



City of Belvedere
Coyote Survey April 2023

prepared for
City of Belvedere

by
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4/28/2023

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City of Belvedere Coyote Survey April 2023

Executive Summary

Rebecca Dmytryk of Humane Wildlife Control Inc. (HWC) was hired by the City of Belvedere to assist with their efforts to manage coyote conflicts. In early April, 2023, we conducted five days of field surveys, interviewed six residents who had reported coyote sightings to the Belvedere Police Department, reviewed reports from the Belvedere Police Department and Marin Humane Society, and collected data from four surveillance cameras.

Based on our observations and review of reported sightings and encounters, there are two adult coyotes frequenting Belvedere, accessing the island using San Rafael Avenue. They travel as a pair, but it is unclear whether they are pair-bonded or siblings. We didn't see evidence of an active natal den in Belvedere, and we are confident coyotes did not have a den or raise pups in Belvedere in 2022.

We believe the presence of coyotes in Belvedere can be attributed to plentiful food resources - both natural and human-related, and a relatively hospitable landscape. We found no major issues with garbage and no indication of a stray cat population, which are two of the most common reasons for coyote activity in an urban environment. However, the abundance of dense vegetation and thick ground cover likely are supporting a significant rodent population on the island, which would attract predators, like the coyote.

In the past two months, reports of coyote sightings and/or encounters have decreased dramatically, with 11 reported sightings in March and April of 2023, compared to 73 encounters between October 2022 and February 2023.

Some possible reasons for this development include: food sources and other potential coyote attractants have been reduced due to educational information provided to Belvedere residents; residents have been keeping small pets inside or

are accompanying them at all times when outside; repairs to fences making it more difficult for coyotes to access private property; and early spring, with the abundance of food resources and water, is typically a quieter month as far as coyote sightings are concerned.

While there have been occasional sightings of coyotes in and around Belvedere for years, records indicate the community began experiencing an increase in their presence in early fall 2022, with a few altercations between dogs and coyotes, but no reported pet fatalities. In 2023, however, at least two dogs were bitten by coyotes, and two others may have been fatally wounded. None of the altercations appear to have been predatory in nature. More likely the altercations were about perceived resources and competition for those resources.

To date, there have been no reports of a coyote biting a person or approaching an individual in a threatening manner. The coyotes encountered during our survey behaved normally and were fearful of humans. Therefore, we do not believe the coyotes frequenting the area pose a threat to public safety.

Regardless of how many coyotes are present in Belvedere at this time, how they are related or how many might be present in the future, it's important for the human inhabitants of Belvedere to understand and accept that coyotes will be a part of the landscape no matter what actions are taken. Removal of individuals will inevitably be followed by replacements. One minus one, equals one. And this is due to the hospitable habitat. To a coyote, Belvedere is rich in resources and relatively quiet and safe.

The most effective way to reduce the presence and prevalence of coyotes in an urban area, and at the same time lessen the chance of conflicts between humans and coyotes, is through a community-wide commitment to reducing attractants and limiting human-generated food sources, while concurrently being mindful of these wild canids and preventing hostile interactions between dogs and coyotes through responsible dog guardianship.

Recommended next steps include: adopting a Coyote Response Plan; considering the adoption of new ordinances; providing educational materials to the community; expanding community participation to increase reporting of coyote activity; providing special training for first responders in coyote behavior, data collection and analysis, and aversion conditioning; collecting additional data on the flora and fauna in Belvedere; building partnerships with neighboring municipalities and wildlife experts; and reducing dense vegetation where warranted.

Executive Summary.....	1
Introduction.....	5
Background.....	5
Methodology.....	6
Findings.....	7
Belvedere Coyote Activity and Behavior.....	7
Attractants and Conducive Conditions.....	10
ANTHROPOGENIC FOOD AND HARBORAGE.....	10
NATURAL VERTEBRATE PREY.....	12
OTHER AVAILABLE FOODS.....	13
Odd or Unusual Conditions.....	13
Conclusions.....	13
Recommendations.....	15
Develop and adopt a Coyote Response Plan.....	15
Consider adopting new City of Belvedere ordinances.....	16
Expand community participation and engagement.....	17
Collect additional data on Belvedere's flora and fauna.....	18
Community survey.....	18
Provide special training for first responders.....	18
Provide various educational opportunities for Belvedere residents.....	18
Build partnerships with neighboring municipalities and wildlife experts.....	19
Reduce dense vegetation on private property.....	19
Summary.....	19
Appendix A (Rebecca Dmytryk's CV).....	21
Appendix B (The California Valley Coyote).....	28
Appendix D (Coyote-Safe Neighborhood Checklist).....	37
Appendix E (Coyote Incident Flowchart).....	39
Appendix F (Seasonal Behavior Graphic).....	43

Introduction

In March, 2023, Humane Wildlife Control Inc. (HWC) was contracted by the City of Belvedere to provide an estimate of the number of coyotes frequenting or inhabiting Belvedere; to identify potential attractants or other environmental conditions that could be responsible for an increase in coyote activity; to provide special training for first responders; and to assist in creating a Coyote Response Plan.

In addition to specific findings, HWC will provide strategies to address the presence of coyotes in Belvedere, including recommendations for an effective plan, guidance on discouraging coyotes from the area, and best practices for protecting pets and property from wildlife.

Our findings and recommendations are based on the information available at the time of writing. The author reserves the right to alter conclusions and recommendations should new information become available.

Survey Team

The field survey was conducted by Rebecca Dmytryk and canine associate, Angus. Analysis of the information collected was performed by Rebecca Dmytryk and Lesley Sampson, Executive Director of Coyote Watch Canada. (See Appendix A for Rebecca Dmytryk's Curriculum Vitae.)

Background

Belvedere is a relatively small residential community just north of San Francisco. The city is less than one square mile in size and consists of two islands and a lagoon. Two causeways connect Belvedere to the Tiburon Peninsula. The hilly terrain of Belvedere "island" is dotted with beautiful homes surrounded by lush vegetation.

In early fall 2022, residents of Belvedere began reporting an increase in coyote activity, in particular, coyotes entering yards and engaging with dogs. In the fall of 2022 and early 2023, residents reported incidents involving a coyote following, or “shadowing”, a person with a dog, and two people reported encounters in which a coyote “rushed” at or chased an off-leash dog.

According to official records, there were reports of two dogs that were bitten by coyotes in 2022 and two in 2023, and two dogs were found deceased after a possible altercation with a coyote. However, no one witnessed any interaction between a dog and a coyote resulting in bites or death. There have been no reports of coyotes biting or otherwise behaving abnormally toward humans.

This study of coyote activity in Belvedere is an attempt to determine the number of coyotes in Belvedere and identify conditions that may be contributing to their presence and prevalence, and what steps the City can take to address any current issues and prevent conflicts with coyotes in the future.

Methodology

Field Survey

Field surveys were conducted April 2nd through April 5th and April 23rd and 24th, 2023, by vehicle and on foot, at various times of day – beginning in the pre-dawn hours. Surveillance cameras were installed at four locations to help establish the number of individual coyotes that were frequenting the area and to try to identify travel patterns.

Additional Data

HWC was provided reports of coyote sightings from the Belvedere Police Department that were collected from October, 2022 to present. The Marin Humane Society also provided reports of incidents involving coyotes in both Belvedere and Tiburon. These reports were used in the analysis.

We also utilized online resources to further assess the level of coyote activity in the area, including social media posts on sites including Facebook and Nextdoor.

Interviews

HWC reached out to six residents to acquire more in depth information regarding coyote encounters and interactions. Five of the interviews took place at the resident's home in order to understand the environment, to hear first hand about the encounter, and to be able to offer specific ideas for property protection. Visits occurred on Golden Gate Avenue, Eucalyptus Road, West Shore Road, and Britton Avenue. The sixth resident, who lives on West Shore Road, was interviewed on the phone.

Findings

Belvedere Coyote Activity and Behavior

We believe the presence and prevalence of coyotes in Belvedere can be attributed to plentiful food resources - both natural and human-related, and a relatively hospitable landscape. Belvedere offers a lush, inviting, hospitable territory with ample food resources, lots of great hiding spots and safe resting places. Although Belvedere is quite developed, the roads are very quiet late at night through the early morning hours, which is when coyotes appear to be most active. (See Appendix B for context)

Based on official reports supplied by the Marin Humane Society and the Belvedere Police Department and information provided by locals, as well as our own observations, we believe there are two adult coyotes frequenting Belvedere, traveling as a pair. It's still unclear if the two coyotes are a mated pair or siblings. Although we received anecdotal accounts of there being one or two additional coyotes, at this time there is insufficient evidence to confirm this.

There is still not enough information to establish residency - whether the coyotes are residing in Belvedere, and if so where they reside, or if they come and go from

Tiburon. However, we feel certain coyotes utilize San Rafael Avenue to access Belvedere more often than Beach Road.

A coyote family will create a natal den in which the female will deliver and care for her newborns. They will use the den until the pups are old enough to travel with the adults - at about 12 weeks of age. During the survey, we searched empty properties, vacant lots, and overgrown areas for a den, and found no evidence of a den. We are confident there was no coyote den in Belvedere in 2022. Coyotes did not raise pups in Belvedere last year. If they had, there would have been multiple sightings of adolescent coyotes, and there were none.

The two coyotes observed during our survey appeared to be in good condition. They both displayed a natural fear of humans and respected healthy boundaries, quickly fleeing when approached. However, they did show a keen interest in our dog, Angus.

In the last six months, there were a few reports of a coyote following a person with a dog. This is similar to what we experienced. There is nothing predatory about this sort of engagement between a coyote and a dog, but it can be intimidating to someone who does not understand the territorial message the coyote is trying to convey. (See Appendix B)

Coyotes are predisposed to view other canids, even small domestic dogs, as competition for resources. Coyotes will “shadow” or “escort” people walking with their dogs when they get too close to the coyote’s valuable food resource. A coyote will also display this behavior to protect its pups or their mate. If a dog is leashed, however, the chance of a physical altercation will be minimized. A review of dog and coyote interactions showed 92% of altercations involved off-leash dogs.¹

While disputes are normal, reactive responses toward dogs can also indicate a negative history with a dog - like being repeatedly harassed or chased. We have anecdotal evidence that several dogs have chased coyotes deep into brush.

¹ Shelley M. Alexander & Michael S. Quinn (2011): Coyote (*Canis latrans*) Interactions With Humans and Pets Reported in the Canadian Print Media (1995–2010), *Human Dimensions of Wildlife*, 16:5, 345-359, <http://dx.doi.org/10.1080/10871209.2011.599050>

Coyotes are incredibly smart and can remember encounters with individual dogs potentially leading to more defensive and reactionary behavior toward all dogs, not just the offending one. (See Appendix B)

Marin County's Ordinance 8.04.175 requires all dogs be under the "immediate control" of a responsible person at all times, but it does not require that dogs be leashed. We noted quite a few dogs being walked off leash and not all were under the control of their guardian.

We also witnessed a dog "taking itself for a walk" along San Rafael Ave and nearly being struck by a car. The dog moseyed back to its home on Windward Road and opened the front gate to let itself back in, leading us to believe this is a common occurrence.

Interviews

We reached out to several residents who had reported interactions with coyotes. Interviews with six of those contacted added depth and understanding to their official reports. Through in-person conversations and on-site review of the circumstances, we were able to get a clear picture of what transpired, and a better idea of where to focus attention moving forward.

Some residents had no problem hazing (scaring off) coyotes, and according to their accounts, the coyotes responded appropriately. Others expressed concern and were not comfortable with the idea of hazing. Coyotes at these locations were persistent because the messaging that they weren't welcome was absent or not delivered effectively.

A few of the properties we visited did not have adequate fencing. We found large gaps in three fences and one property did not have any fencing to keep coyotes out, just an electronic "fence" to keep their dog from leaving. Coyotes had access to this property and appeared to visit in order to reach an adjacent construction site. Upon learning of this pattern, we visited the construction site and noted food left out - most likely an attractant for the coyotes.

Talking with residents about their coyote encounters while walking around their property was extremely beneficial. It allowed us to better understand the circumstances that led to or facilitated coyotes being on their property. And with that knowledge, we were able to provide the residents with strategies to help prevent future encounters.

We were also able to determine which reports were related to actual coyote encounters and which were related to perceived encounters - a distinction that helped us create a more accurate profile of Belvedere's coyotes and their behaviors.

In the past two months reports of coyote sightings and/or encounters have decreased dramatically. We offer several suggestions for this development:

- Food sources and other coyote attractants have been reduced due to educational information provided to Belvedere residents by City officials.
- Residents have been keeping small pets inside or accompanying them at all times when outside.
- Repairs to fences, or the installation of new fences, is preventing coyotes from entering private property where they may have felt comfortable.
- Residents' awareness has resulted in appropriate responses to seeing coyotes.
- Early spring is typically a quieter time, as paired coyotes await the arrival of their pups. It is also a time when there is plentiful natural food and water. (See Appendix F)

Attractants and Conducive Conditions

ANTHROPOGENIC FOOD AND HARBORAGE

Residential Trash Bins. The survey was purposefully conducted on garbage and recycling collection days, when residential bins would be the fullest. We found relatively few residential bins with lids open, tipped over or with overflowing garbage.

Commercial Bins and Dumpsters. Construction dumpsters are often a problem as they are usually open and easily accessible by wildlife, and are used for the disposal of both building materials and food waste. During our assessment, we noticed food scraps in the driveway and on the street in front of one residential construction site. Overall, though, there were no major issues with commercial bins and dumpsters within Belvedere.

However, in adjacent Tiburon, we documented a number of overflowing bins and accessible garbage.

Municipal and Park Trash Receptacles. During the survey, we found an open garbage bin in Belvedere Park at the base of the large redwoods, and a can missing its lid near the playground parking lot. We documented food scraps and litter nearby these bins.

Dog Excrement. During our on-foot survey we noticed the occasional pile of dog waste left by dog walkers, and we found one dog waste bag left behind. While it's not a huge issue, rats *will* consume dog feces, so it should be considered a coyote attractant.

Bird Feeders. We did not observe any bird feeders while conducting our survey on public property. However, we did see crows, jays and a pair of pigeons congregating in one area, two mornings in a row, which leads us to believe there was some reliable food resource attracting them to this area.

Backyard Chickens. We understand there are a few properties in Belvedere that have chickens. At least one family has reported losing chickens to coyotes. The chickens, themselves, are an attractant, but so are the rodents and other animals, including coyotes, that are attracted to the chicken feed.

Rodent Poison Bait Stations. We came across a few bait stations during our assessment. One was on public property - on the shoulder of a roadway, the other two were observed on private property.

While the purpose of using poison is to reduce the rat and mouse population in an area, it can be counterproductive. Unless the area is closed, meaning, no new individuals can migrate in, there will be new rodents appearing, attracted by the poisoned food. The bait and the dead and dying rodents often found around these stations attract mesopredators, including opossum, skunk, raccoon, fox and coyote.

A more sustainable and lasting approach involves making the property less attractive and excluding them from buildings.

Dense Vegetation. The landscaping around many of the residential properties, especially those on slopes, had dense shrubbery and thick ground cover - predominantly, English and or Algerian ivy. Such thick vegetation can provide desirable nesting spaces for rodents.

Vacant Properties. We noted a couple of developed properties that appear to be vacant and neglected. A property that has buildings in disrepair, debris piles and overgrowth can be an attractive nuisance, drawing rodents and other wildlife, including coyotes, to the area.

NATURAL VERTEBRATE PREY

Woodrats. We found evidence (a stick house) of a San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*), suggesting there could be more of the California native in Belvedere. The dusky-footed woodrat is

listed as a Species of Special Concern, providing extra protection for the at-risk species.

Commensal rodents. In addition to woodrats, we believe there is a significant population of non-native rats, roof rats (*Rattus rattus*) and possibly the Norway rat (*Rattus norvegicus*), due to the prevalence of ivy for habitats. We will be recommending an additional survey to understand what species are most prevalent.

Mule deer. During the survey we encountered a few mule deer, mostly on vacant properties. While coyotes primarily eat small animals, they have been known to prey on fawns.

OTHER AVAILABLE FOODS

Fruiting trees. We noted a few fruit trees and we observed one “strawberry tree” (*Arbutus unedo*) that happened to be full of edible fruits at the time of the survey and was very close to where coyotes were observed.

Marine Shoreline Edibles. When exposed by a low tide, Belvedere’s rocky shoreline provides coyotes an opportunity to forage for a variety of marine edibles, including crustaceans.

Odd or Unusual Conditions

On our early morning, pre-dawn surveys, the lack of bird song was apparent. We heard great horned owls, a robin, and a few crows and jays after sunrise, but the buzzing and chatter of songbirds like juncos, titmice, chickadees, sparrows, wrens, finches, that would be expected this busy time of year, was eerily absent.

The black rat (*Rattus rattus*) is considered the leading cause of bird species declines worldwide², and their arboreal skills allow them to easily reach nests (and roosting

² Stattersfield AJ, Capper DR, Dutson GC, Morrisey T. Threatened birds of the world: the official source for birds on the IUCN Red List. Cambridge, U.K.: BirdLife International; 2000.

birds) in trees and shrubs. If predation by rats on birds - their eggs and nestlings, has resulted in fewer songbirds in Belvedere, then the presence of coyotes on the "island" is certainly beneficial to the area's songbirds.

Conclusions

While there have been occasional sightings of coyotes in and around Belvedere for years, records indicate the community began experiencing an increase in their presence in early fall 2022, with a few altercations between dogs and coyotes, but no reported pet fatalities. In 2023, however, at least two dogs were bitten by coyotes, and two others may have been fatally wounded. Data from interviews and other reports suggest that none of the altercations was predatory in nature. More likely the altercations were about perceived resources and competition for those resources.

Signs and evidence suggest there are two coyotes frequenting Belvedere. Unfortunately, there's not enough information to say conclusively if coyotes reside in Belvedere or not, or how they are related. There is not enough data at this time to build an accurate profile of these individuals and their habits.

To date, there have been no reports of a coyote biting a person or approaching an individual in a threatening manner. The coyotes encountered during our survey behaved normally and were fearful of humans. Therefore, we do not believe the coyotes frequenting the area pose a threat to public safety.

Regardless of how many coyotes are present in Belvedere at this time, how they are related, or how many might be present in the future, it is important for the human inhabitants of Belvedere to understand and accept that coyotes will be a part of the landscape no matter what actions are taken. Removal of individuals will inevitably be followed by replacements. One minus one, equals one. And this is due to the hospitable habitat. To a coyote, Belvedere is rich in resources and relatively quiet and safe.

The most effective way to reduce the presence and prevalence of coyotes in an urban area, and at the same time lessen the chance of conflicts between humans and coyotes, is through a community-wide commitment to reducing attractants and limiting human-generated food sources, while concurrently, being mindful of these wild canids and preventing hostile interactions between dogs and coyotes through responsible dog guardianship.

Recommendations

Develop and adopt a Coyote Response Plan

We recommend the City of Belvedere develop a comprehensive Coyote Response Plan (CRP) to address coyote activity - a progressive, science-based program that embraces tolerance and co-existence while prioritizing human safety at all times. The CRP should be a living document, meant to be updated as new science, new techniques or best practices are discovered.

We believe an effective CRP is based on four fundamental components: Response, Education, Prevention and Partnerships. We wish to work with the City to develop such a plan.

The CRP we envision for Belvedere will focus on proactive strategies to prevent human-wildlife conflicts, like reducing attractants and habitat modification. Increasing its citizens' knowledge of coyotes and how to safeguard pets and property will also be a priority.

As part of this plan, we recommend providing residents with an expanded checklist to provide guidance to help them evaluate their properties. We have provided an example in Appendix C, Coyote-Safe Neighborhood Checklist.

Preventing coyote conflicts from escalating requires vigilant monitoring, savvy analysis of reports, and proficient response by the City's first responders. Therefore the CRP will emphasize the importance of response planning and preparedness, including specialized training on aversion conditioning (humane hazing). This has

proven to be extremely effective in mitigating human-coyote conflicts.³

The plan also recommends periodic assessment of the program to evaluate its success. We offer suggestions for this section in Appendix D, Coyote Response Strategy.

A successful CRP also relies heavily on partnerships. The plan will highlight the importance and value of building and maintaining partnerships with neighboring communities and wildlife experts.

Finally, the plan will acknowledge there may be situations that require the removal of an animal for the animal's welfare or for public safety concern. This plan will spell out exactly how this would be carried out, placing emphasis on compassion, and avoiding indiscriminate killing of coyotes.

Consider adopting new City of Belvedere ordinances

No feeding Wildlife Bylaw

Marin County's Ordinance 8.04.226 - Feeding of Certain Wild Animals prohibits the intentional feeding or otherwise providing food for wildlife, but it does not address the unintentional attracting or feeding of wild animals.

Leash Law

If altercations between off leash dogs and coyotes continue to occur, we highly recommend adopting a stronger "control" policy – perhaps requiring dogs to be leashed, with a recommendation they be on a leash no longer than 6 feet.

³Sampson, Lesley and Van Patter, Lauren, "Advancing Best Practices for Aversion Conditioning (Humane Hazing) to Mitigate Human-Coyote Conflicts in Urban Areas," Human-Wildlife Interactions 14, no. 2, Article 7, 2020 <https://digitalcommons.usu.edu/hwi/vol14/iss2/7>

Dog Feces

Dog excrement attracts rodents. It is also bad for the environment and waterways, and poses health risks to humans, other dogs and wildlife. We suggest starting with a campaign to educate residents about the issue and how it relates to the presence of coyotes in Belvedere. Marin County Parks produced the Dog Waste Campaign Strategy - a document full of excellent ideas on messaging.

If an educational campaign fails to achieve the desired results, then an ordinance may be necessary.

Attractive Nuisances

An attractive nuisance is a property with features that can attract wildlife, In this case, a property that is attractive to and supportive of rodents and other perceived pests, which are food sources for coyotes.

We noticed a few properties in Belvedere that are vacant, with tall grass and thick brush growing. Another property has a couple of old derelict buildings that offer animals excellent harborage.

We suggest owners be required to keep yards maintained even when properties are temporarily uninhabited or vacant.

Expand community participation and engagement

Coyote Reporting System

One of the most valuable resources for monitoring coyote activity is through reports from members of the public. Therefore, we highly recommend Belvedere create and maintain an online reporting form, as well as a dedicated phone line. The reports received through these systems will be transmitted immediately to the Belvedere Police Department. In case of a

dire emergency, however, users will be instructed to call 911.

Resident Volunteer Support

Create a corps of trained volunteer responders, available to assist other residents when needed. They could be educated in the use of repellents and deterrents, aversion conditioning, and methods of excluding coyotes. They could also be available to do a property survey.

Collect additional data on Belvedere's flora and fauna

Surveillance

It would be helpful to track coyote movement on and off Belvedere. We suggest placing a camera at either Lagoon Road or West Shore Road and San Rafael Avenue. It would also be helpful to have additional cameras to track movements in other neighborhoods should sightings be reported.

Vertebrate species inventory

A survey of what types of birds and mammals are present would be interesting, but especially the species of rodents to establish a baseline population.

Community survey

We envision a questionnaire, similar to the one developed for the 2009 Belvedere deer study, to evaluate residents' understanding of coyotes and their immediate concerns, but also to receive feedback on potential environmental conditions that could lead to conflicts with the wild canids. For example, a survey could reveal whether residents are feeding wildlife.

Provide special training for first responders

This training should include coyote behavior and how to interpret it; what information to collect from a reporting party and how to analyze it; archiving and mapping the data; when and how to use aversion conditioning with coyotes.

Provide various educational opportunities for Belvedere residents

Produce and distribute educational materials to community members and offer interactive workshop(s) that will include examples of repellents and deterrents and a demonstration on how to use hazing props. Topics would include coyote behavior, how to safeguard pets and property, and aversion conditioning.

Build partnerships with neighboring municipalities and wildlife experts

Collaborative partnerships can be invaluable to the success of a coyote response program by improving its capabilities with additional resources, skills, and experience. In addition to responding to potentially sick or injured animals, wildlife partners can help first responders evaluate coyote behavior, assist with investigations, and conduct hazing when appropriate.

Reduce dense vegetation on private property

We encourage property owners who are concerned about rodents and/or coyotes to remove or cut back ivy and trim the base of shrubs to reduce harborage.

Summary

In conclusion, reducing attractants and making Belvedere less inviting and less hospitable to coyotes should result in fewer coyote interactions, overall. However, this improvement in coyote behavior, requires improvement in human behavior.⁴

⁴ Ryan Gibbs, "Coyote expert says improved human behavior is evident," Jamestown Press, Jamestown, RI 10/7/21 <https://www.jamestownpress.com/articles/coyote-expert-says-improved-human-behavior-is-evident/>

Coyotes have been and always will be a part of the area's landscape. It comes down to people being educated about these animals and understanding what to do and what not to do, so both humans and coyotes can coexist in relative harmony.

It is important to note that the coyote's unique characteristics and their unusual social dynamics make it impossible for them to be eradicated, and yet, it's these same characteristics that give us *some* control over their density, by controlling their food resources.

If the goal is for residents of Belvedere to see few *if any* coyotes in their residential neighborhoods, we feel confident the City of Belvedere can achieve this objective by taking the actions recommended above.

We do not recommend lethal measures to reduce the presence of coyotes or as a means of resolving conflicts because this strategy has *never* been successful. In fact, it can actually, surprisingly, result in an increase in individuals and conflicts.⁵

In closing, we greatly appreciate this opportunity to provide Belvedere with a comprehensive report on its coyotes, and we look forward to continuing to help the City develop an exemplary coyote program.

⁵ The Conservation Agency, Narragansett Bay Coyote Study. "Coyote Troubles...Why Not Just Shoot Them?" YouTube, uploaded by Numi Mitchell 02, 22, 2021, <https://youtu.be/WRuxGdasBzg>

Appendix A



CURRICULUM VITAE

REBECCA DMYTRYK
diametryk@gmail.com

FORMAL EDUCATION

1984: Biology, Pierce College

1983: Animal Behavior, Observing Animal Behavior, University of California, Los Angeles,

1978: Diploma, Agoura High School, Agoura, California,

PRESENT VOCATIONS AND POSITIONS

President and CEO, National Association for Wildlife Emergency Services (nonprofit)

Founding Officer, Board Member, Humane Wildlife Control Association (trade association)

CEO, Humane Wildlife Control Inc.

Voice Talent, Author, Artist

PROFESSIONAL APPOINTMENTS AND EMPLOYMENT

2023: Member, Advisory Panel, Coyote Watch Canada

2013 to present: Founder, President, CEO, National Association for Wildlife Emergency Svcs

2013 to present: Founder, Board Member, Humane Wildlife Control Association

2012 to present: Owner, CEO Humane Wildlife Control Inc, Moss Landing, CA

2022: Santa Cruz County Animal Shelter, after hours response, Santa Cruz, CA

2000 to 2020: Director and Officer, EarthWays Foundation, Malibu, CA

2015 to 2018: CA Dept Fish and Wildlife, Predator Policy Workgroup, CA

2007 to 2015: Owner, Carmel Canines Mobile Pet Services, Moss Landing, CA

2002 to 2004: CA Dept of Fish & Wildlife, Wildlife Rehabilitation Committee, CA

2000 to 2013: Founder, Director, WildRescue, a project of EarthWays Foundation

2002 to 2003: Board Member, California Council for Wildlife Rehabilitators

1996 to 2002: Founder, President and CEO, The California Wildlife Center

1996 - 2000 Marine Mammal Response, contract, City of Malibu, CA

1990 to 2011: International Bird Rescue Oiled Wildlife Response Team.

1992: Secretary and Treasurer, International Center for Gibbon Studies, Saugus, CA
1991 - 1993: Co-Founder, Vice President, Marine & Mountain Wildlife Rescue, Malibu, CA
1986 to 2007: Owner/Operator, Malibu Mobile Pet Services, Malibu CA
1985: Secretary, Marine Wildlife Rescue Station, Agoura, CA
1987: Animal Control Officer, Los Angeles County Animal Care and Control, Agoura, CA
1983 - 1989: Reserve Officer, Los Angeles County Animal Care and Control, Agoura CA
1980 to 1982: Co-Founder, Animal Rescue Care Center, Thousand Oaks, CA

SPECIAL TRAINING AND CONTINUING EDUCATION

2022: Advanced Aversion Conditioning, Coyote Watch Canada, Webinar
2022: Adv Wildlife Control Operator Training, National Wildlife Control Operators Assn
2022: Wildlife Control Operator Training, National Wildlife Control Operators Assn
2021: Coyote Workshop, Fish and Game Commission, Webinar
2021: Vertebrate Pest Council Workshop, Vertebrate Pest Council, Webinar
2020: Vertebrate Pest Conference, Vertebrate Pest Council, Santa Barbara, CA
2019: Vertebrate Pest Council Workshop, Vertebrate Pest Council, Sacramento, CA
2019: Rodents I - Behavior and Tracking, EPA Center for IPM, Webinar
2017: The Wildlife Society / Int'l Urban Wildlife Conference, San Diego, CA
2016: California Council for Wildlife Rehabilitators annual symposium, Fresno, CA
2013: Nuisance Wildlife Trapping Webinar, State Humane Assn. of California
2013: National Wildlife Rehabilitators Association annual symposium, Murfreesboro, TN
2013: Nuisance Wildlife Trapping, webinar presented by State Humane Association.
2013: National Wildlife Rehabilitators Association annual symposium, Portland, OR
2012: California Council for Wildlife Rehabilitators annual symposium Yosemite, CA
2012: National Wildlife Rehabilitators Association annual symposium, Baton Rouge, LA
2011: International Wildlife Rehabilitation Council annual symposium, Fort Lauderdale, FL
2010: National Wildlife Rehabilitators Association annual symposium, Bellevue, WA
2009: Effects of Oil on Wildlife, Tallinn, Estonia
2008: International Wildlife Rehabilitation Council annual symposium, Napa, CA
2007: Effects of Oil on Wildlife conference, hosted by OWCN & IBRRC, Monterey, CA
2007: International Wildlife Rehabilitation Council Rehabilitator's Certification
2004: International Wildlife Rehabilitation Council annual symposium, Portland, OR
2003: International Wildlife Rehabilitation Council annual symposium, Chicago, IL
2003: Effects of Oil on Wildlife conference, hosted by IFAW & IBRRC, Hamburg, Germany
2003: 24 Hours HAZWOPER, Hazard Communication Course 1001, San Luis Obispo, CA
2002: California Council for Wildlife Rehabilitators annual symposium, San Diego, CA
2002: ATV Safety Institute Rider Course, Rancho Cordova, CA
2002: National Wildlife Rehabilitators Association annual symposium, St. Louis, MO
2001: International Wildlife Rehabilitation Council annual symposium, Orlando, FL
2001: California Council for Wildlife Rehabilitators annual conference, Fremont, CA

2001: Oiled Wildlife Care Network Advanced Training, San Pedro, CA
2001: National Wildlife Rehabilitators Association annual symposium, Lake Tahoe, NV
2000: International Wildlife Rehabilitation Council annual symposium, Montreal, Quebec
2000: California Council for Wildlife Rehabilitators annual symposium, Newport Beach, CA
1999: International Wildlife Rehabilitation Council annual symposium, Tucson, AZ
1999: California Council for Wildlife Rehabilitators annual symposium, Sacramento, CA
1998: National Wildlife Rehabilitators Association annual symposium, Seattle, WA
1998: California Council for Wildlife Rehabilitators annual symposium, San Rafael, CA
1998: Bird Deterrence Workshop by USDA, APHIS, Wildlife Services, Sacramento, CA
1997: California Council for Wildlife Rehabilitators annual conference, Morro Bay, CA
1995: International Wildlife Rehabilitation Council, Basic Skills, Klamath Falls, OR
1995: 40 hours HAZWOPER training, Seattle, WA
1994: 24 hours HAZWOPER training, Department of Fish and Wildlife-OSPR.
1993: 16 hours OSHA / Post Emergency Oil Spill Response Training
1993: National Wildlife Rehabilitators Association annual symposium, Sacramento, CA
1991 - 1993: Volunteer position with the International Bird Rescue and Research Center
1992 - 1993: The Marine Mammal Center, Sausalito, CA - *Extensive hands-on training*
1992: *Shelter Management and Operations, Disaster Preparedness, Wildlife Handling*, American Humane Association Conference, San Diego, CA
1992: UC Davis Wildlife Health, Oil Spill and Wildlife Emergency Response Conference.
1986: *Handling of Exotics*, Los Angeles SPCA

PERMITS LICENSES AND CERTIFICATIONS

2022 to present: Certified Advanced Wildlife Control Operator, NWCOA
2020 to present: QualityPro GreenPro Certification (for Humane Wildlife Control Inc.),
2015 to present: Pest Control License issued by California Dept. of Pesticide Regulation
2015 to present: Dept. of Pesticide Regulation Qualified Applicators License 135684
2013 to present: U.S. Fish & Wildlife Service, Special Purpose Education/Salvage MB05124B
2012 to present: U.S. Fish & Wildlife Service, Rehabilitation MBPER0050894
2011 to 2012: U.S. Fish & Wildlife Service, Special Purpose Relocate MB38756A
2007: International Wildlife Rehabilitation Council, Wildlife Rehabilitation Certification
1994 to present: 24-Hour HAZWOPER Certification
2004 - 2008: NOAA NMFS Marine Mammal Stranding (Malibu)
2000 - present: U.S. Fish & Wildlife Service, Special Purpose MB794662
1998: U.S. Fish & Wildlife Service, Rehabilitation (The California Wildlife Center)
1998: California Department of Fish & Wildlife, Rehabilitation Permit
1994 - 1998: U.S. Fish & Wildlife Service, Special Purpose (individual permit)
1989 - 1995: California Department of Fish & Wildlife, Rehabilitation (individual permit)
1981: California Department of Fish & Wildlife, Rehabilitation (Animal Rescue Care Center)

CONFERENCE ACTIVITY AND PARTICIPATION

TALKS, WORKSHOPS, TRAININGS AND PAPERS PRESENTED

2023: *Living With Coyotes*, Swampscott, MA, (online)
2022: *Responding to Wildlife Emergencies*, CalAnimal, NACA sponsored (online)
2020: *Wildlife Search & Rescue*, Wetlands & Wildlife, Huntington Beach, CA
2020: *Holistic Solutions for Nuisance Wildlife*, Poster, Vert Pest Conf, Santa Barbara, CA
2020: *Barn Owl Nest Box Construction*, Poster, Vert Pest Conf, Santa Barbara, CA
2020: *CO for Control of Ground Squirrels and Gophers*, Vert Pest Conf, Santa Barbara, CA
2020: *Holistic Solutions for Nuisance Wildlife*, PAPA Seminar, Napa, CA
2019: *Holistic Solutions for Nuisance Wildlife*, PAPA Seminar, Sacramento, CA
2019: *No-Poison Rodent Control*, Ntl Environmental Health Assn P.E.S.T. conf. (online)
2019: *Use of Carbon Monoxide to Control Ground Squirrels*, NEHA P.E.S.T. conf. (online)
2019: *Barn Owls for Natural Rodent Control*, EPA Center for IPM (online)
2019: *Use of Carbon Monoxide to Control Ground Squirrels*, PAPA Seminar, Salinas, CA
2019: *Barn Owls for Natural Rodent Control*, Marina Garden Club, Marina, CA
2019: *Answering the Call of the Wild*, CA Animal Welfare Assn conference, San Jose, CA
2019: *Exclusion and Eviction of Mammals and Birds*, PAPA Seminar, Anaheim, CA
2019: *Use of Carbon Monoxide to Control Ground Squirrels*, PAPA Seminar, Anaheim, CA
2019: *No-Poison Rodent Control*, PAPA Seminar, Stockton, CA
2018: *Living With Urban Coyotes*, hosted by the City of San Gabriel, CA
2018: *Living With Wildlife*, hosted by the City of Hidden Hills, CA
2018: *Living With Wildlife*, hosted by the City of Arroyo Grande, CA
2018: *Rodent Exclusion and Eviction*, AgSafe Seminar, Fresno, CA
2018: *Exclusion and Eviction in Vertebrate Pest Control*, PAPA Seminar, Anaheim, CA
2018: *Rodent Exclusion and Eviction*, PAPA Seminar, Napa, CA
2018: *Exclusion and Eviction in Vertebrate Pest Control*, PAPA Seminar, Santa Maria, CA
2018: *Using Barn Owls to Control Rodents Naturally*, PAPA Seminar, Santa Maria, CA
2018: *Using Barn Owls to Control Rodents Naturally*, PAPA Seminar, Modesto, CA
2018: *Commensal Rodent Eviction and Exclusion*, PAPA Seminar, Modesto, CA
2018: *Using Barn Owls to Control Rodents Naturally*, PAPA Seminar, Anaheim, CA
2018: *Ethical Wildlife Control*, National Wildlife Rehabilitators Assn, Anaheim, CA
2017: *Making a Killing Without Killing*, Wildlife Society Urban Wildlife Conf. San Diego, CA
2017: *Living with Urban Coyotes*, hosted by Councilman Chappi Jones, San Jose, CA
2016: *Wildlife Search & Rescue*, California Council for Wildlife Rehabilitators, Fresno, CA
2016: *Wildlife Search & Rescue*, Clovis Police Department, Clovis CA
2016: *Making a Killing Without Killing*, Vertebrate Pest Conference, Newport Beach, CA
2016: *Living with Urban Coyotes*, hosted by Councilman Tim Goodrich, Torrance, CA
2015: *Living Among Carnivores*, California Council for Wildlife Rehabilitators, Sacramento, CA
2015: *Making a Killing*, California Council for Wildlife Rehabilitators, Sacramento, CA
2015: *Wildlife SAR Fundamentals*, National Wildlife Rehabilitators Assn, Princeton, NJ
2015: *Tips on Capturing Flighted Birds*, National Wildlife Rehabilitators Assn, Princeton, NJ
2013: *Wildlife Capture and Handling*, National Wildlife Rehabilitators Assn, Portland, OR

2013: *Reuniting Wildlife*, National Wildlife Rehabilitators Association, Portland, OR
2012: *Reuniting and Wild-Fostering*, National Wildlife Rehabilitators Assn, Baton Rouge, LA
2012: *Reuniting Wild Birds*, California Council for Wildlife Rehabilitators, Yosemite, CA
2011: *Reuniting Raptors*, International Wildlife Rehabilitation Council, Fort Lauderdale, FL
2010: *Reuniting, Re-nesting and Wild-Fostering*, Panel, NWRA, Bellevue, WA
2009: *Oiled Wildlife Capture Techniques*, Effects of Oil on Wildlife, Tallinn, Estonia.
2009: *Oiled Wildlife Handling, Transport, First Aid*, Effects of Oil on Wildlife, Tallinn, Estonia
2008: *Reuniting Young*, Panel, International Wildlife Rehabilitation Council, Napa, CA
2007: *Avian Capture Techniques*, Effects of Oil on Wildlife, Monterey, CA
2003: *Wildlife Capture Techniques*, Intl. Wildlife Rehabilitation Council, Portland, OR
2003: *On The Write Track*, International Wildlife Rehabilitation Council, Portland, OR
2003: *Shape Shifting, Spinning, and the Art of Hotline Operations*, IWRC, Chicago, IL
2003: *Avian Capture Techniques*, Effects Of Oil on Wildlife, Hamburg, Germany
2002: *Training Agency Personnel*, National Wildlife Rehabilitation Association, St. Louis, MO
2001: *On The Write Track*, International Wildlife Rehabilitation Council, Orlando, FL
2001: *Emergency Response for Veterinarians, and Agency Personnel*, IWRC, Orlando, FL
2001: *Rehab and the Wildlife Paramedic – Saving Lives*, CCWR, Fremont, CA
2001: *Wildlife Emergency Response*, National Wildlife Rehabilitators Assn, Lake Tahoe, NV
2000: *This is Wildlife Rescue, How May We Help You*, IWRC, Montreal, Quebec, Canada
1999: *Wildlife Paramedics: The Benefits First Responders*, CCWR, Sacramento, CA

OTHER PUBLIC SPEAKING ENGAGEMENTS

2023: *Living With Coyotes*, Swampscott, MA, (online)
2022: *Coyote Aversion Conditioning*, Nahant, MA (online)
2020: *Living With Wildlife*, Malibu Bluffs Park, Malibu, CA
2019: *Living With Wildlife and Barn Owls for Natural Rodent Control*, Ojai Library, Ojai, CA
2019: *Living With Urban Coyotes*, hosted by the Aromas Grange, Aromas, CA
2019: *Living With Wildlife*, hosted by the Pebble Beach Garden Club, Pebble Beach, CA
2018: *Living With Urban Coyotes*, hosted by the City of San Gabriel, CA
2018: *Living With Wildlife*, hosted by the City of Hidden Hills, CA
2018: *Living With Wildlife*, hosted by the City of Arroyo Grande, CA
2017: *Living with Urban Coyotes*, hosted by Councilman Chappi Jones, San Jose, CA
2017: *Living With Wildlife: Barn Owls*, Carmel Valley Garden Club, Carmel Valley, CA
2017: *Living With Wildlife: Gopher*, Carmel Valley Garden Club, Carmel Valley, CA
2017: *Living with Urban Coyotes*, Point Dume Community, Malibu, CA
2017: *Living With Wildlife*, U.C. Davis Tahoe Environmental Research Cnt, Incline Village, NV
2017: *The American Barn Owl*, hosted by the Haute Enchilada, Moss Landing CA
2016: *Living With Wildlife*, Aromas Grange, Aromas, CA
2016: *Living with Urban Coyotes*, Capitola Community Center, CA
2016: *Living with Urban Coyotes*, hosted by Councilman Tim Goodrich, Torrance, CA
2016: *Living with Urban Coyotes*, Carson City Parks and Rec, Carson City, NV

2016: *Living with Urban Coyotes*, Trail Safe Nevada, Reno, NV

2015: *Living with Urban Coyotes*, Long Beach Animal Control, Long Beach, CA

2015: *Non-Lethal Solutions to Urban Wildlife Conflicts*, CA Fish & Game Commission Wildlife Resource Committee, Los Angeles, CA

PUBLICATIONS

CONFERENCE PROCEEDINGS

2000: *Wildlife Paramedics: The Benefits of Being the First Responders to Wildlife Emergencies*, International Wildlife Rehabilitation Council Conference Proceedings.

BOOKS

2012: *Wildlife Search and Rescue, a guide for first responders*. Wiley Blackwell, UK

VIDEOS

2023: *Living With Coyotes 2023*, published on Vimeo and YouTube

2023: *Benefits of a Canid Response Plan*, published on Vimeo

APPS

2015: *WildHelp*, V1, mobile application for iOS

UNPUBLISHED

2014: Co-Author, *Best Practices for Response, Care and Re-Wilding of Mountain Lions*

2007: Co-Author, *The Bear Dreamer*, the story of Timothy Treadwell

PROFESSIONAL MEMBERSHIP AND AFFILIATIONS

- Humane Wildlife Control Association
- National Pest Management Association
- National Wildlife Control Operators Association
- National Wildlife Rehabilitators Association
- Professional Women in Pest Management

AWARDS, HONORS, COMMENDATIONS

2023: Impact Award, National Pest Management Assn, Women's Forum, SC

2021: Commendation, California State Senator John Laird

- 2020: Integrated Pest Management Achievement Award, Dept of Pesticide Regulation
- 2015: Los Angeles Animal Services, Certificate of Appreciation for Providing Wildlife Search & Rescue Training to the Employees of LA Animal Services
- 2012: US Fish and Wildlife Service, Office of Law Enforcement, Certificate of Appreciation for Wildlife Rescue and Community Liaison
- 2012: California Council for Wildlife Rehabilitators, Certificate of Recognition for 31 Years of Service and Dedication in Wildlife Rehabilitation
- 2004: CA Dept of Fish & Wildlife, Certificate In Recognition of Volunteer Services.
- 2002: CA Dept of Fish & Wildlife, Certificate of Appreciation for Exceeding 20 Years In Wildlife Rehabilitation
- 2002: California Department of Fish & Wildlife, Award in Recognition of Dedicated Service.
- 1999: Golden Rule Award Finalist for exceptional volunteer service.
- 1998: Golden Rule Award Finalist for exceptional volunteer service.
- 1998: Citizen of the Year, Dolphin Award, Malibu, CA
- 1998: L A County Commendation for dedicated service.
- 1997: L A County Commendation for volunteer emergency assistance during 1996 wildfires.
- 1993: L A County Animal Care and Control Commendation for volunteer services.
- 1992: Webster Elementary School PTSA, Malibu, CA, Recognition for lectures on wildlife.

OTHER

Expert Witness with testifying experience on wildlife behavior and capture techniques.

Appendix B

THE CALIFORNIA VALLEY COYOTE

The coyote (*Canis latrans*) has inhabited California for tens of thousands of years, predating human occupation of the land. It co-existed alongside the first aboriginal people, Spanish colonists, and adapted over and over again to major changes in the habitat and increased human presence⁶. It is the coyote's unique characteristics that allow it to survive, even thrive, near humans.

There are currently 20 recognized subspecies of coyote. Marin County is home to the California valley coyote, which typically weighs between 18 and 35 pounds - about as large as a medium-sized dog, but with long legs. Its thick coat can make it appear larger.

Although the coyote is classified as a carnivore, coyotes are better identified as opportunistic omnivores as they eat a variety of foods including nuts and seeds, grasses, vegetables, fruits, insects, rodents, rabbits and other small mammals. In an urban setting, coyotes are attracted to bird feeders for the seed as well as the abundance of rodents attracted to the feeder. Coyotes are also attracted by compost piles, vegetable gardens and fruit trees, accessible garbage and pet food. Even so, research indicates rodents make up the bulk of the coyote diet in both urban and rural areas.⁷

Being an opportunistic forager, urban coyotes have flexible hunting habits. Coyotes are naturally fearful of humans and will try to avoid encounters with people by exploring neighborhoods when they're the quietest - the least amount of vehicle and or pedestrian traffic. In Belvedere, this would be late night until just after dawn.

Coyotes can learn to take advantage of anthropogenic (human-related) foods, like pet food left outdoors. A coyote that learns it can find a bowl of food in a particular

⁶ Gill, Don. "The Coyote and the Sequential Occupants of the Los Angeles Basin," *American Anthropologist* 72, no. 4 (1970): 821-2, accessed 7/31/22, <http://www.jstor.org/stable/671658>

⁷ "Coyote Relationship with Other Animals," Urban Coyote Research Project, accessed 7/31/22, <https://urbancoyotereseearch.com/coyote-info/home-ranges-individuals>

backyard, for example, might visit that yard nightly, but should it encounter a human, it will bolt for safety. This would be considered a “food-conditioned” individual.

A “human-conditioned” coyote is one that has learned through repeated encounters with humans deliberating “training” them, that if they approach, they will be “rewarded”. This can happen when people hand-feed coyotes, or toss them food from a distance. While these coyotes still retain their fear of humans, they have increased their proximity tolerance because the *“juice is worth the squeeze”*. These are often the coyotes observed casually loitering in one spot, waiting for “their person” to show up.

Another type of human-conditioning can happen when people act passively in the presence of coyotes in an urban environment. Instead of helping to maintain respectful boundaries through assertive messaging, they retreat, signaling submissiveness.⁸ This can cause coyotes to feel more at ease around humans.

A coyote following a person may indicate it has learned through repeated encounters that it can successfully scavenge food. Much like jackals (a relative of the coyote) in Africa that follow behind lions - because the lion leads to food. It’s the same concept. However, a coyote following or “escorting” a person with a dog can mean something very different.

There is growing evidence to support the theory that altercations between coyotes and domestic dogs and cats are primarily driven by competition or a threat response, rather than predatory in nature⁹. Therefore, a coyote following a person with a dog may indicate either a food resource nearby pups are somewhere close.

⁸ Wattles, D. (2022, July 7). Eastern Coyote Biology and Management [online presentation]. Town of Nahant "Coyote Discussion With Mass Wildlife Representative," Nahant, MA, Country. <https://youtu.be/976GPh55QTE>

⁹ Poessel, Sharon & Mock, E & Breck, Stewart. (2017). Coyote (*Canis latrans*) diet in an urban environment: variation relative to pet conflicts, housing density, and season. *Canadian Journal of Zoology*. 95. 287-297.

A coyote that shows extraordinary interest in a dog accompanied by a person might also be the result of repeated negative encounters with dogs, so traumatic the coyote has become more defensive and reactionary.

Even so, no matter how badly conditioned or how traumatized, coyotes *can* be “deprogrammed” and reconditioned to respect and maintain healthy boundaries with humans. As with all human-wildlife conflicts, the source of the problem must be identified and remedied.

Repeated sightings of coyotes in urban settings indicate a reliable food or water resource. Justin Brown, a biologist with the National Park Service suggests that if people are encountering coyotes in a residential area, “they’re coming into your neighborhood for a reason. There’s some sort of resource they’re finding.”¹⁰ According to Brown, people need to realize that their actions are responsible for drawing coyotes into their neighborhoods and that “we need to be dealing with *that* situation if we don’t want them there.”¹¹

Eliminating attractants, then, is key to reducing the prevalence of coyotes in an urban landscape, and subsequently reducing risk of altercations with pets. According to Niamh Quinn, a Human-Wildlife Interactions Adviser with the University of California’s Division of Agriculture and Natural Resources, keeping coyotes from having potential food sources can help reduce their presence.¹²

For decades, experts have suspected a strong connection between anthropogenic food resources and the presence of coyotes in urban areas, suggesting that reducing food resources would reduce the presence of coyotes in an urban landscape.

¹⁰ Ryan Fonesca, “To Unlock the Secrets of Urban Coyotes, Biologists Turn to Poop,” LAIST, Los Angeles, CA 3/25/19, <https://www.latimes.com/archives/la-xpm-1986-11-23-me-12481-story.html>

¹¹ Fonesca, R. “To Unlock the Secrets of Urban Coyotes, Biologists Turn to Poop,”

¹² David Mendez, “People and Pets Contend With Urban Coyotes in Los Angeles,” Spectrum News, Redondo Beach, CA, 12/16/20 <https://spectrumnews1.com/ca/la-west/public-safety/2020/12/16/contending-with-urban-coyotes-in-los-angeles>

Finally, in 2004, a study involving radio-collared coyotes confirmed the theory. Researchers documented a dramatic decrease in coyote traffic across an entire neighborhood when two major sources of food were removed.¹³

Authorities agree, the two most important strategies to reduce the presence of coyotes in urban areas and to maintain health boundaries, are education of the public on what attracts coyotes and how to discourage them, and ordinances prohibiting the feeding of wildlife or otherwise attracting wildlife, including the handling of refuse.¹⁴

Reducing food resources might not only reduce the number of individual coyotes in an area, but possibly reduce the number of family units, or packs, due to the unique social characteristics of the coyote.

A coyote's home range refers to the area in which they travel and forage for resources. Home ranges of coyotes can overlap. A territory is a portion within the home range that is defended from other coyotes.¹⁵

Solitary coyotes, also referred to as nomads, or transients, often travel great distances and have large home ranges but do not defend a territory. However, resident coyotes, those that belong to a family unit, or pack, fiercely defend a territory, keeping all other coyotes out.

Territory size will vary, depending on the food resources. In a natural habitat, a coyote's territory could be 15 square miles. Conversely, in an urban environment with an abundance of anthropogenic food resources, coyotes may only need to control a small territory, less than 2 square miles, to survive.

¹³ Derek Gomes, "Study finds food source major draw for coyotes," Newport Daily News, Newport, RI 7/19/19, <https://www.newportri.com/story/news/local/2019/07/17/want-to-keep-coyotes-away-dont-make-food-available-to-them-on-a-quidneck-island/4671343007>

¹⁴ Baker, Rex O. and Timm, Robert M. (2017) "Coyote Attacks on Humans, 1970-2015: Implications for Reducing the Risks," *Human-Wildlife Interactions*: Vol. 11: Iss. 2, Article 3. <https://digitalcommons.usu.edu/hwi/vol11/iss2/3>

¹⁵ "Home Ranges of Individuals," Urban Coyote Research Project, <https://urbancoyotereseach.com/coyote-info/home-ranges-individuals> (accessed 7/31/22)

A family unit, or pack, consists of an alpha pair, and often one or two subordinate helpers (usually older offspring), as well as the pups of the year. The total number of individuals in a pack fluctuates depending on the time of year and age of the pack's members. The average size is between 3 and 4 adults.

Pups are born in early spring. The female will give birth and nurse her pups in a sheltered area, referred to as a den. After they are about six weeks old they start to explore outside of their den. Weeks later, when the pups are more mobile, the family will abandon the den site and use various "rendezvous sites" to rest and socialize. By the end of summer and early fall, the more independent pups might begin to disperse from the pack to become nomads. Through fall and winter months, most of the pups will disperse. Depending on the pack's dynamics, though, one of two may remain as a helper.

Coyotes are absolutely monogamous - until death do they part¹⁶, and about 95% of the time *only* the alpha pair reproduce. Other female members of the pack remain behaviorally sterile¹⁷. This unique social hierarchy of the coyote has profound implications when lethal measures are used to manage their numbers.

Simply put, when either (or both) the "King" or "Queen" is removed, the social structure of the pack collapses and the kingdom - the territory - is then "up for grabs". Immigration is immediate, either from local transient coyotes or neighboring packs, or betas, quickly replacing the reproductive male and or female.¹⁸ Therefore, no long term change in population should be expected.

Coyotes evolved special adaptations allowing them to recolonize quickly and for this reason efforts to control their numbers by lethal means are not successful, as

¹⁶ Ohio State University. "Urban coyotes never stray: New study finds 100 percent monogamy," ScienceDaily, www.sciencedaily.com/releases/2012/09/120925142549.htm (accessed 7/31/22)

¹⁷ Dr. Robert L. Crabtree, "Crabtree Letter on Coyotes," The Wildlife News, <https://www.thewildlifeneeds.com/wp-content/uploads/2012/07/Crabtrees-Letter-on-Coyotes.pdf> (accessed 7/31/22)

¹⁸ "Crabtree Letter on Coyotes," The Wildlife News, accessed 7/31/22, <https://www.thewildlifeneeds.com/wp-content/uploads/2012/07/Crabtrees-Letter-on-Coyotes.pdf>

researcher Niamh Quinn has explained, “When you start to lethally control coyotes, all you get is coyotes from other areas.”¹⁹

Possibly the most current example of this phenomenon is playing out in Torrance, California, where the City’s campaign to eliminate coyotes through year-round trapping does not appear to be working as anticipated. Analysis of the program’s statistics suggests no significant decrease in the population of coyotes in the area or a reduction in sightings or encounters.

Research suggests removal of coyotes can increase the number of individuals in an area, pointing to the potential for the next litter of pups to survive to adulthood due to a surplus in food from there being fewer adults. These pups could be recruited to stay on as helpers when they are mature, which means within a year or so, the population could be back to where it was originally. Additionally, ongoing lethal control can result in an area’s packs being skewed towards younger, more productively fit individuals.²⁰

What *has* proven effective, is removal of the food resources that attract and support coyotes in an urban environment. This includes, pet food, birdseed, compost, accessible garbage, fruits and berries, free-roaming chickens, and free-roaming cats. The presence of coyotes *can* be reduced by reducing their food, and the behavior of coyotes *can* be changed when humans change *their* behavior.²¹

Controlling the presence of wildlife in a given area by controlling the food on which they depend is one of the fundamental principles of Integrated Pest Management. It is a simple and effective strategy to control the presence of vertebrate wildlife, from mice to mountain lions.

¹⁹ “People and Pets Contend With Urban Coyotes in Los Angeles,” Spectrum News, (accessed July 31, 2022) <https://spectrumnews1.com/ca/la-west/public-safety/2020/12/16/contending-with-urban-coyotes-in-los-angeles>

²⁰ “Crabtree Letter on Coyotes,” The Wildlife News, <https://www.thewildlifeneeds.com/wp-content/uploads/2012/07/Crabtrees-Letter-on-Coyotes.pdf>, (accessed July 31, 2022).

²¹ David Gregg and Jo Yellis, “Coyote study comes to Providence,” Providence Journal, Providence RI, 9/21/20, <https://www.providencejournal.com/story/opinion/2020/09/21/opiniongregg-and-yellis-coyote-study-comes-to-providence/114108810/>

Appendix C

Coyote-Safe Neighborhood Checklist

Arm Yourself With Knowledge

- Visit [\(link\)](#) (dedicated coyote web page).
 - Watch [\(e-learning module\)](#). Include family members.
- Discuss coyote safety with your family members, including children.
- Learn aversion techniques to use on coyotes, at [\(link\)](#).
- Learn how to protect yourself against aggressive dogs, at [\(link\)](#).
- Share information with neighbors, property managers / landlord.

Be Prepared

- Be prepared to report sightings of loose dogs or coyote sightings.
 - Bookmark the Reporting Form: [\(link\)](#).
 - Add the Hotline to your Contacts.
 - Be prepared to use aversion techniques on wild canids.
 - See checklist of props to have on hand at [\(link\)](#).

Reduce Attractants

Handling of garbage and green waste

- Do not allow garbage or recycling bins to become overfilled. Lids must shut.
- Be sure lids are secure and functioning properly. Replace if damaged.
- Never compost meat, bones or dairy.
- ☺ Keep discarded meat/dairy frozen until trash day.

Composting

- Be sure the bin is secure and animals cannot gain access.

Barbeques

- Clean after each use. Keep drip tray clean or inaccessible (to animals)

Birdseed feeders

- Birdseed attracts rodents and rodents attract coyotes.
 - (a) Remove feeder.
 - (b) Install a rodent barrier system.

Harborage (shelter and hiding spots)

- Debris piles attract rodents and subsequently the animals that prey on them.
 - Remove any debris or brush piles.
- Keep grass trimmed and vegetation thinned.
- ☺ Lollipop pruning of shrubs opens the base but leaves a full canopy.
- Inspect home's exterior for any openings, holes, gaps.
 - Make necessary repairs to prevent animals from accessing shelter.
 - Include decks and landing.
- ☺ Take precautions to not entrap nocturnal animals within structures.

Garden and Fruit Trees

- Ripe and fallen fruit attract rodents and other wildlife including coyotes.
 - Pick up ripe and fallen fruit daily, if possible.
- Vegetable gardens attract rabbits and rodents which are prey for coyotes.
 - Prevent / deter small mammals from accessing the garden.

The Keeping of Poultry

- The feed and bedding used to maintain poultry can attract rodents.
 - Exclude rodents from access to stored food / bedding.
 - Reduce or eliminate rodent access to animal enclosure(s).
- Rabbits, poultry and waterfowl can attract coyotes and other predators.
 - House animals in predator-proof enclosures.
 - Never let the animals roam freely, unguarded.

Companion Animal Care and Feeding

- Pet food must never be left where it is accessible to wildlife.
- Remove pet feces from the yard, daily.

- Keep cats contained for their safety.
- Catio and Cat Gardens allow cats to enjoy the outdoors safely.
- Keep dogs on a 6' or shorter leash while in parks and public property.
- Do not leave small dogs in the yard, unattended.

Stray, Feral and Free-Roaming Cats

- Free-roaming cats are at risk of being preyed upon by wildlife or loose dogs.
- Supplied food must never be left where it is accessible to wildlife.

Preventive Measures

Private Property (in addition to the above)

- Install predator-proof fencing.
- Install wildlife deterrents.

Neighborhood and Public Spaces

- Report feeding of coyotes through the Reporting Form ([link](#)).
- Report stray or feral cat feeding locations through the Reporting Form ([link](#)).
- Report overflowing trash receptacles to the City.

Appendix D

COYOTE RESPONSE STRATEGY

An effective CRP will include a dedicated program to monitor and respond to wild canid activity quickly and proficiently. The program should be overseen by municipality's first responders, typically their police or animal control authority.

It is recommended, the response team utilize the SARA Model (Scanning, Analysis, Response, Assessment), or similar problem-solving process, in its approach to wild canid investigations.

Monitoring and data collection of coyote sightings and encounters are critical to implementing an effective response. Therefore, we recommend the municipality build and maintain a dedicated system through which to thoroughly and accurately collect data, including a method for tracking and mapping coyote activity to help identify potential problem areas, quickly.

One of the most important resources for monitoring canid activity is input from its citizens. Therefore, we recommend the City create and maintain a user-friendly reporting system where citizens can report coyote activity. We recommend an online reporting form for those who are comfortable with computers, as well as a dedicated phone line. In both cases the City will advise users to call 911 should they feel they are in danger.

Reports generated online as well as through the phone system, will be received directly by the City's first responders, where investigators will review the information and begin planning the appropriate response. The response will be influenced by a comprehensive guide. See Appendix E, Coyote Incident Flowchart, which identifies and classifies coyote behavior and offers recommendations on the level of response. This particular one is meant for the public. A more detailed version is available for first responders.

This final stage of the SARA Model is just as important as the others. It requires ongoing internal evaluation of response strategies, as well as periodic assessment of the program to gauge its overall success.

The plan encourages periodic internal debriefings (Police) to evaluate response protocols and the effectiveness of strategies being used - to highlight good outcomes and identify areas for improvement. Additional meetings that include operational staff, relevant community partners and stakeholders are highly recommended. Summaries of these meetings should be provided to City leaders.

Appendix E

COYOTE INCIDENT FLOWCHART

Sick or injured coyote	Report sighting to Belvedere and or MHS.	Responders will assess the situation and may attempt to capture the animal for care.
Coyote vocalizations, scat, prints.	Inform officials by phone or online form.	Information will be documented.
Coyote observed day or night traveling through community.	Inform officials by phone or online form.	Information will be analyzed and archived.
Confirmed predation of free-roaming cat(s) by a coyote.	Inform officials by phone or online form.	Information will be collected. RP may be contacted for further information to determine preventive measures. A field response may be warranted.
Coyote enters a fenced yard with people and or pets present in the yard. No altercation.	Inform officials by phone or online form. Haze animal out of yard.	In addition to the above, a yard audit may be recommended. If the animal is observed by officials, they will conduct hazing.

Domestic Dog Related:

Unattended dog found injured or killed. Coyote suspected.	Inform officials by phone or online form. Seek medical attention for injured pet. Try to document / preserve evidence.	Information will be collected and officials may wish to conduct forensic investigation. Increased surveillance of the area may be warranted.
Physical altercation between off-leash dog (or one on extension leash).	Contact the Police Department directly. Seek medical attention for dog, as needed.	In addition to the above, officials will analyze reports and assess area for possible den, pups or food resources.

<p>Coyote involved in physical altercation with unattended dog in fenced yard.</p>	<p>Contact the Police Department directly. Seek medical attention for pet, as needed.</p>	<p>In addition to the above, officials may conduct audit of the yard and immediate public area. Increased surveillance and patrols may be warranted. An educational meeting for the block or neighborhood may be recommended. Wildlife Partners may be consulted.</p>
<p>Coyote approaches person with a dog on a 6' leash and displaying one or more of the following:</p> <ul style="list-style-type: none"> • Showing teeth • Hackles raised • Lunging or nipping with or without contact. <p>(not predatory)</p>	<p>Contact the Police Department directly through 911.</p>	<p>In addition to the above, officials will conduct an additional survey of the area and consult with Wildlife Partners. Signs may be posted to alert pedestrians. The immediate area may be cordoned off to avoid additional interaction with the animal. Removal of that individual may be warranted after a thorough and exhaustive investigation is conducted.</p>
<p>Canid injures or kills attended dog (within 6' of human).</p>	<p>Contact the Police Department directly. Seek medical attention for dog, as needed.</p>	<p>In addition to the above, intensive hazing by officials may be implemented. Removal of that individual may be warranted after a thorough and exhaustive investigation is conducted.</p>
<p>Multiple <u>confirmed</u> incidents of a coyote approaching attended dogs. (after intensive hazing)</p>		<p>In addition to the above, officials will consult with Wildlife Partners. Removal of the individual coyote may be warranted.</p>

Coyote(s) Loitering:

<p>Coyote observed resting or lingering in an area day or night.</p>	<p>Inform officials by phone or online form.</p>	<p>Location will be documented. RP may be contacted for further information. A field response may be warranted to assess the animal's condition and to conduct hazing if appropriate.</p>
<p>Multiple sightings of coyote(s) resting or lingering in an area.</p>		<p>In addition to the above, officials will conduct a neighborhood and increase patrols and or surveillance. Wildlife Partners may be consulted.</p>

Coyote(s) Following Person With and Without Dogs:

Coyote follows a person without a dog. No contact.	Conduct effective hazing. Inform officials by phone or online form.	Location will be documented. Officials may conduct a survey of the area looking for underlying cause of behavior, if any.
Multiple reports of coyotes following people without dogs. No incidents.		In addition to the above, officials may assess the area for a den site or pups and make note of potential harborage and consult with wildlife partners on hazing strategy. Hazing will be conducted if warranted.
Coyote follows person with a dog. No incident.	Conduct hazing if appropriate. Inform officials by phone or online form.	Location will be documented. Officials may conduct a survey of the area looking for underlying cause of behavior, if any.
Multiple accounts of a canid following a person with a dog. No Incident.		In addition to the above, officials may assess the area for a den site or pups and make note of potential harborage and consult with wildlife partners on hazing strategy. Hazing will be conducted if warranted.

Human Involved Interaction:

Coyote approaches a person without a dog displaying one or more of the following: <ul style="list-style-type: none"> • Showing teeth • Hackles raised • Lunging or nipping without contact. (not predatory)	Call 911.	Officials will conduct an immediate survey of the area and consult with Wildlife Partners. Signs will be posted to alert pedestrians. The area may be cordoned off to avoid additional interaction with the animal. Removal of that individual may be warranted after a thorough and exhaustive investigation is conducted
Coyote physically engages with a human and bites or otherwise physically injures the person.	Call 911.	Officials will conduct exhaustive investigation to identify specific canid involved and circumstances around the altercation (including action of victim before / after). Officials will report the incident to State Wildlife Officials and will

...continued		consult with Wildlife Partners for removal of the individual canid.
Coyote physically injures a person while engaging with the coyote (hand feeding, approaching pups, etc.)	Call 911.	In addition to the above, officials may issue a citation and or levy fines for feeding or otherwise harassing wildlife.

Appendix F

