



# Community Cats: Monitoring Activity with Camera Traps

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## Introduction Methods

The domestic cat (Felis catus) is a species of feline predator that has been widely domesticated throughout the world. Thought to have originated from African wild cats or Asian desert cats, the species now inhabits every continent on the planet except Antarctica. Whether they live as domesticated pets, feral scavengers or something in-between, populations of Felis catus are linked to human development. The non-native, high breeding potential of the species are attributes that solidify its standing as one of the top 100 worst invasive species on the planet (Longcore et. al, 2009). Gestation period is just over 60 days and litters can consist of up to 18 kittens. Female cats reach sexual maturity at six months and go into estrus every 21 days (Toenjes, 2014).

"Community cats" is a term used to describe outdoor. unowned, free roaming cats. They range from feral to friendly, unaltered or spay/neutered, and can be of any age (ASPCA, 2024). Community cats pose a threat to local ecosystems through waste, predation and territory marking. It was found that cats are responsible for an average of 272 million bird deaths per year across Australia (Woingrski et. al. 2017). Male cats spray urine to mark territory and attract mates, which can negatively impact native, residential and commercial plants. This behavior increases around the presence of other cats, and happens often in densely populated areas. (Frank et. al. 1999). Urban parks and green spaces may offer attractive habitats for cats, as they can hunt for stimulation while remaining close to supplemental feeding and shelter provided by humans. Our aim in this experiment was to test which areas, if any, are vulnerable to the negative impact of community cats on the urban ecosystem.

Trap Neuter Return (TNR) programs are the standard for controlling cat populations. Cats are trapped, either by locals or program representatives, taken to a clinic and spayed or neutered, then returned to the trapping location. This method is seen as a more effective and humane way to reduce population growth than euthanasia. Participation in these programs is stronger in higher income neighborhoods that are in close proximity to facilities that perform the surgery. To effectively stabilize the growth of the community cat population in a specific area, 75% of the individuals must be saved/neutera(ASPCA).





According to news sources, as well as those who live there, the city of Covington, Kentucky has an abnormally high abundance of community cats. Community council has addressed the issue voted to allow citizens to feed populations under controlled circumstances (City of Covington, 2020). Covington, considered part of the Greater Cincinnati area, was identified as a "high abundance location" for community cats. Thus, we chose Covington as a test location. Additionally, we tested hamilton county, since trap/neuter clinics are well-funded in the area.

Motion sensing trail cameras baited with 2 cups of generic dry cat food were placed in various locations around the Greater Cincinnati Area and left unattended for two day periods. At the end of the two day period, cameras were collected and photographs were analyzed to establish how many animals visited the camera. Testing Sites included residential areas where high levels of community cat activity had been observed, such as public parks and green spaces.



### Results

We separated the data by two parameters: distance from a human residence in meters (grouped further into >75m, 75-150m, and >150m from residence), and local participation in TNR programs. We performed a Poisson generalized linear model test (GLM) on the data, using a quasi-poisson modifier to account for overdispersion.

Our cameras were set for motion activation, with four-photo bursts at every instance of motion. Each camera captured approximately 1000-4000 pictures per 2 days.

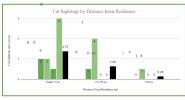
We set up cameras at twelve locations: Urban Eco Village in Price Hill ( $\alpha$ ), Bellevue Park in Clifton (b), Mt. Storm (c), a Newport apartment-side (d, e), a Covington Roadside (f), a Covington Porch (g), Owls Nest Park in Walnut Hills (h), Southgate Park in Newport (h), Ault Park (h), Licking River Path (h), Buttercup Woods (m), and a Newport roadside (n, p)

#### Cat Sightings by Distance from Residence:

Although the P-value did not indicate a statistically significant difference between distance groups, there was a trend of 0.02 fewer cat sightings per meter from a human residence. The black bar represents average cat sightings per distance group.

- T-value: -1.39

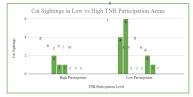
P-value: 0.19



#### Cat Sightings by TNR Participation:

Although the P-value did not indicate a statistically significant difference between areas, the number of cat sightings in high-TNR areas was greater than in low-TNR areas.

- T-value: 1.04
- DF: 12
- P-value: 0.32



#### Yearly Successful Surgeries performed by UCAN:



The UCAN facility has increased the number of feral cat spay/ neuter surgeries from 334 in 2011 to 3,274 in 2023. The data implies an exponential growth factor represented by the equation: 1.19E-155e°0.18x=0.957





#### All animals present:





## Discussion

According to our data, the degradation of the environment caused by an overabundance of community cat populations does not seem to currently be causing significant damage to public parks and green spaces in Cincinnati.

In collecting our data, we discovered several areas for improvement in our experimental design. For instance, we received the clearest photographs for identification when the cat food was placed approximately one meter from the camera. Additionally, if we were to repeat this experiment, we would likely place the camera at different distances from residential areas within the same site, providing a constant location to compare data.

UCAN and OAR are nonprofits, both located in Hamilton County, and are funded by donations that have allowed them to spay and neuter a high volume of community cats. Public awareness campaigns such as "Scoater the Neutered Cat" and "Give Them Ten" have contributed to participation in TNR programs. Since the implementation of TNR programs through the Joanie Bernard Foundation in 2013, the live release rate of cats in Cincinnati has increased from just 37% to 97%. The Kenton County and Campbell County Animal Shelters, which serve the Covington Area, have historically had fewer resources than the Cincinnati clinics listed above. Grants from the Joanie Bernard Foundation aim to help these shelters increase its TNR capabilities in the future. The Campbell County Animal Shelter in particular has increased their live release rate from 20% in 2016 to 78% in 2022.

While recent improvements in Northern Kentucky are significant, they Cincinnati maintains a higher success rate via TNR, as shown by data collected from local shelters. The data gathered from the camera traps reflects this disparity. The cats per hour data collected in Northern Kentucky testing sites showed significantly higher community cat activity than those placed in areas closer to the more robust TNR programs. This creates a compelling argument to continue funding and improving TNR programs in Northern Kentucky.