

# USDA Wildlife Services' Report to City of Hendersonville Board of Mayor and Aldermen

## Population Estimate of White-tailed Deer within Hendersonville, Tennessee City Limits

An aerial survey to estimate the number of white-tailed deer within the city limits of Hendersonville, TN was conducted on March 6,7,8, and 10, 2023. This survey covered ~38 square miles and included Saunders Ferry peninsula, Indian Lake peninsula, South of Highway 386, and from Country Hills Golf Club South to Highway 386 (Figure 1).

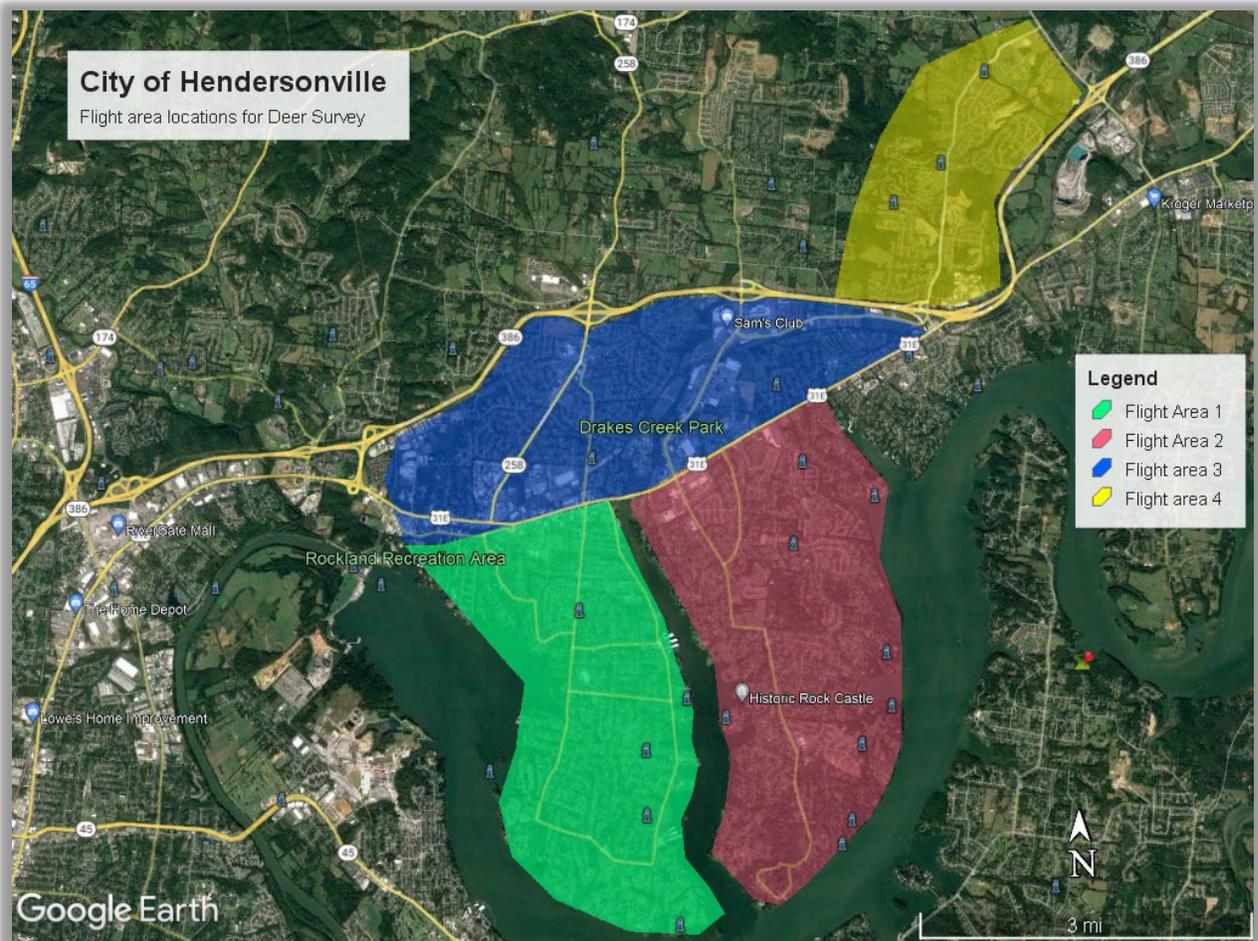
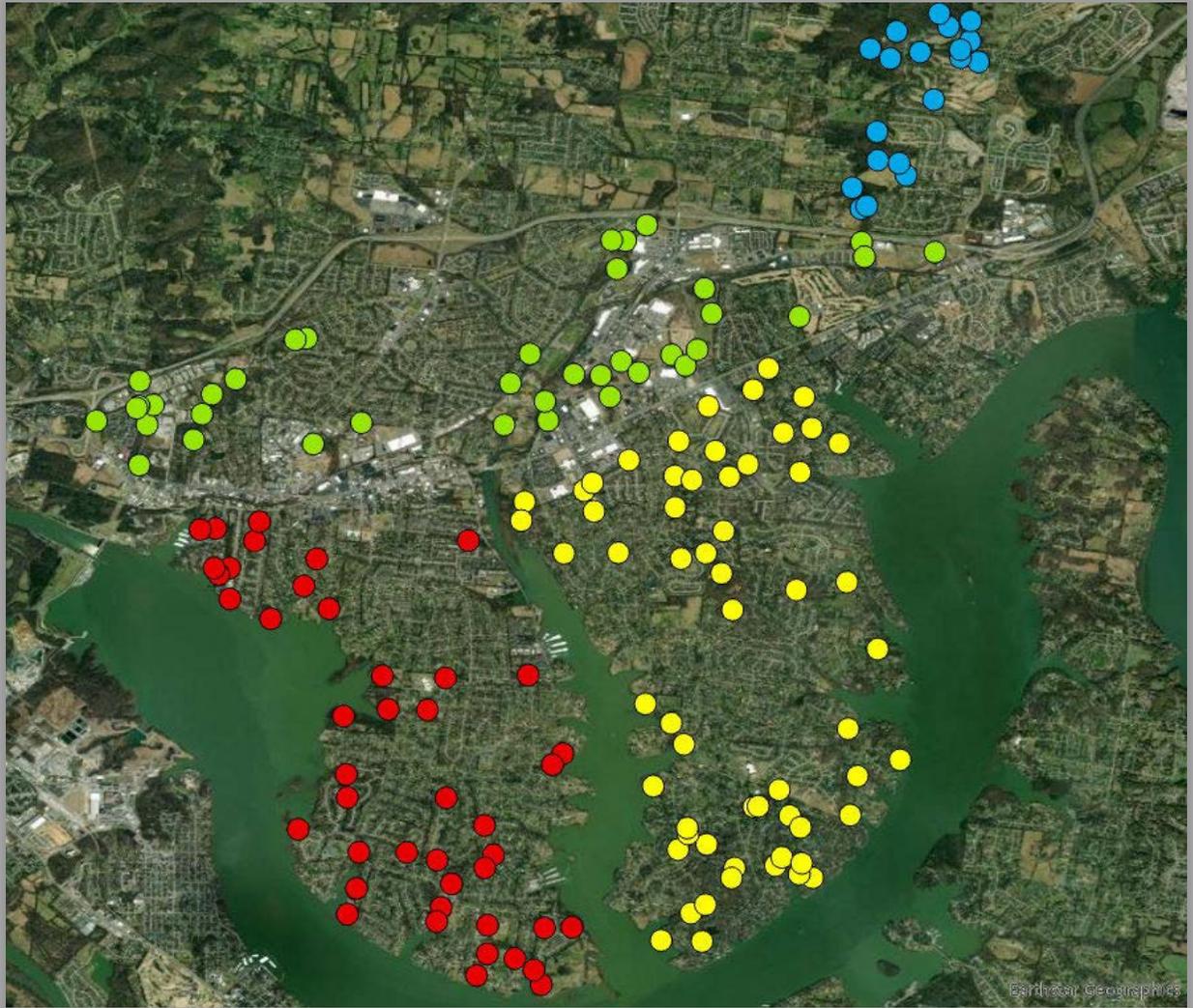


Figure 1: Survey area of aerial deer survey conducted in Hendersonville, TN during 2023

Considering historical surveys of this area, Wildlife Services (WS) decided to take a slightly different approach in the collection of data, creating a more accurate count of deer on the landscape with minimal margin of error. These minor changes in the survey were to perform the aerial survey with the aid of thermal imagery along with logging each deer/group of deer into a data collection application with a georeferenced data point (Figure 2).



**Figure 2: Point map of where deer were observed. 2023**

In previous years, WS provided an overall population estimate for the entire city. This year we took the survey and data collection and broke it into 4 different flight sections to provide population densities for specific areas. We were able to quarry the data to produce density estimate maps for each of the areas (Figures 3, 4, 5, & 6). These maps show the geospatial density of deer within the flight areas (each map is calculated independent of others; therefore density is not comparable between maps). The maps show areas where deer are more densely populated (red) compared to areas where deer populations are less dense (green). In conjunction to the flight area density maps we have included a full city density map (Figure 7).



**Figure 3: Flight area 1 (Saunders Ferry) deer density map 2023**

On the Saunders Ferry peninsula a total of 381 deer were observed. This peninsula is approximately  $5.5\text{mi}^2$ . Given the approximate area and the number of deer observed, there are roughly  $69.3\text{ deer}/\text{mi}^2$  on the Saunder Ferry peninsula.



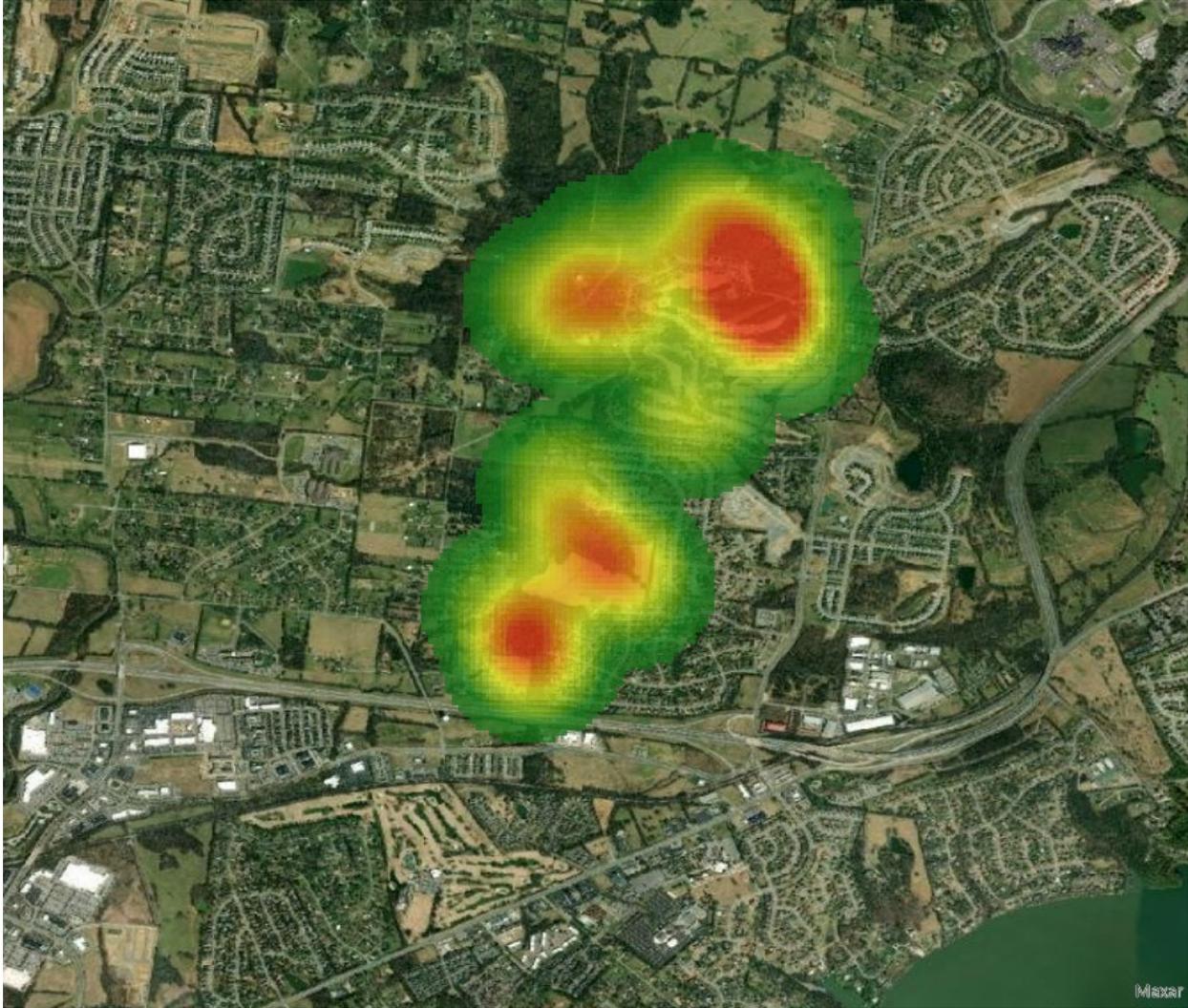
**Figure 4: Flight area 2 (Indian Lake) deer density map 2023.**

A total of 542 deer were observed on Indian Lake peninsula. Indian lake is the largest area surveyed at approximately  $6.67\text{mi}^2$ . Given the approximate area and the number of deer present, the deer density is  $81.3\text{ deer}/\text{mi}^2$  for the Indian Lake peninsula.



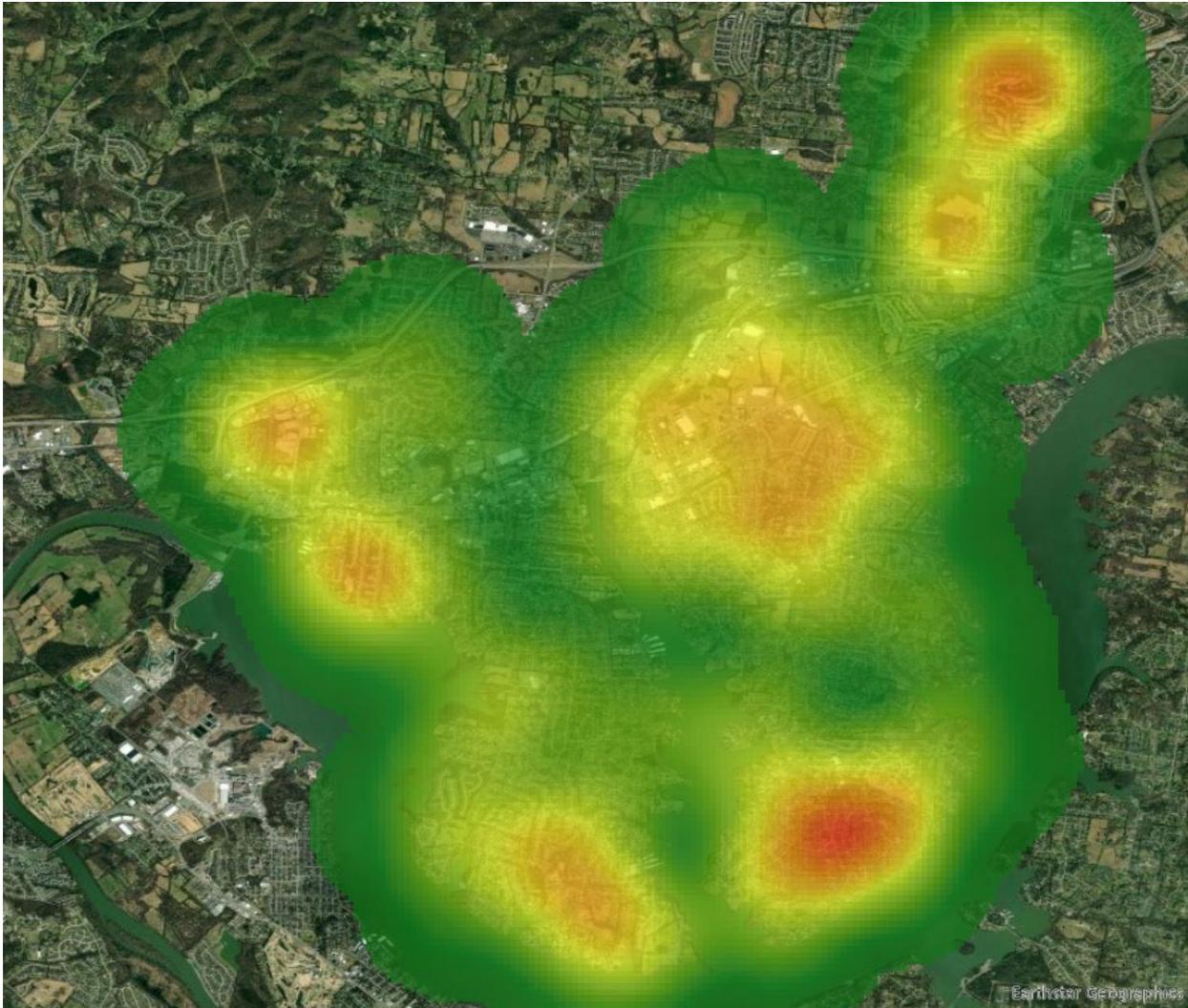
**Figure 5: Flight area 3 (South of 386) deer density map 2023.**

For the survey area between Highway 386 and Highway 31, a total of 197 deer were observed. The approximate coverage area is  $6.17\text{mi}^2$ . The results of this area represent a deer density of approximately  $31.9\text{ deer}/\text{mi}^2$ .



**Figure 6: Flight area 4 (Country Hills Golf Course) deer density map 2023**

For the survey area which included Country Hills Golf Course and the area between it and Highway 386, the area surveyed is roughly 2.46mi<sup>2</sup> and 92 deer were observed. This results in a deer density of approximately 37.4 deer/mi<sup>2</sup>.



**Figure 7: City of Hendersonville deer density map 2023.**

During the aerial survey, a total 1,212 deer were observed, which equates to approximately 31.7 deer/mi<sup>2</sup> across the entire City of Hendersonville. Tennessee Wildlife Resources Agency (TWRA) estimates the white-tailed deer population to be 19.6 deer/mi<sup>2</sup> for Tennessee. The Quality Deer Management Association estimates there to be 15-30 deer/mi<sup>2</sup> in Sumner County, which according to TWRA, places it among the top 5 counties in the state for deer populations, based upon deer harvest report data.

While the white-tailed deer population density for the City of Hendersonville differs greatly from that of the state, there is also a significant difference in the human population density. According to the US Census Bureau, in 2021, the City of Hendersonville had 1,630 residents/mi<sup>2</sup> while Sumner County had only 375 residents/mi<sup>2</sup>, and the State of Tennessee had 167.6 residents/mi<sup>2</sup>. This is equal to a resident to deer ratio of approximately 51:1 within the City of Hendersonville, while in Sumner County that number would range from 12.5:1–25:1, and statewide approximately 8.5:1.