

Sociobiology of Loyola Marymount University's Red-Tailed Hawk (*Buteo jamaicensis*) Reproductive Group

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Abstract

As urbanization increases, nesting habitat for avian predators will likely become limited and may cause them to be unsuccessful in exploiting urban areas. Red-tailed hawks (*Buteo jamaicensis*) are common synanthropic, top-order predators that appear to thrive in urban environments. The Loyola Marymount University campus presents optimal nesting habitat due to tall trees and built other anthropogenic structures. Anecdotal reports indicate that a single breeding group has nested on the LMU campus for the past eight breeding seasons (years). Remote video monitoring of the nest began in 2015, and indicates continual usage of the area for several purposes including use of these areas for hunting and territorial defense. In addition, observations of raptor soaring behavior were taken throughout the 2016 fall season at the LMU bluff. Several behaviors observed included reproductive behavior, soaring on the bluff, migratory patterns and interspecific and intraspecific interactions. This study suggests further investigation in usage of updrafts in different species of raptors and can contribute to landscape planning and how urbanization affects flight, avian behavior, migratory patterns, courtship behavior, and nest site preference.

Purpose

- How are the Red-tailed hawks at the bluff utilizing its unique structure and location to successfully reproduce in an urbanized environment?
- How do red-tailed hawks utilize LMU's bluff orographic shape in order to defend territory, conduct reproductive activity and enhance hunting activities?
- Determine which wind and sun conditions are critical for updrafts, specifically thermals?
- Does LMU's unique cliff configuration create unusual orographic updraft conditions for raptors to utilize?
- Can the nest established adjacent to the baseball field provided optimal observational data on hawk reproductive biology?

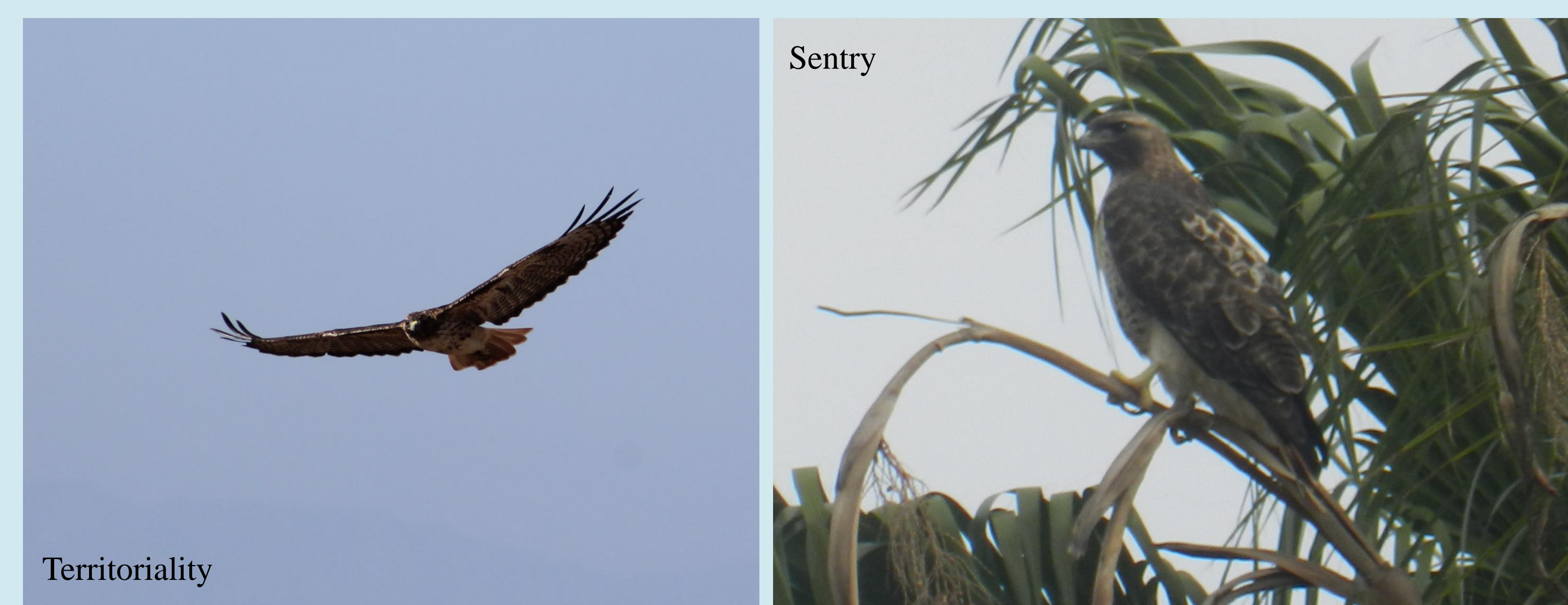
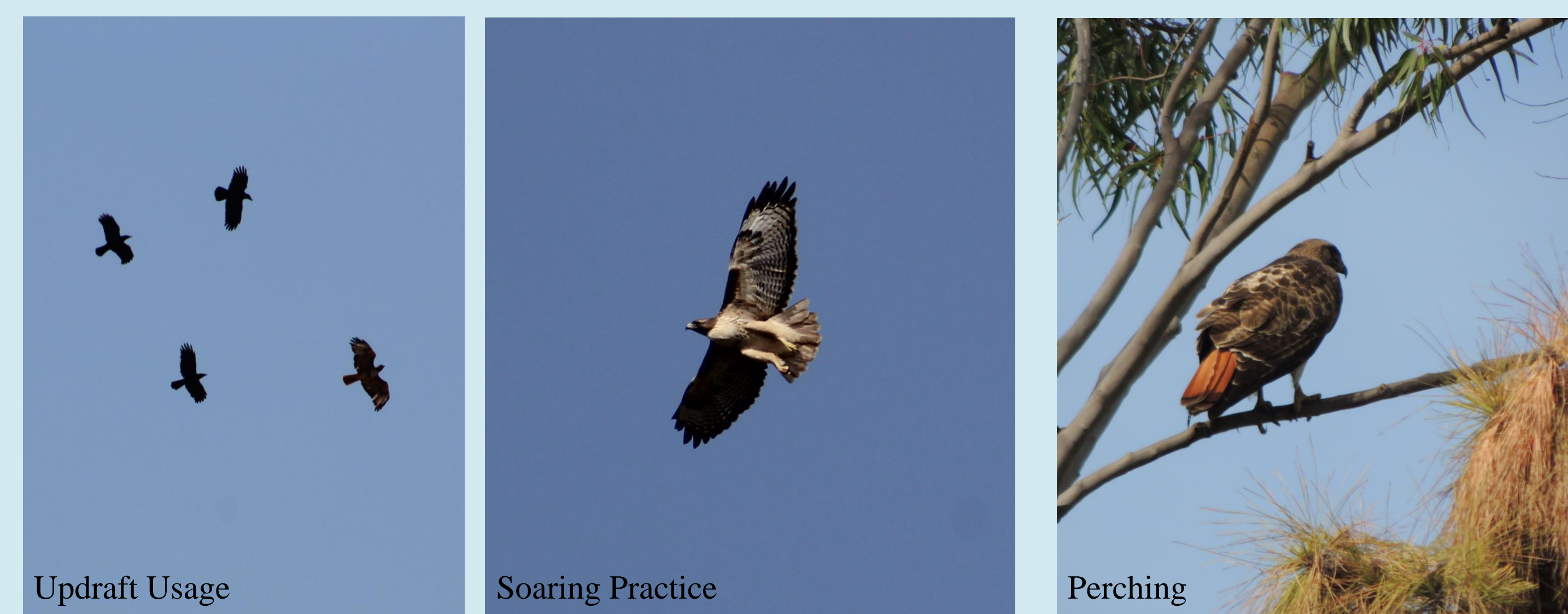
Methods

- Nesting behavior at the baseball field was video recorded and directly observed and recorded in field notes.
- A transect was established along Loyola Marymount University's bluff to inspect for raptor sightings
 - Additional collection of data includes video footage and photographs of raptors viewed at the bluff.
 - Transect inspection was conducted for a few hours two times a week.
- Anecdotal observations observed while passing the bluff during non-observation hours were also recorded
- Behaviors *i.e.* territoriality, courtship, *etc.* were noted and categorized in observer field notes as well as the time and location of each sighting

Data



Map of LMU Campus and established observational locations. Red highlighted area is the bluff transect, where the majority of observational data were collected during the fall season. Majority of raptor sightings were observed around the bluff.



Results

- **Talon Drop:** courtship or territorial display. Typically 2-3 hawks were involved.
- **General Soaring:** bluff provides perfect location to practice flying skills for juveniles from the nest.
 - good location to overlook Discovery park or soar to the wetlands
- **Territoriality:** hawks were sighted soaring at high altitudes hovering in the same place to display towards other raptors in the area
- **Nesting Attentiveness:** usually one or both parents were observed at the nest or in close proximity, either brooding, perched, grooming or tending the nest.
- **Interspecific Interactions:** nesting interactions usually involved mobbing by other birds, either jays or crows. Other species observed included cooper's hawk and american kestrel.
 - Most commonly noted interactions were acts of aggressiveness by other birds towards the Red-tailed hawks
- **Courtship:** Red-tailed hawks were observed performing aerial displays at high altitudes potentially to impress a possible mate for breeding season
 - Interactions between the pair nesting at the baseball field were noted during video footage analysis
 - Individual juvenile red-tailed hawks seen at the transect were suspected to be offspring from baseball field nest

Discussion

- Most of the behaviors observed at the bluff were territorial displays *i.e.* talon drop, soaring around territory using updrafts, aerial dances
- Information gathered on red-tailed hawk nesting behavior and requirements could assist urban planners in designing predator 'friendly' urban development designs
 - Study findings provide helpful background information on how topography/landscape correlate to behavior
- Territoriality and soaring behavior could provide advantageous information to researchers to help them better understand red-tailed hawk interspecific interactions
- Original research approach involved observing the relationship between weather conditions and incidence of raptor sightings
 - LMU's distinctive orographic bluff provided hawks with enhanced soaring conditions
 - No obvious soaring correlation with weather was observed, leading to the likelihood that there was no direct relationship between weather conditions and raptor sightings

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