Department of Natural Resources
SCI-MIC Supported Research Projects
2016 Progress Reports

Feral Swine Research Project

Feral swine pose significant threats to habitat, wildlife, human health, and the agricultural industry in Michigan. Feral swine are possibly the most prolific large mammal on earth reaching sexual maturity at a young age, capable of breeding several times a year, have large litters, and high natural survival. Natural predators have little impact on feral swine populations and in good habitat they can endure extremely high rates of hunting harvest with little impact on the overall population.

Feral swine are opportunistic omnivores impacting plants and animals through direct consumption and by habitat modification and degradation. In addition, feral swine compete directly with wildlife for food and water resources, and prey on some wildlife species. The scale of ecological damage caused by feral swine has not yet been spatially delineated nor economically assessed for Michigan. An understanding of feral swine space use and activity budgets is needed to help assess and predict risks to plant and animal communities and to help prioritize targeted management actions.

Feral swine are reservoirs and potentially amplifiers for >30 diseases and at least 37 known parasites that can affect humans, livestock, and wildlife. The presence of feral swine in Michigan threatens to compromise the disease-free status of the domestic livestock herds and complicates eradication of bovine tuberculosis (bTB) in free-ranging deer. In Michigan, preliminary testing of 133 feral swine samples indicated ~10% were positive for pseudorabies. Collectively, the potential of feral swine as a disease reservoir and vector makes disease monitoring and control a top priority for Michigan.

Feral swine trapping in Michigan has been implemented by United States Department of Agriculture (USDA) to control localized populations. However, little is known about the effectiveness of these trapping efforts to reduce or eradicate local populations. Additionally, there is an absence of spatial ecology information (i.e., dispersal capabilities, daily movements, seasonal movements, proximity to domestic swine, and feeding behavior) that can be used to inform stakeholders about risk, educate landowners, and ultimately better inform population management strategies, including lethal removal. The goal of this project is to quantify feral swine space and resource use, disease status and potential for disease transmission, and develop and evaluate effective lethal removal techniques and strategies.

In 2016, trapping of feral swine was conducted by USDA with some support from MDNR, MSU, and UM-Flint. Trapping resulted in 3 additional radio-collared animals (8 total for study). Also in 2016, MDNR, USDA-WS, and 2 private helicopter contractors supported feral swine aerial surveys and capture efforts from January-February. Using GPS locations from radio-collared swine we developed search areas with the highest

probability for locating feral swine. Searching these areas resulted in recapture of a feral swine with a malfunctioning radio-collar and lethal removal of an additional un-collared animal. Using known locations of feral swine with radio-collars we also refined aerial searching techniques. The radio-collaring phase of the project is winding down, with opportunistic collaring as pigs are caught in other areas (e.g., Upper Peninsula of Michigan).

We developed a predictive model using accelerometer (motion sensor) data obtained from GPS collared animals to delineate geographic areas having a high probability of rooting activity. This information was used to select field-sampling sites to investigate the impact of feral swine rooting on native flora. Field crews visited 29 sites (19 rooted, 10 random) that were ~20 ac in size during the summer of 2016. We collected information on localized plant communities, the amount of exposed mineral soil, and tree damage. Additionally, we visited 5 sites where the timing of rooting events was documented. At these sites we collected soil cores to measure the depth of the organic material. We aim to use this measure as an index of how long ago rooting occurred. Crews also conducted a damage assessment in a field of corn that was occupied by feral swine.

Twenty-five animals were lethally collected in cooperation with USDA for disease monitoring and produced the following results:

4/16 animals tested were positive for toxoplasmosis
2/5 animals tested were positive for leptospirosis
1/14 animals tested positive for influenza A virus

The disease monitoring objective was revised in FY 2016 because of low numbers of lethally removed swine and low disease prevalence. The revised objective now focuses on the use of environmental DNA (eDNA) to confirm presence/absence of swine from watersheds. Use of eDNA is an emerging technology that can be used to noninvasively detect animals by testing environmental samples. In 2017, we intend to refine this technique for detecting feral swine in Michigan. Under various seasonal conditions, we will manually introduce feral swine DNA into watersheds and quantify detection of eDNA from downstream water samples. A graduate student (Amberly Hauger) was recently hired at UM-Flint and she will coordinate sample collection with USDA – National Wildlife Research Center in Ft. Collins, CO.

Partners: Safari Club International-MIC, US Department of Agriculture-Wildlife Services, Michigan State University, University of Michigan-Flint, and Michigan Pork Producers.

Timeframe and budget: This project started in 2013 and is scheduled to run through 2018. Total project costs will exceed $800,000.