**Estimating Black (*Ursus americanus*) and Brown (*Ursus arctos*) Bear Minimum Population Size in Gustavus, Alaska Using Noninvasive Genetic Sampling: Implications for Determining the Effect of Human Caused Mortality on Population Size**

By

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 Glacier Bay National Park (GLBA) lies within one of the largest protected wilderness area in the world. Wildlife within GLBA is managed by the National park Service (NPS) in accordance to the Organic Act of 1916. Wildlife on the adjacent private and state land to the south is under the management of Alaska Department of Fish and Game (ADF&G). Black (*Ursus americanus*) and brown (*U. arctos)* bears are important for wildlife viewing opportunities within GLBA as well as provide sport hunting opportunities in areas surrounding the park such as Gustavus. Very little is known about bear population demographics in and around GLBA. Bears continually cross jurisdictional borders making interagency collaboration essential for co-management. There has never been a population study done on black or brownbears within GLBA and its surrounding areas.

 I will be using noninvasive genetic tagging by collecting hair from opportunistically found rub trees as well as baited hair traps. My study area is comprised of 200 square kilometers that is divided by a jurisdictional boarder between NPS and ADF&G lands. Over the course of two years I will collect samples and have them analyzed by Wildlife Genetics International. The genetic markers found from the collected samples will then be analyzed using mark-recapture models. Using these models I will be able to determine a minimum number of black and brown bears within the study area. I will also look at the numbers of human-caused mortality of bears from the past decade to determine trends in bear mortality to assist in future bear management decisions. By understanding bear distribution, sources of mortality, and factors contributing to bear/human conflicts, education and outreach can be used to minimize negative interactions between bears and people. This project is the beginning of a cooperative agreement between the NPS and ADF&G to ensure that bear harvest levels are sustainable and to join efforts to minimize any unnecessary loss of two of the area’s most valuable species.