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

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

Date: Report updated April 29, 2021

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 2 (NCCP-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.

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

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.

Task 1 under both grants was completed, as were Tasks 2 and 3 under the NCCP-LAG grant, and the final joint report submitted and accepted during the second quarter of 2020. In order to complete these tasks during the second quarter, the original joint report draft that was submitted March 31 was revised in response to feedback from SANDAG and CDFW. Several new tables and maps were created and modifications of the Excel databases made, as well as some text modification in the report. The final joint report has been shared with stakeholders and others involved with highway wildlife crossing development and assessment.

Several consultations have occurred since the report completion with SDMMP/USGS (Kris Preston) and TNC (Trish Smith) in relation to how SANDAG may best use the data generated and what other analyses are indicated. Also additional mountain lion collar data from recently collared lions has been shared to further illuminate conservation and highway planning by the County.

Task 2 (SANDAG)

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

Work on this task is in process.

Recent analyses of puma survival data from across the state (Benson et al. in prep) suggests that the eastern Peninsular Range population clusters with other populations that have the lowest annual survival of all the populations, and probably the lowest of any in the state. Causes are primarily human-related – depredations, vehicles, and poaching. This finding amplifies the concerns that the eastern Peninsular population may be a "sink" relative to other populations, and that reducing mortalities is critical to its stability.

Due to the pending application for listing of the San Diego County mountain lion population as threatened under the California Endangered Species Act, CDFW has expanded increased requirements for lethal depredation permits to all of San Diego County. This regulatory step will make it more important that non-lethal tools be developed to assist owners of small livestock in protecting their animals from mountain lions, and thereby further reduce mountain lion losses.

Despite policy changes noted above, numerous lion mortalities associated with depredation events have occurred in San Diego County over the last year, with several during the period covered by this report.

To assist in testing of devices, Dr. Vickers and UCD field personnel assisted Dr. Dellinger and CDFW personnel in capturing and GPS-collaring 9 individual mountain lions in San Diego County between Jan-May 2020, as well as investigating when GPS-collared mountain lions died. All captured animals were sampled for DNA, disease, etc., and results of those analyses will be combined and compared with existing data from regional and statewide mountain lion analyses.

Capture activities ceased after April 2020 due to issues associated with the response to the novel coronavirus pandemic. However, some field work has continued, primarily dealing with the deaths of 7 of the 9 GPS-collared mountain lions and loss of contact with another one. All

deceased animals were retrieved from the field and secured for later necropsy (final results pending), and collars retrieved. Causes of death were – Vehicle (2), Disease (2), Another lion (1), Depredation (killed during attack by owner – 1), and Unknown Cause (1).

Since the last quarterly report (Oct-Dec 2020), only one opportunity for field testing of devices at a depredation site has occurred, and that mountain lion did not return to the site. Team members did advise the owner on better housing strategies for their livestock, and monitored the area with cameras for approximately a month. No further depredations occurred during that time.

Consultations and collaborations continue with CDFW, other researchers who are studying this issue in other areas, UCANR, and the Mountain Lion Foundation. An agreed upon protocol has been developed and permission has been obtained to deploy experimental enclosures on CDFW land in San Diego County. This deployment will begin in May, 2021. Controlled experiments there will begin as soon as test pens are constructed.

In addition, the San Diego Zoo Wild Animal Park has requested the team's assistance in developing and testing deterrent strategies and devices to reduce depredation of their exotic hoofstock. Several depredation events have occurred recently and Dr. Vickers did a site visit on April 28 in association with that request. It is expected that the Wild Animal Park will become a collaborator with UCD in the effort to develop better strategies and devices for deterrence.

Dr. Vickers is also working with a group of electrical engineering students and faculty at Cal State Northridge to develop prototype devices that may be more effective than devices currently on the commercial market for deterrent purposes. He is also working with a talented high school student that is similarly working on unique device development. For both of those efforts some small expenditures have occurred for materials for the prototype devices. Future expenditures will include the purchase of additional commercial devices for testing purposes, fencing and post materials for construction of test enclosures, and cameras – as well as increased personnel and vehicle expenditures.