May 22, 2019

Mr. Gregory Mattson
San Diego County Planning & Development Services
5510 Overland Avenue, Suite 310
San Diego, CA 92123

Subject: Endangered Quino Checkerspot Butterfly and Otay Village 13 Project in San Diego County, California

Dear Mr. Mattson:

This letter is in response to the Draft and Recirculated Draft Environmental Impact Report ("EIR") (State Clearinghouse No. 2004101058) for the Otay Ranch Resort Village 13 Project, GPA04-003, REZ04-009, TM-5361, SP04-002, and ER LOG04-19-005 ("Project"). We are concerned that San Diego County failed to adequately analyze and mitigate for the Project's significant impacts to the endangered Quino checkerspot butterfly (*Euphydrays editha quino*) and its designated critical habitat.

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Specifically, the EIR's conclusions are based on a fundamental misunderstanding of the animal's population dynamics and how it occupies and interacts with its habitat in the region through time. We provide this letter to the County of San Diego to identify and underscore these deficiencies, and to present scientific evidence that is crucial for understanding the significant threat this project poses to the Quino checkerspot butterfly.

**Credentials**

We are entomologists and senior scientists at the Center for Biological Diversity (the "Center") where we work to protect imperiled insects such as butterflies, lady beetles, native bees, and tiger beetles.

Prior to coming to the Center, Chris Nagano worked for 27 years for the U.S. Fish and Wildlife Service from 1989 to 2016 in several positions ranging from endangered species entomologist to Deputy Assistant Field Supervisor biologist. While stationed at the USFWS's Carlsbad Field Office, in 1997 Nagano was the first person in several years to observe a live individual of the Quino checkerspot in the wild. He co-developed

a survey (recovery) permit for the animal; and, with Dr Rudi Mattoni, completed the initial ecological field studies of this endangered species. Prior to going to the Service, Nagano worked for several years in the mid-late1980s as a research associate in the Entomology Section at the Natural History Museum of Los Angeles County. Nagano has a Master of Environmental Studies degree from the Yale School of Forestry and Environmental Studies.

Dr. Tara Cornelisse has studied and applied the principles of entomology and conservation biology to insect conservation for 17 years. Prior to coming to the Center, Dr. Cornelisse was a professor of Animal Behavior, Ecology, and Conservation at Canisius College. There she taught undergraduate and graduate students insect behavior and conservation as well as studied the impact of urbanization on Monarch butterfly habitat use. Prior to teaching, Dr. Cornelisse was a postdoctoral scholar at the American Museum of Natural History. Dr. Cornelisse has a M.S. in Conservation Biology and a Ph.D. in Environmental Studies; during both of which she used metapopulation theory as a framework to study population dynamics and habitat use of three different species of tiger beetles. Specifically, her dissertation examined how local, within site, habitat quality and regional, landscape land uses, as well as area and isolation, impacted the population viability of the endangered Ohlone tiger beetle. Dr. Cornelisse has also served as a biological consultant for the University of California Santa Cruz and the US Fish and Wildlife Service and has 11 peer-reviewed publications.

**Ecology and Conservation of the Quino Checkerspot Butterfly**

At one time, the Quino checkerspot butterfly was probably one of the most abundant butterflies in southern California, but it has now vanished from much of its former range. The species was once widespread from coastal Los Angeles County south to San Diego County, and western Riverside and southwestern San Bernardino counties. Its numbers and range have been dramatically reduced due to human impacts, chief of which is urban development, but also livestock grazing, off-road vehicle use, poor fire management practices, loss of habitat due to invasive non-native plants, predation by exotic invertebrates, and global climate change.

Historically, during years with optimal resource conditions, the Quino checkerspot butterfly had population booms in which there were many thousands of adults. In the 1950s, collectors described the butterfly as occurring on every coastal bluff, inland mesa top, and lower-mountain slopes in San Diego County and coastal northern Baja California (Murphy and White 1984). Large populations also were observed during this period in Riverside and Orange counties. There were tens of thousands of butterflies during one of the last of these population booms in San Diego County in the late 1970s (Murphy and White 1984). By the middle 1980s, more than 75% of its historical range and at least 95% of its coastal bluff and mesa habitat had been destroyed by urban development. The 1988 petition to list the Quino checkerspot butterfly as an endangered species suggested it was extinct. It was not until 1997 that the U.S. Fish and Wildlife Service ("FWS") protected it under the Endangered Species Act, and it was

that same year that the agency's scientists succeeded in locating an extant population. Despite its protected status as an endangered species, unrelenting development and other threats throughout the Quino checkerspot's range continue to place it in peril of extinction. The Otay Village 13 Project would further imperil the species, likely resulting in local if not regional extinction.

As a species, the Quino checkerspot butterfly exists as a network of metapopulations, specifically core-satellite metapopulations which consist of an interdependent network of populations on patches of suitable habitat that are geographically separated from each other by unsuitable habitat. The survival of each butterfly subpopulation is dependent on both the local habitat resources as well as the movement of individuals between patches (Hanski and Gyllenberg 1993; Hellmann *et al.* 2004). When population abundance is high, often associated with years of optimal weather and plentiful resources, a majority of the habitat patches within a metapopulation will be occupied by the species. When population abundance is low, often associated with poor resource years, only the largest and most connected of habitat patches will be occupied. The "core" patches are those that are larger in area, more connected, and most consistently occupied, while the satellite populations are more likely to be occupied only in years of high population abundance due to individuals emigrating from the core patches (Hanski and Gyllenberg 1993).

The loss of occupied patches via habitat destruction destabilizes metapopulation dynamics, leading to the inability of the species to recolonize those patches and effectively unable to maintain high population abundances over time. The loss of a core patch is especially devastating to the persistence and survival of an entire metapopulation. For example, as core habitats were destroyed leaving no or minimal patch connectivity, metapopulations of the Quino checkerspot butterfly in Los Angeles, Orange, and San Bernardino counties were lost (Mattoni *et al.* 1995; Harrison 1989; Harrison *et al.* 1988; Hanski *et al.* 1996).

Our comments on the County's environmental review of the Project's Quino checkerspot butterfly impacts are as follows:

1. The EIR fails to acknowledge that the Project site is core critical habitat for the Quino checkerspot butterfly.

The USFWS defines Quino checkerspot butterfly occupancy based on "population-scale occupancy" that is defined by "all areas used by adults during the persistence time of a population (years to decades)" (USFWS 2009). The USFWS further characterizes Quino checkerspot butterfly occupancy in terms of "occurrence complexes;" and occurrences within "1.2 miles (2 km) of each other are considered to be part of the same occurrence complex" (USFWS 2009). The Project is located on a "core occurrence complex" named "Unit 8" by the USFWS (see Federal Register 74: 28859, 28780.). The EIR discloses that the adult Quino checkerspot butterflies have been observed in the Project Area in 127 instances over the course of four years (DEIR at 2.3-19.). In addition, the majority of the lifespan of this butterfly is spent in its early stages (egg, caterpillar, chrysalis),

which can be extremely difficult or impossible for even specialists to located (White 1986(87)). It appears that no surveys for the early stages of the Quino checkerspot were conducted by butterfly specialists at the Otay Village 13 Project site. It also discloses that "the Project would impact approximately 27% of [the federally designated "Unit 8"] critical habitat unit. (DEIR at 2.3-19.) However, it fails to disclose that the affected area is "core" critical habitat, or explain the biological significance of that fact.

Core patches of metapopulations are centers of high population abundance based on geographic size, quality of resources, connectivity to other patches, and high reproductive output. Core patches serve as a source of Quino checkerspot butterfly individuals that repopulate other patches with suitable habitat (Murphy and White 1984; Mattoni *et al.* 1995; Singer and Ehrlich 1979; Preston *et al.* 2012). A core, or source, patch population is one in which the number of births exceeds the number of deaths, resulting in a net emigration of individuals to satellite patches (Howe et al. 1991). According to the final rule designating critical habitat for the Quino checkerspot (USFWS 2009), a core population is a habitat patch where at least two of the following criteria apply: (1) 50 or more adults are reported during a single survey at least once; (2) immature life history stages are recorded; or (3) the geographic area within the metapopulation (within 0.6 mile of Quino checkerspot occurrences) is greater than 1,290 acres. The Project site contains a core population of the Quino checkerspot because of its size and central connective location containing Quino checkerspot butterfly habitat patches. Based on the recovery plan (USFWS 2003), Otay Lakes/Rancho Jamul metapopulation is well over 1,290 aces in size.

2. The loss and fragmentation of the core patch at the Project site will have a substantial adverse effect on the Quino Checkerspot butterfly.

In our view, the loss of core habitat that from the Project (with mitigation) will have a significant and potentially catastrophic effect on the long-term viability of the affected Unit 8 metapopulation.

Quino checkerspot butterfly individuals appear and disappear on habitat patches across the metapopulation landscape in response to temporal and spatial changes in habitat quality caused by localized microclimatic conditions such as solar insolation and timing and abundance of rainfall (Osborne and Redak 2000). In order to complete their development into the pupal stage before host plants dry up and die for the season, caterpillars that come out of diapause seek microclimates with high solar insolation (Osborne and Redak 2000). This means that during a period critical for individuals' survival, Quino checkerspot butterfly caterpillars must actively seek out food plants in sufficient quantity in areas with adequate amounts of sunlight before they are able to pupate. When the caterpillar pupates, it often does so in the leaf litter or within native vegetation such as California Buckwheat (Pratt and Emmel 2009). As such, as a caterpillar—the stage in which it spends the vast majority of its life—the Quino checkerspot butterfly requires heterogeneous habitat of both sunny southern facing slopes and shaded areas as well as both open areas with food plants and nearby areas with larger vegetation.

Contiguous, expansive, and heterogenous habitat is therefore essential to the survival of the Quino checkerspot butterfly. Habitat destruction from the Project would result in less contiguous habitat area and less heterogeneity, reducing the resources available to the butterflies. For a large Quino checkerspot butterfly population to persist on a given site for many years and achieve population occupancy, the butterfly needs an expansive, connected heterogeneous area of habitat (Osborne and Redak 2000). By reducing the size of a large area of designated critical core habitat for the Quino checkerspot butterfly, the Project will prevent Quino checkerspot butterfly caterpillars from finding enough food to survive pre- and post-diapause and from successfully moving about the landscape to required areas of microhabitat for pupation, resulting in significant negative impact to butterfly's survival in the region. Should it be allowed to proceed, the Project would break up the existing continuous expanse of habitat, and turning this metapopulation into a house of cards, vulnerable to being blown down by the slightest adverse environmental factor.

Due to loss of core habitat from the Project, the Quino checkerspot butterfly would be negatively impacted by the synergistic threats of habitat reduction and climatic change (USFWS 2009). As such, maintenance of this critical, contiguous habitat is a necessary conservation action to buffer loss of the butterfly in the face of the changing climate. In our professional opinion, if the Project is allowed to move forward as proposed, it would risk the loss of the entire metapopulation in Critical Habitat Unit 8, which the proposed mitigation would be unable to offset.

3. The mitigation proposed in the FEIR is inadequate for the significant impacts to the Quino Checkerspot butterfly.

The FEIR's proposal to mitigate the loss of an occupied core Quino checkerspot butterfly habitat at a 2:1 ratio with largely on-site habitat will not reduce the impacts from this Project to less than significant. Mere ratio-based mitigation simply will not compensate or offset the loss of the occupied core habitat at Otay Village 13. Furthermore, the on-site habitat will be seriously degraded as a result of edge effects, invasive species, fragmentation, and human disturbance.

Any mitigation should be based on the biology and ecology of the Quino checkerspot, and designed to ensure that the affected metapopulation will be able to survive and not be reduced in size or eliminated by the substantial reduction in core habitat resulting from the Project. The EIR's mitigation proposal of on-site preservation at a 2:1 ratio does not accomplish this. It appears to be based entirely on a proposed amendment (the "Quino Amendment") to the County's South County Multispecies Conservation Plan ("MSCP") that would include the Quino checkerspot butterfly as a species subject to the MSCP. (DEIR at 2.3-19, see also 2.3-52.) But the EIR does not include or attach the proposed Quino Amendment, nor any evidence supporting the use of 2:1 onsite preservation as adequate mitigation for the reduction or loss of core Quino checkerspot butterfly habitat. (As of the date of this letter, the draft Quino Amendment is still being prepared by the County and has still not been released for public review.) The proposed "mitigation" would essentially allow an area of core, designated critical habitat that is essential for the continued existence and recovery of the Quino checkerspot butterfly

metapopulation to be reduced by one third, with the remaining two thirds negatively affected by the edge effects from the development footprint.

**Conclusion**

The Project will have a substantial adverse effect the Quino checkerspot butterfly and threaten its ability to survive in the region because the Project will reduce or eliminate the metapopulation that relies on the Project area as core habitat. The proposed mitigation is inadequate, unsupported by substantial scientific data, and will not compensate for the proposed Project's significant impact to this endangered species.

If you have questions regarding this letter, please contact us at the Center for Biological Diversity (P.O. Box 11374, Portland, Oregon 97211).

Sincerely,

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