

ANNUAL PROGRESS REPORT - 2009

Black Bear Bait Station Survey Great Smoky Mountains National Park

Introduction

Managing black bears (*Ursus americanus*) requires knowledge of their population fluctuations. Although mark-recapture methods provide the best population estimates, they are labor intensive and expensive. Bait-stations surveys, however, are relatively inexpensive and simple to conduct. Although bait-station surveys do not determine density estimates, they can be used to monitor the relative density, distribution, and activities (Johnson 1982), as well as, general population trends (Salinas 2003) of black bears.

In 1981, black bear bait-station surveys were initiated in Great Smoky Mountains National Park (GRSM) and since have been used to collect baseline information for assessing black bear population fluctuations. This report summarizes the 2009 black bear bait-station survey. The following personnel assisted with the 2009 black bear bait-station survey: Katie Beckner, Caleb Brien, Josh Clark, Logan Degenhart, Joseph Dirmeyer, Joe Evans, Carrie Gindl, Dan Nolfi, Herb Payne, Brad Russell, Bill Stiver, Jason Taylor, Rick Varner, and Joe Yarkovich.

Methods

Baits consisted of 3 partially opened cans of sardines strung approximately 3 meters (8 to 10 feet) from the ground with string. Baits were placed at approximately 0.8-km (0.5-mi.) intervals along roads and trails to systematically and representatively sample the entire park. For each bait-station location, data regarding elevation, overstory and understory vegetation, and distance from the nearest trail or road were recorded on preprinted data sheets. Bait-station locations also were plotted on 7.5 minute U.S. Geological Survey topographic maps or determined using a Garmin portable Global Positioning System receiver

After 5 days, baits were checked for bear visits. Claw marks on trees and/or large tooth-holes in cans provided evidence of a bear visit. Activity was recorded for each bait-station on preprinted data sheets. Percentage visitation was calculated by dividing the number of baits visited by the total number of baits established.

Results

The 2009 black bear bait-station survey was conducted from 1 July to 22 July. Nineteen bait-station routes were established along 338 km (211 mi.) of trails and roads. A total of 389 bait-stations were established. The overall sampling density was 1 bait-station/ 5.33 km².

Percentage visitation ranged from 42.1% along the Bradley Fork route to 100% on the Rabbit Creek, Hazel Creek, and Gregory Bald routes (Table 1). Percentage visitation by section ranged

from 71.6% for the southeast section (Cataloochee/Balsam Mountain) to 90.1% for the northwest section (Elkmont/Cades Cove) (Table 1). Overall percentage visitation was 82.5% (Table 1).

Discussion

The overall percent visitation was the highest ever recorded for the survey (Figure 1), increasing from 75.5% in 2008 to 82.5% in 2009 (+7.0%). The record high percent visitation suggests an increase in the bear population and is consistent with anecdotal information of numerous bear sightings by visitors and employees.

Literature Cited

- Johnson, K. G. 1982. Preliminary results of bait-station surveys to monitor relative abundance, distribution, and activities of black bears in the southern Appalachian region. Annu. Sci. Res. Meet. Natl. Park Serv., Southeast Reg. 8:(Abstr.).
- Salinas, R. A. 2003. Modeling the effects of harvesting on black bears in the Southern Appalachians. Ph D. Dissertation. The University of Tennessee, Knoxville, Tennessee, USA.

Table 1. Black bear bait-station survey results for Great Smoky Mountains National Park, 2009.

Bait-line Location	Number of sites	Number Visited by Bears	Percent Visitation
<u>Cataloochee-Balsam Mountain Section</u>			
Mt. Sterling/Pretty Hollow Gap/Cataloochee	15	14	93.3%
Cataloochee Divide	22	16(1) ^a	72.7%
Heintooga/Round Bottom Road	32	25	78.1%
AT/Bradley Fork/Smokemont	19	8(1) ^a	42.1%
Subtotal	88	63(2)^a	71.6%
<u>Cosby/Mt. Leconte Section</u>			
Big Creek/Low Gap/Cosby	20	10	50.0%
Greenbriar/Low Elev. Tr./Texas Creek	32	31	96.9%
AT/Mt. Leconte/Trillium Gap/Greenbriar	23	16	69.6%
Subtotal	75	57	76.0%
<u>Deep Creek/Fontana 20 Mile Section</u>			
Noland Divide Trail	21	18	85.7%
Silers/Welch Ridge/Hazel Creek	28	28	100%
20-Mile/Wolf Ridge/Gregory/Birch SpringLoop	31	26	83.9%

Table 1. Continued.

Bait-line Location	Number of sites	Number Visited by Bears	Percent Visitation
Eagle Creek	15	11	73.3%
Clingman's Dome/ ^b Silers	7	4	57.1%
Subtotal	102	87	85.3%
<u>Elkmont/Cades Cove Section</u>			
Cove Mountain Trail	16	14	87.5%
Sugarland Mountain Trail	22	18	81.8%
Silers/Miry Ridge/ Elkmont	21	19	90.5%
Bote Mountain/Spence/ Russell/Anthony Creek	21	20	95.2%
Hannah Mountain/ Rabbit Creek	22	22	100%
Sam's Gap/Gregory Bald	8	8	100%
Rich Mountain Road	14	13	92.9%
Clingman's Dome/ ^b Silers	7	4	57.1%
Subtotal	131	118	90.1%
Totals	389	321(2)^a	82.5%

^aNumber in parenthesis indicate the number of sites that were taken by other animals.

^bThis line ran the boundary between two sections and was used for subtotals for both surveys; duplication was omitted in total

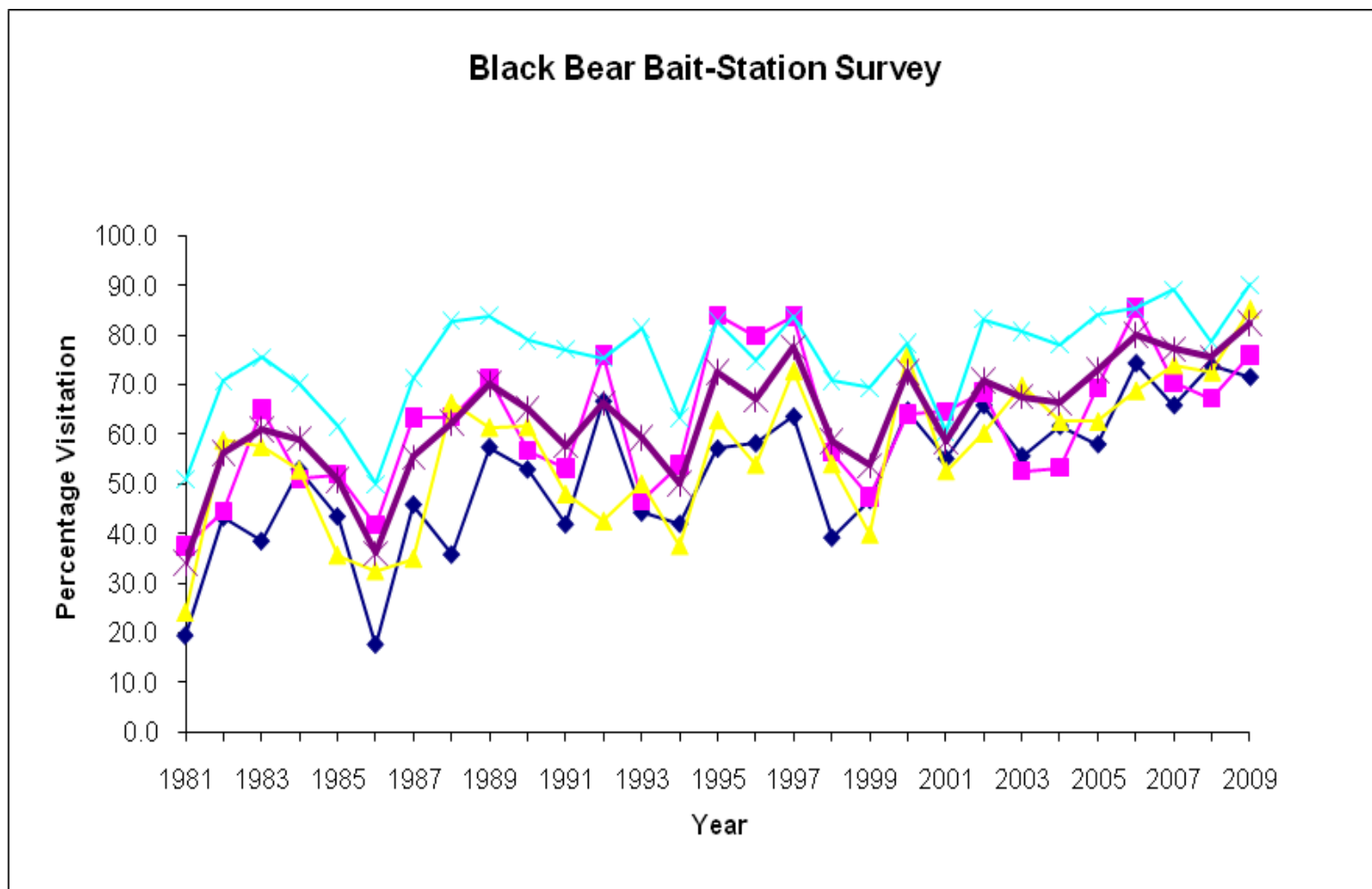


Figure 1. Black bear bait-station survey for Great Smoky Mountains National Park, 1981-2009.