

# Wildlife Corridor Camera Trap Study



**PREPARED FOR BAINBRIDGE ISLAND LAND TRUST  
MARCH 5<sup>TH</sup>, 2015**

By Simon Nhan  
With the assistance of  
Brenda Padgham, Rebecca Nissley, Avery Bowron,  
Deborah Rubnick, Malerie Fleischman, Aaron Wirsing



# Summary



- Question: What kind of activities are occurring in in the Wildlife Corridor and what is the relationship between the wildlife and human activities?

## Case Study

- Coyote home range in metropolitan area (Stanley D. Gehrt, et al. 2009)
  - Urban and rural areas of Chicago
  - Fragmented habitat lead to increase in home range
  - In urban areas Coyote used the night to move in urban areas to another part of their home range

# Summary Continued



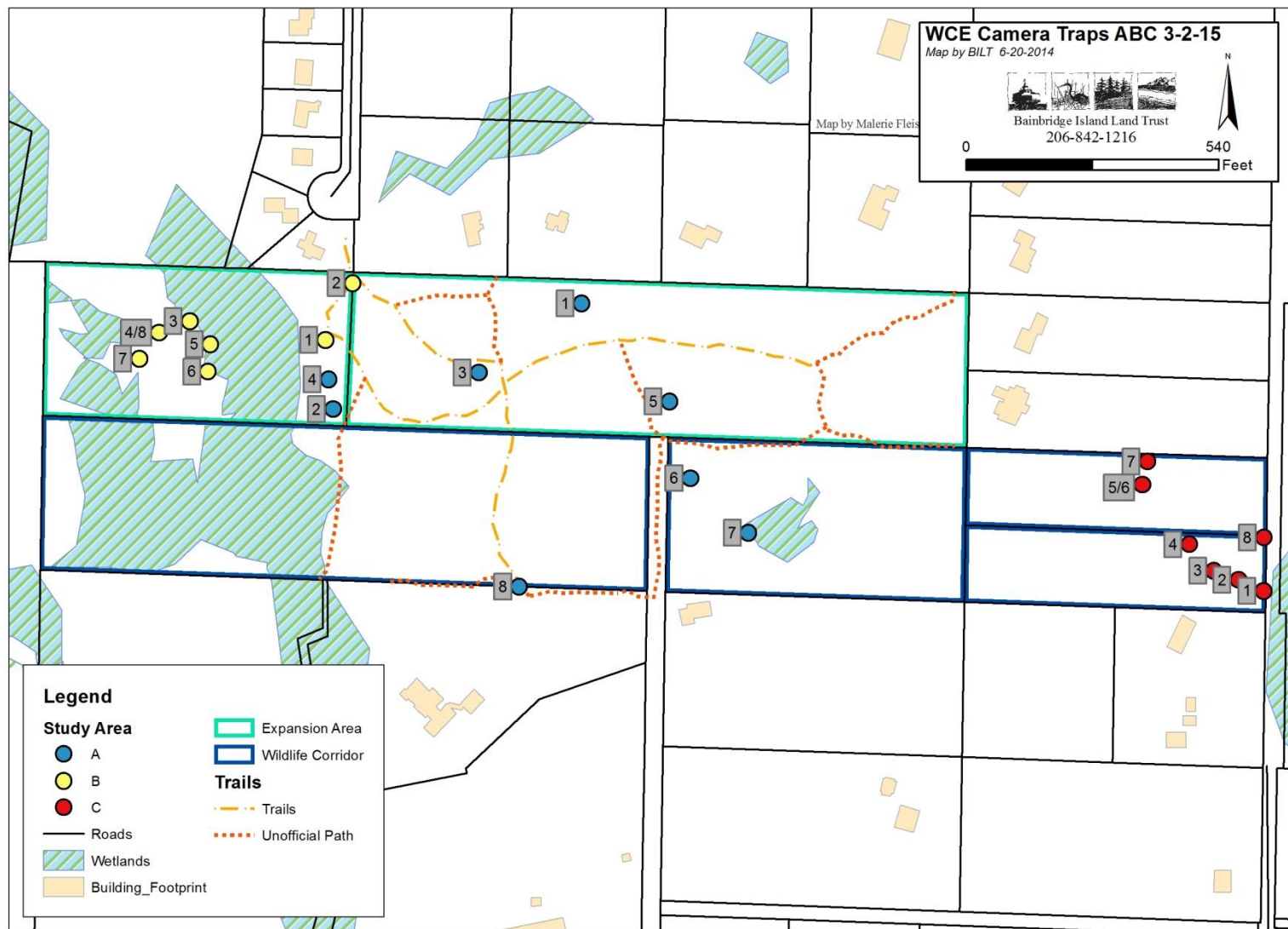
- 8 Cameras, 3 study sites
- All pictures are saved but only pictures with people or wildlife were used
- Data retrieved from photos:
  - Camera number
  - Date
  - Time
  - Species
- There have not been any statistical analysis done to this data and the graphs are just another representation of the Data

Camera	Date	Time	Species	Location (ft.)	Habitat	Notes
2	7/30/2014	1337	Mallard	~28.27 ft. from Trail	Facing Pond	
2	7/30/2014	1403	Mallard	~92.68 ft. from wetland	Facing Pond	
2	7/31/2014	1640	People	~297.48 ft. Building	Pond and Trail	
2	8/4/2014	926	People		Pond and Trail	
2	9/4/2014	1247	People		Pond and Trail	
2	9/12/2014	818	People		Trail	
2	9/14/2014	1020	People		Trail	
2	9/15/2014	1457	people		Trail	
2	9/15/2014	1515	people		Trail	
2	9/14/2014	1018	people & Dog		Trail	
2	9/15/2014	1457	people & dog		Trail	
2	8/11/2014	1145-1153	People & Horse		Pond and Trail	
2	8/11/2014	1044-1053	people & Horse		Pond and Trail	
2	8/14/2014	1331	People & Horse		Pond and Trail	
2	8/14/2014	1231	People & Horse		Pond and Trail	
2	8/26/2014	843	People & Horse		Pond and Trail	
2	9/2/2014	956-1212	People & Horse		Pond and Trail	
2	7/29/2014	2233	Raccoon		Facing Pond	
2	8/24/2014	00_16	Unknown			

# Process

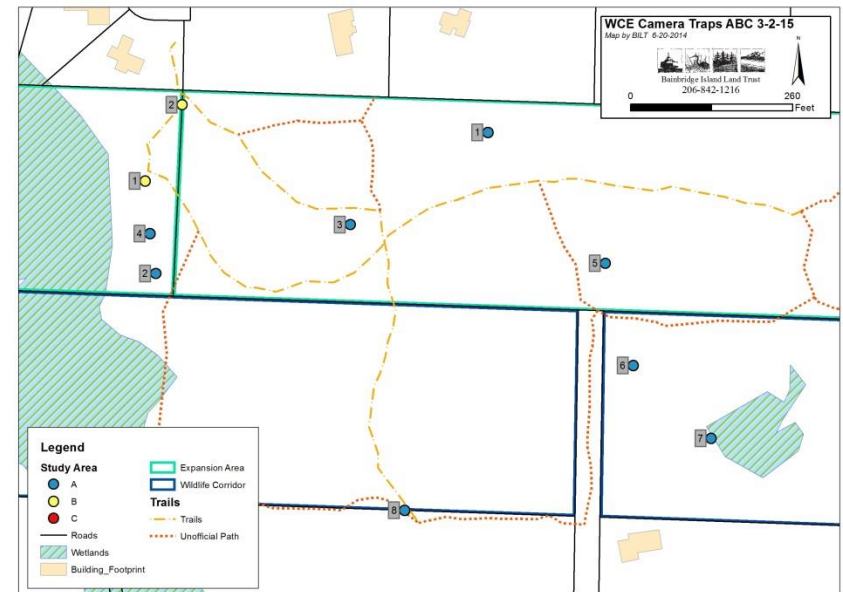


- After going through all photos and collecting the ones with a subject each photo is named
  - Name convention Date, time, species i.e 021315\_1020\_Squirrel(1)
- Inputting the information in Excel
  - At first, I hand input all relevant data
  - Later Brenda and Avery suggested writing a script
- Graphs were generated from what I thought were easily comparable i.e. number of species and time of day



# Study Site A

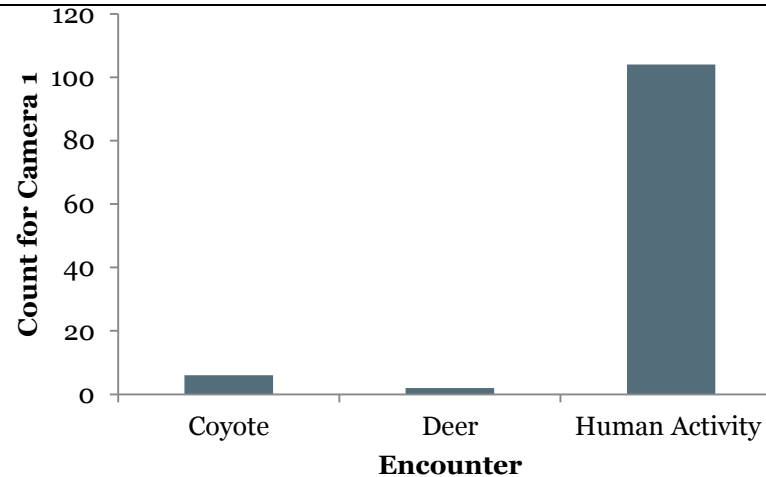
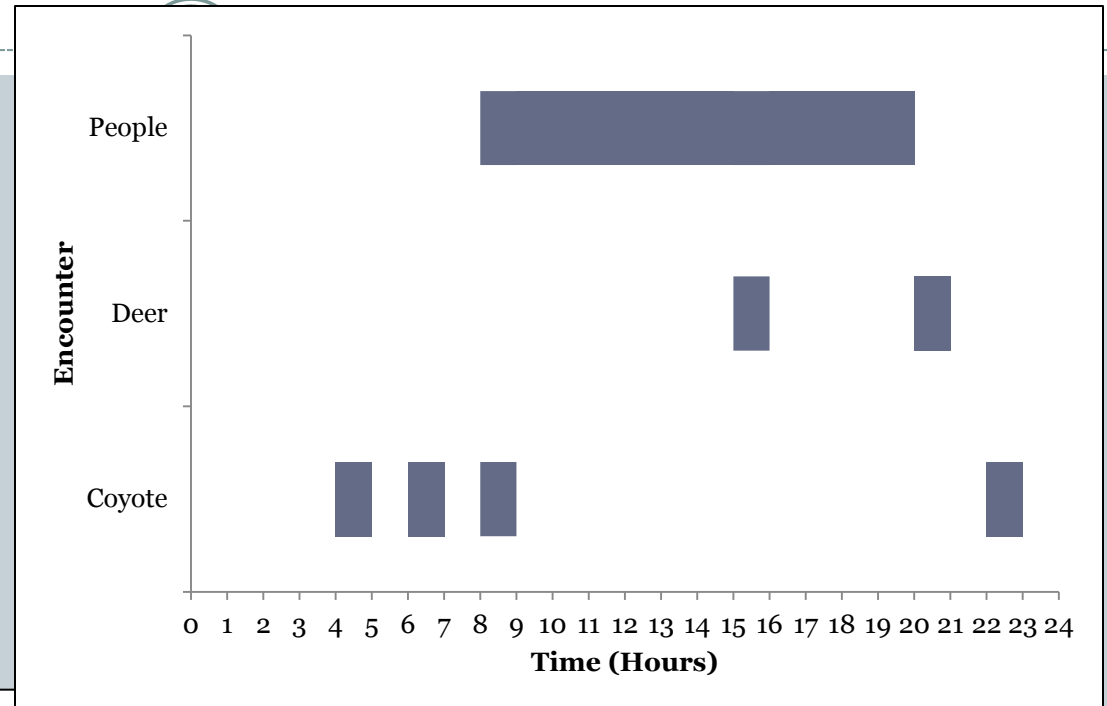
- July 31<sup>st</sup>, 2014 – September 18<sup>th</sup>, 2014
- Total Encounters: 298
- High human use ranging from; strolls, walking dogs, horse riding



# Encounters

## Study Site A

- **Camera 1**
  - **Closest**
    - ✦ Trail 95ft
    - ✦ Wetland 593ft
    - ✦ Building 156ft
  - **Most encounters**
  - **112 Encounters**
    - ✦ Human activity: 104
    - ✦ Coyote: 6
    - ✦ Deer: 2



## Study Site A

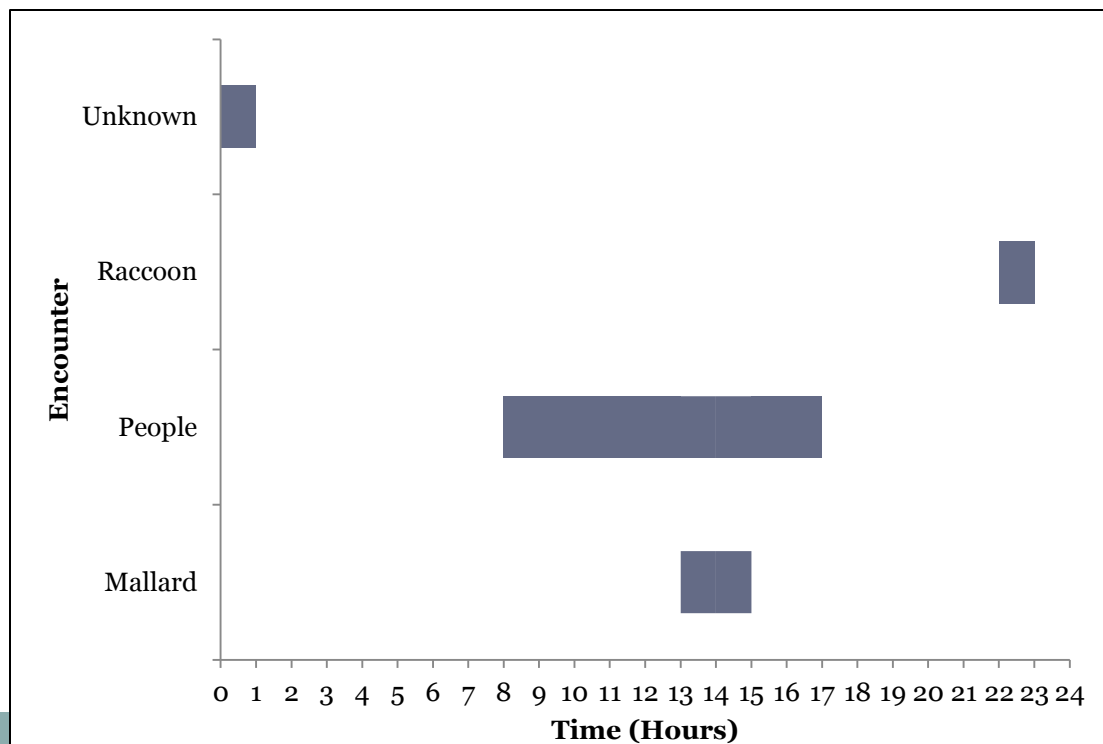
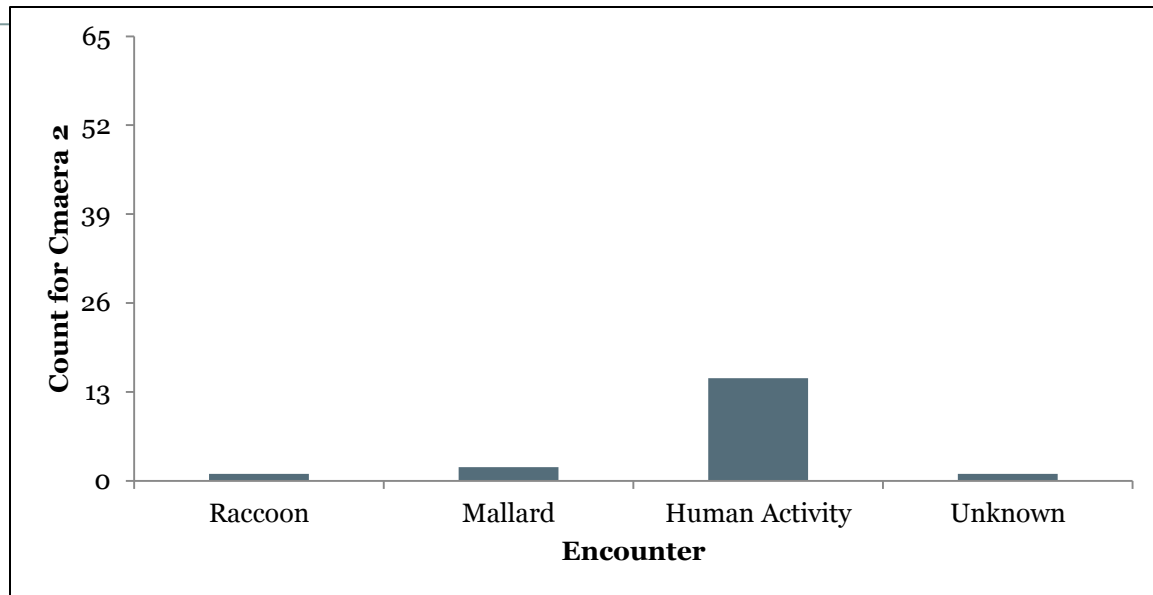
### Camera 2

#### Closest

- ✦ Trail 28ft
- ✦ Wetland 92ft
- ✦ Building 297ft

#### 19 Encounters

- ✦ Raccoon: 1
- ✦ Mallard: 2
- ✦ Human Activities: 15
- ✦ Unknown: 1





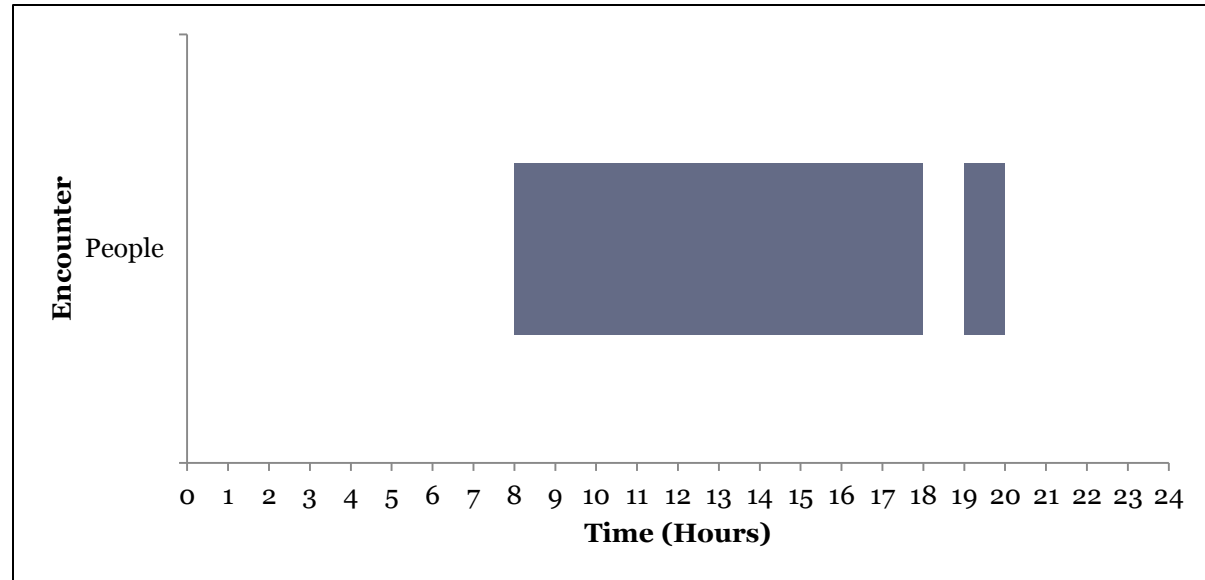
## Study Site A

### Camera 3

#### Closest

- Trail 27ft
- Wetland 384ft
- Building 270ft

Only Human Encounters: 20



## Study Site A

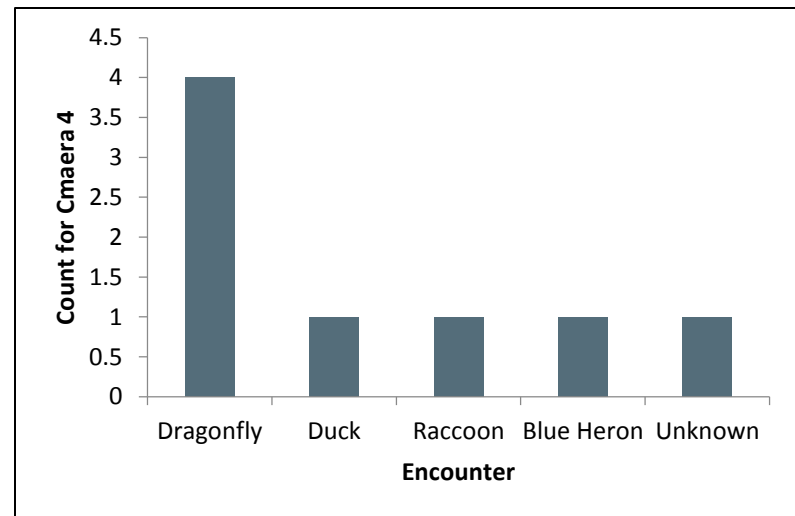
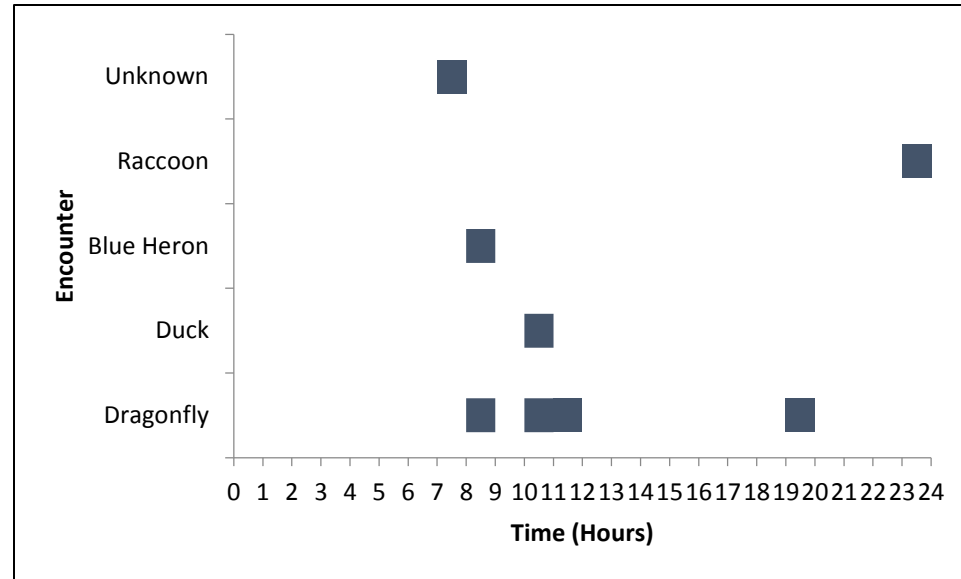
### Camera 4

#### Closest

- ✦ Trail 71ft
- ✦ Wetland 62ft
- ✦ Building 260ft

#### Encounters 8

- ✦ Dragonfly: 4
- ✦ Duck: 1
- ✦ Raccoon: 1
- ✦ Blue Heron: 1
- ✦ Unknown: 1



## Study Site A

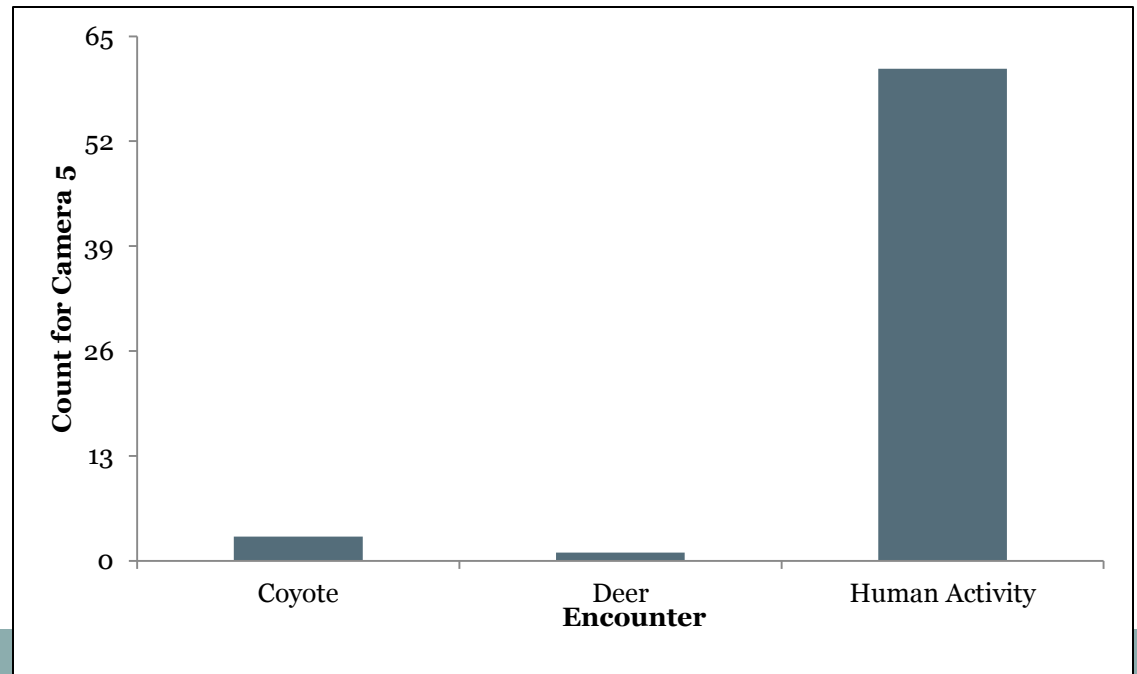
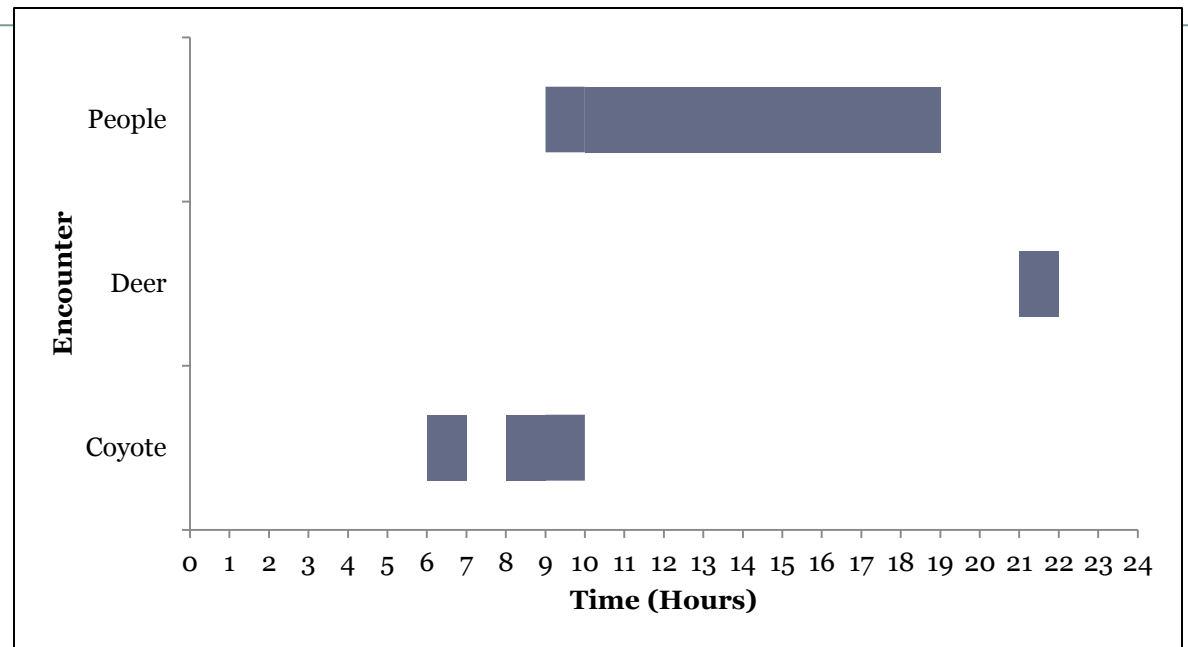
### ● Camera 5

#### ○ Closest

- ✦ Trail 47ft
- ✦ Wetland 311ft
- ✦ Building 350ft

#### ○ Encounters 65

- ✦ Human Activity: 61
- ✦ Coyote: 3
- ✦ Deer: 1



## Study Site A

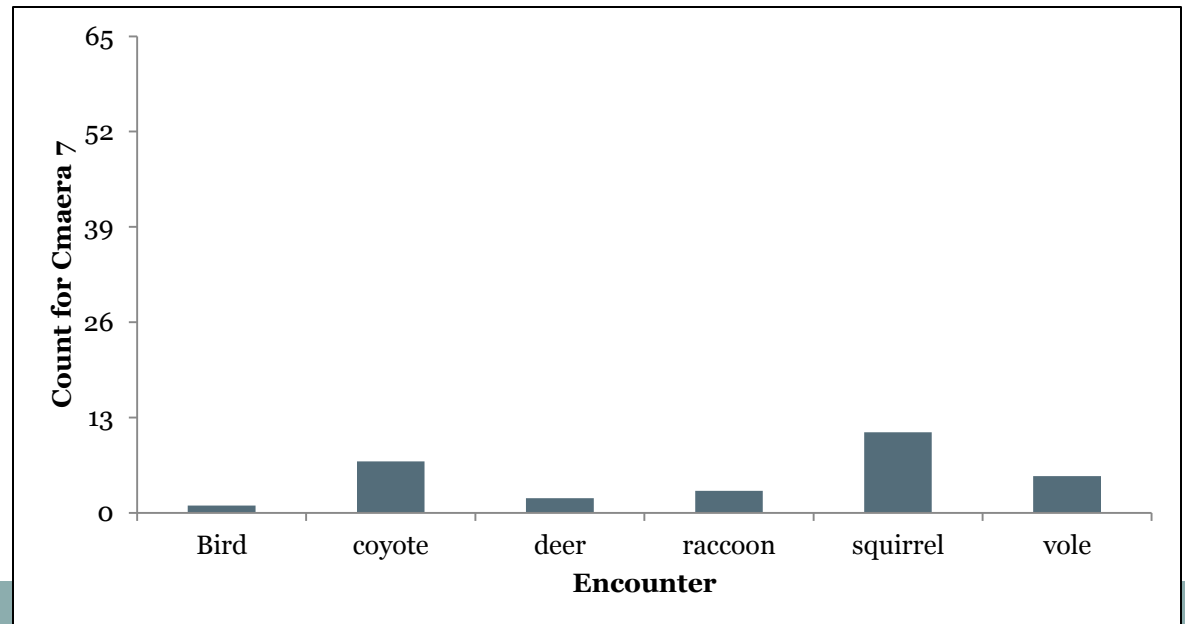
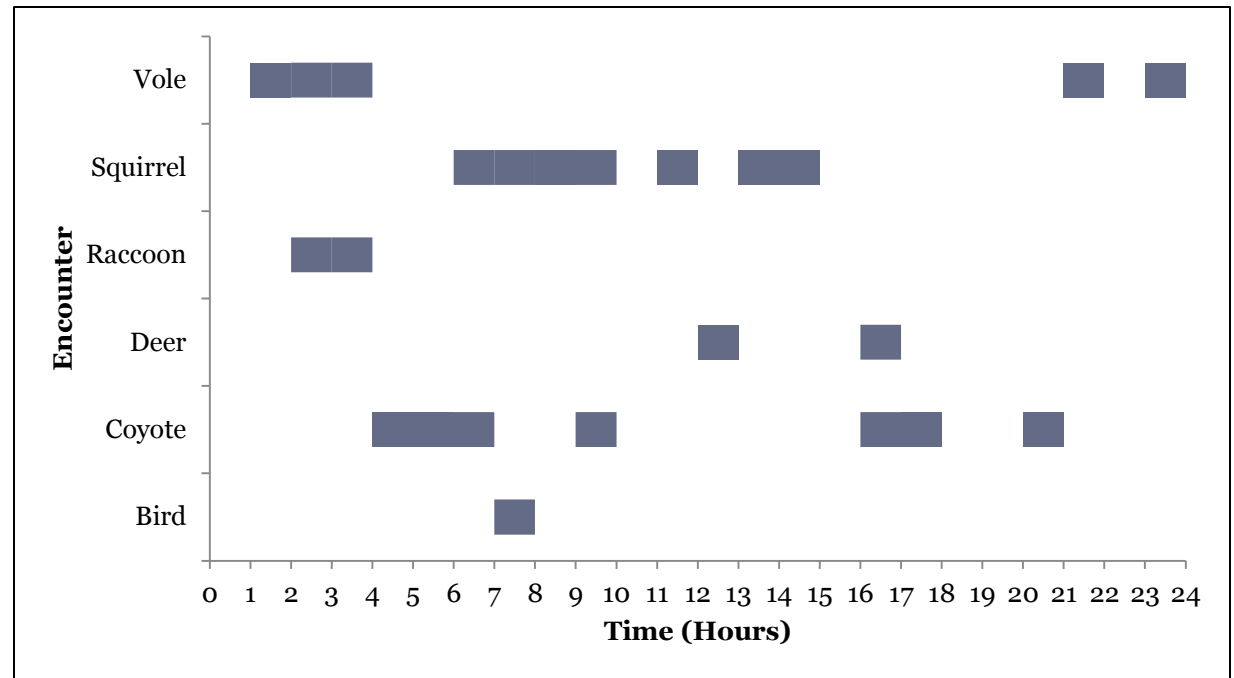
### Camera 7

#### Closest

- ✦ Trail 186ft
- ✦ Wetland 4ft
- ✦ Building 171ft

#### Encounter 29

- ✦ Bird: 1
- ✦ Coyote: 7
- ✦ Deer: 2
- ✦ Raccoon: 3
- ✦ Squirrel: 11
- ✦ Vole: 5



## Study Site A

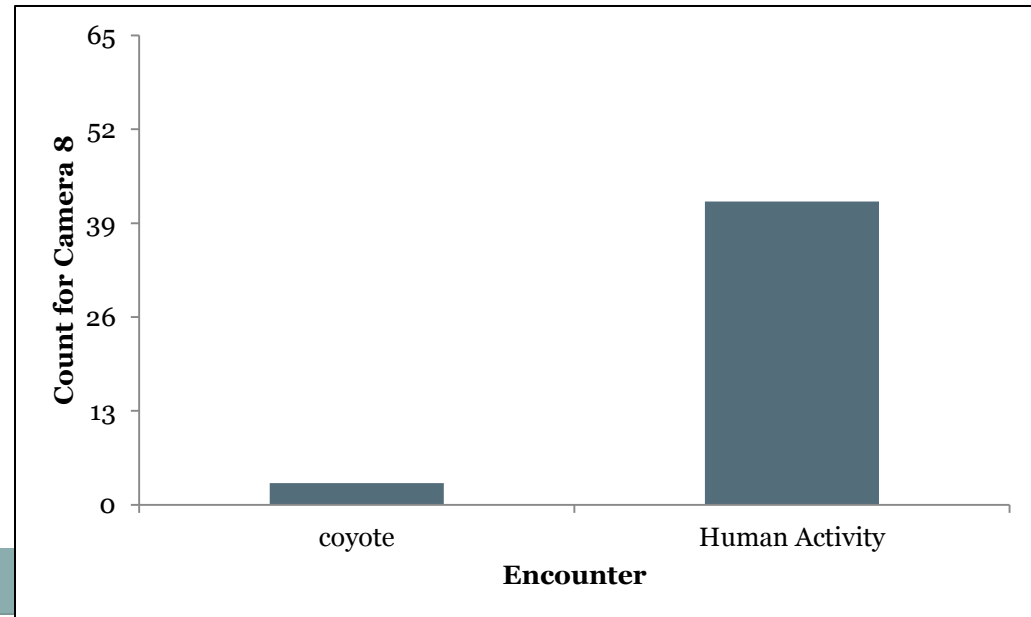
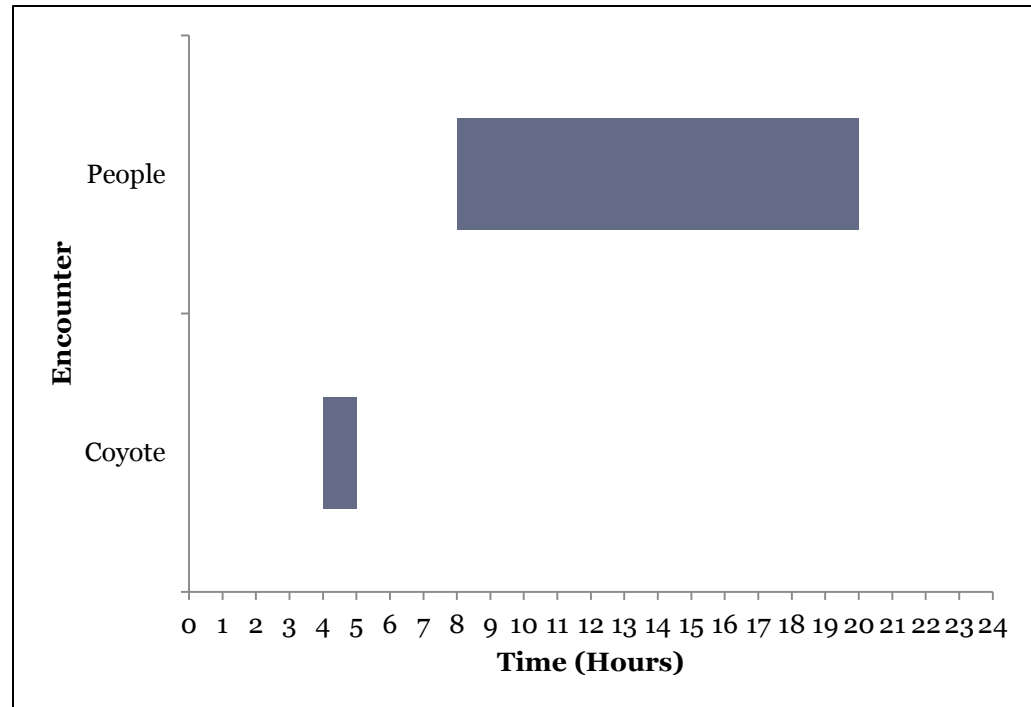
### Camera 8

#### Closest

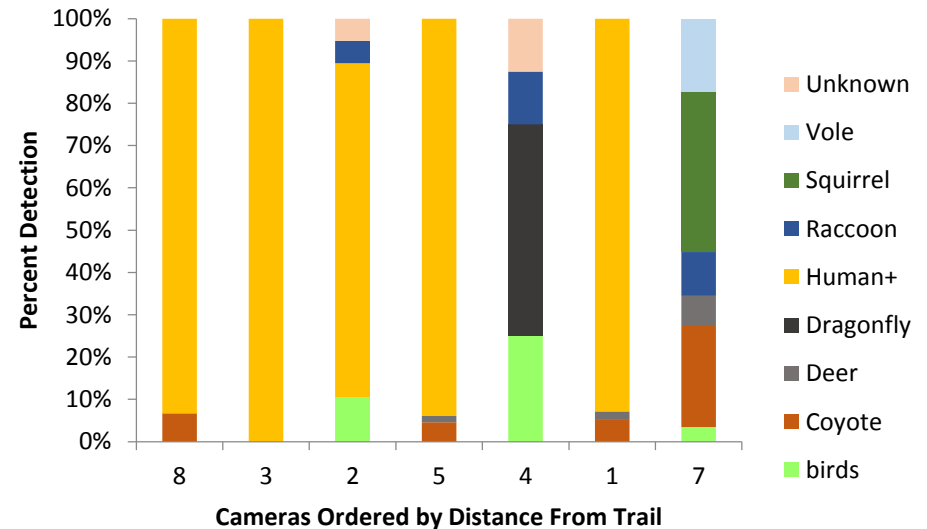
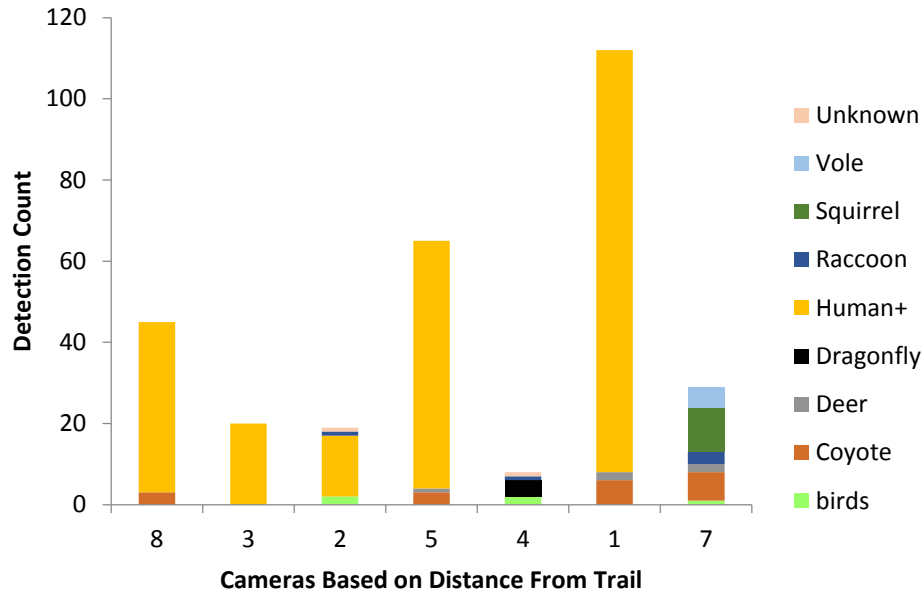
- Trail 6ft
- Wetland 431ft
- Building 240ft

#### Encounter 45

- Human activity: 42
- Coyote: 3



# Study Site A Comparison



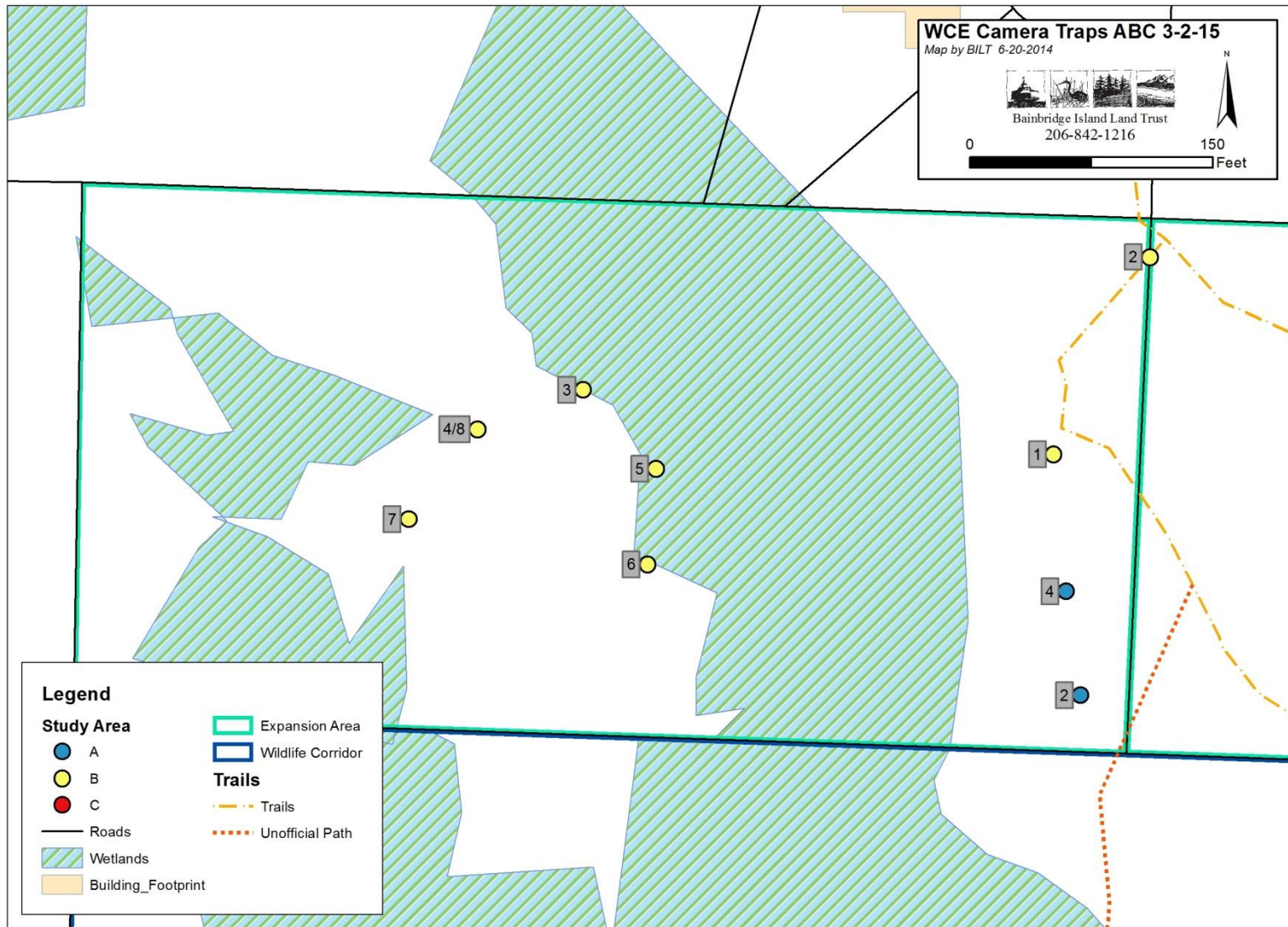
# Study Site B



- September 19<sup>th</sup>, 2014 – January 20<sup>th</sup>, 2015
- Total Encounters: 163
- Cameras 1 and 2 were east of wetlands
  - Study Sites were recorded based on date that's why 1 and 2 are grouped with site B
- Cameras 3 -8 within wetlands









## Study Site B East of Wetland

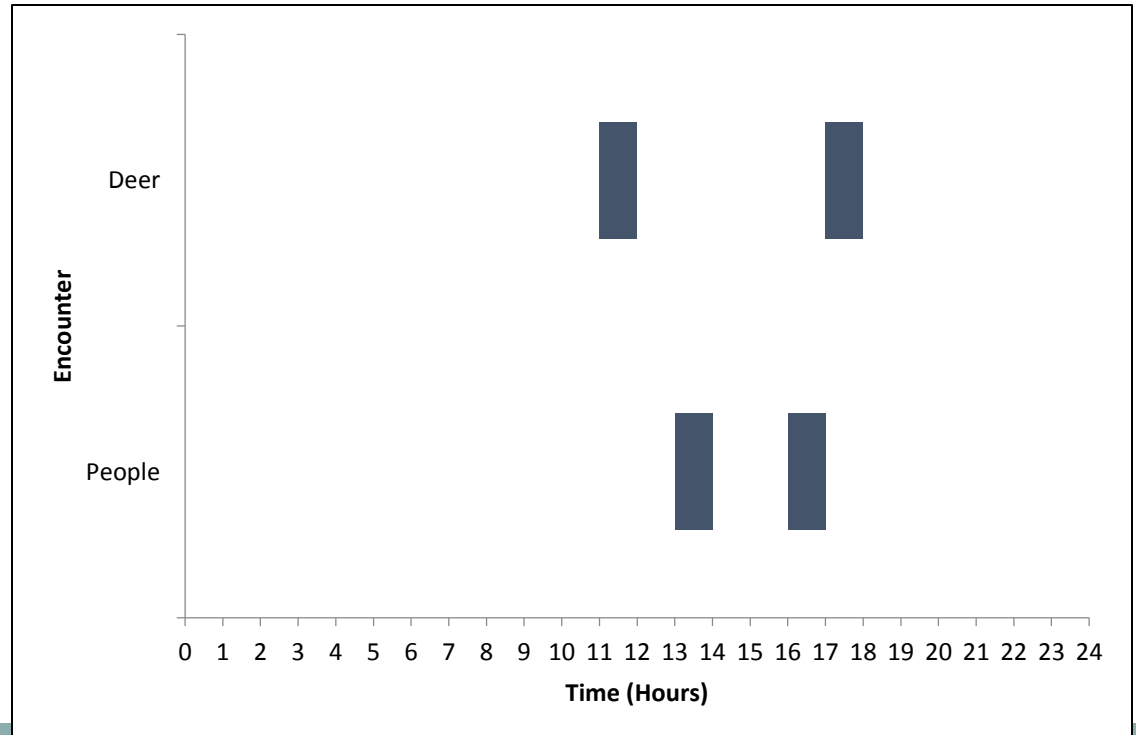
### Camera 1

#### Closest

- ✦ Trail 34ft
- ✦ Wetland 57ft
- ✦ Building 171ft

#### Encounters 4

- ✦ Human Activity: 2
- ✦ Deer: 2



## Study Site B East of Wetland

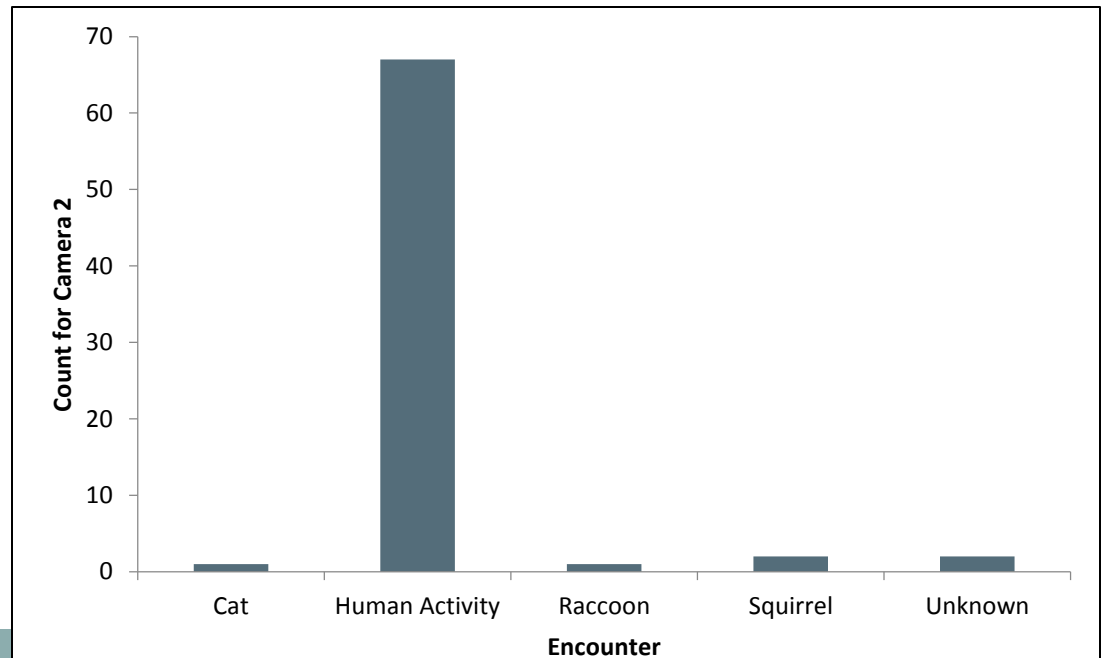
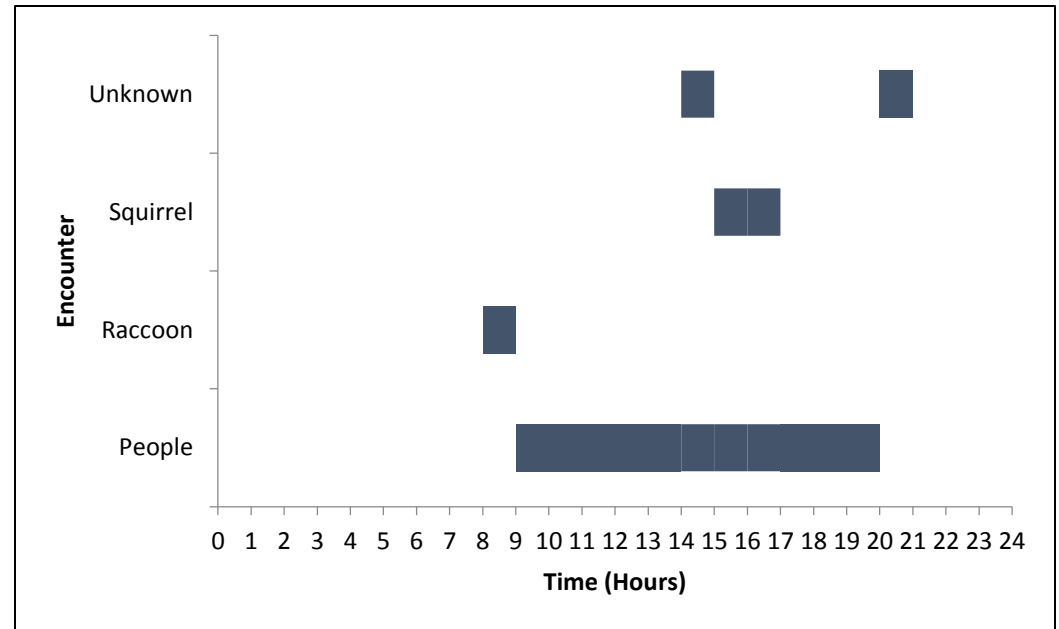
### Camera 2

#### Closest

- ✦ On Trail
- ✦ Wetland 164ft
- ✦ Building 85ft

#### Encounters 73

- ✦ Human Activity: 67
- ✦ Cat:1
- ✦ Raccoon: 1
- ✦ Squirrel:2
- ✦ Unknown: 2



## Study Site B

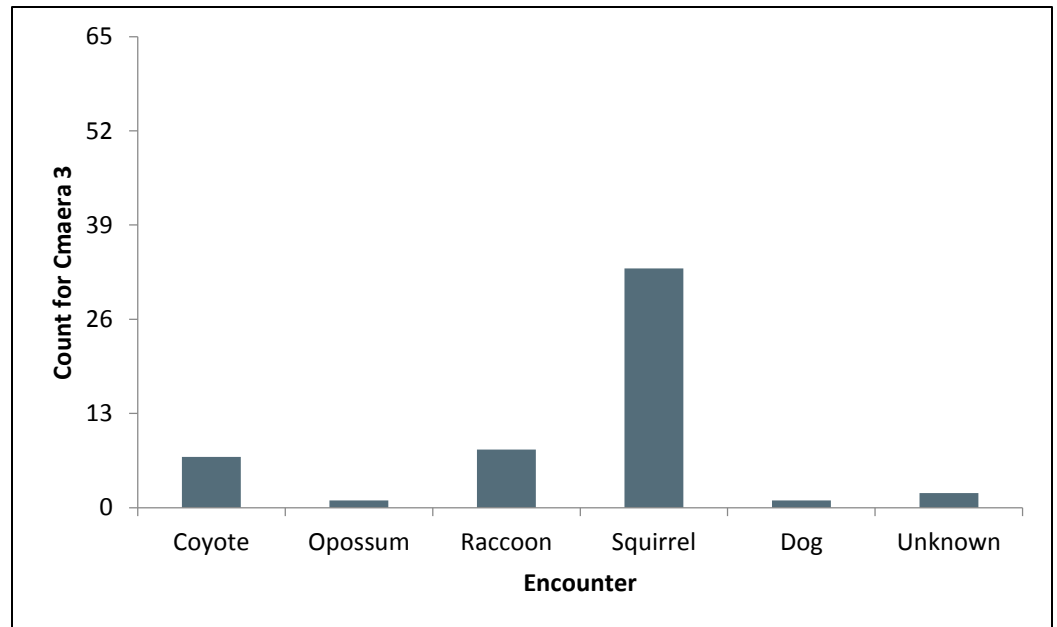
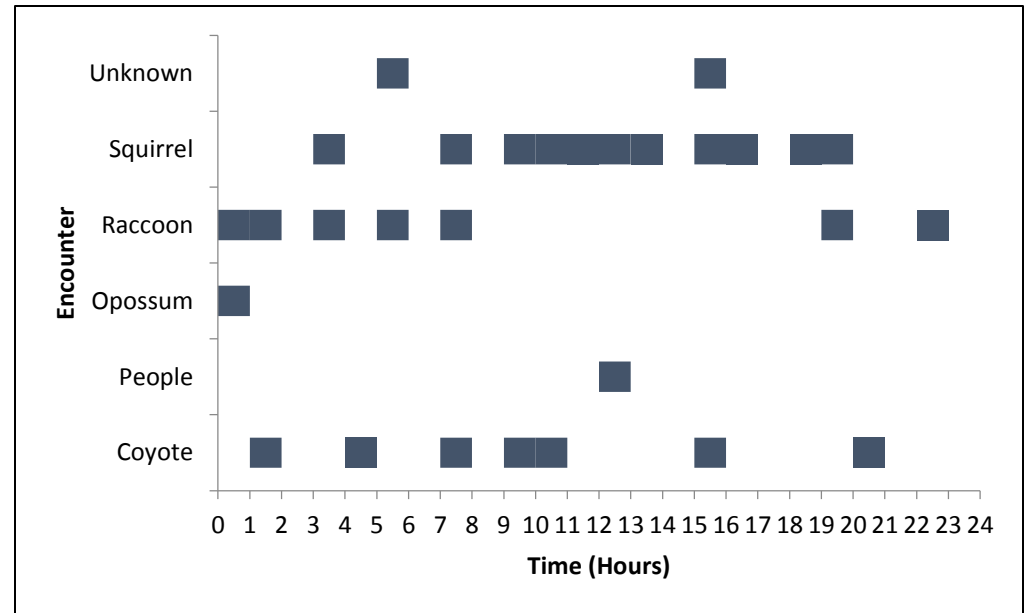
### Camera 3

#### Closest

- ✦ No Trail
- ✦ Within Wetland
- ✦ Building 278.69ft

#### Encounter 52

- ✦ Coyote: 7
- ✦ Opossum: 1
- ✦ Raccoon: 8
- ✦ Squirrel: 33
- ✦ Dog: 1
- ✦ Unknown: 2



## Study Site B

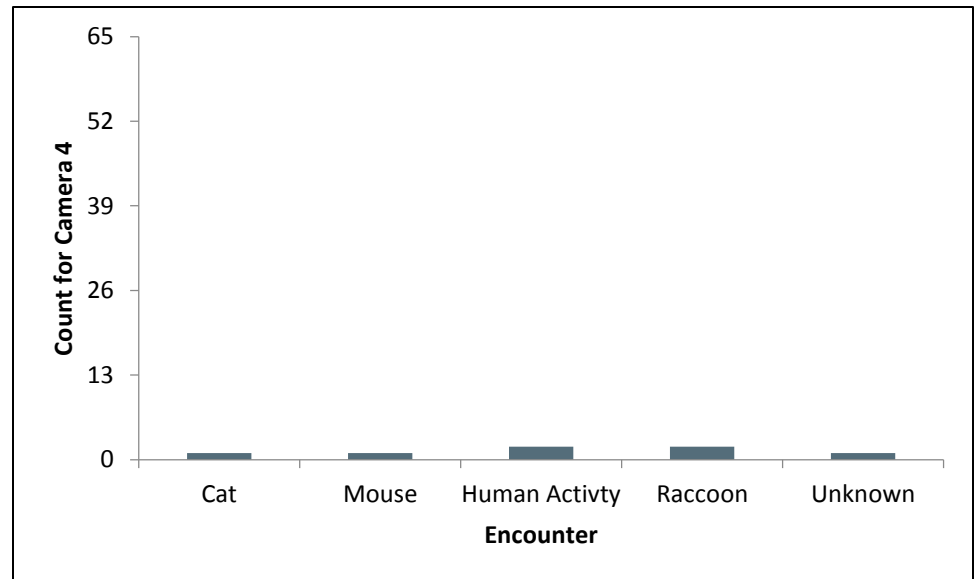
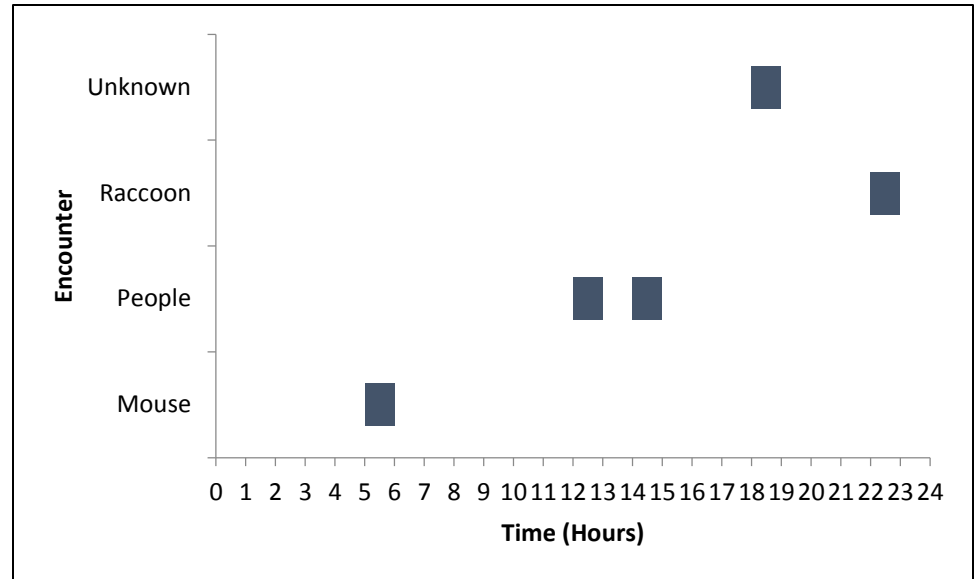
### Camera 4

#### Closest

- ✦ No Trail
- ✦ Wetland 29.01ft
- ✦ Building 347.49ft

#### Encounter 7

- ✦ Human Activity: 2
- ✦ Cat: 1
- ✦ Mouse: 1
- ✦ Raccoon: 2
- ✦ Unknown:1



## Study Site B

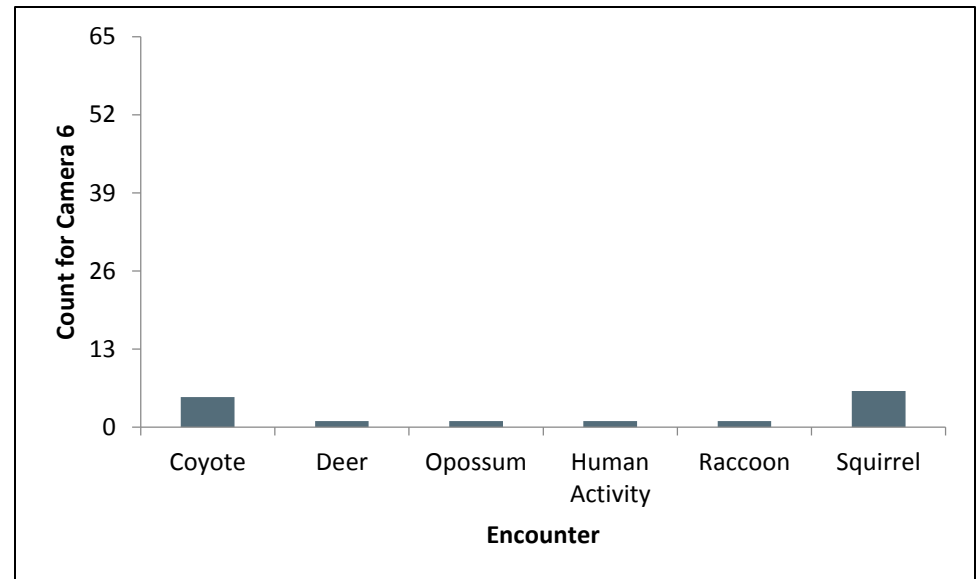
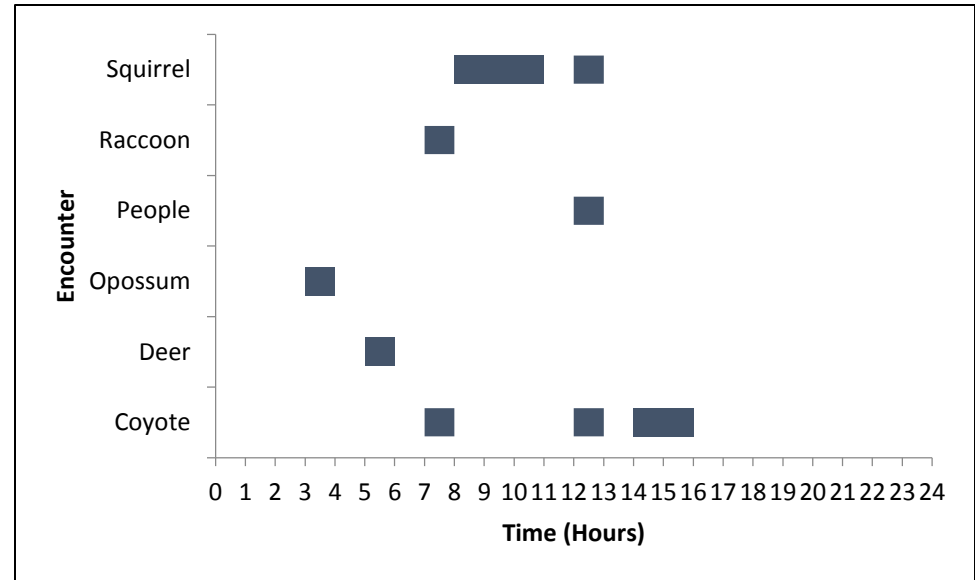
### Camera 6

#### Closest

- ✦ No Trail
- ✦ In Wetland
- ✦ Building 319.34ft

#### Encounter 15

- ✦ Human Activity: 1
- ✦ Coyote: 5
- ✦ Deer: 1
- ✦ Opossum: 1
- ✦ Raccoon: 1
- ✦ Squirrel: 6



## Study Site B

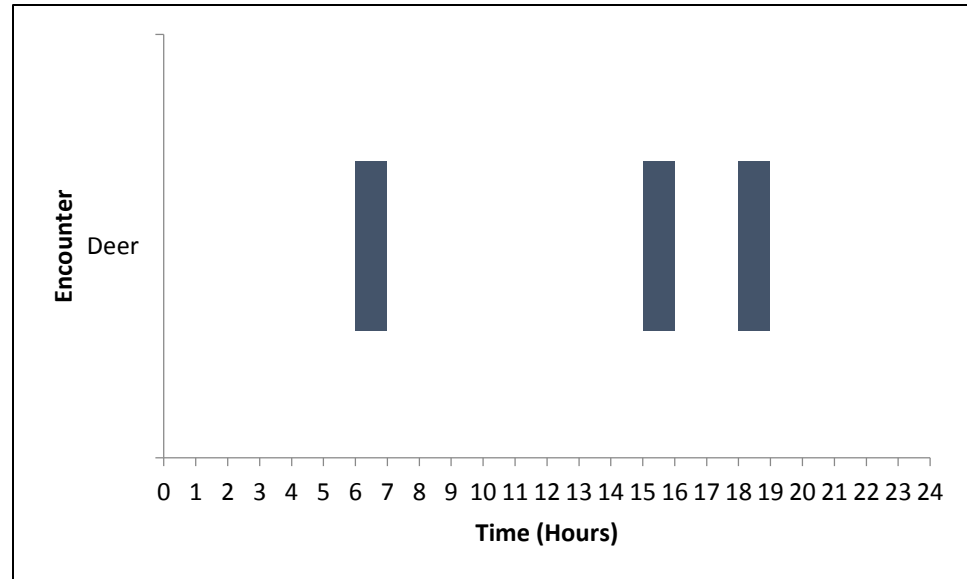
### Camera 7

#### Closest

- ✦ No Trail
- ✦ Wetland 29ft
- ✦ Building 412ft

#### Encounters 3

- ✦ Deer: 3



## Study Site B

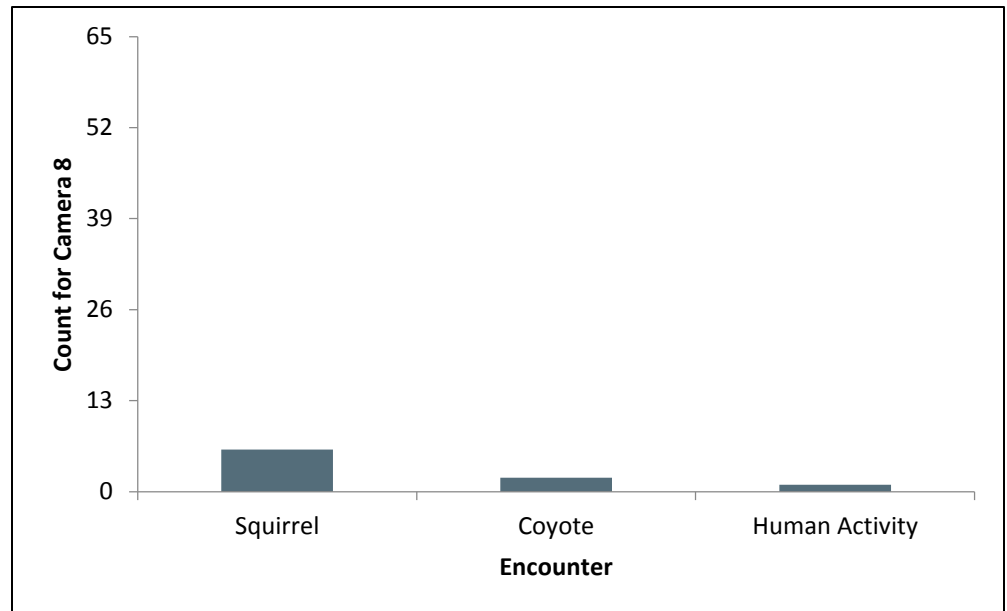
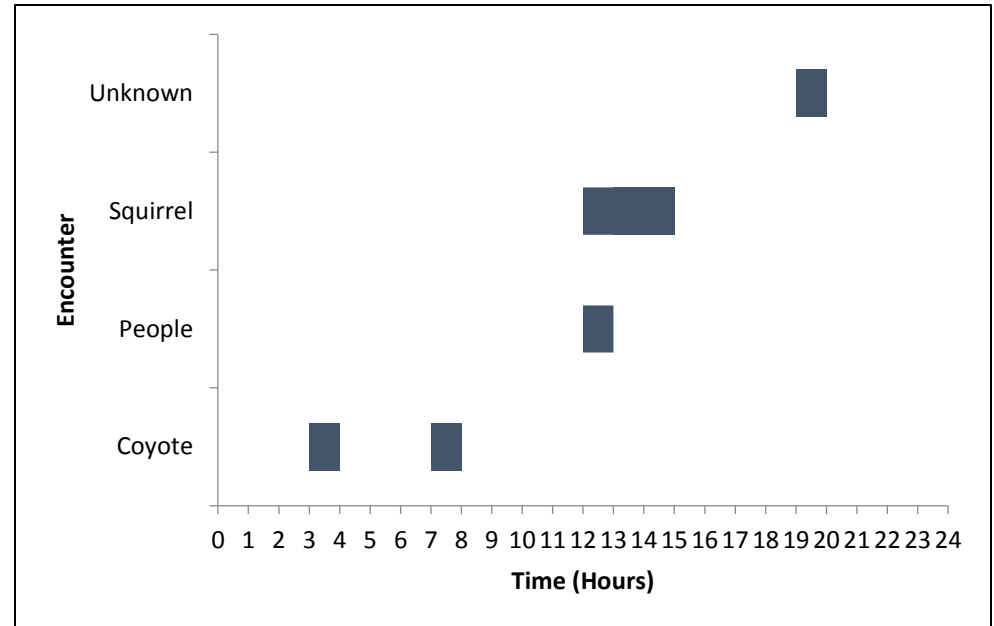
### Camera 8

#### Closest

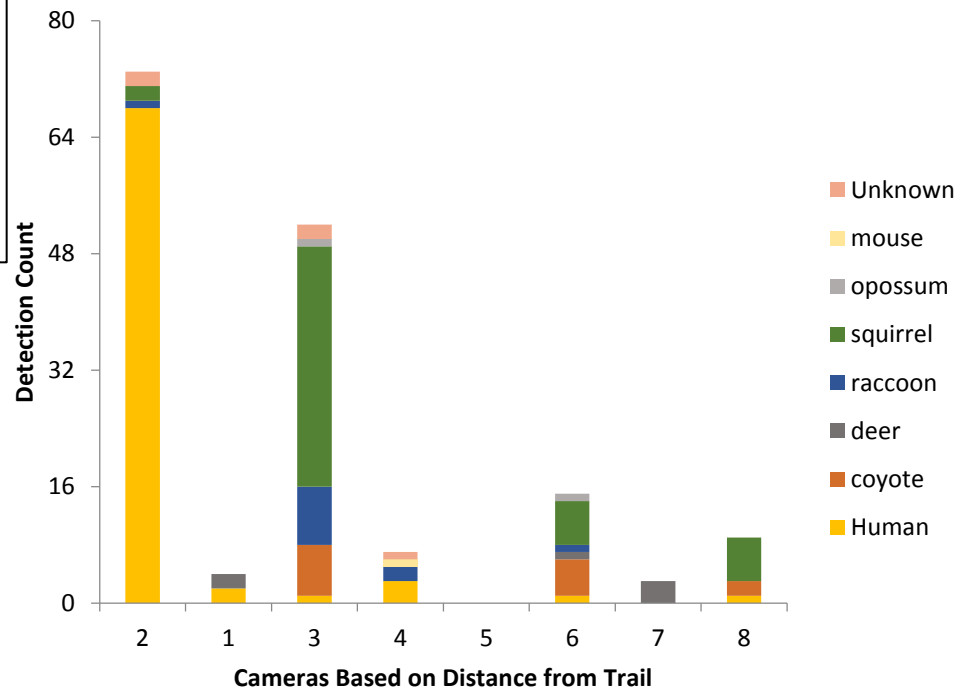
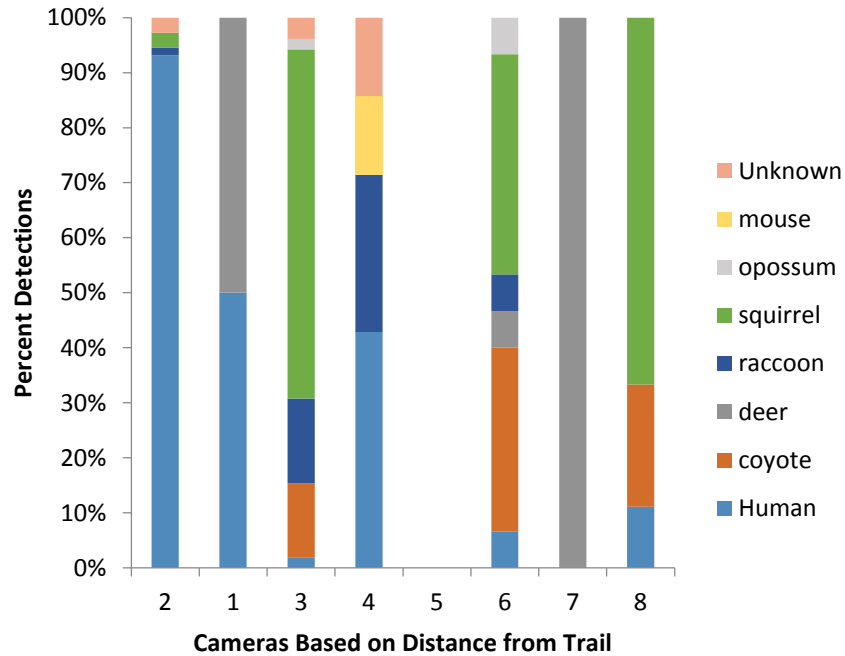
- ✦ No Trail
- ✦ Wetland 29.01ft
- ✦ Building 347.49ft

#### Encounter 9

- ✦ Human Activity: 1
- ✦ Coyote: 2
- ✦ Squirrel: 6



# Study Area B Comparison

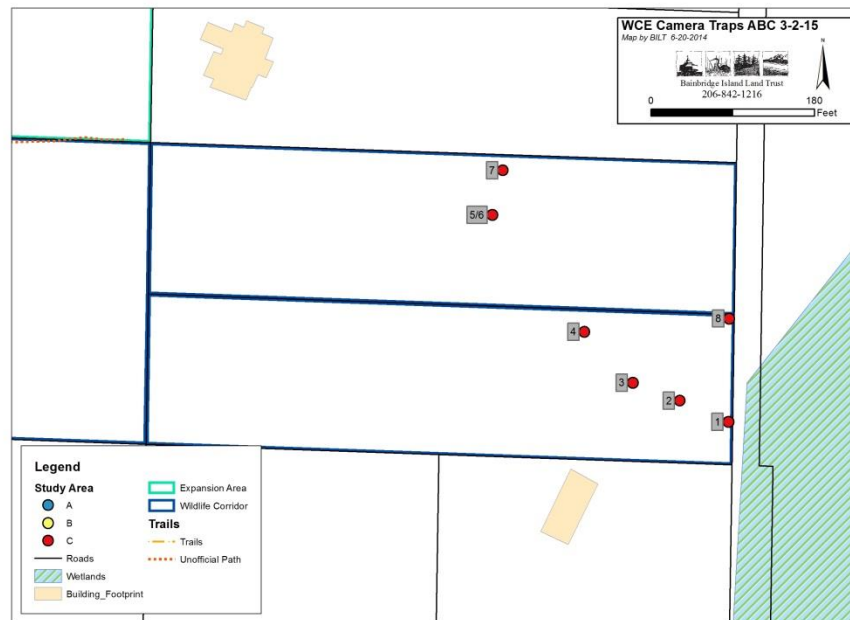


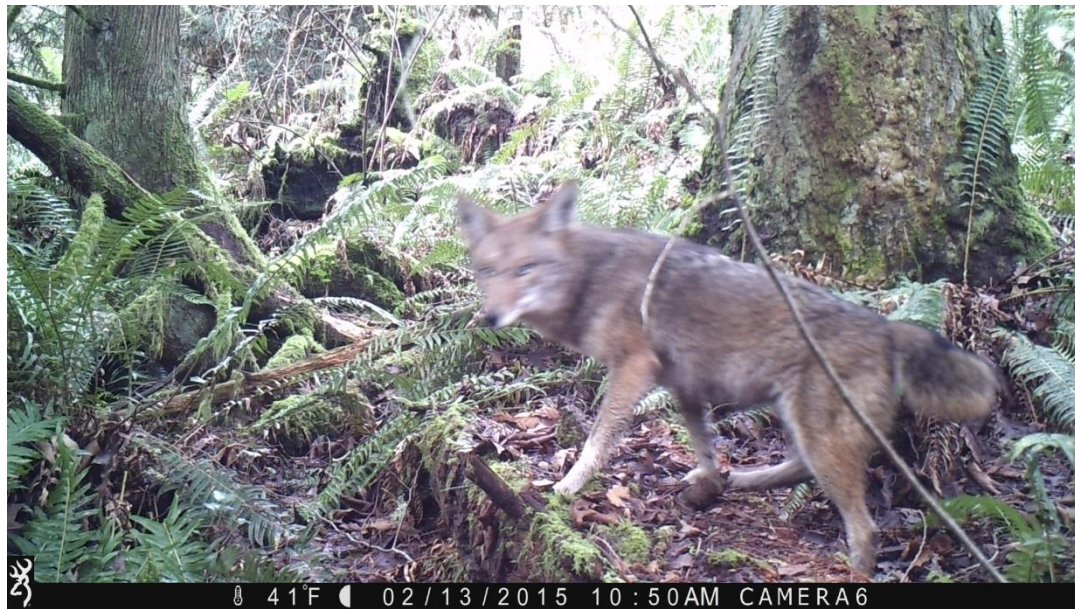


# Study Area C



- January 27<sup>th</sup>, 2015 – February 24<sup>th</sup>, 2015
- Total Encounters: 49
- Next to Meig's Park, Trail separating study site and park





## Study Site C

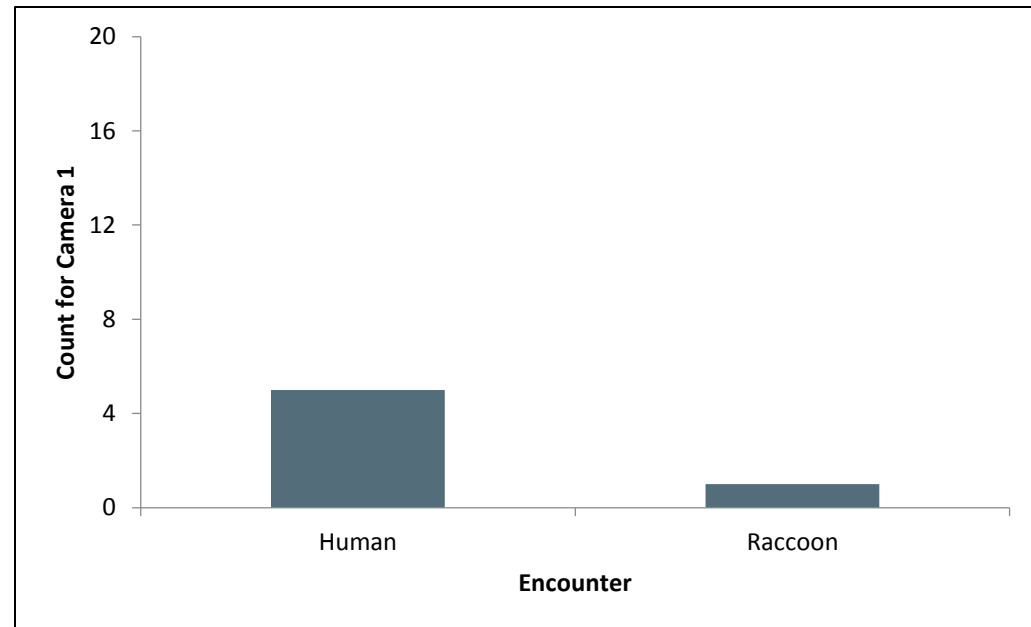
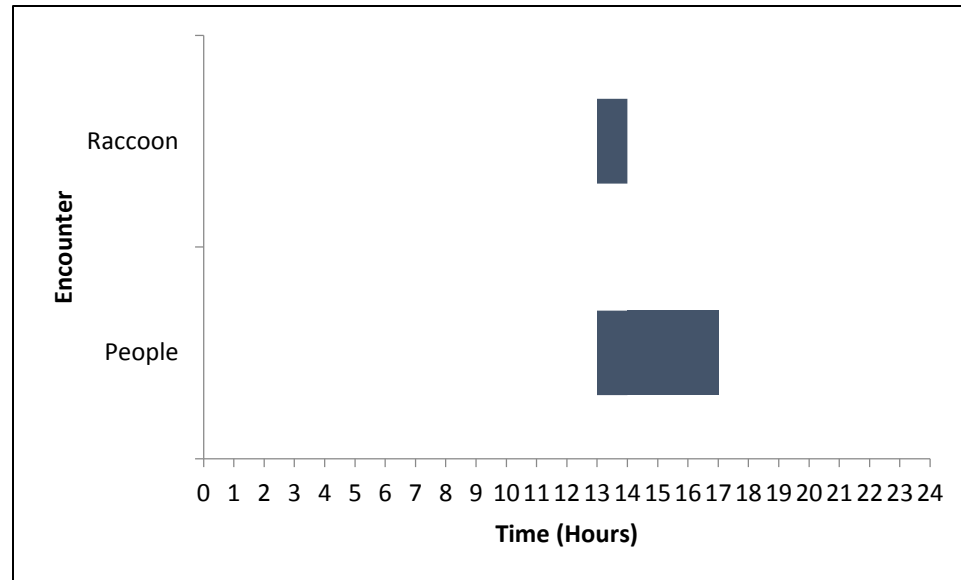
### Camera 1

#### Closest

- ✦ Trail 18ft
- ✦ Wetland 17ft
- ✦ Building 162ft

#### Encounters 6

- ✦ Human Activity: 5
- ✦ Raccoon: 1





## Study Site C

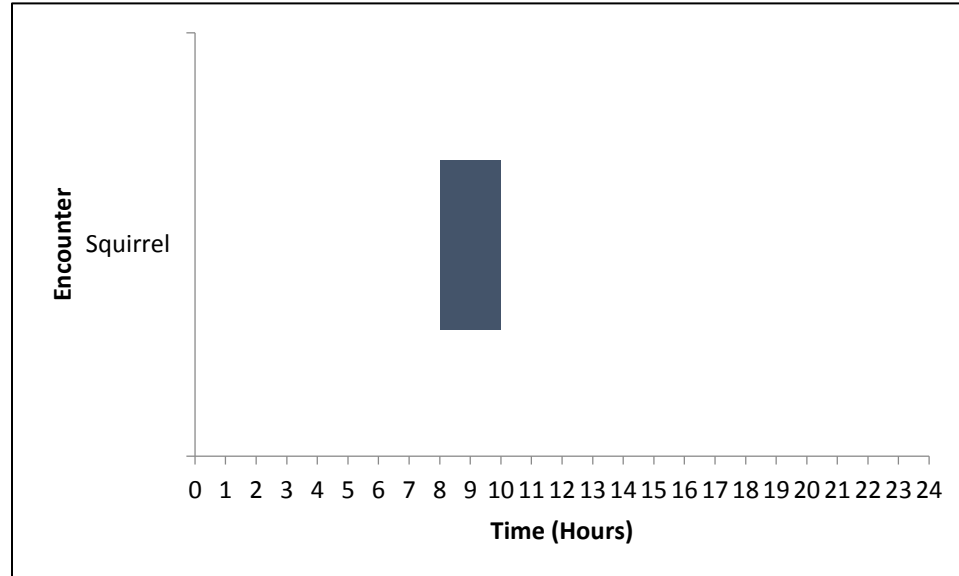
### ● Camera 3

#### ○ Closest

- ✦ Trail 126ft
- ✦ Building 116.78ft

#### ○ Encounters 2

- ✦ Grey Squirrel: 2



41°F ( 02/14/2015 09:37AM CAMERA 3

## Study Site C

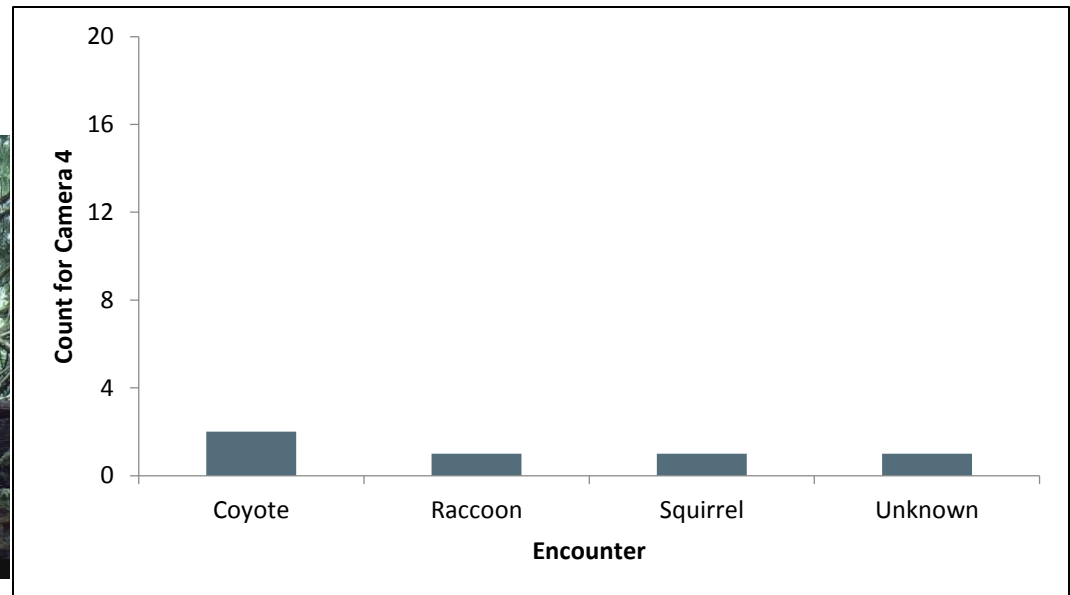
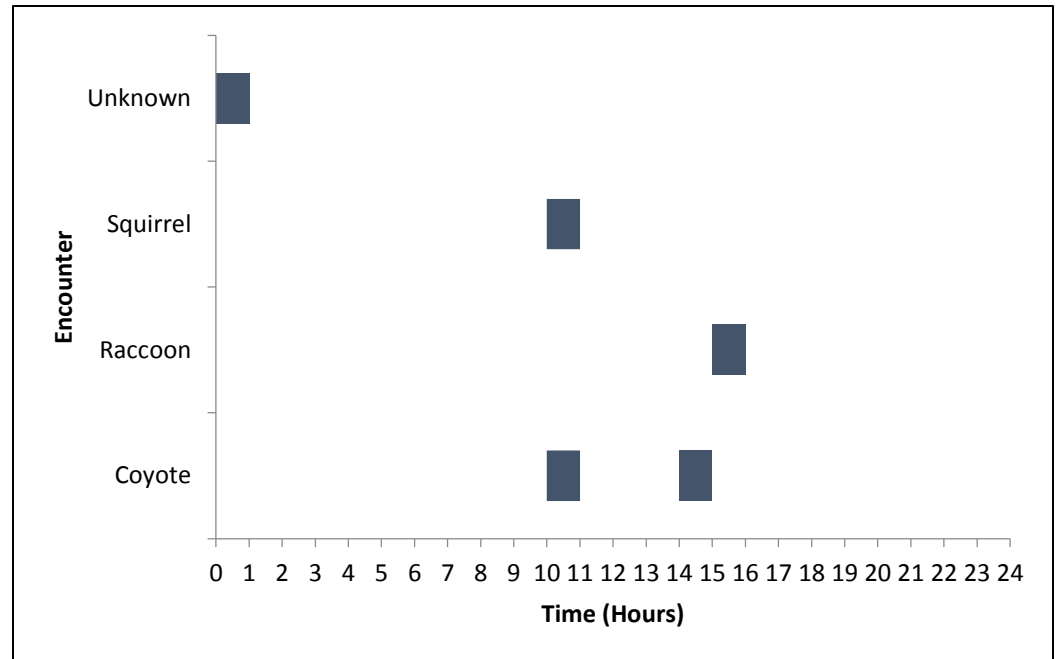
### Camera 4

#### Closest

- Trail 179ft
- Building 151ft

#### Encounters 5

- Coyote: 2
- Raccoon: 1
- Squirrel :1
- Unknown :1



8 38°F ( 02/18/2015 10:53AM CAMERA1

## Study Site C

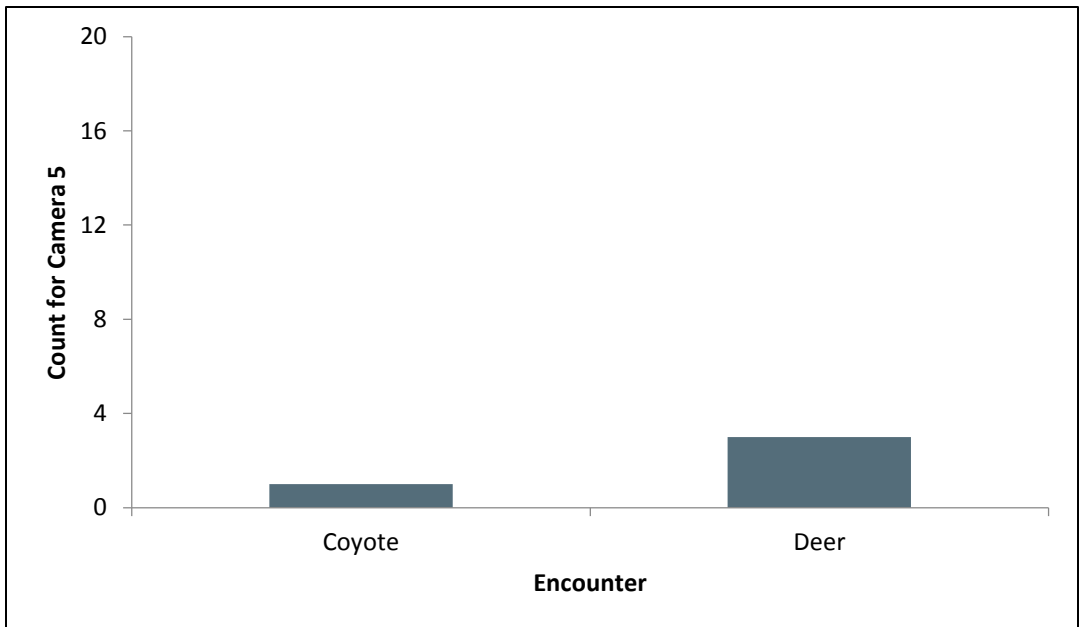
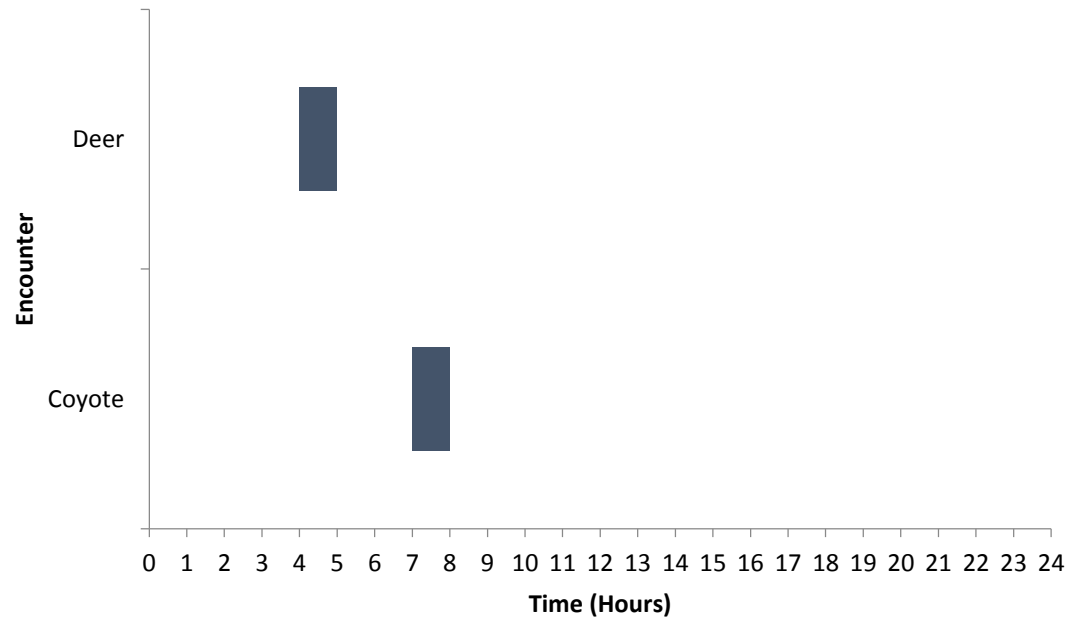
### Camera 5

#### Closest

- ✦ Trail 282ft
- ✦ Building 299ft

#### Encounters 4

- ✦ Coyote: 1
- ✦ Deer: 3



## Study Site C

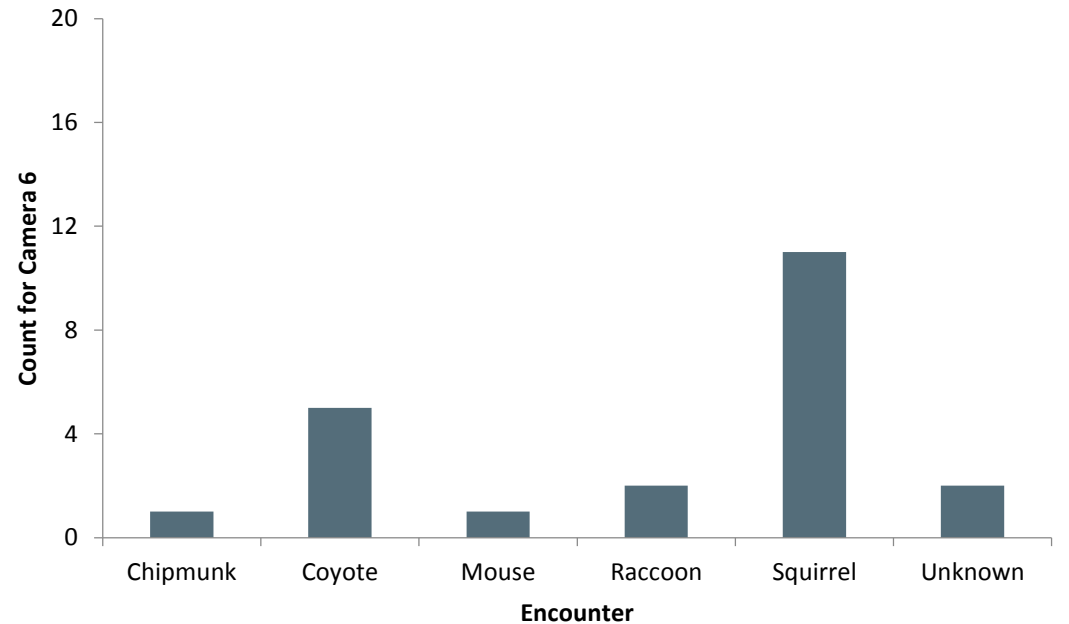
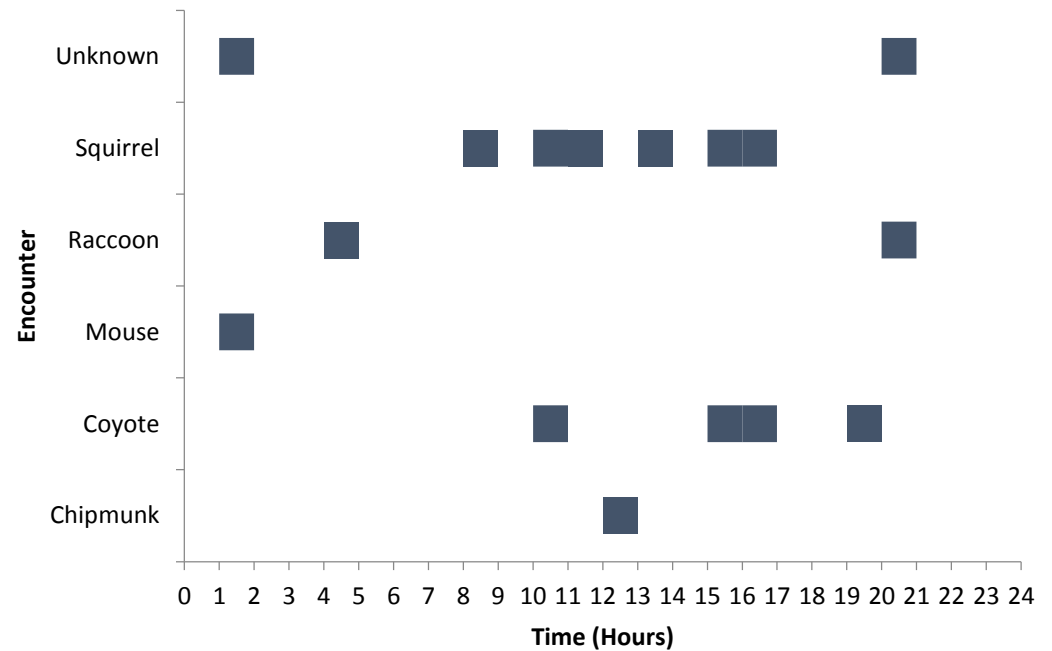
### Camera 6

#### Closest

- ✦ Trail 282ft
- ✦ Building 299ft

#### Encounters 22

- ✦ Chipmunk: 1
- ✦ Coyote: 5
- ✦ Mouse: 1
- ✦ Raccoon: 2
- ✦ Squirrel: 11
- ✦ Unknown: 2



## Study Site C

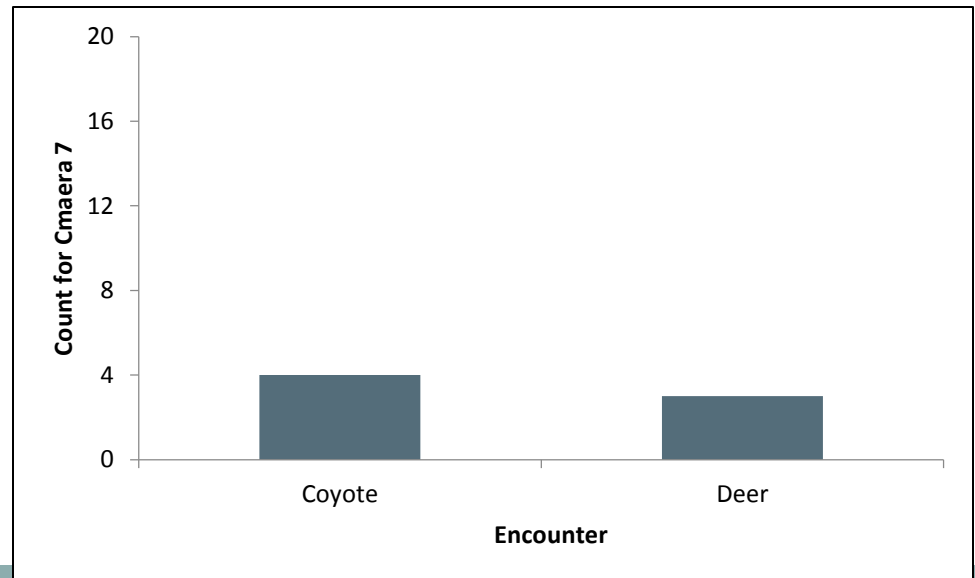
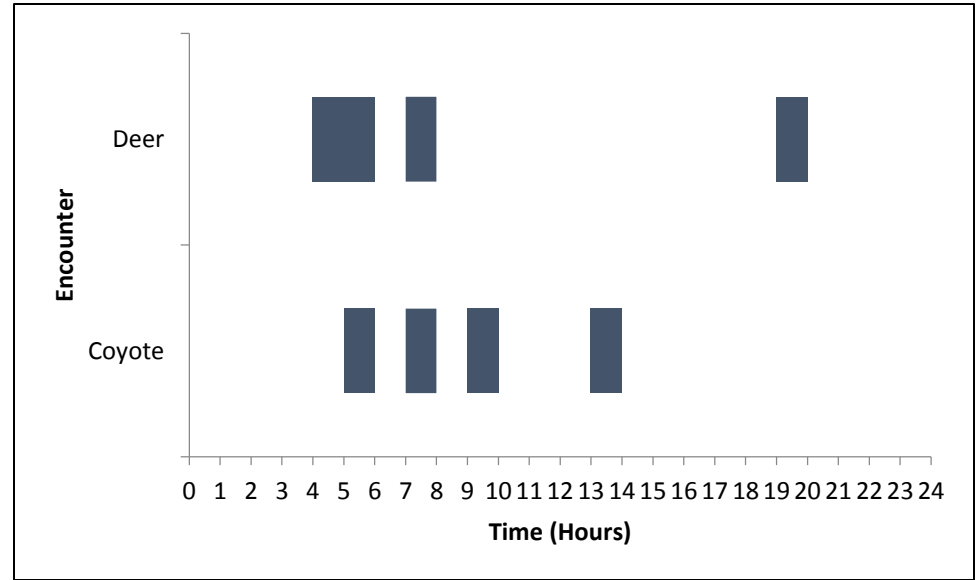
### Camera 7

#### Closest

- Trail 271ft
- Building 279ft

#### Encounter 7

- Coyote: 4
- Deer: 3





## Study Site C

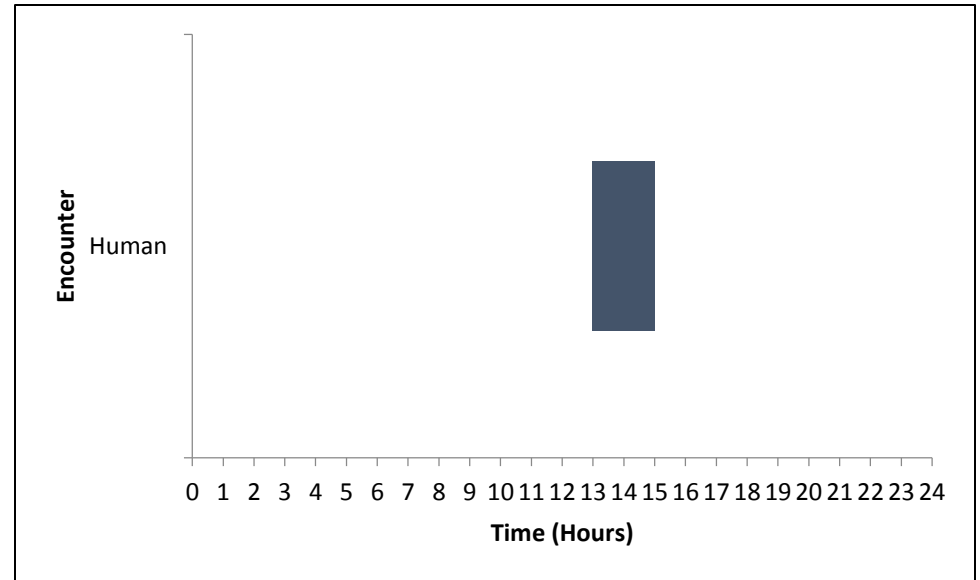
### Camera 8

#### Closest

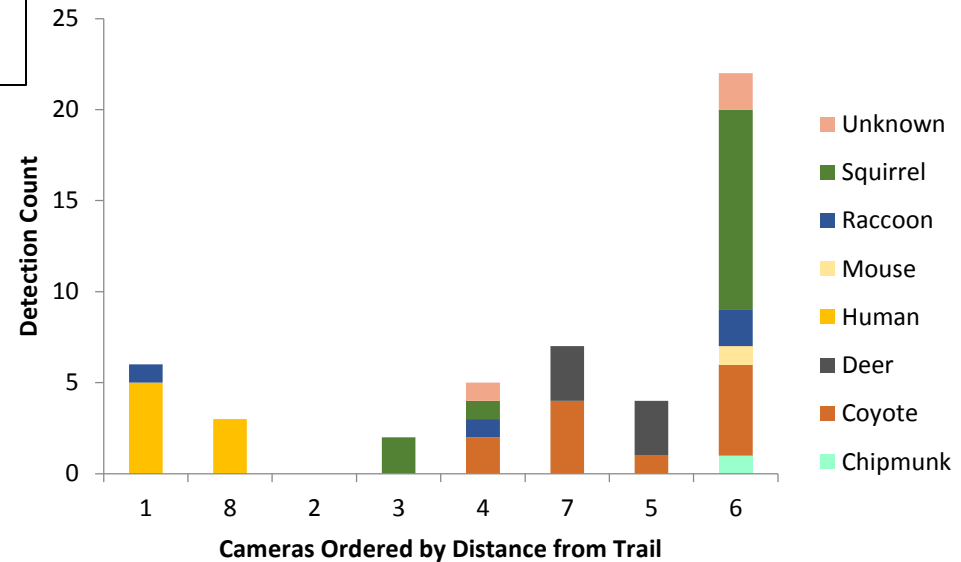
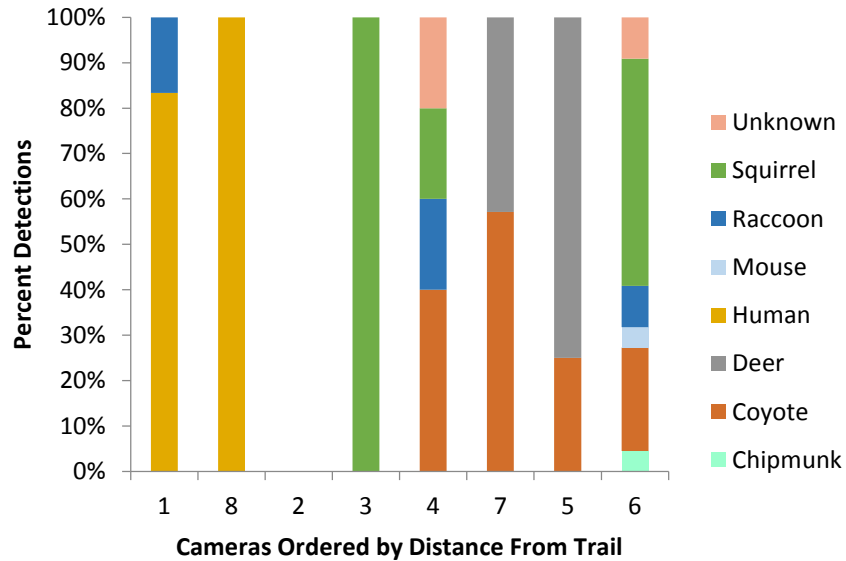
- ✦ Trail 20ft
- ✦ Wetland 64ft
- ✦ Building 240ft

#### Encounters 3

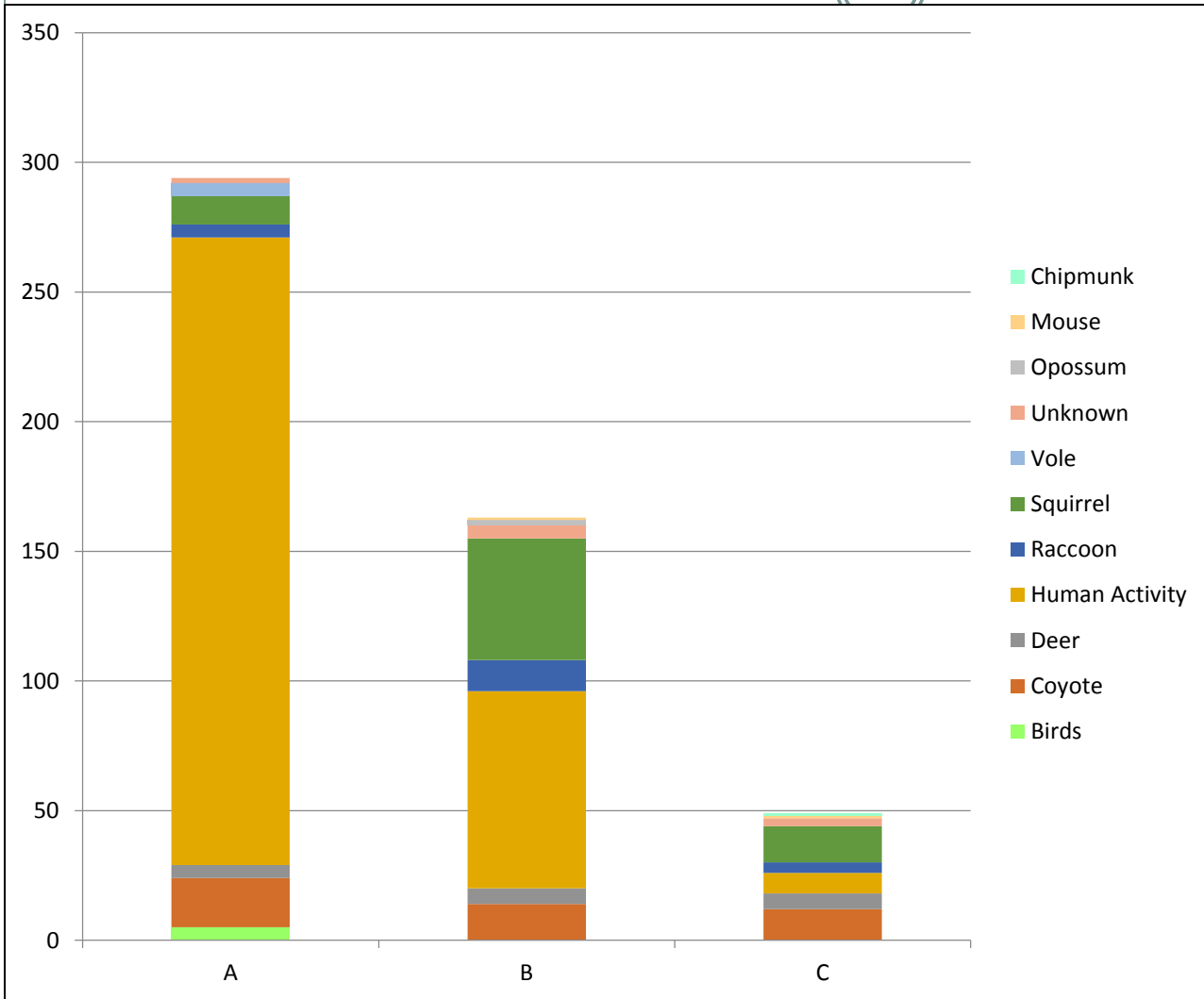
- ✦ Human Activity: 3



# Study Area C Comparison

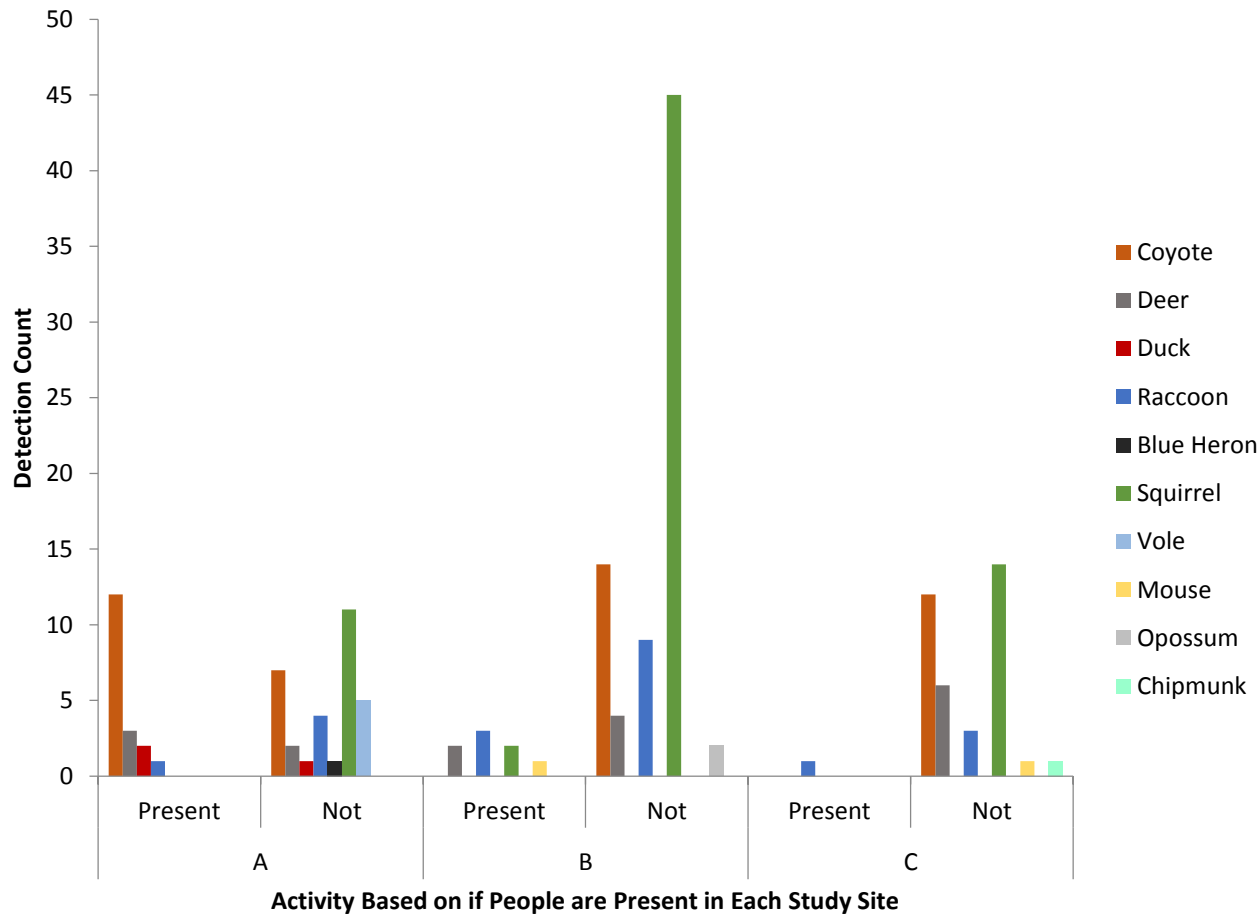


# Study Site Comparison



- If Camera 2 from site B was removed then the activities in site B and C would be similar
- There seems to be similar amount of coyote activity
- Squirrels prefer sites with less people

# Study Site Comparison Continued



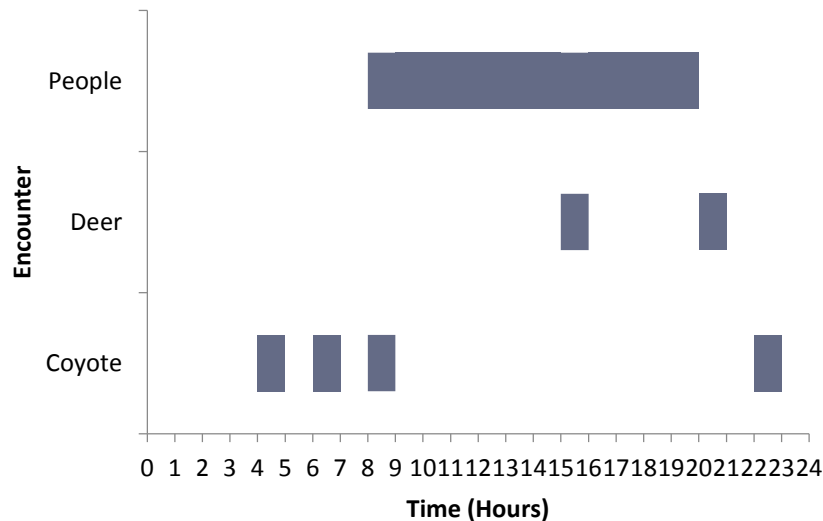
- Sites B and C saw increase wildlife activity with people absent
- Squirrels, Coyotes, Raccoons and Deer showed the most activity when people were absent
- No dramatic change in Site A
- Result from the large number of trails

# Activity Based on Time Detected

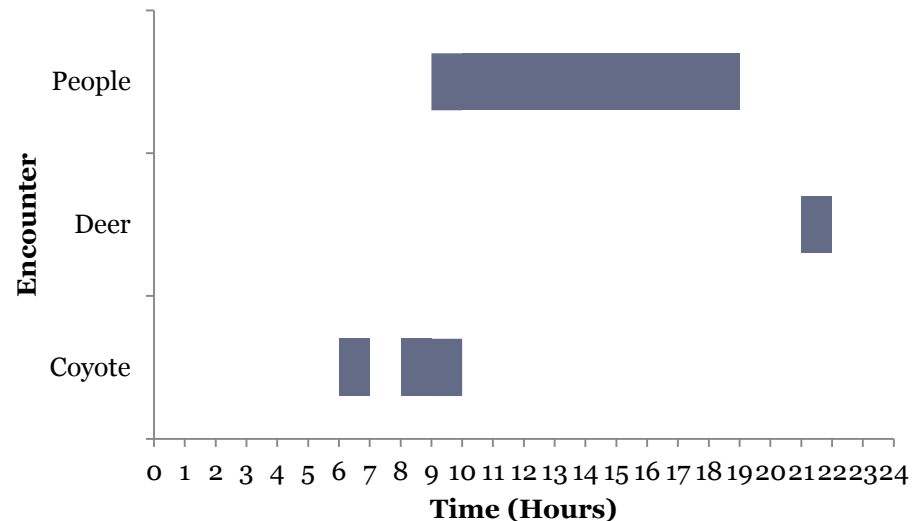


- Wildlife is more active when there is a lack of human activity throughout the day

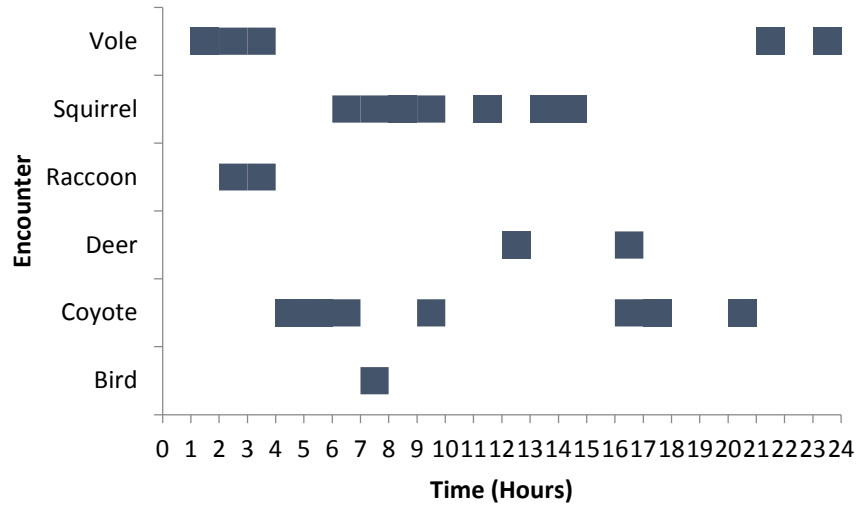
SSA Cam 1



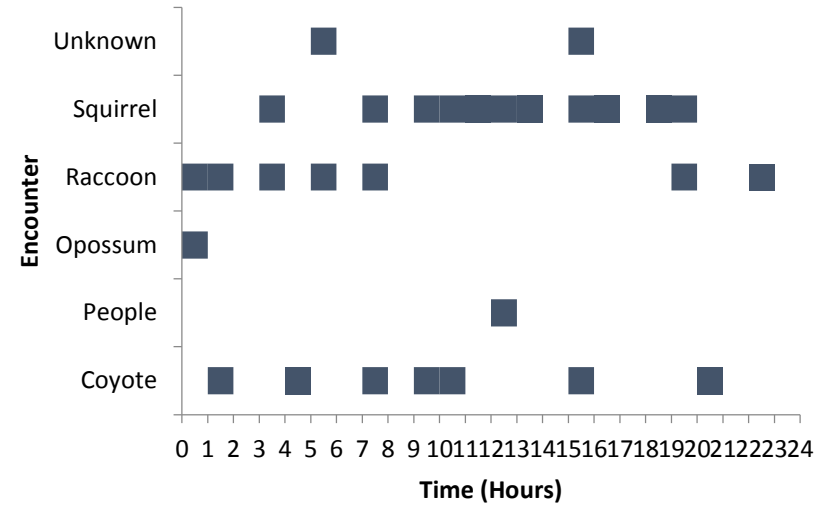
SSA Cam 5



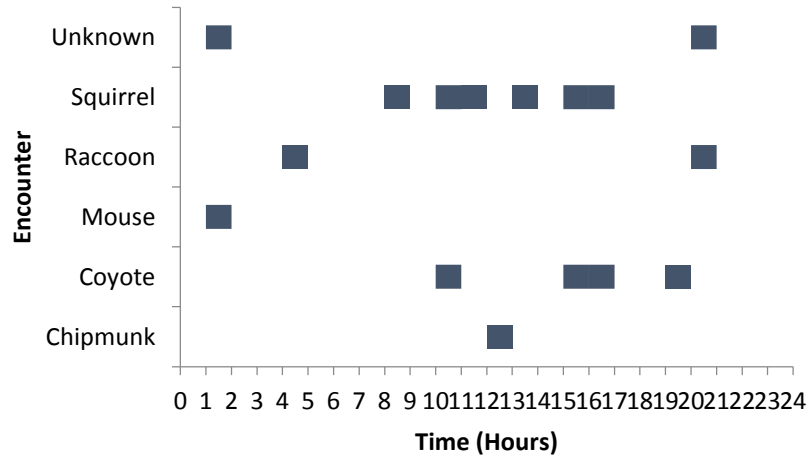
## SSA Cam 7



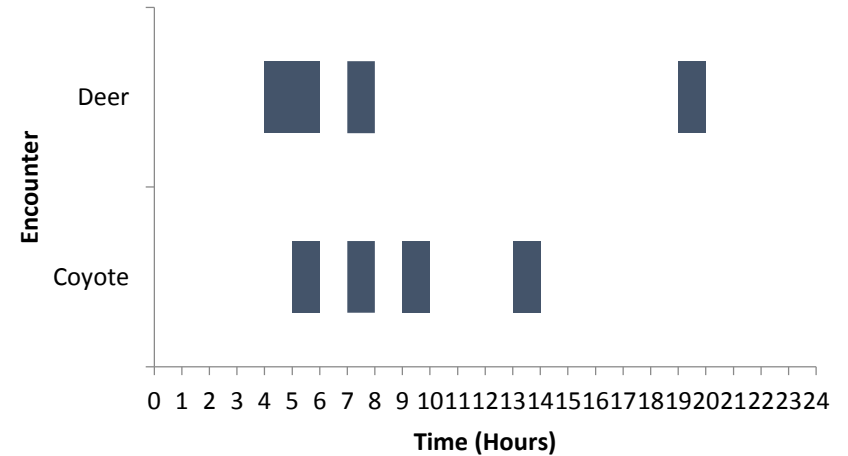
## SSB Cam 3



## SSC Cam 6



## SSC Cam 7



# Limitations



- Time of year that each site was studied
  - Study Site A was observed during the summer to autumn
  - Study Site B was autumn to winter
  - Study Site C winter to spring
- Duration of each camera was not consistent
- Camera Malfunction
  - There were a couple cameras that broke throughout the project
    - ✦ Some didn't turn on until dried
  - Some cameras took 6000+ pictures
    - ✦ Fixed itself

# Improvements



- Having more cameras out
  - Might be more time consuming
  - As long as details are logged stagger which cameras are checked
- Randomize where cameras are placed
  - Limits how clumped cameras will be
- Taking time to record surrounding habitat
  - Ground cover
  - Canopy cover
  - Slope
  - Etc.



# Conclusion



- With the limited data gathered it seems as long as there isn't human activity wildlife will use the corridor anytime of the day.
- Study Site Cs proximity to the park could be factor for activity
- The middle of the corridor gets significant activity from horses and dogs