

ANNUAL PROGRESS REPORT - 2008

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 of black bears (Johnson 1982).

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 of the 2008 black bear bait-station survey. The following personnel assisted with the 2008 black bear bait-station survey: Seth Brown, Jay Carr, Dani Cessna, Joe Evans, Dan Nolfi, Andrew Partin, Bill Stiver, Rick Varner, Bobby Watson, 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 2008 black bear bait-station survey was conducted from 2 July to 23 July. Nineteen bait-station routes were established along 338 km (211 mi.) of trails and roads. A total of 375 bait-stations were established. The overall sampling density was 1 bait-station/ 5.41 km².

Percentage visitation ranged from 11.11% along the Silers route to 100.0% on Rabbit Creek/Hannah mountain route (Table 1). Percentage visitation by section ranged from 67.16% for the northeast section (Cosby/Mt. LeConte) to 78.74% for the northwest section (Elkmont/Cades

Cove) (Table 1). Overall percentage visitation was 75.46% (Table 1).

Discussion

The overall percent visitation decreased from 77.2% in 2007 to 75.5% in 2008 (-1.74%). In the western halves of the park the visitation rates decreased from 82.4% in 2007 to 76.0% in 2008 (-6.4%). The visitation rates in the eastern halves of the park increased from 68.0% in 2007 to 70.9% in 2008 (+2.86%). Despite the slight decrease, the visitation rate remains relative high, suggesting a high density of bears in the Park.

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.).

Table 1. Black bear bait-station survey results for Great Smoky Mountains National Park, 2008.

Bait-line Location	Number of sites	Number Visited by Bears	Percent Visitation
<u>Cataloochee-Balsam Mountain Section</u>			
Mt. Sterling/Pretty Hollow Gap/Cataloochee	16	11	68.8%
Cataloochee Divide	22	14	63.6%
Heintooga/Round Bottom Road	32	30	93.8%
AT/Bradley Fork/Smokemont	14	7	50.0%
Subtotal	84	62	73.8%
<u>Cosby/Mt. Leconte Section</u>			
Big Creek/Low Gap/Cosby	16	9	56.3%
Greenbriar/Low Elev. Tr./Texas Creek	30	27	90.0%
AT/Mt. Leconte/Trillium Gap/Greenbriar	21	9	42.9%
Subtotal	67	45	67.2%
<u>Deep Creek/Fontana 20 Mile Section</u>			
Noland Divide Trail	19	13	68.4%
Silers/Welch Ridge/Hazel Creek	35	29(2) ^a	82.9%
20-Mile/Wolf Ridge/Gregory/Birch SpringLoop	30	23	77.3%

Table 1. Continued.

Bait-line Location	Number of sites	Number Visited by Bears	Percent Visitation
Eagle Creek	13	11	84.6%
Clingman's Dome/ ^b Silers	9	1	11.1%
Subtotal	106	77(2)	72.6%
<u>Elkmont/Cades Cove Section</u>			
Cove Mountain Trail	16	13	81.3%
Sugarland Mountain Trail	19	15	79.0%
Silers/Miry Ridge/ Elkmont	18	13	72.2%
Bote Mountain/Spence/ Russell/Anthony Creek	21	19(2) ^a	90.5%
Hannah Mountain/ Rabbit Creek	22	22	100%
Sam's Gap/Gregory Bald	9	9	100%
Rich Mountain Road	13	8(1) ^a	61.5%
Clingman's Dome/ ^b Silers	9	1	11.1%
Subtotal	127	100(3)^a	78.7%
Totals	375	283(5)^a	75.5%

^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

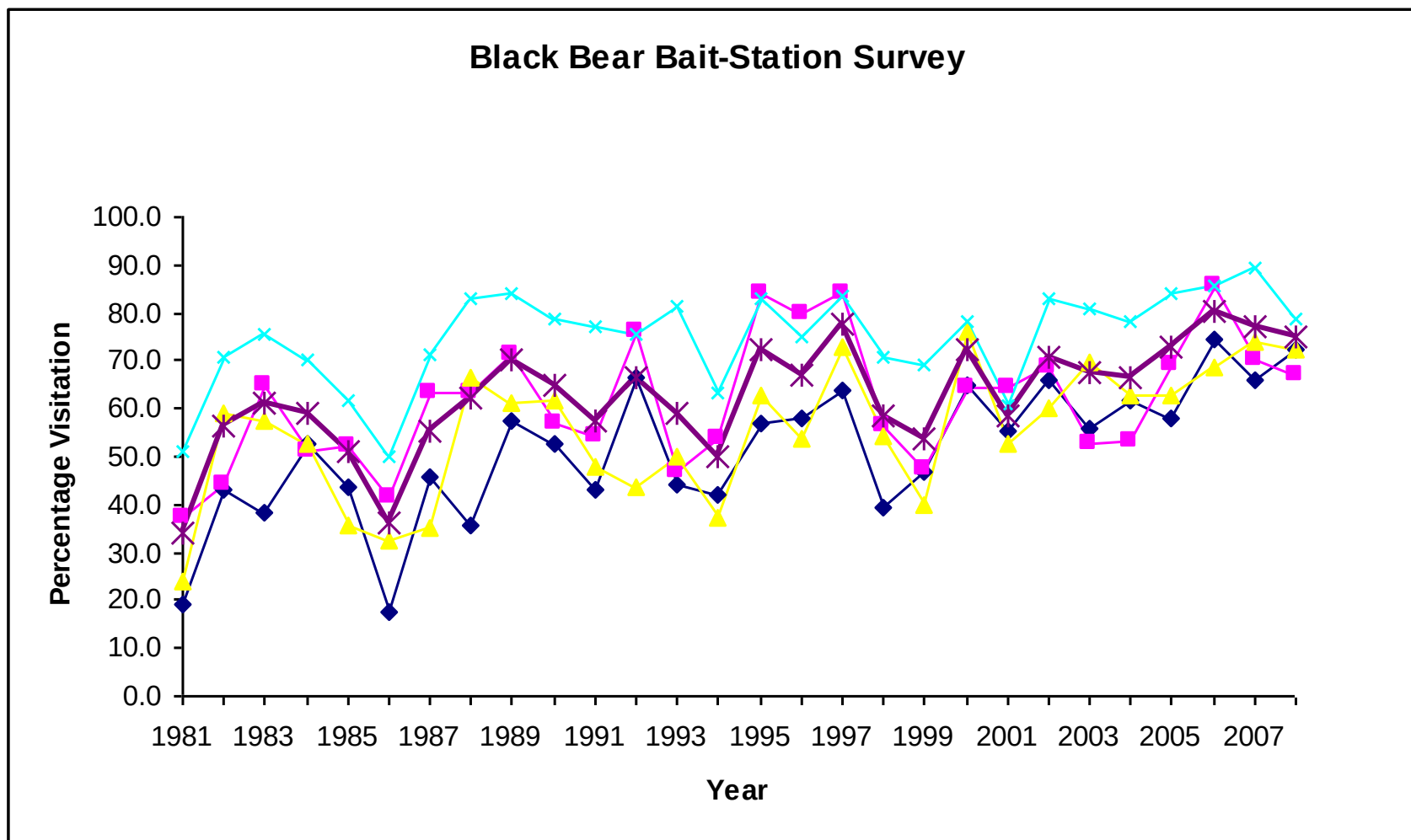


Figure 1. Black bear bait-station survey for Great Smoky Mountains National Park, 1981-2008.