

ANNUAL PROGRESS REPORT - 2007

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 2007 black bear bait-station survey. The following personnel assisted with the 2007 black bear bait-station survey: Forrest Easterly, Mike Fink, Andrew Herrington, Aaron Johnson, Dan Nolfi, Andrew Partin, Jake Payne, Dawn Pekarchick, Kyle Sams, Bill Stiver, 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 Global Positioning System.

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 2007 black bear bait-station survey was conducted from 5 July to 1 August. Nineteen bait-station routes were established along 338 km (211 mi.) of trails and roads. A total of 378 bait-stations were established. The overall sampling density was 1 bait-station/ 5.1 km².

Percentage visitation ranged from 22.2% along the Big Creek/Cosby route (Big Creek trail and Low Gap trail) to 100.0% along Rich Mountain Road (Table 1). Percentage visitation by section ranged from 65.9% for the southeast section (Cataloochee/Balsam Mountain) to 89.1% for the

northwest section (Elkmont/Cades Cove) (Table 1). Overall percentage visitation was 77.2%.

Discussion

The overall percent visitation decreased from 80.1% in 2006 to 77.2% in 2007. However, there were notable differences between the eastern and western halves of the Park. In the eastern half of the Park, visitation rates decreased from 79.5% to 68.0% (-11.5%). However, in the western half of the Park, visitation increased from 80.4% to 82.4% (+2%); these differences are likely due to food availability.

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, 2007.

Bait-line Location	Number of sites	Number Visited by Bears	Percent Visitation
<u>Cataloochee-Balsam Mountain Section</u>			
Mt. Sterling/Pretty Hollow Gap/Cataloochee	12	3	25.0
Cataloochee Divide	21	15	71.4
Heintooga/Round Bottom Road	31	25	80.6
AT/Bradley Fork/Smokemont	18	11	61.1
Subtotal	82	54	65.9
<u>Cosby/Mt. Leconte Section</u>			
Big Creek/Low Gap/Cosby	18	4	22.2
Greenbriar/Low Elev. Tr./Texas Creek	28	25	89.3
AT/Mt. Leconte/Trillium Gap/Greenbriar	25	21	84.0
Subtotal	71	50	70.4
<u>Deep Creek/Fontana 20 Mile Section</u>			
Noland Divide Trail	20	17	85.0
Silers/Welch Ridge/Hazel Creek	29	20 (1) ^a	68.9
20-Mile/Wolf Ridge/Gregory/Birch Spring Loop	31	25	80.6

Table 1. Continued.

Bait-line Location	Number of sites	Number Visited by Bears	Percent Visitation
Eagle Creek	16	11	68.8
Clingman's Dome/ ^b Silers	8	4	50.0
Subtotal	104	77 (1)	74.0
<u>Elkmont/Cades Cove Section</u>			
Cove Mountain Trail	13	12	92.3
Sugarland Mountain Trail	22	21	95.5
Silers/Miry Ridge/ Elkmont	18	16	88.9
Bote Mountain/Spence/ Russell/Anthony Creek	24	20	83.3
Hannah Mountain/ Rabbit Creek	22	21	95.5
Sam's Gap/Gregory Bald	9	8	88.9
Rich Mountain Road	13	13	100
Clingman's Dome/ ^b Silers	8	4	50.0
Subtotal	129	115	89.1
Totals	378	292 (1)	77.2

^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 totals.

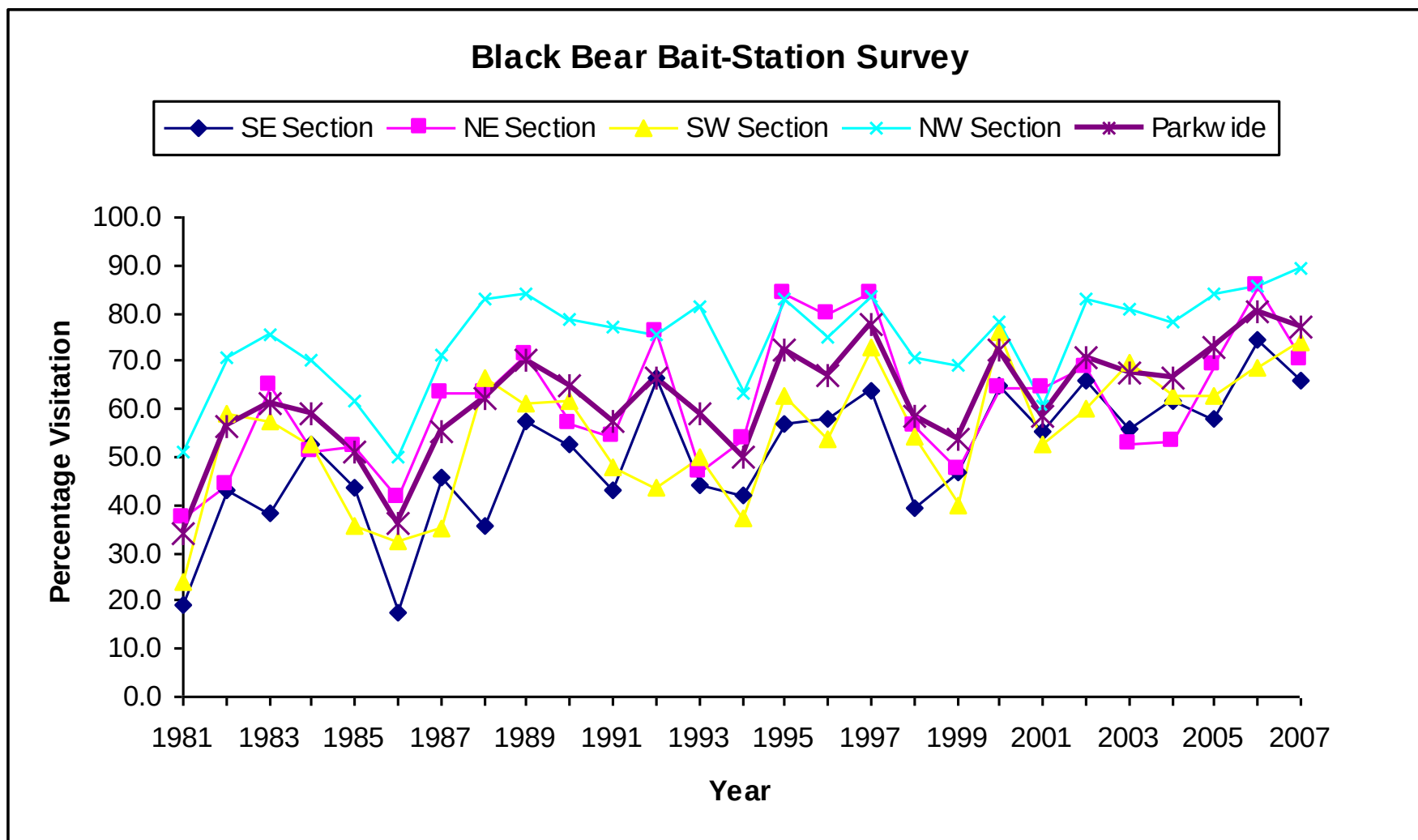


Figure 1. Black bear bait-station survey for Great Smoky Mountains National Park, 1981-2007.