RELATIONSHIPS BETWEEN THE AMERICAN BROWN BEAR POPULATION AND THE BIGFOOT PHENOMENON

ETHAN A. BLIGHT
Blight Investigations, Gainesville, FL

ABSTRACT

Misidentification of the American brown bear (Ursus arctos, Ursus arctos horribilis, Ursus arctos middendorffi) is often named as a possible source of the Bigfoot phenomenon. Bigfoot report data and American brown bear population data are presented and analyzed to identify any relationship between the two.

1. INTRODUCTION

Bigfoot believers and disbelievers alike have always been aware that, in theory, a person might mistake certain animals for Bigfoot. One of these animals is the bear. No person can deny that such misidentification is possible. It is clear that it *can* happen.

The question to be addressed in this paper is this: does it happen? The majority of the so-called skeptical community believes that it does, and that misidentification of common species of bear contributes a significant portion of Bigfoot reports. However, they have produced little in the way of actual examples to support this opinion. Hence the question of bear misidentification, and the degree to which it contributes to Bigfoot reporting, has always been unresolved.

2. GREEN'S SIGHTING DATA

Bigfoot researcher John Green claimed to have collected over 1,500 Bigfoot reports as of the 1981 printing of his book. Green's national sighting data as of November 1977 is summarized in Table 1 (Green 1981). This data is analyzed to determine if misidentifications of the American brown bear (Ursus arctos) is a significant contributor to the Bigfoot phenomenon.

TABLE 1
GREEN SIGHTING DATA AND BROWN BEAR POPULATION STATISTICS

Case (1)	State (2)	Brown/Grizzly Bear Population (3)	Sq. Mi. (4)	Brown/Grizzly Bear Pop. / Sq. Mi. (5)	Freq. (6)	Cluster Group (7)
1	Alaska	31,250	550,000	0.0568	20	A
2	Montana	681	147,138	0.0046	74	A
3	Oregon	0	96,981	0	176	A
4	Washington	15	68,192	0.0002	281	A
5	N. California	0	79,347	0	294	A
6	S. California	0	79,347	0	49	B
7	Idaho	30	83,557	0.0004	32	A
8	Wyoming	627	94,914	0.0066	4	B
9	South Dakota	0	77,047	0	7	B
10	Nevada	0	110,540	0	5	B
11	New Mexico	0	121,510	0	7	B
12	Florida	0	58,560	0	104	B
13	Texas	0	267,339	0	30	B
14	Arkansas	0	53,104	0	19	B
15	Iowa	0	56,290	0	15	B
16	North Dakota	0	70,665	0	2	B

17	Arizona	0	113,575	0	5	B
18	Kansas	0	82,264	0	6	B
19	Oklahoma	0	69,919	0	9	B
20	Mississippi	0	47,716	0	8	B
21	Nebraska	0	77,227	0	3	B
22	Colorado	0	104,247	0	4	B
23	Missouri	0	69,686	0	10	B
24	Maine	0	33,040	0	4	B
25	Utah	0	84,916	0	2	B
26	Illinois	0	56,400	0	23	B
27	Michigan	0	58,216	0	18	B
28	Georgia	0	58,876	0	10	B
29	Minnesota	0	84,068	0	5	B
30	Indiana	0	36,291	0	15	B
31	Wisconsin	0	56,154	0	8	B
32	Pennsylvania	0	45,333	0	24	B
33	Tennessee	0	42,244	0	9	B
34	Kentucky	0	40,395	0	7	B
35	West Virginia	0	24,181	0	6	B
36	Ohio	0	41,222	0	19	B
37	Alabama	0	51,069	0	5	B
38	South Carolina	0	31,055	0	6	B
39	Louisiana	0	48,523	0	5	B
40	New Hampshire	0	9,304	0	5	B
41	North Carolina	0	52,712	0	5	B
42	New Jersey	0	7,836	0	36	B
43	Vermont	0	9,609	0	2	B
44	New York	0	49,476	0	11	B
45	Virginia	0	40,815	0	4	B
46	Maryland	0	10,577	0	12	B
47	Delaware	0	2,057	0	1	B
48	Connecticut	0	5,009	0	2	B
49	Massachusetts	0	8,257	0	1	B
50	Rhode Island	0	1,214	0	0	B
51	Hawaii	0	10,932	0	-	B
	Mean	639.28	70,177	0.0013	28.18	
	Median	0	56,290	0	7.50	
	Std. Dev.	4,373.96	81,728	0.0080	61.09	
	Std. Err.	612.48	11,444	0.0011	8.64	

3. METHODOLOGY

Green's data will be tested against a simplistic model of expected sighting rates for animals. The probability of receiving a report for a cataloged animal is modeled as:

$$p_r = p_s \cdot p_a \cdot p_h \cdot p_e \qquad \text{(Eq. 1)}$$

where,

p_r is the probability function of receiving a report,

p_s is the probability function that an observation results in a report submission,

p_a is the probability function of an animal being at a specific place and time to be observed,

p_h is the probability function of a human being in a specific place and time to make the observation, and

p_e is the probability function of an observer expecting to observe the phenomenon.

The author assumes that the probability that an observation results in a report submission is geographically uniform, so this reduces to a constant. The probability that a human in a specific place and time makes an observation is directly proportional to human population density. The probability of an animal being in a specific place and time to be observed is directly proportional to the animal's population density. This is modeled on a per-state basis as the population divided by the number of square miles.

4. ANALYSIS

Table 1 is organized on a per-state basis and is ordered in descending normalized frequency (not shown) (Glickman 1998). The "Brown Bear Population" column is the most recent brown bear population figure for each state (Carroll 1993, Dood 1996, Schwartz 1999, Servheen 1990, Murray 1992, Hall 1946). "Sq. Mi." is the number of square miles in the state. "Brown Bear Pop./Sq. Mi. is derived as "Brown Bear Population" divided by "Sq. Mi." The "Freq." column contains Green's reported observation frequencies (Green 1981). "Cluster Group" is the assigned cluster group resulting from cluster analysis (Glickman 1998).

The bivariate correlation coefficient for Table 1 data between frequency and brown bear population density is computed as a baseline prior to data clustering and is called the baseline correlation. The frequency is not well correlated to the brown bear population density across the entire dataset.

Hierarchal cluster analysis has previously been performed by Glickman on the normalized frequency. Cases 1, 2, 3, 4, 5, and 7 were called Group A which consists of Alaska, Montana, Oregon, Washington, Northern California, and Idaho. The remainder of the cases was called Group B. (Glickman 1998)

The same correlation as that computed for the baseline was computed for Group A and B and are summarized in Table 2.

TABLE 2
POST-CLUSTERING CORRELATIONS OF GREEN'S SIGHTING DATA TO BROWN BEAR POPULATION STATISTICS

(1)	Frequency vs. Brown Bear Population Density (2)
Baseline Correlation	-0.0149
Baseline Significance	0.104
Baseline Cases	44
Group A Correlation	-0.5373
Group A Significance	1.274
Group A Cases	6
Group B Correlation	-0.0722
Group B Significance	0.469
Group B Cases	38

5. DISCUSSION

Glickman noted that the report frequency in Group A has a high correlation to human population density. This is consistent with the model of receiving a report of an animal (Eq. 1). Glickman also noted that the report frequency in Group B has a high correlation to human population. He hypothesized that Group B may represent manufactured reports. (Glickman 1998)

If the misidentification of brown bears was a significant contributor to Green's sighting data, and, by extension, to the Bigfoot phenomenon as a whole, a strong positive correlation between brown bear population density and report frequency is expected.

If Group B represents manufactured reports only, no correlation between brown bear population density and report frequency is expected.

No direct relationship is observed between brown bear population density and frequency: the Baseline and Group B correlations of -0.0149 and -0.0722, respectively, are both negative and of a low absolute value. The Group A correlation of -0.5373, though having a high absolute value, is also negative.

Since no correlation was found between brown bear population density and report frequency in Group B, the hypothesis that Group B represents only manufactured reports has not been contradicted.

The significant inverse correlation between brown bear population density and report frequency in Group A is of special interest. As noted above, the correlation between human population density and report frequency in Group A is consistent with the model of receiving a report of an animal. This suggests that some animal species may be responsible for the Bigfoot phenomenon in Group A. However, the correlation between brown bear population density and report frequency in Group A, though significant, is negative, which suggests that misidentification of brown bears is not a significant contributor to the Group A phenomenon.

The inverse relationship means that the number of reported Bigfoot sightings is low wherever brown bear population density is high. If the Bigfoot phenomenon is caused by an animal species, then this inverse relationship suggests that the brown bear and the animal species responsible for the Bigfoot phenomenon tend to avoid each other. This is consistent with the expected behavior of natural enemies.

6. CONCLUSIONS

The goal of this analysis was to determine the degree to which misidentification of the American brown bear contributes to the Bigfoot phenomenon. The lack of significant positive correlation between brown bear population statistics and Green's sighting data suggests that misidentification of brown bears is responsible for only a small fraction of all Bigfoot reports.

The hypothesis that a significant portion of the Bigfoot phenomenon results from misidentification of brown bears has been proved false. Those attempting to study the Bigfoot phenomenon scientifically, especially members of the so-called skeptical community, should respond by rejecting this hypothesis, and should in the future refrain from offering the hypothesis as a plausible explanation for the Bigfoot phenomenon.

If Bigfoot exists, then it is probably a natural enemy of the American brown bear. Reports from The Bigfoot Research Project (TBRP) include observations of foraging on bear grass and stream fishing for trout. Gigantopithecus' diet may have included fruits. The American brown bear is known to feed on trout, fruits, and various grasses. Competitive exclusion may cause brown bears and Bigfoot to seek separated habitats. The brown bear is also the largest terrestrial carnivore in the world, and has been known to hunt large animals. It is possible that the American brown bear could pose a predatory threat to Bigfoot.

Taken together with the results of Glickman's analysis and the authors prior analysis (Blight 2005), the results in this paper indicate that some species of animal other than the American brown bear or the American black bear is responsible for the Bigfoot phenomenon observed in Alaska, Montana, Oregon, Washington, Northern California, and Idaho. The animal special responsible remains unidentified. The Bigfoot phenomenon in these states may be the result of an uncataloged animal, or it may result from misidentification of some other species of cataloged animal. Eliminating the only two species of bear native to North America as possible causes of the phenomenon, there are few, if any, remaining cataloged animal species that could plausibly be misidentified as Bigfoot. Thus, in the opinion of the author, it is probable that the Bigfoot phenomenon is the result of an uncataloged animal.

REFERENCES

Blight, E.A. 2005, Relationships between the American Black Bear Population and the Bigfoot Phenomenon (Gainesville, FL: Blight Investigations)

Carroll, G.M. 1993, Unit 26A brown/grizzly bear survey-inventory progress report, Management report of survey-inventory activities (Juneau, AK: Alaska Department of Fish and Game)

Dood, A.r., Brannon, R.D., & Mace, R.D. 1986, Final programmatic environmental impact statement for the grizzly bear in northwestern Montana (Helena, MT: Montana Department of Fish, Wildlife and Parks)

Glickman, J. 1998, Toward a Resolution of the Bigfoot Phenomenon (Hood River, OR: North American Science Institute)

Green, J. 1981, Sasquatch, The Apes Among Us (Blaine, WA: Hancock House Publishers, Inc.)

Hall, E.R. 1946, Mammals of Nevada (Berkley and Los Angeles: University of California Press)

Murray, J.A. 1992, The Great Bear – Contemporary Writings on the Grizzly (Seattle, WA: Alaska Northwest Books)

Schwartz, C., & Haroldson, M., Eds. 1999, Yellowstone grizzly bear investigations: annual report of the Interagency grizzly Bear Study Team, 1998 (Bozeman, MT: U.S. Geological Survey)

Servheen, C. 1990, The Status and Conservation of the Bears of the World, Eighth International Conference on Bear Research and Management, Monograph Series No. 2