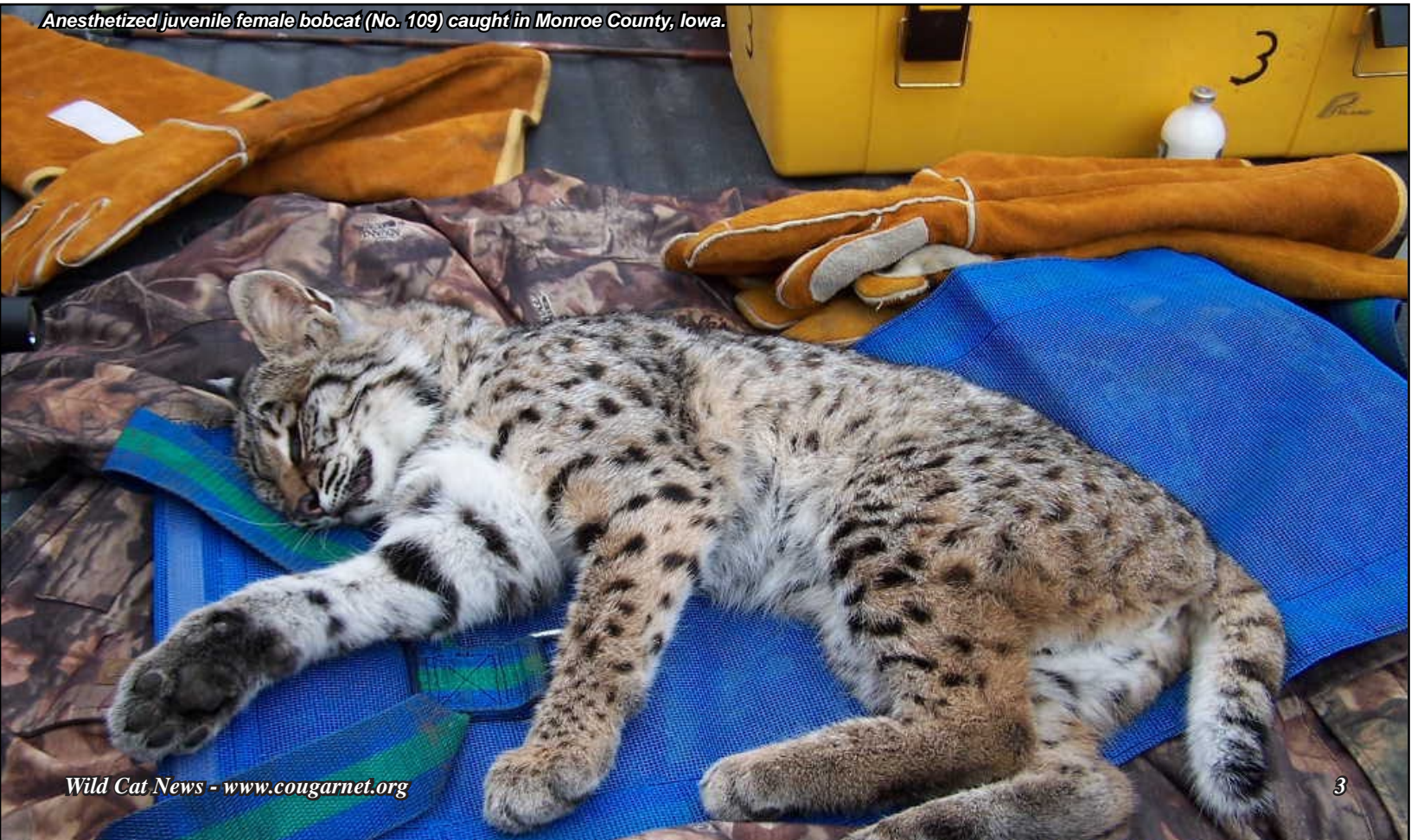


Above: Radio-collared female bobcat (No. 175) caught by a trail camera in Warren County, Iowa.

bobcats are anesthetized, measured, weighed, and individually ear-tagged. A tooth is extracted for an age determination and blood is drawn for DNA and disease testing. Between 2003 and early 2006, 69 bobcats

were captured and fitted with radio collars, 53 of which received standard VHF collars and 16 received GPS collars. Each bobcat is located twice per week using vehicle-mounted yagi antennas, and missing bobcats are

Anesthetized juvenile female bobcat (No. 109) caught in Monroe County, Iowa.



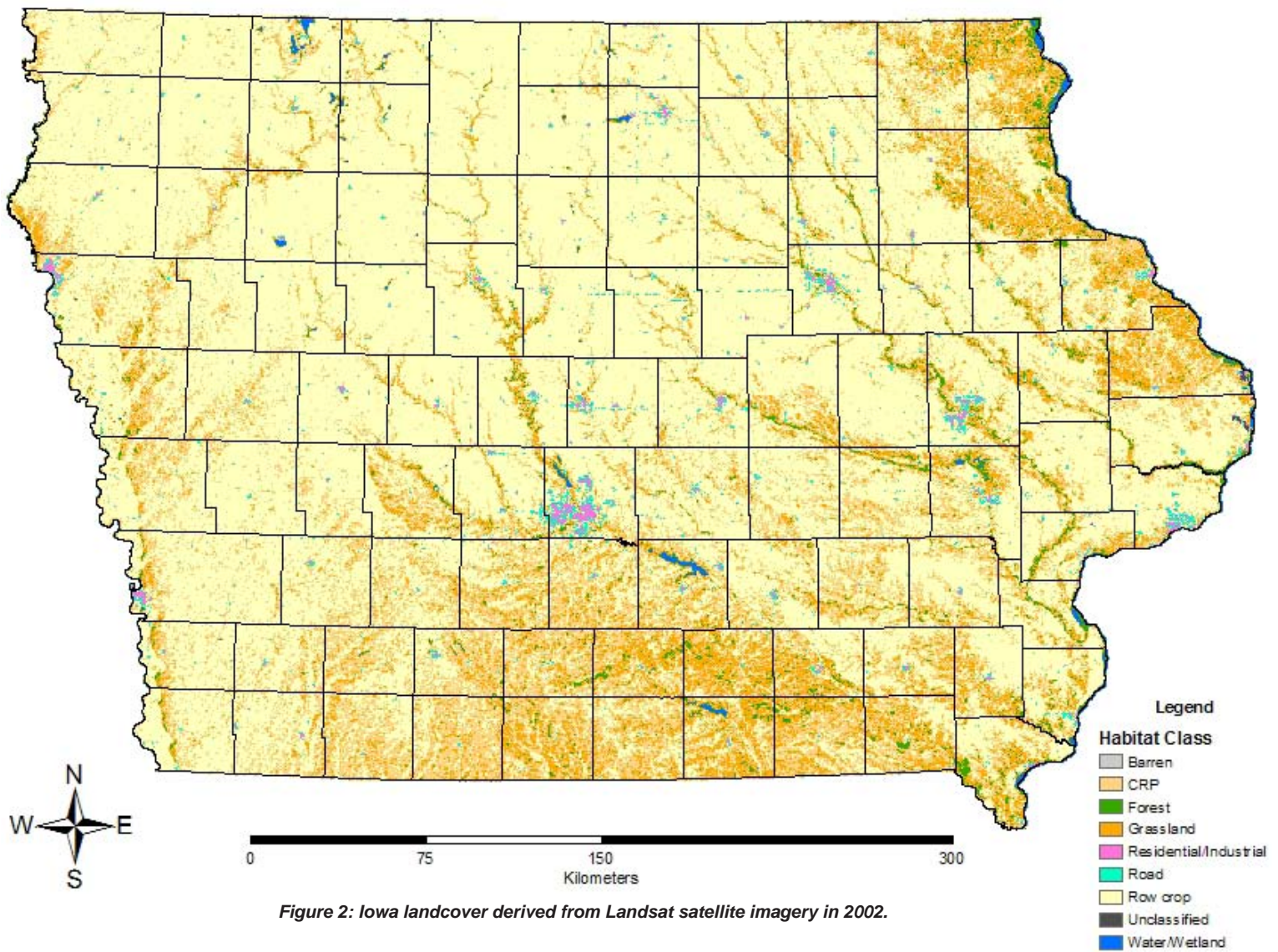


Figure 2: Iowa landcover derived from Landsat satellite imagery in 2002.

tracked from a fixed-wing airplane. To date, more than 10,500 ground and aerial locations have been collected on them, and an additional 1,399 GPS locations have been recovered. Annual survival of the radio-collared bobcats is 82% and appears to be similar between males and females. Causes of mortality have included automobile collision (five), incidental trapping (five), illegal shooting (two), drowning (two), train collision (one), other predators (one), and unknown causes (one). The average home range size of male bobcats (57 km²) is more than twice the size of females (20 km²). Female bobcats maintain considerably smaller home ranges in the spring-summer months (16 km²) as compared to the fall-winter

months (26 km²), which is likely due to behavior associated with denning and kitten-rearing activity. Intensive monitoring of female bobcats revealed that large brush piles and areas of dense understory are typically used as den sites. Bobcats are selecting forest habitat approximately twice as frequently as any other habitat class, including grassland and Conservation Reserve Program (CRP), both at the landscape and the local scale. Bobcats are frequently relocated along river and stream corridors, which is where much of the forest habitat in Iowa is found. Habitat models indicate that home ranges are smaller in landscapes where forest and grassland habitat is less fragmented and larger in landscapes where forest and grassland

habitat is more fragmented. Models also indicate that home ranges are more circular in landscapes with a few large patches of forest. Researchers have recorded dispersal of 12 juvenile bobcats thus far, and have observed straight-line dispersal distances of up to 141 km.

Reproduction & Population Growth

In addition to live-capture, bobcat carcasses are collected statewide in order to gather demographic information. To date, 352 bobcat carcasses have been collected and necropsied, most of which died from automobile collisions and incidental trapping. Carcasses provide researchers with standard measurements, age and diet



Juvenile male bobcat (No. 159) getting fitted with a VHF radio collar in Monroe County, IA.

information, reproduction estimates, and DNA samples. The average age of the Iowa bobcat population is 1.3 years and the oldest bobcat was aged at 9 years. Bobcats less than 2 years of age comprise 66% of the age distribution. Mean litter size, as determined from placental scars,

ranges from two to three kittens. The pregnancy rate of 1- to 2-year-old bobcats is 75%, whereas that of older females is approximately 97%. The observed pregnancy rate of the 1- to 2-year-old bobcats is almost twice that of previous reports, which is consistent with the demography of an

expanding population. A population projection model developed using all known demographic data indicates that the bobcat population in Iowa is growing at a relatively high rate.

While the information collected so far indicates that bobcats are doing well in south-central Iowa, it is still unclear if they will be able to expand and persist in substantial numbers in the more highly agricultural areas of Iowa. Continued research will help to elucidate the ecological mechanisms enabling bobcats to recolonize Iowa.



Vehicle-mounted radiotelemetry system used to track bobcat in south-central Iowa.



Juvenile male bobcat (No. 143) after release back into Davis County, Iowa.