Interim report re NCCP-Local Assistance Grant # P1750301 from California Dept. of Fish and Wildlife and SANDAG – UCD agreement #A37682/MOU #5005298 Awarded to the University of California, Davis Wildlife Health Center

Report prepared by Dr. Winston Vickers, UC Davis Karen C. Drayer Wildlife Health Center

Date: Report updated July 24, 2019

Introduction:

The title of this Project is "Santa Ana Mountains to eastern Peninsular Range Conservation Connectivity Infrastructure Planning Project for Interstate 15 and Closely Associated Roadways" (funded through this Agreement by the Natural Community Conservation Planning (NCCP) Local Assistance Grant (LAG) Program) and is conducted coincident with the Project titled "Mountain Lion Linkage Assessment along SR's 76,78, and 79, and testing of Hazing Devices in Western San Diego County (funded by the San Diego County Association of Governments), and The Nature Conservancy (Conservancy). In-kind support is being provided by San Diego State University's Santa Margarita River Ecological Reserve (SMER), the Western Riverside County Regional Conservation Authority (RCA), and California Department of Transportation (Caltrans). The lead entity on the project is the Karen C. Drayer Wildlife Health Center at the University of California, Davis (UCD-WHC), with collaborators from the California Polytechnic University, Pomona (CPP) and the Conservancy. Mountain lion research has been conducted by researchers from the UCD-WHC in southern California since 2001.

The lead researcher and director of the project is Dr. Winston Vickers of the UCD-WHC. The three faculty from CPP that are directing the project there are Civil Engineering Department Chair Xudong Jia, and faculty members Wen Cheng, and Lourdes Abellara. Trish Smith and Brian Cohen are the primary collaborators at The Nature Conservancy.

Tasks to be completed:

Task 1 (NCCP-LAG): Conduct wildlife crossing infrastructure assessments for the approximately 7-mile portion of I-15 in the SA-ePR linkage region south of and inclusive of Temecula Creek (study area).

Task 1 (SANDAG):

Conduct Highway Crossing Assessments and create Wildlife Crossing Improvement Plans for portions of I-15, SR's 76, 78, and 79, as well as other major highways in MU's 5,8,9, and 10 that have been identified by previous research as having high wildlife crossing potential.

Methods:

Methods being used are similar to those used by the UCD-WHC team to assess other highways in the region previously, and well as methods used by other researchers in the region, Cal Trans personnel, and collaborating Cal Poly Pomona civil engineers.

Results:

Task 1 under both grants are identical, in process, and partially completed.

Mountain lion GPS collar data, habitat use, movement, and corridor models, and camera data, from the UC Davis mountain lion study, as well as information generated by other entities such as roadkill and culvert data from Caltrans or other entities, and other published reports or scientific studies, are being utilized to define sections of I-15, SR79, SR76, SR78, Pala-Temecula Rd., and Rainbow Canyon Rd.

Along these highways, a total of 181 potential wildlife crossing points that had been identified by previous mountain lion movement modeling by the UCD team (including the Temecula Creek bridge and several large culverts under the freeway), other culverts of smaller size that might conceivably allow wildlife movement, potential crossing locations without any structure currently, and locations where vehicle strikes of mountain lions have occurred previously were examined, photographed, and characterized. Physical characteristics such as size and evidence of wildlife movement paths leading to them or the highway nearby, fencing

present and its character, habitat character on both sides of the highway, etc. were documented (Table 1). Additional sites are still to be examined as of this date.

Table 1. Number of sites examined on each area highway	
Highway name	Number of sites examined
I-15	30
Old Highway 395	7
Rainbow Canyon Rd.	4
Pala-Temecula Rd	14
SR-79	22
SR-76	73
SR-78	34
Other highway/road	3

Cameras have been placed at a number of the identified sites along I-15 and on SR 79 and SR 76. Additional cameras are being placed currently at other sites where wildlife movement was most in evidence or where placement was most likely to detect movement through certain culvert structures or bridges. Cameras were also placed on key adjacent conserved lands along I-15. Cameras have been active for well over 3,000 total camera-nights.

Fencing has also been evaluated as to type and condition along all highway segments examined, and evidence of wildlife movement to the shoulder was noted where it was present. Consultations with Cal Trans regarding plans for fencing along I-15 have been ongoing.

Approximately half of all examined sites had crossing structures (culverts or bridges) that were large enough to allow mountain lion use, and also with straight courses that the animal can see through. However, the majority of those sites have some constraint on routine wildlife passage as they currently exist. These constraints include nearby human structures or other evidence of human presence, elevation of culverts above creekbeds, or other physical

characteristics that may inhibit wildlife movement. Most are not large enough to accommodate movement of deer.

Cameras placed along I-15 at culverts have recorded over 1,400 photos of 9 species of carnivores and mesocarnivores, including rare species such as spotted skunks and ringtail, and including 1 mountain lion photographed at a culvert mouth. Very few of the animals photographed at culvert mouths moved into or through the culverts. At some culverts the numbers of photos of certain species were dramatically different at the west and east end of the culverts. In the vicinity of the Temecula Creek golf course for instance, photos of bobcats and coyotes were common at the east end of the culverts, but much less common at the west ends. In the same area, pictures of gray foxes were much more common at the west end of those culverts versus the east end. Additional photos have been taken of wood rats, mice, rabbits, and squirrels. Additional information on photos taken was included in the previous interim report, and a more comprehensive summary table will be provided in subsequent reports.

Cameras in Temecula Creek and under the bridges have captured pictures of mountain lion, bobcat, coyotes, gray fox, rabbits, and beaver 37 times. Humans (aside from Cal Trans and other workers) were detected on camera (both during the day and the night) over 130 times, with some presence in the middle of the night. All of these detections are presumed to be trespassers.

Since the previous report a mountain lion was again photographed on camera on the TNC property (now called Rainbow Canyon property) adjoining I-15 on the east (June of 2019) to add to previously reported evidence that mountain lions approach I-15 from the east and the west in the corridor / linkage area relatively frequently.

Task 2 (LAG) – Collaborate with Cal Poly Pomona engineering faculty and students, and other highway engineers, to assess feasibility of infrastructure changes being considered, prioritize the proposed changes, and develop conceptual design and placement specifications for any modifications.

This task has been completed.

Methods:

In collaboration with CPP civil engineering faculty and students, Caltrans, and County Highway Agencies, and the Conservancy, the UCD-WHC team is developing conceptual approaches to improving connectivity and reducing vehicle-wildlife collisions in key highway crossing areas identified in Task 1. Engineering collaborators have, and continue to, provide input into feasibility of different proposed improvements such as directional fencing, culvert or bridge modifications, sound buffering concepts, or new crossing structure construction. This input is assisting the UCD team in prioritizing crossing locations and infrastructure modifications that should be considered as most likely to significantly contribute to mountain lion and other wildlife connectivity, and reduce wildlife-vehicle collisions and consequent risks to humans.

Results:

CPP team report:

The "Safe Wildlife Crossings Design for I-15 Freeway" project design phase was completed by CPP students and faculty in May of 2019 and presented to the engineering community at CPP, Cal Trans, and the Tri County County Connectivity Group. Their technical report is attached to this report, and will be incorporated in the final report of this project. A website was created that details the project and can be viewed at: https://i15wildlifecrossing.wixsite.com/calpolypomona.

Task 2 (SANDAG)

Test Mountain Lion Hazing / Deterrent Devices aimed at reducing livestock predation and associated mountain lion depredation permits.

Work on this task has begun.

Dr. Vickers has begun planning for a collaborative effort with Dr. Jeff Manning of Washington State University and Dr. Justin Dellinger of CDFW, as well as The Mountain Lion Foundation, to complete this task. Field work is planned for the Fall and Winter of 2019-2020, and potentially extending into 2021.

Methods may be expanded to include testing of behavioral responses of GPS-collared mountain lions to hazing/deterrent devices, versus testing on non-collared mountain lions.

Task 3 (LAG). Coordinate and consult with stakeholders on findings and create maps and other tools to illustrate findings.

This task is in process and partially completed.

Methods:

Trish Smith of The Nature Conservancy and Winston Vickers have been coordinating and communicating with Caltrans and other stakeholders to share preliminary results of all Tasks under both LAG and SANDAG funding.

Results:

As detailed in our previous report, Trish Smith of The Nature Conservancy has coordinated multiple meetings of stakeholders in relation to connectivity planning for I-15 and across the region. These efforts have continued since the last report, and have included meetings with the City of Temecula, the Tri County Inter-Agency Working Group, and several other entities. Winston Vickers has made a presentation to the Tri County Inter-Agency Working Group meeting, and will be presenting to the San Diego Management and Monitoring Plan meeting in August of 2019.