Department of Natural Resources
SCI-MIC Supported Research Projects
2017 Progress Reports

Predator Prey Project

This cooperative study with Mississippi State University investigating the role of predators, winter weather, and habitat on deer fawn survival in the Upper Peninsula is one of the best-documented research projects conducted by the Michigan DNR. You can find progress reports and links to technical publications from this research project on the project's website:

http://www.fwrc.msstate.edu/carnivore/predatorprey/index.asp

There is also a link to the website on the SCI MIC website:

http://www.scimic.org/projects.html

The project also maintains a Facebook page that is updated with current activities and interesting observations from the field. Follow the link below to keep up with the latest news:

https://www.facebook.com/MIpredprey

This past year, work continued analyzing and interpreting data from the mid-snowfall zone and beginning to make comparisons with our findings from the low-snowfall zone study area. For example, we captured and monitored 150 deer during 2010–2015 in the low and mid-snowfall zones. February–May survival ranged from 0.24–0.89 (mean = 0.69) across years. Mortality risk increased 1.7% with each unit increase of cumulative winter severity index, decreased 7.2% with each cumulative snow free day, and decreased 11.9% with each kg body mass gained relative to the population average. Age and weekly snow depth did not influence deer survival. Predation, primarily from coyote and wolves, accounted for 78% of known-cause mortalities. Our results suggest that deer condition entering winter and winter severity impact deer winter survival, but the timing of spring snow melt may be the most important factor determining late winter weekly mortality rates of deer in the Upper Peninsula of Michigan.

We also began fieldwork in the high-snowfall zone study area. In 2017, we captured 125 (42 male, 83 female) individual white-tailed deer, including 51 adults, 9 yearlings, and 65 fawns. We radio-collared 48 female deer and VIT tagged 47 female deer. We detected pregnancy with ultrasound in 98% of adult (n = 46) and 75% of yearling (n = 4) females. We captured and radio-collared 34 neonate fawns (18 male, 15 female, 1 unknown sex). We obtained 8,438 adult female deer GPS locations, and monitored fawn survival via VHF telemetry. We observed 10 radio-collared adult female white-tailed deer mortalities and 11 mortalities of radio-collared fawns born during 2017. To estimate deer abundance, we placed 52 remote infrared cameras throughout the study area at baited sites and obtained 13,225 images including 5,559 observations of deer (3,828 adult females, 614 adult males, 892 fawns, and 225 unidentified deer). We also placed 52 remote infrared cameras at non-baited sites along trails throughout the study area to evaluate the effectiveness of a non-baited deer camera abundance estimate. We immobilized 9 adult black bears (5 male, 4 female) in their dens and observed 7 cubs (4 male, 3 female) from 3 females. From May to July we captured and immobilized 17 black bears (14 male, 3 female), 2 coyotes (1 male, 1 female), 2 bobcats (1 male, 1 female), and 7 wolves (6 male, 1 female) and either fitted them with GPS or VHF collars. We collected 466 hair samples and > 191,700 images from bobcat hair snares and remote cameras, respectively. We

collected 802 hair samples and 2,927 images from black bear hair snares and remote cameras, respectively. During howl surveys we recorded an average response rate of 13.3% for coyotes and 1.4% for wolves. We conducted investigations at 513 carnivore cluster sites to identify carnivore prey sources and opportunistically collected 239 scats from black bear, bobcat, coyote, and wolf. We conducted 5 ruffed grouse drumming surveys to estimate grouse abundance and had a 43.6% average detection rate across surveys. We completed snowshoe hare pellet count surveys at 456 random locations stratified within 5 different land cover types to estimate hare densities with respect to available land cover. To provide an index of beaver abundance, we conducted aerial surveys and detected 61 inactive lodges, 78 active lodges with a cache present, and 7 caches with no sign of a lodge.

Throughout the year, we hosted many volunteers from various organizations and two photographers/videographers, gave 35 presentations, hosted 3 workshops, and kept our Facebook page and website current with project results.

Partners: Safari Club International-MIC; Safari Club International Foundation; Northwoods Chapter Safari Club International; U.P. Whitetails Association, Inc., Menominee County Chapter; Wildlife Unlimited of Delta County; Ottawa Sportsmen's Club, Ontonagon Valley Sportsmen's Club, Plum Creek Timber Company, and Mississippi State University

Time Line and Budget: This project is being conducted in three snowfall zones in the UP with a total duration of approximately twelve years (2009-2021). Total project costs could exceed $3,000,000.