

# Mesocarnivore Responses to Visual Lures In Freshwater, California

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## INTRODUCTION & AIMS

Camera trapping is a common technique used to determine mesocarnivore presence, home ranges, habitat preference, species richness and abundance.<sup>1</sup> Several detection related techniques have been rigorously scientifically tested - mainly the efficacy of various scent lures, reward-based food baits, camera placement and study designs.<sup>2</sup> However, visual lures, which are frequently deployed by managers, have been tested for efficacy at attracting individuals to camera stations far less.



This study sought to test the efficacy of using a visual lure at camera stations to increase detection and station visitation of mesocarnivores.

Mesocarnivores are highly successful in urban-wildland interface areas of North America and California.<sup>3</sup> Mesocarnivores can be difficult to detect without the use of camera traps- they tend to be elusive, crepuscular, or nocturnal.<sup>4</sup> However, camera trapping allows us to record many aspects of mesocarnivore behavior, movement, and activity patterns, as long as biologists place cameras in locations where individuals will be detected, or lure animals to the camera.

The goals of this study were to determine if animals were attracted to or repelled by visual lures by analyzing:

- Time spent at stations with or without lures
- Level of interest (none, low, high)
- Species to species comparisons of time at lured stations



## STUDY AREA

This study was conducted in Humboldt County, CA on a 10-acre private parcel in Freshwater, approximately 5 km east of Eureka. The study site consisted of fallow agricultural land, with predominately invasive plants. Residences, agricultural lands, and second growth forests compose the surrounding area. 10 cameras were placed along a 150 m transect, at intervals of 16 m, along an active game trail. Camera stations to receive a visual lure were randomly selected (n = 5).



Google maps 2023, locations of camera stations.

## METHODS

- The visual lure consisted of a 1 m long pole with 2 strips of mammal fur, assorted feathers, and blue iridescent tinsel attached at the tip.
- Lure was inserted into soil 2 m in front of camera.
- All 10 cameras were Bushnell Trophy model 119836, affixed to fence posts with webbing.
- 30 s recordings at 3 s intervals.
- Deployed 24 hrs per day, for 29 days (n = 6960 hrs).
- “Interest” was ranked by behaviors towards the lure such as stalking, sniffing, marking and biting or being startled, weary, or running away from the lure.
- Fisher’s Exact Tests to analyze each species’ interest at stations with lures vs. no lures.
- Kruskal-Wallis H Test to rank and compare time spent at a lure for those times animals showed interest, by species groups.

## RESULTS

- A total of 117 recordings were made (n = 25.6 min.).
- 6 mesocarnivore species detected in high frequencies (Bobcat, House Cat, Opossum, Raccoon, Striped Skunk, & Grey Fox), and Red Fox, Striped Skunk, and Black Bear observed but not included due to small sample sizes. Bobcat interest in the lure was not significant, but Fisher’s Exact Test indicated significant interest in the visual lure compared with no lure for the other 5 species (Figure 1).
- 70 % of observations occurred between 2000-0400 hrs.
- No significant difference was found between the medians of each species’ time spent at lures for those times animals showed interest ( $X^2 = 2.0459$ ,  $df = 5$ ,  $P = 0.8428$ ). Opossum spent slightly more time at lures (Figure 2).
- Rain was not correlated with probability of visitation at camera stations with lures or without ( $P > 0.05$ ).
- Gray Fox were recorded on camera with lures the most (n = 7.7167 min.) and Bobcat the least (n = 1.76 min.).

Fishers Exact Test P-values

Species	P-value
Bobcat	0.2
House Cat	0.0048
Opossum	0.0124
Raccoon	0.007
Striped Skunk	0.0152
Gray Fox	0

Figure 1. Interest at camera stations with a visual lure versus stations without a visual lure for each species in Freshwater, CA, March 2023.

## DISCUSSION

- Gray Fox’s high interest in the visual lure (Figure 1) indicates that canid detection and length of observation might increase with the use of visual stimuli at camera stations.
- Camera stations with a visual lure were visited more frequently than those without (Figure 1), and most species showed high levels of interest at the lure.
- Felids, particularly Bobcats, appeared to be less interested in the visual lure, but confounding variables such as presence and abundance could be altering detection in the study area.
- Locally or seasonally rare and elusive species (Spotted Skunk, Black Bear, Red Fox) detections were not statistically significant, making discussion on their responses to the visual lure anecdotal.
- An extreme outlier for Opossum data occurred when an individual spent 186 s trying to eat the visual lure.

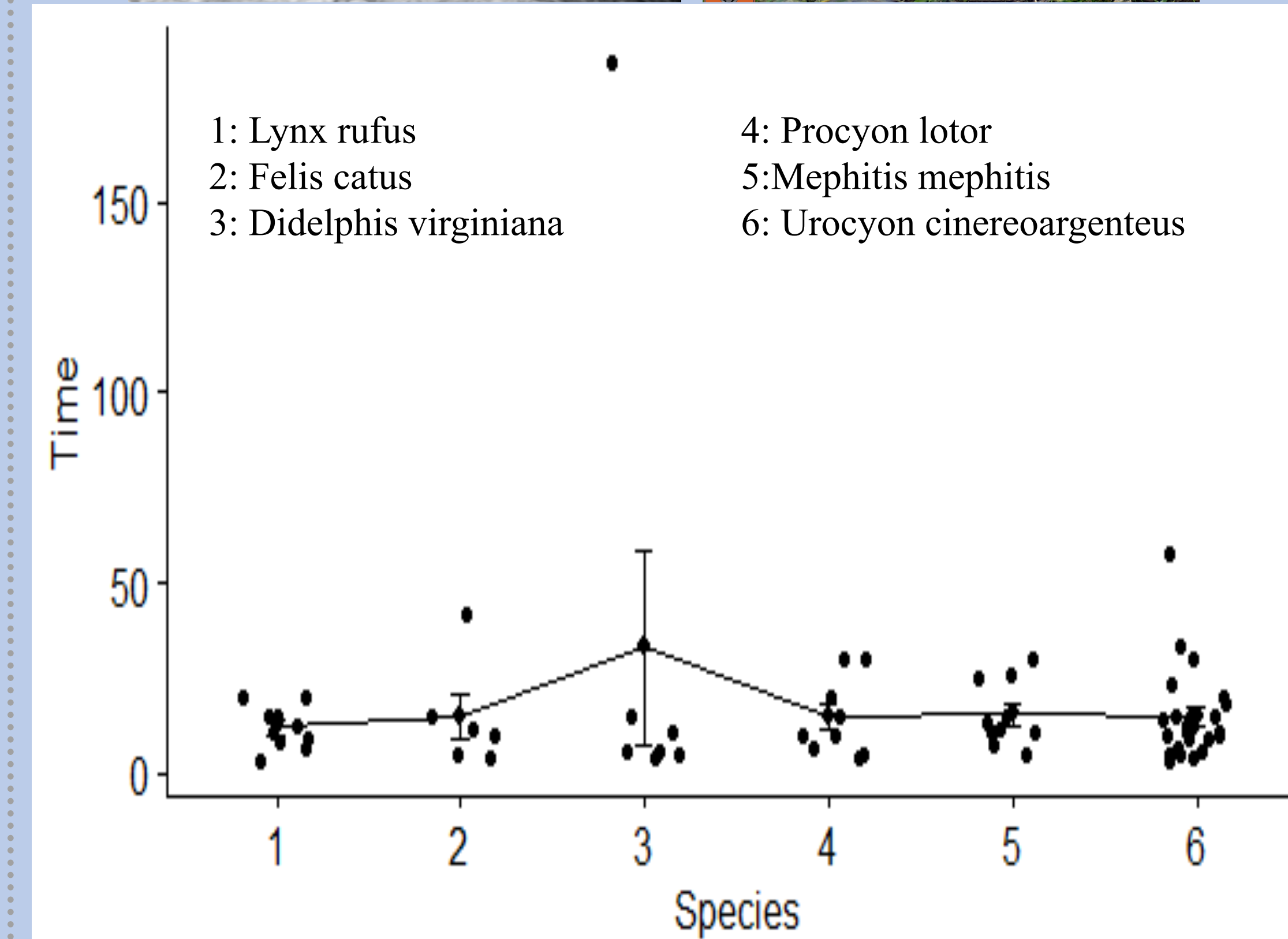


Figure 2. No significant variation between the medians of the 5 species’ time spent at cameras with lures and showing interest.

## CONCLUSIONS

- The use of visual lures at camera stations shows some promise for increasing detection. Camera stations with visual lures were visited more frequently than those without, but no species appeared to be more interested in the lure than other species. Further research into taxa specific responses is warranted to influence techniques.
- Future studies should focus on further exploration of visual lures as a less invasive attractant to cameras and increasing detection probability of rare and difficult to detect species.
- Larger sample sizes, more cameras, and a variety of lure types should be explored.

## ACKNOWLEDGEMENTS

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## LITERATURE CITED

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