

## Assessment of Historic and Current Deer Population Modeling

The objective of this project is to conduct a retrospective analysis of age structure data, to modernize current population estimates and to better predict deer herd growth.

### TIMELINE

Launch: July 2018

Funded Through: June 2021

### FUNDING

Pittman-Robertson

### DNR PARTNER BUREAU

Wildlife Management

### EXTERNAL STAKEHOLDERS

Deer hunters

CDACs

General public

An extensive retrospective analysis of Wisconsin's available deer data (e.g., buck kill, age structure from harvest, population growth rate) will allow us to assess the current deer population monitoring framework and to explore new models that may better serve the deer management program. These analyses will help answer long-standing questions about which variables best predict herd growth and recruitment, how hunter-effort has changed over time and what alternatives there are to the Sex-Age-Kill (SAK) formula for estimating the population size of Wisconsin's deer herd.

The study will review the quota reference value process to understand how closely predictions have matched what is observed the next year (pre-hunt and post-hunt population predictions compared with SAK population estimates), percent change in the population under the achieved antlerless harvest and observed buck kill. This assessment of the quota reference value process will guide reanalysis to improve prediction accuracy.

There will be ongoing collaboration with Wildlife Management and findings will be integrated into the decision-making process for deer management throughout the study. As updates and modifications are finalized, they will be implemented to improve decision-making in real time. Progress and results of this work will be written up in manuscripts and submitted for peer-reviewed publication to ensure that the best available science is used and to bring enhanced scientific credibility to Wisconsin's deer-monitoring process.



Linda Freshwaters Arndt.

### KEY POINTS

- » Evaluation and modernization of the SAK formula for deer population estimation will make better use of input data collected by Wisconsin DNR staff and the public; measure uncertainty in population estimates; and identify gaps in knowledge.
- » The development of alternative methods to estimate deer population size and the application of these methods to past data will allow for an independent assessment of the performance of SAK, compared with alternative modeling methods in Wisconsin's deer population, to guide recommendations on what modeling methods should be used in future.
- » Assessment of the process used to predict over-winter population growth, buck harvest and estimated population change under different antlerless quotas will allow us to fine-tune the process or adopt new methods to make better predictions in the future and provide the best available information to the CDACs.

### SPOKESPERSON

Jennifer Stenglein, PhD  
Quantitative Wildlife Research Scientist  
Jennifer.Stenglein@wisconsin.gov

Daniel Storm, PhD  
Deer & Elk Research Scientist  
DanielJ.Storm@wisconsin.gov

