



A143 Coyote Pup Scavenging as Distinct From Adult Behavior: The Potential for Reproductive Patterns to Inform the Estimation of Postmortem Interval

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Learning Overview: After attending this presentation, attendees will understand juvenile coyote scavengers as behaviorally distinct from adults.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by providing novel insight into variation in intraspecies behavior and its potential impact on the forensic analysis of human remains.

Coyote (*Canis latrans*) scavenging has received considerable attention in taphonomy and ecology research.¹⁻³ Scavenging coyotes disrupt outdoor death scenes by consuming and scattering human remains, interfering with search and recovery missions, and reducing the probative potential of osteological analysis and the estimation of Postmortem Interval (PMI). Absent from current coyote scavenger data is consideration of the behavior and pattern of juvenile coyote pup scavenging. Juvenile coyotes present differences in dentition, bite force, body size, musculature, and experience. These variables have the potential to impact the rate, pattern, and presentation of scavenging and impact subsequent analyses of human remains.

The impact of coyote pup scavenging was investigated at Colorado Mesa University's Forensic Investigation Research Station high-altitude satellite facility (FIRS-TB40). FIRS-TB40 is located in the Rocky Mountain Region of Colorado at 9,500 feet Above Mean Sea Level (AMSL). The environment is characterized by steep slopes, alpine forests, open moraine grasslands, dramatic weather shifts, high precipitation, high Ultraviolet (UV) exposure, and heavy annual snowfall. Distinct environments foster distinct adaptive radiations that are expected to have a polyvalent impact on behavior, including scavenging. Baigent et al. described the succession and progression of scavenger guilds among a porcine cohort placed at FIRS-TB40 in the summer of 2018.⁴ This study demonstrated cooperative and competitive behavior between canid and avian groups and suggested that adult coyote scavenging at high-altitude diverged appreciably from published norms. A higher resolution model of coyote scavenging is reported with an emphasis placed on juvenile coyotes as progenitors of distinct intragroup scavenger behavior. Four pigs (two exposed/two caged) were placed in the summer of 2018 in a longitudinal transect across a 45° slope, each 30 meters apart. Each sample was monitored by a game camera programmed to collect both time lapse photographs and respond to motion in the environment. Carrion were visited three times weekly for a period of eight weeks, photographed, and decomposition documented using the total body score model.⁵ At the terminus of active decomposition, carrion were visited biweekly for six-months, photographed, and game camera data collected and analyzed.

Adult coyotes were the primary agents of tissue removal throughout early decomposition. Adult scavenging was characterized by independent, short interval "eat and retreat" behavior, the movement of osseous tissue upslope, and exclusively nocturnal. Adults made no attempt to disrupt the caged carrion or the centrally located exposed carrion. Juvenile coyotes appeared six-weeks postmortem (consistent with seasonal patterns of gestation and weaning), scavenged nightly across a 45-day window, and diverged from adult behavior significantly. Divergence is categorized as: (1) novel behavior (juveniles were cathemeral and worked individually, or in packs of two to four individuals); (2) tenacity (juveniles were observed digging under and burrowing through cage panels); (3) longer feeding periods (juveniles were observed in scavenging phases that averaged five hours in length); and (4) exploitation of novel resources (juveniles exploited carrion previously ignored by adults). Additionally, unlike adults, juveniles were not dissuaded by desiccated tissue; tissue removal was characterized by longitudinal peeling and did not include skeletal involvement. Juveniles were intermittently observed scavenging under the supervision of one to two adults. Adults did not feed during these phases, suggesting that scavenging presents the opportunity for intergenerational training and that juvenile feeding is prioritized.

Juvenile scavenger patterns are critical to understanding intraspecies variation in behavior that may impact scavenger drive, and the presentation and analysis of postmortem defects. Because coyote reproductive cycles are consistent and predictable, the identification of juvenile scavenging has the potential to be temporally co-related and inform the estimation of PMI. Future study will focus on higher resolution descriptive models of the tissue change associated with juvenile scavenging, as well as impact on patterns of skeletal dispersal in the post-deposition environment.

References:

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High Altitude, Coyote Scavenging, Human Decomposition