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## **An alternative explanation to Bigfoot reports**

### **Abstract:**

The purpose of this project is to question the legitimacy of Bigfoot sightings in the western United States while providing an alternate simple explanation, Black bears. I used report data acquired from a paranormal database (BFRO.net) and Black bear range maps to analyze possible correlations between the location and abundance of sightings against population and range of bears. The analysis showed 96% of Bigfoot reports fell within Black bear range and counties with zero to low sightings also contained no bears. Additionally annual fluctuations in Bigfoot sightings show a peak during summer and decline during winter months validating my hypothesis. The analysis, albeit simple, provided a possible alternative explanation to Bigfoot sightings in the western United States. However, other explanations and interpretations of the analysis are possible; Sasquatch and Black bears require the same type of habitat and coexist, and sightings are more abundant during summer because humans don't venture out as much during the winter, for example.

### **Introduction:**

Growing up I've always shown a heightened interest in cryptozoological documentaries not as a believer but as a skeptic. The documentaries follow a general formula that build up hype and suspense then simply end providing zero conclusions leaving viewers frustrated but ready for more. Having viewed countless Bigfoot documentaries and never receiving anything other than more questions I began to attempt to answer the questions for myself. For my project I aim to question the legitimacy of Bigfoot sightings in the western United States by providing a more plausible however simple explanation, Black bears. To do so I plan on using a three prong approach, first I'll compare the abundance of sightings per county with bear population counts, second I'll use GPS locations of sightings against bear range maps to determine what proportion of sightings happen within Black bear habitat, and third using known Black bear ecology and seasonal activity, I hypothesize, Bigfoot reports will follow the seasonal trend with more sightings in late summer / early fall with Black bears at the height of activity and significantly less sightings during winter.

### **Methods:**

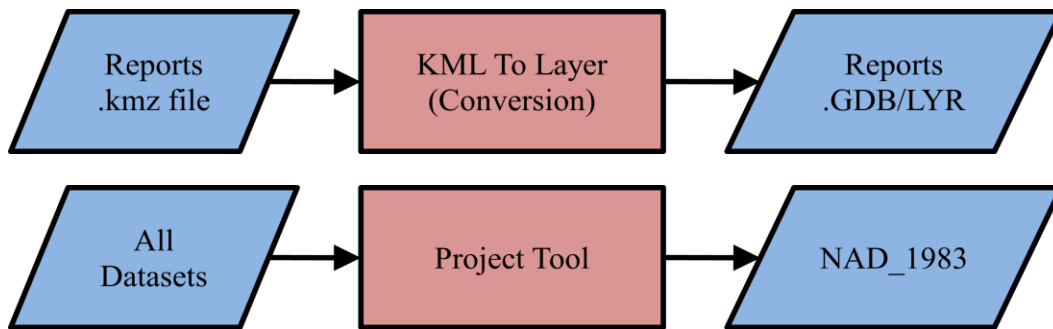
#### **Data acquisition:**

I used numerous vector shape files to complete analysis including, Canada and USA boundaries, California, Oregon, and Washington county boundaries, North American Black bear range, and finally Bigfoot sightings. CA counties, State Basic (USA), and Canada boundaries were

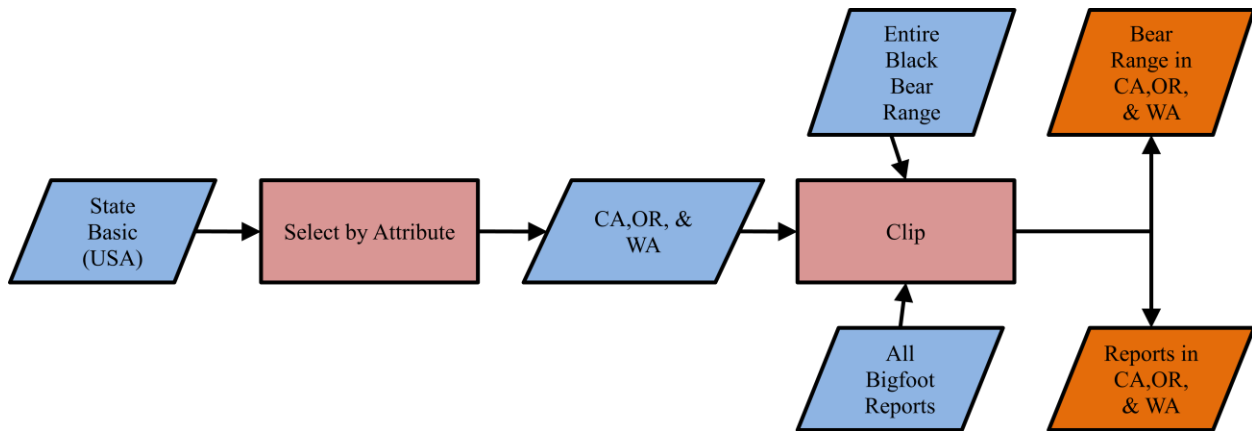
downloaded from Arcgis.com. RCE countries (OR) was acquired from the Oregon spatial library and WAOFM county boundary (WASH) was downloaded from Data.gov. The Black bear range map was acquired for ODI Queensland, a Canadian GIS website. Lastly the most essential data set a .kmz file with all known Bigfoot reports in North America was downloaded from BFRO.net, a cryptozoology hub aiming to legitimize the existence of Sasquatch.

**Processes:**

Before any analysis of data the .kmz file was converted to a file geodatabase and each dataset was projected to a single spatial reference system, NAD 1983.



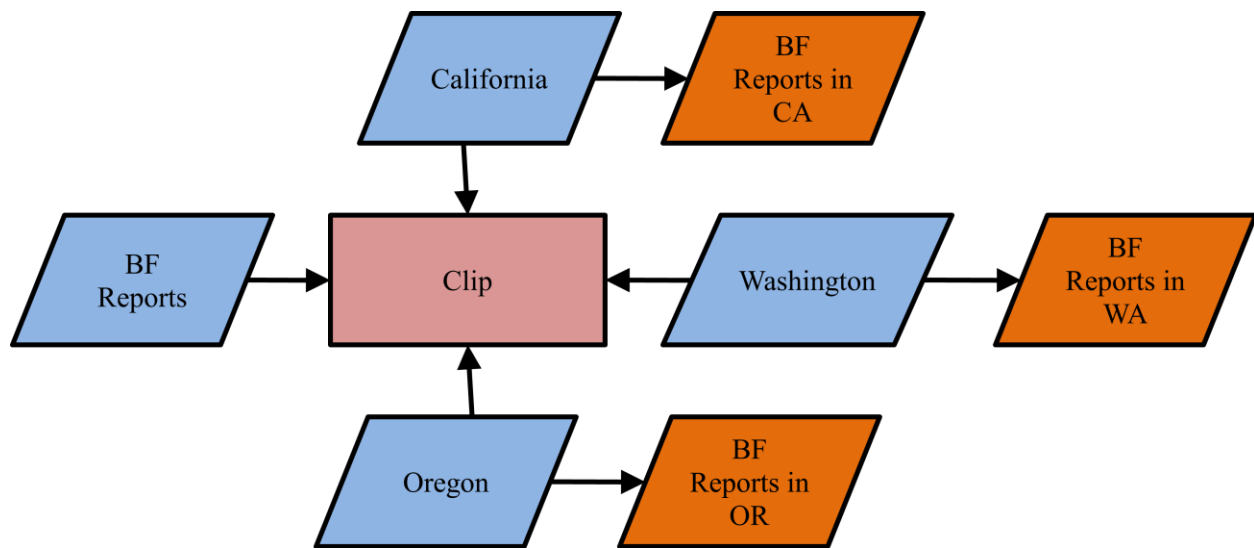
With all layers in the same spatial reference system the black bear range and reports were clipped to the confines of the three states in question.



The first analysis was performed by adding a field into the attribute tables of the three states entitled Bigfoot sightings and manually inputting the number of reports per county (data from BFRO.net) into the attribute table. Once completed a color ramp was used within the symbology tab to display the Bigfoot ‘hotspots’ on a county level across the three states. Additionally another field entitled Black bear presence or absence was added and given a value of 1 or 0. A color ramp using categories rather than quantities was used to show whether black bears are present on a county level across the three states. These two color ramps displayed side by side will more than anything highlight the areas or counties that lack both bears and Bigfoot reports.

The second analysis utilized the previously clipped Reports and Range. By overlaying the Bigfoot reports on top of the Black bear range shape file it becomes visually apparent that a huge majority of sightings occur in Black bear range. Upon counting the sightings outside bear range and dividing it by the total reports 98% occurred within the range.

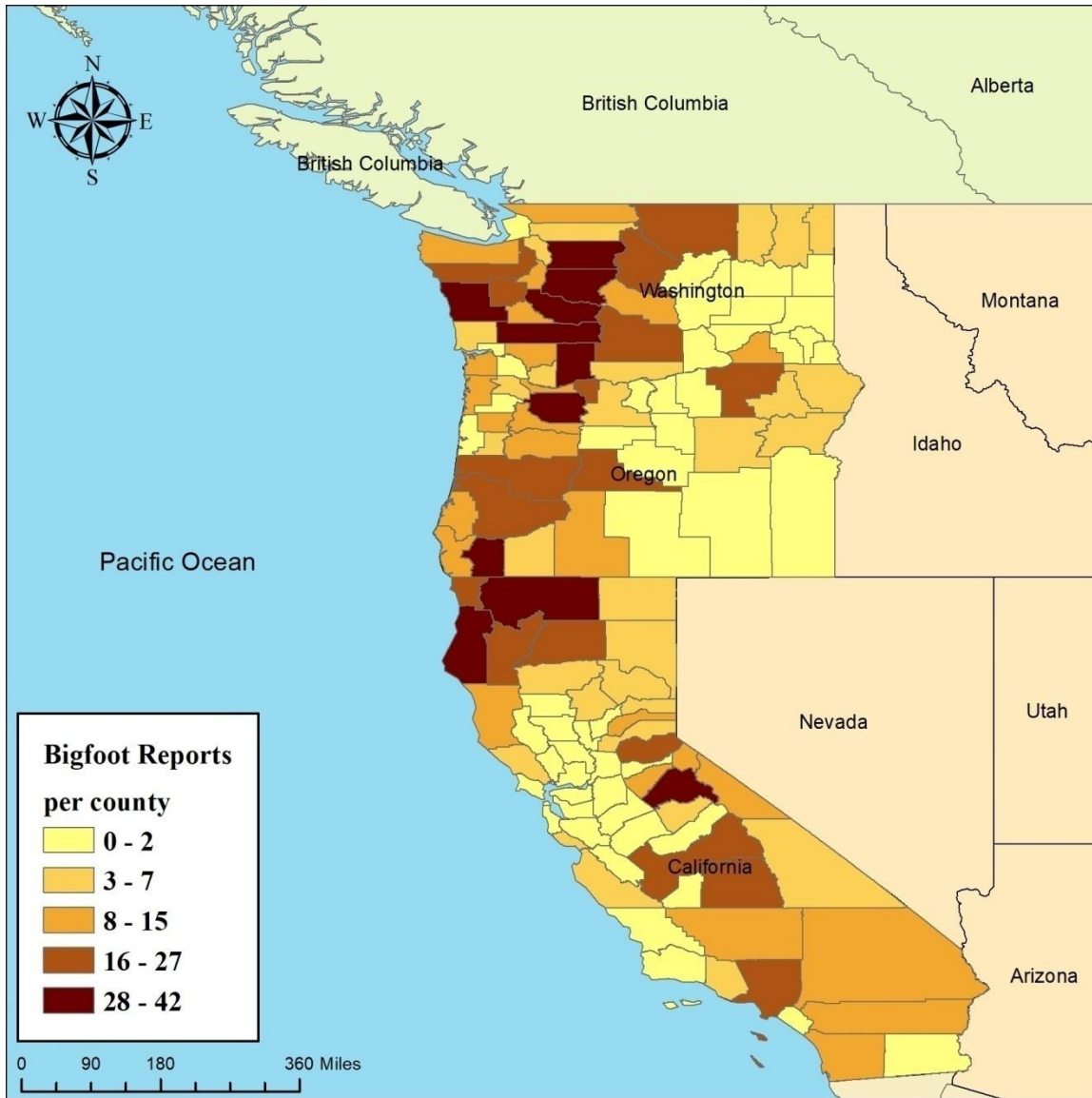
The final analysis was performed using a combination of known Black bear ecology and annual fluctuations in Bigfoot sightings. To perform this analysis the Bigfoot report shapefile was clipped three additional times.



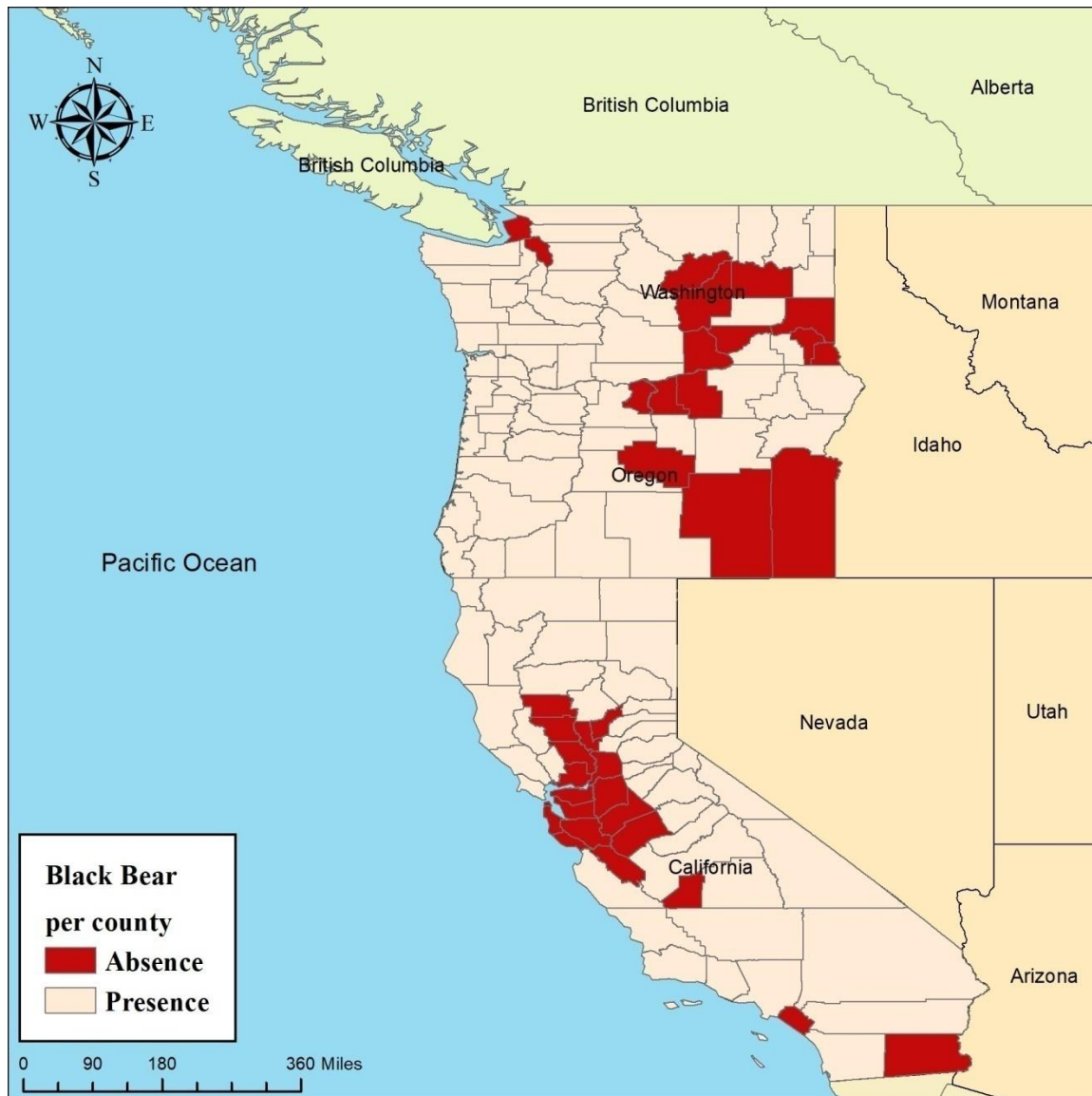
Now with the data more manageable I altered the NAME field within the attribute table (the data originally showed month and year) to display only month for each report. I then used select by attribute tool with the equation, 'NAME'='JAN' for every month and took note of each months count. Process was repeated for each state individually. The counts per month were then inputted into excel and a bar graph for each state was produced to show annual fluctuations in sightings per state.

### **Results:**

When viewed together, map 1 (Report abundance per county) and map 2 (Presence or absence of Black bear per county) visually highlight counties with no Black bear activity also display zero – low Bigfoot reports, additionally counties with a high abundance of reports are always within counties with Black bear presence.



**Map 1:** Shows Bigfoot ‘hotspots’ per county in the western United States using a color ramp.



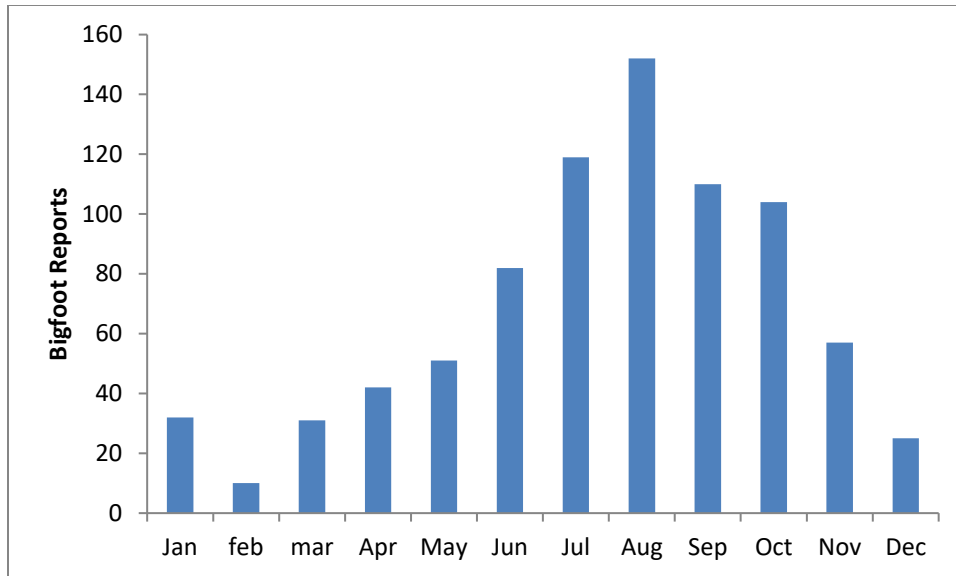
**Map 2:** Shows presence or absence of Black bear populations per county. Absence is highlighted in red.

Using Bigfoot reports with GPS coordinates and a Black bear range map both projected into the same spatial reference system on map 3 displayed below allowed me to calculate the percentage of reports that fell within bear range. 98% of reports are within the confines of the Black bear range map.



**Map 3:** Bigfoot report locations displayed on top of a Black bear range map in the western United States.

Black bear activity and home range size fluctuates with the seasons. Further north Black bears hibernate up to 6 months during winter. Further south they don't have to because winters don't get as cold and food sources are available year round. Activity levels and home range size follow this general rule however, summer equals high activity and larger home range, winter equals less activity. Females den with cubs during winter with the greatest occurrence between December and February. Because of this I expected a correlation showing more sightings during summer months and less during winter. The results of this hypothesis are depicted below using a bar graph.



**Figure 1:** Fluctuation of reports across all three states showing a spike in Bigfoot sightings during summer and a decline in sightings with the onset of winter.

### **Discussion:**

The question asked in this project was have people been mistakenly identify Black bears as Bigfoot and the answer is it's possible. Before getting into the analysis I believed two things would happen; a huge majority of sightings would be within bear range and sightings on an annual basis would follow a structured rise and fall emulating that of black bear activity. After the analysis these two beliefs were correct and can be interpreted in one of two ways, either I'm a genius or it's a coincidence. Bigfoot might just enjoy the same habitat type as bears and as for the seasonal variation in sightings people tend to venture out more during the summer and less during winter giving Figure 1 of results a different interpretation. As with all things paranormal there is huge uncertainty in the level of honesty being displayed by the people reporting the sightings. Additionally a minority of the reports lacked sufficient enough detail to allow the type of analysis I wished to conduct.

### **Conclusion:**

The correlation between Bigfoot sightings and Black bear range/activity is readily apparent as shown in my findings. How one interprets the findings however is a different story. The findings at their current state can be disregarded as coincidental due to their abstract what if nature. Upon completing the project however I do believe in the possibility of my assumption because all analytical steps worked out in my favor and I don't believe that coincidental. As with all things paranormal there is a level of uncertainty, a divide between believers and skeptics which shall remain in spite of my alternative explanation to Bigfoot reports in the western United States.

### **References:**

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Bridges, A.S., Vaughan, M.R. & Klenzendorf, S. 2004: Seasonal variation in American black bear *Ursus americanus* activity patterns: quantification via remote photography. –*Wildl. Biol.* 10: 277-284.

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