



## **Culver City Coyote Management Project Update from LMU Center for Urban Resilience February 16, 2022**

Thank you for the opportunity to update the Culver City management team and elected officials on the progress of our coyote management project. The program progress has been guided by our preliminary findings and significantly impacted by the Covid pandemic. Our data gathering efforts continued unabated by the outbreak, but we had to make modifications to our protocols in order to remain in compliance with LA County, University, and other municipal regulations. Our efforts to implement high social contact activities, such as curriculum in the schools, face-to-face backyard surveys, and community workshops were delayed. As we emerge from the worst impacts of the pandemic, we are ramping up activities such as those mentioned above and will continue the outreach to schools and the public beyond the contract period. We are deeply committed to a successful outcome of the coyote conflict challenges in Culver City and consider this partnership to be central to our mission as a Center.

With less than six months remaining in the formal part of the project, we have gathered most of our physical data: nearly 2.5 million camera trap images, more than a year of radiotelemetry data, more than 200 scat samples, direct observations, and informal engagement with stakeholders. We are about to launch our social survey and develop the curriculum to be shared with Culver City Schools. The social survey will be a critical component of the overall dataset as it informs the recommendations and helps direct the City's choices of interventions. We remind you all as stakeholders that successful coyote management is as much a human endeavor as it is a wildlife management problem. Understanding community expectations will help us all craft a successful and dynamic management plan. In addition, the formal and informal educational program will engage the community with a collective message about coyotes, the management program, and the intended interventions.

We are currently in the process of analyzing all of that data to be compiled into a complete report with a full list of recommendations that have been reviewed by a team of coyote experts. We will be engaging colleagues across the country as part of this process. Coyote management is dynamic, and teams are working across the nation to develop effective implementations. Feedback from research and management colleagues, as well as ongoing analysis of the current research literature, will be valuable additions to our work. While it is premature to prepare final recommendations without all of the data being analyzed, especially the social surveys, we have included some preliminary recommendations at the conclusion of this report.

### **Backyard Safety Surveys**

The backyard safety surveys were designed to provide a service to residents who were concerned about coyote presence in their backyards as well as to collect data on commonalities that may be drawing more coyotes into Culver City neighborhoods. To date, we have completed a dozen surveys, and we are hoping that the release of the online social survey and the relaxing

of pandemic regulations will spur further interest and willingness of residents to participate in the on-site safety surveys. Survey data and informal conversations with residents lead us to believe that most residents do not have adequate fencing to keep coyotes from yards and most residents do not know that coyotes regularly eat fruit and will jump into yards to eat low-hanging or downed fruit, particularly figs. Because Covid prevented us from launching a full-scale promotion of backyard surveys, we believe that we need to gather additional data to make full claims. However, we do have recommendations at the conclusion of this report on ways to make this program more effective. In fact, we have been contacted by other cities in the United States and Canada who wish to make this a part of their coyote action plans.

### **Camera Trapping**

In total, we collected nearly 2.5 million images from roughly 30 cameras throughout Culver City in 2020 and 2021. Currently, we have sorted through all of the 2020 photos (more than half of the images) and have done analysis on the trends we observed during the first six months. We are currently in the process of analyzing all of the 2021 data using occupancy analysis as well as a temporal analysis model that will inform us where and how coyotes are using the available habitat. Especially important are other wildlife observed in the images as their presence may impact coyote behavior and risk to residents from coyote activities.

The majority of the coyote images appear at Marycrest Manor and Culver City Park, where we have radio collared two coyotes, but there are rare images in the smaller suburban parks as well. Thus, we refer to this pack as the Marycrest Manor pack. One trend that has occurred is that we haven't seen a coyote in Carlson Park or the surrounding streets since 2020. However, we have started seeing them at Blanco and Marino Parks (Sunkist Park area) with more regularity. We also see a lot more cats at those locations and have received reports from residents of feral cat feeding locations in these neighborhoods. Based on a combination of radio collar and camera trap data, we now believe that there are two packs in Culver City: one that remains largely in the oilfields and Culver City Park, and one that resides along Ballona Creek and occasionally visits the neighborhood parks. We have observed breeding patterns in the Marycrest Manor pack, which did decline in this breeding season. However, we do not believe that the pack that uses Ballona Creek and visits the suburban parks resides in Culver City except rarely, based on both camera trap and scat data (see more information below).

One question we strove to understand through this analysis was why cats make up approximately 3% of the diet in cities like Chicago but sometimes more than 30% in Los Angeles, and we believe we now understand this. In Chicago, researchers found that cats avoid areas where coyotes are dense, which tends to be the larger green spaces. In Culver City, we found that coyotes prefer larger green spaces as well; however, cats do not avoid areas with high coyote density. Cats are found in the larger green spaces, not just urban areas where they are traditionally found. Thus, we believe that the overlap leads to increased cat deaths. We will be publishing these findings in a peer-reviewed scientific journal this year.

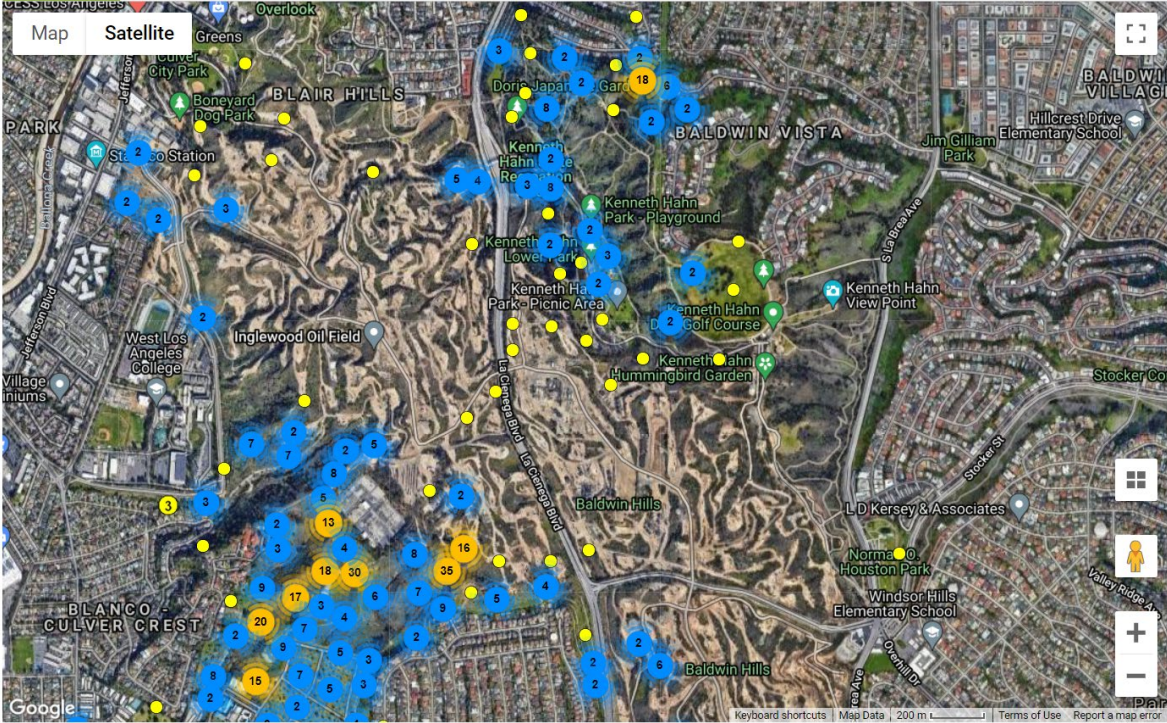
### **Education**

We completed a six-week school program about urban wildlife, specifically coyotes, that is available for Culver City schools to implement at any time. Covid has restricted our efforts to get

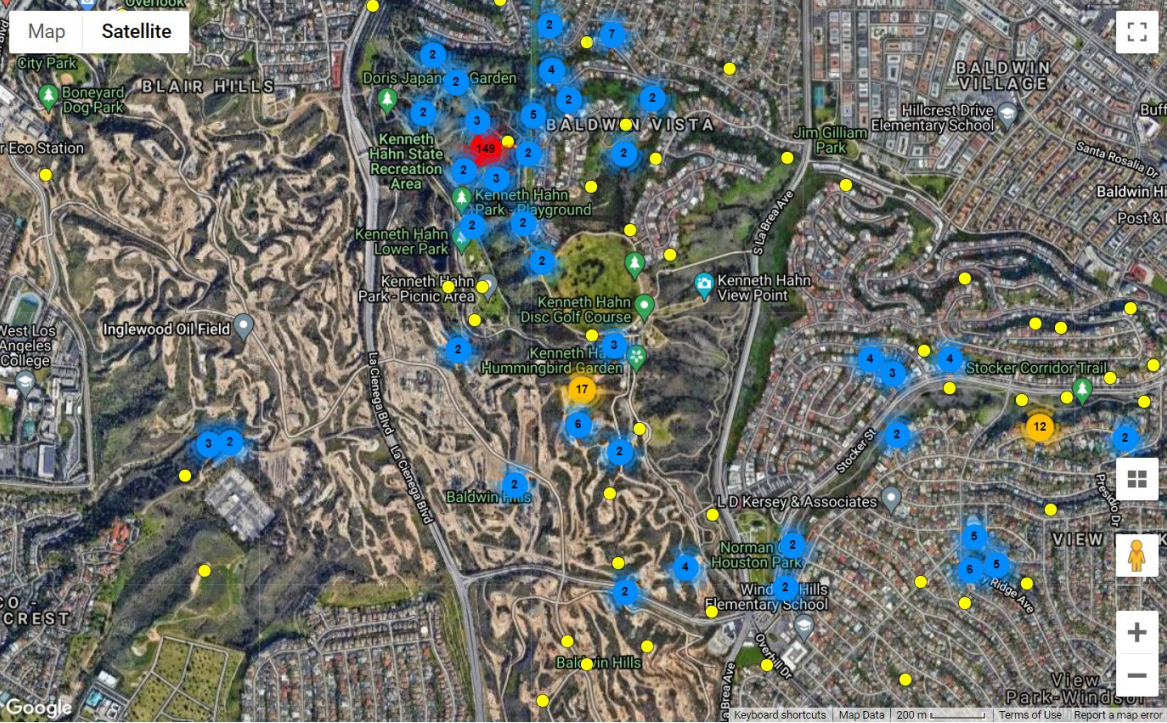
in the schools and complete this program ourselves, but it will be available on the CUREs web site, and we are poised to implement these curricula in any school that is interested, ranging from elementary to high school. This willingness extends beyond the formal contract date, and we will run workshops and teacher training sessions whenever the district is ready. We have also developed a general education presentation that can be presented at community events or events such as Scientist in the Park Day, which we wanted to implement prior to Covid to reach residents about the program. These education programs include information on coyote history, demographics, and behavior as well as strategies for responding to coyotes if you see one and reducing the likelihood of drawing coyotes to your yard. These are currently available to the City of Culver City, and CUREs staff are happy to present at any school or event as Covid permits.

### **Radio Collaring**

In collaboration with the National Parks Service, we were able to trap and collar two male coyotes, including the alpha male of the Marycrest Manor pack in 2020, which we have now been monitoring for a full year. They are occasionally seen in the neighborhoods directly adjacent to Marycrest Manor, and some neighborhoods in Baldwin Hills, but they are mostly restricted to the oil fields, Marycrest Manor, Culver City Park, Kenneth Hahn Park (and adjacent golf course), and Holy Cross Cemetery. This allowed us to suspect that there was a second pack, mostly likely living on Ballona Creek, where they have been seen on camera and we have collected scat as well, that is visiting the neighborhood parks and yards. However, one of the males has traveled into the Sunkist Park area in 2022 and has been recorded once on the Creek near that area as well. Since we had not seen this movement pattern at all in 2021, it is possible that the other pack has moved further down the Creek, allowing the Marycrest Manor pack to utilize it more or that the Marycrest Manor Pack does extend into those neighborhoods, just much more rarely than we thought, given that they did not travel there in all of 2021. Scat analysis should help us distinguish between these two possibilities. Below, you can see where c171 (alpha male) and c165 (offspring) have traveled in 2002 thus far.



c171 (alpha)



c165 (offspring)

## Scat Analysis

In 2020, we collected more than 100 scat samples from the Ballona Creek (near Lindberg Park), Culver City Park, and Marycrest Manor that we sent to a lab in Idaho for DNA analysis in order to determine how many individuals we were tracking. At the end of 2021, after recognizing that we likely had a second pack that lived along the Creek, we extended our scat collection efforts to try to place the origin of the other pack, which we do not believe lives in Culver City based on our camera trap data. Thus, we hiked all the way down the Creek past the Culver City boundaries and collected scat near what we believed to be a potential den site. We sent those samples to Idaho for DNA analysis as well to see if we had found the location of the other pack. We expect that to be analyzed by the end of the school year.

We also completed a longitudinal study of the Marycrest Manor pack in which we collect scat monthly throughout 2021 to look for changes in their diet. This will help us determine if there are seasons in which cats seem to be higher risk and to ascertain how much of their diet cats make up annually. Our undergraduate team has almost completed this analysis and will have a presentation ready for the Loyola Marymount student research symposium in March.

## Social Survey

We are preparing to launch a survey of Culver City residents, to better understand their current knowledge of coyotes, their opinions and attitudes regarding coyotes, and their own activities and interactions related to coyotes in the neighborhood. We have conducted similar surveys in other locations and find that the results of the survey allow us to better tailor our management and education recommendations. We have been working closely with the City to develop marketing strategies to increase the response to the survey, which will be open from February to April, and the results will be provided in the final report.

## Recommendations

Though our data has not been completely analyzed, and therefore we cannot compile a comprehensive list of recommendations, here is *preliminary partial* list based on our current understanding of Culver City coyotes. These recommendations are subject to change as the various data sets are finalized and their analyses are completed.

- Now that Covid is starting to ease its grip on us, Culver City should focus on the education component of this project. We have prepared a full school curriculum that could easily be implemented in a science class or after school program for almost any level of student. This would get students talking about the project and includes a Citizen Science component where students conduct Backyard Surveys in their own backyards, thus informing the City on which neighborhoods may be in most need of educational outreach. We are prepared to offer these services even after the formal contract ends.
- Further outreach through social media and NextDoor is key to reaching residents about common things that draw coyotes into yards, such as open trash containers, feeding other wildlife such as cats or raccoons, fruit trees, and water resources.
- The City should undertake efforts to clean fogs off the streets, since they are such a large component of coyote diets in Southern California and may be a significant attractant.

- The City should also focus its educational efforts on teaching adults hazing techniques. Based on two years of conversations with residents, it seems that residents either retreat or take pictures when coyotes are spotted. Implementing a well-trained hazing program can help make neighborhoods more frightening to coyotes, who will then avoid them during times when they are likely to encounter people. When we have spotted coyotes on neighborhood streets, it is often around dinnertime when they could encounter people with their pets.
- The City should increase its efforts to reduce wildlife and feral domestic animal feeding within the City boundaries. Food in cat colonies increases the probability that coyotes will use neighborhoods as foraging areas, thus increasing human/pet/coyote encounters.
- In addition, the City should notify residents that coyotes can easily scale 6 foot fences. The best way to keep a coyote out of your yard is to install coyote rollers and patch holes in fences. Most residents are not aware that coyotes can do this.
- Based on our findings, cats are more widespread in Culver City than in many other urban areas where coyote studies have been conducted and do not avoid coyotes in those areas. Residents should be encouraged to keep cats indoors and to avoid feeding feral cat colonies, where camera traps have spotted an unusually high number of coyotes.
- Finally, if coyote removal efforts are to be put in place, these efforts should be focused on coyotes traveling the Ballona Creek rather than the established pack in Marycrest Manor, which seems to avoid neighborhoods when possible. Studies show that when removing established coyotes from an area, two or more packs tend to fill those spaces, increasing the number of coyotes in the area. Since the Marycrest Manor pack seems to avoid neighborhoods, it may not be advisable to remove them as they could be replaced by packs that may be more aggressive. Similarly, note that if the City tries to remove coyotes from the Creek, others may move in and continue to utilize the neighborhoods if this action is not paired with an educational campaign. Traveling coyotes likely enter the neighborhoods seeking food and water. If this is not addressed, no amount of coyote removal will solve the problem.
- Additional recommendations will be made following full data analysis, social survey results, consultation with colleagues, and review of the latest published literature.