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July 29, 2010

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DOCKET

08-AFC-13

DATE JU

JUL 29 2010

RECD. JUL 29 2010

California Energy Commission Attn: Docket Office, 08-AFC-13 1516 Ninth Street Sacramento, CA 95814

Re: Calico Solar; Docket No. 08-AFC-13

Dear Docket Clerk:

DANIEL L. CARDOZO

THOMAS A. ENSLOW

TANYA A. GULESSERIAN

JASON W. HOLDER

MARC D. JOSEPH

ELIZABETH KLEBANER

RACHAEL E. KOSS LOULENA A. MILES

ROBYN C. PURCHIA

FELLOW AARON G. EZROJ

OF COUNSEL THOMAS R. ADAMS ANN BROADWELL GLORIA D. SMITH

Please process the enclosed PREHEARING CONFERENCE STATEMENT OF CALIFORNIA UNIONS FOR RELIABLE ENERGY, conform the copy of the enclosed letter, and return the copy in the envelope provided.

Thank you.

Sincerely,

/s/

Loulena A. Miles

LAM:bh Enclosures

2309-079a

STATE OF CALIFORNIA California Energy Commission

In the Matter of:

The Application for Certification for the Calico Solar Project (formerly SES Solar One) Docket No. 08-AFC-13

PREHEARING CONFERENCE STATEMENT OF CALIFORNIA UNIONS FOR RELIABLE ENERGY

July 29, 2010

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Attorneys for the CALIFORNIA UNIONS FOR RELIABLE ENERGY

Pursuant to the July 13, 2010 Notice of Prehearing Conference and Evidentiary Hearings, California Unions for Reliable Energy ("CURE") submits this prehearing conference statement on the Calico Solar Project ("Project"). Each informational item requested by the Committee is discussed below.

1. Topic Areas That Are Complete and Ready to Proceed to Evidentiary Hearing

All resource areas with the exception of Biological Resources, Cultural Resources, Soil and Water Resources, and Transmission System Engineering are complete and ready to proceed to evidentiary hearing.

2. Topic Areas That Require Further Analysis and Which Are Not Ready for Adjudication

The following resource areas are not ready for adjudication.

a. <u>Biological Resources</u>

Construction of the proposed project would result in the permanent loss of approximately 6,215 acres of occupied desert tortoise habitat. Desert tortoise is listed as threatened under the state and federal Endangered Species Acts. The BLM's Biological Assessment issued on April 1, 2010 estimates up to 246 tortoises inhabit the Project site and that the Calico Solar LLC ("Applicant") will need a take permit for up to 100 tortoises. The applicant estimates that approximately 57 federally listed threatened desert tortoises would need to be translocated outside of the Project site. Thus, the proposed Project has more desert tortoises than are on the Ivanpah and Ridgecrest Proposed Project sites.

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¹ Biological Assessment, URS Corporation, April 1, 2010, p. 4-1.

Yet, to date, the Applicant has not provided to the parties a central piece of the Applicant's proposed mitigation strategy for desert tortoise: the desert tortoise translocation plan.

For over a year, CURE, Defenders of Wildlife, and Basin and Range Watch have been asking the Applicant to prepare a desert tortoise translocation plan explaining the Applicant's proposal to move desert tortoise off of the Project site and to provide that plan to the parties for review. According to the March 30, 2010 Staff Assessment, "Staff considers the translocation effort for desert tortoise to be the critical path for commencement of construction activities." CURE agrees. CURE has repeatedly reiterated the importance of this plan to the overall mitigation strategy for the Project's significant impacts to take of desert tortoise. Recent translocation efforts of desert tortoise at Ft. Irwin have been a tragic failure, resulting in a nearly 50% mortality rate. The experience at Ft. Irwin underscores the parties' need to review the translocation proposal in detail prior to litigating this matter.

Most importantly, the Applicant has failed to meet its burden to provide information regarding its proposed mitigation for significant impacts to desert tortoise, as required by Commission Regulation § 1723.5. And Staff has not yet analyzed the Applicant's proposed mitigation and presented its analysis in a report, as required by Commission Regulation § 1742.5.

As this Committee is well aware, CEQA requires that conclusions regarding Project impacts and the efficacy of proposed mitigation be based on substantial

evidence. Substantial evidence is defined as "enough relevant information and reasonable inferences from this information that a fair argument can be made to support a conclusion, even though other conclusions might also be reached." Pursuant to sections 1723.5(a) and 1748(d) of the Commission's regulations, the Applicant has the burden to submit information in support of the Applicant's Project. Pursuant to sections 1723.5(d) and 1742, Staff must conduct environmental review of the Applicant's Project and prepare a report prior to evidentiary hearings. Litigating the biological resource issues without the Applicant's proposed mitigation for desert tortoise would be premature. Unless and until a translocation plan is produced by the Applicant, the Commission should postpone the scheduling of hearings on this topic.

b. Cultural Resources

Staff acknowledges that its testimony on cultural resources is not ready to proceed to hearings because Staff is still conducting its analysis and will provide a Supplemental Staff Assessment on cultural resources. Since Staff's Supplemental Assessment on cultural resources has not yet been released, the topic of cultural resources is not ready for evidentiary hearings.

c. Water Supply

The Applicant has failed to identify a legal and reliable water supply for the Project. The Applicant proposes to develop a new groundwater well on a private parcel adjacent to the Project site. Staff found that the data regarding the viability of the proposed well is inadequate. Until the Applicant provides additional analysis

to show that the well is reliable (monitoring wells and additional testing), the topic of water resources is not ready for hearings. Additionally, CURE respectfully requests that the Committee not allow the Applicant to present new evidence on this well at the hearings that has not been provided in previously filed written testimony.

Furthermore, the Applicant has failed to meet its burden to provide information regarding its proposed mitigation for significant impacts to water resources, as required by Commission Regulation § 1723.5. In turn, Staff has not yet analyzed feasible mitigation designed to reduce impacts and presented its analysis in a report, as required by Commission Regulation § 1742.5. Moreover, the parties need time to review the materials in advance of hearings.

d. Soil and Water Resources

The Project will impact sensitive desert surface soils resulting in dust and sedimentation into the ephemeral desert washes on the Project site. Neither Staff nor the Applicant undertook a survey effort to evaluate the amount of these resources on the Project site that act to stabilize soil and protect water resources. Until an accounting is made and mitigation is proposed to protect these resources, this topic is not ready for hearings.

e. Transmission System Engineering

The Commission is required under CEQA to analyze the whole of the Project which has the potential to result in a direct physical change in the environment.²

² 14 Cal. Code Reg. § 15378; see also Laurel Heights Improvement Assn. v. Regents of the University of California (1988) 47 Cal.3d 376.

In this case, the whole of the Project includes the proposal to construct and operate an 850 MW power plant, to replace the 67 mile Lugo-Pisgah transmission line, to expand the Pisgah substation, to build a new 100-acre substation, and to construct a number of other transmission upgrades needed to deliver the Project's power to the grid. However, to date, the Applicant has failed to provide crucial information regarding potentially significant impacts on biological, cultural, and soil and water resources as they relate to each of these transmission components. As a result, Staff has not analyzed all impacts associated with the whole of the Project.

Consequently, it is impossible for the Commission to conclude (and impossible for any party or the public to determine) whether the Supplemental Staff Assessment's conditions of certification for numerous significant impacts will reduce those impacts to below a level of significance.

The Applicant has not yet provided and Staff has not yet analyzed in a report critical facts regarding the Project's potentially significant impacts to biological resources, soil and water resources and cultural resources associated with necessary transmission upgrades. Therefore, these topic areas, as they related to major aspects of the Project, are not ready for evidentiary hearings. It is imprudent and a waste of the Commission's and the parties' resources to proceed to evidentiary hearings with incomplete information on this topic.

In sum, at this time, the Applicant has not yet met its burden to provide the Commission with information supporting its application and Staff's report is incomplete. Thus, the parties need more time to meet their evidentiary obligations

regarding the Project's impacts to biological, soil and water and cultural resources at the Project site, and at the sites of the many transmission upgrades needed for Project development. Until this information is provided, this Project is not ready for evidentiary hearings.

3. Resource Areas That Are in Dispute

CURE currently disputes the following resources areas: Biological Resources, Soil and Water Resources, and Transmission System Engineering. A brief description of the disputed issues follows:

a. <u>Biological Resources</u>

There are numerous unresolved issues related to biological resources. First, the SSA fails to establish an accurate baseline to measure the Project's potentially significant impacts to Nelson's bighorn sheep, microphyll woodland, special-status plants, groundwater dependent vegetation, wildlife movement and connectivity, and Mojave fringe-toed lizard. As a result, impacts have not been adequately analyzed for these species and it is impossible to determine whether proposed mitigation measures will reduce impacts to these species to below a level of significance.

Second, the SSA fails to adequately identify the significance of the Project's impacts to numerous species including the small-flowered androstephium, special status bats and, along the transmission route, Mohave ground squirrel, desert tortoise, Mojave tarplant, California red-legged frog, Southwestern willow flycatcher.

Third, the SSA fails to provide adequate mitigation measures for significant impacts to desert tortoise, golden eagle, special status plants, special-status bats, among others.

b. Soil and Water Resources

The Applicant's analyses used to evaluate significant impacts to soil and water resources in the SSA: (1) are insufficient to determine the adequacy of existing groundwater supplies to meet proposed Project needs; (2) failed to identify significant impacts to aquatic resources from the destruction of cryptobiotic crust and desert pavement; (3) did not adequately account for global climate change; and (4) significantly underestimated the amount of sedimentation from disturbed soils.

As a result, the Project would result in potentially significant unmitigated impacts to the soil and water resources on the Project site.

c. Transmission System Engineering

A number of transmission upgrades will be needed for the Project to operate. Many of these upgrades were not adequately identified in the Supplemental Staff Assessment. Additionally, the environmental impacts from these upgrades were not identified, analyzed or mitigated. Moreover, transmission upgrades that were identified were not properly analyzed or mitigated. Finally, the Supplemental Staff Assessment improperly defers analysis and concludes that some impacts of upgrades needed for the Calico Project to operate will be analyzed in a future EIR/EIS.

4. Witnesses, Topic Areas, Testimony

Each of CURE's proposed witnesses and a summary of their testimony is discussed below. A copy of their qualifications is attached as Exhibit A. CURE reserves the right to submit additional testimony at the evidentiary hearings.

a. <u>Vernon Bleich, PhD (Time estimate for direct testimony: 1 hour)</u>

Vernon Bleich will testify on the topic area of Biological Resources with a special emphasis on the Project's significant unmitigated impacts to bighorn sheep.

b. David Whitley, PhD (*Time estimate for direct testimony: 1 hour*)

- David Whitley will testify on the topic of Cultural Resources. Mr. Whitley will testify regarding significant impact determinations for cultural resources and the identification of adequate and appropriate mitigation measures.
- Scott Cashen will testify on the topic area of Biological Resources. Mr.

 Cashen will testify regarding significant impacts, required analyses and mitigation for biological resources.

c. Scott Cashen (*Time estimate for direct testimony: 3 hours*)

d. <u>David Marcus (Time estimate for direct testimony: 1 hour)</u>

David Marcus will testify on the topic area of Transmission System Engineering. Mr. Marcus will testify regarding a number of projects that are required in order to transmit the Project's proposed power to the grid.

e. Dr. Boris Poff (Time estimate for direct testimony: 1 hour)

Boris Poff will testify on the topic area of Soil and Water Resources. Boris Poff will testify regarding significant impacts associated with the Project's water supply and use and soil resources.

5. Topic Areas for Cross-Examination

CURE requires one hour of cross-examination for each of the Applicant's and Staff's witnesses presenting testimony in the following areas: Biological Resources, Cultural Resources and Soil and Water Resources. CURE also reserves a half hour of cross-examination for each of the other Staff and Applicant witnesses in all other topic areas.

6. CURE's List of Exhibits

The following is CURE's tentative list of exhibits, in sequential order. CURE reserves the right to supplement this exhibit list with additional documents, analyses and other information at any time up to and including the close of the evidentiary hearings.

EXHIBIT	DATE	TITLE	SUBJECT	SPONSOR
NO.	7/22/10			D :1116
400	7/23/10	Opening Testimony of David Marcus on Behalf of California	Transmission	David Marcus
		Unions for Reliable Energy on Transmission for the Calico Solar		
401	7/16/10	Project	т	D :11/
401	7/16/10	Marcus Declaration	Transmission	David Marcus
402		Marcus c.v.	Transmission	David Marcus
403	4/26/10	131 FERC 61,071, Docket ER10-796, order issued April 26, 2010	Transmission	David Marcus
405	7/29/10	Rebuttal Testimony of Boris Poff on Behalf of California Unions	Soil/Water	Boris Poff
		for Reliable Energy on Soil and Water for the Calico Solar		
		Project		
406		Poff c.v.	Soil/Water	Boris Poff
407		McFadden, Wells, Jercinovich, Department of Geology, Univ. of	Soil/Water	Boris Poff
		New Mexico, Influences of eolian and pedogenic processes on		
		the origin and evolution of desert pavements		
408		Seager, Ting, Held, Kushnir, et al., Model Projections of an	Soil/Water	Boris Poff
		Imminent Transition to a More Arid Climate in Southwestern		
		North America		
409		Okin, Murray, Schlesinger, Degradation of sandy arid shrubland	Soil/Water	Boris Poff
		environments: observations, process modeling, and management		
		implications		
410		Okin, Gillette, Herrick, Multi-scale controls on and consequences	Soil/Water	Boris Poff
		of Aeolian processes in landscape change in arid and semi-arid		
		environments		
411		Angel, Palecki, Hollinger, Storm Precipitation in the United	Soil/Water	Boris Poff
		States. Part II: Soil Erosion Characteristics		
412		Anderson, Wells, Graham, Pedogenesis of Vesicular Horizons,	Soil/Water	Boris Poff
		Cima Volcanic Field, Mojave Desert, California		-
413	7/29/10	Rebuttal Testimony of Vernon C. Bleich on Biological for the	Biology	Vernon Bleich
		Calico Solar Project		
414		Bleich c.v.	Biology	Vernon Bleich

415	1996	Bleich, Wejaisem. Ramey, Rechel: Metapopulation Theory and	Biology	Vernon C. Bleich
		Mountain Sheep: Implications for Conservation		
416		Epps, Wehausen, Bleich, Torres, Brashares: Optimizing dispersal and corridor models using landscape genetics	Biology	Vernon C. Bleich
417		Wehausen: Nutrient predictability, birthing seasons, and lamb recruitment for desert bighorn sheep	Biology	Vernon C. Bleich
418		Oehler, Bleich, Bowyer, Nicholson: Mountain Sheep and Mining: Implications for Conservation and Management	Biology	Vernon C. Bleich
419		Schwartz, Bleich, Holl: Genetics and the Conservation of Mountain Sheep	Biology	Vernon C. Bleich
420	1990	Belich, Wehausen, Holl: Desert-dwelling Mountain Sheep: Conservation Implications of a Naturally Fragmented Distribution	Biology	Vernon C. Bleich
421		Bleich, Bowyer, Wehausen: Sexual Segregation in Mountain Sheep: Resources or Predation?	Biology	Vernon C. Bleich
422		Epps, Wehausen, Palsoboll, McCullough: Using Genetic Tools to Track Desert Bighorn Sheep Colonizations	Biology	Vernon C. Bleich
423	2000	Torres, Mulchahy, Gonzales, Pauli, Andrew: Human Induced Migration and Homing Behavior of a Desert Bighorn Ram in the Whipple Mountains, California: Or Herman the Trailer Park Ram	Biology	Vernon C. Bleich
424	7/29/10	Rebuttal Testimony of Scott Cashen on Biology for the Calico Solar Project	Biology	Scott Cashen
425		Cashen c.v.	Biology	Scott Cashen
426		Belnap, Webb, Miller, et al.: Monitoring Ecosystem Quality and Function in Arid Settings of the Mojave Desert	Biology	Scott Cashen
427		California Partners in Flight and PRBO Conservation Science: The Desert Bird Conservation Plan, a Strategy for Protecting and Managing Desert Habitats and Associated Bids in the Mojave and Colorado Deserts	Biology	Scott Cashen
428		U.S. Department of the Interior, USGS: Threats to Desert Tortoise Populations: A Critical Review of the Literature	Biology	Scott Cashen
429		U.S. Department of the Interior, USGS: Modeling Habitat of the Desert Tortoise (Gopherus agassizii) in the Mojave and Parts of	Biology	Scott Cashen

		the Sonoran Deserts of California, Nevada, Utah and Arizona		
430		Pagel, Whittington, Allen: Interim Golden Eagle Inventory and Monitoring Protocols; and Other Recommendations	Biology	Scott Cashen
431		Marzluff, Knick, Vekasky, Schuek, Zarriello: Spatial Use and Habitat Selection of Golden Eagles in Southwestern Idaho	Biology	Scott Cashen
432		Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species	Biology	Scott Cashen
433		Okin, Murray, Schlesinger: Degradation of sandy arid shrubland environments: observations, process modeling, and management implications	Biology	Scott Cashen
434	March 2006	Record of Decision, West Mojave Plan, Amendment to the California Desert Conservation Area Plan	Biology	Scott Cashen
435	August 2008	U.S. Dept. of Interior: Effects of the International Boundary Pedestrian Fence in the Vicinity of Lukeville, Arizona, on Drainage Systems and Infrastructure, Organ Pipe Cactus National Monument, Arizon	Biology	Scott Cashen
436		U.S. Fish and Wildlife Service: Final Environmental Assessment, Proposal to permit Take as provided Under the Bald and Golden Eagle Protection Act	Biology	Scott Cashen

7. Scheduling Matters

CURE proposes the following schedule for the remainder of this proceeding.

PROPOSED SCHEDULE

Event	Date
Evidentiary hearings on all topics except	August 4-6, 2010
for cultural resources, biological	
resources, soil and water resources and	
transmission system engineering.	

Staff publishes Supplemental Staff	TBD
Assessment including cultural resources,	
biological resources, soil and water	
resources, and transmission system	
engineering.	
Applicant and Intervenors submit	30 days after publication of the SSA
supplemental testimony	
All parties submit supplemental rebuttal	45 days after publication of the SSA
testimony	
Parties file revised prehearing	50 days after publications of the SSA
conference statements	
Evidentiary Hearings on remaining	60 days after publication of the SSA
topics	
Parties File Post-Hearing Opening	4 weeks after Evidentiary Hearings
Briefs	
	6 weeks after Evidentiary Hearings
Parties File Post-Hearing Reply Briefs	
PMPD Issued	6-8 weeks after Evidentiary Hearings
Commission Hearing on PMPD	Near end of comment period on PMPD
Comments Due on PMPD	30 days after PMPD released
Revised PMPD Issued Responding to	45 days after PMPD released
Comments	
Comments Due on Revised PMPD	15 days after Revised PMPD released
Final Commission Decision	After comment period closes on Revised
	PMPD

8. Proposed Modifications to Conditions of Certification

CURE's proposed modifications to Conditions of Certification are presented in testimony and may be further supplemented.

Dated: July 28, 2010 Respectfully submitted,

/s/

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Calico Solar – 08-AFC-13 DECLARATION OF SERVICE

I, Bonnie Heeley, declare that on July 29, 2010, I served and filed copies of the attached PREHEARING CONFERENCE STATEMENT OF CALIFORNIA UNIONS FOR RELIABLE ENERGY dated July 29, 2010. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at www.energy.ca.gov/sitingcases/calicosolar/CalicoSolar_POS.pdf. The document has been sent to both the other parties in this proceeding as shown on the Proof of Service list and to the Commission's Docket Unit electronically to all email addresses on the Proof of Service list; and by depositing in the U.S. mail at South San Francisco, CA, with first-class postage thereon fully prepaid and addressed as provided on the Proof of Service list to those addresses NOT marked "email preferred."

AND

By sending an original paper copy and one electronic copy, mailed and emailed respectively to:

CALIFORNIA ENERGY COMMISSION Attn: Docket No. 08-AFC-13 1516 Ninth Street, MS 4 Sacramento, CA 95814-5512 docket@energy.state.us.ca.

I declare under penalty of perjury that the foregoing is true and correct. Executed at South San Francisco, CA, on July 29, 2010

Bonnie Heeley

CALIFORNIA ENERGY COMMISSION Attn: Docket No. 08AFC13 1516 Ninth Street, MS-4 Sacramento, CA 95184 docket@energy.state.ca.us Felicia Bellows Vice President, Development Tessera Solar 4800 North Scottsdale Road Suite 5500 Scottsdale, AZ 85251 Felicia.bellows@tesserasolar.com

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Lorraine White, Adviser to Commissioner Eggert

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EXHIBIT A

David S. Whitley, Ph.D., RPA Principal/Principal Archaeologist

Total Years of Experience: 35 years

Education:

Ph.D. 1982/Anthropology/University of California, Los Angeles M.A. 1979/Geography/University of California, Los Angeles

B.A. 1976/Anthropology and Geography/University of California, Los Angeles

Registrations:

1979 Register of Professional Archaeologists

Professional Profile:

David S. Whitley, Ph.D., specializes in the prehistoric archaeology and ethnography of far western North America, with particular interests in sacred sites, rock art, chronometrics and cultural heritage management. He has also worked in southern Africa, the European Upper Paleolithic and Guatemala. His professional publications include 17 books/monographs and approximately 100 articles and chapters. Included among his recent books are The Rock Art of California (University of Utah Press, 2000), the edited volume Handbook of Rock Art Research (AltaMira Press, 2001), and Introduction to Rock Art Research (Left Coast Press, 2005), which received a Choice Outstanding Academic Book Award for 2006. His latest book is Cave Paintings and the Human Spirit: The Origin of Creativity and Belief (Prometheus Books, 2009).

Whitley has written the nominations for 470 sites that are now listed on the NRHP, and has a nomination for an 89 site NHL district that is currently under consideration. For a decade he served on the Council of Directors of the ICOMOS International Rock Art Committee. In 2001 he received the Thomas King Award from the Society for California Archaeology for Excellence in Cultural Resource Management.

Selected Project Experience:

Coso NHL Management Plan, NAWS China Lake, Inyo County, California, 2009-ongoing. Co-Principal Investigator and report co-author of a management plan for the Coso NHL district, a 57-square-mile area containing the largest concentration of petroglyph sites in North America. This has involved coordination with stakeholders, including Native American tribes; the development of management and conservation protocols; and the identification and prioritization of future preservation tasks for the only rock art NHL west of the Rockies.

Carrizo Plain Ecological Reserve Land Management Plan, Jodi McGraw Consulting, Carrizo Plain, San Luis Obispo County, California, ongoing. Principal investigator, field director and report author for an archaeological reconnaissance, overview and management plan for cultural resources on four California Department of Fish and Game units totaling 39,016 acres; and authorship of cultural sections for a Fish and Game Land Management Plan.

Draft Environmental Impact Statement, Twentynine Palms Marine MAGTF Land Expansion, TEC Inc., San Bernardino County, California, ongoing. Co-Principal Investigator and co-author for cultural resources sections of a NEPA draft EIS for a proposed 150,000-acre land expansion.

Tejon Mountain Village Project, Tejon Mountain Village LLC, Tejon Ranch, Kern and Los Angeles counties, California, 1999-2009. Principal Investigator and report author for a Phase I survey of 28,000 acres and Phase II testing of 38 prehistoric sites, for CEQA compliance.

Assessment of CA-INY-434 and -7117, Epsilon Systems Solutions, NAWS China Lake, Inyo County, California, 2008. Principal Investigator, field director and report author for condition assessments of petroglyph sites CA-INY-434 and -7117, involving site documentation and mapping; evaluation of current conditions and identification of natural and cultural impacts to the sites; and management recommendations for long-term preservation.

Rosamond Space-Port Survey, United Engineering Group, Rosamond, Kern County, California, 2008. Principal Investigator, field director and report author for Phase I archaeological survey of 546 acres, resulting in the identification and recording of nine sites.

Clipper Windpower Class III Inventory, Clipper Windpower, Inc. Barstow, San Bernardino County, California, 2008. Principal Investigator, field director and report author for Class III inventory of seven anemometer pads and access roads.

Boeing Corporation Santa Susana Field Lab Projects, MWH Americas, Inc., Los Angeles County, California, 2001-2008. Principal investigator, field director and report author for six Class III inventories/Phase I surveys required for maintenance, hazardous waste clean-up and other activities on the Santa Susana Field Lab; and evaluation and preliminary condition assessment for NRHP listed rock art site CA-LAN-1072 (Burro Flats).

Carrizo Plain National Monument Projects, Carrizo Plain National Monument/BLM Bakersfield Field Office, San Luis Obispo and Kern counties, California, 2001-2008. Principal Investigator, field director and senior report author for six projects/contracts, consisting of NHPA Class II and III inventories of over 14,400 acres for Section 110 compliance; documentation and condition assessment of the Saucito pictograph site; NRHP nomination and listing, at national level of significance, of a 24 site district, for Section 106 compliance; and a NHL nomination of an 89-site district for Section 106 compliance.

Dead End Canyon Site Assessment, Epsilon Systems Solutions, NAWS China Lake, Inyo County, California, 2007. Principal Investigator, field director and report author for a petroglyph site condition assessment; and an NRHP evaluation of a large village for Section 106 compliance, involving surface collection and mapping of house pits.

Lancaster Retention Basin Survey, Impact Sciences, Lancaster, Los Angeles County, California, 2007. Principal investigator and report author for Phase I archaeological survey of 1.5-acre retention basin.

Vintage Well Pad Survey, Vintage Production California, Tejon Ranch, Kern County, California, 2006. Principal Investigator and report author for a Phase I archaeological survey of a well-pad.

Hueneme Pipeline Survey, City of Hueneme, Wastewater Division, Hueneme, Ventura County, California, 2006. Principal Investigator, field director, report author for a Class III inventory/Phase I survey of a 3400 linear feet pipeline route, requiring SHPO consultation.

Searles Lake High-Stand Shoreline Survey, Bureau of Land Management, San Bernardino County, California, 2005. Principal Investigator, field director and report author for a Class III inventory of the high-stand (Late Pleistocene) pluvial lake shoreline (2,343 acres) of the Christmas Canyon sub-basin of Searles Valley.

Tejon Ranch Water Management and Exchange WRMWSD 850 Canal/Reservoir No. 1 Pumpback Project, Tejon Ranch Company, Tejon Ranch, Kern County, California, 2003-2004. Principal Investigator, field director and report author for a Phase I archaeological survey of 1268 acres related to water rights and usage.

Christmas Canyon Site Assessment, Bureau of Land Management, San Bernardino County, California, 2003. Principal Investigator, field director and report author for an assessment of 16 surface sites within the Christmas Canyon area of the Searles Lake Basin.

Hoover Dam By-Pass Project, CH2M Hill, Colorado River Valley, California and Nevada, 2000. Principal Investigator and report co-author of an ethnohistoric overview and Traditional Cultural Properties nomination for sites associated with the Hoover Dam By-Pass.

Newhall Ranch Projects, Newhall Land and Farms/Lennar Homes, Valencia, Los Angeles County, California, 1993-2009. Principal Investigator, field director and report author for 24 separate studies/contracts involving Phase I CEQA studies and NHPA Class III inventories of approximately 20,000 acres, Class II test excavations at 11 prehistoric sites, and Class III data recovery at one site.

Golden Queen Mine Projects, Golden Queen Mining Company, Rosamond, Kern County, California, 1994-2007. Principal Investigator, field director and report author for five projects/contracts involving a CEQA Phase I study of 640 acres total, Phase II test excavations

of nine historical (1900-1910 mining related) sites, and Phase III data recoveries (including HABS/HAER documentation) of four sites, one of which was a large historical mining ghost town with about 60 structures.

Fort Irwin Rock Art Projects, NTC Fort Irwin, Barstow, San Bernardino County, California, 1997-1999. Principal Investigator, field director and report author for three projects/contracts, involving a NHPA Class III inventory of 2000 acres at "The Whale;" rock art site documentation and assessment of three petroglyph sites; testing, rock art documentation and Section 106 evaluation at Sally's Rockshelter.

BLM Land Exchange Inventories and Assessment, Conservation Partners, Inc., Santa Barbara, Tulare, Kern and Kings counties, California, 1999-2000. Principal Investigator, field director and report author for seven projects/contracts requiring Class III inventories of 5,221 acres, and one project requiring limited testing and determinations of NRHP eligibility for four sites.

Class II Inventory, NAWS China Lake, Inyo and San Bernardino counties, California, 1982-1983. Co-principal Investigator, field director and report co-author of a sample survey of the North and South Ranges of the China Lake NWC, representing approximately 10,000 inventoried acres.

LADWP Well Pad Study, Los Angeles Department of Water and Power, Inyo County, California, 1982. Principal Investigator, field director and report author, archaeological assessments of four geothermal well pads locations in the Coso KGRA, adjacent to Sugarloaf Mountain.

Curriculum Vita: Boris Poff, Ph.D.

Education:	Ph.D. 2007 Northern Arizona University - Flagstaff, AZ. (Forest Science) M.S. 2002 Northern Arizona University - Flagstaff, AZ. (Forestry) B.A. 1993 San Jose State University - San Jose, CA. (Journalism) A.A. 1989 Sacramento City College, Sacramento, CA. (Communications)	
Related	June 2008 – Present	
Keiateu Work	Department of the Interior, National Park Service, Mojave National Preserve	
Experience:	Barstow, California	
	Title: Hydrologist, Resources Specialist	
	May 2006 – January 2008 (and as volunteer until May 2008)	
	Department of the Agriculture, United States Forest Service, Rocky Mountain	
	Research Station	
	Flagstaff, Arizona Title: Hydrologist	
•	August 2003 – May 2006	
	Department of the Agriculture, United States Forest Service, Rocky Mountain Research Station	
	Flagstaff, Arizona	
	Title: Hydrologic Technician	
	January 2000 –June 2003	
	Northern Arizona University	
	School of Forestry	
	Hydrology Lab	
	Flagstaff, Arizona Title: Research Assistant	
	Title. Research Assistant	
Affiliations:	Northern Arizona Type 2 Incident Management Team – MEDL(t)	
Alimations.	Society of American Foresters – Member	
	American Water Resources Association – Member	
	George Wright Society – Member	
	Arizona Nevada Academy of Science – Board of Governors	
Other	Tooknical Weiter/Product Safety Engineer Bookford Engineering Coming	
Experience	 Technical Writer/Product Safety Engineer: Rockford Engineering Services Sunol, CA/Dreieich Germany 1991-1993 	
	• Vice-Director: Class 22 Ltd., London, UK 1994-1998	
	EMT: Guardian Medical Transport, Flagstaff, AZ 2004-2005	
	Ski Patrol: Arizona Snowbowl, Flagstaff, AZ 2004-2008	

RESUME

DAVID I. MARCUS June 2010 P.O. Box 1287 Berkeley, CA 94701-1287

Employment

Self-employed, March 1981 - Present

Consultant on energy and electricity issues. Clients have included Imperial Irrigation District, the cities of Albuquerque and Boulder, the Rural Electrification Administration (REA), BPA, EPA, the Attorney Generals of California and New Mexico, alternative energy and cogeneration developers, environmental groups, labor unions, other energy consultants, and the Navajo Nation. Projects have included economic analyses of utility resource options and power contracts, utility restructuring, utility bankruptcy, nuclear power plants, non-utility cogeneration plants, and offshore oil and hydroelectric projects. Experienced user of production cost models to evaluate utility economics. Very familiar with western U.S. grid (WSCC) electric resources and transmission systems and their operation and economics. Have also performed EIS reviews, need analyses of proposed coal, gas and hydro powerplants, transmission lines, and coal mines. Have presented expert testimony before FERC, the California Energy Commission, the Public Utility Commissions of California, New Mexico, and Colorado, the Interstate Commerce Commission, and the U.S. Congress.

Environmental Defense Fund (EDF), October 1983 - April 1985

Economic analyst, employed half time at EDF's Berkeley, CA office. Analyzed nuclear power plant economics and coal plant sulfur emissions in New York state, using ELFIN model. Wrote critique of Federal coal leasing proposals for New Mexico and analysis of southwest U.S. markets for proposed New Mexico coal-fired power plants.

California Energy Commission (CEC), January 1980 - February 1981

Advisor to Commissioner. Wrote "California Electricity Needs," Chapter 1 of <u>Electricity Tomorrow</u>, part of the CEC's 1980 Biennial Report. Testified before California PUC and coauthored CEC staff brief on alternatives to the proposed 2500 megawatt Allen-Warner Valley coal project.

CEC, October 1977 - December 1979

Worked for CEC's Policy and Program Evaluation Office. Analyzed supply-side alternatives to the proposed Sundesert nuclear power plant and the proposed Point Concepcion LNG terminal. Was the CEC's technical expert in PG&E et. al. vs. CEC lawsuit, in which the U.S. Supreme Court ultimately upheld the CEC's authority to regulate nuclear powerplant siting.

Energy and Resources Group, U.C. Berkeley, Summer 1976

Developed a computer program to estimate the number of fatalities in the first month after a major meltdown accident at a nuclear power plant.

Federal Energy Agency (FEA), April- May 1976

Consultant on North Slope Crude. Where To? How?, a study by FEA's San Francisco office on the disposition of Alaskan oil.

Angeles Chapter, Sierra Club, September 1974 - August 1975

Reviewed EIRs and EISs. Chaired EIR Subcommittee of the Conservation Committee of the Angeles Chapter, January - August 1975.

Bechtel Power Corporation (BPC), June 1973 - April 1974

Planning and Scheduling Engineer at BPC's Norwalk, California office. Worked on construction planning for the Vogtle nuclear power plant (in Georgia).

Education

Energy and Resources Group, U.C. Berkeley, 1975 - 1977

M.A. in Energy and Resources. Two year master's degree program, with course work ranging from economics to engineering, law to public policy. Master's thesis on the causes of the 1972-77 boom in the price of yellowcake (uranium ore). Fully supported by scholarship from National Science Foundation.

University of California, San Diego, 1969 - 1973

B.A. in Mathematics. Graduated with honors. Junior year abroad at Trinity College, Dublin, Ireland.

Professional Publications

"Rate Making for Sales of Power to Public Utilities," with Michael D. Yokell, in <u>Public Utilities Fortnightly</u>, August 2, 1984.

Curriculum Vitae

VERNON C. BLEICH

Eastern Sierra Center for Applied Population Ecology (ESCAPE)

11537 36 X St. SW Dickinson, ND 58601 760/937-5020 701/225-7834 vbleich@ndsupernet.com



Personal Interests:

Hockey (I am a former goaltender), family life, banjo, gardening, hunting, and fishing.

Professional Goals:

To help ensure the persistence of populations of large mammals and their habitats through the study of their ecology and behavior, to apply that knowledge in meaningful conservation efforts, and to impart that knowledge through professional activities including publications, teaching, and other public contacts.

Education:

- Ph.D. University of Alaska Fairbanks (Wildlife Biology, 1993). Thesis: "Sexual Segregation in Desert-Dwelling Mountain Sheep."
- M.A. California State University, Long Beach (Biology, 1973). Thesis: "Ecology of Rodents at the Seal Beach Naval Weapons Station, Fallbrook Annex, San Diego County, California."
- B.S. California State University, Long Beach (Zoology, 1970).

Professional Background:

- Senior Conservation Scientist, Eastern Sierra Center for Applied Population Ecology (2007 present). I provide expertise on natural resource conservation issues, particularly as they relate to large mammals in desert, mountain, and plains environments.
- Senior Environmental Scientist, California Department of Fish and Game (2001 2007; now retired). I served as the project leader for the Sierra Nevada Bighorn Sheep Recovery Program, a project to conserve mountain sheep in that range and restore them to formerly occupied habitats. I continued to function as the Regional Large Mammal and Desert

- specialist, with an emphasis on mountain sheep and mule deer in southeastern California. I also served as chair of the Sierra Nevada Bighorn Sheep Scientific Advisory Group, and continued to serve as a member of the Peninsular Bighorn Sheep Recovery Team.
- Senior Wildlife Biologist, California Department of Fish and Game (1999 2001). I served as the Regional Large Mammal and Desert Specialist, with an emphasis on mountain sheep and mule deer in southeastern California. At the request of the U.S. Fish and Wildlife Service I was appointed by the Department of Fish and Game to serve on the Peninsular Bighorn Sheep Recovery Team.
- Senior Wildlife Biologist, California Department of Fish and Game (1993 1999). I served as the Regional Large Mammal Specialist and supervised the activities of 5 journeyman wildlife biologists in eastern California. Emphasis species included mountain sheep, mule deer, pronghorn, tule elk, and sage grouse in eastern California.
- Associate Wildlife Biologist, California Department of Fish and Game (1986 1993). I served as the Regional mountain sheep specialist, and supervised the activities of 5 journeyman wildlife biologists in eastern California. Emphasis species included mountain sheep, mule deer, pronghorn, tule elk, and sage grouse in eastern California.
- Project Leader, California Department of Fish and Game, Federal Aid in Wildlife Restoration Project W-26-D (1978 1986). I supervised 2 technicians, and planned and implemented habitat management projects designed to benefit waterfowl, sage grouse, mule deer, and mountain sheep in eastern California.
- Assistant Wildlife Biologist, California Department of Fish and Game (1975 1978). I was an Area Biologist responsible for management of mule deer, mountain sheep, and the Endangered Stephens' kangaroo rat, as well as for environmental review activities in Riverside and San Bernardino counties, California.
- Junior Aquatic Biologist, California Department of Fish and Game (1974 1975). I was responsible for fisheries management activities, with an emphasis on wild trout and the Endangered unarmored three-spined stickleback in Los Angeles and San Bernardino counties, California.
- Park Ranger, Department of Recreation, City of Long Beach, California (1970 1973). I was responsible for public education activities, routine patrol, and coordination with other law enforcement agencies in El Dorado Regional Park, Long Beach, California.

Academic Appointments:

- Research Professor, Department of Natural Resources and Environmental Science, University of Nevada, Reno (2007 Present).
- Affiliate Faculty, Department of Biological Sciences, Idaho State University, Pocatello, Idaho (2005 Present)

- Senior Research Associate, Institute of Arctic Biology, University of Alaska Fairbanks, Fairbanks, Alaska (1998 Present).
- Affiliate Assistant Professor of Wildlife Ecology, Department of Biology and Wildlife, University of Alaska Fairbanks, Fairbanks, Alaska (1993 1998).
- Research Associate, Institute of Arctic Biology, University of Alaska Fairbanks, Fairbanks, Alaska (1993 present).
- Adjunct Assistant Professor of Natural Resource Science, Department of Natural Resource Science, University of Rhode Island, Kingston (1992 1994).
- Instructor, Mt. San Jacinto College, San Jacinto, California. I instructed an introductory course entitled, "Wildlife Management" (1976 1986).
- Assistant Professor, Department of Biology, Rio Hondo College, Whittier, California. I instructed lecture and laboratory sections of General Zoology (biology major emphasis), General Biology (general education emphasis), and Marine Biology (1973 1974).
- Teaching Assistant, California State University, Long Beach. I instructed laboratory sections of General Biology (for non-majors) and General Zoology (for majors) (1972 1973).
- Graduate Research Assistant, California State University, Long Beach. I prepared specimens and curated the collection of mammals (> 10,000 specimens) in the Bird and Mammal Museum, and instructed laboratory sections of General Ecology (for majors), General Mammalogy (for majors), and Advanced Mammalogy (1970-1972).

Graduate Student Supervision:

Chair of Graduate Committee:

Kevin L. Monteith (Ph.D.), Reproductive ecology of migratory and resident mule deer in the eastern Sierra Nevada, California. Idaho State University, Pocatello. Graduation expected June, 2010. Co-chair with Dr. R. T. Bowyer.

Michael W. Oehler (M.S.), Ecology of mountain sheep: effects of mining and precipitation. University of Alaska Fairbanks. *Graduated December 1999*. Current position: Wildlife Biologist, National Park Service, Theodore Roosevelt National Park, Medora, North Dakota. Co-chair with Dr. R. T. Bowyer.

Becky M. Pierce (Ph.D.), Predator-prey dynamics between mountain lions and mule deer: effects on distribution, population regulation, habitat selection and prey selection. University of Alaska Fairbanks. *Graduated May 1999*. Current position: Associate Wildlife Biologist, California Department of Fish and Game. Co-chair with Dr. R. T. Bowyer.

Graduate Committee Membership:

Cody J. McKee (M.S.), Ecology of mule deer in the eastern Mojave Desert, California. University of Nevada, Reno (Graduation expected June 2011).

Jeffrey T. Villepique (Ph.D.), Interactions between mountain lions and mountain sheep: an assessment of forage benefits and predation risk. Idaho State University, Pocatello (Graduation expected December 2010).

Sabrina Morano (Ph.D.), Reproductive biology of mule deer in the White Mountains, Inyo and Mono counties, California. University of Nevada, Reno (Graduation expected June 2011).

Jericho C. Whiting (Ph.D.), Behavior and ecology of reintroduced Rocky Mountain bighorn sheep. Idaho State University, Pocatello. *Graduated December 2008*. Current position: Wildlife Biologist, Idaho National Laboratory, Twin Falls.

Cody A. Schroeder (M.S.), Habitat selection by mountain sheep: forage benefits or risk of predation? Idaho State University, Pocatello. *Graduated September 2007*. Current position: Doctoral Student, University of Nevada, Reno.

Jason P. Marshal (Ph.D.), Foraging ecology and water relationships of mule deer in a Sonoran Desert environment. University of Arizona, Tucson. *Graduated May 2005*. Current position: Lecturer, University of the Witwatersrand, South Africa.

Heather E. Johnson (M.S.), Antler breakage in tule elk in Owens Valley, California: nutritional causes and behavioral consequences. University of Arizona, Tucson. *Graduated January 2004*. Current position: Doctoral Student and Research Associate, University of Montana, Missoula.

Jennifer L. Rechel (Ph.D. [Geography]), Influence of neighborhood effects and friction surfaces on the spatial distribution and movement strategies of desert-dwelling mountain sheep (Ovis canadensis). University of California, Riverside. Graduated August 2003. Current position: Wildlife Biologist, U.S. Forest Service, Pacific Southwest Forest and Range Experiment Station, Riverside, California.

Holly B. Ernest (Ph.D.), Ecological genetics of mountain lions (*Puma concolor*) in California. University of California, Davis. *Graduated December 2001*. Current position: Research Geneticist, School of Veterinary Medicine, University of California, Davis.

Esther S. Rubin (Ph.D.), The ecology of bighorn sheep (*Ovis canadensis*) in the peninsular ranges of California. University of California, Davis. *Graduated December 2000*. Current position: Conservation Biologist, The Conservation Biology Institute, Borrego Springs, California.

Nancy G. Andrew (M.S.), Demography and habitat use of desert-dwelling mountain sheep in the East Chocolate Mountains, Imperial County, California. University of Rhode Island, Kingston. *Graduated May 1994*. Current position: Staff Environmental Scientist, California Department of Fish and Game.

Awards and Honors:

Honorary Lifetime Membership, 2010 (in recognition of long and continuing service to the Society for the Conservation of Bighorn Sheep)

Wild Sheep Biologist Wall of Fame Award, 2009 (in recognition of significant contributions to the conservation of wild sheep in North America) (Wild Sheep Foundation)

Lifetime Achievement Award, 2008 (In recognition of contributions toward the conservation of mountain sheep in California) (California Chapter of the Foundation for North American Wild Sheep)

Honor Plaque 2007 (Group Award, in recognition of outstanding contributions toward the recovery of mountain sheep in the Sierra Nevada) (Desert Bighorn Council)

State Statesman Award, 2006 (In recognition of outstanding contributions to the wild sheep of California) (Foundation for North American Wild Sheep)

Trail Blazer Award, 2004 (In recognition of efforts on behalf of mountain sheep conservation in California) (California Chapter of the Foundation for North American Wild Sheep)

Director's Achievement Award, 2004 (In recognition of editorial services for *California Fish and Game* (California Department of Fish and Game)

Annual Achievement Award, 2004 (In recognition of conservation of mule deer and their habitats) (Southern California Chapter, California Deer Association)

Alumni Achievement Award for Professional Excellence, 2002 (University of Alaska Alumni Association)

Outstanding Alumnus Award, 2002 (College of Science, Engineering, and Mathematics, University of Alaska Fairbanks)

Sustained Superior Accomplishment Award, 2002 (California Department of Fish and Game)

The Desert Ram Award, 2001 (Desert Bighorn Council)

Outstanding Publication Award for a Monograph, 1998 (The Wildlife Society)

Award of Appreciation, 1998 (San Fernando Valley Chapter of Safari Club International, CA)

Professional Membership, Boone and Crockett Club, 1998 (Boone and Crockett Club)

Certificate of Appreciation, 1997 (Society for the Conservation of Bighorn Sheep)

"Ol' Irongut" Award, 1996 (California Department of Fish and Game, Division of Air Services)

Resources Agency/University of California Fellowship, 1996 (Sponsored jointly by the California Resources Agency and the University of California, Davis)

Director's Achievement Award, 1992 (California Department of Fish and Game)

Outstanding Biology Department Alumnus, 1988 (California State University, Long Beach)

Professional of the Year, 1985 (Western Section of The Wildlife Society)

California Wildlife Officer of the Year, 1984 (Shikar-Safari Foundation)

Award of Honor, 1984 (Society for the Conservation of Bighorn Sheep)

Honorary Lifetime Membership, 1984 (Banning [California] Sportsman's Club)

Professional and Fraternal Memberships:

American Society of Mammalogists (Life Member)
The Boone and Crockett Club (Professional Member)
The Wildlife Society
Society for Conservation Biology
Southwestern Association of Naturalists
Wild Sheep Foundation
National Rifle Association
California Chapter, Foundation for North American Wild Sheep
Society for the Conservation of Bighorn Sheep
Minnesota-Wisconsin Chapter, Foundation for North American
Wild Sheep

Licenses and Certifications:

California Community College Credential (# 45476, Lifetime)
State of California Blaster's License (# 2087)
Certified in Wildlife Capture Techniques (California Department of Fish and Game)
Certified Wildlife Biologist (1981 - The Wildlife Society)
California Hunter Safety Instructor (# 1984)

Other Professional Activities:

Editorial Activities:

Editor-in-Chief, California Fish and Game (2009 - present)

Associate Editor, California Fish and Game (1995 - 2009)

Editor, Transactions of the Western Section of The Wildlife Society (1988)

Associate Editor, Transactions of the Western Section of The Wildlife Society (1986-87)

Reviewer for Journals:

Conservation Biology, Journal of Wildlife Management, Wildlife Society Bulletin, Journal of Mammalogy, The Condor, California Fish and Game, Transactions of the Western Section of the Wildlife Society, Western North American Naturalist, Desert Bighorn Council Transactions, Southwestern Naturalist, Proceedings of the Northern Wild Sheep and Goat Council, Journal of Wildlife Diseases, Great Basin Naturalist, Bulletin of the Southern California Academy of Sciences, Journal of Zoology (London), Vida Silvestre Neotropical, Wildlife Biology, Wildlife Monographs, European Journal of Wildlife Research, Biological Conservation, Journal of Arid Environments (An average of about 12 reviews per year).

Other Activities:

2008 - Present: Member, Big Game Records Committee, Boone and Crockett Club

2007 - Present: Advisory Board Member, Texas Bighorn Society

2007 - Present: Science Advisor, Society for the Conservation of Bighorn Sheep

2006 - Present: Member, Ad Hoc Committee on Professional Membership, Boone and Crockett Club.

1998 - 2002: Coach and member of Board of Trustees, Sierra Roller Hockey League.

1995-96: Vice Chairman, The Desert Bighorn Council.

1994-98: Member, Board of Directors, The Wildlife Forensic DNA Foundation.

1993 - Present: Member, Wildlife Management Professional Advisory Committee, Foundation for North American Wild Sheep.

1991: Member, Committee on Support of Symposia and Conferences, The Wildlife Society.

- 1989-1993: Member, Board of Trustees, Friends of the Eastern California Museum; Vice-chairman, 1991-1992; Chairman, 1993.
- 1987-1988: Chairman, The Desert Bighorn Council.
- 1988: Co-chairman, Wildlife Water Development Symposium, Western Section of The Wildlife Society.

Refereed Publications:

- **Bleich, V. C.** *In review.* Perceived threats to mountain sheep: levels of concordance among western states, provinces, and territories. Desert Bighorn Council Transactions.
- Marshal, J. P., and V. C. Bleich. *In review*. Geographic variation in relationships between El Nino Southern Oscillation and mule deer harvest in California, USA. Canadian Journal of Zoology.
- Holl, S. A., and V. C. Bleich. *In review*. Responses of large mammals to fire and rain in the San Gabriel Mountains, California. Southwestern Naturalist.
- Marshal, J. P., V. C. Bleich, P. R. Krausman, A. Neibergs, M. L. Reed, and N. G. Andrew. *In review*. Habitat use and diets of mule deer and feral ass in the Sonoran Desert. Journal of Arid Environments.
- Whiting, J. C., R. T. Bowyer, J. T. Flinders, V. C. Bleich, and J. G. Kie. *In press*. Sexual segregation and use of water by bighorn sheep: implications for conservation. Animal Conservation.
- Villepique, J. T., B. M. Pierce, V. C. Bleich, and R. T. Bowyer. *In press*. Diets of mountain lions following a decline in mule deer numbers. Southwestern Naturalist.
- **Bleich, V. C.** In press. Considerations for reprovisioning wildlife water developments: mountain sheep in desert ecosystems. California Fish and Game.
- Gibson, R. M., V. C. Bleich, C. W. McCarthy, and T. L. Russi. *In press*. Recreational hunting can lower population size in Greater Sage-grouse. Studies in Avian Biology.
- Schroeder, C. A., R. T. Bowyer, V. C. Bleich, and T. R. Stephenson. *In press*. Ramifications of sexual segregation for an endangered alpine ungulate: Sierra Nevada bighorn sheep, *Ovis canadensis sierrae*. Arctic, Antarctic, and Alpine Research.
- Bleich, V. C., J. P. Marshal, and N. G. Andrew. 2010. Habitat use by a desert ungulate: predicting effects of water availability on mountain sheep. Journal of Arid Environments 74:638-645.
- Krausman, P. R., D. E. Naugle, M. R. Frisina, R. Northrup, V. C. Bleich, W. M. Block, M. C.

- Wallace, and J. D. Wright. 2009. Livestock grazing, wildlife habitat, and rangeland values. Rangelands 31(5):15-19.
- Holl, S. A., and V. C. Bleich. 2009. Reconstructing the San Gabriel Mountains bighorn sheep population. California Fish and Game 95:77-87.
- Clifford, D. L., B. A. Schumaker, T. R. Stephenson, V. C. Bleich, M. Leonard-Cahn, B. J. Gonzales, W. M. Boyce, and J. A. K. Mazet. 2009. Assessing disease risk at the wildlife-livestock interface: a study of Sierra Nevada bighorn sheep. Biological Conservation 142:2559-2568.
- Bleich, V. C., J. H. Davis, J. P. Marshal, S. G. Torres, and B. J. Gonzales. 2009. Mining activity and habitat use by mountain sheep. European Journal of Wildlife Research 55:183-191.
- Pease, K. M., A. H. Freedman, J. P. Pollinger, J. E. McCormack, W. Buermann, J. Rodzen, J. Banks, E. Meredith, V. C. Bleich, R. J. Schaefer, K. Jones, and R. K. Wayne. 2009. Landscape genetics of California mule deer (*Odocoileus hemionus*): the roles of ecological and historical factors in generating differentiation. Molecular Ecology 18:1848-1862.
- Duffy, L. K., M. W. Oehler, R. T. Bowyer, and V. C. Bleich. 2009. Mountain sheep: an environmental epidemiological survey of variation in metal exposure and physiological biomarkers following mine development. American Journal of Environmental Sciences 5:296-303.
- Marshal, J. P., J. W. Cain III, V. C. Bleich, and S. S. Rosenstock. 2009. Intrinsic and extrinsic sources of variation in the population dynamics of an arid-environment large herbivore. Canadian Journal of Zoology 87:103-111.
- Villepique, J. T., V. C. Bleich, R. A. Botta, B. M. Pierce, T. R. Stephenson, and R. T. Bowyer. 2008. Evaluating GPS collar error: a critical evaluation of Televilt POSREC-Science™ Collars and a method for screening location data. California Fish and Game 94:155-168.
- Bleich, V. C., H. E. Johnson, S. A. Holl, L. Konde, S. G. Torres, and P. R. Krausman. 2008. Fire history in a chaparral ecosystem: implications for conservation of a native ungulate. Rangeland Ecology and Management 61:571-579.
- Marshal, J. P., P. R. Krausman, and V. C. Bleich. 2008. Body condition of desert mule deer is related to rainfall. Southwestern Naturalist 53:311-318.
- Marshal, J. P., V. C. Bleich, and N. G. Andrew. 2008. Evidence for interspecific competition between feral ass and mountain sheep in a desert environment. Wildlife Biology 14:228-236.
- Bleich, V. C., and R. A. Weaver. 2007. Status of mountain sheep in California: comparisons between 1957 and 2007. Desert Bighorn Council Transactions 49:55-67.

- Wehausen, J. D., and V. C. Bleich. 2007. Influence of aerial search time on survey results. Desert Bighorn Council Transactions 49:23-29.
- Bowyer, R. T., V. C. Bleich, X. Manteca, J. C. Whiting, and K. M. Stewart. 2007. Sociality, mate choice, and timing of mating in American bison (*Bison bison*): effects of large males. Ethology 113:1048-1060.
- Epps, C. W., J. D. Wehausen, V. C. Bleich, S. G. Torres, and J. S. Brashares. 2007. Optimizing dispersal and corridor models using landscape genetics. Journal of Applied Ecology 44:714-724.
- Bleich, V. C., T. R. Stephenson, B. M. Pierce, and M. J. Warner. 2007. Body condition of mule deer while injured and following recovery. Southwestern Naturalist 52:164-167.
- Johnson, H. E., V. C. Bleich, and P. R. Krausman. 2007. Mineral deficiencies in tule elk, Owens Valley, California. Journal of Wildlife Diseases 43:61-74.
- Johnson, H. E., V. C. Bleich, P. R. Krausman, and J. L. Koprowski. 2007. Effects of antler breakage on mating behavior in male tule elk (*Cervus elaphus nannodes*). European Journal of Wildlife Research 53:9-15.
- Bleich, V. C. 2006. Mountain sheep in California: perspectives on the past, and prospects for the future. Biennial Symposium of the Northern Wild Sheep and Goat Council 15:1-13.
- Marshal, J. P., V. C. Bleich, P. R. Krausman, M. L. Reed, and N. G. Andrew. 2006. [Invited paper] Factors affecting habitat use and distribution of mule deer in an arid environment. Wildlife Society Bulletin 34:609-619.
- Bleich, V. C., N. G. Andrew, M. J. Martin, G. P. Mulcahy, A. M. Pauli, and S. S. Rosenstock. 2006. [Invited paper] Quality of water available to wildlife: comparisons among artificial and natural sources. Wildlife Society Bulletin 34:627-632.
- Bleich, V. C., S. Nelson, P. J. Wood, H. R. Wood, and R. A. Noles. 2006. [Invited paper] Retrofitting gallinaceous guzzlers: enhancing water availability and safety for wildlife. Wildlife Society Bulletin 34:633-636.
- Marshal, J. P., P. R. Krausman, V. C. Bleich, S. S. Rosenstock, and W. B. Ballard. 2006. [Invited paper] Gradients of forage biomass and ungulate use near wildlife water developments. Wildlife Society Bulletin 34:620-626.
- Rominger, E. M., V. C. Bleich, and E. J. Goldstein. 2006. [Letter] Bighorn sheep, mountain lions, and the ethics of conservation. Conservation Biology 20:1041.
- Marshal, J. P., L. M. Lesicka, V. C. Bleich, P. R. Krausman, G. P. Mulcahy, and N. G. Andrew. 2006. Demography of desert mule deer in southeastern California. California Fish and Game 92:55-66.

- Bleich, V. C., B. M. Pierce, J. Jones, and R. T. Bowyer. 2006. Variance in survival rates among young mule deer in the Sierra Nevada, California. California Fish and Game 92:24-38.
- Johnson, H. E., V. C. Bleich, and P. R. Krausman. 2005. Antler breakage in tule elk, Owens Valley, California. Journal of Wildlife Management 69:1747-1752.
- Rosenstock, S. S., V. C. Bleich, M. J. Rabe, and C. Reggiardo. 2005. Water quality at wildlife water sources in the Sonoran Desert, United States. Rangeland Ecology and Management 58:623-627.
- Marshal, J. P., P. R. Krausman, and V. C. Bleich. 2005. Rainfall, temperature, and forage dynamics affect nutritional quality of desert mule deer forage. Rangeland Ecology and Management 58:360-365.
- Bleich, V. C., J. T. Villepique, T. R. Stephenson, B. M. Pierce, and G. M. Kutliyev. 2005. Efficacy of aerial telemetry as an aid to capture specific individuals: a comparison of two techniques. Wildlife Society Bulletin 33:332-336.
- **Bleich, V. C.** 2005. [Invited paper] In my opinion: politics, promises, and illogical legislation confound wildlife conservation. Wildlife Society Bulletin 33:66-73.
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- **Bleich, V. C.** 1979. [Review of] Wild geese, by M. A. Ogilvie. California Fish and Game 66:282-283.
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- Bleich, V. C. 2009. A brief history of the CDFG bighorn sheep habitat enhancement program. California Wild Sheep, Winter 2009:8-10.
- Bleich, V. C. 2009. Some thoughts on "Water dispensaries keep mountain bighorn sheep alive. California Wild Sheep, Fall 2009:28-30.
- **Bleich, V. C.** 2009. Parting shots [letter]. Bighorn (The Official Magazine of the Texas Bighorn Society), Spring 2009:30.
- **Bleich, V. C.** 2009. Implications of fire history for conserving bighorn sheep. Boone and Crockett Club Trophy Points 3 (July 2009). Available at: http://www.boone-crockett.org/news/featured_story.asp?area=news&ID=52
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- Bleich, V. C., H. E. Johnson, S. A. Holl, L. Konde, S. G. Torres, and P. R. Krausman. 2009. Implications of fire history for conserving bighorn sheep. California Wild Sheep, Summer 2009:29.
- **Bleich, V. C.** 2009. Some thoughts on water development in wilderness. California Wild Sheep, Spring 2009:8-9.
- Bleich, V. C. 2008. Mountain sheep in California: some perspectives on the past, and prospects for the future (Part IV). California Wild Sheep, Fall 2008:14-15.
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- Davis, J. H., and V. C. Bleich. 1980. Time-lapse photography: a new focus on wildlife. Outdoor California 41(4):7-9.
- Coombes, L. J., and V. C. Bleich. 1979. Horizontal wells: the DFG's new slant on water for wildlife. Outdoor California 40(3):10-12.

Presentations at Professional Meetings

From 1972 to the present, I have been an author or coauthor of more than 100 presentations at professional meetings. I was selected to present a keynote address, "Ecology of mountain sheep: Ramifications for disease transmission and population persistence" at the April 2007 Workshop on Respiratory Disease in Mountain Sheep: Knowledge Gaps and Future Research which was held at the University of California, Davis. Details pertaining to these presentations are available upon request.

Grants and Fellowships

During 1973 through 2007, I competed successfully for and received project-specific funding in the amount of \$1,636,247 from internal and external sources. Details of grants and other funding received are available upon request.

Scott Cashen, M.S.

Senior Biologist / Forest Ecologist

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In his 18 years in the profession, Scott Cashen has consulted on projects pertaining to wildlife and fisheries ecology, avian biology, wetland restoration, and forest management. Because of his varied experience, Mr. Cashen is knowledgeable of the link between the various disciplines of natural resource management, and he is a versatile scientist.

Mr. Cashen's employment experience includes work as an expert witness, wildlife biologist, consulting forester, and instructor of Wildlife Management. He has worked throughout California, and he is knowledgeable of the different terrestrial and aquatic species and habitats present in the state.

Mr. Cashen is an accomplished birder and is able to identify bird species by sight and sound. His knowledge has enabled him to survey birds throughout the United States and instruct others on avian identification. Mr. Cashen's research on avian use of restored wetlands is currently being used by the United States Fish and Wildlife Service to design wetlands for specific "target" species, and as a model for other restored wildlife habitat monitoring projects in Pennsylvania. In addition to his bird experience, Mr. Cashen has surveyed for carnivores, bighorn sheep, and other mammals; special-status amphibian species; and various fish species.

PROFESSIONAL EXPERIENCE

Litigation Support / Expert Witness

Mr. Cashen serves as the biological resources expert for the San Francisco law firm of Adams Broadwell Joseph & Cardozo. He is responsible for reviewing CEQA/NEPA documents, assessing biological resource issues, preparing written comments, providing public testimony, and interfacing with public resource agencies.

REPRESENTATIVE EXPERIENCE

- <u>Victorville 2 Solar-Gas Hybrid Power Project</u>: Victorville, CA (338-acre natural gas and solar energy facility) – Review of CEQA equivalent documents and preparation of written documents.
- Avenal Energy Power Plant: Avenal, CA (148-acre natural gas facility) Review of CEQA equivalent documents and preparation of written documents.
- <u>Ivanpah Solar Electric Generating System</u>: Ivanpah, CA (3700-acre solar facility) Review of CEQA equivalent documents and preparation of written documents.
- Carrizo Energy Solar Farm: San Luis Obispo County, CA (640-acre solar energy

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- facility) Review of CEQA equivalent documents. Preparation of data requests, comments on Preliminary Staff Assessment, comments on wildlife corridor model (CEQA equivalent documents).
- <u>Live Oak Master Plan</u>: Hanford, CA (390-acre housing development) Review of CEQA documents and preparation of comment letter.
- Rollingwood: Vallejo, CA (214-unit housing development) Review of CEQA documents and preparation of comment letter.
- Columbus Salame: Fairfield, CA (430,000 ft² food processing plant) Review of CEQA documents and preparation of comment letter.
- Concord Naval Weapons Station: Concord, CA (5028-acre redevelopment) –
 Review of CEQA documents, preparation of comment letters, and provision of
 public testimony at County hearings.
- <u>Chula Vista Bayfront Master Plan</u>: Chula Vista, CA (556-acre development) Review of CEQA documents and preparation of comment letter.
- Beacon Solar Energy Project: California City, CA (2012-acre solar facility) –
 Review of CEQA equivalent and NEPA documents. Preparation of data requests,
 comments on Preliminary Staff Assessment, comments on Incidental Take Permit
 Application. Expert witness providing testimony at California Energy
 Commission hearings.
- Solar One Power Project: San Bernardino County, CA (8230-acre solar facility) –
 Review of CEQA equivalent and NEPA documents and preparation of data
 requests. Expert witness providing testimony at California Energy Commission
 hearings.
- Solar Two Power Project: Imperial County, CA (6500-acre solar facility) Review
 of CEQA equivalent and NEPA documents. Preparation of data requests and
 other documents for case record. Expert witness providing testimony at
 California Energy Commission hearings.
- Alves Ranch: Pittsburgh, CA (320-acre housing development) Review of CEQA documents.
- Roddy Ranch: Antioch, CA (640-acre housing and hotel development) Review of CEQA documents and preparation of comment letter.
- <u>Aviano</u>: Antioch, CA (320-acre housing development) Review of CEQA documents.
- Western GeoPower Power Plant and Steamfield: Geyserville, CA (887-acre geothermal facility) – Review of CEQA documents and preparation of comment letter.
- San Joaquin Solar I & II: Fresno County, CA (640-acre hybrid power plant) Review of CEQA equivalent documents and preparation of data requests.
- Sprint-Nextel Tower: Walnut Creek, CA (communications tower in open space

preserve) - Review of project documents and preparation of comment letter.

Project Management

Mr. Cashen has managed several large-scale and high profile natural resources investigations. High profile projects involving multiple resources often require consideration of differing viewpoints on how resources should be managed, and they are usually subject to intense scrutiny. Mr. Cashen is accustomed to these challenges, and he is experienced in facilitating the collaborative process to meet project objectives. In addition, the perception of high profile projects can be easily undermined if inexcusable mistakes are made. To prevent this, Mr. Cashen bases his work on solid scientific principles and proven sampling designs. He also solicits input from all project stakeholders, and provides project stakeholders with regular feedback on project progress. Mr. Cashen's educational and project background in several different natural resource disciplines enable him to consult on multiple natural resources simultaneously and address the many facets of contemporary land management in a cost-effective manner.

REPRESENTATIVE EXPERIENCE

- Forest health improvement projects Biological Resources (CDF: San Diego and Riverside Counties)
- San Diego Bark Beetle Tree Removal Project Biological Resources, Forestry, and Cultural Resources (San Diego Gas & Electric: San Diego Co.)
- San Diego Bark Beetle Tree Removal Project Forestry (San Diego County/NRCS)
- Mather Lake Resource Management Study and Plan Biological Resources, Hydrology, Soils, Recreation, Public Access, CEQA compliance, Historic Use (Sacramento County: Sacramento)
- "KV" Spotted Owl and Northern Goshawk Inventory (USFS: Plumas NF)
- Amphibian Inventory Project (USFS: Plumas NF)
- <u>San Mateo Creek Steelhead Restoration Project</u> TES species, Habitat Mapping, Hydrology, Invasive Species Eradication, Statistical Analysis (Trout Unlimited and CA Coastal Conservancy: Orange County)
- <u>Hillslope Monitoring Project</u> Forest Practice Research (CDF: throughout California)
- <u>Placer County Vernal Pool Study</u> Plant and Animal Inventory, Statistical Analysis (*Placer County: throughout Placer County*)
- Weidemann Ranch Mitigation Project Mitigation Monitoring and Environmental Compliance (Toll Brothers, Inc.: San Ramon)

- Delta Meadows State Park Special-status Species Inventory Plant and Animal Species Inventory, Special-status Species (CA State Parks: Locke)
- <u>Ion Communities Biological Resource Assessments</u> Biological Resource Assessments (Ion Communities: Riverside and San Bernardino Counties)
- <u>Del Rio Hills Biological Resource Assessment</u> Biological Resource Assessments (*The Wyro Company: Rio Vista*)

Biological Resources

Mr. Cashen has a diverse background in biology. His experience includes studies of a variety of fish and wildlife species, and work in many of California's ecosystems. Mr. Cashen's specialties include conducting comprehensive biological resource assessments, habitat restoration, species inventories, and scientific investigations. Mr. Cashen has led investigations on several special-status species, including ones focusing on the foothill yellow-legged frog, mountain yellow-legged frog, steelhead, burrowing owl, California spotted owl, northern goshawk, willow flycatcher, and forest carnivores. Mr. Cashen was responsible for the special-status species inventory of Delta Meadows State Park, and for conducting a research study for Placer County's Natural Community Conservation Plan.

REPRESENTATIVE EXPERIENCE

Avian

- <u>Study design and Lead Investigator</u> Delta Meadows State Park Special-status Species Inventory (CA State Parks: Locke)
- <u>Study design and lead bird surveyor</u> Placer County Vernal Pool Study (*Placer County: throughout Placer County*)
- Surveyor Willow flycatcher habitat mapping (USFS: Plumas NF)
- <u>Independent surveyor</u> Tolay Creek, Cullinan Ranch, and Guadacanal Village restoration projects (*Ducks Unlimited/USGS: San Pablo Bay*)
- <u>Study design and Lead Investigator</u> Bird use of restored wetlands research (*Pennsylvania Game Commission: throughout Pennsylvania*)
- <u>Study design and surveyor</u> Baseline inventory of bird species at a 400-acre site in Napa County (HCV Associates: Napa)
- <u>Surveyor</u> Baseline inventory of bird abundance following diesel spill (LFR Levine-Fricke: Suisun Bay)
- <u>Study design and lead bird surveyor</u> Green Valley Creek Riparian Restoration Site (City of Fairfield: Fairfield, CA)
- <u>Surveyor</u> Burrowing owl relocation and monitoring of artificial habitat (US Navy: Dixon, CA)

- <u>Surveyor</u> Pre-construction raptor and burrowing owl surveys (various clients and locations)
- Surveyor Backcountry bird inventory (National Park Service: Eagle, Alaska)
- <u>Lead surveyor</u> Tidal salt marsh bird surveys (*Point Reyes Bird Observatory:* throughout Bay Area)

Amphibian

- <u>Crew Leader</u> Red-legged frog, foothill yellow-legged frog, and mountain yellow-legged frog surveys (*USFS: Plumas NF*)
- <u>Surveyor</u> Foothill yellow-legged frog surveys (PG&E: North Fork Feather River)
- <u>Surveyor</u> Mountain yellow-legged frog surveys (El Dorado Irrigation District: Desolation Wilderness)
- <u>Crew Leader</u> Bullfrog eradication (Trout Unlimited: Cleveland NF)

Fish and Aquatic Resources

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

Mammals

- <u>Principal Investigator</u> Peninsular bighorn sheep resource use and behavior study (*California State Parks: Freeman Properties*)
- <u>Scientific Advisor</u> Red Panda survey and monitoring methods. Study on red panda occupancy and abundance in eastern Nepal (The Red Panda Network: CA and Nepal)
- <u>Surveyor</u> Forest carnivore surveys (University of CA: Tahoe NF)
- <u>Surveyor</u> Relocation and monitoring of salt marsh harvest mice and other small mammals (US Navy: Skagg's Island, CA)

Natural Resource Investigations / Multiple Species Studies

• <u>Scientific Review Team Member</u> – Member of the science review team assessing the effectiveness of the US Forest Service's implementation of the Herger-Feinstein Quincy Library Group Act.

- <u>Lead Consultant</u> Baseline biological resource assessments and habitat mapping for CDF management units (CDF: San Diego, San Bernardino, and Riverside Counties)
- <u>Biological Resources Expert</u> Peer review of CEQA/NEPA documents (*Adams Broadwell Joseph & Cardoza: California*)
- <u>Lead Consultant</u> Pre- and post harvest biological resource assessments of tree removal sites (SDG&E: San Diego County)
- <u>Crew Leader</u> T&E species habitat evaluation for BA in support of a steelhead restoration plan (*Trout Unlimited: Cleveland NF*)
- <u>Lead Investigator</u> Resource Management Study and Plan for Mather Lake Regional Park (County of Sacramento: Sacramento, CA)
- <u>Lead Investigator</u> Wrote Biological Resources Assessment for 1,070-acre Alfaro Ranch property (Yuba County, CA)
- <u>Lead Investigator</u> Wildlife Strike Hazard Management Plan (HCV Associates: Napa)
- <u>Lead Investigator</u> Del Rio Hills Biological Resource Assessment (The Wyro Company: Rio Vista, CA)
- <u>Lead Investigator</u> Ion Communities project sites (*Ion Communities: Riverside and San Bernardino Counties*)
- <u>Surveyor</u> Tahoe Pilot Project: CWHR validation (University of California: Tahoe NF)

Forestry

Mr. Cashen has five years of experience working as a consulting forester on projects throughout California. During that time, Mr. Cashen has consulted with landowners and timber harvesters on best 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

- <u>Lead Consultant</u> CDF fuels treatment projects (CDF: San Diego, Riverside, and San Bernardino Counties)
- <u>Lead Consultant and supervisor of harvest activities</u> San Diego Gas and Electric Bark Beetle Tree Removal Project (SDG&E: San Diego)
- <u>Crew Leader</u> Hillslope Monitoring Program (CDF: throughout California)

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• Consulting Forester – Inventory and selective harvest projects (various clients throughout California)

EDUCATION / SPECIAL TRAINING

- M.S. Wildlife and Fisheries Science, The Pennsylvania State University (1998)
- B.S. Resource Management, The University of California-Berkeley (1992)
 Forestry Field Program, Meadow Valley, California, Summer (1991)

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
Society of American 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
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

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