ANNUAL REPORT ON VITAL SIGNS MONITORING OF DISTRIBUTION AND ABUNDANCE OF WOLVES IN DENALI NATIONAL PARK & PRESERVE

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Executive Summary

Wolves have been monitored with the use of radio collars in Denali National Park and Preserve since 1986 (Mech et al., 1998). During 1995, 15 wolf packs that lived within or partly within the park/preserve boundaries were monitored with radio collars. A total of 30 different wolves were monitored for part or all of 2005. Twelve wolves were captured and radio-collared during the year. Of eight collared wolves that died in 2005, three were legally killed by humans outside of the park/preserve boundaries (two shot, one snared). The estimate of wolf density in March 2005 was 4.51 wolves per 1000 square kilometers, near the low end of the range of wolf densities (3.1 to 7.8 wolves per 1000 square kilometers) observed in late winter during the last 19 years in Denali. The relatively low wolf density is likely the result of low numbers of available prey, following declines in the size of the Denali caribou herd and a series of mild winters that made ungulates less vulnerable to predation.

Key Words

WOLVES - ALASKA - PREDATOR - CANIS - TELEMETRY

Introduction

This report summarizes efforts to monitor wolves (*Canis lupus*) in Denali National Park and Preserve (DENA), Alaska, in calendar year 2005. Wolves occur in all three parks of the Central Alaska Monitoring Network (CAKN) and are one of six keystone large mammal species in interior Alaska. Wolves are of great importance to people from both consumptive and non-consumptive viewpoints, and to the ecosystem as a whole. From a monitoring standpoint, wolves are considered to be good indicators of long-term habitat change within park ecosystems because they depend on healthy populations of large ungulate prey, which in turn respond to vegetation, weather and other habitat patterns across the entire landscape (Mech and Peterson 2003, Fuller et al. 2003). As a top predator, wolves may play a key role in influencing ungulate populations, and as a result may influence vegetation patterns (Miller et al. 2001, Ripple and Beschta 2003). The effects of wolves on ungulate populations may be important determinants of ungulate availability for subsistence harvest on NPS park and preserve lands in Alaska, and harvest by the general public on NPS Preserve lands (National Park Service 2003).

Wolves are a species specifically identified in the enabling legislation and management objectives of all three CAKN parks (U. S. Congress 1980). Wolves are of great importance to park visitors because of the unique opportunities to view wolves in Alaskan parks. While the primary objectives of monitoring will be to track the distribution and abundance of wolves, a variety of accessory data will be obtained in the monitoring process, that are likely to have great value for wildlife management and research. The body of data on wolf populations in Alaska parks is of great value in developing scientific models of predator/prey systems. In heavily visited portions of the parks, managers may want to know the locations of active wolf dens and rendezvous sites so that they can be protected from disturbance. When intensive wolf harvest or wolf control take place near parks, it is vital to know the patterns of travel of park packs, in order to determine whether they are being significantly impacted by activities outside the parks. Data

on the genetic and morphological characteristics of wolves, obtained as a sidelight to wolf capture, will be important in evaluating long-term changes in wolf populations in Alaska.

Methods and Materials

Methods of wolf monitoring used in Denali in 2005 followed the draft wolf monitoring protocol for the Central Alaska Monitoring Network (Meier et al. 2004). However, the determination of wolf pack territories (Figure 1) was not rigorously calculated using the 95% of locations that would produce the smallest home range. Appropriate software must be found or developed in order to automate this task. The present wolf pack territories were produced by removing, by hand, selected points that were thought to represent extraterritorial forays or pre-dispersal movements by the collared animals.

Results

Twelve wolves were captured and radio-collared in 2005. Morphological data was gathered from captured wolves, and blood and tissue samples taken for genetics and disease analysis. During 2005, 30 different radio-collared wolves from 14 packs were monitored. Collared wolves were located approximately twice per month, resulting in 578 locations of collared wolves from aircraft. In addition, daily locations were obtained from 7 wolves that wore GPS collars in 2005. The Telonics GPS collars used on wolves obtain one location each day and store the location coordinates within the collar. The data is uploaded weekly through the ARGOS satellite system, and also stored on board so that all data can be uploaded when the collar is retrieved.

Eight radio-collared wolves died during 2005. Three were legally killed outside of the park/preserve (one was snared, and two were shot). Three collared wolves died of natural causes (probably starvation), and two others were not examined soon enough to determine their cause of death.

As of April 1, 2005, we observed 66 wolves in 15 packs, covering an area of 14,630 square kilometers, mostly within the boundaries of Denali National Park and Denali National Preserve, north of the Alaska Range (Figure 1). This produced a density estimate of 4.51 wolves per 1000 square kilometers.

Discussion

Since 1986, estimated wolf density in Denali has varied from about 3 to 10 wolves per 1000 square kilometers. The estimated density in spring 2005, at 4.51 wolves per 1000 square kilometers, was thus near the low end of the observed range. Relatively low numbers of caribou in the Denali herd, along with a series of mile winters, have probably resulted in low numbers of vulnerable prey (primarily moose, caribou and sheep) for wolves to kill. In the past, higher numbers of wolves generally followed more severe winters when ungulates were more vulnerable to predation. [note: as of this writing in late winter 2005-2006, wolf numbers in

Denali have apparently rebounded, with an estimated density of 6.7 wolves per 1000 square kilometers].

Genetic analysis of specimens from Denali wolves, in cooperation with the USGS/BRD genetics laboratory in Anchorage. Blood samples are also screened for disease antibodies and archived for other testing by the Alaska Department of Fish and Game.

Plans for Coming Year

In 2006, we plan to maintain contact with approximately 15 wolf packs inside or partly inside Denali National Park and Preserve. Collars will be maintained on 2 to 3 members of each pack if possible. Two additional GPS/ARGOS collars have been purchased and will be deployed on wolves in the park. Monitoring efforts will continue, with wolves being located about twice per month, with extra monitoring flights in spring and fall to document pack sizes

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Figure 1. Wolf Pack Territories and Population Estimate for Denali National Park and Preserve, 2005.