

# A Temporal Analysis of Urban Coyote (*Canis latrans*) Activity in Long Beach, CA

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## Introduction

The coyote (*Canis latrans*) is found across the United States in both rural and urban ecosystems. They have always filled a niche in the ecosystem in the wild as both scavengers and hunters, but in urban environments they have adapted to anthropogenic food sources and pose a threat to communities. In communities such as Long Beach, CA, the presence of a coyote can be dangerous to pets and humans, which is a concern of residents.

This arm of the ongoing study includes the implementation of game cameras to understand daily coyote activity and movement throughout the community. The data give us important information about the diurnal and nocturnal behavior as well as family group sizes and dispersion times. Future measures include trapping and radio-collaring the coyotes to obtain geographical data on the movement patterns, as well as community engagement and education. Through community education and citizen reporting, we hope to manage the problem and minimize human-coyote interactions. Our goal is for the community to coexist with the coyotes and to avoid extermination.

## Hypotheses

- Coyotes in this semi-developed area are expected to be most active from dusk to dawn. Humans and domestic animals are most likely to be active during the daytime, so we expect that the coyotes will be inversely active (Narragansett Bay Coyote Study; Grinder et al. 2001)
- The coyotes of Long Beach and other local residential areas move throughout the city using corridors that connect the green spaces in which they reside (Riley et al. 2003)

## Methods

- The Long Beach study site is a grassy open space adjacent to a fire station and a busy road (Figure 1). This open space is a corridor that connects larger habitats for wildlife to travel between (Riley et al. 2003)
- To observe the behavior of the coyotes, 6 motion activated game cameras were set out to capture both video recording and pictures of the coyotes, day and night
  - The data reported were collected from May 20, 2016 to November 29th, 2017.
- The images from each game camera were first sorted using “tags” with a media organization software called *Picasa*, then counted and sorted by hour (See Figure 2) The same data were also used to understand daily coyote activity throughout the period of study (See Figure 3).

## Data



Figure 1: (Left) Study area map, with marked game camera locations. (Right) Likely a juvenile Coyote captured by a game camera.

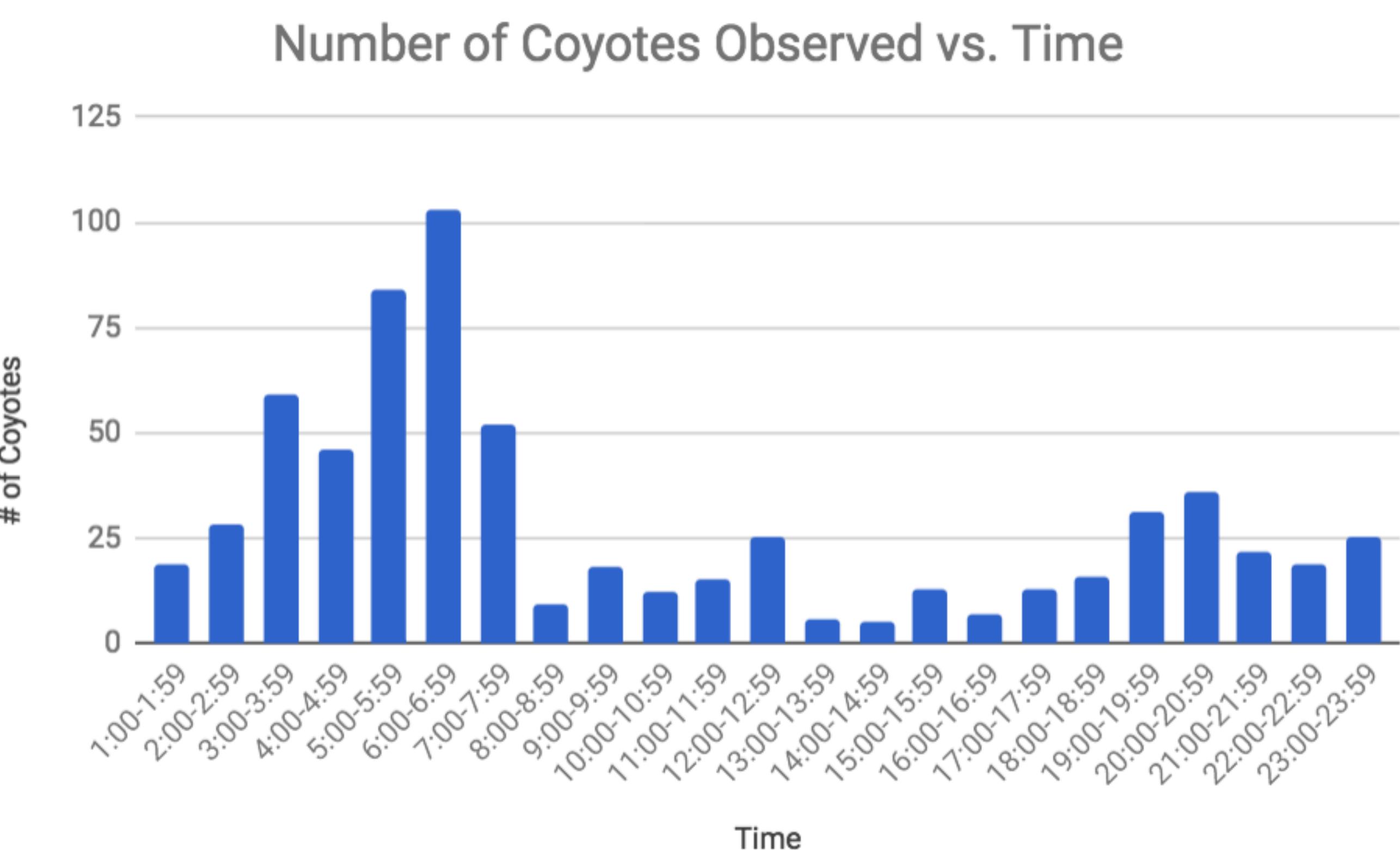


Figure 2: Total number of observed coyotes observed by time of day.

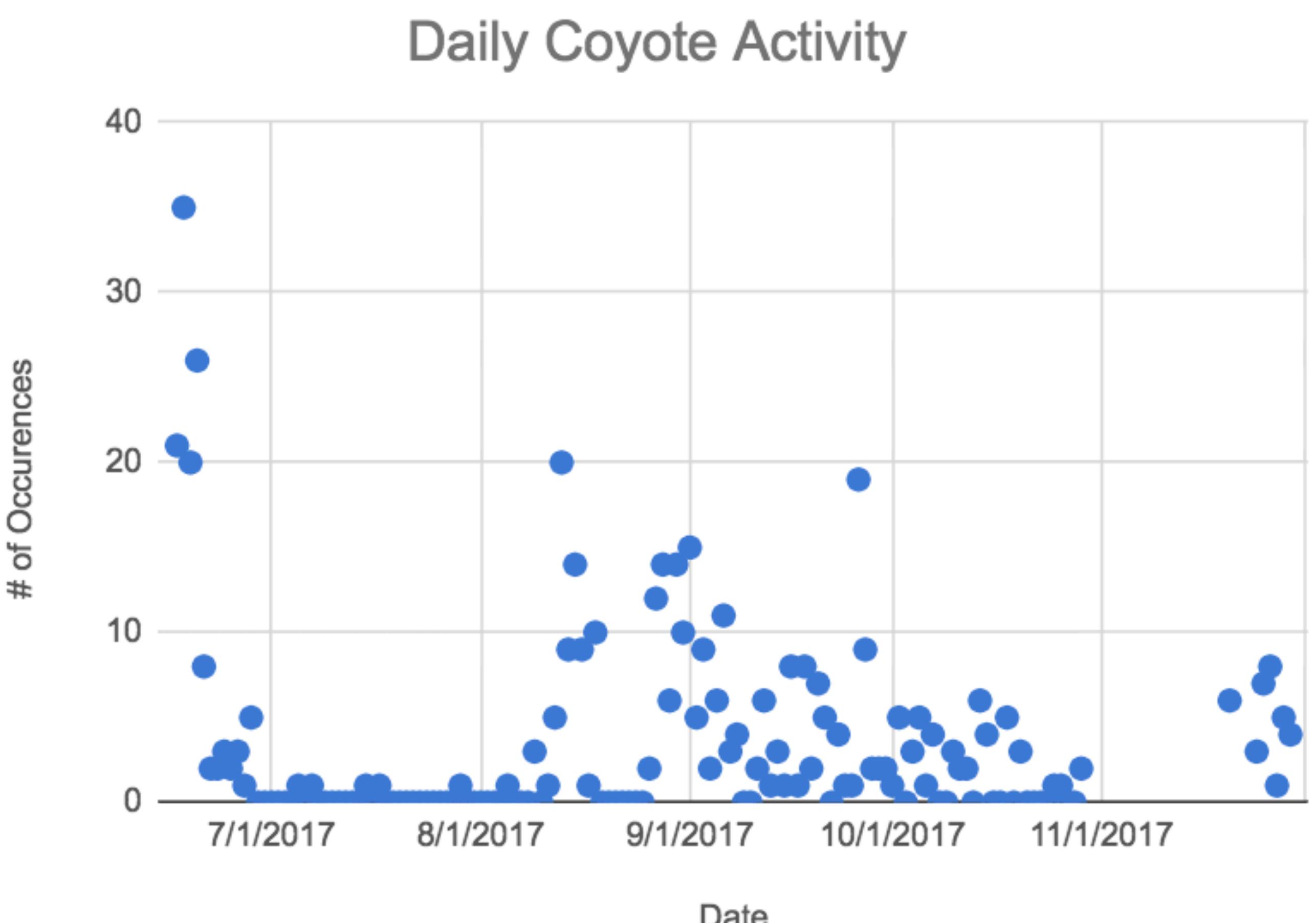


Figure 3: Total number of observed coyotes over research period.

## Results

- 75% of the total observed coyotes were present during the hours of 8pm-8am while 25% were present from 8am-8pm
- The most frequented hours included
  - 3:00-3:59 am (n=59)
  - 5:00-5:59 am (n=84)
  - 6:00-6:59 am (n=103)

## Discussion

### Activity

- The data support the first hypothesis and are in fact more active throughout the night and early morning
  - Further analysis of the presence of humans and domestic animals in correlation with the coyote data would strengthen results
- Further analysis of the data with respect to temperature and sunset/sunrise to better understand behavior

### Identification

- Collaring and Radio Telemetry would allow for constant GPS tracking of individual coyotes giving a more refined analysis of frequented locations, distance traveled with respect to the den, and other measures
- To understand the family group dynamics and dispersion rates, the individuals under observation need to be identified using unique markings

### Reproduction

- We expect the coyotes in Long Beach to avoid reproductive behavior until the spring, with the next litter of pups born again in the late spring or early summer

## Literature Cited

- Grinder, Martha I., and Paul R. Krausman. "Home range, habitat use, and nocturnal activity of coyotes in an urban environment." *The Journal of Wildlife Management* (2001): 887-898
- "Narragansett Bay Coyote Study." *The Conservation Agency*. 2014. Web. <http://theconservationagency.org/narragansett-bay-coyote-study/>.
- Riley, Seth PD, et al. "Effects of urbanization and habitat fragmentation on bobcats and coyotes in southern California." *Conservation Biology* 17.2 (2003): 566-576.

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