

DRAFT

Determining the Size of the Florida Panther Population

The Florida panther population has been monitored since the 1970's. Experts have historically used field observations (e.g., tracks, scat, captures) to count panthers. The numbers have ranged from as few as 20 in the 1970s up to about 180 after 2012. The population size is used to assess the status of panthers, impacts of management, and to develop conservation strategies. The current method used to track panther numbers is the Minimum Annual Count. Field surveys throughout the year collect verified panther sign (photos, tracks, radiocollared panthers, etc.) that are tallied into the annual count.

Two new methods are currently being developed and tested to assess the population size of panthers, one based on panther road kills and another based on remote camera data. These two methods are being developed and tested now and each should produce **true population estimates**. A true population estimate requires measurements of **sampling effort, detectability and precision**. Measuring **sampling effort** assures consistency each time the population is counted so that estimates are comparable. Measuring **detectability** means figuring out the chance of detecting a panther if it is present (via sign, trail camera photos, captures). The **precision** of any estimate is affected by sample sizes. If you have a small sample, the estimate will have a wide margin of error (the "+ or -" often seen in polls). Techniques with low precision (wide margins of error) are not very informative regarding the current state of a population.

Minimum Annual Count

The Minimum Annual Count, produced by Roy McBride of Ranchers Supply continues to be the technique we rely on. Field surveys conducted by a team of trained biologists collect data on verified panther sign, photos, tracks, captures, and those equipped with radio collars to provide a minimum annual count of panthers each year. These data, collected from field surveys conducted throughout the calendar year, are then used to tally a minimum number of panthers detected for that year. The Minimum Annual Count, as its name implies, is not a true population estimate but rather a simple count. This method does not account for sampling effort, imperfect detection of animals, or provide a margin of error. The latest Minimum Annual Count was completed in 2014 and it reported 138 adult and subadult panthers in the surveyed areas.

Roadkill

This technique generates an estimate of population size based on the proportion of all panthers killed by vehicle collisions that were previously captured and radiocollared. Additional variables used in this model include road density, traffic volume, and presence of protective measures (wildlife crossings and fencing). The roadkill technique estimated a panther population size for 2012 at 269 individuals but with a margin of error between 143 and 509 meaning that we can only say that the actual population size fell within this range with 95% certainty (or conversely, there is only a 5% chance the actual number was outside this range). This margin of error is much too wide to use this estimate for informing any practical conservation decisions.

Camera trap-

This technique uses a grid of 50 motion sensitive cameras in panther habitat where photos are taken over a span of 5 months. Radiocollared panthers are identified on photos and their movements across the camera grid are recorded. Photographs of radiocollared panthers tell us the likelihood of detecting a panther when it is inside the grid and that allows us to estimate the number of unmarked panthers based on how often they are photographed. Combined information on marked and unmarked panthers results in an estimate, with a measure of variance (margin of error), of the population size for the camera grid. In order to estimate the rangewide population with this method, camera grids need to be set up in different types of habitat. We have completed 2 camera grids but need additional grids so that we can see how panther densities vary across their range before we can generate a rangewide population estimate.

FWC uses the Minimum Annual Count to generate a panther population range because neither the roadkill nor camera trap techniques have been fully developed and tested. The Minimum Annual Count tracks back for at least 20 years and has documented quite well the rise in panther numbers since the 1980's. The FWC reports the current population range as 90-180 panthers*. The lower number is based on the annual average of the number of adults and subadults documented during the Minimum Annual Count over the last 5 years (2010-2014). The upper number is calculated by multiplying the average density of panthers (panthers/acre) over the last 5 years (2010-2014) from the areas with the highest densities noted during the Minimum Annual Count by the total amount acres of occupied panther habitat in South Florida.

For more detailed information on Florida panther population estimation see [Panther Net](#).

*These population figures include adults and young adults. Kittens traveling with their mothers are not included in the population estimate because recovery criteria address only adults and subadults.