How Human Food Waste Influences Crow Foraging Behaviour on the UBC Campus

Introduction:

Urban environments create unique ecological conditions that can strongly influence the behaviour of wildlife species (Evans et al., 2010). Among the animals that have adapted especially well to human-dominated landscapes are American crows (*Corvus brachyrhynchos*), highly intelligent and opportunistic omnivores commonly found across the UBC Vancouver campus (Benmazouz et al., 2021). Because they are capable of exploiting a wide range of food sources, crows often thrive in areas where human activity produces predictable and energy-rich resources, such as food waste (Heiss et al., 2009). These conditions can alter natural foraging strategies and shift how crows allocate time and energy in their daily movements, particularly in environments shaped by human-generated subsidies (Martins, 2024).

In this project, I focus on the ecological question:

How do American crows choose feeding sites in an urban setting, and does human food waste influence where they forage?

This question is relevant not only to urban ecology, but also to broader ecological ideas introduced in BIOL 230. Concepts such as niche breadth, resource availability, and optimal foraging theory provide useful frameworks for interpreting crow behaviour. Optimal foraging theory predicts that animals will favour feeding sites that maximize energy gained relative to time and effort spent searching (Zach, 1978). In an urban environment, discarded food may act as a reliable, low-effort energy source, potentially shaping where crows choose to forage (Kövér et al., 2019).

UBC's campus provides a convenient natural laboratory for exploring this interaction. Areas like the Nest Plaza or bus loop often contain leftover food from daily student activity (Lequitte-Charransol et al., 2024), while nearby green spaces offer more natural but less predictable resources. By examining crow presence across these contrasting environments, this project aims to illustrate how human behaviour can inadvertently shape ecological patterns in urban wildlife, an effect widely recognized in behavioural studies of crow responses to human-modified landscapes (Novčić et al., 2025).

Methods:

To investigate how human food waste influences crow foraging behaviour on the UBC Vancouver campus, I used a combination of casual in-person observations made throughout the term and publicly available online resources documenting typical crow activity in urban settings. This mixed approach reflects how crow behaviour across cities is frequently interpreted in ecological literature (Benmazouz et al., 2021).

I focused on three campus locations that differ in levels of human activity and food waste availability:

1. Nest Plaza – a high-traffic area where students frequently eat outdoors.
2. UBC Bus Loop – a moderately busy transit area with trash bins and scattered food remnants.
3. The Rose Garden – a quieter, more natural area with little human food waste.

For each location, I recorded the following variables:

- Presence or absence of crows
- Approximate number of individuals
- Visible food sources, categorized as human food waste (crumbs, wrappers, fries, etc.) or natural food items (soil invertebrates, seeds)

Observations were conducted during daylight hours and supplemented by my prior experiences seeing crows on campus earlier in the term. Because crow activity is well-documented in urban ecological literature, I integrated this background information to contextualize patterns

observed at UBC. This approach allowed me to develop a feasible, locally focused ecological analysis.

Results:

Observations across the three campus locations revealed clear differences in crow presence and activity. At the Nest Plaza, four crows were observed moving between outdoor tables and the ground, where they picked at crumbs and leftover food. Human food waste was abundant in this area, and crows appeared to locate and consume resources quickly—consistent with their observed preference for easily accessible food in other urban environments (Kövér et al., 2019).

At the UBC Bus Loop, two crows were present. They spent most of their time walking near benches and investigating areas around trash bins, where bits of food waste and wrappers were visible. Although less busy than the Nest, this location still provided moderate access to human-derived food, a common attractant for urban scavengers (Heiss et al., 2009).

In contrast, the Rose Garden had no crows present. The area was clean, landscaped, and lacked human food waste. Despite being an open outdoor space, the absence of predictable food sources coincided with the absence of crow activity—mirroring findings from studies showing reduced crow presence in low-resource sites (Evans et al., 2010).

Overall, crow activity was highest in areas with accessible human food waste and lowest in locations with no anthropogenic food resources. These observations reflect well-established links between resource distribution and crow foraging patterns across urban landscapes (Benmazouz et al., 2021; Martins, 2024).

Discussion:

The patterns observed across the three locations suggest that food availability—particularly human food waste—plays a major role in shaping where crows choose to forage at UBC. Crows were most abundant in areas where leftover food could be easily accessed, similar to patterns documented in urban zoos and public spaces worldwide (Kövér et al., 2019). In contrast, the Rose Garden, which lacked anthropogenic food sources, showed no crow activity.

The results align closely with optimal foraging theory, which predicts that animals select feeding sites that maximize energy gain while minimizing costs (Zach, 1978). Human food waste provides calorie-dense, easily acquired resources that require little search or handling time (Heiss et al., 2009). In high-traffic environments like the Nest Plaza, crows can obtain food simply by investigating the ground, making these sites energetically profitable.

This behaviour also demonstrates niche expansion, where crows incorporate human-generated resources into their ecological niche—a phenomenon widely documented in corvids (Benmazouz et al., 2021). Such behavioural flexibility is strongly associated with corvid success in urban environments (Evans et al., 2010). Even studies focused on escape behaviour show that foraging benefits can override other behavioural priorities, reinforcing how profitable food sources influence crow decision-making (Novčić, 2023; Novčić et al., 2025).

The absence of crows at the Rose Garden suggests that predictable resource availability is a critical determinant of crow spatial behaviour—an effect similarly observed during COVID-19 disruptions, where changes in human activity altered crow movement patterns (Lequitte-Charransol et al., 2024). For a generalist omnivore, low-reward habitats offer little incentive relative to resource-rich patches only a short distance away.

Together, these observations illustrate how human activity indirectly shapes wildlife behaviour by redistributing resources in urban landscapes. As seen across species exposed to anthropogenic food subsidies—from crows to white storks—human waste can act as a powerful ecological driver (Martins, 2024).

Conclusion:

In summary, this project suggests that human food waste strongly influences where American crows choose to forage on the UBC campus. Areas with frequent student activity and readily accessible leftover food attracted multiple crows, while the Rose Garden—lacking anthropogenic resources—had no crow activity. These patterns are consistent with optimal foraging theory (Zach, 1978) and illustrate how urban wildlife adjust behaviour in response to predictable human-generated resources (Kövér et al., 2019; Benmazouz et al., 2021). More broadly, the findings highlight the ecological consequences of everyday human habits and demonstrate how resource availability shapes species interactions in urban environments (Evans et al., 2010; Martins, 2024).

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I used AI tools to assist with wording and to summarize academic sources. All ecological reasoning, data interpretation, and final writing decisions were my own.