To: Crystal Krause, Northern Sierra Nevada Foothills Connectivity Project

From: Tom Infusino, Calaveras Planning Coalition, on behalf of the Calaveras Planning Coalition and Foothill Conservancy

Re: Input from knowledgeable local participants regarding the delineation of habitat blocks and linkages from the North Fork Cosumnes River in Eldorado County, south through Amador and Calaveras counties, to the Stanislaus River.

Date: 5/10/13

## I. Background

On April 5, 2013 the staff of the NSNFCP hosted a workshop for knowledgeable local participants from throughout the Northern Sierra Nevada foothills to explain the nature of the California Department of Fish and Wildlife's connectivity mapping project and to gather useful information regarding local wildlife habitat blocks and linkages. This meeting was characterized as the beginning of the process of data collection from local participants. In attendance from the Central Sierra were Elena DeLacy from the American River Conservancy, Tom Infusino from the Calaveras Planning Coalition (CPC), and John Buckley from the Central Sierra Environmental Resource Center (CSERC).

During the workshop, the Central Sierra local participants got to see the impressive preliminary wildlife habitat blocks and linkages mapped during the extensive statewide planning exercise in 2010. (See California Essential Habitat Connectivity Project, p. 56) The workshop noted the important role that both west to east and south to north wildlife habitat linkages will play as wildlife adjust to global climate change. After viewing the preliminary block and corridor system, the Central Sierra local participants drew some preliminary conclusions. First, critical wildlife habitat blocks and linkages in the Central Sierra were not picked up by the statewide analysis. Second, the lack of local land use information interfered with the accuracy of the statewide analysis. Third, there was a critical need for local participants to provide additional information to bridge these gaps. Fourth, we needed to include additional Central Sierra participants who can provide useful information. Fifth, we needed to go into the field, and then back into our offices to provide the NSNFCP with two work products: 1) a map of our suggested wildlife habitat blocks and linkages, and 2) a report explaining our methodology and our results. Sixth, we needed to complete these tasks in time for the products to be useful to the NSNFCP.

This report and the accompanying map (Foothill Conservancy Wildlife Corridor Maps, enclosed) are the work products of the collaborative efforts of Elana DeLacy, of the American River Conservancy; Ellie Route of the Mother Lode Land Trust; Katherine Evatt, Pete Bell, Gwen

Starrett, and Reuben Childress of the Foothill Conservancy; Tom Infusino, of the Calaveras Planning Coalition, and Amy Rocha of the Natural Resources Conservation Service. CSERC has already submitted a digital habitat block map for the area west of Highway 49 and south of Highway 12 in Calaveras County (Southwestern Calaveras Block B-5). We would like that block included in our network. We designed our system of blocks and corridors to link up to the CSERC block. We are very grateful to CSERC for their very significant and very professional contribution to this effort.

It is important to note that each of the nonprofit organizations that worked on this project spent a lot of time and effort over a five-week period. None of them had any advance warning of the need for their participation in NSNFCP process. None of them had the opportunity to budget time or funds for their participation or to collect, organize and evaluate necessary information. That this extraordinary effort has been made is a testament to the importance that these organizations place on the work of the NSNFCP. That being said, if local participants will be needed in later phases of the NSNFCP, please let us know as soon as possible, and please provide longer lead times in your work plan for local participants' input.

## II. Methodology

### A) General Methodology.

We reviewed our notes and materials from the April 5 workshop, and the 2010 Report, *California Essential Habitat Connectivity Project*. These documents provided guidance on the objectives of the NSNFCP, the role of local participants, and useful methods for providing information. We contacted Crystal Krause, who indicated that for our work products to be useful to the NSNFCP, it would have to be completed early in May 2013.

Based upon this information we set the following expectations for our efforts:

**1) We will gather available databases to use in addition to our personal knowledge of the landscape, its divisions, its barriers and its crossings.**

This effort was very productive. We received the American River Conservancy's Land Projects Conservation Status Map (Attachment 1). We received the Mother Lode Land Trust's Resource Mapping Project Map (Attachment 2). We reviewed the *21st Century Open Space Vision Map* produced by the Sacramento Valley Conservancy (Attachment 3). We accessed local parcel maps from the GIS systems of Amador and Calaveras counties (http://www.co.amador.ca.us/index.aspx?page=217, http://calaverasgov.us/Departments/HZ/TechnologyServices/GIS.aspx). We looked at the draft general plan update maps from Amador and Calaveras counties (Attachment 4, http://mapserver.co.calaveras.ca.us/genplan_pub/index.html). We considered the preliminary

blocks and linkages from page 56 of the 2010 Report, *California Essential Habitat Connectivity Project*, and on the California Department of Fish and Wildlife's ACE II Viewer (http://imaps.dfg.ca.gov/maps/ace/). We referenced the BLM and USFS maps (Eldorado & Stanislaus National Forests). We used an aerial photo enhance with roadways and waterways provided by the Natural Resources Conservation Service as our base map upon which to trace the habitat blocks and linkages. We cross-checked our work with other data sources (The Sierra Nevada Ecosystem Project Report, the Calaveras County Significant Wildlife Habitats Map - Attachment 5, etc.) We also made extensive use of Google Earth to assess the extent of habitat disturbance.

**2) We will gather the necessary local participants in a series of meetings to map refined wildlife habitat blocks and linkages.**

As detailed below, we had a series of four meetings. At each of these meetings, local participants provided input on the areas they knew best.

**3) We will identify areas critical to wildlife habitat connectivity.**

As suggested in the 2010 Report, we searched for areas of high ecological integrity. We looked for areas with low road density and a low percentage of disturbance from urban, agricultural, and silvicultural uses. We included protected areas (Like Calaveras Big Trees State Park and East Bay Municipal Utility District watershed lands) in the wildlife habitat network. We tried to connect habitat blocks with multiple linkages using riparian areas and adjacent uplands and ridges. We identified key threats to wildlife habitat connectivity and noted opportunities to secure wildlife habitat connectivity. As identified in the NSNFCP Goals and Objectives paper, we looked for habitat starting at the county lines and then up to approximately 5000 feet in elevation. In general these networks crossed the private land in these counties, and ended in or near federal lands managed by the USFS.

Amador and Calaveras counties' wildlands include an important diversity of habitat types including grasslands, oak woodlands, riparian forests, and conifer forests. Habitat connectivity is particularly critical in this Sierra Nevada foothill region since significant dispersal routes occur elevationally as well as latitudinally. Our rationale for selecting habitat connectivity is briefly described below.

**a) Grasslands and the Ecotone between Grasslands and Oak Woodlands**

Large areas of grassland and bordering blue oak woodland in the lower elevation foothills of Amador and Calaveras counties are important habitat for foothill focal species, including Lark Sparrow and Yellow-billed Magpie. Furthermore, large tracts of this open rangeland are important to several migratory hawk species. Overwintering species, Ferruginous Hawk and Rough-legged Hawk, require large ranges to hunt. The migratory Swainson's Hawk uses this same area during its breeding season. Connectivity of

grassland with riparian forests will provide nesting trees in proximity to foraging habitat.

**b) Riparian Corridors**

Riparian forests are important corridors for birds and other wildlife that migrate from low-elevation wintering grounds to high-elevation breeding locations. The diversity of canopy layers and prey species also make riparian habitat important for longer-distance migrants, such as neotropical migratory birds. The Mokelumne River supports breeding habitat for many species including Black-headed Grosbeak, Tree Swallow, Yellow Warbler, and other focal species identified in California Partners in Flight Riparian Bird Conservation Plan. Smaller drainages running upslope in the foothills often provide natural habitat connectivity.

**c) Ponderosa Pine Forest, Mixed Conifer Forest and Red Fir Forest**

Amador and Calaveras counties include all three forest types. Habitat connectivity and preservation are particularly critical since climate change models predict a significant reduction in these habitats. In addition, conifer specialists such as Downy and Hairy Woodpeckers avoid crossing small forest gaps, suggesting that habitat fragmentation in these areas will limit genetic diversity. Ponderosa Pine Forest extends below 3,000 feet in this portion of the Sierra Foothills. Therefore, *focal species need to be identified and included in modeling efforts.* Climate models predict extensive reductions in Red Fir Forest, with northern refugia occurring in Calaveras County. Connectivity in this area is critical to provide habitat for red fir specialists.

**4) We will produce both a map and a report explaining our methodology and results.**

We produced this report and the enclosed hand-drawn map. If the NSNFCP needs a digital map, we may be able to get the map converted. We hope that the hand-drawn map is a sufficient timely and useful product.

**5) We will use these work products to inform the NSNFCP and the general plan updates underway in Amador and Calaveras counties.**

To date we have provided our habitat connectivity map suggestions to the NSNFCP. In the near future, during the appropriate public comment junctures in the ongoing general plan update processes in Amador and Calaveras counties, we will provide this information to these counties.

**B) Day 1: Foothill Conservancy, CPC, Mother Lode Land Trust, and American River Conservancy outline the Cosumnes River Linkages, the South Fork Cosumnes Block, and the Sutter Creek Linkage.**

Since April 23 was the only day we would have the opportunity to work with representatives of the American River Conservancy and the Mother Lode Land Trust, we focused on mapping the common areas most familiar to them. We began by trying to map linkages along the forks of the Cosumnes River. This was fairly challenging since rural sprawl to the west and clearcut logging damage to the east have compromised the larger habitat blocks. As a result, we felt the need to include some of the damaged logging lands in a large block, in hopes that future conservation efforts focused there could restore some of the necessary habitat. Fortunately, we were able to build upon BLM lands, USFS Lands, and lands with conservation easements on them. We used Google Earth to identify the condition of the landscape. We used some Amador County parcel map data to identify larger parcels less subject to damage and more suitable for conservation easements. We looked at the map from the statewide analysis in 2010 to identify areas in need of refinement, and to identify linkage gaps that needed filling. We consulted with Mother Lode Land Trust map for conservation priorities and the American River Conservancy map for existing conservation lands.

That day we also completed mapping the Sutter Creek linkage. This linkage is sort of the Jekyll and Hyde linkage in Amador County. The Sutter Creek Watershed was rated as one of the highest in biotic integrity by the SNEP Report. (SNEP Report, Volume II, Chapter 24, Biotic Integrity of Watersheds, pp. 977-978.) Outside of the city of Sutter Creek, that is an accurate assessment. However, like the creek, the linkage is forced through narrow walls and under the road as it passes through the City of Sutter Creek, limiting its effectiveness for some species.

We did not designate a linkage east of Highway 49 along Jackson Creek. In the City of Jackson, the creek is forced between narrow walls and under roadways as it passes through the city. East of Jackson it parallels rural sprawl along highway 88.

**C) Day 2: Foothill Conservancy and the CPC outline the Mokelumne River Corridor and the Western Amador Block.**

On May 1 we continued our work on to the North Fork Mokelumne River Linkage. We were squeezed by silvicultural damage to the east and rural sprawl along the Highway 88, Highway 26, and Highway 12 corridors in the west. Fortunately, the linkage itself is characterized by extensive East Bay Municipal Utility District, BLM and USFS holdings, making it the most protected west - east linkage in our region. In addition, both the BLM and the USFS have recommended that Congress designate a 37 mile stretch of the Mokelumne River as a National Wild and Scenic River. Pending Congressional action on these recommendations, the BLM and

the USFS are managing river corridor lands to protect the outstanding and remarkable values that qualify the Mokelumne for Wild and Scenic designation.

This linkage provides multiple access points connecting the four major regional blocks: the South Fork Cosumnes River Block (B-2), the Central Calaveras Block (B-3), the Western Amador Block (B-4), and the Southwestern Calaveras Block (B-5). It is therefore an indispensable component for wildlife habitat linkage in this region.

By completing the eastern portion of the North Fork Mokelumne River Linkage (A-5), we also completed the southern boundary of the South Fork Cosumnes River Block (B-2).

As we moved into the lands west of Highway 49 in Amador County, we modified our mapping approach. These lands are characterized by developed lands in the City of Ione, mining lands (some intermixed with rare plant habitat), and rangelands. These mostly open lands are traversed by Willow Creek, Dry Creek, Sutter Creek, and Jackson Creek. While the developed lands in the City of Ione are a barrier to wildlife, the rangeland in the area is not. Much of the rangeland is under Williamson Act contract by owners who want to continue its current uses. In addition, by state law the mining lands are ultimately subject to reclamation. Thus, while their current use may be a barrier to wildlife movement, some of that barrier will become permeable in the future. Our review of the Mother Lode Land Trust map confirmed that this area is a high priority for conservation. Our review of the lands on Google Earth confirmed the usefulness of this block for wildlife habitat and movement. Thus, the Western Amador Block was created by isolating the City of Ione, and including the lands outside of the city.

**D) Day 3: Foothill Conservancy and CPC outline the Central Calaveras Block and the Stanislaus River Linkage.**

Building on our efforts from the prior meeting, on May 2 we addressed the area in Calaveras County that is immediately south of the North Fork Moklumne River linkage. We noted that this area is characterized by high quality habitat, lava cap ridges, damaged industrial forest lands, with only isolated areas of heavily roaded lands converted to developed uses. The 1996 Calaveras County General Plan Significant Wildlife Habitats Map identified the lands in this block as important to the Railroad Flat Deer herd (Attachment 5). By isolating the damaged industrial forest lands and the lands converted to developed uses, we delineated the Central Calaveras Block, to provide for north-south wildlife movement. The southern edge of the block is bounded by the developed uses along the Highway 4 corridor.

The Stanislaus River is an important wildlife habitat linkage joining rangeland in the west to forested lands in the east. Our challenge was to identify access from the Central Calaveras Block, around the developed uses on the Highway 4 corridor, and into the Stanislaus River linkage. Fortunately, there remain lands that provide separation of communities along the

Highway 4 corridor between Angels Camp and Valecito, between Murphys and Forest Meadows, between Avery and White Pines, between Arnold and Big Trees Village, and between Cottage Springs and Big Meadow. The draft general plan map and land use designations for Calaveras County are designed to retain these separations between communities.

**E) Day 4: Foothill Conservancy and CPC outline the North Fork Calaveras River Linkages; the Calaveritas Creek, San Antonio Creek & San Domingo Creek Linkages; and the EBMUD lands in Calaveras County.**

On May 6, we completed the habitat mapping exercise. Our efforts were to locate means to cross between developed uses along the Highway 49 and Highway 12 corridors to link the Central Calaveras Block (B-3) to the Southwestern Calaveras Block (B-5). We also identified the EBMUD lands in Calaveras County that form the southern boundary of the North Fork Mokelumne River linkage. We isolated the developed uses in Angels Camp, San Andreas, Toyon, and the development from Valley Springs to the county line. This provided ample habitat connectivity between the blocks along the North Fork and South Fork of the Calaveras River, and along Calaveritas, San Antonio, and San Domingo Creeks.

**III. Results:**

**A) West to East Connectivity**

**1) North Fork Cosumnes River Linkage (A-1)**

The Cosumnes River is the largest stream without a major dam on its mainstream in the Sacramento-San Joaquin drainage and the only Sierra river that flows undammed from its headwaters to the valley floor. Thus, it serves as a laboratory for the study of natural processes in a stream with unregulated flows. Along its lower reaches, where human disturbance is more pronounced, it can serve as a laboratory for studying the isolated effects of those disturbances, since they are not exacerbated by the effects of highly regulated flows. (See for example, Moyle et.al, Alien Fishes in Natural Streams, Environmental Biology of Fishes, October 2003, Volume 68, Issue 2, pp. 143-162.)

The North Fork Cosumnes Linkage (A-1) crosses private lands in southern El Dorado County outside of Somerset and Grizzly Flat and links to USFS lands up to the Iron Mountain area. This is an important west - east linkage for wildlife movement.

**2) Middle Fork Cosumnes River Linkage (A-2)**

The Middle Fork Cosumnes Linkage crosses private lands in El Dorado County and links to USFS lands and up to the Iron Mountain area. This is an important west–east linkage for wildlife movement.

**3) South Fork Cosumnes River Linkage (A-3)**

The South Fork Cosumnes River Linkage (A-3) runs primarily through private lands along the border between El Dorado and Amador Counties, and then up to Omo Ranch Road. The American River Conservancy has and continues to acquire conservation easements along the South Fork Cosumnes River. In addition, there are some BLM holdings along the river.

**4) Sutter Creek Linkage (A-4)**

The Sutter Creek Linkage runs through private lands from Shake Ridge Road in the east through the Cities of Sutter Creek and Ione in the west. The Sutter Creek Watershed was rated among the highest in biotic integrity by the Sierra Nevada Ecosystem Project Report. (SNEP Report, Volume II, Chapter 24, Biotic Integrity of Watersheds, pp. 977-978.)

**5) North Fork Mokelumne River Linkage (A-5)**

The North Fork Mokelumne River linkage runs from the Amador and Calaveras county lines primarily through EBMUD, BLM and USFS lands. This linkage provides multiple access points connecting the four major regional blocks: the South Fork Cosumnes Block (B-2), the Central Calaveras Block (B-3), the Western Amador Block (B-4), and the Southwestern Calaveras Block (B-5). It is therefore an indispensable component for wildlife habitat linkage in this region.

**6) North Fork Calaveras River Linkage (A-6)**

The North Fork Calaveras River linkage is a key wildlife habitat linkage from the heart of the Central Calaveras Block, across Highways 49 and 12, to Hogan Reservoir and the Southwestern Calaveras Block.

**7) Calaveritas Creek, San Antonio Creek, and San Domingo Creek Linkage (A-7)**

These three creeks between San Andreas and Angels Camp provide habitat connectivity across Highway 49 between the Central Calaveras Block and the Southwestern Calaveras Block. We did not include Angels Creek because its functionality as a linkage is compromised as it passes through Angels Camp.

**8) Stanislaus River Linkage (A-8)**

The Stanislaus River is an important wildlife habitat linkage joining rangeland in the west to forested lands in the east. The linkage also provides access from the Central Calaveras Block, around the developed uses on the Highway 4 corridor, to the Stanislaus River. These access points run between communities along the Highway 4 corridor. The draft general plan map and

land use designations for Calaveras County are designed to retain these separations between communities.

**B) North - South Connectivity**

**1) Corridor Linking the Cosumnes River Forks (B-1)**

Primarily USFS lands just east of Grizzly Flat and running south across the Cosumnes River forks provide north-south habitat connectivity.

**2) South Fork Cosumnes River Block (B-2)**

Providing mere corridors will not sustain wildlife populations. As a result, we felt the need to identify a habitat block between the South Fork Cosumnes River and the Mokelumne River. This also provides for north-south connectivity. We include some of the damaged logging lands in this large block in hopes that future conservation efforts focused there could restore some of the necessary habitat.

**3) Central Calaveras Block (B-3)**

This block lies between the Mokelumne River and the Stanislaus River east of Highway 49. This area is characterized by high quality habitat and lava cap ridges. The 1996 Calaveras County General Plan Important Wildlife Habitats Map identified some of the lands in this block as important to the Railroad Flat Mule Deer herd. (Attachment 5) This block provides for north-south wildlife movement. The southern edge of the block is bounded by the developed uses along the Highway 4 corridor.

**4) Western Amador Block (B-4)**

West of Highway 49 in Amador County, these lands are mostly rangelands. These lands are traversed by Willow Creek, Dry Creek, Sutter Creek, and Jackson Creek. Much of the rangeland is under Williamson Act contract by owners who want to continue its current uses. In addition, by state law the mining lands are ultimately subject to reclamation. The Mother Lode Land Trust map confirmed that this area is a high priority for conservation. These lands are already included in the CAPP. Our review of the lands on Google Earth confirmed the usefulness of this block for wildlife habitat and movement.

**5) Southwestern Calaveras Block (B-5 from map provided by CSERC)**

CSERC has already sent the NSNFCP a digital map of the Southwestern Calaveras Block. This block unites oak woodland habitat running from Rancho Calaveras in the north to New Melones Reservoir in the south. These lands are already included in the CAPP. Many thousand acres in the Salt Springs Valley are already covered by conservation easements.