

FLORIDA BLACK BEAR RANGE 2016

Abstract: We updated bear range using Concave Hull and Kernel Density Estimator (KDE) utilization models on point locations collected by Florida Fish and Wildlife Conservation Commission (FWC) staff and the public. Data sources included research (captures, radiotelemetry, and hair corrals), management actions (documented roadkills and other mortalities, calls to FWC about bears, captures and subsequent releases in response to conflicts with humans, and surveys for other species), and a new bear sighting registry where the public could submit non-conflict sightings using an internet mapping application. We combined calls and registry data into public sightings because the registry contained many human-bear conflicts. Except research, we used data from the last 3 years (2013-2015) for all sources; we used research data from all years when the locations were on public conservation lands because data in those remote areas was under represented and without it, occurrence was skewed to urban areas. We selected a subset of data from telemetry and public sightings to reduce location bias toward the two largest datasets. The final dataset contained 32,273 locations. The greatest extent of occurrence, combining Concave Hull and KDE results, totaled 110,397.2 km² or 75.6% of Florida. The 95% KDE isopleth was 38,210.7 km² (26.2% of Florida); the 99% isopleth outside the 95% isopleth was 27,237.5 km² (18.6% of Florida); and the area of Concave Hull outside the isopleths was 44,949.0 km² (30.8% of Florida). The remaining portion of Florida was 35,662.5 km². These presence-only data included variations in sampling/reporting effort and observer bias. In addition, the range map has no relation to habitat quality, suitability, or availability because many of the locations in the dataset were documenting bears attracted to human-supplied foods. Although the Concave Hull and KDE isopleths represent varying levels of recent documented bear occurrences, they are not predictions of future events. Because of a substantial increase in bear occurrence data in Florida, we used presence data to create an atlas in our study, with no emphasis on abundance or variations in habitat suitability (Delfin-

Alfonso et al. 2012). We applied a concave hull to create generalized range and a Kernel Density Estimator to objectively identify hotspots of bear occurrences. Updated ranges are important to FWC for managing and predicting human-bear conflicts, estimating potential areas for improving linkages between subpopulations, employing conservation plans, implementing public outreach, and monitoring listing criteria.

