January 14, 2015

Mr. Robert Hingtgen
County of San Diego
Department of Planning and Development Services
5510 Overland Avenue, Suite 110
San Diego, CA 92123

Subject: Comments on the Final Environmental Impact Report Prepared for the Soitec Solar Development Project

Dear Mr. Hingtgen:

This letter contains my comments on the Final Environmental Impact Report ("FEIR") for the Soitec Solar Development Project ("Project") prepared by San Diego County ("County") under the California Environmental Quality Act ("CEQA"). I am submitting the comments contained herein on behalf of Backcountry Against Dumps, Donna Tisdale, and myself.

The Applicant proposes to construct and operate four solar energy facilities: Tierra del Sol ("TDS"), Rugged, LanEast, and LanWest. All four facilities would be located in eastern San Diego County, and collectively they would extend across approximately 1,490 acres of relatively undisturbed land.

I am an environmental biologist with 21 years of professional experience in wildlife ecology and natural resource management. To date, I have served as a biological resources expert for over 100 projects, the majority of which have been renewable energy facilities in southern California. My experience and scope of work in this regard has included assisting various clients with evaluations of biological resource issues, reviewing environmental compliance documents prepared pursuant to CEQA and the National Environmental Policy Act ("NEPA"), submitting written comments in response to CEQA and NEPA documents, and testifying as an expert witness before the California Energy Commission and California Public Utilities Commission. My educational background includes a B.S. in Resource Management from the University of California at Berkeley, and a M.S. in Wildlife and Fisheries Science from the Pennsylvania State University. A true and correct copy of my curriculum vitae is attached hereto as Exhibit 1.

I have gained particular knowledge of the biological resource issues associated with the Project through my work on numerous other projects in the region. My comments are based on my review of the environmental documents prepared for the Project, a review of scientific literature pertaining to biological resources known to occur in the Project area, consultation with other biological resource experts, and the knowledge and experience I have acquired during more than 21 years of working in the field of natural resources management.

EXISTING CONDITIONS

The FEIR Failed to Disclose the Perilous Status of San Diego County's Golden Eagle Population

The golden eagle population in San Diego County is rapidly declining.[1] As reported in the Draft Environmental Impact Statement/Environmental Impact Report for the East County Substation/Tule Wind/Energia Sierra Juarez Gen-Tie Projects:

> Studies of the breeding population and locations within San Diego County have been conducted over the past 70 years. The population within the county in 1900 was estimated at 108 pairs (Unitt 2004). It remained at approximately this population size for a number of years but has shown a gradual decline since the 1950s and is now estimated at approximately 50 pairs (Unitt 2004; Scott 1985; WEST 2010b). As the population of the species declines within the county, loss of breeding adults becomes of greater concern. Currently only one-third of the nesting territories mapped in 1937 are occupied with the start of the twenty-first century (Unitt 2004). Over the next 30 years, it is estimated that the population may drop to approximately 25 pairs (Unitt 2004)…The population of golden eagles in general is not showing declines throughout its range; however, declines are noted within the western United States and for San Diego County, as previously noted (Kochert et al. 2002).[2]

The DEIR and FEIR failed to disclose the precipitous status of San Diego County's golden eagle population. In addition, they failed to disclose information indicating the most important factor in the population's decline has been the loss and fragmentation of foraging habitat.[3] This precluded the public and decision makers from understanding the potential severity of the Project on San Diego's remaining golden eagle population.

The FEIR Failed to Establish the Importance of the Project Sites to Golden Eagles

Golden eagles, and birds of prey in general, are widely spaced, rapid-moving, and wide-ranging.[4] In addition, raptor movements and activity patterns are highly variable, especially during migration.[5] These factors make raptors difficult to detect and count.[6] As a result, the U.S. Fish and Wildlife Service ("USFWS") recommends surveys across all seasons for a minimum of two years to evaluate a project's risk to eagles.[7]

---

[1] Unitt PA. 2004. San Diego County Bird Atlas. Proceedings of the San Diego Society of Natural History, No. 39. pp. 171-173.

[2] Dudek. 2010. Draft EIS/EIR for the East County Substation/Tule Wind/Energia Sierra Juarez Gen-Tie Projects. p. D.2-178.

[3] Unitt PA. 2004. San Diego County Bird Atlas. Proceedings of the San Diego Society of Natural History, No. 39. pp. 171-173.

[4] Fuller MR, JA Mosher. 1981. Methods of Detecting and Counting Raptors. Studies in Avian Biology 6:235-246.

[5] *Ibid*.

[6] *Ibid*.

[7] U.S. Fish and Wildlife Service. 2011 Jan. Draft Eagle Conservation Plan Guidance. Appendix C: Stage 2—Site-Specific Assessment Recommended Methods and Metrics.

Ten golden eagle territories are known to occur in the vicinity of the Project sites. However, as the FEIR acknowledges, there were never any site-specific studies to assess the importance of the Project sites to the golden eagles in those territories.[8] Instead, the County relied on the report prepared by WRI to assess "golden eagle use and territories within and adjacent to the Proposed Project area."[9] There are several reasons why WRI's report cannot be used to make conclusions pertaining to the spatial and temporal patterns of golden eagle use of the Project area.

First, the data presented in the report are primarily based on: (1) WRI's efforts to locate and monitor nest sites in the region; and (2) ground-based observations during surveys conducted for other projects. Although the data are useful, they are not a valid substitute for site-specific survey data, and thus they are insufficient to evaluate golden eagle use of the four Project sites. For example, WRI's ground-based observations were designed to map and describe flights by golden eagles over the Tule Wind Project—not the Project sites.[10] Indeed, there were no ground-based observation stations in the vicinity of the TDS, LanEast or LanWest Project sites, which would have precluded the ability to make any inferences about eagle use of those sites.[11]

Second, there are limitations to WRI's data that preclude the County from using those data to make conclusions about golden eagle use of the Project sites. For example, WRI's report states: "the complete boundary of the golden eagle foraging territory [in the vicinity of the TDS site] is *currently unknown*."[12] As a result, WRI recommended additional analyses be conducted to determine the territory boundaries and the activity patterns within the territory.[13] The County never conducted those additional analyses. Instead, it chose to incorrectly report in the FEIR that: "[t]here is recent golden eagle breeding activity in six territories that surround the project site, however, *they do not overlap with the [TDS] project site*."[14]

Third, WRI acknowledged it has been unable to locate the active nest site associated with eagles in a second [redacted] territory.[15] Neither the Applicant nor the County made an attempt to locate that nest site. Instead, both parties leaped to the conclusion that there are no nest sites within 4,000 feet of any of the Project sites.

---

[8] FEIR, Response to Comment O10-38. *See also* Wildlife Research Institute. 2013. Golden Eagle History for the Soitec Solar Project. p. 13.

[9] FEIR, Response to Comment O10-38.

[10] Tule Wind LLC. 2012. Project-Specific Avian and Bat Protection Plan for the Tule Reduced Ridgeline Wind Project. p. 3-14.

[11] *Ibid*, Figure 2-5.

[12] Wildlife Research Institute. 2013. Golden Eagle History for the Soitec Solar Project. p. 29. [emphasis added].

[13] *Ibid.*

[14] FEIR, p. 2.3-117. [emphasis added].

[15] Wildlife Research Institute. 2013. Golden Eagle History for the Soitec Solar Project. pp. 32 and 32.

Finally, WRI's report does not provide any information on the non-breeding segment of golden eagles that may use the Project area during the winter or migration. This precludes a complete assessment of Project impacts to golden eagles. As reflected in the USFWS's golden eagle inventory and monitoring protocol: "[t]he applicant is responsible for providing up-to-date biological information about the eagles that breed, feed, shelter, and/or migrate in the vicinity of the activity that may potentially be affected by the proposed activity."[16]

Due to the issues described above, I concur with the USFWS and others who concluded the lack of robust, Project-specific survey efforts has resulted in an inadequate assessment of the Project's direct, indirect, and cumulative impacts on golden eagles.[17]

The FEIR Failed to Evaluate the Potential for the Project Sites to Function as Core Foraging Areas

Golden eagles have large home ranges. However, during the breeding season many eagles concentrate their foraging activities in "core areas" that are several orders of magnitude smaller than the home range.[18] Eagles will travel far from their nests to access those core foraging areas.[19] Golden eagles have been observed foraging at, or flying over, all four Project sites.[20] However, neither the Applicant nor the County made an effort to survey the Project sites to evaluate their potential function as core foraging areas.

Data on the natural history, behavior, abundance, and availability of prey can provide insight into golden eagle habitat quality and management. Prey abundance has been correlated with eagle reproductive parameters, and also with habitat use by nonbreeding eagles, such as juveniles, subadults, and floaters.[21] Neither the Applicant nor the County attempted to assess the abundance and availability of golden eagle prey species on the Project sites.[22] Similarly, there were no attempts to quantify the frequency of golden eagle foraging activities at the Project sites. As a result, the FEIR lacks the data needed

---

[16] Pagel JE, DM Whittington, GT Allen. 2010 Feb. Interim Golden Eagle inventory and monitoring protocols; and other recommendations. Division of Migratory Birds, United States Fish and Wildlife Service. p. 4.

[17] FEIR, Comment F1-7.

[18] Marzluff JM, ST Knick, MS Vekasy, LS Schueck, TJ Zarriello. 1997. Spatial use and habitat selection of golden eagles in southwestern Idaho. The Auk 114(4):673-687.

[19] DeLong, J. P. 2004. Effects of management practices on grassland birds: Golden Eagle. Northern Prairie Wildlife Research Center, Jamestown, ND. Northern Prairie Wildlife Research Center Online. Available at: <http://www.npwrc.usgs.gov/resource/literatr/grasbird/goea/goea.htm>. (Version 28MAY2004).

[20] Wildlife Research Institute. 2013. Golden Eagle History for the Soitec Solar Project.

[21] Driscoll, D.E. 2010. Protocol for golden eagle occupancy, reproduction, and prey population assessment. American Eagle Research Institute, Apache Jct., AZ. 55pp. Access: <http://www.dfg.ca.gov/wildlife/nongame/GEWG/>.

[22] Response to Comment F1-7 claims: "[a] discussion of prey availability can be found in the Biological Resources Report (see Appendices 2.3-1 and 2.3-2 of the DPEIR)." However, neither appendix supports that claim.

to evaluate the potential for the Project sites to function as core foraging areas. Despite this lack of data, the Project sites appear to support abundant populations of lagomorphs (i.e., rabbits) and rodents, which are important prey species for eagles in the American Southwest.[23] This suggests the sites provide good foraging habitat for golden eagles. In the absence of empirical data on the locations of core foraging areas, the County must defer to the best available science, which suggests the Project could eliminate a substantial amount of core foraging habitat (perhaps all) used by at least one pair of breeding eagles.[24] The loss of core foraging habitat is likely to lead to take, as defined in the Eagle Act, and would exacerbate the decline of San Diego County's golden eagle population. The County has not disclosed or analyzed the severity of this impact, nor has it ensured potentially significant impacts to golden eagles are adequately mitigated.

The FEIR Misrepresents Bird Migration through the Project Area

The FEIR states:

> The Tierra Del Sol solar farm is located within the Pacific Flyway for migratory avian species; however, the project site is located east of the main coastal migration route and west of the primary route between the Gulf of California and the Salton Sea. Therefore, most species are not expected to fly over the project site.[25]

The FEIR provides the same statement regarding the Rugged, LanWest, and LanEast Project sites.[26] The FEIR's statement appears to be based purely on speculation because the Applicant did not conduct bird surveys to determine the abundance and diversity of bird species that use (or fly over) the Project sites during migration.

I agree many bird species fly through the Salton Sea; however, many others do not. For example, soaring birds (e.g., raptors) avoid large bodies of water during migration because water does not provide the requisite thermals (updrafts). According to Phillip Unitt, author of the San Diego County Bird Atlas:

> Because of the comparatively low elevation of San Diego County's mountains (lower than the San Bernardino and San Jacinto mountains to the north), many birds migrating from a winter range in western mainland Mexico to a breeding range in northern California, the Pacific Northwest, or Alaska use San Diego County as a corridor for crossing from the desert to the coastal slope.[27]

Indeed, the Applicant's consultant reported: "[m]igrating birds using this inland

---

[23] FEIR, pp. 2.3-44, -65, and -80. *See also* Marzluff JM, ST Knick, MS Vekasy, LS Schueck, TJ Zarriello. 1997. Spatial use and habitat selection of golden eagles in southwestern Idaho. The Auk 114(4):673-687.

[24] Marzluff JM, ST Knick, MS Vekasy, LS Schueck, TJ Zarriello. 1997. Spatial use and habitat selection of golden eagles in southwestern Idaho. The Auk 114(4):673-687.

[25] FEIR, p. 2.3-124.

[26] *Ibid*, p. 2.3-126, -129, and -131.

[27] *See* Aspen Environmental Group. 2008. Final Environmental Impact Report/Environmental Impact Statement and Proposed Land Use Amendment, San Diego Gas and Electric Company Application for the Sunrise Powerlink Project. SCH #2006091071. DOI Control No. FES-08-54. California Public Utility Commission and U.S. Department of Interior, Bureau of Land Management. [emphasis added].

migration route of the Pacific Flyway may pass through the project area."[28] This information highlights the flaws with the County's statements and subsequent analyses pertaining to bird migration through the Project sites.

The FEIR Fails to Disclose, Analyze, and Mitigate Potentially Significant Impacts to All Special-Status Species

Southern Grasshopper Mouse

The southern grasshopper mouse (*Onychomys torridus ramona*) is listed as a California Species of Special Concern.[29] There are only 26 occurrence records of this taxon in the California Natural Diversity Database ("CNDDB").[30] As described below, the Project sites provide suitable habitat for, and are within the geographic range of, the southern grasshopper mouse. However, neither the DEIR nor FEIR provided any mention of the taxon.

Historically, the southern grasshopper mouse inhabited mesas and valleys along the Pacific slope of the Peninsular and Transverse Ranges in southwestern California and extreme northwestern Baja California, Mexico.[31] Recent records document the occurrence of this taxon on the desert slopes of the San Gabriel Mountains and the Peninsular Ranges, near Sage and Aguanga in Riverside County, and from the vicinity of Banner, Jacumba, Boulevard and Oak Grove in San Diego County.[32] The Project area is within this narrow region, and several of the Project sites are located in close proximity to documented occurrences of the species (Figure 1).

The southern grasshopper mouse is believed to inhabit a variety of low, open and semi-open scrub habitats including coastal sage scrub, mixed chaparral, low sagebrush, riparian scrub, and annual grassland with scattered shrubs.[33] As a result, the Project sites provide suitable habitat for the southern grasshopper mouse. The Applicant's consultant concluded there is a "low" potential for the taxon to occur on the TDS Project site. The "factual basis for [the] determination" was reported to be: "[n]o suitable grassland habitat found within the project area."[34] The taxon is not limited to grassland habitat, and thus the consultant's determination is unfounded. The consultant correctly concluded that there is a "moderate" potential for the taxon to occur on the Rugged Project site based on the presence of suitable habitat and documented occurrence (albeit old) less than one mile from the Project area.[35] The consultant did not provide any information on the potential

[28] FEIR, Appendix 2.3-4, p. 54.

[29] Previously referred to as the Ramona grasshopper mouse.

[30] California Natural Diversity Database (CNDDB). 2015. RareFind 5 [Internet]. California Department of Fish and Wildlife [2015 January 6].

[31] Bolster BC, editor. 1998. Terrestrial Mammal Species of Special Concern in California. California Department of Fish and Game, Sacramento (CA). pp. 124 to 126.

[32] *Ibid.*

[33] *Ibid.*

[34] DEIR, Appendix 2.3-1, Appendix F.

[35] DEIR, Appendix 2.3-2, Appendix H.

for the taxon to occur on the LanWest or LanEast Project sites, or on the parcels being considered for mitigation.

As the FEIR acknowledges, detection of small mammals usually requires trapping surveys.[36] Trapping surveys were not conducted at any of the Project sites. This has made it impossible for the public and decision makers to understand the Project's environmental setting and potential impacts, and the adequacy of the County's proposed mitigation measures.

Due to its low fecundity, low population density, and large home range size, the southern grasshopper mouse is more susceptible to small- and large-scale habitat loss and fragmentation than other rodents.[37] As a result, any impacts to a subpopulation occurring on one of the Project sites would have relatively severe impacts to overall species viability and diversity. The FEIR failed to provide measures that ensure this potentially severe impact is mitigated.

[36] FEIR, p. 2.3-65.

[37] Bolster BC, editor. 1998. Terrestrial Mammal Species of Special Concern in California. California Department of Fish and Game, Sacramento (CA). pp. 124 to 126.

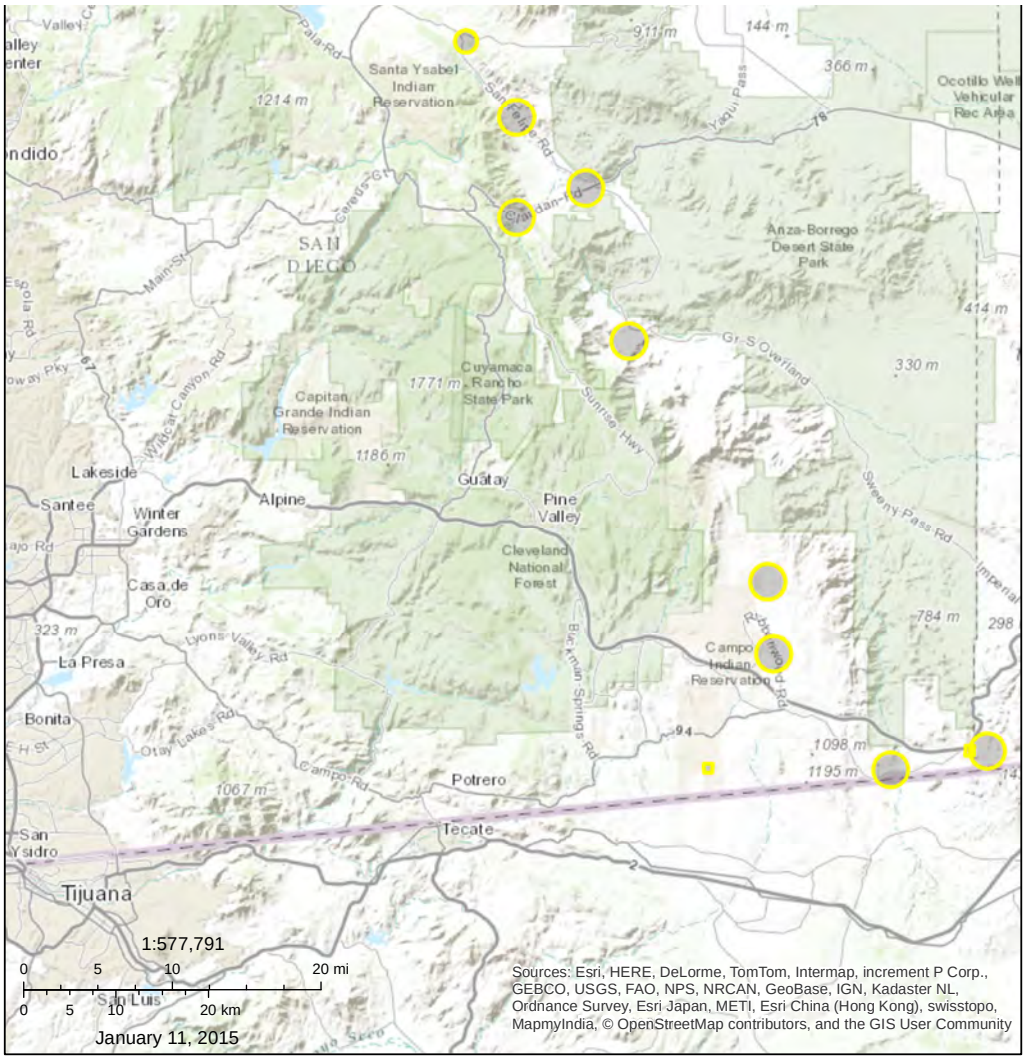

Figure 1. CNDDB records (yellow circles) of the southern grasshopper mouse in the vicinity of the Project sites.

Other Mammal Species of Special Concern

Several other mammal species that are listed as California Species of Special Concern have the potential to occur on the Project sites. They include the Dulzura pocket mouse, northwestern San Diego pocket mouse, and pallid San Diego pocket mouse.[38] As discussed previously, trapping surveys were never conducted to determine whether any of these species occur on the Project sites. This has made it impossible for the public and decision makers to understand the Project's environmental setting and potential impacts, and the adequacy of the County's proposed mitigation measures.

[38] FEIR, p. 2.3-65.

Special-Status Plant Species

The County failed to disclose or analyze potentially significant impacts to two special-status plant species that were detected during surveys of the Project sites:

- Southern jewelflower (*Streptanthus campestris*) (Rugged, LanWest, and LanEast).[39]
- Cuyamaca cypress (*Hesperocyparis stephensonii*) (LanWest)[40]

Neither of these species was even mentioned in the DEIR or FEIR, although both species are listed in one or more of the floral compendiums provided in the Applicant's biological resources reports.

Southern jewelflower has a Rare Plant Rank of 1B.3 and a Heritage Rank of G2/S2.3, which indicates it has a high risk of extinction at both the global and statewide levels. Cuyamaca cypress has a Rare Plant Rank of Rank 1B.1 and a Heritage Rank of G1/S1, which indicates it has a very high risk of extinction at both the global and statewide levels. By definition, plants with a Rare Plan Rank of 1 are considered rare or endangered under CEQA §15380(b) and (d). As a result, the County is obligated to disclose and analyze impacts to southern jewelflower and Cuyamaca cypress before a decision is made on the Project.

PROJECT IMPACTS

The FEIR Failed to Properly Analyze Project Impacts to Nesting Golden Eagles

The FEIR concluded golden eagles do not nest in the TDS and Rugged Project areas; therefore, the Project would not impact nesting success.[41] The FEIR states:

> The connection between impacts to foraging area and nesting success is not well studied or known. If predatory animals cannot find prey, then they will not be able to provide for their young. However, the tipping point for how much land is enough is not known. The foraging habitat impacted by the Proposed Project is not of the highest quality due to the amount of brush and also would only amount to a small percentage of the potential foraging habitat within a typical east county San Diego golden eagle territory. As indicated in the WRI report, territories of GOEA within the San Diego MSCP are 20 to 30 square miles. Therefore, the project is not expected to have any resulting impacts to breeding pairs in the vicinity.[42]

These statements contradict scientific information and evidence in the record. Unitt (2004) concluded the most important factor in the decline of golden eagles in San Diego

[39] DEIR, Appendix D in Appendices 2.3-2, 2.3-3, and 2.3-4.

[40] FEIR, Appendix 2.3-4, Appendix D.

[41] FEIR, p. 2.3-135.

[42] FEIR, Response to Comment S3-54.

County has been the loss and fragmentation of foraging habitat.[43] Furthermore, the FEIR provided no scientific evidence to support the claim that "foraging habitat impacted by the Proposed Project is not of the highest quality due to the amount of brush." Whereas I agree golden eagles do not typically forage in brush, brush provides thermal and escape cover for rabbits, which are a principal prey item for eagles. Therefore, the juxtaposition of brush and more open habitats at the Project sites may be ideal for rabbit populations, which would in turn suggest high quality foraging habitat for eagles.

I agree that golden eagles have large home ranges, and sometimes territories. However, eagles do not simply maximize home range size. Rather, they adjust their ranging and foraging behavior to take advantage of the types and configuration of prey habitat.[44] Thus, quality of habitat is more important than quantity, and the County has no basis to suggest impacts to a "small percentage of the potential foraging habitat" would be inconsequential to the golden eagle pairs that occur in the vicinity of the Project sites.[45]

The FEIR Lacks Adequate Analysis of Cumulative Impacts to Golden Eagles

The USFWS has provided the following guidelines for evaluating cumulative impacts to eagles:

> To ensure that impacts are not concentrated in particular localities to the detriment of locally-important eagle populations, cumulative effects need to be considered at the population management level—*Service Regions* for Bald Eagles and *Bird Conservation Regions* for Golden Eagles—and, especially for project-specific analyses, at local area population levels (the population within the average natal dispersal distance [140 miles] of the nest or nests under consideration).[46]

The County's cumulative impacts analysis did not adhere to these guidelines. Not only did it fail to examine effects at the local area population level (i.e., 140 miles), but it excluded the projects east of the Project sites: "because they would affect more arid vegetation communities than those present on-site, and therefore, the Proposed Project would not cumulatively contribute to impacts to natural vegetation communities in this region or to impacts to species that are associated with these habitat types."[47] The County's rationale is scientifically indefensible for species such as the golden eagle, whose habitat extends east to the desert floor. Indeed, the FEIR acknowledges some of

[43] Unitt PA. 2004. San Diego County Bird Atlas. Proceedings of the San Diego Society of Natural History, No. 39. pp. 171-173.

[44] Marzluff JM, ST Knick, MS Vekasy, LS Schueck, TJ Zarriello. 1997. Spatial use and habitat selection of golden eagles in southwestern Idaho. The Auk 114(4):673-687.

[45] *Ibid.*

[46] Pagel JE, DM Whittington, GT Allen. 2010 Feb. Interim Golden Eagle inventory and monitoring protocols; and other recommendations. Division of Migratory Birds, United States Fish and Wildlife Service, at 3. *See also* U.S. Fish and Wildlife Service, Division of Migratory Bird Management. 2009. Final Environmental Assessment, Proposal to Permit Take. Provided Under the Bald and Golden Eagle Protection Act. Washington: Dept. of Interior, at 30.

[47] FEIR, p. 2.3-180.

the eagles that fly through the Project area are associated with the territories established in nearby desert habitat.[48] Moreover, the County has no basis to argue golden eagle territories are 20 to 30 square miles, and therefore the Project "is not expected to have any resulting impacts to breeding pairs in the vicinity"*—if has not analyzed cumulative effects within each eagle pair's territory (i.e., 20 to 30 square miles).*[49]

I concur with the comments submitted by the USFWS and others regarding the significant threat to the golden eagles due to the numerous renewable energy and transmission line projects in eastern San Diego County and western Imperial County.[50] The County has not adequately disclosed, analyzed, or mitigated the Project's contribution to that significant threat.

The FEIR's Cumulative Impacts Analyses Are Not Supported by Scientific Data

I agree with the USFWS and others that commented the DEIR provided misleading analysis of cumulative impacts within the vicinity of the Project sites.[51] In particular, the USFWS noted that the County established an inappropriately large study area (approximately 466,564 acres) for many of the taxa that would (or could) be affected by the Project. This inherently resulted in the Project's contribution to cumulative effects to appear minor.

The Applicant's consultant prepared a habitat model to determine the potential for cumulative impacts to special-status plant and animal species. The habitat model included: (1) suitable vegetation communities that are being impacted within the biological cumulative analysis study area, and (2) suitable elevation ranges for each species.[52] The consultant then compared the acreage of habitat impacted by several projects in the study area against the acreage output by the model. For example, the model indicated 333,436 acres of habitat are available for the southern grasshopper mouse in the study area, of which 2,436.9 acres (0.73%) could be cumulatively impacted.[53] This resulted in the consultant's conclusion that: "[t]he additional loss of less than 1% of suitable habitat within the study area would not result in significant impacts to species or their habitat."[54] The consultant made a comparable conclusion for every other species that it analyzed.[55]

The consultant's methods do not constitute a valid approach to cumulative effect

[48] FEIR, Response to Comment O10-36.

[49] FEIR, Response to Comment S3-54.

[50] USFWS. 2012 May 2. Tule Wind Energy Project, Phase II. Letter from Assistant Field Supervisor, Carlsbad Fish and Wildlife Office, to Deputy Chief of the Migratory Bird Division, Pacific Southwest Region, Sacramento.

[51] FEIR, Comment F1-19.

[52] FEIR, pp. 2.3-181, -182, and -185.

[53] FEIR, Appendix 2.3-5.

[54] *Ibid.*

[55] *Ibid.*

analyses. First, the model relied on the assumption that each species occurs throughout all portions of the study area that satisfied the two basic input criteria (i.e., vegetation community and elevation). This assumption is not supported by data. For example, the model led the consultant to conclude desert beauty (*Linanthus bellus*) occurs within 221,591 acres of the study area, and thus impacts to up to 1,134 acres of occupied habitat would not significantly impact the plant's habitat.[56] However, database records make it clear that desert beauty does not occur within 221,591 acres of the study area (Figure 2).[57]

Second, limiting the model to two basic input criteria overinflated the estimate of habitat available for each species. Habitat availability is dictated by numerous biotic and abiotic factors beyond vegetation community and elevation. These include soil type, aspect, patch size, and canopy cover, among many others. For example, desert beauty is limited to sandy soils in chaparral habitat (even though the consultant inexplicitly included Great Basin Scrub and Upper Sonoran Subshrub Scrub habitats in the model).[58] Including soil type as an input criterion would have greatly reduced the model's estimate of habitat available for most of the species analyzed.

Third, the consultant failed to consider all of the reasonably foreseeable projects in the study area. For example, the Sol Orchard Ramona Solar and Sol Orchard Valley Center Solar projects have been approved by the County. However, neither project was considered in the cumulative effects analysis.[59]

[56] *Ibid.*

[57] Data provided by the participants of the Consortium of California Herbaria. Available at: <ucjeps.berkeley.edu/consortium>. (Accessed 2015 Jan 14).

[58] Robert Patterson & J. Mark Porter 2014. *Linanthus bellus*, in Jepson Flora Project (eds.) *Jepson eFlora*, http://ucjeps.berkeley.edu/cgi-bin/get_IJM.pl?tid=31042, accessed on January 14, 2015. *See also* CNPS, Rare Plant Program. 2015. Inventory of Rare and Endangered Plants (online edition, v8-02). California Native Plant Society, Sacramento, CA. Website http://www.rareplants.cnps.org [accessed 14 January 2015].

[59] FEIR, Table 2.3-16 and footnote 5 to Appendix 2.3-5.

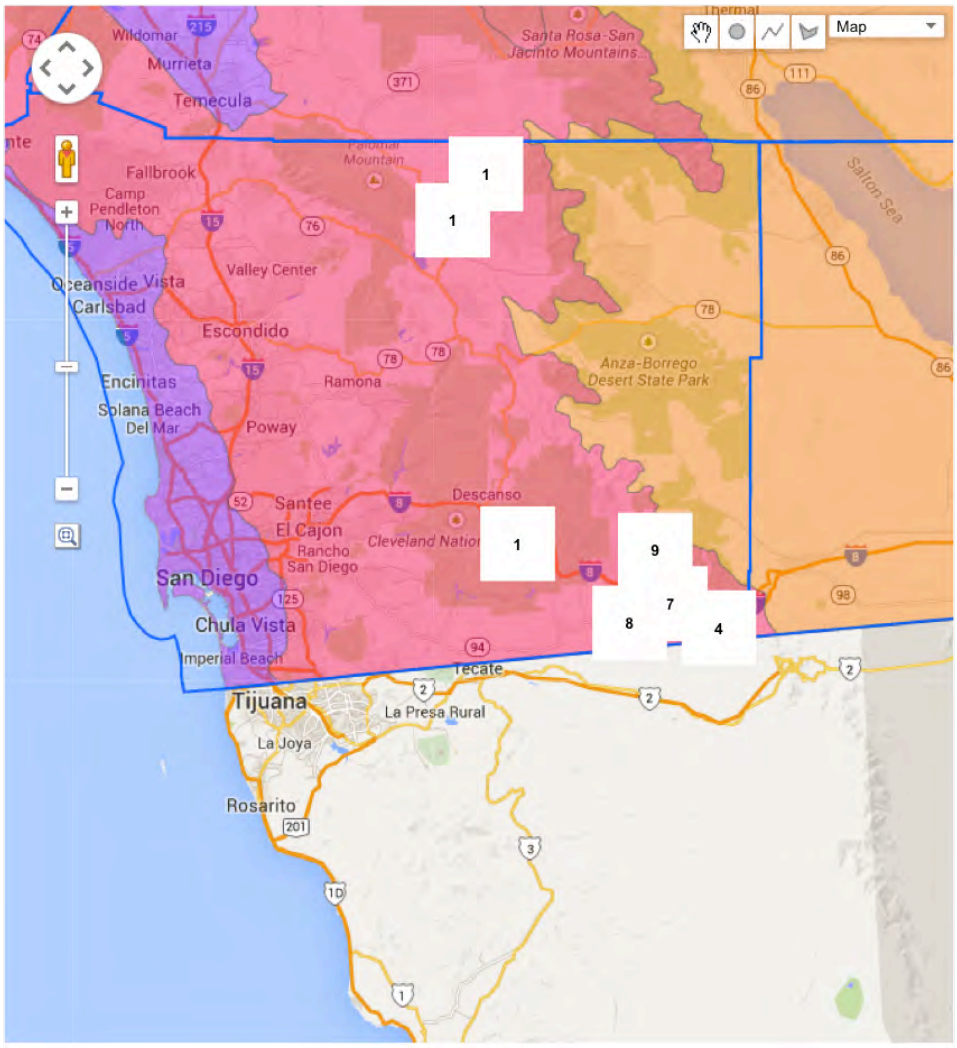

Figure 2. California Consortium of Herbaria database records of desert beauty within the cumulative effects study area: the Peninsular Ranges of the California Floristic Province (in red). White squares indicate number of occurrences in the database.

MITIGATION ISSUES

Bird and Bat Monitoring Plan

The FEIR responded to several comments by stating it has included an additional condition of Project approval that requires the development of a Bird and Bat Monitoring Plan ("BBMP").[60] However, nowhere does the FEIR incorporate the BBMP as a required mitigation measure. As a result, it is unclear whether the BBMP was a factor in

[60] FEIR, Response to Comment S3-57.

the County's impact assessment, and to what extent the County considers the BBMP mitigation needed to reduce significant impacts of the Project. Furthermore, the FEIR does not provide any information about the BBMP other than it would entail training O&M staff to perform self-monitoring of the Project site for bird and bat strikes for a period of three years.[61] The FEIR does not identify the:

(a) goals of the BBMP and the performance standards for evaluating its success;

(b) monitoring regime, including sampling techniques, frequency, and duration;

(c) methods that will be used to account for observer bias and carcass removal;

(d) statistical methods that will be used to analyze the data;

(e) take thresholds for remedial actions;

(f) additional conservation measures (or actions) that would be triggered if take thresholds are exceeded; and,

(g) enforcement mechanism that ensures the BBMP is implemented and performance standards are met.

Vetting of these variables by the scientific community and resource agencies is fundamental to the BBMP's ultimate value. "Self-monitoring" and monitoring by O&M staff have already proven to be ineffective strategies at other solar facilities.[62]

Avian Collision Hazards

Pseudo Lake Effect

Several commenters raised concerns about the "pseudo-lake effect" and potential collision hazard to birds. The County's response was that "there is very little scientific information available regarding the 'pseudo-lake effect,' and actual effects on birds, therefore an adequate discussion of the potential impacts would be speculative. (14 CCR § 15145 [impact too speculative for evaluation].)"[63] It also responded with the statement that: "the magnitude of this effect is unknown, since no comprehensive scientific studies have been conducted for this potential phenomenon. However, in response to [the comments], the County has included an additional condition of project approval (see Chapter 2.3 of the FPEIR) that requires the development of a Bird and Bat Monitoring Plan."[64] Despite the stated uncertainty, the FEIR concluded the "glare and pseudo-lake effect of the trackers were deemed to be a low risk to avian movement and migration due to a number of factors, including array design, solar unit design, and site location."[65]

Whereas the extent of the threat remains unknown, the presence of dead and injured birds

[61] FEIR, Response to Comment O10-47.

[62] Kagan RA, TC Viner, PW Trail, EO Espinoza. 2014. Avian Mortality at Solar Energy Facilities in Southern California: A Preliminary Analysis. National Fish and Wildlife Forensics Laboratory. 28 pp.

[63] FEIR, p. 2.3-125.

[64] FEIR, Response to Comment S3-57.

[65] *Ibid*, p. 2.3-163.

at solar facilities operating (or under construction) in California demonstrates the facilities present a collision hazard to birds.[66] The impact is not too speculative for evaluation as the County claims. A recent study completed by the National Fish and Wildlife Forensics Laboratory (2014) reported:

> Solar facilities appear to represent "equal-opportunity" hazards for the bird species that encounter them. The remains of 71 species were identified [at three solar facilities], representing a broad range of ecological types. In body size, these ranged from hummingbirds to pelicans; in ecological type from strictly aerial feeders (swallows) to strictly aquatic feeders (grebes) to ground feeders (roadrunners) to raptors (hawks and owls). The species identified were equally divided among resident and non-resident species, and nocturnal as well as diurnal species were represented.[67]

There is no information to support or refute the County's claim that the spacing of CPV trackers reduces the potential for a "lake effect" (compared to typical PV panels). However, the precautionary principle is warranted because the threat CPV trackers pose to birds remains unknown (as the County has acknowledged). Addressing the uncertainty of a potentially significant threat requires an adaptive management strategy capable of addressing unforeseen circumstances (or predictions). Monitoring of the facilities for three years by O&M staff is not a successful adaptive management strategy. For this reason, and the reasons stated above, the BBMP is inadequate mitigation.

Transmission Lines

The FEIR concludes the implementation of bird diverters and Avian Power Line Interaction Committee ("APLIC") standards would reduce the electrocution and collision hazard to a less-than-significant level.[68] It even goes as far as stating; "the Proposed Project would implement appropriate measures to *prevent* electrocution or collision and would mitigate *all* potentially significant impacts; therefore, the Proposed Project would not contribute to a cumulatively considerable impact related to the potential electrocution or collision with transmission lines."[69] These statements do not accurately depict the hazard of the Project's transmission lines.

First, the implementation of APLIC guidelines *reduces* avian collisions, but not necessarily to a level that can be considered less-than-significant. Studies suggest that most bird collisions occur with the shield (static) wire, which is the smallest diameter and highest wire on a transmission line.[70] The transmission lines proposed for the Project would have a static wire, which increases the risk of avian collisions.[71]

---

[66] Kagan RA, TC Viner, PW Trail, EO Espinoza. 2014. Avian Mortality at Solar Energy Facilities in Southern California: A Preliminary Analysis. National Fish and Wildlife Forensics Laboratory. 28 pp.

[67] *Ibid.*

[68] FEIR, Table S-2.

[69] *Ibid*, p. 2.3-188.

[70] Avian Power Line Interaction Committee (APLIC). 2012. *Reducing Avian Collisions with Power Lines: The State of the Art in 2012.* Edison Electric Institute and APLIC. Washington, D.C. p. xii.

[71] FEIR, p. Appendix 3.1.4-5, p. 40.

Second, although avian-safe construction *minimizes* electrocution risk, electrocutions can never be completely eliminated.[72] Because wet feathers and wet wood are conductive, birds can be electrocuted during wet weather on normally benign poles.[73]

The FEIR Fails to Provide Adequate Mitigation for Impacts to Golden Eagle Habitat

Golden eagles require large patches of relatively undisturbed habitat free from human disturbance.[74] This fact is clearly articulated in WRI's report, upon which the County has based its analyses.

The FEIR acknowledges the Project would have potentially significant impacts to golden eagle foraging habitat. It further acknowledges the Project would have a significant impact if it resulted in the loss of *functional* foraging habitat for raptors, including golden eagles.[75] However, the FEIR's tabulation of impacts to foraging habitat, and thus the acreage required for compensatory mitigation, is based solely on the Project's direct impacts. The FEIR does not require any compensatory mitigation for the habitat that would be functionally lost due to fragmentation, degradation, and ongoing human presence at the facilities. At a minimum, all areas within each Project site's perimeter would no longer function as foraging habitat for golden eagles (and several other raptors) after the sites are developed. This would include the land deemed "impact neutral" and the small patches of habitat that would remain among the four subareas at the Rugged site. The sum total of this acreage needs to serve as the starting point for calculating compensatory mitigation.

The USFWS recommends "habitat equivalency analysis" to quantify appropriate compensation acreage and ensure habitat services are replaced by like services.[76] Habitat services are generally defined by a metric (e.g., species density) that represents the functionality of the habitat (e.g., ability of the habitat to provide nest sites, prey populations, cover, etc.).[77] The County failed to conduct the habitat equivalency analysis needed to formulate appropriate mitigation for impacts to golden eagle habitat.[78] Instead,

---

[72] Avian Power Line Interaction Committee (APLIC). 2006. *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006.* Edison Electric Institute, APLIC, and the California Energy Commission. Washington, D.C and Sacramento, CA. p. 56.

[73] *Ibid.*

[74] Thelander CG, California Department of Fish and Game. 1974. Nesting territory utilization by golden eagles (Aquila chrysaetos) in California during 1974. Wildlife Management Branch Administrative Report No. 74-7 (November 1974). 22 pp. *See also* Wildlife Research Institute. 2013. Golden Eagle History for the Soitec Solar Project. pp. iv and 1.

[75] FEIR, pp. 2.3-99, -178, and -179.

[76] U.S. Fish and Wildlife Service, Pacific Southwest Region. 2010. Region 8 Interim Guidelines for the Development os a Project-Specific Avian and Bat Protection Plan for Solar Energy Plants and Related Transmission Facilities. 15 pp.

[77] *Ibid.*

[78] *Ibid.*

it simply assumed that the requirements for: (1) preservation of native habitats equivalent to or greater than the acreage of total project impacts; and (2) pre-construction nesting bird surveys within 500 feet of the Project boundaries, would reduce impacts to a less-than-significant level. The DEIR and FEIR provide no scientific basis for that assumption, especially because they do not ensure the habitat preservation would offset impacts to the specific territories (or pairs) affected by the Project.

Given the evidence in the record, it is clear that impacts to golden eagles are much more significant than indicated in the FEIR, and that the County has failed to propose adequate measures to mitigate those impacts to less than significant levels.

The FEIR Fails to Ensure the Project Mitigates Potentially Significant Impacts Associated with Weeds

The construction and operation of the Projects has the potential to facilitate the colonization and/or spread of non-native "weed" species. The FEIR described the adverse effects weeds can have on native species and habitats, and it accurately characterized those effects as being potentially significant.[79] The FEIR then concluded that impacts associated with weeds "would be reduced to less than significant with the implementation of mitigation requiring avoidance, minimization, and best management practices during construction and operation."[80] However, the only mitigation measures imposed by the County that address weeds are the measures that: (1) prohibit the planting and seeding of invasive plant species; and (2) the requirement for weed control treatments to follow regulations set by the San Diego County agriculture commissioner.[81] The FEIR does not require the Applicant to prepare and implement a weed control plan, or monitor the Project sites (including transmission line routes) for new weed infestations. Similarly, the FEIR does not establish performance standards or an enforcement mechanism that ensures potentially significant impacts associated with the colonization and/or spread of weeds are successfully mitigated. As a result, potentially significant impacts remain unmitigated.

The FEIR Fails to Mitigate Potentially Significant Impacts to Special-Status Bat Species

The FEIR acknowledges a variety of special-status bat species have the potential to roost at or adjacent to the Project sites.[82] However, the FEIR lacks any mitigation to ensure bat roosts are not significantly impacted by the Project.

Bats are relatively long-lived and have low reproductive rates compared to many other mammals. In addition, most bat species are susceptible to noise and other types of

[79] FEIR, pp. 2.3-182 and -183.

[80] *Ibid.*

[81] FEIR, pp. 2.3-196 and -199.

[82] FEIR, pp. 2.3-29 and -30.

anthropogenic disturbance.[83] This makes them vulnerable to mass displacement. Maternity colonies and hibernating bats are especially susceptible to disturbance. One poorly timed disturbance event can cause complete abandonment of the maternity colony, resulting in mass mortality of the pups. These traits may seriously limit a bat species' ability to recover from persistent disturbance or fatality events.[84]

CONCLUSION

Based on the issues described in this letter, it is my professional opinion that the County has not met the obligations of CEQA, and that the Project would result in significant and unmitigated impacts to several sensitive biological resources.

Sincerely,

Scott Cashen, M.S.
Senior Biologist

[83] Western Bat Working Group. 2005 [update]. Species Accounts. Available at: <http://www.wbwg.org>.
[84] *Ibid.*

EXHIBIT 1

Scott Cashen, M.S.
Senior Biologist / Forest Ecologist

Scott Cashen has 21 years of professional experience in natural resources management. During that time he has worked as a field biologist, forester, environmental consultant, and instructor of Wildlife Management. Mr. Cashen focuses on CEQA/NEPA compliance issues, endangered species, scientific field studies, and other topics that require a high level of scientific expertise.

Mr. Cashen has knowledge and experience with numerous taxa, ecoregions, biological resource issues, and environmental regulations. As a biological resources expert, Mr. Cashen is knowledgeable of the various agency-promulgated guidelines for field surveys, impact assessments, and mitigation. Mr. Cashen has led field investigations on several special-status species, including ones focusing on the yellow-legged frog, red-legged frog, desert tortoise, steelhead, burrowing owl, California spotted owl, northern goshawk, willow flycatcher, Peninsular bighorn sheep, red panda, and various forest carnivores.

Mr. Cashen is a recognized expert on the environmental impacts of renewable energy development. He has been involved in the environmental review process for over 80 solar, wind, biomass, and geothermal energy projects. Mr. Cashen's role in this capacity has encompassed all stages of the environmental review process, from initial document review through litigation support. Mr. Cashen has provided expert witness testimony on several of the Department of the Interior's "fast-tracked" renewable energy projects. His testimony on those projects helped lead agencies develop project alternatives and mitigation measures to reduce the environmental impacts associated with the projects.

Mr. Cashen was a member of the independent scientific review panel for the Quincy Library Group project, the largest community forestry project in the United States. As a member of the panel, Mr. Cashen was responsible for advising the U.S. Forest Service on its scientific monitoring program, and for preparing a final report to Congress describing the effectiveness of the Herger-Feinstein Forest Recovery Act of 1998.

AREAS OF EXPERTISE

- CEQA, NEPA, and Endangered Species Act compliance issues
- Comprehensive biological resource assessments
- Endangered species management
- Renewable energy development
- Scientific field studies, grant writing and technical editing

EDUCATION

M.S. Wildlife and Fisheries Science - The Pennsylvania State University (1998)
B.S. Resource Management - The University of California, Berkeley (1992)

PROFESSIONAL EXPERIENCE

Litigation Support / Expert Witness

As a biological resources expert, Mr. Cashen reviews CEQA/NEPA documents and provides his clients with an assessment of biological resource issues. He then prepares written comments on the scientific and legal adequacy of the project's environmental documents (e.g., Environmental Impact Statement). Mr. Cashen has provided testimony to the California Energy Commission, California Public Utilities Commission, and U.S. district courts.

Mr. Cashen can lead field studies to generate evidence for legal testimony, and he can incorporate testimony from his deep network of species-specific experts. Mr. Cashen's clients have included law firms, non-profit organizations, and citizen groups.

REPRESENTATIVE RENEWABLE ENERGY EXPERIENCE

Solar Energy

- Abengoa Mojave Solar Project
- Avenal Energy Power Plant
- Beacon Solar Energy Project
- Blythe Solar Power Project
- Calico Solar Project
- Calipatria Solar Farm II
- Carrizo Energy Solar Farm
- Catalina Renewable Energy Project
- Fink Road Solar Farm
- Genesis Solar Energy Project
- Heber Solar Energy Facility
- Imperial Valley Solar Project
- Ivanpah Solar Electric Generating
- Maricopa Sun Solar Complex
- McCoy Solar Project
- Mt. Signal and Calexico Solar
- San Joaquin Solar I & II
- Stateline Solar Project
- Solar Gen II Projects
- SR Solis Oro Loma
- Vestal Solar Facilities
- Victorville 2 Power Project

Geothermal Energy

- Casa Diablo IV Geothermal Project
- East Brawley Geothermal
- Mammoth Pacific 1 Replacement
- Orni 21 Geothermal Project
- Western GeoPower Plant

Wind Energy

- Catalina Renewable Energy Project
- Ocotillo Wind Energy Project
- San Diego County Wind Ordinance
- Shu'luuk Wind Project
- Tres Vaqueros Repowering Project
- Tule Wind Project
- Vasco Winds Relicensing Project

Biomass Facilities

- CA Ethanol Project
- Colusa Biomass Project
- Tracy Green Energy Project

Project Management

Mr. Cashen has managed several large-scale wildlife, forestry, and natural resource management projects. Many of these projects have required hiring and training field crews, coordinating with other professionals, and communicating with project stakeholders. Mr. Cashen's experience in study design, data collection, and scientific writing make him an effective project manager, and his background in several different natural resource disciplines enable him to address the many facets of contemporary land management in a cost-effective manner.

REPRESENTATIVE EXPERIENCE

Wildlife Studies

- Peninsular Bighorn Sheep Resource Use and Behavior Study: (*CA State Parks*)
- "KV" Spotted Owl and Northern Goshawk Inventory: (*USFS, Plumas NF*)
- Amphibian Inventory Project: (*USFS, Plumas NF*)
- San Mateo Creek Steelhead Restoration Project: (*Trout Unlimited and CA Coastal Conservancy, Orange County*)
- Delta Meadows State Park Special-status Species Inventory: (*CA State Parks, Locke*)

Natural Resources Management

- Mather Lake Resource Management Study and Plan – (*Sacramento County*)
- Placer County Vernal Pool Study – (*Placer County*)
- Weidemann Ranch Mitigation Project – (*Toll Brothers, Inc., San Ramon*)
- Ion Communities Biological Resource Assessments – (*Ion Communities, Riverside and San Bernardino Counties*)
- Del Rio Hills Biological Resource Assessment – (*The Wyro Company, Rio Vista*)

Forestry

- Forest Health Improvement Projects – (*CalFire, SD and Riverside Counties*)
- San Diego Bark Beetle Tree Removal Project – (*SDG&E, San Diego Co.*)
- San Diego Bark Beetle Tree Removal Project – (*San Diego County/NRCS*)
- Hillslope Monitoring Project – (*CalFire, throughout California*)

Biological Resources

Mr. Cashen has a diverse background with biological resources. He has conducted comprehensive biological resource assessments, habitat evaluations, species inventories, and scientific peer review. Mr. Cashen has led investigations on several special-status species, including ones focusing on the foothill yellow-legged frog, mountain yellow-legged frog, desert tortoise, steelhead, burrowing owl, California spotted owl, northern goshawk, willow flycatcher, Peninsular bighorn sheep, red panda, and forest carnivores.

REPRESENTATIVE EXPERIENCE

Avian

- Study design and Lead Investigator - Delta Meadows State Park Special-Status Species Inventory *(CA State Parks: Locke)*
- Study design and lead bird surveyor - Placer County Vernal Pool Study *(Placer County: throughout Placer County)*
- Surveyor - Willow flycatcher habitat mapping *(USFS: Plumas NF)*
- Independent surveyor - Tolay Creek, Cullinan Ranch, and Guadacanal Village restoration projects *(Ducks Unlimited/USGS: San Pablo Bay)*
- Study design and Lead Investigator - Bird use of restored wetlands research *(Pennsylvania Game Commission: throughout Pennsylvania)*
- Study design and surveyor - Baseline inventory of bird species at a 400-acre site in Napa County *(HCV Associates: Napa)*
- Surveyor - Baseline inventory of bird abundance following diesel spill *(LFR Levine-Fricke: Suisun Bay)*
- Study design and lead bird surveyor - Green Valley Creek Riparian Restoration Site *(City of Fairfield: Fairfield, CA)*
- Surveyor - Burrowing owl relocation and monitoring *(US Navy: Dixon, CA)*
- Surveyor - Pre-construction burrowing owl surveys *(various clients: Livermore, San Ramon, Rio Vista, Napa, Victorville, Imperial County, San Diego County)*
- Surveyor - Backcountry bird inventory *(National Park Service: Eagle, Alaska)*
- Lead surveyor - Tidal salt marsh bird surveys (*Point Reyes Bird Observatory: throughout Bay Area*)
- Surveyor – Pre-construction surveys for nesting birds (*various clients and locations)*

Amphibian

- Crew Leader - Red-legged frog, foothill yellow-legged frog, and mountain yellow-legged frog surveys *(USFS: Plumas NF)*

- Surveyor - Foothill yellow-legged frog surveys *(PG&E: North Fork Feather River)*
- Surveyor - Mountain yellow-legged frog surveys *(El Dorado Irrigation District: Desolation Wilderness)*
- Crew Leader - Bullfrog eradication *(Trout Unlimited: Cleveland NF)*

Fish and Aquatic Resources

- Surveyor - Hardhead minnow and other fish surveys *(USFS: Plumas NF)*
- Surveyor - Weber Creek aquatic habitat mapping (*El Dorado Irrigation District: Placerville, CA*)
- Surveyor - Green Valley Creek aquatic habitat mapping *(City of Fairfield: Fairfield, CA)*
- GPS Specialist - Salmonid spawning habitat mapping *(CDFG: Sacramento River)*
- Surveyor - Fish composition and abundance study (*PG&E: Upper North Fork Feather River and Lake Almanor*)
- Crew Leader - Surveys of steelhead abundance and habitat use *(CA Coastal Conservancy: Gualala River estuary)*
- Crew Leader - Exotic species identification and eradication *(Trout Unlimited: Cleveland NF)*

Mammals

- Principal Investigator – Peninsular bighorn sheep resource use and behavior study (*California State Parks: Freeman Properties*)
- Scientific Advisor –Study on red panda occupancy and abundance in eastern Nepal *(The Red Panda Network: CA and Nepal)*
- Surveyor - Forest carnivore surveys *(University of CA: Tahoe NF)*
- Surveyor - Relocation and monitoring of salt marsh harvest mice and other small mammals *(US Navy: Skagg's Island, CA)*
- Surveyor – Surveys for Monterey dusky-footed woodrat. Relocation of woodrat houses (*Touré Associates: Prunedale*)

Natural Resource Investigations / Multiple Species Studies

- Scientific Review Team Member – Member of the scientific review team assessing the effectiveness of the US Forest Service's implementation of the Herger-Feinstein Quincy Library Group Act.
- Lead Consultant - Baseline biological resource assessments and habitat mapping for CDF management units *(CDF: San Diego, San Bernardino, and Riverside Counties)*

- Biological Resources Expert – Peer review of CEQA/NEPA documents (*various law firms, non-profit organizations, and citizen groups)*
- Lead Consultant - Pre- and post-harvest biological resource assessments of tree removal sites *(SDG&E: San Diego County)*
- Crew Leader - T&E species habitat evaluations for Biological Assessment in support of a steelhead restoration plan *(Trout Unlimited: Cleveland NF)*
- Lead Investigator - Resource Management Study and Plan for Mather Lake Regional Park *(County of Sacramento: Sacramento, CA)*
- Lead Investigator - Biological Resources Assessment for 1,070-acre Alfaro Ranch property *(Yuba County, CA)*
- Lead Investigator - Wildlife Strike Hazard Management Plan *(HCV Associates: Napa)*
- Lead Investigator - Del Rio Hills Biological Resource Assessment *(The Wyro Company: Rio Vista, CA)*
- Lead Investigator – Ion Communities project sites (*Ion Communities: Riverside and San Bernardino Counties*)
- Surveyor – Tahoe Pilot Project: Validation of California's Wildlife Habitat Relationships (CWHR) Model *(University of California: Tahoe NF)*

Forestry

Mr. Cashen has five years of experience working as a consulting forester on projects throughout California. Mr. Cashen has consulted with landowners and timber operators on forest management practices; and he has worked on a variety of forestry tasks including selective tree marking, forest inventory, harvest layout, erosion control, and supervision of logging operations. Mr. Cashen's experience with many different natural resources enable him to provide a holistic approach to forest management, rather than just management of timber resources.

REPRESENTATIVE EXPERIENCE

- Lead Consultant - CalFire fuels treatment projects *(SD and Riverside Counties)*
- Lead Consultant and supervisor of harvest activities – San Diego Gas and Electric Bark Beetle Tree Removal Project *(San Diego)*
- Crew Leader - Hillslope Monitoring Program *(CalFire: throughout California)*
- Consulting Forester – Forest inventories and timber harvest projects *(various clients throughout California)*

Grant Writing and Technical Editing

Mr. Cashen has prepared and submitted over 50 proposals and grant applications. Many of the projects listed herein were acquired through proposals he wrote. Mr. Cashen's clients and colleagues have recognized his strong scientific writing skills and ability to generate technically superior proposal packages. Consequently, he routinely prepares funding applications and conducts technical editing for various clients.

PERMITS

U.S. Fish and Wildlife Service Section 10(a)(1)(A) Recovery Permit for the Peninsular bighorn sheep

CA Department of Fish and Game Scientific Collecting Permit

PROFESSIONAL ORGANIZATIONS / ASSOCIATIONS

The Wildlife Society (Conservation Affairs Committee member)

Cal Alumni Foresters

Mt. Diablo Audubon Society

OTHER AFFILIATIONS

Scientific Advisor and Grant Writer – *The Red Panda Network*

Scientific Advisor – *Mt. Diablo Audubon Society*

Grant Writer – *American Conservation Experience*

Scientific Advisor and Land Committee Member – *Save Mt. Diablo*

TEACHING EXPERIENCE

Instructor: Wildlife Management - The Pennsylvania State University, 1998

Teaching Assistant: Ornithology - The Pennsylvania State University, 1996-1997