Department of Natural Resources
SCI-MIC Supported Research Projects
2014 Progress Reports

Local-Scale Assessment of Deer Populations Following a Major Mortality Event

Work conducted on this project through 2014 is summarized below under each of the major established objectives.

Objective 1. Estimate local abundance of white-tailed deer in proximity to areas of a major mortality event (epizootic hemorrhagic disease (EHD) outbreak).

To estimate deer abundance in the Maple River area affected by EHD in the summer of 2012, distance sampling was initiated in the summer of 2013 using resources provided through SCI-Lansing Chapter. In 2014, these data enabled calculation of preliminary abundance estimates to evaluate deer populations in year one of the study. We also completed our second season of ground-based distance sampling in the Maple River study area using a total of 35 surveys conducted between June 17 and August 12. An earlier start time in this second field season allowed more weekly replicate surveys to be conducted in the Maple River study area, which was necessary due to a low encounter rate for deer in this area.

Objective 2. Identify a similar area not recently affected by a recent mortality event to replicate monitoring efforts at a similar scale where deer abundance is expected to be representative of regional pre-outbreak conditions.

A Cass River study area was identified based on similar landscape composition and the absence of any significant EHD outbreaks. We delineated 4 transect routes for ground surveys in the Cass River study area to closely mirror our sampling approach in the Maple River study area, where 2 transects are positioned within a mile of the Cass River and 2 transects are positioned approximately 3 miles away from the Cass River. By placing transects along a major riparian corridor, we may detect differences in deer populations associated with this landscape feature and better understand its role in potential EHD outbreaks. We completed our first season of sampling in the Cass River study area using a total of 24 surveys conducted between June 19 and July 24.

Objective 3. Estimate the time required for local deer populations to recover from a major mortality event.

Incorporating a second study area as a control site allows us to evaluate the impact of EHD on deer population abundance and recovery. Density estimates were generated for 4 strata: 1 – disease impacted agricultural habitats (Maple River area), 2 - disease impacted riparian habitats (Maple River area), 3 - disease-free agricultural habitats (Cass River area), and 4 – disease-free riparian habitats (Cass River area). Because sources of EHD outbreaks occur in proximity to wetlands, we used these strata to represent potential differences in abundance along each side of a riparian corridor

(~1km and 5km). By placing transects along a major riparian corridor, we may detect differences in deer populations associated with this landscape feature and better understand its role in potential EHD outbreaks. Generally, Cass River had much greater deer abundance across the study area as compared to Maple River despite similar detection processes. This clear difference in deer populations will facilitate our ability to disentangle population level effects due to disease mortality, and will help demonstrate the utility of the field method under different population densities.

Objective 4. Evaluate the feasibility of using trained volunteers from the local community into a five year deer abundance monitoring plan.

Observers who participated in the surveys at both study sites included staff of the Department of Fisheries and Wildlife at Michigan State University, Michigan Department of Natural Resources (DNR) employees, and volunteers associated with the Maple River area deer cooperative, Thumb Area Branch Quality Deer Management Association members, and other volunteers recruited by local DNR field staff. Observers were briefly trained and provided equipment to record an angle and distance of each of the deer from the vehicle, the number, gender, and activity of observed deer, as well as the land-cover type where each deer was observed. We have had enough staff and volunteer support to conduct all transect routes simultaneously, but intend to grow our hunter-based volunteer network as this project continues into the future.

In the Maple River area, the cooperative with which the volunteers were associated has been in existence for many years. These individuals have a history of sharing harvest information and other deer observations and management goals, both among themselves (at meetings and through an annually mailed newsletter) and with DNR staff. No such organization exists immediately around the Cass River study area, so the contrast provided in this regard will aid us in more effectively evaluating the feasibility of using trained volunteers under differing local conditions.

Objective 5. Provide recommendations to aid future local population assessment methods, management decisions, and broader public communications regarding the local-scale response of deer populations to die-off events.

This objective will be addressed after several years of research results are available under each of the other objectives.