# ** A Story of Survival - Births, Deaths, and Predation in White-Tailed Deer in North Idaho

Elizabeth Painter*, Wildlife Biology Program, University of Montana, Missoula
Chad Bishop, Wildlife Biology Program, University of Montana, Missoula
Mark Hurley, Wildlife Research Section, Idaho Department of Fish and Game, Coeur d'Alene

*Indicates Presenter

**Indicates Student Presentation

In North Idaho, ungulate and predator populations are fluctuating, and determining the population growth of white-tailed deer (*Odocoileus virginianus*) will allow us to assess their role in the complex predator-prey systems, where they have never been studied. We wanted to identify how white-tailed deer fawn and adult survival influence population growth rates, and how predation on different age groups contributes to changes in population growth rates. We used vital rates estimated from 360 female deer collared between 2019 and 2021 to build a stage-based matrix model. We then tested eight management scenarios of hypothetical reductions in cause-specific mortality proportional to each stage to determine their impacts on population growth. We estimated a current declining population growth rate. The scenarios that produced a population growth rate above 1, were a 50% reduction in mountain lion predation, and two scenarios of combined reductions in mortality due to mountain lions and bears, as well as a reduction in antler-less harvest. Our findings demonstrated that this population can withstand low fawn survival rates, and is more sensitive to changes in adult survival rates. Additionally, mountain lion predation impacts all stages and would require drastic changes to alter the trajectory of this population. We produced the first estimates of population parameters and vital rates in North Idaho of white-tailed deer, highlighting low recruitment rates and high mortality due to mountain lions. The management scenarios illustrate the potential effects, or ineffectiveness, of predator removal to improve white-tailed deer population outlook.