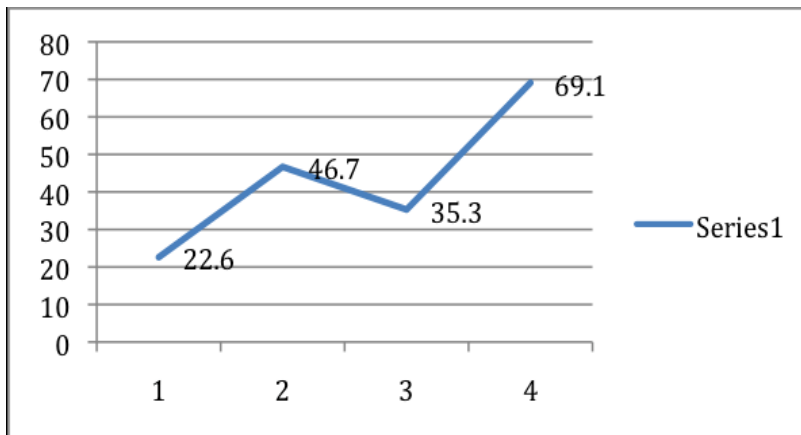


Evaluation of Genetic Structure and Population Estimate in New Jersey Black Bears (*Ursus americanus*) Prepared by: Northeast Wildlife DNA Laboratory, East Stroudsburg University, East Stroudsburg, PA; Huffman et al. 2010.

Genetic data was used to estimate the population size of black bears in New Jersey and to evaluate population structure and genetic relationships. The New Jersey Division of Fish and Wildlife (NJDFW) provided tissue samples collected from hunter harvested bears and research trapped bears from New Jersey bear management zones (BMZs) 1-4. Black bear DNA was analyzed for genetic diversity to calculate an effective population size (EPS) value. The ratio of change for EPS values among years can be used to measure the growth or decline of the bear population. EPS values were calculated for BMZs 1 and 3 (the area north of Rt. 80 and west of Rt. 287) at four points in time (2001, 2003, 2005 and 2009). The 2009 estimate for BMZs 1 and 3 is based on a 2001 population estimate of 1,146 bears, which is the 2001 peer reviewed estimate for this area (1,777) minus the bears harvested in 2003 and 2005 (631).



Effective population size values for NJ black bears from 2001 (1), 2003 (2), 2005 (3) and 2009 (4).

The decrease in EPS values from 46.7 (2003) to 35.3 (2005) may be the result of the bear hunt conducted in 2003.

The data indicates a steady increase in the effective population size of black bears for the area north of Rt. 80 and west of Rt. 287. The ratio of change in EPS values from the 2001 to 2009 is approximately 3:1. The estimated bear population for the area north of Rt. 80 and west of Rt. 287 is 3,438 in 2009.

The genetic structure of the population shows no evidence of increasing genetic isolation with geographic distance in New Jersey. The bears are not restricted in their movements and highways and other land use features do not appear to be a barrier to movement among BMZs. Data indicates the maturing NJ bear population is developing its own genetic character. Results of this study confirm inter-breeding with Pennsylvania bears, however more data is needed to confirm inter-breeding with NY bears, although this appears likely. Additional sampling is recommended to confirm the tri-state nature of the New Jersey bear population.