

Camera Trap Analysis of Apex and Mesopredator Occurrence and Movement Patterns Within and Around the

Ballona Wetlands, Los Angeles, CA

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Introduction

- Apex predators often act as sentinel and flagship species, and there is also evidence to support their role as a surrogate species, especially if they act as structuring agents and biodiversity indicators in an ecosystem (Sergio *et al.* 2003).
- It has also been suggested that apex predators have a higher sensitivity to ecosystem changes, such as to landscape and food sources, than that of their prey, which can be observed in the propensity of top predators in a system to often times be the first species to be extirpated. (Duffy 2002). Apex predators have also displayed the effect of bioaccumulation of pollutants and toxic materials on their health (Sergio *et al.* 2003).
- This indicates that apex and meso predators likely provide an insight into the health of an ecosystem and can be investigated to detect any new potential ecosystem threats .

Methods

- Two types of game cameras, both providing a date and time stamp of when a photo or video clip was taken, have been used to record *in situ* study data.
- The **Bushnell Trophy Cam HD Camera** specifications include:
 - 0.3 second trigger time for pictures and 3.2 sec. for video
 - 80 ft. sensory and nighttime I.R. range
 - 12 month battery life (approx.)
- The **Browning Spec Ops Camera** specifications include:
 - 0.76 second trigger time for pictures and 0.79 sec. for video
 - 90 ft. sensory and nighttime I.R. range
 - 5.5 month battery life (approx.)



Fig. 1: Map identifying the location of each camera trap currently in use and the area in which they are monitoring. (Images from Google Earth) Orange arrows indicate still image cameras, while blue represent video recording cameras.

Results (In Progress)

Camera Trap	Type of Animal	Total # of Animals	Time Spotted
Camera A	Rabbit	17	Only Night
	Owl	1	2/11/16-5:45 and 2/16/16-3:21
	Rat	1	2/12/2016 - 18:39
Camera B	Data Not Yet Recovered		
Camera C	Camera Removed		
Camera D	Data Not Yet Recovered		
Camera E	Coyote	6	Only Night
	Hawk	2	10:45 A.M.
	Unidentified Raptor	1	9:22 A.M.
	Rabbit	2	11:21 and 9:21 P.M.
	Squirrel	3	11:45 A.M. and 12:30 P.M.
	Coyote	1	3/7/16 - 4:11 A.M.
Camera F	Rabbit	4	2/23/16 - 11:13 P.M. and 1:24 A.M.
	Coyote	1	2/8/16 -1:19 A.M.
Camera G	Squirrel	2	9:55 A.M. and 3:00 PM
	Camera Removed		
Camera I	Camera Removed		
Camera J	Camera Removed		

Table 1: Total current sightings of each terrestrial animal and predators recorded by each camera including recording time.



Fig. 2: Camera locations and concealment techniques.

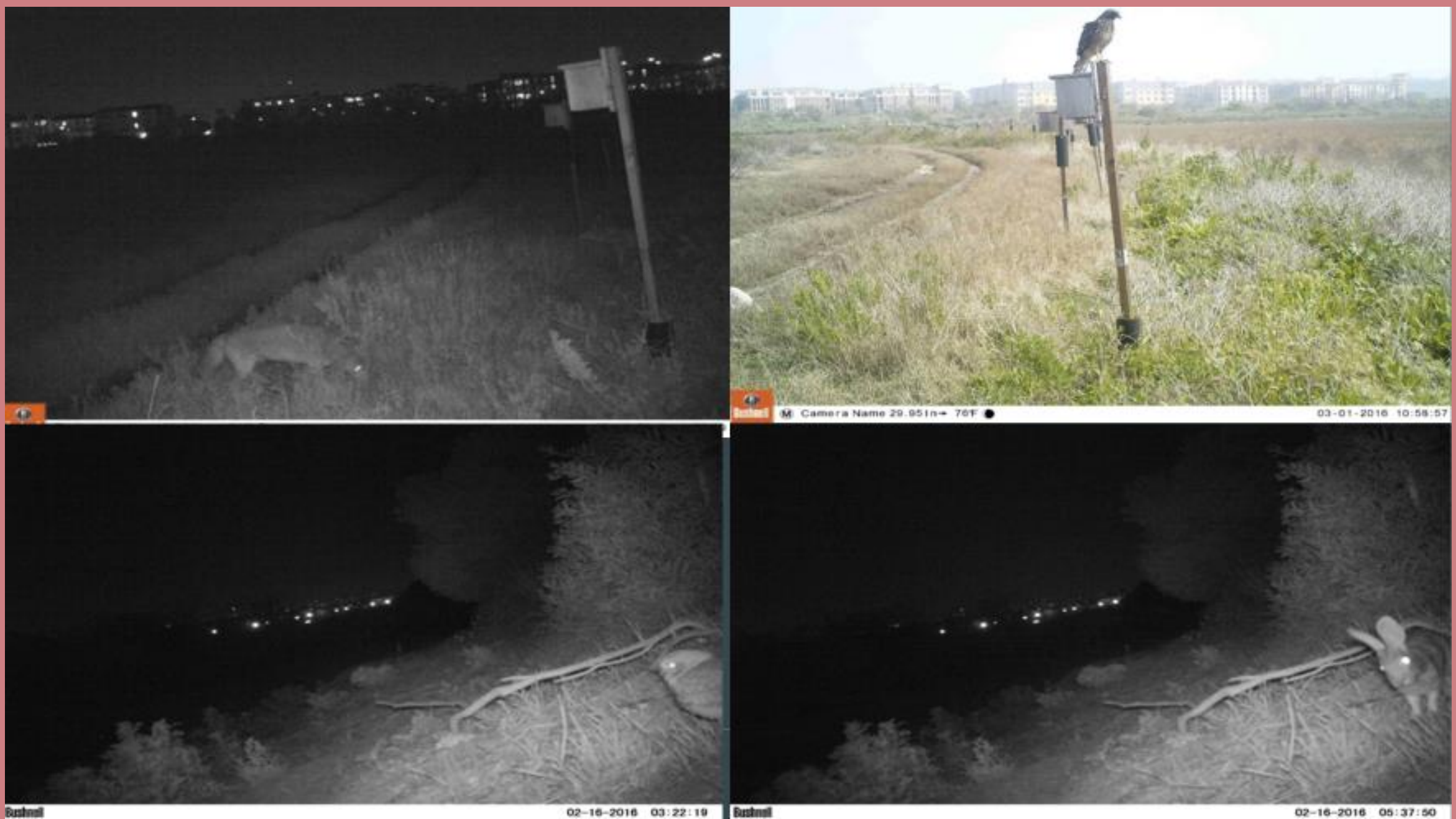


Fig. 3: Clockwise from the upper right: hawk, rabbit, owl, coyote. The upper two were captured by camera E and the bottom two by camera A.

Results (In Progress)

Camera Trap	Animal	Quantity	Date	Time
Camera E	Coyote	1	2/11/2016	9:53 P.M.
		2	2/16/2016	7:56 P.M.
		1	2/19/2016	6:18 P.M.
	Hawk	1	2/24/2016	7:41 P.M.
		1	3/7/2016	3:00 A.M.
		1	2/23/2016	10:45 A.M.
		1	3/1/2016	11:00 A.M.
Camera F	Coyote	1	3/7/2016	4:11 A.M.
Camera G	Coyote	1	2/8/2016	1:19 A.M.

Table 2: Table indicating times and dates each predator was recorded at a camera site including when groups were observed.

Discussion

- Numerous rabbits, an important food source for meso and apex predators, were spotted along the cliff trail of LMU, which would predict predators are likely to frequent the area. Currently, no predators aside from an owl have been recorded along the trail.
- We suspect this may result from heavy atraffic through the area or predator movement restrictions associated with the multi-lane, heavily trafficked road located between the adjacent Ballona Wetlands and the trail.
- What might be a resident hawk and an unidentified raptor were recorded by Camera E, which is located inside a swallow nest box in the Ballona Freshwater Wetlands.
- Predator occurrence at the Camera E location was anticipated due to the fact that it is located on an ecotone.

Future Research

- In order to differentiate and identify individual predators, higher quality night time photos are needed. A different brand camera will be tested in order to address this issue.
- Although no camera datas have been obtained of the bird, an osprey has been sighted circling above the freshwater wetland when team members were tending game cameras, indicating there are more predators present in the area than we have yet recorded via game cameras

References

- Duffy, J. E. (2002). Biodiversity and ecosystem function: the consumer connection. *Oikos*, 99(2), 201-219.
- Sergio, F., Caro, T., Brown, D., Clucas, B., Hunter, J., Ketchum, J., ... & Hiraldo, F. (2008). Top predators as conservation tools: ecological rationale, assumptions, and efficacy. *Annual review of ecology, evolution, and systematics*, 1-19.