FOWS 6450 - Graduate Student Assignment - Bush
4/28/24
Case Study Memo

Introduction:

In Alabama, conflict exists between black bears (*Ursus Americanus*) and humans. This case study attempts to pinpoint key issues, stakeholders, drivers, and outcomes of this conflict. The black bear population has been reduced dramatically from the historical extent in the southeastern United States at an alarming 80% reduction (Draper et al, 2017). While bears play a critical and complex role in the ecosystem, often called “ecosystem engineers" by environmental scientists (U.S. D.O.I, 2016), the habitat reduction and genetic isolation due to human factors is threatening to eliminate bears from that role.

Background:

While many black bears have set home ranges, most are known to migrate seasonally when pressured for food. From the 1980s-1990s, 206 radio-collared bears’ seasonal movements were monitored in the Minnesota area (Noyce & Garshelis, 2011). Late summer was the most common time for bears to leave their home range in search of abundant food sources. In preparation for hibernation, bears will attempt to gorge themselves on a high-caloric diet in order to build up enough energy to last through the winter. For bears with enough food within their home range, travel was an unnecessary risk. However, for those in need of food, movement became essential. One trend noticed was that male bears were more likely to travel beyond their home range as well as farther than female bears. This migratory pattern is critical for bears to intermingle, eat, and fulfill their role in the ecosystem.

Restrictions to these migratory patterns create conflict, which is exactly what has happened in the Mobile Bay area in southern Alabama. Alabama currently has two small populations of black bears. One exists in the Mobile River Basin, while the second exists in the northeast corner of the state. A team of scientists from Auburn University evaluated the genetic diversity of these two populations and measured the factors that can influence diversity including population size and genetic connectivity to surrounding populations (Draper et al, 2017). They identified 135 unique individual bears in the Mobile River Basin, while 32 bears were identified in northeast Alabama. Due to the small population size, the genetic structure and interaction between Alabama bears and those in Georgia, Mississippi, Florida, and Tennessee are essential for maintaining genetic diversity. To ensure population growth, further research to determine if natural or man-made barriers to the bears' range exist is crucial.

Evaluations/Outcomes:

In northeast Alabama, studies from the Alabama Department of Conservation and Natural Resources have shown the bear population is healthier and growing more rapidly than in the Mobile River Basin. The Mobile-area's bear population is at risk due to genetic isolation, habitat loss, and inbreeding (Rainer, 2022). There is more hope for the northern Alabama population than the bears in Mobile, and one of the key factors is how little access the Mobile River Basin bears have to other bear populations. Even during summer when many bears are migrating to find food, the Mobile population has human barriers to contend with. The roads, highways, and neighborhoods surrounding the Mobile River Basin make summer travel a danger-filled gauntlet for bears here. Researchers have suggested the “last-resort” method of translocating bears into the Mobile River Basin to increase the genetic diversity and prolong the populations existence (Draper et al, 2017), but this solution does not provide for the long term migrational needs.

Reflection/Summary:

There is a great deal to learn about Alabama's bear population and management practices. It can be frustrating to know that the bear population has decreased so dramatically in the southeast. However, there is a future for the black bears in Alabama due to the growing restoration effort. Both natural (canyons or floods) and man-made (interstates or cities) barriers to roam can lead to more population isolation, like what is happening in the Mobile River Basin. More research should be focused on identifying barriers and finding management solutions to ensure genetic diversity.

Citations: APA

Draper JP, Waits LP, Adams JR, Seals CL, Steury TD. (2017). Genetic health and population monitoring of two small black bear (Ursus americanus) populations in Alabama, with a regional perspective of genetic diversity and exchange. PLoS ONE 12(11): e0186701.

Noyce, K. V., & Garshelis, D. L. (2011). Seasonal migrations of black bears (Ursus americanus): causes and consequences. *Behavioral Ecology and Sociobiology*, *65*(4), 823–835. http://www.jstor.org/stable/41414570

Rainer, D. (2022, March 31). *Black Bear Cubs collared in Northeast Alabama*. Outdoor Alabama. https://www.outdooralabama.com/articles/black-bear-cubs-collared-northeast-alabama

U.S. D.O.I. (2016, April 18). *Understanding & Managing bears*. National Parks Service. https://www.nps.gov/subjects/bears/managing.htm#:~:text=Bears%20are%20considered%20ecosystem%20engineers,the%20forest%20surrounding%20salmon%20streams.