United States Department of the Interior

NATIONAL PARK SERVICE
Santa Monica Mountains National Recreation Area
401 West Hillcrest Drive
Thousand Oaks, California 91360-4207

In reply refer to:

December 6, 2019

Honorable Karen Farrer, Mayor
Honorable Council Members
City of Malibu
23825 Stuart Ranch Road
Malibu, CA 90265

Dear Mayor Farrer and Councilmembers:

Thank you for the invitation to comment on the proposed Local Coastal Program Amendment No. 14-001. In general, the National Park Service does not testify in support or opposition to local measures, but does provide subject matter expertise and comments to assist local governments in their evaluation of proposed actions, when invited to do so.

National Park Service scientists have been studying carnivores in the Santa Monica Mountains for more than two decades, since 1996. Our studies include observations and data collection on bobcats, coyotes, and mountain lions, predominantly. In these studies we have found widespread exposure to and large impacts of anticoagulant rodenticides on all three of these carnivores. The interaction between anticoagulant rodenticide exposure and death from mange resulted in the complete loss of bobcats from open space areas in the Conejo Valley.

Our studies have found anticoagulant rodenticide poisoing to be a leading cause of death for many carnivores. Specifically, we found over a nine-year study that 27% of coyotes were directly killed by anticoagulant rodenticide poisoning (Riley et al. 2003, Gehrt and Riley 2010), making it the second leading cause of death for these animals after vehicles. For bobcats, the interaction between rodenticide exposure and serious mange disease led to an epizootic of mange in bobcats in our study area, the first such epizootic that had ever been reported in the scientific literature (Riley et al. 2007). This epizootic had amajor impact on our study population: 19 bobcats collared bobcats died from mange disease over a three-year period from 2002-2004, and all of the study animals were lost in one habitat fragment in Oak Park, with little evidence of bobcat activity there for many years. Although bobcats eventually returned to that area by 2009 and 2010, including females that successfully raised kittens, we have been seeing more mange disease again in recent years. Population genetic studies with our colleagues at UCLA indicated that the mange epizootic was severe enough to create a genetic bottleneck (Serieys et al. 2015a). From the beginning, severe mange disease showed a very strong statistical association with anticoagulant rodenticide exposure (Riley et al. 2007), which was even more evident as our studies continued (Serieys et al. 2015b). Importantly, however, work with our colleagues at UCLA revealed significant and widespread immune system impacts of rodenticide exposure in bobcats, both inflammatory and immune suppressive effects (Serieys et al. 2018). These immune effects could then be leading to the development of severe mange disease in bobcats, and potentially mountain lions as well (see below). Finally, even more recent work has shown that gene

expression in bobcats is profoundly affected by anticoagulant exposure, including for genes related to the immune system and the skin (Fraser and Mouton et al. 2018). So toxicants are affecting wildlife at fundamental physiological and genetic levels.

In addition, five mountain lions have now died directly from anticoagulant rodenticide poisoining during our long-term study of the behavior and ecology of this species, the last remaining large carnivore in the region. The first two died in 2004, but then a subadult female died in 2015, and two large, healthy adult males died this year, in March and August of 2019. In a recent analysis of survival and mortality causes across the 17 years of our study since 2002, death from anticoagulant poisoing has become an important cause of death for mountain lions, approaching intraspecific conflict and vehicles strikes (Benson et al. 2019). Finally, we have also documented notoedric mange in multiple mountain lions, including the first two that died of anticoagulant toxicosis and later P22 in Griffith Park. All of these mange-infected animals were also exposed to rodenticides, contributing to the link between this disease and the toxicants.

Overall, our studies have shown widespread exposure to these chemicals across the carnivores in our region that we have studied. We found a greater than 90% exposure rate of bobcats to anticoagulant rodenticides (Riley et al. 2007, Riley et al. 2010, Serieys et al. 2015b), a 96% exposure rate in mountain lions (23 of 24 have tested positive), and an 83% exposure rate in coyotes (Gehrt and Riley 2010). Moreover, for all of these species, 2/3 or more of the exposed animals had evidence of multiple different rodenticide compunds and sometimes in large amounts, indicating multiple exposure events. In recent years, we have documented three mountain lions that were exposed to 6 different compounds, the most that we have ever found.

We have seen widespread exposure in the three species that we have studied intensively, but we also know of exposure and effects in other species. We have found exposure in species as varied as raccoons, gray foxes, and a gopher snake, and we have documented death from rodenticide poisoning both in a collared gray fox and in a GPS-collared raccoon, as part of a road study in 2017. We know from colleagues at local wildlife rehabilitation facilities that raptors (e.g., owls, hawks) are often exposed to these toxicants, although no survival studies have been done locally.

These studies suggest that these compounds are having impacts on the wildlife of the Santa Monica Mountains and surrounding areas. We hope this information will be useful to you as you consider management of the use of anticoagulant rodenticides within the City of Malibu. Thank you for your consideration.

Sincerely,

David Szymanski
Superintendent

cc: Reva Feldman, City Manager, City of Malibu
Bonnie Blue, Planner, City of Malibu