

Project Highlight – SD State Wildlife Grant

Project Type Research

Title Natural history and genetic makeup of the northern flying squirrel population in the Black Hills and northeastern South Dakota

In a nutshell The northern flying squirrel occurs in the Black Hills and in a portion of northeastern South Dakota. This study was conducted to help us better understand habitat needs and certain ecological aspects of this species and the red squirrel in South Dakota. The project included research into genetic aspects of these squirrels. A third facet of the study was an examination of northern flying squirrel food habits.

Relevant Species of Greatest Conservation Need

- northern flying squirrel (*Glaucomys sabrinus*)

Relevant Habitats coniferous forests

Cooperators South Dakota State University (Charles Dieter; graduate student Melissa Hough) and University of South Dakota (Hugh Britten; graduate student Alyssa Kiesow)

Purpose

- determine reproductive characteristics, morphological characteristics, habitat selection, seasonal activity patterns, population characteristics, distribution and food habits
- to develop proper handling, trapping, and radio-collaring techniques
- determine the genetic variability and genetic distance between the Black Hills, South Dakota and northeastern South Dakota populations of northern flying and red squirrel using microsatellite markers, mitochondrial DNA markers, and Y-chromosome markers
- study the population and develop parentage testing for the *Glaucomys sabrinus* and *Tamiasciurus hudsonicus* in the Black Hills, South Dakota and northeastern South Dakota using microsatellite markers

Timeframe 2004 - 2008

Location Black Hills of South Dakota and northeastern South Dakota

Summary or Important Findings

- 59 flying squirrels were tracked with radio telemetry to 133 different den sites. Den sites were drays (nests) in live trees, cavities in live trees and cavities in snags.
- Flying squirrels preferred areas with larger trees and good canopy cover and preferred pine habitat to aspen birch and bur oak.

- Fungi, including truffles and false truffles, comprised more than 90% of the diet of flying squirrels in the Black Hills. Diet analysis was conducted by Dr. Audrey Gabel of Black Hills State University.
- Genetic analyses indicate adequate gene flow between populations within the Black Hills, but a lack of genetic exchange outside the Hills.

Best contact person Alyssa Kiesow, Northern State University

More Information

Hough, M.J. 2008. Research techniques, habitat use, and ecology of northern flying squirrels, and research techniques and distribution of red squirrels in the Black Hills National Forest and northeastern South Dakota. M.S. Thesis, South Dakota State University, Brookings.

Kiesow, A.M. 2008. Genetic structure of Northern flying squirrel (*Glaucomys sabrinus*) and red squirrel (*Tamiasciurus hudsonicus*) populations in the Black Hills. PhD Dissertation, University of South Dakota, Vermillion.

Scientific publications resulting from this project:

Hough, M.J. and C.D. Dieter. 2009. Summer nest tree use by northern flying squirrels in the Black Hills, South Dakota. *American Midland Naturalist* 162:98-111.

Hough, M.J. and C.D. Dieter. 2009. Home range and habitat use of northern flying squirrels in the Black Hills, South Dakota *American Midland Naturalist* 162:112-124.

Kiesow, A.M., L.E. Wallace, and H.B. Britten. 2011. Characterization and isolation of five microsatellite loci in northern flying squirrels, *Glaucomys sabrinus* (Sciuridae, Rodentia). *Western North American Naturalist* 71: 553-556.

Kiesow, A.M., E.M. Monroe, and H.B. Britten. 2012. Genetic structure of the arboreal squirrels *Glaucomys sabrinus* and *Tamiasciurus hudsonicus* in the North American Black Hills. *Canadian Journal of Zoology* 90(9): 1191-1200.

Hough, M. and C. Dieter. 2013. Relative abundance of northern flying squirrels and red squirrels in different forest types, Black Hills, South Dakota. *Great Plains Research* 23:25-31.