

Scent Recognition Related to Pair Bonding and Relationships in *Canis lantrons* (Coyotes)

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Abstract

Pair-bonding is a mutualistic relationship between two adult individuals of the same species wherein they support each other and raise offspring together, though it is not always associated with sexual isolation from other members [1]. Pair-bonding is ubiquitous in all wild canids, so *Canis lantrons* (coyote) are being studied for both neurological and behavioural basis for pair-bonding [2]. This part of the study focuses on the behaviour of *C. lantrons* in response to scent stimuli from self, sibling, stranger, and mate in the form of urine samples previously collected. Data was collected via videotaping. The experiment has not finished, so data analysis and results are not applicable, but will be coded in Boris. We aim to answer questions on the relationships between the behaviour exhibited in response to the different relationships that the urine samples represent, and predict that coyotes will prefer self and mate scent to stranger and sibling.

Objectives

- Discover if coyotes have preferences for the scents of mates, siblings, or strangers when given two options at a time.
- Gain experience working in the field within a larger team.



Figure 1
Canis lantrons by Miriam Black

Background

Pair-bonding is an unfamiliar term, but a familiar concept. We associate pair-bonding with monogamy, meaning that two adults will remain sexual partners for the rest of their lives, but pair-bonding is a broader term than that. Pair-bonding is when two adults of the same species form a companionship; they raise young and feed together, even though they might not mate with each other every season [1]. Because all wild canids exhibit pair-bonding [2], we have selected native coyotes *Canis latrans* for this experiment. While one team studies the neurological basis for monogamy, we studied the behaviour of *C. latrans* via scent communication.

Methods

Previous to this season of testing, urine samples from the coyotes were collected and stored with labels of the gender, individual's ID number, and year that it was collected.

We set a time in the evening near sunset to put the stimulus into the pens, so each coyote had 24 hours to interact with each set of stimulus. In the span of four rounds, each lasting nine days and each with four individuals (two pair mates), we tested behaviour for urine samples from self, stranger, sibling, and mate. The pen was set up so that near the middle there were two poles in the ground to which the bowls (Fig2.A1 & A2) would be attached. Trancams (Fig2.B1 & B2) tracking movement were placed viewing the bowls (one camera to one bowl) and the SD cards were replaced every 24 hours at the same time as the scent samples. To get a baseline activity, and to get the coyotes used to our and the bowls' presence, each round began with three days of habituation, where the bowls contained only water.

We will code the behaviours observed by the trancams in Boris to get both the duration and frequency of interactions such as urination, sniffing, and scratching.

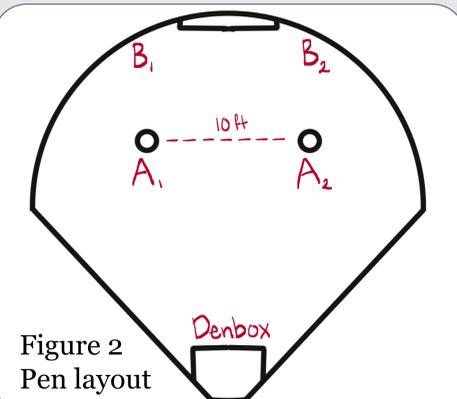


Figure 2
Pen layout

Conclusions

There is one more season left, so data analysis has not started and no results are in. I learned how much work a research project takes from both being on the field and watching Caroline Long carry the weight of the project. When I conduct my own, I will, like Caroline, make it the focus of my life.



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[1] Bales, K. L., et al. (2021). What is a pair bond? *Hormones and Behavior*, 136(105062). <https://doi.org/10.1016/j.yhbeh.2021.105062>

[2] Macdonald, D.W., et al. (2019). Monogamy: Cause, Consequence, or Corollary of Success in Wild Canids? *Frontiers in Ecology and Evolution*, 7. <https://doi.org/10.3389/fevo.2019.00341>