Tessera Solar
power from stirling energy systems

June 16, 2010

DOCKET	
08-AFC-13	
DATE	JUN 16 2010
RECD.	JUN 18 2010

Mr. Christopher Meyer
CEC Project Manager
Attn: Docket No. 08-AFC-13
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814-5512

Mr. Jim Stobaugh
BLM Project Manager
Attn: Docket No. 08-AFC-13
Bureau of Land Management
P.O. Box 12000
Reno, NV 89520

RE: Calico Solar (formerly Solar One) Project (08-AFC-13)
Applicant's Submittal of Late Spring Botany Survey Report

Dear Mr. Meyer and Mr. Stobaugh,

Tessera Solar hereby submits the Applicant's Late Spring Botany Survey Report for the Calico Solar Project. I certify under penalty of perjury that the foregoing is true, correct, and complete to the best of my knowledge.

Sincerely,

Felicia L. Bellows
Vice President of Development

URS

June 14, 2010

Chris Otahal
Wildlife Biologist
Bureau of Land Management
Barstow Field Office
2601 Barstow Road
Barstow, CA 92311

Subject: Late Spring 2010 Botanical Survey of the
Calico Solar Project Site
URS Project No. 27658189.70010

Dear Mr. Otahal:

INTRODUCTION

This letter report presents the results of the late spring botanical surveys for the Calico Solar Project (Project), a proposed renewable solar energy facility located 35 miles east of Barstow, California. Botanical surveys were conducted for the Calico Solar Project (Project) site in 2007 and 2008, which were years with well below normal rainfall (10% and 49% of normal for 2007 and 2008, respectively). The botanical surveys for 2007 and 2008 were part of a larger survey area (13,000 acres north of the railroad in 2007 and 27,000 acres that included below the railroad and adjacent ACEC in 2008) that included lands west and east of the project site. Due to the landscape scale of the larger survey areas, the level of effort per acre was lower than the current surveys discussed in this letter report.. In response to above average rainfall events that have occurred during 2010 to date, and CEC requests for additional species mapping, additional botanical surveys were conducted by URS Corporation for the Project site. These surveys incorporated survey protocols published by the Bureau of Land Management (BLM) (BLM 1996a, BLM 1996b, BLM 2001, and BLM 2009) and reviewed by BLM staff prior to the commencement of botanical surveys on the site. The 2010 late spring survey was conducted from May 3 through May 12, 2010. The surveys encompassed the originally proposed 8,230-acre Project site, plus a 250-foot buffer area outside the site perimeter. The proposed Project site area was subsequently reduced to 6,215 acres, referred to as Alternative Project Layout #2; however, this report presents the results of surveys for the entire 8,230 originally proposed site and buffer area. Table 1 provides a summary of the dates on which the surveys were performed and the URS staff who participated in the surveys. This letter report documents the results of these surveys and supplements the data collected during the previous spring botanical surveys conducted in 2007, 2008 and April 2010 (URS 2010).

PRE-SURVEY RECONNAISSANCE AND VICINITY DATA

Target special-status plant species for the Calico Solar botanical survey are identified in Table 2. The list of special-status plants includes all species from the BLM and California Energy Commission (CEC) Calico Solar Project Staff Assessment (Biological Resource Table 1 in the Staff Assessment/ Draft Environmental Impact Analysis [SA/DEIS]), and was further augmented through

recommendations made by Mr. James Andre (J. Andre, pers. comm.) of the Sweeney Desert Mountain Research Center. Flowering and fruiting diagnostic characters are often needed to properly identifying many plant species, and the late spring botanical survey was appropriately timed to capture special-status target species that may not have been identifiable or were in seedling/vegetative stages during the first round survey. Survey timing was determined through reconnaissance-level site visits that were conducted prior to the survey to assess the phenology (progression of the blooming period) of the flora and to monitor several special-status plant reference populations.

The timing for the first round of surveys was selected to coincide with the blooming period of early spring ephemeral and perennial species. Botanists conducted reconnaissance-level site visits prior to the surveys to assess the phenology (progression of the blooming period) of the flora and to visit rare plant reference populations. During the pre-survey reconnaissance, phenological assessment was performed for sensitive plant species previously detected onsite, *Penstemon albomarginatus* (white-margined beardtongue; CNPS List 1B.1) and *Androstephium breviflorum* (small-flowered androstephium; CNPS List 2.2). Both of these species were confirmed to be in flower or bud during the preliminary visit. Additionally, an offsite reference population of *Eriophyllum mohavense* (Barstow woolly sunflower; CNPS List1B.2), a species with moderate potential to occur within the project vicinity, was also observed in flower before the start of the survey. For the second round of surveys, two offsite reference populations, Mojave monkeyflower (*Mimulus mohavensis*, BLM Sensitive, CNPS 1B.2) and creamy blazing star (*Mentzelia tridentate*, CNPS 1B.1), both with a moderate potential to occur onsite, were visited prior to the initiation of the late spring surveys. Both of these populations were observed to be in flower at the reference sites at the time of the surveys.

In addition to floral observations, precipitation and temperature data can provide an indication of the probability that ephemeral species will complete their life cycles within that given year. For example, in an above average rainfall year, it can be assumed that appropriately timed surveys will more accurately reflect the ephemeral flora of a site than during a below average rainfall year. The population sizes of ephemeral species annually fluctuate due to climatic conditions, with higher population numbers occurring in relatively high rainfall years.

Table 3 provides 2009-2010 precipitation and temperature data from the meteorological station at the Daggett-Barstow Airport (ASOS HFM Daggett, CA) located approximately 20 miles east of the Project. Although rainfall can be variable within the region, it is assumed the data generally are reflective of the meteorological conditions experienced onsite. Leading up to the 2009-2010 winter, the region was experiencing very low rainfall totals and lacked an autumn triggering event (i.e., precipitation one inch or greater) indicative of most substantial spring blooms. Nevertheless, the region did receive significant rainfall by early winter, and subsequent rainfall events occurred at regular intervals through early spring resulting in favorable conditions for spring blooms.

In addition to precipitation, temperature is also an important factor to consider when evaluating the quality of a spring bloom. The region experienced below-average temperatures that likely delayed germination and growth of some ephemeral species, and may have been the primary factor behind the delayed blooming pattern observed throughout the region. James Andre (J. Andre, pers. comm.) suggested that abundant spring blooms can be triggered by late season precipitation and warmer temperatures. This assumption was supported by reference population observations of Mojave monkeyflower and Harwood's eriastrum (*Eriastrum harwoodii;* CNPS List 1B.2.). Monitoring of reference populations of both of these species was conducted during the spring. Although individuals of these species were not detected during early spring visits to these populations, Mojave monkeyflower was later confirmed to be in flower and in good numbers, and Harwood's eriastrum has since been reported in limited numbers. Based on these premises, most ecological groups of plants were expected to germinate this spring and should be detectable, but perhaps in lower population numbers than would be expected during a year with ideal temperatures and rainfall, such as in 2005. Both species were expected to be near the peak of their blooming period at the time of the late spring botanical survey, ensuring confirmation of their presence/absence onsite.

SURVEY METHODS

The originally proposed 8,230-acre Project site and a 250-foot buffer area around the site perimeter were divided into 86 cells each of which consisted of approximately 95 acres (Figure 1). The 250-foot buffer area also included areas within the Not-a-Part (NAP) parcels where the Applicant had right-of-entry. These areas are shown on Figures 1, 2, and 3. The distance between transects for most of the survey area in the late spring surveys was 30 meters. Smaller transect spacing (15-20 meters) was employed for the approximately 4,000-acre southern area, which was identified as having high to moderate potential to support white-margined beardtongue (*Penstemon albomarginatus*, CNPS List 1B.1) and small-flowered androstephium (*Androstephium breviflorum*, CNPS List 2) during the earlier spring botanical surveys. Refer to the early spring botany survey letter report for specifics on the methodology used during the first round of surveys.

Once appropriate timing of the survey was selected to coincide with the spring blooming pattern, a crew of up to 15 botanists was deployed to conduct the late spring surveys of the Project site and buffer area. Teams of botanists conducted transects throughout each cell and buffer area to cover the entire site. Resumés for all surveyors are provided as Appendix A.

Transect surveys were conducted on the project site for a total of 138 field days during the late spring survey (Table 1). The level of effort equaled or exceeded the effort level identified in BLM protocol (BLM 1996a, BLM 1996b, BLM 2001, and BLM 2009) and by BLM staff. The typical rate of coverage was eight to 12 acres per hour.

RESULTS

No new special-status plant species, taxa were detected during the late spring 2010 surveys. One additional occurrence of Emory's crucifixion thorn (*Castela emory,* CNPS List 2.3) and several new occurrences of small-flowered androstephium and Utah vine milkweed (*Cynanchum utahense* ; CNPS List 4.2) were also detected onsite during the second round of surveys. See Figure 2 for the distribution of California Native Plant Society (CNPS) List 1B and List 2 rare plants detected within the Calico Solar Project site in April 2010. CNPS List 4 species are shown in Figure 3. Table 4 provides a complete, cumulative list of plant species observed during surveys conducted from 2007 through 2010.

CALIFORNIA NATIVE PLANT SOCIETY LISTS 1 AND 2

No new occurrences of white-margined beardtongue were reported during the late spring survey. During the earlier spring survey, five distinct occurrences were reported of white-margined beardtongue, totaling 25 individuals (Figure 2). One 2008 occurrence, representing one individual plant, was not relocated. Because of its distinct visual signature and timing of the surveys, as well as the intense survey methodology (*i.e.*, close-transect spacing within suitable habitat), there is a high probability that all occurrences of this species have now been detected within the Project area.

A few additional occurrences of small-flower androstephium were reported during the late-spring survey. In any given year, only a portion of the bulbs in a population produce above-ground growth, and the species has an inherently lower detection rate associated with the cryptic nature of its seedling stage and bulb dormancy. The majority of the detected plants occurred in a large and contiguous population in varying densities throughout most of the southern portion of the site. For purposes of this letter report, this species distribution onsite is depicted as a polygon. Only small-flower androstephium occurrences that were observed outside of the mapped polygon were recorded during the late spring survey.

One additional crucifixion thorn was identified during the late spring surveys. The detected shrub was located immediately adjacent to a previously recorded location and this grouping may have been mistaken during the earlier spring survey as one individual shrub. A total of four individuals of crucifixion thorn were detected within the Project area during the first and second round of spring surveys in 2010 (Figure 2). One of these individuals was also detected during the 2008 surveys. This species is typically a fairly large shrub species that is easily identifiable. Because of the ease of detection, the intensity of the surveys (including previous years), and its continued negative detection for the majority of the site, there is a high probability that all occurrences of this species have now been detected within the Project area. The recently proposed Alternative Project Layout #2 will avoid all four of the detected individuals.

Small-flowered sand-verbena (*Tripterocalyx micranthus*; CNPS List 2.2) was included in the 2008 general floral inventory for the Project. In California, this species is believed to be restricted to the Kelso Dunes (approximately 40 miles east of the project site). It is highly unlikely small-flowered sand-verbena exists onsite based on the negative detection of this species after intensive surveys throughout potentially suitable habitat within the Project site in 2010. The white-flowered form of *Abronia villosa* var. *villosa* (sand verbena) can easily be mistaken for a small-flowered sand-verbena, and this common species was detected during the 2010 surveys.

Similarly, Coves' Cassia (*Senna covesii*; List 2.2) also was previously observed in the Project area, but was not detected during the 2010 early or late spring surveys. The recorded presence of coves' cassia is a highly suspect record. The species is unlikely to be present in the Pisgah region, as there are only three known occurrences reported for the Mojave Desert, all from far eastern San Bernardino County in the Turtle, Whipple and Piute Ranges. This species is primarily restricted to the Sonoran Desert, and it is assumed that misidentification is the likely reason for its inclusion in the 2008 floral inventory.

CALIFORNIA NATIVE PLANT SOCIETY LIST 4

Utah vine milkweed is a vining perennial member of the dogbane family (Apocynaceae). It has been recorded to be present in Imperial, Riverside, San Bernardino and San Diego counties, as well as in Arizona, Nevada and Utah. It is found in Sonoran Desert (creosote-bush) scrub growing on sandy or gravelly substrate between 500 and 4,500 feet in elevation. Utah vine milkweed is on CNPS "Watch" List 4.3. Recent surveys indicate that Utah vine milkweed appears to be more common in the desert regions of California than previously documented (L. LaPre, pers comm.). The species was also detected during the early spring 2010 surveys conducted on the Project site (Figure 3).

UNDESCRIBED LUPINE SPECIES

A potentially undescribed lupine taxon was detected in several locations in the northern part of the survey area (Figure 3). Mr. James Andre (pers. comm.) believes this lupine species may potentially be a new subspecies or variety within *L. concinnus* complex based on the unique flower and leaf characters that separate it from other taxa within this complex, and he believes this form merits taxonomic recognition, either as a new species, or as a new variety under *L. concinnus.* The unnamed species does have some taxonomic precedent. *L. concinnus* var. *agardhianus*, which is currently not recognized by most taxonomists, has similar taxonomic characters as the lupine found in the Project area. Mr. Andre previously vouchered this potentially unnamed taxon from the eastern Cady Mountains, and its detection in the Calico Solar Project area is a new locality. Mr. Andre has labeled the voucher specimen as *Lupinus concinnus* J. Agardh var. *agardhianus* (A.A. Heller) C.P. Smith. The all of the known locations of this species within the Project site will be avoided with implementation of Alternative Project Layout #2.

Sincerely,

URS CORPORATION

Patrick Mock, Ph.D.
Principal Scientist

PM:ml

cc: Chris Huntley, Aspen/CEC
Larry LaPre, BLM
Jim Stobough, BLM
Rick York, CEC
Scott White, Aspen/CEC
Chris Meyer, CEC
Felicia Bellows, TSNA
Angela Leiba, URS

Attachments:

Table 1:	Calico Solar Project, Late Spring Survey Effort by Date
Table 2:	Calico Solar Project, 2010 Potential and Occurring Sensitive Plants
Table 3:	Calico Solar Project, 2009-2010 Precipitation and Temperature for Project Vicinity
Table 4:	Calico Solar Project, Vascular Plant Inventory
Figure 1:	Botany Survey Area
Figure 2:	Special Status Species Detected in Early and Late Spring Botany Surveys
Figure 3:	CNPS List 4 and Other Species Detected in Early and Late Spring Botany Surveys
Appendix A	Surveyor Resumes

REFERENCES:

Andre, J. 2010. Personal communication with James Andre. April 2010.

BLM 1996a. Bureau of Land Management. Special Status Plant Management. BLM Manual Handbook 6840-1.

BLM 1996b. Bureau of Land Management. Special Status Plant Management. BLM Manual Supplement 6840-06.

BLM 2001. Bureau of Land Management. Special Status Species Management. BLM Manual 6840 Revision.

BLM 2009. Bureau of Land Management. Survey Protocols for NEPA/ESA Compliance for BLM Special Status Plant Species.

URS Corporation. 2010. First Round Spring 2010 Botanical Survey of the Calico Solar Project Site Letter Report. May 17.

Table 1
Calico Solar Project
Late Spring Survey Effort By Date

Date	Surveyors
May 3, 2010	Shawn Johnston (URS), Johanna Kisner (URS), Kristiaan Stuart (URS), Julie Love (URS), Jessica Birnbaum (URS), Glenn Rink (CSRC), Kyle Christie (CSRC), Richard Crawford (CSRC), Mercy Vangh (CSRC), Bret Blosser (CSRC), Suzanne Rhodes (CSRC), Theresa Salvato (CSRC), Robert Johnson (CSRC), and Marc Baker.
May 4, 2010	Shawn Johnston (URS), Johanna Kisner (URS), Kristiaan Stuart (URS), Julie Love (URS), Jessica Birnbaum (URS), Glenn Rink (CSRC), Kyle Christie (CSRC), Richard Crawford (CSRC), Mercy Vangh (CSRC), Bret Blosser (CSRC), Suzanne Rhodes (CSRC), Theresa Salvato (CSRC), Robert Johnson (CSRC), and Marc Baker.
May 5, 2010	Shawn Johnston (URS), Johanna Kisner (URS), Katherine Caldwell (URS), Kristiaan Stuart (URS), Julie Love (URS), Jessica Birnbaum (URS), Glenn Rink (CSRC), Kyle Christie (CSRC), Richard Crawford (CSRC), Mercy Vangh (CSRC), Bret Blosser (CSRC), Suzanne Rhodes (CSRC), Theresa Salvato (CSRC), Robert Johnson (CSRC), and Marc Baker.
May 6, 2010	Shawn Johnston (URS), Johanna Kisner (URS), Katherine Caldwell (URS), Kristiaan Stuart (URS), Julie Love (URS), Jessica Birnbaum (URS), Glenn Rink (CSRC), Michelle Cloud-Hughes(CSRC), Kyle Christie (CSRC), Richard Crawford(CSRC), Mercy Vangh (CSRC), Bret Blosser (CSRC), Suzanne Rhodes (CSRC), Theresa Salvato (CSRC), Robert Johnson (CSRC), and Marc Baker.
May 7, 2010	Shawn Johnston (URS), Johanna Kisner (URS), Katherine Caldwell (URS), Kristiaan Stuart (URS), Julie Love (URS), Jessica Birnbaum (URS), Glenn Rink (CSRC), Michelle Cloud-Hughes(CSRC), Kyle Christie (CSRC), Richard Crawford (CSRC), Mercy Vangh (CSRC), Bret Blosser (CSRC), Suzanne Rhodes (CSRC), Theresa Salvato (CSRC), Robert Johnson (CSRC), and Marc Baker.
May 8, 2010	Shawn Johnston (URS), Katherine Caldwell (URS), Kristiaan Stuart (URS), Glenn Rink (CSRC), Michelle Cloud-Hughes (CSRC), Kyle Christie (CSRC), Richard Crawford (CSRC), Mercy Vangh (CSRC), Bret Blosser (CSRC), Suzanne Rhodes (CSRC), Theresa Salvato (CSRC),Robert Johnson (CSRC), Scott Carroll (CSRS), Marc Baker and Mike Honer.
May 9, 2010	Katherine Caldwell (URS), Dina Robertson (URS), Kristiaan Stuart (URS), Glenn Rink (CSRC), Michelle Cloud-Hughes (CSRC), Kyle Christie (CSRC), Richard Crawford (CSRC), Mercy Vangh (CSRC), Bret Blosser (CSRC), Suzanne Rhodes (CSRC), Theresa Salvato (CSRC), Robert Johnson (CSRC), Scott Carroll (CSRC), Marc Baker and Mike Honer.
May 10, 2010	Shawn Johnston (URS), Katherine Caldwell (URS), Dina Robertson (URS), Kristiaan Stuart (URS), Glenn Rink (CSRC), Kyle Christie (CSRC), Richard Crawford (CSRC), Suzanne Rhodes (CSRC), Theresa Salvato (CSRC),Robert Johnson (CSRC), Scott Carroll(CSRC) and Mike Honer.
May 11, 2010	Shawn Johnston (URS), Dina Roberson (URS), Glenn Rink (CSRC), Kyle Christie (CSRC), Richard Crawford (CSRC), Suzanne Rhodes (CSRC), Robert Johnson (CSRC), Theresa Salvato (CSRC), Scott Carroll (CSRC) and Mike Honer
May 12, 2010	Shawn Johnston (URS), Dina Roberson (URS), Glenn Rink (CSRC), Kyle Christie (CSRC), Richard Crawford (CSRC), Suzanne Rhodes (CSRC), Robert Johnson (CSRC), Theresa Salvato (CSRC), Scott Carroll (CSRC) and Mike Honer

Surveyor Acronyms:
CSRC = Conservation Science & Research Consulting
URS = URS Corporation

Table 2
Calico Solar Project
2010 Potential and Occurring Sensitive Plants

Species		Sensitivity Status			Habitat Association	Blooming Period	Potential to Occur	Status Onsite
Scientific Name	Common Name	Federal	State	CNPS				
Astragalus jaegerianus	Lane Mountain milk-vetch	Federally Endangered	None	1B.1	Joshua tree woodland, and Mojave desert scrub. 900 to 1200m.	April - June	Moderate potential. Suitable habitat and known occurrences north of project area (Williams Well, and Paradise Range, quadrangles).	Not observed within the proposed project area during 2007, 2008, or 2010 botanical surveys.
Calochortus striatus	alkali mariposa lily	BLM Sensitive	None	1B.2	Chaparral, chenopod scrub, Mojave desert scrub, and Meadows and seeps (alkaline/mesic). 70 to 1595m.	April - June	Very low potential. Marginally suitable habitat on site; however, nearest known locations are east of the project area (Redman, and Roger Lake South quadrangles).	Not observed within the proposed project area during 2007, 2008, or 2010 botanical surveys.

Table 2
Calico Solar Project
2010 Potential and Occurring Sensitive Plants
(Cont.)

Species		Sensitivity Status			Habitat Association	Blooming Period	Potential to Occur	Status Onsite
Scientific Name	Common Name	Federal	State	CNPS				
Camissonia boothii ssp. boothii	Booth's evening Primrose	None	None	2.3	Joshua tree woodlands, pinyon and juniper woodlands. 900 to 2400m.	April - September	Very low potential. Marginally suitable habitat on site. Nearest known occurrences 60 miles west along the Mojave River, and 60 miles east in Mid Hills.	Not observed within the proposed project area during 2007, 2008, or 2010 botanical surveys.
Castela emoryi	Emory's crucifixion thorn	Species of Concern	None	2.3	Mojave desert scrub, Playas, Sonoran desert scrub. 90 to 679m.	May - July, Rarely in April.	Present.	Observed in 2008, and 2010 but not in 2007.
Chamaesyce abramsiana	Abrams' spurge	None	None	2.2	Mojave desert scrub, and Sonoran desert scrub. -5 to 915m.	August - November	Moderate potential. Suitable habitat within the project area. A presumable under-collected species; however, closest known occurrence is from Bighorn Basin quadrangle, along Kelbaker Road, 45 miles east of site.	Not observed within the proposed project area during 2007, 2008, or 2010 botanical surveys.

Table 2
Calico Solar Project
2010 Potential and Occurring Sensitive Plants
(Cont.)

Species		Sensitivity Status			Habitat Association	Blooming Period	Potential to Occur	Status Onsite
Scientific Name	Common Name	Federal	State	CNPS				
Chamaesyce parryi	Parry's spurge	None	None	2.3	Desert dunes, and Mojave desert scrub. 395 to 730m.	May - November	Moderate potential. Suitable habitat on site; however, nearest known occurrence is from Kelso Dunes	Not observed within the proposed project area during 2007, 2008, or 2010 botanical surveys.
Chamaesyce revoluta	revolute spurge	None	None	4.3	Mojave desert scrub. 1095 to 3100m.	August – October (April)	Moderate potential. Suitable habitat and known to occur 40 miles to the east within San Bernardino County.	Not observed within the proposed project area during 2007, 2008, or 2010 botanical surveys.

Table 2
Calico Solar Project
2010 Potential and Occurring Sensitive Plants
(Cont.)

Species		Sensitivity Status			Habitat Association	Blooming Period	Potential to Occur	Status Onsite
Scientific Name	Common Name	Federal	State	CNPS				
Chorizanthe xantii var. leucotheca	white-bracted spineflower	None	None	1B.2 CA Endemic	Mojave desert scrub, Pinyon and Juniper woodland. 300 to 1200m.	April - June	Very low potential. Suitable habitat within the project area; however, nearest known occurrences are in southwest corner of San Bernardino County.	Not observed within the proposed project area during 2007, 2008, or 2010 botanical surveys.
Corypthantha alversonii	foxtail cactus	None	None	4.3 CA Endemic	Mojave desert scrub, Sonoran desert scrub. 75 to 1525m.	April - June	Present, location not recorded.	Observed in 2008, but not in 2007 or 2010
Cryptantha clokeyi	Clokey's cryptantha	None	None	1B.1	Mojave desert scrub. 800 to 1280m.	April - May	Moderate potential. Suitable habitat nearby reports from Barstow and Lane Mountain quadrangle.	Not observed within the proposed project area during 2007, 2008, or 2010 botanical surveys.

Table 2
Calico Solar Project
2010 Potential and Occurring Sensitive Plants
(Cont.)

Species		Sensitivity Status			Habitat Association	Blooming Period	Potential to Occur	Status Onsite
Scientific Name	Common Name	Federal	State	CNPS				
Cryptantha costata	ribbed cryptantha	None	None	4.3	Desert dunes, Mojave desert scrub, and Sonoran desert scrub. -60 to 500m.	February - May	High potential. Suitable habitat and known to occur within San Bernardino County.	Not observed within the proposed project area during 2007, 2008, or 2010 botanical surveys.
Cryptantha holoptera	winged crytantha	None	None	4.3	Desert dunes, Mojave desert scrub, and Sonoran desert scrub. 100 to 1690m.	March - May	Present (unconfirmed report from study area). High potential due to suitable habitat on site. Nearest confirmed vouchers from hills around Baker, CA.	This species was listed on the general inventory during the 2008 survey, but was not detected during the 2010 botanical surveys.

Table 2
Calico Solar Project
2010 Potential and Occurring Sensitive Plants
(Cont.)

Species		Sensitivity Status			Habitat Association	Blooming Period	Potential to Occur	Status Onsite
Scientific Name	Common Name	Federal	State	CNPS				
Cymopterus deserticola	desert cymopterus	BLM sensitive	None	1B.2 CA Endemic	Joshua tree woodland, Mojave desert scrub. 630 to 1500m.	March - May	Low to moderate potential. Suitable habitat on site; however, project site is 60 miles east of known range of species.	Not observed within the proposed project area during 2007, 2008, or 2010 botanical surveys.
Cymopterus multinervatus	purple-nerve cymopterus	None	None	2.2	Mojave desert scrub, and Pinyon and juniper woodlands. 790 to 1800m.	March - April	Moderate to high potential. Suitable habitat on site, and recorded occurrence within 15 miles of the project site.	Not observed within the proposed project area during 2007, 2008, or 2010 botanical surveys.
Cynanchum utahense	Utah vine milkweed	None	None	4.2	Mojave desert scrub, Sonoran desert scrub. 150m to 1435m.	April - June	Present	Observed in 2008 and 2010, but not in 2007.

Table 2
Calico Solar Project
2010 Potential and Occurring Sensitive Plants
(Cont.)

Species		Sensitivity Status			Habitat Association	Blooming Period	Potential to Occur	Status Onsite
Scientific Name	Common Name	Federal	State	CNPS				
Deinandra mojavensis	Mojave tarplant	None	State Endangered	1B.3 CA Endemic	Chaparral, coastal scrub, Riparian scrub (volcanic tuff/mesic). 640 to 1600m.	June – October; uncommon in January	Low potential. Marginally suitable habitat on site.	Not observed within the proposed project area during 2007, 2008, or 2010 botanical surveys.
Eriastrum hardwoodii	n/a	None	None	1B.2 CA Endemic	Desert Dunes. 200 to 915m.	March - June	Moderate potential. Suitable sandy habitat on site. Nearest known occurrences at Devil's Playground 20 miles northeast of site.	Not observed within the proposed project area during 2007, 2008, or 2010 botanical surveys.

Table 2
Calico Solar Project
2010 Potential and Occurring Sensitive Plants
(Cont.)

Species		Sensitivity Status			Habitat Association	Blooming Period	Potential to Occur	Status Onsite
Scientific Name	Common Name	Federal	State	CNPS				
Eriogonum sp.	n/a	None	None	None	Calcareous or volcanic rocky slopes and canyons. 300 to 600 m.	August - November	Low potential. Soon to be described (J. Reveal) shrub from Bristol Mountains, approximately 30 miles east of project site.	Not observed within the proposed project area during 2007, 2008, or 2010 botanical surveys.
Eriophyllum mohavense	Barstow woolly sunflower	BLM Sensitive	None	1B.2	Chenopod scrub, Mojave desert Scrub, and Playas. 500 to 960m.	April - May	Moderate potential. Suitable habitat on site; however, project area is 30 miles east of known species range.	Not observed within the proposed project area during 2007, 2008, or 2010 botanical surveys.

Table 2
Calico Solar Project
2010 Potential and Occurring Sensitive Plants
(Cont.)

Species		Sensitivity Status			Habitat Association	Blooming Period	Potential to Occur	Status Onsite
Scientific Name	Common Name	Federal	State	CNPS				
Galium proliferum	desert bedstraw	None	None	2.2	Joshua tree woodland, pinyon and juniper woodland (carbonate/limestone), and Mojave desert scrub. 1190 to 1570m.	March – June, September - November	Moderate potential. Suitable habitat on site; however, nearest known occurrence is from Ivanpah Mountains, 50 miles northeast of project area.	Not observed within the proposed project area during 2007, 2008, or 2010 botanical surveys.
Maurandya antirrhiniflora ssp. antirrhiniflora	violet twining snapdragon	None	None	2.3	Joshua tree woodland, and Mojave desert scrub (carbonate). 760 to 1525m.	April – June, September - November	Low potential. Nearest known location is from Providence Mountains 50 miles east of project area.	Not observed within the proposed project area during 2007, 2008, or 2010 botanical surveys.

Table 2
Calico Solar Project
2010 Potential and Occurring Sensitive Plants
(Cont.)

Species		Sensitivity Status			Habitat Association	Blooming Period	Potential to Occur	Status Onsite
Scientific Name	Common Name	Federal	State	CNPS				
Mentzelia tridentata	creamy blazing star	None	None	1B.3 CA Endemic	Mojave desert scrub and sonorant desert scrub. 700 to 1160m.	March - May	Moderate potential. Suitable habitat within project area; however, highly restricted to Yermo and Newberry Mountains, approximately 30 miles west.	Not observed within the proposed project area during 2007, 2008, or 2010 botanical surveys.
Mentzelia puberula	argus blazing star	None	None	2.2 (as of Feb 11, 2010)	Mojave desert scrub, Sonoran desert scrub. 200 to 1200 m.	March – May	Low potential. Nearest known occurrence approximately 30 miles to north in Avawatz Mountains and at Fort Irwin, and southeast in Sheephole Mountains.	Not observed within the proposed project area during 2007, 2008, or 2010 botanical surveys.

Table 2
Calico Solar Project
2010 Potential and Occurring Sensitive Plants
(Cont.)

Species		Sensitivity Status			Habitat Association	Blooming Period	Potential to Occur	Status Onsite
Scientific Name	Common Name	Federal	State	CNPS				
Mimulus mohavensis	Mojave monkeyflower	BLM Sensitive	None	1B.2 CA Endemic	Mojave desert scrub. 700 to 1000 m.	April - June	Moderate potential. Suitable habitat and nearest known occurrences within 25 miles of site along Camp Rock Road southeast of Barstow.	Not observed within the proposed project area during 2007, 2008, or 2010 botanical surveys.
Monardella boydii	Boyd's pennyroyal	None	None	Proposed List 1B.2	Mojave desert scrub (rocky slopes). 1100 to 1400 m.	May - June (October)	Low potential, but nearest occurrence near Rodman Mountain, approximately 20 miles west-southwest.	Not observed within the proposed project area during 2007, 2008, or 2010 botanical surveys.

Table 2
Calico Solar Project
2010 Potential and Occurring Sensitive Plants
(Cont.)

Species		Sensitivity Status			Habitat Association	Blooming Period	Potential to Occur	Status Onsite
Scientific Name	Common Name	Federal	State	CNPS				
Muilla coronata	crowned muilla	None	None	4.2	Chenopod scrub, Joshua tree woodland, pinyon and juniper woodlands, and Mojave desert scrub. 765 to 1960m.	March - April	High potential to occur. Suitable habitat and known occurrence within immediate vicinity.	This species was listed on the general inventory during the 2008 botanical surveys, but was detected at a location east of the current project area (former Solar 3 site). Was not observed during the 2007 and 2010 botanical surveys.

Table 2
Calico Solar Project
2010 Potential and Occurring Sensitive Plants
(Cont.)

Species		Sensitivity Status			Habitat Association	Blooming Period	Potential to Occur	Status Onsite
Scientific Name	Common Name	Federal	State	CNPS				
Nemacaulis denudata var. gracilis	slender cottenheads	None	None	2.2	Coastal dunes, desert dunes, and Sonoran desert scrub. 0 to 700m.	April - May	Moderate potential. Suitable sandy habitat within the study area. Nearest known occurrences in Kelso Dunes.	Not observed within the proposed project area during 2007, 2008, or 2010 botanical surveys.
Opuntia basilaris var. brachyclada	short-joint beavertail	BLM sensitive	None	1B.2 CA Endemic	Chaparral, Joshua tree woodland, pinyon and juniper woodland, and Mojave desert scrub. 425 to 1800m.	April - May	Moderate potential. Suitable habitat on site; however, nearest known occurrence is from cotton well.	Not observed within the proposed project area during 2007, 2008, or 2010 botanical surveys.
Penstemon albomarginatus	white-margined beardtongue	BLM Sensitive	None	1B.1	Desert Dunes(stabilized), Mojave desert scrub. 640 to 1065m.	March - May	Present.	Observed within the project area in 2008 and 2010 but not 2007.

Table 2
Calico Solar Project
2010 Potential and Occurring Sensitive Plants
(Cont.)

Species		Sensitivity Status			Habitat Association	Blooming Period	Potential to Occur	Status Onsite
Scientific Name	Common Name	Federal	State	CNPS				
Penstemon thurberi	Thurber's beardtongue	None	None	4.2	Chaparral, Joshua tree woodland, pinyon juniper woodland, and Sonoran desert scrub. 500 to 1200m.	May - July	Low to moderate potential. Nearest known occurrences in Kelso Dunes, 20 mi. to northeast and in southern portion of JTNP occurring in Joshua Tree woodland habitat.	Not observed within the proposed project area during 2007, 2008, or 2010 botanical surveys.
Phacelia parishii	Parish's popcorn-flower	None	None	1B.1	Mojave desert scrub, and Playas (clay/alkaline). 540 to 1200m.	April – May; uncommon in June - July	Low to moderate potential. Suitable habitat (margins of playas). Known occurrences within close vicinity of the study site (Daggett and Yermo).	Not observed within the proposed project area during 2007, 2008, or 2010 botanical surveys.

Table 2
Calico Solar Project
2010 Potential and Occurring Sensitive Plants
(Cont.)

Species		Sensitivity Status			Habitat Association	Blooming Period	Potential to Occur	Status Onsite
Scientific Name	Common Name	Federal	State	CNPS				
Physalis lobata	lobed ground cherry	None	None	2.3	Mojave desert scrub, Playas. 500 to 800m.	April - May, August - October	Low potential. Suitable habitat on site; however, nearest occurrence for this species is east of Dale Lake quadrangle, approximately 90 miles southeast of project area.	Not observed within the proposed project area during 2007, 2008, or 2010 botanical surveys.
Polygala acanthoclada	desert polygala	None	None	2.3	Chenopod scrub, pinyon and juniper woodlands, and Joshua tree woodland. 760 to 2285m.	May – October	Low potential. Suitable habitat on site; however, nearest known occurrence is in New York Mountains, approximately 70 miles east, and in JTNP 60 miles south of project area.	Not observed within the proposed project area during 2007, 2008, or 2010 botanical surveys.

Table 2
Calico Solar Project
2010 Potential and Occurring Sensitive Plants
(Cont.)

Species		Sensitivity Status			Habitat Association	Blooming Period	Potential to Occur	Status Onsite
Scientific Name	Common Name	Federal	State	CNPS				
Portulaca halimoides	desert portulaca	None	None	4.2	Joshua tree woodland. 1000 to 1800m	July - November	Low to moderate potential. Nearest known occurrences 30 miles east above 1200m.	Not observed within the proposed project area during 2007 or 2008 botanical surveys.
Salvia funerea	Death Valley sage	None	None	4.3	Mojave desert scrub (carbonate). 0 to 1865m.	March - May	Low potential. Suitable habitat exist on site; however, nearest known reported occurrence in Bristol Mountains, 35 miles east of project area.	Not observed within the proposed project area during 2007, 2008, or 2010 botanical surveys.

Table 2
Calico Solar Project
2010 Potential and Occurring Sensitive Plants
(Cont.)

Species		Sensitivity Status			Habitat Association	Blooming Period	Potential to Occur	Status Onsite
Scientific Name	Common Name	Federal	State	CNPS				
Sclerocactus polyancistrus	Mojave fish-hook cactus	None	None	4.2	Great basin scrub, Joshua tree woodland, and Mojave desert scrub (carbonate). 620 to 2340m.	April - May	Moderate potential. Suitable habitat exists within the project area. Known to be present in western San Bernardino County and north to Inyo County, but not verified east of Yermo.	Not observed within the proposed project area during 2007, 2008, or 2010 botanical surveys.

Table 2
Calico Solar Project
2010 Potential and Occurring Sensitive Plants
(Cont.)

Species		Sensitivity Status			Habitat Association	Blooming Period	Potential to Occur	Status Onsite
Scientific Name	Common Name	Federal	State	CNPS				
Senna covesii	Coves' cassia	None	None	2.2	Sonoran desert scrub. 305 to 1070m.	March - June	Absent from Project site. A highly suspect report from the project site and unlikely from the Pisgah region. Only three known occurrences reported for the Mojave Desert from far eastern San Bernardino County in Turtle, Whipple and Piute Ranges. This species is mainly restricted to the Sonoran Desert.	Not observed within the proposed project area during 2007, 2008, or 2010 botanical surveys.

Table 2
Calico Solar Project
2010 Potential and Occurring Sensitive Plants
(Cont.)

Species		Sensitivity Status			Habitat Association	Blooming Period	Potential to Occur	Status Onsite
Scientific Name	Common Name	Federal	State	CNPS				
Tripterocalyx micranthus	small-flowered sand-verbena	None	None	2.3	Desert dunes, and Mojave desert scrub. 550 to 855m	April - May	Absent from Project site. Possible in sandy area within the project vicinity (offsite, east of project site), but needs to be confirmed. Known to be restricted in California to Kelso Dunes.	This species was listed on the general inventory during the 2008 survey, but was not detected during the 2010 botanical surveys.

Notes/Abbreviations:
CNPS – California Native Plant Species
JTNP – Joshua Tree National Park
M – meter
n/a – not applicable

Table 3
Calico Solar Project
2009-2010 Precipitation and Temperatures for Project Vicinity

Month	May 2009	June 2009	July 2009	August 2009	September 2009	October 2009	November 2009	December 2009	January 2010	February 2010	March 2010	April 2010
Precipitation (inches)	0.01	0	0.05	0	0	0	0.26	0.45	1.61	1.58	0.23	0.10
Average Temperature (°F)												
Maximum	96	92	109	103	99	80	70	56	59	62	70	90
Mean	81	78	94	87	83	65	56	45	48	52	56	61
Minimum	66	64	81	72	68	52	42	34	36	42	44	36

Table 4
Calico Solar Project
Vascular Plant Inventory

Scientific Name	Common Name
MONOCOTS	
Poaceae	Grass Family
Achnatherum hymenoides	Indian rice grass
Achnatherum speciosum	desert stipa
Aristida purpurea ssp. *neallyi*	Nealley's three-awn
*Bromus diandrus**	ripgut brome
Bromus madritensis ssp. *rubens**	red fox-tail brome
*Bromus tectorum**	Cheat grass
Cynodon dactylon	Bermuda grass
Dasyochloa pulchella	Fluff grass
*Hordeum marinum**	barley
*Phalaris canariensis**	canary grass
Pleuraphis rigida	galletta grass
*Schismus arabicus**	Arabian schismus
*Schismus barbatus**	Mediterranean grass
Sporobolus airoides	alkali sacaton
*Triticum aestivum**	wheat
*Vulpia bromoides**	brome fescue
Liliaceae	Lily Family
Androstephium breviflorum	small-flowered androstephium
Hesperocallis undulata	desert lily
EUDICOTS	
Aizoaceae	Carpet-weed Family
Mesembryanthemum nodiflorum	slenderleaf iceplant
Amaranthaceae	
Tidestromia oblongifolia	Arizona honeysweet
Apiaceae	Carrot Family
Lomatium mohavense	Mojave desert parsley
Apocynaceae	
Amsonia tomentosa	gray amsonia

Table 4
Calico Solar Project
Vascular Plant Inventory
(Cont.)

Scientific Name	Common Name
Asclepiadaceae	Milkweed Family
Asclepias erosa	desert milkweed
Asclepias subulata	rush milkweed
Cynanchum utahense	Utah vine milkweed
Sarcostemma cynanchoides	fringed twine vine
Asteraceae	Sunflower Family
Acamptopappus shaerocephalus	goldenhead
Adenophyllum cooperi	Cooper dyssodia
Adenophyllum porophylloides	San Felipe dyssodia
Ambrosia dumosa	white bur-sage
Ambrosia X Hymenoclea	
Atrichoseris platyphylla	tobacco weed
Baccharis brachyphylla	shortleaf baccharis
Bebbia juncea	sweetbush
Brickellia californica	Brickellbush
Calycoseris parryi	yellow tackstem
Chaenactis carphoclinia	pebble pincushion
Chaenactis carphoclinia var. *carphoclinia*	pebble pincushion
Chaenactis fremontii	desert pincushion
Chaenactis stevioides	desert pincushion
Chrysothamnus paniculatus	black banded rabbitbrush
Coreopsis bigelovii	Bigelow's coreopsis
Dicoria canescens	desert twinbugs
Encelia actoni	acton encelia
Encelia farinosa	brittlebush
Encelia frutescens	button brittlebush
Eriophyllum lanosum	wooly frocks
Eriophyllum wallacei	Wallace's wooly daisy
Filago depressa	dwarf cottonrose
Geraea canescens	desert sunflower
Glyptopleura marginata	carveseed

Table 4
Calico Solar Project
Vascular Plant Inventory
(Cont.)

Scientific Name	Common Name
Hymenoclea salsola	white burrobush
Isocoma acradenia	alkali golden bush
Lasthenia californica	California goldfields
Lepidospartum squamatum	California broom sage
Machaeranthera arida	silver lake daisy
Malacothrix californica	California dandelion
Malacothrix coulteri	snake's head
Malacothrix glabrata	desert dandelion
Monoptilon bellidiforme	daisy desert star
Monoptilon bellioides	desert star
Palafoxia arida	Spanish needle
Perityle emoryi	Emory's rock daisy
Peucephyllum schottii	pygmy cedar
Porophyllum gracile	odora
Prenanthella exigua	thorny skeleton plant
Rafinesquia neomexicana	desert chicory
Stephanomeria exigua	small wire lettuce
Stephanomeria parryi	Parry's wire lettuce
Stephanomeria pauciflora var. *pauciflora*	wire lettuce
Trichoptilium incisum	yellow dome
Xylorhiza tortifolia	Mojave woody aster
Bignoniaceae	Trumpet Creeper Family
Chilopsis linearis	desert willow
Boraginaceae	Borage Family
Amsinckia tesselata	devil's lettuce
Cryptantha angustifolia	Panamint cryptantha
Cryptantha barbigera	bearded cryptantha
Cryptantha circumscissa	cushion cryptantha
Cryptantha dumetorum	bush-loving cryptantha
Cryptantha inaequata	unequal cryptantha
Cryptantha maritima	Guadalupe cryptantha

Table 4
Calico Solar Project
Vascular Plant Inventory
(Cont.)

Scientific Name	Common Name
Cryptantha micrantha	red root cryptantha
Cryptantha nevadensis	Nevada cryptantha
Cryptantha pterocarya	wing nut cryptantha
Cryptantha utahensis	scented cryptantha
Heliotropium curassavicum	heliotrope
Pectocarya heterocarpa	chuckwalla combseed
Pectocarya penicillata	winged pectocarya
Pectocarya platycarpa	broadfruit combseed
Pectocarya recurvata	curve nut combseet
Plagiobothrys jonesii	Mojave popcorn flower
Tiquilia nuttallii	Nuttall's colenia
Tiquilia plicata	plicate colenia
Brassicaceae	Mustard Family
*Brassica tournefortii**	African mustard
Descurainia pinnata	western tansy mustard
Descurainia sophia	flixweed tansy mustard
Dithyrea californica	California shieldpod
Guillinia lasiophylla	California mustard
Lepidium flavum	yellow pepper weed
Lepidium fremontii	desert pepper grass
Lepidium lasiocarpum var. *lasiocarpum*	sand peppergrass
*Sisymbrium irio**	London rocket
Streptanthella longirostris	long beaked twist flower
Cactaceae	Cactus Family
Cylindropuntia echinocarpa	silver cholla
Cylindropuntia ramosissima	diamond cholla
Echinocactus polycephalus	cotton-top cactus
Echinocereus engelmannii	Engelmann hedgehog
Mammillaria tetrancistra	fishhook cactus
Opuntia basilaris var. *basilaris*	beavertail cactus
Campanulaceae	Bellflower Family

Table 4
Calico Solar Project
Vascular Plant Inventory
(Cont.)

Scientific Name	Common Name
Nemacladus rubescens	desert nemacladus
Capparaceae	Caper Family
Cleomella obtusifolia	mojave stinkweed
Caryophyllaceae	Pink Family
Achyronichia cooperi	onyx flower
Spergularia marina	saltmarsh surry
Chenopodiaceae	Chenopod Family
Atriplex canescens	four-wing saltbush
Atriplex elegans var. *fasciculata*	wheelscale
Atriplex hymenelytra	desert holly
Atriplex polycarpa	desert saltbush
Atriplex phyllostegia	leafcover saltweed
Atriplex suberecta	peregrine saltbush
*Cycloloma atriplicifolium**	tumble ringwing
Grayi spinosa	hopsage
*Kochia scoparia**	Mexican fireweed
Monolepis nuttalliana	Nuttall's povertyweed
*Salsola paulsenii **	barbwire Russian thistle
*Salsola tragus**	Russian thistle
Suaeda moquinii	inkweed
Convolvulaceae	Morning glory Family
Cuscuta denticulata	desert dodder
Cucurbitaceae	Gourd Family
Cucurbita palmata	coyote melon
Ephedraceae	Ephedra Family
Ephedra californica	California ephedra
Ephedra funerea	Death Valley ephedra
Ephedra nevadensis	Nevada ephedra
Euphorbiaceae	Spurge Family
Chamaesyce albomarginata	white margined sandmat
Chamaesyce polycarpa	small seeded spurge

Table 4
Calico Solar Project
Vascular Plant Inventory
(Cont.)

Scientific Name	Common Name
Croton californicus	California croton
Stillingia spinulosa	annual toothleaf
Fabaceae	Legume Family
Acacia greggii	cat-claw acacia
Astragalus didymocarpus	two-seeded milkvetch
Astragalus layneae	Layne's milkvetch
Astragalus lentiginosus	lens-pod milkvetch
Dalea mollissima	silky dalea
Lotus salsuginosus	coastal bird's-foot trefoil
Lotus strigosus	strigose bird's-foot trefoil
Lotus wrangelianus	chilean bird's-foot trefoil
Lupinus brevicaulis	shortstem lupine
Lupinus concinnus var. *agardhianus!*	elegant lupine
Lupinus shockleyi	desert lupine
Prosopis glandulosa var. *torreyana*	honey mesquite
Psorothamnus spinosus	smoke tree
Senna armata	desert senna
Geraniaceae	Geranium Family
*Erodium cicutarium**	red stem filaree
Erodium texanum	Texas filaree
Hydrophyllaceae	Waterleaf Family
Emmenanthe penduliflora var. *penduliflora*	whispering bells
Eucrypta micrantha	desert eucrypta
Nama californicum	California fiddleleaf
Nama depressum	depressed fiddleleaf
Nama demissum	desert purple mat
Nama hispidum	bristly nama
Nama pusillum	eggleaf fiddleleaf
Phacelia crenulata var. crenulata	notch-leafed phacelia
Phacelia crenulata var. *ambigua*	heliotrope phacelia
Phacelia distans	common phacelia

Table 4
Calico Solar Project
Vascular Plant Inventory
(Cont.)

Scientific Name	Common Name
Phacelia fremontii	Fremont's phacelia
Phacelia neglecta	alkali phacelia
Phacelia pachyphylla	black tack phacelia
Phacelia rotundifolia	round-leafed phacelia
Phacelia tanacetifolia	lacy phacelila
Krameriaceae	Krameria Family
Krameria erecta	little leaved ratany
Krameria grayi	white ratany
Lamiaceae	Mint Family
Salazaria mexicana	bladder-sage
Salvia columbariae	chia
Loasaceae	Loasa Family
Eucnide urens	desert rock nettle
Mentzelia albicaulis	blazing star
Mentzelia desertorum	desert blazing star
Mentzelia involucrata	sand blazing star
Mentzelia obscura	pacific blazing star
Mentzelia reflexa	reflexed blazing star
Petalonyx thurberi	sandpaper plant
Petalonyx thurberi ssp. *thurberi*	Thurber's sandpaper plant
Malvaceae	Mallow Family
Eremalche exilis	white mallow
Eremalche rotundiflora	desert five spot
Nyctaginaceae	Four O'Clock Family
Abronia villosa var. *villosa*	sand verbena
Allionia incarnata	trailing windmills
Mirabilis bigelovii	Bigelow's desert four o'clock
Mirabilis laevis	desert wishbone bush
Onagraceae	Evening Primrose Family
Camissonia boothii ssp. *condenseta*	Booth's evening primrose
Camissonia boothii ssp. *desertorum*	Booth's desert primrose

Table 4
Calico Solar Project
Vascular Plant Inventory
(Cont.)

Scientific Name	Common Name
Camissonia brevipes	yellow cups
Camissonia claviformis	brown-eyed primrose
Camissonia claviformis ssp. *claviformis*	clavate-fruited primrose
Camissonia refracta	narrow leaf suncup
Oenothera deltoides	dune primrose
Oenothera primiveris	yellow desert evening primrose
Papaveraceae	Poppy Family
Argemone corymbosa	Mojave prickly poppy
Argemone munita	chicalote
Eschscholzia californica	california poppy
Eschscholzia glyptosperma	desert gold poppy
Eschscholzia minutiflora	pygmy poppy
Plantaginaceae	Plantain Family
Plantago ovata	wooly plantain
Polemoniaceae	
Eriastrum eremicum	desert wollystar
Gilia brecciarum	Nevada gilia
Gilia clokeyi	Clokey's gilia
Gilia latiflora ssp. *daveyi*	hollyleaf gilia
Gilia latifolia	broadleaf gilia
Gilia sinuata	rosy gilia
Gilia stellata	star gilia
Gilia subacaulis	pinyon gilia
Ipomopsis polycladon	manybranded ipomopsis
Langlosia setosissima ssp. *punctata*	Great Basin langlosia
Linanathus jonesii	Jones linanthus
Linanathus demissus	desert linanthus
Loeseliastrum schottii	Schott's calico
Polygonaceae	Buckwheat Family
Chorizanthe brevicornu	brittle spineflower
Chorizanthe brevicornu var. *brevicornu*	brittle spineflower

Table 4
Calico Solar Project
Vascular Plant Inventory
(Cont.)

Scientific Name	Common Name
Chorizanthe corrugata	wrinkled spineflower
Chorizanthe rigida	spiny-herb
Eriogonum brachypodum	Parry's buckwheat
Eriogonum deflexum	skeleton weed
Eriogonum fasciculatum	yellow buckwheat
Eriogonum inflatum	desert trumpet
Eriogonum inflatum var. *inflatum*	desert trumpet
Eriogonum maculatum	angle stermed buckwheat
Eriogonum nidularium	whisk broom
Eriogonum pusillum	yellow turban
Eriogonum reniforme	kidneyleaf buckwheat
Eriogonum thomasii	Thomas' buckwheat
Eriogonum trichopes	little trumpet
Rumex hymenosepalus	canaigre dock
Portulacaceae	Purslane Family
Calyptridium monandrum	pussypaws
Calyptridium parryi var. *nevadensis*	Nevada pussypaws
Resedaceae	Mignonette Family
Oligomeris linifolia	leaved cambess
Rubiaceae	Bedstraw family
Galium stellatum	desert bedstraw
Scrophulariaceae	Figwort Family
Antirrhinum filipes	twining snapdragon
Mimulus bigelovii	Bigelow's monkeyflower
Mohavea breviflora	golden desert snapdragon
Mohavea confertiflora	ghost flower
Penstemon albomarginatus	white margin beardtongue
Simaroubaceae	Quassia Family
Castela emoryi	Emory's crucifixion thorn
Solanaceae	Nightshade Family
Lycium andersonii	Anderson thornbush

Table 4
Calico Solar Project
Vascular Plant Inventory
(Cont.)

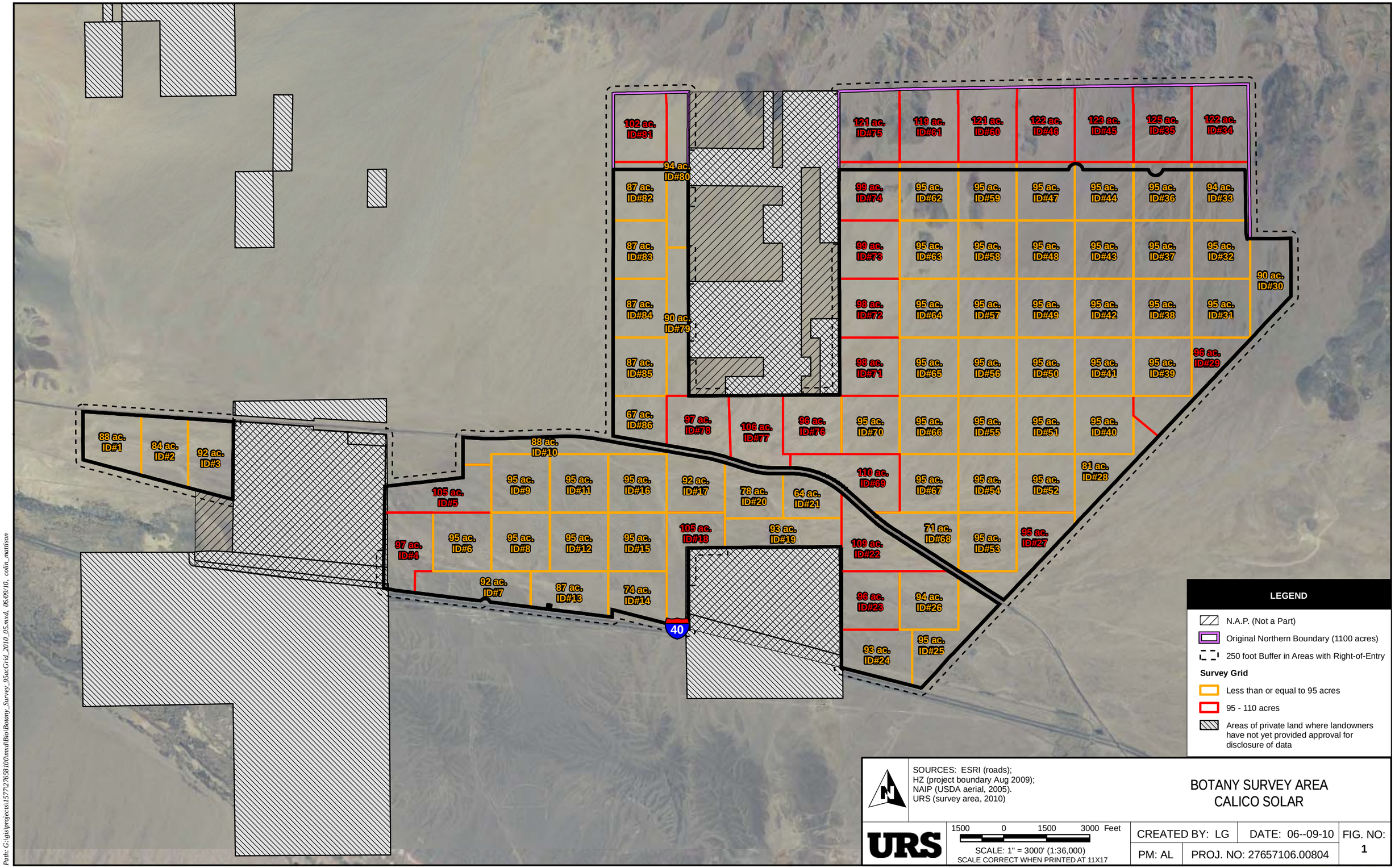
Scientific Name	Common Name
Lycium cooperi	Cooper's box thorn
Nicotiana obtusifolia	desert tobacco
Physalis crassifolia	yellow nightshade groundcherry
Tamaricaceae	Tamarix Family
*Tamarix aphylla**	athel tamarisk
*Tamarix ramosissima**	salt-cedar
Verbenaceae	Vervain Family
Viscaceae	Mistletoe Family
Phoradendron californicum	mesquite mistletoe
Zygophyllaceae	Caltrop Family
Larrea tridentata	creosote bush

Notes:

* Denotes non-native species.

! = Not recognized in the Jepson manual (1993)

FIGURES



Path: G:\gis\projects\1577\27658100.mxd\Bio\Botany_Survey_95acGrid_2010_05.mxd, 06/09/10, colin_mattison

LEGEND

Original Boundary (Reduced 2,015 ac)

250 foot Buffer in Areas with Right-of-Entry

Alternative Project Layout #2

Phase 1 (275MW Construction Area 2,327 ac)

Phase 2 (3,888 ac)

N.A.P. (Not a Part)

Data by Survey

April 2010 URS Surveys

May 2010 URS Surveys

Data by CNPS List Category (Cumulative Count)

CNPS 1B.1 - Rare, Threatened and Endangered in CA and Elsewhere (BLM "sensitive" species, not state listed)

white-margined beardtongue (25)

CNPS 2.2 - Rare, Threatened and Endangered in CA, but More Common Elsewhere

small-flowered androstephium population exceeding 1500 plants

small-flowered androstephium (2)

CNPS 2.3 - Rare, Threatened and Endangered in CA, but More Common Elsewhere

crucifixtion thorn (1)

crucifixion thorn (3)

* Plants are labelled with count if greater than 1

(Phase 1)

(Phase 2)

N.A.P.

(Phase 2)

(Phase 1)

(Phase 2)

4

2

17

N.A.P.

(Phase 2)

N.A.P.

40

SOURCES:
Mortensen (project features June 2010);
URS (main access rds, t-line, fenceline, May 2010);
NAIP (USDA aerial 2005).
URS(sensitive species survey, 2010).

SPECIAL STATUS SPECIES DETECTED IN EARLY AND LATE SPRING BOTANY SURVEYS CALICO SOLAR

URS

1500 0 1500 3000 Feet

SCALE: 1" = 3000' (1:36,000)
SCALE CORRECT WHEN PRINTED AT 11X17

CREATED BY: CM | DATE: 06-08-10 | FIG. NO: 2

PM: AL | PROJ. NO: 27658189.20001

Path: G:\gis\projects\15772\27658100\mxd\Bio\Botany\EarlySpring_SitePlan_w_Botany_List1_2.mxd, 06/16/10, colin_mattison

LEGEND

Original Boundary (Reduced 2,015 ac)

250 foot Buffer in Areas with Right-of-Entry

Alternative Project Layout #2

Phase 1 (275MW Construction Area 2,327 ac)

Phase 2 (3,888 ac)

N.A.P. (Not a Part)

Data by Survey

April 2010 URS Surveys

May 2010 URS Surveys

Data by CNPS List Category (Cumulative Count)

CNPS 4.3 - Plants on Watch List

Utah vine milkweed (111)

Utah vine milkweed (11)

Undescribed Lupine species (10)

Undescribed Lupine species (5)

* Plants are labelled with count if greater than 1

(Phase 2)

N.A.P.

(Phase 2)

N.A.P.

(Phase 1)

(Phase 2)

(Phase 1)

N.A.P.

(Phase 2)

40

2

2

30

15

15

3

3

7

5

1

50

5

SOURCES:
Mortensen (project features June 2010);
URS (main access rds, t-line, fenceline, May 2010);
NAIP (USDA aerial 2005).
URS(sensitive species survey, 2010).

CNPS LIST 4 AND OTHER SPECIES DETECTED IN EARLY AND LATE SPRING BOTANY SURVEYS CALICO SOLAR

URS

1500 0 1500 3000 Feet

SCALE: 1" = 3000' (1:36,000)
SCALE CORRECT WHEN PRINTED AT 11X17

CREATED BY: CM	DATE: 06-09-10	FIG. NO: 3
PM: AL	PROJ. NO: 27658189.20001	

Path: G:\gis\projects\1577\27658100\mxd\Bio\Botany\EarlySpring_SitePlan_w_Botany_List4.mxd, 06/16/10, colin_mattison

APPENDIX A

VITAE

MARC A. BAKER, Ph.D.

1217 GRANITE CREEK LANE, CHINO VALLEY, ARIZONA 86323
TEL: (928) 636-0252; (928) 713-7009; e-mail: marcbaker@cableone.net; marc.baker@asu.edu

RESEARCH INTERESTS

Evolution and systematics of Cactaceae; the role of polyploidy, hybridization, asexual reproduction, and geographic isolation in evolution. Flora, plant community dynamics, and ecology of the Southwestern United States, especially within the Sonoran Desert Biome; rare plant biology; currently working on the Cactaceae for the Intermountain Flora.

RESEARCH SKILLS

Transmission electron microscopy, scanning electron microscopy, thin-layer chromatography, high-performance liquid chromatography, cytological analysis of chromosomes of root-tips and microsporogenesis, herbarium techniques, ethnographic techniques, GPS, vegetation sampling and plant identification, especially for Arizona, Baja California, California, and New Mexico, computer data base systems, GIS, and graphics.

INSTITUTIONAL AFFILIATIONS

Southwest Botanical Research (duns no. 80-367-5776), Chino Valley, AZ: sole proprietor
Graduate Advisor, Prescott College, Prescott, Arizona
Adjunct Professor, Arizona State University, Tempe, Arizona
Native Plant Law Technical Advisory Board, Phoenix, AZ: member

ORGANIZATIONAL MEMBERSHIPS

Botanical Society of America
International Association of Plant Taxonomists
Arizona-Nevada Academy of Sciences
Arizona Riparian Council
California Botanical Society
California Native Plant Society

EDUCATION

Ph.D., Botany (Systematic Botany), May, 1985, Arizona State University Tempe, Arizona.
Dissertation: Evolution of a hybrid polyploid complex in *Opuntia*, subgenus *Cylindropuntia* (Cactaceae).

M.A., Biology (Systematic Botany and Ethnobotany), June, 1980, Humboldt State University, Arcata, California. **Thesis:** Ethnobotany of the Yurok, Karok, and Tolowa Indians of Northwest California.

B.A., Botany, June, 1975, San Jose State University, San Jose, California.

A.A., Forestry, June, 1972, Bakersfield Community College, Bakersfield, California.

Foreign Languages: Spanish

BOTANICAL EXPERIENCE

1988 to present. Owner of Southwest Botanical Research. Consulting services that include Biological Assessments and Evaluations and the collection, identification, survey, and other types of research on vascular plants of Arizona, California, Nevada, and New Mexico.

1993-present. Botanical consultant for Kiva Biological Consulting. August 1993-2007: Arizona Game & Fish Desert Tortoise Survey (contract # G30061-B). Study included plant identification and vegetation sampling. 2008-2009: Fort Irwin Desert tortoise surveys; 2009: Rare plant surveys, Clark County, Nevada. Primary contact: Pete Woodman.

2005-present. Botanical consultant for Jones and Stokes, Sacramento, California. Including rare plant surveys in the Spring and Las Vegas Mtns., Clark County, Nevada, rare plant surveys in the Lake Mead area for the government of Clark County; and wetland delineation in the Barstow, San Bernardino, California area.

2008.Botanical consultant for URS, Santa Barbara and San Diego Offices. Projects included rare plant surveys and Johnson Valley USFWS protocol 100% coverage desert tortoise surveys.

1997-2007. Botanical consultant for Ecosystems Management, Inc. Projects include sensitive plant surveys for the Navajo Transmission line, Arizona/ New Mexico; sensitive plant survey for the Pittsburgh & Midway Coal Mine expansion near Ratón, New Mexico; and B.I.A. range surveys for the Navajo Partition Land, east of Flagstaff, AZ; range analysis for the Roswell BLM District, Roswell, NM. Principle contact: Bill Hevron, tel: (505) 884-8300.

1995-2006. Botanical consultant for Environet, Inc., Phoenix, Arizona. Projects include surveys for special status species, and Biological Assessment and Evaluations. Principle contact: Jill Himes, tel: (602) 438-0318.

1997 to 2002. Botanical consultant for Biozone, Inc., Prescott, Arizona. Projects include Vegetation characterization of the Watson Woods Riparian Preserve, Vegetation Characterization of the Walnut Creek Research and Learning Center, Survey for T&E species for the Hopi Reservation, and surveys.

1998. Biological consultant for Mojave Engineering Associates, Inc. Projects include Biological Assessment and Evaluations.

1994-1999. Botanical consultant for Johnson Associates Inc. Owner: Robert Johnson, tel: (408) 897-2473; projects have included biological surveys for housing developments and land fills.

1995. Botanical consultant for Hughes Environmental Consultants. Project included pipeline right-of-way Desert tortoise and botanical survey near Bullhead City, AZ and pipeline right-of-way botanical survey near Farmington, NM.

Aug 1990-1996. Botanical consultant for SWCA Associates. Subcontract duties included plant identification (including rare plant surveys in Clark County, NV), vegetation mapping and vegetation volume sampling for ASARCO, Kearny, Arizona; vegetation sampling for the San Tan Tortoise Survey, Maricopa County, Arizona; sensitive plant survey for the Wickieup-Bagdad gas pipeline, vegetation mapping for the Phelps Dodge Mine Expansion Project, Morenci and Safford, AZ, the distribution and taxonomy of *Echinocereus arizonicus* and related taxa in Arizona and New Mexico; Project coordinators: Jim Tress, Tina Lee, Scott Mills, tel: 602-325-9141.

1993-1994. Botanical consultant for Resources Management International (RMI), including a plant survey for the Wickieup-Bagdad proposed Citizens' gas pipeline, project coordinator: Catherine LeBlanc.

Jan 1991-January 1995. Botanical consultant for the Department of Anthropology, Contract Archeology, Arizona State University. Research included vegetation mapping and floristic analysis of the Tonto Basin, Arizona. Project coordinator: Glen Rice, tel: 602-479-2406, 965-7181.

1991-1992. Botanical consultant for the Army Corps of Engineers. Duties include plant collection and identification for the construction of an herbarium of Arizona wetlands plants. Project coordinator: Karen Reichhardt.

1988-1991. Botanical consultant for Ruffner Associates. Subcontracts included a three year study of the sensitive plant species of Organ Pipe Cactus National Monument; *Tumamoca* surveys for private firms; and Vegetation mapping in southern California for the Riverside Water District.

1985-1987. New York Botanical Garden, Chief Investigator, *Plant Resources of the Ecuadorean Amazon* Project. Duties included creating an integrated program of teaching and ethnography with the Shuar (Jivaro) culture.

SELECTED CONTRACTS AND RESEARCH AWARDS

2009. Verde River Vegetation monitoring. Prescott National Forest (Order no. AG-94TZ-P-09-0016, $22,050). Contact: Mike Leonard (928 443-8211).

2009. Cook's Lake Vegetation study. Bureau of Reclamation. Phoenix Area Office (Order No. R09PX32003, $21,820).

Contact: Diane Laush **(** 623-773-6255).

2008. Botanical Survey 2008 Season- Kuenzler's cactus surveys, Guadalupe Ranger District, Lincoln National Forest (contract no. AG-7512-P-07-0066,). Contact: Larry Paul (505-887-9296).

2008-Present. Vegetation characterization of the Watson Woods Riparian Preserve, Prescott, Arizona. Prescott Creeks Preservation Association. Contact: Michael Byrd, 928-445-5669.

2007. Rare plant surveys for the Turkey-Gavilon Fuel Units Project, Lincoln National Forest, Alamogordo, New Mexico (Contract no. AG-7512-P-07-0017, $12,130). Contact person was Larry Cordova (505-630-3007)

2007. Rare plant consultation for the Prescott National Forest, Prescott, Arizona (Contract no. AG-8191-P-0009, $5,000).

2006-7. Geographic Distribution of *Coryphantha robustispina* ssp. *robustispina* (Pima Pineapple Cactus) and *Echinomastus erectocentrus* var. *erectocentrus* (Needle-spined Pineapple Cactus) within the extended City of Tucson HCP Southlands planning area. Contract with the City of Tucson ($23,535).

2006. Morphological analysis of *Echinocactus horizonthalonius*. State of Arizona, Tucson.

2006. Geographical and morphological analysis of *Echinocereus fendleri*. Lincoln National Forest, Alamogordo, New Mexico.

2005-2012. Monitoring of *Coryphantha robustispina* var. *robustispina* in the Alter Valley, Pima County, Arizona. Grant from the Bureau of Reclamation, Phoenix, Arizona.

2005-6. Plant surveys for the Lincoln National Forest. Alamogordo, New Mexico (contract no. AG-7512-06-0016, $8,400). Contact person was Linda Baker (505) 434-7263

2005-7. Floristic study of Rancho del Cielo, Pima County, Arizona. U. S. Bureau of Reclamation. Phoenix, Arizona. (Order no. 05PG321037).

2001-2006. Riparian vegetation monitoring for the Hubbell Trading Post National Historic Site, Ganado, Arizona. (Order No. P742004032). Contact persons: Nancy Stone, Ann Worthington (928-755-3477).

2005. A phenetic analysis of the Acuña cactus, *Echinomastus erectocentra* var. *acunensis* and its relatives: *E. erectocentrus* var. *erectocentrus*, and *E. johnsonii* . State of Arizona, Tucson, (Order no.432672).

2004. Geographic distribution and DNA analysis of *Coryphantha robustispina* ssp. *robustispina*. Arizona Department of Game & Fish, Phoenix, Arizona.

2004. Five-year monitoring study for the Pima pineapple cactus (Coryphantha robustispina ssp. robustispina). U. S. Bureau of Reclamation. Phoenix, Arizona.

2003. Rare plant surveys for the Coronado National Forest, Tucson, Arizona. (Order no. 43-8197-3-0038, $12,200)

2003. Botanical survey of the Timberon/Culp Peak Fuel Reduction Project. Lincoln National Forest, Alamogordo, New Mexico. (Order No. 0308-03-10).

2003. Elucidation of the intraspecific taxonomy of *Coryphantha scheeri* using multivariate techniques. A study in cooperation with the U. S. Fish and Wildlife Service, Tucson, Arizona.

2003. Re-measurement of riparian transects along the lower Verde River. Rocky Mountain Forest and Range Experimental Station.

2002-3. Status report of *Cylindropuntia multigeniculata*, including further morphometric studies. U. S. Fish and Wildlife Service, Las Vegas, Nevada.

2002-3. Monitoring of *Coryphantha robustispina* var. *robustispina* for the Arizona-Sonora Desert Museum, Tucson, Arizona.

2001. Rare Plant and noxious weed survey of the Bradshaw Ranger District. Prescott National Forest. (order no. 43-94TZ-1-0164; $15,800)

2002. Survey and documentation of noxious weeds for the Coconino County Department of Public Works, Flagstaff, Arizona. ($6,100).

2002. Range analysis for the Chino Valley Ranger District (Prescott National Forest), Chino Valley, Arizona.

2001-2006. Botanical surveys and monitoring for the Scott Able Fire, Sacramento Ranger District, Lincoln National Forest, New Mexico. (43-7512-1-0113; $54,000). Contact person was Linda Baker (505) 434-7263

2001. Geographic survey of the a new species of *Leptodactylon* from Arizona. Prescott National Forest. ($2,500).

2001. Re-measurement of riparian transects along the upper Verde River and its tributaries. Rocky Mountain Forest and Range Experimental Station ($18,000).

2000. Re-measurement of riparian transects along the upper Verde River. Rocky Mountain Forest and Range Experimental Station (REC206, $5,000).

2000. Surveys and autecology of the Pima Pineapple Cactus (*Coryphantha scheeri*). Bureau of Reclamation. (00PG321054; $14,123.23).

2000. Vegetation mapping of the Peoria Planning Area. Maricopa County Water Conservation District, Phoenix, Arizona ($18,000). [study included mapping 40,000 acres of Sonoran Desert vegetation).

1999. Plant Status Reports for five plant species (Conioselinum mexicanum, *Erigeron arisolius, Eupatorium bigelovii, Lupinus huachucanus,* and *Stellaria porsildii*). Coronado National Forest (43-8197-9-0099, $2,500).

1999. Vegetation mapping of the greater Phoenix and Tucson Metropolitan Planning Areas as a part of the CAP water reallocation EA. Bureau of Reclamation, Phoenix, Arizona ($55,000). [study includes mapping 1.2 million acres of Sonoran Desert vegetation]

1999. Vegetation mapping of the Santa Cruz River Flood Plain, Pima Co., Arizona. Bureau of Reclamation, Phoenix. (Contract no. 99320500061, $9,750).

1999. Weed survey for the Coronado National Forest, Tucson, Arizona. (contact nos. 43-8167-8-0089, 43-8197-9-0077, $21,350, $4,600).

1999. Rare plant survey for the Lincoln National Forest. Alamogordo, New Mexico. (Contract no. 443-7512-8-0081, $1,850).

1998. Multivariate analysis and DNA study of the Blue Diamond Cholla and related taxa. U.S.F.W.S., Reno, Nevada.

1998. Riparian vegetation inventory for the middle Verde River, Rocky Mountain Research Station (contract no. 43-8167-8-0069, $5,000).

1998. Range analysis for the Prescott National Forest (contract no. 43-8167-8-0089, $23,000).

1998. Riparian vegetation baseline for the Hubbell Trading Post National Historic Site ($2,900).

1998. Floristic analysis of the Walnut Creek Riparian Preserve.

1998. Cactus research at Carlsbad National Park (contract no. 1443-cx-7170-98-001, $10.000).

1997. Range analysis for the Prescott National Forest (contract no. 43-8191-7-0106, $8,600).

1997. Riparian vegetation inventory for the upper Verde River, Prescott National Forest. (contract no. 43-8191-7-0104, $5,000).

1996. Vegetation characterization of the Watson Woods Riparian Preserve, Prescott, Arizona ($12,761).

1996. Identification and annotation of the Yavapai College Herbarium (YCH). Yavapai College, Prescott, Arizona ($6,270).

1996. Plant identification for the USDA, Forest Service Intermountain Research Station, Ogdon, Utah.

1995. Plant inventory in the Wet Beaver Creek Wilderness, Arizona. Coconino National Forest, U. S. Forest Service P. O. 43-8167-5-033 (6,800).

1995. Vegetation characterization of Cooks Lake, Arizona. U. S. Bureau of Reclamation contract No. 1425-5-PG-32-03630 (14,400).

1995. Botanical survey of the China Dam Grazing Allotment, Chino Valley Ranger District, Prescott National Forest, Chino Valley, Arizona. Share-Cost Agreement No. CCS-09-01-95-0127-MC-26801 ($37,616).

1995. Survey for endangered or candidate plant taxa of proposed National Forest land exchanges within the Verde Valley, Yavapai County, Arizona. Coconino National Forest contract No. 43-8167-5-0171 ($2,450).

1994. Botanical survey of the Limestone Grazing Allotment, Chino Valley Ranger District, Prescott National Forest, Chino Valley, Arizona. Share Cost Agreement No. CCS-09-94-076-26201 ($36,810)

1994. Reproductive status of *Vauquelinia californica* ssp. *pauciflora*. Contract from the Arizona Department of Agriculture, Phoenix, Arizona through the Arizona State University Department of Botany, ASU No. 94-0925 (4,000).

1994. Nutrioso milk-vetch (*Astragalus nutriosensis*) status survey. Contract from the Arizona Department of Agriculture, Phoenix, Arizona ($4,000).

1993. Botanical survey of the Camp Wood, Williamson Valley, Yolo North, and Yolo South grazing allotment of the Chino Valley Ranger District, U. S. Forest Service, Chino Valley, Arizona. Contact No. 43-8191-3-0132 ($22,292).

1992. Prescott National Forest. Botanical Survey of the Woodchute, Juniper Mesa, Sycamore Canyon and Apache Creek Wilderness Areas. Contact No. 43-8191-2-0221 ($17,797).

1992. U. S. Army Corps of Engineers. Construction of a Arizona Riparian plant reference collection. Contract No. DACW09-92-M-0103 ($2,500).

1991. U. S. Army Corps of Engineers. Construction of a Arizona Riparian plant reference collection. Contract No. DACW09-91-M-0342 ($2,500).

1982. Research assistantship, cytogenetic analysis of *Cowania* and *Fallugia* (Rosaceae). The feasibility of host range expansion in nitrogen_fixing non_legumes. Arizona State University Research Fund 521475, and National Science Foundation grant # TCM_8204885. Tempe, Arizona.

1981. Research assistantship, alkaloid analysis of *Opuntia* (Cactaceae). Arizona State University, Tempe, Arizona.

1980. Inventory of the rare and endangered species of Six Rivers National Forest. United States Forest Service contact, Eureka, California.

1979. Distribution of the rare and endangered plant species, *Arabis mcdonaldiana*. United States Forest Service contract, Eureka, California.

1978-1979. Sensitive species inventories for proposed timber sales. Bureau of Indian Affairs; Eureka, California.

1978. Autecology of the rare plant species, *Pityopus californicus*. United States Forest Service contact. Eureka, California.

TEACHING AND RELATED EXPERIENCE

1996 to present. Graduate advisor for Prescott College, Prescott, Arizona.

1996. Short courses in plant identification for the U. S. Forest Service Intermountain Research Station and the Prescott National Forest.

1987-1997. Independent study advisor for Prescott College, Prescott, Arizona.

1986. Lecturer. Plant systematics and tropical dendrology. Ministry of Agriculture and Instituto Normal Bilingue Intercultural Shuar, Ecuador.

1980-1982. Lab instructor. Cytogenetics, one semester; Arizona Flora, three semesters; Plants, Pleasures, and Poisons, one semester. Arizona State University.

1976_1978. Lab instructor. General Botany, three quarters; Plant Systematics; Plants and Man. Humboldt State University.

1973-1975. Technical assistant. Plant Anatomy; Plant Morphology; Plant Taxonomy. San Jose State University.

ABSTRACTS AND NOTES (*also presented as conference papers)

Coleman, R. A. and M. A. Baker. 2006. *Microthelys rubricallosa*, a new addition to the orchid flora of the United States. Orchids 75:56-57.

*Baker, M. A. 2005. Morphological and cytological analyses in *Cylindropuntia* (Cactaceae) the circumscription of *C. multigeniculata, C. echinocarpa*, and *C. whipplei*; including the resurrection of *C. whipplei* var. *enodis*. Paper presented at the annual meetings of the Society of Plant taxonomists. Austin, Texas.

*Baker, M. A. 2004. Pros and cons of using phenetic analysis of morphological data for the circumscription of problematic taxonomic groups; examples from the Cactaceae of the Chihuahuan desert Region. 6th Symposium on the Natural Resources of

the Chihuahuan Desert. Alpine, Texas.

*Baker, M. A. 2003. Further elucidation of the taxonomic relationships and geographic distribution of *Escobaria sneedii* var. *sneedii*, *E. sneedii* var. *leei*, and *E. guadalupensis* (Cactaceae). Fourth Southwestern Rare and Endangered Plant Conference; Las Cruces, New Mexico.

*Baker, M. A. 1996. Recommendations for the preservation of rare plants and unique habitats within the Chino Valley Ranger District, central Arizona. Second Southwestern Rare and Endangered Plant Conference; Flagstaff, Arizona.

*Baker, M. A. 1996. Reproductive status of Arizona rosewood (*Vauquelinia californica* ssp. *pauciflora*). Arizona-Nevada Academy of Science 30(Proc. Suppl.).

*Baker, M. A. & D. J. Pinkava. 1994. Interspecific hybridization in *Opuntia* (Cactaceae) in Arizona and adjacent states. Arizona-Nevada Academy of Science 29(Proc. Suppl.):20.

*Johnson, R. A., M. A. Baker, D. Pinkava, and G. A. Ruffner. 1992. Population dynamics and demography of Acuña Cactus (*Echinomastus erectrocentrus* var. *acunensis*). First Southwestern Rare & Endangered Plant Congress, US F&WS, Santa Fe, NM, 30 Mar-Apr 2.

Nesom, G. L. & M. A. Baker. 1991. First report of *Erigeron velutipes* (Asteraceae) from the United States. Phytologia 71(5):414-415.

Pinkava, D. J., B. D. Parfitt, and M. A. Baker. 1989. The *Opuntia standlyi* complex (Cactaceae). Arizona-Nevada Academy of Science 24(Proc. Suppl.):13

Baker, M. A. and B. D. Parfitt. 1986. Reports. In: A. Love (ed.), IOPB chromosome number reports XCI. Taxon 35:405-406.

*Baker, M. A. 1986. On the distribution and evolution of *Opuntia* of mainland Ecuador. Amer. J. Bot. 73 (5):750.

*Baker, M. A. 1986. Botanical Knowledge of the Shuar of Eastern Ecuador. Paper given at the annual meeting of the Society for Economic Botany, The New York Botanical Garden, Bronx, NY.

Parfit, B. D., M. A.Baker, and M. L. Gallagher. 1985. Reports. In: A. Love (ed.), IOPB chromosome number reports LXXXVI. Taxon 34:162-163.

*Baker, M. A. 1984. Triploidy: an isolation mechanism possibly leading to "speciation" in *Opuntia*, subgenus *Cylindropuntia* (Cactaceae). Amer. J. Bot. 71(5, part 2):155.

*Wallace, R. S., E. Fairbrothers, M. A. Baker, and D. J. Pinkava. 1984. Seed enzyme iso-electric-focusing as an aid toward classification in the genus *Opuntia* (Cactaceae). Amer. J. Bot. 71(5, part 2):197-198.

*Baker, M. A. 1983. The evolution, ecology, and distribution of *Pityopus*. J. Ariz._Nev. Acad. Sci. 18(Suppl.):30.

*Baker, M. A. and D. J. Pinkava. 1983. Megasporogenesis and megagametogenisis in *Opuntia fulgida*, *O. spinosior*, and their triploid hybrids. Amer. J. Bot. 70(5, part 2):104.

*Trushell, M. N., M. A. Baker, and D. J. Pinkava. 1983. Hybridization among *Opuntia whipplei*, *O. acanthocarpa*, and *O. leptocaulis* (Cactaceae). J. Arizona_Nevada Academy of Science (Suppl.):28.

Trushell, N., D. J. Pinkava, and *M. A. Baker. 1983. A taxonomic revision of the *Opuntia whipplei* complex (Cactaceae). Amer. J. Bot. 70(5, part 2):133.

*Baker, M. A. 1982. Preliminary studies of a hybrid polyploid complex of cholla. J. Ariz._Nev. Acad. Sci. 17(Suppl.):17.

*Baker, M. A. 1982. The ethnobotany of the Karok, Tolowa, and Yurok Indians of Northwest California. Bot. Soc. Amer. Misc. Pub. No. 162:83. Baker, M. A. 1982.

*Baker, M. A. 1982. Alkaloids of a clonal hybrid complex in *Opuntia* (Cactaceae). Bot. Soc. Amer. Misc. Pub. No. 162:83.

Baker, M. A. and Parfitt, B. D. 1982. Reports. In: A. Love (ed.),IOPB chromosome number reports LXXVII. Taxon 31:764-765.

Baker, M. A. 1982. Scanning electron micrographs of seeds. In: L. Bremer. *Coryphantha pusilliflora* sp. nov. A new species from Coahuila, Mexico. Cact. Succ. J. (US) 54:133_134.

*Baker, M. A. 1981. Plant folk taxonomy of the Yurok, Tolowa, and Karok Indians. J. Ariz._Nev. Acad. Sci. 16(Suppl.):9.

Baker, M. A. 1981. Scanning electron micrographs of seeds. In: L. Bremer. *Coryphantha grata* sp. nov. A new species from Tamaulipas, Mexico. Cact. Succ. J. (US) 53:276_277.

SELECTED REPORTS

Baker, M. A. 2007. Geographic Distribution of *Coryphantha robustispina* ssp. *robustispina* (Pima Pineapple Cactus) and *Echinomastus erectocentrus* var. *erectocentrus* (Needle-spined Pineapple Cactus) within the extended City of Tucson HCP Southlands planning area. Prepared for the City of Tucson.

Baker, M. A. 2005. Geographic Distribution of *Coryphantha robustispina* ssp. *robustispina* (Pima Pineapple Cactus) and *Echinomastus erectocentrus* var. *erectocentrus* (Needle-spined Pineapple Cactus) within the City of Tucson HCP planning area. Prepared for the City of Tucson.

Baker, M. A. 2005. Vegetation of the Scott-Able Fire and its immediate buffer area, a four-year study. Report to the Lincoln National Forest, Alamogordo, New Mexico.

Baker, M. A. 2004. Phenetic analysis of *Coryphantha*, section *Robustispina* (Cactaceae), part 1: stem characters. Report to the Arizona Department of Game & Fish, Phoenix, Arizona.

Baker, M. A. 2002. Phenetic analysis of *Cylindropuntia multigeniculata* (Clokey) Backb. (Cactaceae) and its relatives. A report prepared for the U.S. Fish and Wildlife Service, Reno, Arizona.

Baker, M. A. 2001. Morphometric analysis of *Echinocereus arizonicus* and its allies (section *Triglochidiatus*, Cactaceae). A report prepared for the U.S. Fish and Wildlife Service, Tucson, Arizona.

Baker, M. A. 2000. Vegetation along the Lower Santa Cruz River, Tucson, Arizona. Prepared for the U. S. Bureau of Reclamation, Phoenix, Arizona. 40pp. illust.

Baker, M. A. 1999. The status of known distributions within Coronado National Forest of *Allium glandulosum, Conioselinum scopulorum*, *Eriogonum arisolius*, *Eupatorium bigelovii*, *Lupinus huachucanus* and *Stellaria porsildii*. Prepared for the Coronado National Forest, Tucson, Arizona. 16pp,, illust.

Baker, M. A. 1996. A Botanical Survey of the Antelope Hills, Horseshoe, China Dam, and Perkinsville Grazing Allotments of the Chino Valley Ranger District, Prescott National Forest, Arizona. 105pp. illust.

Baker, M. A. 1996. Vegetation Characterization of the Cooks Lake Conservation Area and its associated buffer zones, Pinal County, Arizona. Prepared for the U. S. Bureau of Reclamation, Phoenix, Arizona. 109pp. illust.

Baker, M. A. & T. M. Wright. 1995. Survey for endangered or candidate plant taxa of proposed National Forest land exchanges within the Verde Valley, Yavapai County, Arizona. 20pp., illust.

Baker, M. A. & T. M. Wright. 1995. Botanical survey of the Limestone Grazing Allotment, Chino Valley Ranger District, Prescott National Forest, Arizona. 89pp., illust.

Baker, M. A. 1994. Reproductive status of Arizona rosewood (*Vauquelinia californica* ssp. *pauciflora*). Report to the Arizona Department of Agriculture, Phoenix, Arizona.

Baker, M. A. & T. M. Wright. 1994. Nutrioso milk-vetch (*Astragalus nutriosensis*) status report. Report to the Arizona Department of Agriculture, Phoenix, Arizona.

Baker, M. A. & T. M. Wright. 1994. Botanical survey of the Camp Wood, Williamson Valley, Yolo North, and Yolo South grazing allotment of the Chino Valley Ranger District, U. S. Forest Service, Chino Valley, Arizona. 120pp., illust.

Baker, M. A. and T. Wright. 1993. Botanical survey of the Apache Creek, Juniper Mesa, Sycamore Canyon, and Woodchute Wilderness areas of the Prescott National Forest, Arizona. 188pp., illust.

Johnson, R. A., M. A. Baker, D. J. Pinkava, N. Trushell, and G. A. Ruffner. 1990. Special status plants of Organ Pipe Cactus National Monument, Arizona: Sensitive Ecosystems Project. Final Report to National Park Service, Organ Pipe Cactus National Monument, Ajo, Arizona. xi + 223 pp.

REFEREED PUBLICATIONS

Baker, M. A., D. J. Pinkava, J. R., Rebman, B. D. Parfitt, and A. D. Zimmerman. Chromosome numbers in some cacti of western North America. VIII. Haseltonia (in prep.).

Baker, M. A. 2006. Circumscription of *Echinocereus arizonicus* subsp. *arizonicus*. Phenetic analysis of morphological characters in section *Triglochidiatus* (Cactaceae), part II. Madroño 53:388-399.

Baker, M. A. 2006. A new florally dimorphic hexaploid, *Echinocereus yavapaiensis* sp. nov. (section *Triglochidiatus*, Cactaceae) from central Arizona. Plant Systematics and Evolution. 258:63-83

Baker, M. A. 2003. Progress on the taxonomy of the claret-cup cacti (Echinocereus, section Triglochidiatus) of the United States. Cactus and Succulent Journal (US) 75 (5):217-223.

Baker, M. A. 2002. Chromosome numbers and their significance in some Opuntioideae and Cactoideae (Cactaceae) of mainland Ecuador and Peru. Haseltonia (9): 69-77.

Bennett, B. C., M. A. Baker, and P. Gómez A. 2002. Ethnobotany of the Shuar of Eastern Ecuador. Advances in Economic Botany 14:1-299.

Pinkava, D. J., J. P. Rebman, and M. A. Baker. 2001. Nomenclatural changes in *Cylindropuntia* and *Opuntia* (Cactaceae) and notes on interspecific hybridization. Journal of the Arizona-Nevada Academy of Science 33(2):150.

Baker, M. A. And R. Johnson. 2000. A morphometric study of *Escobaria sneedii* var. *sneedii*, *E. sneedii* var. *leei* and *E. guadalupensis*. Systematic Botany 24 (4): 577-587.

Baker, M. A. And D. J. Pinkava. 1999. A new Arizona hybrid cholla, *Opuntia campii* (Cactaceae). Cactus and Succulent Society of America 71:320-322.

D. J. Pinkava, J. P. Rebman, and M. A. Baker. 1999. Chromosome numbers for some cacti of Western North America VII. Haseltonia no. 6:32-41.

Baker, M. A. 1999. Vegetation and plant communities of the Tonto Basin in the vicinity of Theodore Roosevelt Lake, Arizona. Arizona State University, Tempe, Arizona.

Baker, M. A. 1996. Recommendations for the preservation of rare plants and unique habitats within the Chino Valley Ranger District, Central Arizona. Pp. 237-242. In: Maschinski, J. H. D. Hammond, and L. Holer, eds. Southwestern Rare and Endangered Plants.: Proceedings of the Second Conference; 1995 September 11-14, Flagstaff, Arizona. General Technical Report RM-GTR-283. Fort Collins, Co: U. S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experimental Station.

Pinkava, D. J. B. D. Parfitt, M. A. Baker, and R. D. Worthington. 1992. Chromosome numbers in some cacti of western North America-VI. Madroño 39(2):98-113.

Baker, M. A. 1993. Subgenus *Cylindropuntia* (Cactaceae). *In*: Hickman, J. (ed.) The Jepson Manual. University of California Press. Berkeley.

Pinkava, D. J., M. A. Baker, R. A. Johnson, N. Trushell, G. A. Ruffner, R. S. Felger & R. K. Van Devender. 1992. Additions, notes and chromosome numbers for the vascular flora of Organ Pipe Cactus National Monument, Arizona. Journal of the Arizona-Nevada Academy of Science 24-25:13-18.

Daniel, T., T. Chuang, and M. A. Baker. 1990. Chromosome numbers of American Acanthaceae. Systematic Botany 15(1):13-25.

Baker, M. A. and D. J. Pinkava. 1987. Cytological and morphometric analyses of a triploid apomict, *Opuntia kelvinensis* (subgenus *Cylindropuntia*, Cactaceae). Brittonia 39(3):387-401.

Pinkava, D. J. and M. A. Baker. 1985. Chromosome and hybridization studies of *Agave*. Desert Plants 7(2):93-100.

Baker, M. A., M. W. Mohlenbrock, and D. J. Pinkava. 1985. A comparison of two methods of preparing cacti and other succulents for standard herbarium mounting. Taxon 34(1):118-120.

Pinkava, D. J., M. A. Baker, B. D. Parfitt, M. W. Mohlenbrock, and R. T. Worthington. 1985. Chromosome numbers in some cacti of western North America.- V. Systematic Botany 10(4):471-483.

Baker, M. A., D. J. Pinkava, and B. D. Parfitt. 1983. On *Cowania* and its intergeneric hybrids in Arizona. Great Basin Nat. 44(3):484_486.

Daniel, T., B. D. Parfitt, B. D. and M. A. Baker. 1983. Chromosome numbers and their systematic implications in the Acanthaceae. Syst. Bot. (3):346_355.

PROFESSIONAL REFERENCES

Dr. Donald J. Pinkava, Professor of Botany. Director of the herbarium. Department of Botany and Microbiology, Arizona State University, Tempe, Arizona, 85287. (602) 965-3179.

Dr. Richard Felger. Director. Drylands Institute. 2509 N Camble, No 176, Tucson, Arizona 85719. (602)-321-1825.

Dr. Tom Van Devender, Research Associate. Arizona-Sonora Desert Museum, Tucson, Arizona. (520) 883-1380.

Dr. Glen Rice, Professor of Anthropology. Department of Anthropology, Arizona state University. Tempe, Arizona 85287. (602) 965-7181, 479-2406.

Barbara Phillips, Botanist, U. S. Forest Service. 2323 East Greenlaw Lane, Flagstaff, Arizona 86004. (520) 527-3600.

Sue Schuhardt, Biologist, Chino Valley Ranger District, Prescott National Forest, Chino Valley, Arizona, 866323. (520) 636-2304.

Mima Falk., Biologist. U. S. Fish and Wildlife Service, 300 West Congress, Room 4D, Tucson, Arizona 85701. (520) 670-4550.

Linda Barker, Botanist. U. S. Forest Service, Lincoln National Forest, Federal Building, 1101 New York Avenue, Alamogordo, NM 88310-6992. (505) 434-7263.

Diane Dobos-Bubno, Biologist, 3225 National Parks Highway, Carlsbad NM 88220. (505) 785-2232, ext 377.

Diane Laush, Biologist, Bureau of Reclamation, PXAO-1500, Phoenix Area Office, 6150 W. Thunderbird Road Glendale, AZ 85306-4001; 623-773-6255

Jessica Birnbaum

Biologist/Environmental Planner

Areas of Expertise

Environmental Compliance
Field Investigation
Planning
Biological Assessments
Vegetation/Rare Plant surveys
General Wildlife Surveys
Endangered Species Surveys-Level II Blunt-Nosed Leopard Lizard Surveyor
Construction Compliance and Monitoring
GPS and GIS mapping

Years of Experience

With URS: 2 Years
With Other Firms: 3 Years

Education

MS/Natural Resources: Planning and Interpretation/2007/ Humboldt State University
BS/Biology/2002/Trinity College

Registration/Certification

CDFG SC-801043-02
Level II Surveyor: Blunt-nosed leopard lizard survey protocol.

Overview

Mrs. Birnbaum is a Biologist and Environmental Planner for URS' Santa Barbara office. Mrs. Birnbaum's position at URS involves botanical and wildlife surveys, endangered species habitat assessment, vegetation and stream monitoring, and habitat restoration.

Botanical Project Experience

Vegetation Restoration Monitoring, Santa Barbara, CA. Santa Barbara Airport Wetland Restoration Project, City of Santa Barbara, June 2008-Present: Assisted in restoration for 65 acres of wetland, coastal sage scrub, and riparian habitats. Monitoring program consisting of point-intercept transect and quadrat data collection and maintenance monitoring. Participated in native seed collection. Supported the production of annual reports detailing restoration success.

California Valley Solar Ranch Project, Carrizo Plain, San Luis Obispo County, March – September 2009: Led crew of 3-6 biologists surveying for special-status plant species on approximately 3,000 acre site and mapped vegetation communities. Personally authored the botanical survey report for submittal to SunPower and the County.

Nextlight's Antelope Valley Solar Ranch One Project EIR, Los Angeles County, CA, November 2008-Present: Drafted Biological Resources section of an EIR for a proposed PV solar generating facility in Antelope Valley, California. Key issues of concern included loss of wildflower field habitat, loss of foraging habitat for sensitive grassland birds, and the potential impact upon horned lizards, an endangered species. URS submitted the biota report, which contained botanical survey results, to County SEATAC. Assisted with botanical surveys and responding to comments (RTC) from SEATAC and LA County on Biota Report and EIR.

Restoration and Stormwater Monitoring, Santa Barbara, CA. Santa Barbara Airport Wetland Restoration Project, City of Santa Barbara, June 2008-Present: Assisted in restoration for 65 acres of wetland, coastal sage scrub, and riparian habitats. Monitoring program consisting of point-intercept transect and quadrat data collection and maintenance monitoring. Participated in native seed collection. Supported the production of annual reports detailing restoration success. Conducted stormwater sampling throughout airport impact areas and drafted report.

Urban Levee Geotechnical Evaluation Program in Woodland, CA, DWR, March 2008 – June 2008: DWR's geotechnical exploration, includes testing and analysis of state and federal levees. Mrs. Birnbaum monitored the drill crews to ensure that no sensitive biological resources

are compromised. Survey efforts concentrate upon monitoring for giant garter snake as the levee area is considered ideal habitat for the species, as well as valley elderberry beetle through surveying elderberry shrubs, riparian brush rabbit, tri-colored blackbird, bank swallows and San Joaquin kit foxes.

California Emergency Levee Erosion Repair, Stockton and Sacramento, CA, for California Department of Water Resources, 2007 – 2008: Mrs. Birnbaum conducted biological field surveys, including for kit foxes and elderberry shrubs, for the Sacramento and American Rivers in the central valley region. As part of this work, she located and protected sensitive species and habitats within levee reconstruction areas.

Professional Societies/Affiliates

California Botanical Society
California Native Plant Society

Specialized Training

2009: Blunt-Nosed Leopard Lizard Identification Workshop, Wildlife Society, Bakersfield, Ca
2009: Introduction to the Second Edition of the Manual of California Vegetation Workshop, CNPS, John Sawyer, Tod Keeler-Wolf, and Julie Evans, Yolo, Ca
2009: Measuring and Monitoring Plant Populations and Vegetation Workshop, California Native Plant Society 2009 Conservation Conference, John Willoughby, Sacramento, Ca
2008: Clean Water Act Regulatory Updates, presented by the Association of Environmental Professionals, Ventura, Ca

Languages

Basic conversational/written proficiency in French and Spanish.

Chronology

6/08- Present: URS Corporation, Santa Barbara, CA.
11/07 – 6/08: URS Corporation, Sacramento, CA.
01/05 – 08/07: Masters of Science study, Humboldt State University.
06/04 – 11/04: Biological Technician, USDA Forest Service – Sierra Nevada Research Center, Quincy, CA.
06/03 – 10/03: Team Leader, Student Conservation Association – Seeds of Success, Prineville, Oregon.

Contact Information

130 Robin Hill Road, Suite 100
Santa Barbara, CA 93117
805-964-6010 ext. 421 phone
805-964-0259 fax
Jessica_birnbaum@urscorp.com

Bret Blosser
Desert Tortoise CV

bretblosser@yahoo.com
805-252-6487 cell
435-259-1933 home
P.O. Box 884, Moab, Utah 84532

Tortoise experience

2003	Line distance sampling with Kiva Biological Consulting on contract to the U.S. Fish and Wildlife Service, 60 days. I was trained by Pete Woodman and others in distance sampling and tortoise handling. I was on Peter Woodman's US Fish and Wildlife Service permit for handling listed species: TE-702631.
2004	Hyundai 2004 Fall Clearance Survey for Mercy Vaughn, 17 days. Tortoise Handling Workshop.
2005	Kristin Berry's tortoise health projects at Fort Irwin (Translocation Health Study) and MCAGCC, 19 days. Mesquite Landfill Clearance Survey for Alice Karl, 21 days.
2006	Tortoise research study led by Mercy Vaughn and Cristina Melendez near Hermosillo, Mexico, three field days. Kristin Berry's tortoise health projects at Fort Irwin (Translocation Health Study) and MCAGCC, 19 days. Tetra Tech's survey of Edwards Air Force Base led by Leslie Backus and Kathy Simon,18 days.
2007	Fort Irwin Clearance with Project Peter Woodman from March 19 to May 13 and from Sept 18 to Oct 18. I am on Peter Woodman's US Fish and Wildlife Service permit for handling. Kristin Berry's tortoise health projects at Fort Irwin (Translocation Health Study) from May 15 to June 8. Tetra Tech's survey of Edwards Air Force Base with Leslie Backus and Kathy Simon from June 9 to 13 and June 18. Fort Irwin Clearance Project with Peter Woodman from September 19 to October 18. I am on Peter Woodman's US Fish and Wildlife Service permit for handling and transmittering.
2008	Fort Irwin SEA and WEA Clearance Project with Peter Woodman during Spring (mid-March to mid-May) and Fall (September and November). I am on his US Fish and Wildlife

	Service permit for handling, transmittering, and re-transmittering. Volunteer tortoise research study organized by Mercy Vaughn, Alice Karl, and Cristina Melendez in Mexico in November, five field days.
2009	Tortoise and plant surveys for Alice Karl near Blythe, Baker, and Daggett for 35 days during March, April, and May. Tortoise clearance at Hyundai Test Track and tortoise survey near Rice for Mercy Vaughn for 25 days in April, and May. Tortoise and plant survey for Peter Woodman near Primm, 3 days.
2010	Rare plant and tortoise surveys for Alice Karl near Blythe and Desert Center, 18 days, March and April.
2010	Rare plant survey for URS near Barstow, 7 days, April.
2010	Tortoise survey for windfarm development, 13 days, April and May.

Education

Ph.D., Tulane University, Department of Anthropology, 2004; dissertation title: “Religious Images in Túapúria Huichol Ceremonialism, Western Mexico, 1590 to 2000.”

M.A., Tulane University, Department of Anthropology, 1993

B.A., University of California, Los Angeles, Department of Anthropology, 1970

Ethnographic field research

1992-2001: 30 months, Sierra Huichol, western Mexico.

1985-2000: 5 months, Sierra Mazateca, Oaxaca, Mexico.

Archeological field research

2001: Survey in El Malpais National Park, New Mexico, two weeks.

1998-1999: Survey in Chaco Canyon National Historical Park, New Mexico, four weeks.

1990-1992: Survey and excavation, UCLA Nacbe Project, Peten, northern Guatemala, six weeks.

Katherine Caldwell

Senior Biologist

Areas of Expertise

Vegetation Ecology
Restoration
Mitigation Planning
Botanical Surveys

Years of Experience

With URS: 3 Years
With Other Firms: 0 Years

Education

MS/Natural Resources/2007/North Carolina State University
BS/Ecology/2005/Rice University
BA/Environmental Science and Engineering/2005/Rice University

Registration/Certification

2009/Certified Associate Ecologist/ Ecological Society of America
2008/40-hour HAZWOPER
2007/Certificate of Training in Wetlands Delineation/NC

Overview

Ms. Caldwell is a biologist specializing in ecosystem ecology with specific applications to vegetation surveying, habitat evaluation, mitigation site development, and restoration design. At URS, she has written numerous environmental assessments and conducted both plant and animal surveys. Previously, Ms. Caldwell worked for the National Park Service monitoring endangered plants, surveying vegetation plots, and classifying vegetation communities.

Project Specific Experience

Biological Consulting

Biologist, Olancha/Cartago 4-Lane Project, Wetland Delineation, Inyo County, CA, Caltrans, 2009, $80K: Conducted wetland delineation and identified waters of the U.S. for 5 alignments along 14 miles of roadway utilizing the 2008 Ordinary High Water Mark Delineation and the 2008 Arid West Delineation manuals. Identified desert plants and wetland drainages for 1 week in the Lone Pine, CA area.

Biologist, Alamo Creek Project, Vacaville, CA, Federal Emergency Management Agency (FEMA), 2008, $300K: Served as project botanist, conducting multiple seasonal rare-plant surveys of a 60-acre parcel. Prepared the rare-plant survey report.

Biologist, Tracy Solar Project, Tracy, CA, GWF Energy, 2009, $50K: Acted as botanist for rare-plant study and community classification study to be included in an Application for Certification for a solar generation project.

Biologist, SR-87 Guadalupe Mitigation Project, San Jose, CA, California Department of Transportation (Caltrans), 2008, $64K: Long-term vegetation monitoring including transect and plot monitoring for vegetative cover, species composition, restoration success, and natural recruitment.

Biologist, Ravenswood Project, Menlo Park, CA, California Department of Transportation (Caltrans), 2008 – Present, $46K: Post-construction monitoring of wetland and upland habitat. Contingency measure development and evaluation. Preparing monitoring report.

Biologist, Harvey Marsh, East Palo Alto, CA, California Department of Transportation (Caltrans), 2008 – Present, $25K: Post-construction monitoring of wetland and upland habitat. Contingency measure development and evaluation. Preparing monitoring report.

Biologist, Review and Petition for Listing of Three Rare Plants, San Francisco, CA, Presidio Trust/Golden Gate National Recreation Area (GGNRA), 2009, $30K: Performed literature review for three rare plants, recommending two for listing under the federal Endangered Species Act. Prepared two petitions for listing based on these findings for the Presidio Trust.

Katherine Caldwell

Task Management

Biologist, In-House Biologist for On-Call Tasks, Alameda, Contra Costa, San Mateo, and Santa Clara Counties, CA, California Department of Transportation (Caltrans), 2008, $7M: Served as an in-house Caltrans biologist on 21 active projects under a URS on-call environmental contract. Work consisted of representing Caltrans' Office of Biological Science and Permitting at project meetings, monitoring project progress and biology needs, reviewing submitted environmental documents and permit applications, preparing permits and other environmental documents, and preparing scopes and budgets for work by other URS staff assisting on projects.

Professional Societies/Affiliates

Ecological Society of America
Phi Kappa Phi Honor Society
Xi Sigma Pi Forestry Honor Society
Friends of the Jepson Herbarium

Awards

2009/Quarterly Achievement Award/URS
2007/Forestry and Environmental Resources Faculty Fellowship for Excellence in Graduate Education/North Carolina State University
2006/Lazar Travel Grant/Duke University
2005/Huxley Scholarship/Rice University

Specialized Training

2007/Field Safety Training
2008/OSHA 40-hour HAZWOPER
2009/8-hr HAZWOPER Refresher
2009/Mitigation Measure Development and Monitoring–UC Davis Ext.

Chronology

08/07 – Present: URS Corporation, Biologist, Oakland, CA
08/05 – 08/07: North Carolina State University, Research Assistant, Raleigh, NC
05/04 – 08/04: Shenandoah National Park, Biological Research Technician (Botany), Luray, VA

Contact Information

URS Corporation
1333 Broadway, Suite 800
Oakland, CA 94612-1924
Tel: 510.893.3600
Direct: 510.874.3122
Fax: 510.874.3268
katherine_caldwell@URSCorp.com

SCOTT CARROLL

Education

1. BA, McPherson College
2. Graduate Courses completed in 1997 and 1998, University of Arizona

Permits

1. USFWS Endangered Species Permit TE37118-0
    - Cactus ferruginous pygmy-owl (pygmy-owl), Southwestern willow flycatcher
2. AGFD Scientific Collecting Permit SP795063
3. Certified Arborist WE-7060A, International Society of Arboriculture

Professional Training

1. Pygmy-owl Survey protocol Training
2. Southwestern Willow Flycatcher Survey protocol Training
3. Chiricahua Leopard Frog Certification Workshop
4. Desert Tortoise Survey protocol Training
5. Burrowing Owl Surveyor Certification Workshop
6. Yellow-billed cuckoo Survey protocol Training

Expertise

Scott has 15 years experience conducting field surveys for plant and animal species in Arizona and New Mexico. He has conducted over 1,000 surveys for the pygmy-owl during that time as a private contractor and as an employee of Westland Resources. He has also surveyed for other special status species, including the desert tortoise, Arizona hedgehog cactus, Pima pineapple cactus, and the Southwestern willow flycatcher. He has experience relocating endangered species. He also has experience performing vegetation inventories, sampling vegetation, and performing noxious weed surveys. Scott has performed Native Plant Protection Ordinance inventories, which involves mapping, identifying, and rating the viability and transplantability of trees and shrubs. He has monitored the success of transplanted trees and shrubs. Scott has experience preparing Biological Evaluations (BE) and Biological Assessments, and conducting jurisdictional delineations of waters of the U.S., including wetlands.

Key Pima County Projects

Pygmy-owl Surveys—Proposed Transportation Projects (2007); Pima County, AZ

1. Hohokam Middle School: Tetakusim Road from Camino de Oeste to Sorrel Lane
2. Kolb Road: Sunrise Drive to Sabino Canyon Road
3. La Cholla Boulevard: River Road to Ruthrauff Road
4. Laguna Elementary – Shannon Road: Curtis Road to Rillito River
5. Vail/Colossal Cave Road: Acacia Elementary School to Old Vail Middle School
6. Valencia Road: Mark Road to Ajo Highway
7. White House Canyon Road: Continental Road/Old Nogales Highway to Continental Elementary and Middle School

Other Key Projects

Conducted surveys for pygmy-owls for the following proposed residential developments—2007

1. Pima County

- Camino de Manana
- Decker
- Elephant Head right-of-way
- Las Mananitas
- Las Nubes
- Las Rocas
- Southwest Kokopelli Homes
- Rancho Soldados

2 Pinal County

- Anthem at Merrill Ranch
- Arroyo Linda
- Merrill Ranch

Conducted surveys for pygmy-owls for the following proposed residential developments--2008

1 Pima County

Camino de Manana
Camino de Vaquero
Vail Ridge Estates
Elephant Head right-of-way and project site
Pomegranate Farms
Las Nubes
Diamond Bell Ranch Unit 14
San lucas
Tierra Linda

2 Pinal County

Anthem at Merrill Ranch
Merrrill Ranch
Hunt-Attaway

Diamond Bell Ranch Unit 14, Pima County, AZ
Scott wrote a BE and has conducted pygmy-owl surveys for the past three years (2005 – 2008) on this 640-acre property.

La Osa Ranch, Pinal County, AZ
Scott conducted pygmy-owl surveys for this project during 2006 and 2007.

Gray Ranch, Animas, NM
This project involved conducting vegetation surveys throughout the 350,000-acre Gray Ranch as well as on-going research monitoring. Surveys involved collecting and identifying grasses and other plants, and preparing specimens for the Gray Ranch herbarium. Work was provided for the Animas Foundation, Malpai Borderlands Group, and the U.S Forest Service in Arizona and New Mexico.

Navajo Partition Land/Joint Use Area on Navajo and Hopi Reservations
This project involved vegetation transect monitoring on the Navajo Partition Land.

Related Coursework
Ornithology, Systematic Botany

Kyle Christie, M.S.

38 Pine Cone Drive
Flagstaff, AZ 86001
(928) 699-8410
kylechristie1@hotmail.com

EDUCATION

Northern Arizona University, Flagstaff, AZ May 2006

- Master of Science *with Distinction*. Major: Biology/Botany
- Biology Department *Best Master's Thesis of 2007*

Colorado College, Colorado Springs, CO May 2001

- Bachelor of Arts. Major: Biology
- *Merriam G. Hartwell Award* for Excellence in the Classics

EXPERIENCE

Research Specialist, Northern Arizona University, Flagstaff, AZ Fall 2007 - Present

- Conducted backcountry vegetation surveys for the USGS-NPS National Vegetation Mapping Program at Grand Canyon National Park
- Authored various project reports; managed data, processed plant collections
- Supervised an 8-person field crew
- Collaborated with *NatureServe* scientists to create local community descriptions following NVC protocols for vegetation communities in Grand Canyon National Park

Vegetation Ecologist, Kass Green and Associates, Berkeley, CA Summer 2009 - Present

- Assisted in the development of a mapping scheme, and provided field reconnaissance to develop mapping signatures of plant communities at Grand Canyon National Park
- Analyzed and edited spatial and tabular data using ArcGIS to map plant communities in Grand Canyon National Park

Consulting Botanist, National Park Service, Flagstaff, AZ Fall 2009

- Inventoried springs in Grand Canyon National Park at-risk due to uranium mining
- Authored a final status report for the National Park Service

Botanist, Ecological Restoration Institute, Flagstaff, AZ Summer 2009

- Identified plants species in the field, estimated species cover, and completed transects to sample vegetation monitoring plots; southern Rocky Mountains, Colorado
- Supervised a 4-person field crew

Consulting Botanist, USGS/Grand Canyon Monitoring and Research Center, Flagstaff, AZ Summer 2009

- Assessed the accuracy of a USGS-NPS vegetation map of the Colorado River corridor

Consulting Botanist, Kiva Biological Consulting, Inyokern, CA Spring 2009

- Conducted rare plant surveys in the Mojave Desert of southern Nevada

Consulting Botanist, Pinnacle Mapping Technologies, Flagstaff, AZ Spring 2009

- Assisted with an arroyo vegetation mapping project at Fort Bliss, Chihuahuan Desert

Consulting Botanist, E^2M, Englewood, CO Spring - Summer 2007

- Conducted backcountry vegetation surveys for the USGS-NPS National Vegetation Mapping Program at Grand Canyon National Park
- Established study plots, and identified vegetation to the plant association and species level following National Vegetation Classification protocols

Botany Technician, United States Geologic Survey, Flagstaff, AZ Fall 2006

- Conducted an accuracy assessment for the USGS-NPS National Vegetation Mapping Program at Petrified Forest National Park
- Identified plant communities to the association level; gathered environmental, geologic, and soil data from study sites

Botany Technician, Colorado Natural Heritage Program, Fort Collins, CO Summer 2006

- Conducted backcountry vegetation surveys for the USGS-NPS National Vegetation Mapping Program at Great Sand Dunes National Park
- Navigated with topographic maps, compass, and GPS to remote study locations

Database Analyst, Southwest Rare Plant Task Force, Flagstaff, AZ Spring 2006

- Collaborated with *NatureServe* database managers to create a list of rare plant species in the southwestern United States for a regional conference

Teaching Assistant, Northern Arizona University, Flagstaff, AZ Fall 2004 - Spring 2006

- Laboratory instructor for Biology 415: *Plant Taxonomy* (1 semester)
- Field instructor for Biology 414: *Native Plants of Arizona* (2 semesters)
- Laboratory instructor for Biology 181: *The Unity of Life* (2 semesters)

Consulting Botanist, National Park Service, Flagstaff AZ Summer 2005

- Collaborated on the *Herbarium Specimen Verification and Databasing Project* for the Southern Colorado Plateau National Parks

Consulting Botanist, Navajo Natural Heritage Program, Window Rock, AZ Summer 2004

- Conducted field surveys for *Erigeron rhizomatus*; a federally listed rare plant species; discovered 10 new populations of the species
- Conducted spatial habitat modeling in ArcGIS to identify additional inventory areas
- Submitted a final status report to the United States Fish and Wildlife Service

GIS Technician, USGS/Grand Canyon Monitoring and Research Center, Flagstaff, AZ Spring 2004

- Constructed a digital map of vegetation associations along the Colorado River corridor of Grand Canyon National Park using ArcGIS
- Assessed map accuracy and ground-truthed vegetation polygons in the field

PUBLICATIONS

- K. Christie. 2009 (in progress). Floristic dynamics across a semi-arid chronosequence in Northern Arizona.
- K. Christie, G. Rink, and T. Ayers. 2009 (in review). Additions to the flora of Grand Canyon National Park resulting from National Vegetation Mapping Program fieldwork. *Canotia*.
- K. Christie. 2009. Phytogeography and floristics of Pinyon-Juniper woodlands in northern Arizona. *Western North American Naturalist* 69(2): 155-164.
- K. Christie. 2008. Vascular flora of the lower San Francisco Volcanic Field, Coconino County, Arizona. *Madroño* 55(1): 1-14.
- K. Christie. 2006. Noteworthy Collections - Arizona. *Madroño* 53(4): 409.
- K. Christie, M. Currie, L.S. Davis, M. Hill, S. Neal, and T. Ayers. 2006. Vascular Plants of Arizona: Rhamnaceae (Buckthorn Family). *Canotia* 2(1): 23-46.

MEDICAL TRAINING

- Wilderness First Responder, WMI Certification, valid through May 2011

REFERENCES

- Dr. Tina Ayers, Professor, Northern Arizona University, (928) 523-9482, tina.ayers@nau.edu
- Dr. Michael Kearsley, Vegetation Mapping Coordinator, Grand Canyon National Park, (928) 638-7462, michael_kearsley@nps.gov
- Judy Springer, Senior Research Specialist, Ecological Restoration Institute, (928) 523-7752, judith.springer@nau.edu

Michelle Cloud-Hughes

(619) 594-2883 (Office)
(619) 299-6350 (Home)
(619) 929-2586 (Cell)
mhughes@projects.sdsu.edu

Education:

B.S. Biology with an emphasis in Ecology, *cum laude,* May 1998
San Diego State University, San Diego, CA

Relevant Experience:

Project Manager, U.S. Army National Training Center, Fort Irwin
January 2003 – Present
Soil Ecology and Restoration Group, San Diego State University Research Foundation

- Coordination and implementation of multiple day, multiple work site revegetation and erosion control fieldwork for 3 to 9 person crews
- Procurement and operation of heavy equipment including graders, trenchers, dozers, backhoes, front-loaders, Bobcat-mounted augers, dump trucks, and water trucks
- Coordination and implementation of monthly maintenance and biannual survival monitoring of up to 2600 transplanted native shrubs distributed between 4 remote work sites
- Biannual reporting of revegetation and erosion control results

Project Manager, Dos Palmas Preserve, Mitigation for the Coachella Canal Lining Project
January 2006 – Present
Soil Ecology and Restoration Group, San Diego State University Research Foundation / AMEC Earth & Environmental

- Sampling and analysis of preserve soils to determine potential revegetation areas
- Experimental design and implementation of mesquite revegetation pilot project
- Coordination and implementation of mesquite revegetation pilot project
- Monthly maintenance and bimonthly reporting of mesquite revegetation results

Project Manager, Native Habitat Enhancement for Orcutt's Spineflower (*Chorizanthe orcuttiana),* Naval Base Point Loma
September 2006 – Present
Soil Ecology and Restoration Group, San Diego State University Research Foundation

- Annual vegetation monitoring within *C. orcuttiana* habitat areas and quantitative monitoring of *C. orcuttiana* populations
- Photo and quantitative monitoring of soil erosion and invasive species encroachment on *C.*

orcuttiana habitat areas
- Herbicide and manual removal of invasive species from *C. orcuttiana* habitat areas
- Installation and maintenance of erosion control materials, including jute netting, straw wattles, and native seedlings

Project Manager, Coastal Sage Scrub Habitat Development Project in Support of the Palos Verdes Blue Butterfly (*Glaucopsyche lygdamus ssp.* palosverdensis), Defense Fuel Support Point (DSFP), San Pedro, CA
October 2006 – Present
Soil Ecology and Restoration Group, San Diego State University Research Foundation

- Coordination and implementation of supplemental revegetation
- Annual vegetation monitoring of transplanted coastal sage scrub species and surrounding vegetation within restored areas
- Annual reporting of coastal sage scrub restoration results

Author, Vegetation Management Plan for Naval Base San Diego Mission Gorge Recreation Facility (MGRF), San Diego, CA
October 2006 – Present
Soil Ecology and Restoration Group, San Diego State University Research Foundation

- Assessment of current and potential future of invasive plant species impacts on MGRF and development of a plan to minimize impacts
- Assessment and prioritization of potential areas for habitat restoration
- Development and composition of a comprehensive vegetation management plan for coastal sage scrub habitat surrounding the MGRF in support of the California Gnatcatcher (*Polioptila californica ssp. californica*) and three sensitive plant species

Botanist
January 2001 - Present
Soil Ecology and Restoration Group, San Diego State University Research Foundation

- Senior botanist involved in collection, identification, and photographic documentation of native and non-native plant species from California desert, montane, chaparral, and coastal sage scrub biomes

Research Assistant
April 1997 - July 1998 & January 2001 – January 2003
Soil Ecology and Restoration Group, San Diego State University Research Foundation

- Propagation and maintenance of native desert, coastal sage scrub, and chaparral plant species
- Revegetation and erosion control fieldwork in desert, coastal sage scrub, and chaparral

- Soil analysis for macronutrients, salinity, pH, texture, and mycorrhizae

Professional Activities:

- Member, California Native Plant Society, 1998 – Present
- California Native Plant Society Vegetation Survey Volunteer, January 2010 - Present
- Photographer, U.C. Berkeley CalPhotos Image Library, 2002 – Present, 883 photos submitted (http://calphotos.berkeley.edu)
- Presenter, "Restoration on Desert Military Lands", Association of Environmental Professionals Conference, April 2006
- Author, San Diego Chapter California Native Plant Society newsletter, *Chorizanthe orcuttiana: A restoration success story*, January 2007
- Presenter, San Diego Chapter California Native Plant Society, *Guns & Roses: Adventures in Desert Restoration at the U.S. Army National Training Center, Fort Irwin,* February 2007
- Presenter, "Restoration on Desert Military Lands", Society for Ecological Restoration California Chapter Annual Conference, October 2007

References:

Tom Zink
Director, Soil Ecology and Restoration Group, San Diego State University Research Foundation
(619) 594-5697 (office)
tzink@sunstroke.sdsu.edu

Julie Janssen
Former Project Coordinator, Soil Ecology and Restoration Group, San Diego State University Research Foundation
(619) 445-8771 (home)
(619) 249-9510 (cell)
juljanssen@yahoo.com

Dr. Ellen Bauder
Plant Ecologist, Adjunct Biology Professor (retired), San Diego State University
(719) 539-5344 (home)
ebauder@sunstroke.sdsu.edu

Anthony Santare & Christina Shanney
Project Coordinators, Soil Ecology and Restoration Group, San Diego State University Research Foundation
(619) 594-6621 (office)
(619) 249-6206 (Anthony's cell)
(858) 472-2450 (Christina)

Richard Crawford

361 South Camino Del Rio #253
Durango Co, 81302
(702) 672-5055
Rich_Crawford1@yahoo.com

Education

Bachelor of Science, Environmental Biology, Fort Lewis College (FLC), Durango, CO, 2004
Minor: Chemistry

Purpose

I am an independent consulting biologist with experience conducting and leading botanical and wildlife surveys in California, Nevada, Arizona, Utah, Colorado, and Wyoming.

Project Experience

Kiva Biological Consulting/Tetra Tech, Inc
April-May 2009
Proposed Solar Power Generation Site
Jean, NV
Botanist

Assisted Dr. Marc Baker, Dr. Robert Johnson, and Glenn Rink to conduct rare plant surveys on approximately 12,000 acres near Jean, NV in creosote bush scrub community. Approved by BLM and USFWS in Las Vegas, NV to conduct rare plant surveys.

Westwind Bio/Eldorado Rock
October 2008- Feb 2009
Boulder City Bike Path
Boulder City, NV
Lead Biologist

Responsible for providing Environmental Compliance consultation for Eldorado Rock Co. on the construction of a 2.7 mile segment of the River Mountain loop Trail Project. Duties included hiring Biologists, conducting desert tortoise awareness training, and biological monitoring.

Kiva Biological/ Department of Defense
October 2006, March-May 2007, September-October 2007, Feburary-May 2008, September-October 2008
Proposed addition of Manuver training Lands at Fort Irwin NTC
Fort Irwin, CA
Crew Lead/Biologist

The FT Irwin NTC Project is a seasonal long term project that

combines research with consulting to provide insight into the effects of large scale translocation efforts on desert tortoises. Duties include the attachment and removal of tracking devices, leading clearance surveys, translocation of desert tortoises, radio tracking desert tortoises, and data management.

BioResources inc./ El Paso Gas co.
July 2008-September 2008
High Plains Expansion Project
Denver, CO
Environmental Inspector

The High Plains Expansion is a project to build a natural gas Pipeline on the front range of Colorado from Cheyenne WY to Denver CO. I was responsible for conducting pre construction weed surveys, raptor nest surveys and general environmental compliance.

Kiva Biological/ U.S Fish and Wildlife Survey
May 2008-June 2008
Various Desert Tortoise surveys
Southern California
Biologist

Working with Kiva Biological, I participated in several different Tortoise efforts including Line Distance Sampling and Desert Tortoise Plot surveys on China Lake Naval Base, Marine Corp Air Ground Combat Center, and the Chocolate Mountain Gunnery Range. Duties included surveying for Desert tortoises, attachment and removal of tracking devices, and conducting basic health assessments on desert tortoises.

Wildland international/Southern Nevada Water Authority
March 2005, June-August 2006, May-July 2007, Feburary 2008
Proposed Surface and Groundwater Diversion Projects
Las Vegas, NV-Ely, NV
Botanist

A project to divert groundwater from northern and central NV to southern NV. Duties included surveying for threatened, endangered and watch list species at the federal, state, and regional level. This Project enabled me to work and learn from many highly regarded botanists (Jim Andre, Glen Clifton, Frank Smith) during extensive and wide ranging rare plant surveys on >5,000 acres and >150 linear miles of proposed pipeline in Montane, Great Basin, and Creosote-bush scrub habitats. Approved by BLM and USFWS in Las Vegas, NV to conduct rare plant surveys.

BioResources inc/ El Paso Gas
July 2007-September 2007
High Plains Expansion project, Piecance Basin Expansion
Denver, CO and Craig CO
Environmental Inspector

Responsible for setting and checking traps during pre construction surveys for the endangered Prebbles jumping mouse, and ensuring environmental compliance during post construction herbicide applications on the Pieceance Basin Expansion pipeline.

Southwind Conservation inc/ Bureau of Indian Affairs
August-September 2006
Navajo Nation Rangeland Studies Project
Botanist

I was hired by Southwind conservation inc. to perform vegetation production surveys on the Navajo Nation in Northern AZ. Duties included species identification, and estimation of dry weight for all new growth in each plot.

Bio Resources inc./ El Paso Gas
December 2005-March 2006
Pieceance Basin Expansion
Biological Monitor

From late December of 2005 until March of 2006 I was hired by Bio Resources to monitor roosting eagles, and to conduct raptor nest surveys for the El Paso Gas Piceance Basin expansion project. The Piceance Basin expansion is a natural gas pipeline running from Wamsutter, WY to Rifle, CO..

Grand Canyon Land Trust
July 2005-September 2005
Baseline Biological Surveys
Kaibab Plateau, AZ
Botanist

In August of 2005 I worked for the Grand Canyon Land Trust conducting baseline vegetation, fuels inventories and coverage assessments on the Kaibab Plateau. The Grand Canyon Land Trust is a non profit that purchased the Kane ranch in southern Utah. It thereby obtained the grazing rights to the Kaibab allotment in northern Arizona and is currently conducting baseline assessments to determine optimal grazing regimes.

University of Nevada Reno
Feburary 2005- June 2005
Line Distance Surveys
Research Tech

UNR Provided me with my first opportunity to work in the Mojave desert as a research technician. My duties included conducting line distance surveys in southern Nevada, coordinating daily search efforts using ArcGIS.

Student Conservation Association/ Bureau of Land Mangement
May 2004-October 2004
Seeds of Success collection Program
Crew Leader

From April through October of 2004 I had a Student Conservation Association (SCA) position as a Team Leader for a crew of 3 interns at the BLM in Kanab, Utah. Working with Laura Fertig, BLM Ecologist, my primary objectives were to lead a team to identifyspecies and collect seeds from populations of native plants using the Seeds of Success collection protocol developed by the Royal Botanic Gardens. Duties included monitoring native plant populations, plant collection, species identification, herbarium curating, and assisting BLM staff with other projects as needed.

Michael Honer – Botanical Consulting Services

874 Fortuna Lane, Isla Vista, CA. 93117
H: 805-968-3666 cel: 805-450-7608
mihoner@earthlink.net

Education:

M.S. 2003: Botany; Claremont Graduate University
M.F.A. 1991: UC Santa Barbara
B.A. 1981: UC Santa Barbara

Biological Work Experience:

Independent Biological Consultant, Isla Vista, CA. 7/2004 - present.

Botanical Consultant, White & Leatherman Bioservices, Upland, CA. 3/03 - 7/04

Experience and responsibilities include:

- -Rare Plant Field Surveys throughout southern California for a variety of clients (private landowners, environmental consulting firms, public agencies, engineering firms.)
- -Familiarity with species compositions and vegetation types for a variety of southern California floristic regions (Low and High Deserts, Montane Zones, Chaparral, Coastal Sage Scrub).
- -USFWS protocol 100% Coverage Desert Tortoise Surveys, 2008 – 2010.
- -Accurate field and lab plant identification, including a working relationship with 3 major southern California herbaria and their staff for quick identification of difficult taxa (Rancho Santa Ana Botanic Garden, UC Riverside, Santa Barbara Botanic Garden)
- -Rare Plant Research with CADFG NDDB, and CNPS Rarefind database.
- -Accurate Mapping of rare plant occurrences.

Professional Affiliation:

Research Associate, Rancho Santa Ana Botanic Garden, Claremont, CA.
Editor, *Crossosoma*: Journal of the Southern California Botanists, Inc.

Publication:

Vascular Flora of the Glass Mountain Region of Mono County, California. Aliso 20 (2), pp. 75-105, August 2003.

References:

Scott White, Scott White Bioservices (909) 949-3686
Mark Bagley, Consulting Biologist, Bishop, CA. (760) 873-5326
Mark Porter, Research Scientist, Rancho Santa Ana Botanic Garden (909) 625-8767 x229

CURRICULUM VITAE

ROBERT A. JOHNSON

PERSONAL

Marital Status: Single

Address	Phone
1926 E. Dunbar Dr. Tempe, Arizona 85282	480 - 897-2473

EDUCATION

University of Illinois	B.S. 1978
University of Illinois	M.S. 1980
Arizona State University	Ph.D. 1989

REPRESENTATIVE PROFESSIONAL EXPERIENCE

Dr. Johnson has twenty years of contract and research experience in the Southwest including a strong background in environmental assessments and impact statements, vegetation surveys, revegetation projects, mitigation plans, and research on rare species, including two publications on a cactus proposed for listing by the U.S. Fish and Wildlife Service. Experience includes fieldwork and write-up of numerous environmental assessments for highway alignment and highway scoping projects subcontracted through Arizona Department of Transportation, transmission and telephone line projects for Salt River Project and U.S. West Communications, and property surveys for Resolution Trust Corporation. Several projects involved formal consultations with the U.S. Fish and Wildlife Service for threatened and endangered species, and several have involved Section 404 permits under the Clean Water Act. Dr. Johnson has also published over 45 articles in peer-reviewed scientific journals.

PROFESSIONAL EXPERIENCE

Arizona State University	Adjunct Faculty Department of Biology/ School of Life Sciences	1999 – present
	Adjunct Faculty- Department of Botany	1991 – 1998
Johnson and Associates, EEI. Inc.	Contract Ecologist	1987 - present
Museum of Northern Arizona	Contract Ecologist	1980-1983

PUBLICATIONS: CONTRACTS

Lastovicka, T. J., and R. A. Johnson. 1977. Vertebrate populations of the proposed River King Mine, Pit No. 3 Extension, New Athens, IL. Submitted to Peabody Coal Company as part of an environmental impact assessment.

Carothers, S. W., and R. A. Johnson (eds.) 1981. A survey of the fishes, aquatic invertebrates and aquatic plants of the Colorado River and selected tributaries from Lee's Ferry to Separation Rapids. Final Report to Water and Power Resources Service, Boulder City, NV.

Carothers, S. W., R. A. Johnson, B. G. Phillips, M. M. Sharp, and A. M. Phillips. 1981. Recreational impacts on riverine habitats in Glen Canyon National Recreation Area, Arizona. Final Report to the National Park Service, Page, AZ.

Phillips Brandt Reddick and Museum of Northern Arizona. 1981. Feral burro management program, Naval Weapons Center, China Lake, California. Final Environmental Impact Statement to the Department of the Navy, China Lake, CA.

Carothers, S. W., A. M. Phillips, B. G. Phillips, R. A. Johnson, C. S. Babcock, and M. M. Sharp. 1982. Riparian ecology of the San Francisco River: Frisco Hot Springs, New Mexico to the Martinez Ranch, Arizona. Final Report to United States Department of Agriculture, Apache/Sitgreaves National Forest, Springerville, AZ.

Ruffner, G. A., M. M. Sharp, R. A. Johnson, and N. J. Brian. 1983. An assessment of the biological resources of Airport Wash, Rillito River and its tributaries, Tucson, Arizona. Final Report to the United States Army Corps of Engineers, Los Angeles, CA.

Brian, N. J., R. A. Johnson, and J. Scott. 1983. Sedona planning area environmental study: vegetation and vertebrate communities. Final Report to Brown and Caldwell Consulting Engineers, Tucson, AZ.

Johnson, R. A., and G. A. Ruffner. 1987. An environmental overview of the proposed expansion of an aggregate borrow pit (ADOT Pit No. 1179), La Paz County, Arizona. Final Report to Bureau of Land Management, Phoenix, AZ. Great Western Research. 1989. Economic analysis of harmful and beneficial aspects of saltcedar. Final Report to Bureau of Reclamation, Boulder City, NV.

Johnson, R. A., M. A. Baker, D. J. Pinkava, N. Trushell, and G. A. Ruffner. 1991. Special status plants of Organ Pipe Cactus National Monument, Arizona. Final Report to the National Park Service, Tucson, Arizona.

Johnson, R. A. 1991. Environmental assessment of wildlife and habitat resources along proposed alignments for U.S. Highway 180, Flagstaff, Arizona. Final Report submitted to Arizona Department of Transportation.

Johnson, R. A. 1992. Biological resources along U.S. Highway 60 Hagen Hill, Gila and Navajo Counties, Arizona. Final Report submitted to Arizona Department of Transportation.

Johnson, R. A. 1992. Biological evaluation of reconductoring a transmission line between the Silver King and Goldfield Substations, Pinal County, Arizona. I. Tonto National Forest lands. Environmental assessment submitted to Salt River Project, Phoenix, AZ.

Johnson, R. A. 1992. Biological evaluation of reconductoring a transmission line between the Silver King and Goldfield Substations, Pinal County, Arizona. II. Bureau of Land Management, State of Arizona, and private lands. Environmental assessment submitted to Salt River Project, Phoenix, AZ.

Johnson, R. A. 1992. Environmental evaluation of biological resources for Whiteriver Street, U.S. Highway 73, White Mountain Apache Indian Reservation, Navajo County, Arizona. Final Report submitted to Arizona Department of Transportation.

Johnson, R. A. 1992. Preliminary environmental assessment for the I-19 corridor study, Rio Rico Road to the International border, Pima County, Arizona. Final Report submitted to Arizona Department of Transportation.

Johnson, R. A. 1992. Texas properties special resources study, College Park, Austin, Texas. Final report submitted to Resolution Trust Corporation.

Johnson, R. A. 1992. Location mapping and status of 17 candidate invertebrate species in Arizona. Final Report submitted to U.S. Fish and Wildlife Service, Phoenix, Arizona.

Johnson, R. A. 1993. Biological assessment of Brookgreene Estates, Fairview, Texas. Final report on property managed by Resolution Trust Corporation.

Johnson, R. A. 1993. Arizona properties special resources study, Enchantment Resort, Sedona, Arizona. Final Report submitted to Resolution Trust Corporation.

Johnson, R. A. 1993. California properties special resources study, Carlsbad, California. Final Report submitted to Resolution Trust Corporation.

Johnson, R. A. 1993. Environmental assessment of biological resources along a transmission line corridor south of Lake Mary Road, Coconino National Forest, Flagstaff, Arizona. Final Report submitted to U.S. West Communications.

Johnson, R. A. 1993. Environmental assessment of biological resources along a transmission line corridor on the south slope of Elden Mountain, Coconino National Forest, Flagstaff, Arizona. Final Report submitted to U.S. West Communications.

Johnson, R. A. 1993. Biological assessment for the proposed realignment of Rio Salado Parkway, Tempe, Arizona. Final Report submitted to Tempe, Arizona.

Johnson, R. A. 1993. Biological resources along a transmission line corridor near Chapel Road nd Pine Knolls Road, Coconino National Forest, Sedona, Arizona. Final Report submitted to U.S. West Communication.

Johnson, R. A. 1994. Biological resources along a transmission line corridor adjacent to Highway 80 at March Middle Road, Tombstone, Arizona. Final Report submitted to U.S. West Communications.

Johnson, R. A. 1994. Biological assessment for bridge construction across Skunk Creek at 67th Avenue, Glendale, Arizona. Final Report submitted to City of Glendale, Arizona.

Johnson, R. A. 1994. Biological assessment of neighborhoods 7 and 10 in Rancho Vistoso, Oro Valley, Arizona. Final Report submitted to UDC Homes.

Johnson, R. A. 1994. Environmental assessment for the flood mitigation plan, Town of Kearny, Arizona. Final Report submitted to the Federal Emergency Management Agency.

Johnson, R. A. 1994. Biological resources along a transmission line corridor east of Highway 387, Casa Grande, Arizona. Final Report submitted to U.S. West Communications.

Johnson, R. A. 1994. Assessment of potential wildlife hazard at Kearny Airport, Town of Kearny, Arizona. Final Report submitted to Arizona Department of Transportation.

Johnson, R. A. 1994. Biological assessment for proposed modifications to State Route 260 from A-1 Lake to the junction of State Route 273. Final Report submitted to Arizona Department of Transportation.

Johnson, R. A. 1994. Biological assessment for proposed bank stabilization along the Gila River for protection of Highway 75 in York, Arizona. Final Report submitted to Arizona Department of Transportation.

Johnson, R. A. 1994. Biological assessment for Avenue 45 East road reconstruction, Yuma County, Arizona. Final Report submitted to Arizona Department of Transportation.

Johnson, R. A. 1994. Biological assessment of Parcels 3, 17, and 28 in Continental Ranch, Marana, Arizona. Final Report submitted to UDC Homes, Inc.

Johnson, R. A. 1994. Biological assessment of Parcels 33 and 34 in Estrella MPC, Goodyear, Arizona. Final Report submitted to UDC Homes, Inc.

Johnson, R. A. 1994. Biological assessment for Estancia MPC, North Scottsdale, Arizona. Final Report submitted to Mr. John E. Lang.

Johnson, R. A. 1994. Biological assessment for proposed dredging of Clear Creek Reservoir, McHood Park, City of Winslow, Arizona. Final Report submitted to City of Winslow, Arizona.

Johnson, R. A. 1994. Biological assessment for U.S. Highway 60, Florence Junction to Boyce-Thompson Arboretum. Final Report submitted to U.S. Forest Service.

Johnson, R. A. 1994. Biological assessment for U.S. Highway 88 repavements and improvements, Apache Junction to Tortilla Flats. Final Report submitted to U.S. Forest Service.

Johnson, R. A. 1994. Biological resources along a transmission line corridor adjacent to U.S. Forest Service Road 58, Coronado National Forest, Arizona. Final Report submitted to U.S. West Communications.

Johnson, R. A. 1994. Biological assessment for proposed modifications to State Route 60 from A-1 Lake to the junction of State Route 273. Final Report submitted to Arizona Department of Transportation.

Johnson, R.A. 1995. Biological assessment for proposed dredging of Bridgewater Channel, Lake Havasu City, Arizona. Final report submitted to Lake Havasu City.

Johnson, R.A. 1995. Biological assessment for proposed construction of a boat launch ramp and other improvements in Windsor Beach State Park, Lake Havasu City, Arizona. Final report to be submitted to Arizona Department of Transportation.

Johnson, R. A. 1995. Biological assessment for porposed expansion of the La Paz County regional landfill, La Paz County, Arizona. Final Report submitted to La Paz County.

Johnson, R. A. 1995. Biological assessment for placement of earthen berms and related marina improvements at Black Meadow Landing, San Bernardino County, California. Final Report submitted to Army Corps of Engineers.

Johnson, R. A. 1995. Biological assessment fro the 69kV Golden Shores powerline, Mohave County, Arizona. Final Report submitted to Bureau of land Management.

Johnson, R. A. 1995. Evaluation of biological resources in washes at Fountain Hills, Arizona.

Johnson, R. A. 1995. Biological assessment for proposed non-routine maintenance to State Route 87 from Milepost 281.5-282.5, Coconino National Forest, Arizona. Final Report submitted to Arizona Department of Transportation.

Johnson, R. A. 1996. Biological assessment for Blue Water Casino and marina, La Paz County, Arizona. Final Report submitted to Army Corps of Engineers.

Johnson, R. A. 1996. Blue Water Casino fish mitigation and monitoring plan. Final Report submitted to Army Corps of Engineers

Johnson, R. A. 1996. Blue Water Casino habitat mitigation and monitoring plan. Final Report submitted to Army Corps of Engineers.

Johnson, R. A. 1996. Biological assessment for proposed dredging and boat ramp construction at Wendt Lot 38 on Lake Havasu, San Bernardino County, California. Final Report submitted to Army Corps of Engineers.

Johnson, R. A. 1996. Lake Havasu State Park habitat mitigation and monitoring plan. Final Report submitted to Army Corps of Engineers.

Johnson, R. A. 1996. Biological assessment for dredging Havasu Landing Resort Marina, Chemehuevi Indian Reservation, California. Final Report submitted to Army Corps of Engineers.

Johnson, R. A. 1996. Biological assessment for proposed dredging and development of the Site Six Marina, Lake havasu City, Arizona. Final Report submitted to Army Corps of Engineers.

Johnson, R. A. 1996. Biological assessment for proposed expansion of Cyprus Mine - Sierrita Mill west of Green Valley, Arizona. Final Report submitted to Bureau of Land Management.

Johnson, R. A. 1996. Southwestern Willow Flycatcher surveys along the Gila River floodplain near Kearny airport, Arizona. Final Report submitted to the City of Kearny.

Johnson, R. A. 1996. Biological assessment for proposed modifications to U.S. Highway 60 at Hagen Hill, White Mountain Apache Indian Reservation, Arizona. Final Report submitted to Arizona Department of Transportation.

Johnson, R. A. 1996. Biological assessment for proposed modifications to State Route 260 at Gooseberry Creek, White Mountain Apache Indian Reservation, Arizona. Final Report submitted to Arizona Department of Transportation.

Johnson, R. A. 1996. Red Mountain Freeway Draft Environmental Impact Statement (technical chapters on biological resources and wetlands). Submitted to Arizona Department of Transportation.

Johnson, R. A. 1996. Biological assessment and evaluation of Highway 87 at Oxbow Hill. Final Report submitted to Arizona Department of Transportation.

Johnson, R. A. 1997. Biological assessment for proposed dredging at Thunderhead One Mobile Park, Chemehuevi Indian Reservation, California. Final Report submitted to Army Corps of Engineers.

Johnson, R.A. 1998. Biological assessment of proposed dredging of Palo Verde Meadows, Bullhead City, Arizona. Final Report submitted to U.S. Army Corps of Engineers.

Johnson, R. A. 1998. Biological assessment and evaluation for construction/rehabilitation of Lynx Lake Dam and spillway, Prescott National Forest, Arizona. Final Report submitted to U.S. Forest Service.

Johnson, R. A. 1998. Preliminary biological assessment for a Highway 93 bypass alignment, Wickenburg, Arizona. Final Report submitted to Arizona Department of Transportation.

Johnson, R. A. 1998. Biological assessment for proposed rehabilitation of fool Hollow spillway, Fool Hollow Lake Recreational Area and Sitgreaves National Forest, Arizona . Final report submitted to Arizona Game and Fish Department.

Johnson, R. A. 1998. Biological assessment for the Lake Havasu beach improvement project, Lake Havasu City, Arizona. Final Report submitted to U.S. Army Corps of Engineers.

Johnson, R. A. 1999. Overview of biological resources in the Middle New River watercourse (confluence with Skunk Creek to New River Dam). Final Report submitted to U.S. Army Corps of Engineers.

Johnson, R. A. 1999. Biological assessment for proposed dredging of Lake Havasu Marina, Lake Havasu City, Arizona. Final Report submitted to U.S. Army Corps of Engineers.

Johnson, R.A. 1999. Biological assessment for the 43rd Avenue rock and gravel plant, Phoenix, Arizona. Final report submitted to Vulcan Materials Company.

Johnson, R.A. 1999. Biological assessment for the Litchfield rock and gravel plant, Avondale, Arizona. Final report submitted to Vulcan Materials Company.

Johnson, R.A. 1999. Biological assessment for the University Drive rock and gravel plant, Phoenix, Arizona. Final report submitted to Vulcan Materials Company.

Johnson, R.A. 2000. Biological assessment for improvement of Gilbert Road from McDowell Road to State Route 87, Mesa Arizona. Final Report submitted to Parsons Brinckerhoff Quade & Douglas, Inc.

Johnson, R.A. and J. Nagy. 2000. Demography and population dynamics of acuna cactus (*Echinomastus erectrocentrus* var. *acunensis*). Report submitted to Arizona Department of Agriculture.

Johnson, R.A. 2000. Biological assessment for the Bard Ranch rock and gravel plant, Peoria, Arizona. Final report submitted to Chandler Ready Mix.

Johnson, R.A. 2001. Plant communities and biological resources within the North Peoria area drainage master plan. Final Report submitted to Stantech Engineers.

Johnson, R.A. 2007. Biological assessment for proposed repairs and dredging for Havasu Landing Resort and Casino Marina, Havasu Lake, California. Final Report submitted to U.S. Army Corps of Engineers.

Johnson, R.A. 2008. Biological review for State Route (SR) 101L – Beardsley Connector. Final report submitted to Arizona Department of Transportation.

Johnson, R.A. 2009. Biological evaluation for US 60 alignment study: Superstition Freeway to Florence Junction. Final report submitted to Arizona Department of Transportation.

Johnson, R.A. 2009. Biological evaluation for State Route 87, Erosion Control. Final report submitted to Arizona Department of Transportation.

Johnson, R.A. 2009. Biological evaluation for State Route 87, New Four Peaks Road to Dos S Ranch Road. Final report submitted to Arizona Department of Transportation.

Johnson, R.A. 2009. Biological review for the levee certification program – Cave Creek Wash. Final report submitted to the City of Phoenix.

Johnson, R.A. 2010. Addendum to the biological evaluation for I-17, Little Squaw Creek Bridges northbound and southbound, Maricopa County, Arizona. Final report submitted to Arizona Department of Transportation.

Additional **Information and Surveys:**

Survey permit for Southwestern Willow Flycatcher (this class was taken several years ago).

Team member to develop Areas of Critical Environmental Concern to protect two endangered cactus: Fick's Cactus (*Pediocacatus peeblesianus* var. *fickeiseniae*) and Brady Pincushion Cactus (*Pediocactus bradyi*) for BLM Arizona Strip District.

Invited Speaker Tonto National Forest Aquatic and Riparian System Workshop, April 1995. Ecology of Parker's Riffle Beetle (*Cylloepus parkeri*)

Plant surveys and surveys for Mohave Desert Tortoise, Johnson Valley, California: USFWS protocol with 100% coverage, May 2008.

Plant surveys and surveys for plants and Mohave Desert Tortoise, Jean, Nevada: USFWS protocol with 100% coverage, April, 2009.

Special Status Species Survey Information:

I have conducted surveys for Willow Flycatchers, Cactus Ferruginous Pygmy Owls, Mexican Spotted Owls, Mohave Desert Tortoises, and numerous special status plant species.

Areas of Expertise	Rare plant and general botanical surveys Vegetation/habitat mapping Ecological habitat restoration Federal and state waters and wetland determinations and delineations Section 404 Permitting and Section 1600 Streambed Alteration Agreements
Total Years of Experience	
URS	< 1 year
Other Firms	10 years
Education	B.S., Biology; Emphasis in Evolution and Systematics, San Diego State University
Overview	Shawn Johnston has over 10 years of experience conducting rare plant and botanical surveys throughout the southwest region of the U.S. in such diverse habitats as Sonoran and Mojave desert scrubs, Joshua tree woodlands, Juniper and pinyon woodlands, chaparrals, coastal sages, and vernal pools. He is also accomplished restoration biologist who has lead or assisted in numerous successful arid lands and wetland restoration projects.
Project Experience	**Energy Projects** **Calico Solar Project** Lead botanist for a proposed solar energy project located near Calico, California. Duties include field and technical lead for the 2010 rare plant surveys of a 8,600 ac. site within Mojave desert scrub, and chenopod scrub. February 2010 – Present Tessera Solar **Rare Plant Survey and Wetland Assessment for Centinela Transmission Corridors** Conducted vegetation mapping, rare plant surveys, and wetland/waters assessment of 500 acres for potential transmission corridors in Sonoran Desert habitats in Imperial County. May, 2009. LS Power **Rare Plant Survey for SDG&E Sunrise Powerlink Proposed and Alternative Alignments** Lead Botanist for the rare plant surveys and reporting for the SDG&E Sunrise Powerlink project. A 300 mi. transmission alignment through diverse habitats e.g. desert scrubs and dunes, coastal sage, vernal pools, chaparrals. January 2007 – October 2008. San Diego Gas & Electric (SDG&E). **SDG&E Sunrise Powerlink Northern Proposed Alignment Wetland and Waters Delineation** Wetland scientist for wetland/water determination and delineation for the proposed SDG&E Sunrise Powerlink transmission line, and associated access roads. 2007 San Diego Gas and Electric **Biological Survey of the Homestead Wind Energy Project**

Lead Botanist and wetland scientist for botanical and wetland assessment for a proposed 1200 ac. wind energy site within Mojave Desert Scrub Habitat near Mojave, California. March 2006 through October 2006
Horizon Wind Energy

Pine Tree Wind Development Biological Studies
Conducted rare plant surveys and vegetation mapping for diverse desert Habitat, e.g. Mojave desert scrub, Joshua tree woodlands, and Juniper and Pinyon woodlands for a 8,000 ac. wind energy project located in Tehachapi, California. March 2004 – May 2005.
Los Angeles Department of Water and Power.

Transportation Projects

SR 76 Middle Segment Wetland Determinations and Delineation (2006).
Client:
Assisted with wetland delineation and reporting of the SR 76 middle segment expansion. May, 2006 – September 2007
Caltrans, district 11/Dokken Engineering.

Biological Impact Assessment for Proposed Reconstruction and Extension of Runway 14/32 and Associated Taxiway "E" at Reno Stead Airport (2006).
Conducted rare plant surveys and biological impact assessments for airport expansion.
Reno Stead Airport/FAA

SR 125 Quino Checkerspot Butterfly/ Vernal Pool Creation/Restoration
Position/tasks: lead Restoration Ecologist and Botanist for the implementation of a 126 ac. vernal pool creation and restoration project in Otay Mesa, California. March 2004 through October 2006.
Caltrans District, 11

Land Management Projects

Land Management Plan Hollenback Canyon Wildlife Area (2007).
Assisted with vegetation mapping, invasive plant assessment and rare plant surveys for a regional state park near Jamal, California .
California Department of Fish Game

Amargosa Valley Plant and Water Study
Lead botanist for a BLM supposed study on the Demographics and Ecology of the Amargosa Niterwort (*Nitrophila mohavensis*) and Ash Meadows Gumplant (*Grendelia fraxino-pratensis*) and the effects of ground and surface water on the plant populations. 2002.
Bureau of Land Management

Johanna Kisner

Senior Biologist/Restoration Ecologist

Areas of Expertise

- Habitat Restoration Planning, Design, Implementation, and Monitoring (freshwater and tidal wetlands, bioswales, vernal pools, riparian, grasslands, coastal sage scrub, coastal dune scrub, chaparral, and oak woodland)
- Vegetation/Rare Plant surveys-examples include La Graciosa thistle, surf thistle, beach spectacle-pod, shagbark manzanita, southern tarplant, Leopold rush
- Survey Experience for Special-Status Species-examples include: tidewater goby and CA red-legged frog, steelhead trout, California tiger salamander, Coast horned lizard, southwestern pond turtle, southwestern willow flycatcher, least Bell's vireo, white-tailed kite, western snowy plover, Belding's savannah sparrow, burrowing owl, and golden eagle
- Bird and General Wildlife Surveys
- CEQA/NEPA Biological Assessments
- Wetland Delineation
- Stream Monitoring
- Construction Monitoring

Years of Experience

With URS: 6+ Yrs
With Other Firms: 5 Yrs

Education

MS/Environmental Science and Management/2001/University of California, SB

BS/Environmental Studies/1999/ University of California, SB

Scientific Collection Permits

USFWS CRLF Recovery Permit (TE204436-0)
CDFG Scientific Collecting Permit, (SC-10044)
Plant Voucher Collecting Permit (2081(a)-09-69-V)

Overview

Ms. Kisner's combined education and professional background provide a wide range of experience in ecology, biological resource assessment, and habitat restoration primarily in Central and Southern California. She has over eleven years of professional experience including botanical surveys, habitat assessment, habitat restoration design, implementation, and monitoring, wetland delineation, wildlife surveys (particularly birds, and holds a U.S. Fish and Wildlife Service (USFWS) recovery permit (TE204436-0) for tidewater gobies (TWG) and California red-legged frogs (CRLF)), construction compliance and monitoring, and GIS mapping. Ms. Kisner has been the project manager for several multi-million dollar habitat restoration projects in Santa Barbara (SB) and Ventura Counties. She has managed and coordinated complex biological resource sections for several CEQA/NEPA documents. She has assisted clients with obtaining and complying with regulatory permits for agencies such as USFWS, California Department of Fish and Game, California Coastal Commission, Army Corp of Engineers, and Regional Water Quality Control Board.

Project Specific Experience

BOTANICAL EXPERIENCE

Ms. Kisner has over eleven years of experience working as a botanist. Botanical experience includes work in SB, Ventura, and San Luis Obispo (SLO) Counties, Berkeley, Mojave Desert, and Southern California. She has extensive knowledge of the flora in the desert regions in California. She was lead botanist for several botanical and rare plant surveys including a solar project in the Carrizo Plain, a solar energy project in Johnson Valley, and MWD Colorado Aqueduct HCP (Mojave Desert). Ms. Kisner has conducted, managed, and assisted in managing botanical surveys for several special-status plant species. Ms. Kisner has extensive experience conducting species specific surveys for the following species: Coulter's goldfields, Blochman's leafy daisy, beach spectaclepod, La Graciosa thistle, and southern tarplant. Additional species Ms. Kisner has experience with include salt marsh bird's beak, curly-leaved mondardella, and California seablite.

- Conducted reconnaissance botanical surveys for Sunpower's solar energy project in California Valley and provided peer review of the project botanical report.

- Botanical monitor for Chevron projects including Guadalupe Restoration Project and Wylie Lease Remediation Assessment.

- Prepared several vegetation maps for projects in SB and Ventura Counties.

- Conducted point-intercept and quadrat vegetation transect monitoring for several projects including Lake Perris Recreation Area Grassland Experiment, UCSB Restoration Projects, SB Airport Wetland Restoration Monitoring Projects, Ellwood Grassland Restoration, and Guadalupe Restoration Project.

- Performed rare plant surveys for projects in SB County including GPS River Rock Mine and Diamond Rock Mine EIRs along the Cuyama River, Santa Maria Pacific's Careaga oilfield, Lauro Reservoir EA, Lake Cachuma RMP, Lake Casitas RMP, and Guadalupe Restoration Project, San Bernardino County including a Solar Energy Project in Johnson Valley, MWD Colorado Aqueduct HCP (Mojave Desert), and Mountain View Power Project, Monterey County for the Los Vaqueros Ranch Mitigation Site, and Kern County McKittrick Oilfields.

HABITAT RESTORATION AND CONSTRUCTION MONITORING

Botanical/Wildlife Monitor, Wylie Lease Remediation Assessment, Santa Maria, California, Chevron, 2008

Conducted pre-construction plant and wildlife surveys, wildlife monitoring during construction, relocated several coast horned lizards prior to and during construction, under the supervision of Tom Olson and authorization of his recovery permit, visually evaluated burrows with a scope to determine presence of California tiger salamanders (CTS) and hand excavated vacant burrows to prevent future use. Perform daily early morning clearance surveys to detect CTS and CRLF prior to construction activities.

Botanical/Wildlife Monitor, Guadalupe Restoration Project, Guadalupe, California, Chevron, 2006-2010

Conduct pre- and post-disturbance vegetation surveys, pre-construction site clearance surveys for sensitive plant and wildlife species, bird surveys, small mammal trapping, CRLF eye-shine and egg mass surveys, population census surveys for La Graciosa thistle (LGT), beach spectaclepod, and surf thistle, construction monitoring for wildlife, assist in plant production at the on-site growing facility, salving of hundreds of LGT, and planting at restoration sites. Perform peer review of site specific restoration plans.

Restoration Biologist/Project Manager, Arroyo Burro Estuary Restoration Project, Santa Barbara, CA, City of Santa Barbara Creeks Division, 2006-present

Project manager for design, implementation, and 5 year monitoring program. Included temporary relocation of TWG, improved steelhead passage, recreational trails and pedestrian bridge, and restoration of creek and estuary banks. Received Santa Barbara Beautiful Award in 2008.

Restoration Biologist/Project Manager, Bohnett Park Creek Restoration Project, Santa Barbara, CA, City of Santa Barbara Creeks Division, 2003-2008

Lead biologist during implementation and project manger during monitoring of the Bohnett Park Creek Restoration which was determined successful after 5 years of monitoring.

Restoration Biologist/Project Manager, Various Santa Barbara Airport Projects, Santa Barbara, California, 2003-present

Project manager for over 85 acres of habitat restoration projects including Santa Barbara Airport's (SBA) Basin E/F Tidal Restoration Project, Safety Area Grading Mitigation, Airfield Safety Projects Creek Relocation, Tidal Demonstration Project, Area I wetland mitigation, Firestone Drainage, Las Vegas Creek, Tecolotito Creek Berm Restoration, Verhelle Bridge (riparian), and Airfield Storm Drains (slough). Responsible for design, implementation, and monitoring for over six years.

Restoration Biologist, Cabrillo Bridge Replacement Project, City of Santa Barbara, Santa Barbara, CA, 2008

Provided revisions to draft restoration plans for estuary and creek bank areas associated with the bridge replacement.

Restoration Biologist, Western Goleta Slough Wetland Enhancement, Santa Barbara Land Trust, Santa Barbara, CA, 2008

Responsible for the design of native grassland, transitional wetland, and coastal sage scrub habitats within the CDFG properties. Prepared a restoration plan, and was lead for landscape plans and specifications.

Restoration Biologist, Casmalia B Drainage Wetlands, Casmalia, California, Casmalia Resources Site Steering Committee, 2008-present

Developed a restoration plan for six wetland pools designed for CRLF, CTS, and Western spadefoot toads, including specifications for planting, monitoring and maintenance procedures, and irrigation. Provided oversight of landscape contractor in conducting site maintenance and performed monitoring activities and reporting.

Additional habitat restoration experience includes:

- Responsible for the monitoring and implementation of several restoration projects in Santa Barbara and Ventura counties including project manager for Calleguas Creek Restoration, Lake Casitas

Wetland and Grassland Restoration, and Ellwood Mesa Native Grassland Restoration, and primary biologist for Turnpike Bioswale, Rhoads Bioswale, and Foster Park (riparian).

- Restoration Coordinator, University of California. Responsible for creating native grassland, vernal marsh, and vernal pool habitat related to environmental mitigation. Supervised the initial grading of the landscape for proper topography. Duties included collecting native seed, planting native species, and removing exotic species. Conducting various flora, fauna, and environmental monitoring for performance criteria. Developing research projects related to vernal pool habitat restoration.

- Assistant Resource Ecologist, California State Parks. Served as the lead person and supervised up to six employees for several ecological restoration, species monitoring, inventory, and exotic species removal projects. Conducted and Ecological Condition Assessment for the Inland Empire District. Managed a program for the removal of brown-headed cowbirds. Prepared environmental permit applications, state contracts, and purchased supplies. Managed a native plant nursery, GIS databases, and other natural resource databases.

Wetland Delineations

- Provided peer review of wetland delineation report for Sunpower's solar energy project in California Valley.

- Performed wetland delineations for Newhall Ranch, SB Airport, SB Ranch Project, Gaviota Bridge Project and Goleta Old Town Improvement Project.

Wildlife Experience

- Project Manager for TWG relocation and protocol surveys for several SB City and County projects (2006-2009).

- Performed USFWS protocol surveys for the California CRLF for several projects in SB, SLO, and Ventura Counties.

- Conducted burrow scoping for California Tiger Salamander (CTS) using an infrared scope for the Chevron Wylie Lease Remediation Project and Casmalia B Drainage Wetlands Project. (2007-2008)

- Conducted protocol surveys for desert tortoise for a solar energy project, Johnson Valley, San Bernardino County. Other species commonly observed include desert horned lizard (and long-nosed leopard lizard. (May 2008)

- Performed CDFG protocol blunt-nosed leopard lizard surveys for the McKittrick Pipeline Removal Project in Bakersfield and Ausra in the Carrizo Plain (3 days, 2007-2008).

- Performed point count and walking bird surveys including riparian, waterfowl, raptor, and passerines. Survey sites in Santa Barbara and Ventura counties include Lake Cachuma, Lake Casitas, Santa Barbara Airport, Firestone Drainage, Las Vegas Creek, and UCSB vernal pool sites.

- Conducted surveys for nesting birds and sensitive birds including Southwestern willow flycatcher, least Bell's vireo, Belding's savannah sparrow, white-tailed kites, golden eagle, western snowy plover, burrowing owl, and tree swallows in SB, Ventura, and Riverside Counties. Specific survey examples include the following:

    - Performed Burrowing owls surveys at Lake Perris SRA and San Jacinto Wildlife Refuge, and developed a GIS map of all occupied burrows. (2001)

    - Conducted Western Snowy Plover surveys at McGrath State Beach during the wintering and breeding seasons. (1999-2000)

    - Volunteer for the White-tailed Kite Monitoring and Tree Swallow Nesting Program, Santa Barbara Audubon Society (2004 to 2006).

    - Assisted in Southwestern willow flycatcher and Least Bell's vireo USFWS protocol surveys at Gaviota Creek, Ventura River, Arroyo Simi River, and Lake Perris SRA. (2001, 2004-2005)

- Conducted small mammal trapping in California Valley for Sunpower's solar energy project. (2008)

- Assisted in surveys to monitor the populations of Stephen's kangaroo rat at Lake Perris SRA. (2001)

- Conducted habitat assessments and biological reporting for San Joaquin kit fox for several projects including a solar energy project in California Valley, GPS River Rock Mine EIR along the Cuyama River and the Panoche and Bullard Energy Center AFC sites in Bakersfield.

Biological Assessments

Lead Biologist, Escolle Lease Site Assessment, Orcutt, California, Chevron, 2010

Lead habitat assessment, amphibian surveys, and rare plant survey efforts. Coordination with regulatory agencies.

Lead Biologist, Ormond Beach Specific Plan, Ventura, California, City of Ventura, 2005-2008

Conducted biological surveys of the project site and prepared admin draft EIR, draft EIR, response to comments, and revised draft EIR.

Lead Biologist, Ekwill-Fowler Project, Goleta, California, City of Goleta, 2005-2006

Conducted biological surveys including rare plant and wildlife surveys along old San Jose Creek. Prepared Caltrans NES document and draft EIR.

Other CEQA/NEPA documents prepared include:

- Environmental Impact Report (EIR/EIS) Biology Sections-Biology Task Leader for Veronica Meadows EIR, Oxnard Plain Groundwater Recharge Project EIR, Lake Cachuma RMP EIS, and Lake Casitas RMP EIS
- Biological Assessments (BA)- Coauthor and peer reviewer for Sunpower Corporation Systems's (Sunpower) solar project in California Valley; Biology Task Leader for Gaviota Bridge Project (TWG, CRLF, and steelhead trout), and Project Manager for the SB Airport Airfield Safety Projects (TWG) and Basin E/F Restoration Project
- Application for Certification (AFC) Projects: Biology Task Leader for Bullard Energy Center and Panoche Energy Center in Bakersfield, and Anaheim Municipal Power Station
- Natural Environmental Study- Biology Task Leader for Laetitia Winery in Nipomo
- Biological Technical Reports- Biology Task Leader for Lake Cachuma Resource Management Plan (RMP) and Lake Casitas RMP
- Negative Declaration (ND): Biology Task Leader for the Wellhead Project in Colton
- Environmental Assessment (EA): Biology Task Leader for Lauro Dam Seismic Retrofit

Professional Societies/Affiliates

California Native Grassland Association (since 2007)
California Native Plant Society (since 2009)
Society for Ecological Restoration (since 2007)

Awards

Santa Barbara Beautiful Award for Public Open Space for the Arroyo Burro Estuary Restoration Project (2008)

Specialized Training

Loss Prevention System (March 2006)
American Red Cross First Aide & CPR (October 23, 2008)
OSHA 40-Hour HAZWOPER 8-hour Refresher (July 15, 2009)
Smith Driver's Training (June 5, 2006)
4 hrs capture/pit tag *Rana* sp. - Dr. Galen Rathbun (October 18, 2006)
40 hour certification in Jurisdictional Delineation of Waters of the U.S., Including Wetlands On the California Coast, Elkhorn Slough Coastal Training Program (November 21, 2008)

Chronology

- URS Corporation, Santa Barbara, CA, Biologist, May 2003 to present
- University of California Santa Barbara, Santa Barbara, CA, Restoration Coordinator, 2002 to 2003
- California State Parks, Inland Empire District, Perris, CA, Assistant Resource Ecologist, Range B, 2001 to 2002
- California State Parks, Channel Coast District, Santa Barbara, CA, Environmental Services Technician, 1998 to 2001

Contact Information

URS Corporation
2625 South Miller St., Suite 104
Santa Maria, CA 93455
Tel: 805.361.1121
Cell: 805.895.9178
Fax: 805.361.1135
johanna_kisner@urscorp.com

Julie Love

Biologist and Restoration Ecologist

Areas of Expertise

- Restoration Planning, Implementation, and Monitoring (Coastal sage scrub, Riparian, Wetland, Grassland, Bioswales)
- Wetland Delineations and Jurisdictional Determinations
- Vegetation Surveys and Mapping
- Special-Status Wildlife Surveys
- Stream Monitoring (Algae and Water Quality)
- Fish Relocation

Years of Experience

With URS: 3 Years
With Other Firms: 4 Years

Education

Master of Environmental Science and Management/2003/University of California, Santa Barbara

Bachelor of Science/Marine Biology/2000/University of California, Los Angeles

Overview

Ms. Love's combined work experience and education provide a wide range of ecological training. She has over seven years of experience working in the fields of habitat restoration, botany, stream and algae monitoring, marine biology, terrestrial wildlife, maintenance/construction, and ecosystem inventory, assessment, and monitoring. Ms. Love's position at URS involves habitat restoration and monitoring, wetland delineations and jurisdictional determinations, vegetation surveys and mapping, habitat assessment, stream and algae monitoring, special-status wildlife surveys, fish relocation, and database management.

URS Specific Experience

Special-Status Wildlife Surveys

Desert Tortoise Survey, Mojave Desert, CA. 40 hours. Performed meandering transect desert tortoise surveys. Performed survey to assess habitat quality for desert tortoise. Mapped, photographed, and cataloged habitat suitability and vegetation types. Mapped jurisdictional drainages. April 2007.

Desert Tortoise Survey, Johnson Valley, CA. 45 hours. Performed USFWS protocol 100% coverage desert tortoise surveys on a 9,315 acre site. Performed survey to assess habitat quality for desert tortoise. Mapped, photographed, and cataloged habitat suitability and vegetation types. April - May 2008.

Blunt-Nosed Leopard Lizard Survey, California Valley, CA.
24 hours. Performed protocol survey to assess habitat quality for blunt-nosed leopard lizard. June 2007.

Wetland Delineations and Jurisdictional Determinations

Jurisdictional Determination, California Valley, CA. Performed jurisdictional determination for a 4,575 acre site. Lead author for the technical report. July 2008 and March 2009.

Jurisdictional Determination, Antelope Valley, CA. Performed jurisdictional determination mapping for a 2,000 acre site. Lead author for the technical report. January 2009.

Jurisdictional Determination Mapping, Johnson Valley, CA. Performed jurisdictional determination mapping for a 9,315 acre site. April - May 2008.

Vegetation Surveys and Mapping

Botanical Survey, Johnson Valley, CA. Performed botanical surveys for a 9,315 acre site. Identified and cataloged plants found on-site. March – May 2008.

Permits

- California Department of Fish and Game Scientific Collecting Permit 2008 -2010

Specialized Training

- San Luis Obispo County Workshop for Biologists, December 2008
- Basic Wetland Delineation Training (40-hour), Wetland Training Institute, 2008
- Riparian Mapping and Species Identification Workshop, California Native Plant Society, 2007
- Using Native Grasses and Graminoids in Restoration and Revegetation, California Native Grasslands Association Workshop, May 2007
- Noxious Weed Seminar, Agricultural Commissioner's Office, June 2005
- American Red Cross First Aid and CPR

Contact Information

URS Corporation
130 Robin Hill Road, Suite 100
Santa Barbara, CA 93117
Tel: 805.964.6010 ext. 367
Cell: 805.252.5135
Fax: 805.964.0259
Julie_Love@urscorp.com

Suzanne Rhodes
901 Coconino Ave.
Flagstaff, Arizona 86001
928-607-7791
slr314@gmail.com

Education, Training, and Certifications

- M.A., Sustainable Landscape Design and Planning, Conway School of Landscape Design, Conway, Massachusetts, June 2009
- B.S., Botany, minor in Anthropology, Northern Arizona University, Flagstaff, December 1999
- PSMJ Resources, Inc. Project Manager Boot Camp, 2007
- NEPA training, 2004
- Pesticide Handler's Certification, 2000
- Emergency Medical Technician, 1983
- USFWS permitted for cactus ferruginous pygmy-owl (*Glaucidium brasilianum cactorum*), Mexican spotted owl (*Strix occidentalis lucida*), southwestern willow flycatcher (*Empidonax traillii extimus*) including nest monitoring, humpback chub (*Gila cypha*).

Areas of Expertise

I am an experienced botanist familiar with the riparian and terrestrial plant communities of the mountains, canyons, and deserts of the Southwest, including special-status and non-native plant species and vegetation types. I have conducted surveys for noxious weeds in both the high desert and lower desert areas of Arizona, California, Colorado, and New Mexico, am adept with vegetation mapping and map interpretation. I have extensive field experience; in addition to plants, I have conducted surveys for protected fish and avifauna. I have experience with vegetation identification and mapping along the mainstem riparian ecosystem of the Colorado River, Rio Chama, and Rio Grande, as well as selected seeps and springs that are tributaries to the Colorado River in Grand Canyon.

My office experience includes analyzing data, managing projects, and meeting with agencies, other personnel, and current and prospective clients. I have researched existing reports and documents in order to include relevant materials in written documents and have prepared biological evaluations, biological assessments, environmental analyses, and numerous technical reports in a variety of formats.

Professional Experience

Botanist, SWCA Environmental Consultants; Flagstaff, Arizona (2000–2008): Conducted habitat assessments and collected field data concerning the Endangered Species Act, Clean Water Act, National Environmental Policy Act, organized and interpreted field data, wrote technical documents and correspondence, managed projects and coordinated with clients, other project managers, and technical staff.

Botany Consultant–Subcontractor, Rob Weber for the Hopi Tribe; Arizona (1999): Provided field interpretation and baseline vegetation inventory incorporating airborne imagery and aerial photography to create vegetation distribution maps for long term monitoring on the Blue Canyon Restoration and Monitoring Pilot Project.

Botanist–Subcontractor, Dr. Thomas Mitchell-Olds for The Max-Planck Institute for Ecology; Jena, Germany (1999): Performed independent field work involving collection and identification of voucher specimens and seed samples from isolated populations of *Arabis* in the southwestern United States.

Assistant Curator, Deaver Herbarium, Northern Arizona University; Flagstaff (1998–2000): Processed herbarium specimens, maintained computer database, managed loan and exchange programs, ordered supplies, and assisted visitors.

Research Assistant, Dr. Michael Kearsley at Northern Arizona University; Flagstaff (1997-2001): Entered and analyzed data, created hand-drawn vegetation distribution maps, and provided plant identification for the Grand Canyon riparian vegetation monitoring program in the field and the office.

Selected Projects

Botanist, Sage Grouse Habitat Classification, Rawlins, Wyoming (2009): Provided botanical expertise in identifying, locating, and classifying sagebrush (*Artemisia*) populations on checkerboard lands proposed for wind turbine construction. Client: Bureau of Land Management.

Botanist, Rare Plant Surveys; Roan Plateau, Colorado (2008): Provided botanical expertise in identifying, locating, and documenting rare plant populations on lands proposed for oil and natural gas extraction. Client: Bureau of Land Management.

Botanist, Tonto Noxious Weed Surveys; Gila County, Arizona (2005): Provided botanical expertise in identifying, locating, and documenting noxious weed populations during surveys to determine the effects of the Picture and Rodeo-Chedeski fires on vegetation. Client: Tonto National Forest.

Botanist, Rare Plant and Noxious Weed Surveys; La Paz and Yuma counties, Arizona (2005): Identified noxious weeds along roadways in southern Arizona for fiber optic right-of-way. Client: EPNG Company

Botanist, US 70 Environmental Services; Lincoln County, New Mexico (2003): Conducted surveys for endangered Kuenzler's cactus (*Echinocereus fendleri* var. *kuenzleri*) and noxious weed populations; and performed wetland delineation for road improvements and widening of US 70. Client: Sierra Blanca Construction.

Botanist, Colorado River Vegetation Mapping; Grand Canyon, Arizona (1999-2007): Identified and mapped vegetation changes at 60 sites along the Colorado River in Grand Canyon. Client: Northern Arizona University.

Botanist, Habitat Identification and Mapping; Prescott National Forest, Arizona (2001): Conducted habitat identification and mapping of rare and sensitive plants (*Heuchera eastwoodiae* and *Lupinus latifolius*) in the Prescott National Forest for a prescribed burn project. Client: Prescott National Forest.

Botanist, Colorado River Environmental Surveys; Grand Canyon, Arizona (1998): Conducted surveys of seeps and springs along the Colorado River within Grand Canyon National Park. Client: Grand Canyon Monitoring and Research Center.

Professional Affiliations and Committees

Southwest Vegetation Management Association
Arizona Native Plant Society
Southwest Vegetation Management Association 2006-2008 Board member
American Society of Landscape Architects 2009

RESUME of GLENN RINK
Far Out Botany

801West Birch Street
Flagstaff, AZ 86001
928-779-5820
glenn_rink@hotmail.com

Education:

Geology BS, Northern Arizona University, 1985
Botany MS, Northern Arizona University, 2003

Botanical publications:

Christie, K., G.R. Rink, and T.J. Ayers, in review, Additions to the flora of Grand Canyon National Park during recent vegetation mapping efforts. Canotia.

Rink, G.R., A. C. Cully, and D.A. McCallum. 2009. A checklist of the vascular flora of El Morro National Monument, Cibola County, New Mexico. Journal of the Torrey Botanical Society 136(3) pp. 403-421.

Rink, G.R. and A. Cully. 2008. A checklist of the vascular flora of Aztec Ruins National Monument, San Juan County, New Mexico. Journal of the Torrey Botanical Society 135(4) pp.571-584.

Rink, G.R. 2007. A checklist of the vascular flora of Yucca House National Monument, Montezuma County, Colorado. Journal of the Torrey Botanical Society 134 (2) pp. 289-300.

Rink, G.R., 2005, A checklist of the vascular flora of Canyon de Chelly National Monument, Apache County, Arizona. Journal of the Torrey Botanical Society 132(3) pp. 510-532.

Rare Plant and Floristic Field Experience

2009, October 31 – Collected putative *Zigadenus vaginatus* from a remote hanging garden within Grand Canyon for molecular analysis related to population genetics study, reference: Emily Palmquist, MS student at Northern Arizona University, emily.palmquist@nau.edu. 1 day.

2009, October 30 – Mapped vegetation and made a vascular plant list at a re-vegetation project site in lower Glen Canyon, Grand Canyon Wildlands Council. 1 day.

2009, October 19-26 – Collected biomass production information (plant ID and weights) from random plots at remote locations on the Navajo Reservation along the Utah/ Arizona border, Ecosphere Environmental, looked for *Astragalus cutleri*, *Astragalus humillimus*, *Atriplex garrettii* var. *navajoensis*, *Erigeron rhizomatus*, *Penstemon navajoa*, *Sclerocactus mesa-verdae*, *Asclepias welshii*, and *Polygala acanthoclada*, reference: Alexis Watts, Sr. Project Biologist, Ecosphere Environmental Services, 112 W. Montezuma Ave., Suite 4, Cortez, CO 81321, 970-564-9100, cell: 928-386-1777, watts@ecosphere-services.com. 8 days.

2009, August 31-September 9 – Vegetation mapping (plant ID and cover estimates) on the North Rim of Grand Canyon, Kass Green and Associates. 10 days.

2009, July 7-10; 2008, May 6, August 27- September 2, October 8-10; 2007, April 27-28 – Vouchered plant survey of Surprise Canyon, a remote tributary of the Colorado River within Grand Canyon, **Mohave County, Arizona**, Far Out Botany. Rare plants looked for include: *Epilobium nevadense, Mentzelia hualapaiensis* sp. nov., *Ericameria arizonica, Aletes macdougalii* ssp. *macdougallii, Camissonia specuicola* ssp. *hesperia, Carex scirpoidea* var. *curatorum, Crossosoma parviflorum, Cryptantha capitata, Flaveria macdougallii, Fraxinus cuspidata* var. *macropetala, Hesperodoria scopulorum* var. *scopulorum, Imperata brevifolia, Ostrya knowltonii, Primula specuicola,* and *Pteryxia petraea*, references listed below. 17 days.

2009, July 13-17, September 10; 2008, July 13-17, August 4-8; 2007, August 4-9, July 5-8 – Vouchered plant survey of the North Rim of Grand Canyon, Grand Canyon Field Institute and Far Out Botany. Rare plants looked for include: *Castilleja kaibabensis, Penstemon pseudoputus, Hymenoxys subintegra, Draba asprella, Selaginella watsonii, Ericameria arizonica,* and *Beckmannia syzigache*, references listed below. 25 days.

2009, June 2-4, 2008, June 10-17, vouchering rare and other plants from springs and hanging gardens in Bright Angel Canyon, Grand Canyon National Park, Far Out Botany. Rare plants searched for included: *Ericameria arizonica, Aletes macdougalii* ssp. *macdougallii, Camissonia specuicola* ssp. *hesperia, Carex scirpoidea* var. *curatorum, Crossosoma parviflorum, Cryptantha capitata, Flaveria macdougallii, Fraxinus cuspidata* var. *macropetala, Hesperodoria scopulorum* var. *scopulorum, Imperata brevifolia, Ostrya knowltonii, Primula specuicola, Pteryxia petraea,* and *Silene rectiramea,* 11 days.

2009, March 29 – April 9, April 13-17, April 20-27 – Plant list and rare plant survey of about 8000 acres in **Clark County, Nevada** for solar power development, Tetratech and Kiva Biological Consulting. Rare plants surveyed for included: *Arctomecon californica, Astragalus geyeri* var. *triquetrus, Astragalus mohavensis, Calochortus striatus, Cryptantha insolata, Eriogonum corymbosum* var. *nilesii* (Las Vegas buckwheat), *Eriogonum viscidulum, Opuntia whipplei* var. *multigeniculata, Penstemon albomarginatus,* and *Penstemon bicolor*, reference: Ron Gregg, Senior Project Manager, TetraTech, 1940 E. Deere Ave. Suite 200, Santa Ana, CA 92705, 949-756-7574, cell: 949-922-9140, Ronald.gregg@tteci.com; also, Jina Sagar, Biologist, Tetratech, 1750 SW Harbor Way, Suite 400, Portland, OR 97201, jina.sagar@tetratech.com, 503-721-7210, cell 503-734-9506. 25 days.

2009, March 24-27 - Plant list and rare plant survey of Arizona Public Service powerline along Arizona State Highway 72 in the vicinity of Bouse, **La Paz County, Arizona**, Envirosystems Management, rare plants surveyed for: *Pholisma arenaria,* and *Astragalus magdalenae* var. *niveus*, reference: Stephanie Treptow, Envirosystems Management, 23 E. Fine, Flagstaff, AZ 86001, 928-22600236, streptow@esmaz.com. 4 days.

2008, March 2 – Plant list and rare plant survey of 80 acres in the Mohave Valley of **Mohave County, Arizona**, Circa Cultural Consulting, Rare plants surveyed for:

Camissonia brevipes and *Enceliopsis argophylla*, reference,: Peter Bungart, Circa Cultural Consulting, 4 North San Francisco, Flagstaff, AZ 86001, 928-213-0984, pbungart@circaculture.com. 1 day.

2008, September 12-18, May 15-21, April 16-May 5 – Vouchered plants in Grand Canyon as part of vegetation mapping effort, National Park Service, rare plants surveyed for included: *Epilobium nevadense, Mentzelia hualapaiensis* sp. nov., *Ericameria arizonica, Aletes macdougalii* ssp. *macdougallii, Camissonia specuicola* ssp. *hesperia, Carex scirpoidea* var. *curatorum, Crossosoma parviflorum, Cryptantha capitata, Flaveria macdougallii, Fraxinus cuspidata* var. *macropetala, Hesperodoria scopulorum* var. *scopulorum, Hesperodoria salicina, Imperata brevifolia, Ostrya knowltonii, Primula specuicola, Pteryxia petraea, Arctomecon californica, Argemone arizonica, Euphorbia aaron-rosei, Rosa stellata* ssp. *abyssa,* and *Silene rectiramea,* references below. 34 days.

2008, September 19-October 2; 2007, April 6-30; 2006, May 3016, June 5-10; 2005, September 2-26; 2004, March 6-April 1; 2003, May 13-23, Vouchered plants in Grand Canyon National Park, Far Out Botany, rare plants looked for included: *Epilobium nevadense, Mentzelia hualapaiensis* sp. nov., *Ericameria arizonica, Aletes macdougalii* ssp. *macdougallii, Camissonia specuicola* ssp. *hesperia, Carex scirpoidea* var. *curatorum, Crossosoma parviflorum, Cryptantha capitata, Flaveria macdougallii, Fraxinus cuspidata* var. *macropetala, Hesperodoria scopulorum* var. *scopulorum, Hesperodoria salicina, Imperata brevifolia, Ostrya knowltonii, Primula specuicola, Pteryxia petraea, Arctomecon californica, Argemone arizonica, Euphorbia aaron-rosei, Rosa stellata* ssp. *abyssa,* and *Silene rectiramea,* references below. 124 days.

2008, May 25-27, June 21-22, 28-29, July 6, 27-28, August 24 – Vouchered plant list of Barbershop Canyon, Coconino County, Arizona, Far Out Botany, rare plants looked for included: *Rumex orthoneurus, Arenaria aberrans* – Mt. Dellenbaugh sandwort, *Aquilegia desertorum* – Mogollon columbine, *Astragalus troglodytes* – creeping milkvetch, *Calypso bulbosa* – western fairy slipper, *Cirsium parryi* ssp. *mogollonense* – Mogollon thistle, *Eriogonum jonesii* – Jone's buckwheat, *Hedeoma diffusa* – Flagstaff pennyroyal *Helenium arizonicum* – Arizona sneezeweed, *Heuchera eastwoodiae* – Eastwood alum root, *Hymenoxys jamesii* – James hymenoxys, *Malaxis porphyrea* – purple adder's mouth *Phlox amabilis* – Arizona phlox, *Talinum validulum* – Tusayan fameflower, *Cimicifuga arizonica* – Arizona bugbane, *Listera convallarioides* – broadleaf twayblade, *Potentilla multifoliolata* – Arizona cinquefoil, *Triteleia lemmoniae* – Mazatzal triteleia, *Spiranthes romanzoffiana* – hooded ladie's tresses, *Erigeron anchana* – Mogollon fleabane, *Erigeron saxatilis* – rock fleabane, reference: Barb Phillips, National Forest Zone Botanist, 1824 S. Thompson Street, Flagstaff, AZ 86001, 928-527-3600, bgphillips@fs.fed.us. 11 days.

2008, April 12-15 – Rare plant survey in Johnson Valley, **San Bernardino County, California**, URS, rare plants surveyed for included: *Astragalus albens, Astragalus tricarinatus, Calochortus striatus, Calochortus plummerae, Camissonia boothii* ssp. *boothii, Castilleja cinerea, Chamaesyce platysperma, Erigeron parishii, Eriogonum ovalifolium* var. *vineum, Linanthus maculates, Mimulus mohavensis, Penstemon*

albomarginatus, *Phacelia parishii*, *Plagiobothrys parishii*, *Polygala acanthoclada*, and *Saltugilia latimeri*, reference: John H. Davis IV, URS, 130 Robin Hill Road, Suite 100, Santa Barbara, CA 93117, 805-964-6010, cell: 805-202-9560, john_davis@urscorp.com. 4 days.

2007, October 10-13 - Plant list and rare plant survey of ca 2000 acres east of the San Rafael Swell in Utah, Circa Cultural Consulting, rare plants surveyed for: *Grindelia fastigiata*, *Platyschkuhria integrifolia* var. *ourolepis*, and *Eriogonum scabrella*, reference,: Peter Bungart, Circa Cultural Consulting, 4 North San Francisco, Flagstaff, AZ 86001, 928-213-0984, pbungart@circaculture.com. 4 days.

2007, August 30 – Rare plant survey of Portonova Ranch east of Flagstaff, Arizona, Fred Phillips Consulting, rare plants surveyed for: *Arenaria aberrans*, *Aquilegia desertorum*, *Astragalus cremnophylax*, *Astragalus troglodytes*, *Chrysothamnus molestus*, *Erigeron saxatilis*, *Eriogonum jonesii*, *Hedeoma diffusa*, *Hymenoxys jamesii*, *Potentilla multifoliolata*, and *Talinum validulum*, reference: Fred Phillips Consulting, LLC,401 South Leroux St.,Flagstaff, AZ 86001, (928) 773-1530, fphillips@commspeed.net. 1 day.

2007, May 27- June 3 – Survey for rare *Echinocereus fendleri* var. *kuenzleri* and species list in Lincoln National Forest, New Mexico, Southwest Botanical Research, Marc Baker, 1217 Granite Creek Lane, Chino Valley, AZ 86323, 928-713-7009, marcbaker@cableone.net. 8 days.

2007, March 20 – Rare plant survey of Arizona Public Service powerlines in Gila County, Arizona, Envirosystems Management, rare species surveyed for: *Abutilon parishii*, *Agave arizonica*, *Agave delmateri*, *Echinocereus triglochidiatus* var. *arizonicus*, *Erigeron piscatus*, *Heuchera glomerata*, *Mabrya acerifolia*, *Penstemon discolor*, *Perityle saxicola*, and *Salvia amissa*, reference: Stephanie Treptow, Envirosystems Management, 23 E. Fine, Flagstaff, AZ 86001, 928-22600236, streptow@esmaz.com. 1 day.

2007, August 4, June 28, May 5-7, 25-26; 2006, August 25-27, October 4-5 - Vouchered species list for Aztec Ruins National Monument, San Juan County, New Mexico, National Park Service, rare plants surveyed for: *Aletes macdougalii* ssp. *breviradiatus*, *Aliciella formosa*, *Astragalus humillimus*, *Astragalus micromerius*, *Sclerocactus cloveriae* ssp. *brackii*, *Sclerocactus cloveriae* ssp. *cloveriae*, *Sclerocactus mesae-verdae*, *Penstemon breviculus*, and *Proatriplex pleiantha*, reference: Theresa Nichols, Aztec Ruins National Monument Resource Manager, 84 County Road 2900, Aztec, NM 87410, Terry_Nichols@nps.gov, 505-334-6372, 12 days.

2007, August 1-2, June 3-4, 23-24, May 3-4, 12, 26-27; 2006, September 2-4, 21-22, October 3 - Vouchered species list for El Morro National Monument, Cibola County, New Mexico, National Park Service, rare plants surveyed for: *Besseya arizonica*, *Erigeron acomanus*, *Helianthus paradoxus*, *Physaria newberryi* var. *yesicola*, *Astragalus accumbens*, and *Phacelia serrata*, reference: Lisa Thomas, Coordinator, Southern Colorado Plateau I&M Network, Northern Arizona University, P.O. Box 5765, Flagstaff, AZ 86011, (928) 523-9280, Lisa_Thomas@nps.gov. 17 days.

2007, November 7 – Survey for rare plants on US Forest Service and BLM lands for the Arizona Department of Transportation, Envirosystems Management, reference: Stephanie Treptow, Envirosystems Management, 23 E. Fine, Flagstaff, AZ 86001, 928-22600236, streptow@esmaz.com. 1 day.

2006, April 16-19, Voucher of plants along Trout Creek, Mohave County, Arizona, Far Out Botany, rare plants surveyed for: *Allium bigelovii*, *Arenaria aberrans*, *Arctomecon californica*, *Penstemon bicolor*, *Polygala rusbyi*, *Purshia subintegra*, and *Salvia davidsonii*. 4 days.

2006, March 27-28, February 23-24 - Plant list and rare plant survey of a proposed gravel pit in the Sacramento Valley, **Mohave County, Arizona**, Circa Cultural Consulting, rare plants surveyed for: *Arctomecon californica*, *Cynanchum utahense*, *Enceliopsis argophylllus*, *Eriogonum viscidulum*, *Penstemon bicolor*, *Polygala acanthoclada*, and *Selinocarpus nevadensis*, reference: Peter Bungart, Circa Cultural Consulting, 4 North San Francisco, Flagstaff, AZ 86001, 928-213-0984, pbungart@circaculture.com. 4 days.

2005, November 14-17 and December 13-18 – Powerline survey for rare plants and to make a plant list between Boulder City and Davis Dam, **Clark County, Nevada**, Circa Cultural Consulting, rare plants surveyed for: *Arctomecon californica*, *Cynanchum utahense*, *Enceliopsis argophylllus*, *Eriogonum viscidulum*, *Penstemon bicolor*, *Polygala acanthoclada*, and *Selinocarpus nevadensis*, reference: Peter Bungart, Circa Cultural Consulting, 4 North San Francisco, Flagstaff, AZ 86001, 928-213-0984, pbungart@circaculture.com. 10 days.

2005, November 18-19, October 8 - Plant list and rare plant survey of roads in **Mohave County, Arizona**, Circa Cultural Consulting, rare plants surveyed for: *Arctomecon californica*, *Cynanchum utahense*, *Enceliopsis argophylllus*, *Eriogonum viscidulum*, *Penstemon bicolor*, *Polygala acanthoclada*,and *Selinocarpus nevadensis*, reference: Peter Bungart, Circa Cultural Consulting, 4 North San Francisco, Flagstaff, AZ 86001, 928-213-0984, pbungart@circaculture.com. 3 days.

2005, August 24-25 - Plant list and rare plant survey of Arizona Public Service powerline from Grey Mountain to Tuba City, Navajo Reservation, Arizona, Envirosystems Management, Rare plants surveyed for: *Amsonia peeblesii*, *Astragalus sophoroides*, *Cymopterus megacephalus*, *Asclepias welshii*, *Errazurizia rotundata*, *Pediocactus peeblesianus* var. *fickeiseniae*, and *Puccinellia parishii*, reference: Stephanie Treptow, Envirosystems Management, 23 E. Fine, Flagstaff, AZ 86001, 928-22600236, streptow@esmaz.com. 2 days.

2005, June 23-25 – Voucher plants along Fossil Creek, central Arizona, for future monitoring, Northern Arizona University. 3 days.

2005, June 8-11, Rare plant survey and voucher of plants between Hance and Cremation Creeks, Grand Canyon National Park, National Park Service, rare plants surveyed for:

Ericameria arizonica, *Aletes macdougalii* ssp. *macdougallii*, *Camissonia specuicola* ssp. *hesperia*, *Carex scirpoidea* var. *curatorum*, *Crossosoma parviflorum*, *Cryptantha capitata*, *Flaveria macdougallii*, *Fraxinus cuspidata* var. *macropetala*, *Hesperodoria scopulorum* var. *scopulorum*, *Hesperodoria salicina*, *Imperata brevifolia*, *Ostrya knowltonii*, *Primula specuicola*, *Pteryxia petraea*, *Arctomecon californica*, *Argemone arizonica*, *Euphorbia aaron-rosei*, *Rosa stellata* ssp. *abyssa*, and *Silene rectiramea*, references below. 4 days.

2005, May 27- June 5, April 10-15, Rare plant survey and voucher of plants in Glen Canyon National Recreation Area, Far Out Botany, rare plants surveyed for: *Astragalus harrisonii*, *Astragalus musiniensis*, *Cirsium rydbergii*, *Cycladenia humilis* var. *jonesii*, *Carex scirpoidea* var. *curatorum*, *Erigeron kachinensis*, *Erigeron zothecinus*, *Perityle specuicola*, *Platanthera zothecina*, *Carex specuicola*, *Primula specuicola*, and *Zigadenus vaginatus*, Far Out Botany. 16 days.

2005, May 13-18, Rare plant survey and voucher of plants along the Bass Trail, Grand Canyon National Park, National Park Service, rare plants surveyed for: *Ericameria arizonica*, *Aletes macdougalii* ssp. *macdougallii*, *Camissonia specuicola* ssp. *hesperia*, *Carex scirpoidea* var. *curatorum*, *Crossosoma parviflorum*, *Cryptantha capitata*, *Flaveria macdougallii*, *Fraxinus cuspidata* var. *macropetala*, *Hesperodoria scopulorum* var. *scopulorum*, *Hesperodoria salicina*, *Imperata brevifolia*, *Ostrya knowltonii*, *Primula specuicola*, *Pteryxia petraea*, *Arctomecon californica*, *Argemone arizonica*, *Euphorbia aaron-rosei*, *Rosa stellata* ssp. *abyssa*, and *Silene rectiramea*, references below. 6 days.

2004, October 6-9 – Survey for rare *Coryphantha scheerii* var. *robustispina* within Mexico along the US border south of **Pima County, Arizona**, Southwest Botanical Research, Marc Baker, 1217 Granite Creek Lane, Chino Valley, AZ 86323, 928-713-7009, marcbaker@cableone.net.. 4 days.

2004, September 22-25, Vouchered plants on the Shivwits Plateau, Mohave County, Arizona, Far Out Botany. 4 days

2004, June 19-20 – Rare plant survey at Lowell Discovery Channel Telescope site near Happy Jack, Arizona, Envirosystems Management, rare plants surveyed for: *Arenaria aberrans*, *Astragalus rusbyi*, *Helenium arizonicum*, *Heuchera eastwoodiae*, and *Penstemon nudiflorus*, reference: Stephanie Treptow, Envirosystems Management, 23 E. Fine, Flagstaff, AZ 86001, 928-22600236, streptow@esmaz.com. 2 days.

2004, May 27, July 13, August 2 – Vouchered plant list for Edgemont Highlands, a housing development east of Durango, Colorado, Linda Robinson Studios. 3 days.

2004, May 16-19, 24-25, 30-31, June 1, 5, July 23-August 2, September 4-7; 2003, March 8, 25-27, April 13-20, June 26-30, July 6-9, 14-19, 22-27, 29-30; September 21-22, 27 – Vouchered plant survey and rare plant survey of portions of the San Juan River Basin for the San Juan Flora Project, San Juan College, Farmington, New Mexico, too

many rare plants surveyed for to mention, reference: Ken Heil, Math-Science Division, Room 1807, San Juan College, 4601 College Boulevard, Farmington, New Mexico 87402-4699, heilk@sjc.cc.nm.us. 64 days.

2004, April 29-30, May 1, 26, 28; 2003, July 27, August 21-22, September 23 – Vouchered species list for Yucca House National Monument, Montezuma County, Colorado, National Park Service, rare plants looked for: *Aletes macdougalii* ssp. *breviradiatus*, *Astragalus coltonii* var. *moabensis*, *Astragalus cronquistii*, *Astragalus naturitensis*, *Astragalus newberrryi*, *Astragalus schmolliae*, *Astragalus tortipes*, *Eriogonum clavellatum*, *Eriogonum leptocladon* var. *ramosissimum*, *Hackelia gracilenta*, *Iliamna grandiflora*, *Penstemon parviflorus*, *Penstemon utahensis*, *Penstemon breviculus*, *Penstemon lentus*, and *Sclerocactus mesa-verdae*, reference: Lisa Thomas, Coordinator, Southern Colorado Plateau I&M Network, Northern Arizona University, P.O. Box 5765, Flagstaff, AZ 86011, (928) 523-9280, Lisa_Thomas@nps.gov. 9 days.

2004, April 14-18 and 2001, five days in March – Survey for the rare plant *Astragalus magdalenae* var. *peirsonii* in the Algodones Dunes of **Imperial County, California**, Botanical and Environmental Consulting, other rare plants surveyed for: *Astragalus lentiginosus* var. *borreganus*, *Croton wigginsii*, *Helianthus niveus* ssp. *tephrodes*, *Palafoxia arida* var. *gigantea*, and *Pholisma sonorae*, reference: Arthur Phillips, Botanical and Environmental Consulting, PO Box 173, Eckert, CO 81418, Nn7a@aol.com, 970-250-8112. 5 days.

2004, April 9 – Survey of Tapco powerline in central Arizona, Envirosystems Management, rare plants surveyed for: *Purshia subintegra*, *Eriogonum ripleyi*, *Eriogonum ericifolium*, and *Polygala rusbyi*, reference: Stephanie Treptow, Envirosystems Management, 23 E. Fine, Flagstaff, AZ 86001, 928-22600236, streptow@esmaz.com. 1 day.

2003, April 25, 30, June 6-9, 17-20 – Rare and sensitive plant survey of portions of Prescott National Forest, Envirosystems Management, rare plants surveyed for: *Agave delamateri*, *Arenaria aberrans*, *Erigeron saxatilis*, *Eriogonum ericifolium* var. *ericifolium*, *Eriogonum ripleyi*, *Hedeoma diffusum*, *Heuchera eastwoodiae*, *Lupinus latifolius* ssp. *leucanthus*, *Phlox amabilis*, *Polygala rusbyi*, and *Salvia dorrii* ssp. *mearnsii*, reference: Stephanie Treptow, Envirosystems Management, 23 E. Fine, Flagstaff, AZ 86001, 928-22600236, streptow@esmaz.com. 10 days.

2001-2003, April –November, Vouchered plant species list for Canyon de Chelly National Monument, Apache County, Arizona, National Park Service, rare plants surveyed for: *Allium gooddingii*, *Astragalus chuskanus*, *Cirsium chellyense*, *Lupinus caudatus* ssp. *cutleri*, *Opuntia* x*viridiflora*, *Platanthera zothecina*, *Zigadenus vaginatus*, *Carex curatorum*, and *Carex specuicola*, reference: Lisa Thomas, Coordinator, Southern Colorado Plateau I&M Network, Northern Arizona University, P.O. Box 5765, Flagstaff, AZ 86011, (928) 523-9280, Lisa_Thomas@nps.gov. 110 days.

1996-2004, survey for rare plants and vouchering of plants on remote portions of the Navajo Reservation, rare plants surveyed for: *Carex specuicola*, *Primula specuicola*, *Zigadenus vaginatus*, *Polygala acanthoclada*, *Platanthera zothecina*, *Errazurizia rotundata*, *Perityle specuicola*, *Cirsium rydbergii*, and *Euphorbia aaron-rosei*, Daniela Roth, U.S. Fish and Wildlife Service, 2369W. Orton Circle, Suite 50, West Valley City, UT 84119-7603, 801-975-3330 x123, daniela_roth@fws.gov. 20 days.

599 days of rare plant surveying, and collecting and vouchering plants. Over 9000 specimens collected and vouchered in museums.

Dina Robertson

Project Ecologist

Areas of Expertise

Natural Resource Management
Vegetation Ecology
Plant Identification
Ecological Restoration and Monitoring
Federal and State Environmental Compliance
Impact Analysis

Years of Experience

With URS: 5 Year
With Other Firms: 7 Years

Education

MS/Range Management/2004/University of California, Berkeley
BS/Biology/1997/University of California, Santa Cruz

Overview

Ms. Robertson is a biologist with more than 12 years experience in environmental science and natural resource management. She is skilled in land management planning, plant identification, ecological restoration, conducting biological inventories, vegetation monitoring and mapping and ecological research. Ms. Robertson has conducted rare plant and vegetation community surveys in northern, central and southern California. She has worked with agencies, nonprofits and private landowners to meet NEPA, CEQA, ESA and CWA requirements. She is also skilled in conducting wetland delineations, wildlife surveys (avian), technical writing and Geographic Information Systems (GIS).

Project Specific Experience

Natural Resource Management

Project Manager, Presidio Trust Restoration Site Monitoring and Rare Plant Research, San Francisco County, CA: $97K: Managed the Design and implementation (baseline monitoring) of a long-term monitoring program for multiple restoration sites on the San Francisco Presidio. The study provided:

- An assessment of the ecological health of the restoration sites,
- A cost effective and implementable long term monitoring plan,
- Decision-making procedures that can help determine thresholds for maintenance actions and focus any necessary maintenance activities on those actions that will preserve the ecological health and viability of the restoration sites over time.
- A repeatable, easy to implement statistically defensible design that is comparable between sites and between years.
- Baseline dataset for long term monitoring.

Project Manager, California Department of Fish and Game (DFG), Land Management Plan (LMP) for the Napa-Sonoma Marshes Wildlife Area, Solano, Sonoma and Napa Counties, CA, $200K: Currently writing LMP for 15,000 acre public land preserve. Project involves vegetation mapping, land ownership/leases/easement mapping, extensive data collection, synthesis and review, interagency coordination and restoration planning.

Project Manager, Biological Services, Golden Gate National Recreation Area (GGNRA), Marin, San Francisco, and San Mateo Counties, Golden Gate National Parks Conservancy (GGNPC), $200K. Example projects:

- **New Parklands Sensitive Habitat Mapping, 2009-present**: Currently modeling suitable habitat for over 20 sensitive wildlife an plant species; habitat maps will be used to identify sensitive areas for avoidance in the GGNRA General Management Plan.

- **Big Lagoon Restoration Project, Non-native Plant Mapping, 2008:** Mapped 20 non-native plant species in 38 acre parcel; made recommendations for pre-construction treatment.
- **New Parklands Acquisition Sensitive Species Data Gaps Analysis, 2007-2008:** Conducted data gaps analysis for sensitive plant and wildlife for GGNRA new San Mateo lands. Compiled data and provided a GIS database of up to date sensitive plant and wildlife species occurrence data.
- **Dias Ridge Realignment Grassland Community Mapping, 2006-2008:** Mapped extent of grasslands, wetlands and exotic plants near Muir Beach for trail realignment in the GGNRA.
- **Rare Plant Modeling, 2005:** Developed a GIS based predictive model for rare plant in the GGNRA. GIS software was used to analyze environmental variables and habitat characteristics associated with known rare plant occurrences, including slope, aspect, soils and vegetation communities.
- **Fort Baker Native and Exotic Vegetation Mapping, Marin County, CA, GGNRA, 2006:** Measured and mapped all trees and vegetation communities for the National Park Service to aid in restoration and fire protection of new conference and retreat center.

Project Manager, Resource Planning Services. California Coastal Conservancy. Solano, Marin and Contra Costa County, $60K. Example projects:

- **Restoration Opportunities and Constraints for the North Richmond Shoreline Conservation Planning Area (NRSCPA), Contra Costa County, 2009:** Evaluated restoration opportunities and provided a GIS geodatabase of data used for restoration planning in the NRSCPA.
- **Scoping for Rush Ranch Preserve Resource Management Plan (RMP), Solano County, CA, 2007:** Wrote detailed scope and budget for RMP for a preserve in Suisun Marsh. Created geodatabase, reviewed existing documents and identified critical data gaps for writing RMP.

Senior Biologist, Auburn State Recreation Area (ASRA) Resource Management Plan (RMP), Nevada and Placer Counties, CA, California State Parks, 2006, $362K: Currently writing biological resources section of RMP for ASRA. RMP compiles and summarizes existing information on sensitive plant, wildlife, vegetation communities and invasive plants in the ASRA, identifies sensitive areas within the recreation area, recommends location of new roads and trails to optimize resource protection as well as additional studies and monitoring required for park planning.

Biological Science Technician, Fire Monitoring Program for the Golden Gate National Recreation Area and Point Reyes National Seashore, Marin County, CA, National Park Service, 1999, $NA: Monitored vegetation response to fire in multiple NPS park units. Served

on a prescribed and wild land fire crew. Collected, identified, and inventoried plants for herbarium collection.

Project Manager, Grassland Monitoring Project, Contra Costa and Alameda Counties, CA, East Bay Regional Park District, 2002-2004, $NA: Designed and implemented an ecological study of soil, vegetation and environmental variables. Coordinated the field work of student researchers in monitoring plant and avian species in eight regional park units.

Independent Consultant, Vegetation Monitoring and Inventory Projects, Various Locations, Northern California, Marin, San Francisco and San Mateo Counties, 1998-2000, $40K: Managed all tasks required to census and monitor rare plants and complete a large scale vegetation map along the coast of the San Francisco Bay Area. Located and recorded populations of exotic plants in multiple open space preserves.

Habitat Restoration

Senior Biologist, Blackie's Pasture Wetland Restoration Design, Marin County, CA, California Coastal Conservancy, 2006, $17K: Prepared restoration plan (vegetation) for a proposed tidal slough in Richardson Bay.

Project Ecologist, Habitat Reserve Program (HRP) Mitigation Site Design, San Francisco Public Utilities Commission (SFPUC), 2009-present, >$1M: Currently working with the SFPUC in the design of multiple restoration sites in the Alameda Creek Watershed. Habitats include oak woodland, riparian, seasonal wetlands and Sycamore Alluvial woodlands. Task management includes vegetation plans and specs, grazing, weed and pond management.

Project Manager, Marin Headlands Mission Blue Butterfly Habitat Enhancement and Protection, Sausalito, CA, Golden Gate National Recreation Area, 2001, $NA: Worked collaboratively with National Park Service (NPS) engineers, contractors, resource staff and roads and trail crews to ensure compliance with federal environmental laws. Planned and implemented restoration projects on a 1500-acre reserve. Designed and administered federal contracts for enhancement of endangered species habitat. Hired contractors and recruited and supervised volunteers in habitat restoration projects. Team leader for Americorps members. Trained members in GIS, habitat restoration, plant identification, community outreach, endangered species habitat enhancement and monitoring.

Restoration Technician, Restoration Implementation, Circuit Riders, Inc., Sonoma, Napa, Alameda, Placer and Sacramento Counties, CA, 1998, $NA: Restored habitat through exotic plant removal and planting of native species in a variety of vegetation types on private and public lands.

Habitat Restoration Specialist, Habitat Restoration and Protection, Marin County and San Francisco Counties, CA, Golden Gate National Recreation Area, 1997-1998, $NA: Americorps Member. Coordinated and led volunteer programs in habitat restoration. Responsible for native plant nursery operations, seed collection, exotic plant removal and out planting of native species. Developed and presented trainings on plant taxonomy. Created herbarium specimens through collection, identification and mounting of type specimens. Restored sites included coastal dune, coastal scrub, riparian and grassland habitats.

Impact Analysis

Senior Biologist. Soil Aquitard Study, Beale Air Force Base, Yolo County, Ca, 2008, $171k: Managed the design and implementation of a soil aquitard study of vernal pools **a**t Beale Air Force Base. The study was used to determine average depth to soil aquitard on different geologic formations. Data will inform impact avoidance measures associated with base operations.

Project Ecologist, Remediation Project, Napa County, CA, Mercury Mine (Private Client), 2006-present, $86K: Conducted habitat assessment for plants and wildlife at a proposed mine remediation site. Completed biological permitting; currently preparing biology section for CEQA Initial Study.

Senior Biologist, Merced Dominion Annexation, Merced County, CA, City of Merced, 2006, $108K: Conducted sensitive plant surveys (vernal pool species) and wrote final floristic report for a proposed development.

Biologist, Calaveras Dam Replacement Project, Santa Clara County, CA, San Francisco Public Utility Commission (SFPUC), 2005-2006, $3M: Evaluated biological issues for activities associated with the replacement of Calaveras Dam. Biological resources included serpentine grasslands, Callippe and Bay Checkerspot butterflies and California red-legged frog. Conducted rare plant surveys for dam design alternatives.

Biologist, Habitat Conservation Plan (HCP), Various Locations, Desert Regions of California and Arizona, Metropolitan Water District (MWD), 2005, $100K: Conducted extensive rare plant and wildlife surveys along over 100 linear miles in the Mojave and Sonoran Desert.

Biologist, Wind Power Project, Solano County, CA, Sacramento Municipal Utility District (SMUD), 2005, $94K: Conducted burrowing owl and avian mortality surveys for a planned wind power project.

Transportation Projects

Project Manager, Greenwood Creek Bridge Replacement, Mendocino County, CA, Caltrans, 2005-2009, $203K: Manage all tasks related to bridge replacement project**.**

Senior Biologist, SR 36 Culvert Replacement, Lassen and Plumas Counties, CA, Caltrans, 2006, $140K: Coordinated and conducted rare plant surveys for a culvert replacement project.

Senior Biologist, Caltrans Willits Bypass Project, Willits, CA, 2006, $150K: Conducted rare plant surveys and vegetation mapping along the proposed road alignments.

Senior Biologist, SR 50 and SR 89 Improvements for Lake Tahoe Water Quality, El Dorado County, CA, Caltrans, 2006, $890K: Conducted wetland delineation of proposed water treatment sites along 30 miles of highway in the Lake Tahoe Basin. Evaluated potential impacts to sensitive plants, natural communities, Tahoe Regional Planning Agency (TRPA) Stream Environment Zones (SEZ) and wetlands resulting from the project for Programmatic Natural Environment Study (NES).

Biologist, Schooner Gulch Highway 1 Relocation, Mendocino County, CA, Caltrans, 2005-2006, $80K: Conducted rare plant surveys for coastal prairie species for a bridge replacement project.

Biologist, Vernal Pool Mitigation Bank, Butte County, CA, Caltrans, 2005, $192K: Conducted rare plant surveys for vernal pool plant endemics for a proposed mitigation bank.

Professional Societies/Affiliates

California Native Plant Society (CNPS)
Society for Ecological Restoration (SER)
California Botanical Society
California Invasive Plant Council (Cal-IPC)

Awards

National Park Service/STAR/Award for outstanding work performance

Languages

Conversational Spanish

Publications

Robertson, Dina. 2004. "Relationships Between Historic Land Use, Plant Species Composition and Environmental Factors in the Foothills South of Mount Diablo, California". MS Thesis, University of California Berkeley

Stampe, E., K. Schwartz, and D. Robertson. 1998. "Plant Families of the Golden Gate National Recreation Area". Technical manual, Golden Gate Parks Association

Chronology

12/04 - Present: URS Corporation, Senior Ecologist, Oakland, CA
02/02 – 07/04: University of California, Berkeley, Graduate Student Researcher, Berkeley, CA
01/01 – 12/01: Natural Park Service, Natural Resource Project Manager, Sausalito, CA
07/99 – 11/99: National Park Service, Fire Effects Technician, Marin, CA
03/98 – 12/00: Consultant, North and Central Coast, CA
01/98 – 03/98: Circuit Rider Productions, Inc., Restoration Technician, CA
11/97 – 11/98: Americorps, Habitat Restoration Specialist, National Park Service, Marin County, CA

Contact Information

URS Corporation
1333 Broadway, Suite 800
Oakland, CA 94612-1924
Tel: 510.893.3600
Direct: 510.893.1751
Fax: 510.874.3268
Dina_Robertson@urscorp.com

Teresa B. Salvato
1009 Bascomb Dr.
Riverside, CA 92507
(909) 720-8534 or (951) 827-3601
teresa.salvato @ucr.edu

Education: B.A. in Music, U.C. Riverside 1988

Additional relevant courses at U.C. Riverside: Subtropical Horticulture 1994
Field Botany 2000

Employment: Parkview Nursery, sales person and planting advisor, 1993

UCR – Dept . of Plant Pathology, Laboratory Assistant 1994-1996

Phytophthora infestans research:

- Virus testing(TMV) on tomato
- Selection for resistance within native species
- Propagation and maintenance of resistant species
- Disease strain mapping project
- PCR and progeny analysis

Rhyzoctonia research:

- Isolation and identification from nursery stock strawberry
- Tissue culture and maintenance of Rhyzoctonia and Phytophthora.

UCR – Dept. of Botany & Plant Sciences, Herbarium Technician and Workroom manager, 1997 2006; Assistant Museum Scientist, 2006 to present - Specimen preparation and data entry, curation, identification and general museum operations; student, volunteer and injured personell training and management.

Additional Work Experience:
Biological consulting projects to which I have contributed through the UCR Herbarium or as a private consultant.

<u>Inyo Co, CA</u>

- Coso Junction due diligence survey for Ultrasystems, 2005
- Coso Junction rare plant survey for Ultrasystems, 2006

<u>Kern Co., CA</u>

- Tejon Ranch rare plant survey for Dudek, 2007

Los Angeles Co., CA

Palmdale field survey for Ultrasystems, 2005
Lancaster field survey for Ultrasystems, 2005
Santa Clarita field survey for NRC, 2005
Centennial Homes, Tejon Ranch grassland study for NRC, 2006 - 2008
San Gabriel Canyon field survey for Ultrasystems, 2007
Santa Anita Reservoir field survey for Ultrasystems, 2007

Orange Co, CA

Santa Ana River Basin vegetation mapping for *Arundo* control for Ultrasystems, 2005
San Diego Creek vegetation mapping and survey for Ultrasystems, 2006
Irvine Ranch Conservancy floristic survey, 2008

Riverside Co., CA

Morongo Indian Reservation forest survey for BIA and Morongo Tribe, 1997-1998
Menifee field survey for Thomas Olson Assoc., 2000
Coachella Valley field survey for CH2MHill, 2000
Hemet (State St. at Gibbel Rd) field survey for Thomas Olson Assoc., 2001
Temecula(Long Canyon) field survey, 2001
San Jacinto Mtns field survey for Scott White, 2001
Santa Ana Mtns field survey for Scott White, 2001
Desert Hot Springs field survey for Steve McCarty, 2001
Hemet Airport survey for Thomas Olson Assoc., 2001
Hemet field survey for Psomas, 2003
Wildomar field survey for Thomas Olson Assoc., 2003
Alberhill field survey for NRC, May 2004
Banning Canyon rare plant survey for AMEC, 2004
Ivyglen vegetation mapping and rare plant survey for Ultrasystems,2005, 2006
San Jacinto River at Valle Vista vegetation mapping and field survey for Kent Beaman, 2005
Santa Rosa Plateau oak mapping and measuring for Kelly Volansky, 2005, 2006
Murrieta Hills plant survey for Helix Environmental, Inc., 2006

San Bernardino Co., CA

Vegetation description of the Upper Santa Ana River, for Dave Bramlet, 1998
Yucaipa parcel field survey for Steve McCarty, 1999
Yucaipa parcel field survey for Partin Development Corp., 1999
Bryant Street widening native tree survey, for city of Yucaipa, 1999
Blue Cut botanical field survey for Kleinfelder Inc., 2000
Big Bear Water Treatment Plant expansion survey, Th. Olson Assoc., 2000

Edison Co. tree removal project rare plant survey for BRC, 2004
Upper Waterman Canyon field survey for BRC, 2005
Running Springs vegetation mapping and survey for Kent Beaman, 2006
Hwy 395 Reallignment field survey for Ultrasystems, 2007
Ivanpah Valley rare plant focus survey and floristic inventory for CH2MHill, 2008

San Diego Co, CA

Plant Inventory of 9 reserves for Dept of Fish and Game, 2005
Otay Mesa floristic survey for NRC, 2008
Santee Lakes floristic survey for NRC, 2008

Clark Co, NV

Mormon Mesa rare plant focus survey and floristic inventory for CH2MHill, 2008

Teaching material preparation for Arborist Certification Class, UC Extension, 2000 to 2005

Revegetation Projects:

Wetlands Restoration and monitoring of Trilogy Golf Course Development for Army Corp of Engineers, 2003-2006; Riverside Co.

Tucolota Creek revegetation for Wildland Resources, 2001, Riverside Co.

Survey, restoration plan and plant lists for 35 county road sites, Los Angeles Co., 2007

Data collection,and restoration plan for two federally listed rare plant species. Mitigation and monitoring report for Big Bear Area Regional Waste Water Agency, San Bernardino Co., 2007.

Mitigation and restoration plan for Mountain Restoration Trust Site: Cold Creek, Los Angeles Co., 2007

Kristiaan G. Stuart

Senior Biologist/Consultation/Coordination Project Manager

Areas of Expertise

- NEPA/CEQA Documentation
- Endangered Species Act Documentation
- Botanical Assessments
- Wildlife Assessments
- Wetland Delineations
- Riparian Restoration
- Program Coordinator
- Project Management
- Task Order Manager

Years of Experience

With URS: 3.5 Years
With Other Firms: 14 Years

Security Clearance

Department of Homeland Security - Nov/2009

Education

MS/Biology, Plant Ecology/2000/ University California, Chico

BS/Biology, Ecology/1997/ University California, Chico

Registration/Certification

2009/Authorization to Collect Voucher Specimens of State Designated Endangered, Threatened and Rare Plants, Voucher Permit/CA/#2081(a)-09-63-V

2005/Scientific Collecting Permit for the Collection of Intertidal Marine Vertebrate and Invertebrate Species/OR

Overview

Mr. Stuart has more than 17 years of professional experience in environmental consulting and resource assessments. His areas of expertise include; NEPA and CEQA compliance and documentation, environmental permit integration, botanical & wildlife resource surveys, wetland delineations, stream inventory surveys, mitigation development and implementation. Mr. Stuart frequently works with personnel from U.S. Fish and Wildlife Service, National Marine Fisheries Service, U.S. Army Corps of Engineers (USACE) and state and local agencies to facilitate achieving project goals while maintaining compliance. The range of his experience, for example, includes working as a NEPA specialist for FEMA in the post Katrina/Rita and Gustav/Ike hurricane disaster recovery effort in Louisiana, environmental program coordination for California Department of Water Resources (DWR) Levee Geotechnical Evaluation Project and conducting environmental resource surveys for clients throughout Oregon, California, Nevada and Louisiana. Additionally, Mr. Stuart is fluent in the collection, processing, mapping and analysis of resources using Trimble GPS units and integrating this data into a geographical information system (GIS).

Project Specific Experience

Federal Projects - NEPA Compliance & Documentation

Senior Environmental Specialist, U.S. Department of Homeland Security, Federal Emergency Management Agency (FEMA), Public Assistance, Disasters Including: Katrina, Rita, Gustav & Ike; New Orleans, LA, 2008-2009, $13,600,000,000: Mr. Stuart served as NEPA, ESA and Executive Order specialist/contractor for FEMA. He reviewed FEMA 2008 and 2009 Louisiana disaster related projects totaling over $13.6 billion for Statutory and Categorical Exclusions; Endangered Species Act, Coastal Zone Management Act, Coastal Barriers Resource Act, Fish & Wildlife Coordination Act, Clean Water Act, River and Harbors Act, Essential Fish Habitat, Executive Orders and project level NEPA compliance. Mr. Stuart used the NEMIS & EMIS database systems to review, comment on potential project related effects and determine eligibility based on federal and state acts, laws and executive orders. He was responsible for coordinating with USFWS, NMFS and USACE to facilitate project eligibility and legal compliance through consultation. He Authored informal consultation letters to USFWS, NMFS and USACE to expedite program goals while maintaining environmental compliance. Additionally, he served as liaison to subgrantees answering concerns regarding environmental constraints and project eligibility. He participated in project kick-off meetings to qualify sub-applicants to the Public Assistance disaster relief process and environmental law requirements relating to NEPA compliance.

Senior Biologist, Multi-Project Environmental Assessment (EA), Beale Air Force Base, Yuba County, Beale AFB, CA, U.S. Air Force, 2008: Mr. Stuart initiated the review process for a multi-project EA in northern California. Project attributes included: to disclose and analyze potentially significant environmental impacts expected from implementation of the Proposed Actions that include development projects and long-term mission-based actions at Beale AFB in accordance with the General Plan; secondary objectives included determining potential cumulative impacts to air quality, biological resources, water resources, hazardous materials and waste management, noise, safety and military munitions response program, and transportation resources.

Environmental Specialist, Public Assistance, Northern California Flood Disasters (1646), Sacramento, CA, Federal Emergency Management Agency (FEMA), 2007-2008: Mr. Stuart prepared a multi-project biological assessment for California Department of Water Resources (Applicant). The biological assessment included the review of repairs to public infrastructure for San Joaquin, Stanislaus, Madera and Fresno counties. Project entailed the biological assessment of nine separate actions at 32 different sites including 25 different federally listed species.

Senior Biologist, Public Assistance, Northern California Flood Disasters (1646), Sacramento, CA, Federal Emergency Management Agency (FEMA), 2006-2007: Mr. Stuart authored several Biological Assessments (BA) for USFWS and NOAA-NMFS jurisdictional species for several post-disaster Public Assistance projects throughout northern California. Methods included site visitations and applicant interviews, species geo-database reviews, agency consultation, report preparation, GIS and peer review process. California Counties included: Butte, Calaveras, Contra Costa, Mendocino, Merced, Napa, San Joaquin, San Mateo, Santa Cruz, Sonoma and Stanislaus.

Environmental Specialist, Public Assistance, Northern California Flood Disasters, Rancho Cordova, CA, Federal Emergency Management Agency (FEMA), 2005-2006, $200,000,000: Mr. Stuart served as NEPA and ESA specialist/contractor for FEMA. He reviewed over 3000 FEMA 2005 and 2006 California disaster related projects covering 35 counties and totaling over $200 million for Endangered Species Act, Coastal Zone Management Act, Fish & Wildlife Coordination Act, Clean Water Act, River and Harbors Act, Executive Orders and NEPA compliance. Used the NEMIS database system to review, comment on potential project related effects and determine eligibility based on the above acts and orders. Mr. Stuart utilized the California Natural Diversity Data Base (CNDDB), USFWS and NMFS GIS spatial data through ArcReader to determine potential impacts to federally listed species and topographical data for impacts to waters of the United States. He coordinated with USFWS, NMFS and USACE to facilitate in project eligibility and legal compliance through informal consultation. Additionally, he authored letters to USFWS and NMFS for requests of formal consultation. He served as liaison to subgrantees

answering concerns regarding environmental constraints and project eligibility. As coordinator for staff biologists, he managed project review proficiency, logistics, and editorial reviews.

Ecologist, Canby I'SOT Geothermal Project, US Department of Energy – National Renewable Energy Laboratory, Environmental Assessment, Canby, CA, 2002: Mr. Stuart was responsible for identifying and mapping botanical resources, conducting a wetland delineation, reviewing bioaccumulation study on mercury input to Pit River, EA preparation, and client consultations on environmental compliance.

State Projects - Program Coordination, CEQA Compliance, Environmental Surveys

Senior Biologist/Solano Phase III Wind Turbine Project EIR/Solano County, CA/Sacramento Municipal Utility District (SMUD), 2009, $375,000: Mr. Stuart supported the development of the recirculated Environmental Impact Report (EIR) for SMUD's Phase III wind turbine generator (WTG) facility in Solano County. Tasks included responding to agency comments from the draft EIR, responding to changes in scope with appropriate environmental policy and species specific mitigation measures.

Environmental Clearance Program Coordinator/Biologist, Levee Geotechnical Investigations, Various Locations Northern CA, California Department of Water Resources, 2006 - 2009, $70,000,000: Mr. Stuart evaluated potential impacts of subsurface soil explorations on special status species, wetlands and other sensitive biological resources for over 350 miles of project levee's. He routinely provided environmental training to all field personnel. He worked with field crews to avoid sensitive biological resources, managed sub-contractors to facilitate in the completion of task goals, worked with local, state and federal agencies to facilitate project goals while maintaining environmental compliance, and prepared environmental documentation for state and federal permits and technical assistance, respectively. California counties included: Butte, Yuba, Sutter, Yolo, Sacramento, Stanislaus and San Joaquin.

Biologist, Mineral Curve Shoulder Widening Project, Tehama County, Mineral, CA, Caltrans, 2007, $20,000: Mr. Stuart conducted botanical resource surveys at a project area adjacent to Hwy 36 where the road will be widened. The Project constraints included many sensitive wildlife and botanical species as well as adjacent wetlands.

Biologist, RSP/Drainage Repairs – Hwy 96, Humboldt County, Hoopa, CA, Caltrans, 2006, $NA: Mr. Stuart conducted wildlife and botanical surveys and wetland delineations on three project areas requiring culvert replacements and road shoulder buttressing. He completed all necessary permitting per project area requirements.

Biologist, Wall Failure Repair Project – Hwy 169 Humboldt County, Hoopa, CA, Caltrans, 2006, $NA: Mr. Stuart conducted wildlife and botanical surveys and wetland delineations on two project areas requiring the excavation and repair of road shoulders that were damaged in winter storms. He completed all necessary permitting per project area requirements.

Biologist, Storm Damage Repairs – Hwy 169 Humboldt County, Hoopa, CA, Caltrans, 2006, $55,000: Mr. Stuart conducted wildlife and botanical surveys and wetland delineations at nine project areas requiring the excavation and repair of road shoulders and culvert replacements that were damaged in winter storms. He completed all necessary permitting per project area requirements.

Biologist, Red Rock Permanent Restoration – Wetland Delineation Studies and Biological Studies, Lassen County, Doyle, CA, Caltrans, 2006, $20,000: Mr. Stuart conducted wildlife and botanical surveys and wetland delineations at a project area adjacent to Hwy 395 where the road slope had failed adjacent to a wetland area. He completed all necessary permitting per project area requirements.

Plant Ecologist, Botanical Survey for Sensitive Plant Species at the Sunnyvale (Stevens Creek) Stream Crossing, California Department of Fish and Game, Santa Clara County, CA, 2001: Conducted botanical resource surveys and report. Key species included: western leatherwood.

Municipal Projects

Project Manager, San Francisco Public Utilities Commission, Ocean Beach Western Snowy Plover Monitoring, San Francisco County, San Francisco, CA, 2008, $35,000: Mr. Stuart provided oversight for project activities and technical review of project related documents.

Plant Ecologist/Project Manager, Bidwell Park Trails Project, Multi-season Botanical and Wetland Resource Surveys, City of Chico Parks Dept., Butte County, Chico, CA, 2001-2002, $40,000: Mr. Stuart conducted comprehensive multi-season botanical surveys throughout the 3,600 acre wild land park. He performed wetland delineations as needed for Park Dept. and developed invasive-exotic plant species inventory and distribution maps. Mr. Stuart used Trimble GeoExplorer GPS unit to accurately map sensitive species as part of a GIS. Performed all GIS tasks related to mapping of botanical resources, wetlands and invasive-exotic plant species. He participated in Park Commission public meetings.

Plant Ecologist/Project Manager, Bidwell Park Invasive Exotic Species Inventory, Distribution & Eradication, City of Chico Parks Dept., Butte County, Chico, CA, 2001-2002: Mr. Stuart inventoried and

mapped, using Trimble GPS combined with GIS, all major invasive exotic plant species in the Bidwell Park system. Plant species with the greatest potential to diminish landscape quality and utility were treated with herbicides whereas less rapidly invasive species were recommended for mechanical and grazed removal. Notable invasive species included: perennial pepperweed, periwinkle, English ivy, tree of heaven and Himalayan blackberry.

Plant Ecologist/Project Manager, Cohasset Road Widening Project, Multi-season Botanical Resource Surveys, City of Chico Public Works Dept., Butte County, Chico, CA, 2001-2002, $8,000: Mr. Stuart conducted comprehensive botanical resource surveys. Mapped sensitive habitat areas with Trimble handheld GPS unit. Mapped all data in a GIS.

Plant Ecologist/Project Manager, South Volonte and River Park Expansion Projects, City of Anderson, Shasta County, CA, 2000, $25,000: Mr. Stuart performed botanical and wildlife resource surveys; wetland delineation reports and USACE verifications for two municipal parks for the City of Anderson.

Plant Ecologist, Reconstruction and Widening of Roadway on East Side Potter Valley Road Potter Valley Wetland Delineation and Botanical Resource Survey, County of Mendocino Department of Transportation, , Mendocino County, CA, 2001: Conducted wetland delineations and botanical surveys along a 9 mile linear project area.

Plant Ecologist, Botanical Survey for Sensitive Plant Species at Cypress Ave. Bridge (BR 6-41), City of Redding, Shasta County, CA, 2001: Conducted botanical resource surveys. Key species included: bristly sedge, fox sedge, silky cryptantha and four-angled spikerush.

Plant & Wetland Ecologist, Nelson Park Expansion Project, Parks & Recreation Dept, City of Oroville, Butte County, CA, 1999, $20,000: Mr. Stuart conducted botanical and wildlife resource surveys and wetland delineations, including USACE verification and joint agency pre-application meeting resulting in vernal pool conservation area and multi-use recreation areas.

Renewable Energy Projects

Senior Biologist, Solano Wind Project, SMUD, Solano County, CA, Sacramento Municipal Utility District, 2006: Mr. Stuart conducted comprehensive botanical surveys and wetland delineations for the Phase 3 project area. He served as wetlands expert for project problem areas and independent technical review (ITR).

Ecologist, Canby I'SOT Geothermal Project, US Department of Energy – National Renewable Energy Laboratory, Environmental Assessment, Modoc County, Canby, CA, 2002: Mr. Stuart was responsible for identifying and mapping botanical resources, conducting a

wetland delineation, reviewing bioaccumulation study on mercury input to Pit River, EA preparation, and client consultations on environmental compliance.

Wildlife Biologist, Goshawk Surveys, Medicine Lake Geothermal Project Area, Calpine Corporation, Siskiyou County, Medicine Lake, CA, 2002: Mr. Stuart conducted protocol level goshawk surveys for proposed transmission routes.

Linear Projects

Senior Biologist, #4-12 Pipeline, Chevron Pipeline, Richmond & Pinole, Contra Costa County, CA, 2007: Mr. Stuart conducted botanical resource and wetland delineation surveys. He prepared a Joint Aquatic Resource Permits Application (JARPA) for wetlands and other waters identified in the project area.

Senior Biologist, Chico Area Bridges Replacement Project, Union Pacific Railroad, Butte County, Chico, CA, 2006: Mr. Stuart conducted botanical, wildlife and wetland resource surveys for bridge replacement project. Constraints included wetlands, rare plants and sensitive wildlife species including Townsend's big-eared bat and Pallid bat.

Project Biologist/Environmental Inspector, Williams Communication Company, Fiber Optic Installation; Point Arena, CA to Reno, NV, 1999-2000, $5,000,000: Mr. Stuart was responsible for the management of approximately 20 environmental monitors/environmental inspectors on a fiber optic installation route extending from Sacramento, CA to Reno, NV (~150 mi). Duties included leading morning kick-off meetings with client, environmental monitors and contract crews, writing project variances for changes to scope of work, designing BMP's and mitigation measures for unique scenarios and educating monitors and contractors on proper implementation, solving project crisis situations with impromptu mitigations and resolutions, meeting and coordinating with agency personnel from RWQCB's, California Dept. of Fish and Game, U.S. Fish and Wildlife Service, National Marine Fisheries Service and U.S. Army Corps of Engineers to co-solve crisis situations and work with contractors on avoidance and minimization measures to sensitive habitats and species, conducted impromptu environmental resource surveys (botanical, wildlife & wetland) when needed due to changes in scope of work. This position required Mr. Stuart to function as a biologist and a project manager and to posses the knowledge of all environmental laws and project related environmental documentation, BMP's, construction practices: trenching, directional boring, bridge attachments and aerial installations; comprehension of and revisions to engineer drawings. California counties included: Mendocino, Sonoma, Lake, Napa, Solano, Sacramento, Nevada, Placer and El Dorado.

Project Biologist / Environmental Inspector, AT&T Cable Removal Project, Tehama County, CA, 2002,: Mr. Stuart served as Lead

Biologist, responsible for identifying and mapping all environmental resources prior to immediate construction, ensuring client/contractor environmental compliance through BMP implementation and resource avoidance, identifying suitable staging areas, and linear routes of ingress and egress. Agencies involved included California Public Utilities Commission, CaDFG, NMFS and USACE.

Plant and Wetlands Ecologist, Pacific Gas & Electric, Hydroelectric Dam and Pipeline Installation, Lassen & Tehama Counties, CA, 2001: Project entailed a feasibility study for FERC licensing. Mr. Stuart was responsible for conducting botanical and wetland delineation surveys, mapping and reports, extensive use of GPS units and data analysis, and identifying project constraints.

Plant and Wetlands Ecologist, Gasquet: Hwy 199 AT&T Fiber Optic Installation Route, Del Norte County, Gasquet, CA, 2002, $500,000: Responsible for botanical and wetland delineation surveys, mapping and reports, extensive use of GPS units and data analysis, identifying project constraints., infrastructure additions to engineer drawings, report preparation and client consultations.

Plant and Wetlands Ecologist, Quest Fiber Optic Installation Route, Lassen County, CA, 2000,: Responsible for botanical and wetland delineation surveys, mapping and reports, extensive use of GPS units and data analysis, identifying project constraints and report preparation.

Plant Ecologist, Lower San Jose Ring Stream Crossing, Worldcom – MCI Metro, San Jose, Santa Clara County, CA, 2001: Conducted botanical resource and bay checkerspot butterfly host plant surveys and report. Key species included: Mt. Hamilton thistle, Congdon's tarplant, Contra Costa goldfields, smooth lessingia, Metcalf Canyon jewel-flower, most beautiful jewel-flower, Santa Clara valley dudleya, Hall's bush mallow, fragrant fritillary and robust spineflower.

Various Projects – Plant Ecology

Plant Ecologist, Pre- and Post-Burn Vegetation Monitoring for the Lassen Foothills Project: Denny Ranch, Dye Creek & Vina Plains Preserve, The Nature Conservancy, Tehama County, CA, 2001: Conducted transect based, GPS assisted surveys on several large habitat areas including: blue oak woodland, foothill and valley grassland and vernal pool and vernal swale wetland to determine the efficacy of controlled burning in the reduction of medusa-head and yellow star thistle and the affects to native plant associates. Data included a comprehensive species list, .25m^2 species point relevé data and cover abundance for the target invasive exotic species.

Plant Ecologist, Wetland Delineation, Freeport Shores Sports Complex, City of Sacramento Parks and Recreation Department, Sacramento County, CA, 2001: Conducted wetland delineation and

botanical resource surveys and report. Constraints included a frequent disturbance regime in mixed soils.

Plant Ecologist, Botanical Survey for Sensitive Plant Species at Soda Bay Bridge (Cole Creek Crossing) Replacement Project, Lake County Department of Public Works, Lake County, CA, 2001: Conducted botanical resource surveys and report. Key species included: Baker's navarretia, beaked tracyina, bent-flowered fiddleneck, big-scale balsamroot, Bogg's Lake hedge hyssop, bristly sedge, Cobb Mountain lupine, Colusa layia, Jepson's milk-vetch, Mayacamas popcorn-flower, round-leaved filaree, and wooly meadowfoam.

Plant Ecologist, Twelve Bridges Vernal Pool Mitigation Monitoring, City of Lincoln, Placer County, CA, 2001: Conducted vernal pool plant and hydrology mitigation monitoring for hundreds of vernal pools in the Twelve Bridges project area.

Plant Ecologist, Cable Installation Route Wetland Delineation and Botanical Resource Surveys, Hallwood-Cordua Irrigation District, Yuba County, CA, 2000: Conducted wetland delineation and botanical resource surveys and report in foothill grassland, valley grassland and vernal pool wetland habitats.

Professional Societies/Affiliates

Cal-IPC (California Invasive Plant Council) Member

California Society for Ecological Restoration

California Native Grasslands Association

Ecological Society of America Member

California Association of Environmental Professionals

California Native Plant Society

Awards

1993/Cash Award/USFS

1996/Vesta Holt Merit Project Award/CSUC Dept. of Biological Sciences

Languages

Spanish (reading and some spoken)

Specialized Training

2009/EMIS Database Training - FEMA

2009/ NEPA, NHPA, ESA, Floodplain, Environmental Justice, CBRA, and Clean Water Act Training - FEMA

2008/Environmental Databases: California Natural Diversity Database (CNDDB) Rarefind, CalPhotos online database, CNPS Inventory of Rare and Endangered Plants of California, USFWS Threatened and Endangered Species System (TESS)

2006/Dept. of Homeland Security / FEMA / NEMIS Database System – FEMA

2006/Operations 1 Training – FEMA

2006/Project Worksheet Development Training – FEMA

2002/CalFlora Database (www.calflora.org) contributor

2001/Panel Judge for California Botanical Society Graduate Student Competition – Chico, CA

2000/Union Pacific Railway Safety Training

1999/DOI Aviation Safety Training, Helicopter & Fixed Wing Aircraft (OAS Course B-3) – USGS

1997-Current/GIS skills: ESRI ArcView, ArcReader, Global Mapper, Trimble GeoExplorer GPS units & post processing software

1997/Wetland Delineation Training (scored 100% on delineation field and written exam) - CSUC

1997/Certified in ArcView GIS - BCC

1997/NEPA & CEQA training - CSUC

1993/Stream Inventory Training – Region 6, USFS

1992/Wildland Fire Fighting Training – USFS

1992/Marbled Murrelet Identification Training – USFS

1992/Improvised Explosive Device Identification & Avoidance Training – USFS

Research Projects – Plant Ecology

Plant Ecologist, Pre- and Post-Burn Vegetation Monitoring for the Lassen Foothills Project: Denny Ranch, Dye Creek & Vina Plains Preserve, The Nature Conservancy, Tehama County, CA, 2001: Conducted transect based, GPS assisted surveys on several large habitat areas including: blue oak woodland, foothill and valley grassland and vernal pool and vernal swale wetland to determine the efficacy of controlled burning in the reduction of invasive exotic plant species: medusa-head and yellow star thistle and the affects to native plant associates. Data included a comprehensive species list, .25m^2 species point relevé data and cover abundance for the target invasive exotic species.

Plant Ecologist/Principal Scientist, Ecology of Perennial Pepperweed (Lepidium latifolium), US Geological Survey, Klamath and Colusa National Wildlife Refuges and Grizzly Island State Wildlife Refuge, Klamath, Colusa and Solano Counties, CA, 1998 – 2001: Studied the ecology of perennial pepperweed, an invasive exotic plant species; in three different ecological settings in California. Studies included determining the rate and behavior of spread of nascent foci populations per soil moisture, salinity and associate species diversity and abundance. Research was also conducted on plant morphology, phenotypic plasticity, growth and reproductive biology. Plant community data was taken to be analyzed by using spatial autocorrelation.

Plant Ecologist, Effects of Soil Stratification Properties on Sacramento River Riparian Restoration Species, The Nature Conservancy; Tehama, Glenn and Butte Counties, CA, 1996: Conducted hundreds of hand auger tests to 16 foot depths classifying soils in one foot increments among several Sacramento River pre-restoration sites. Data was collected for analysis of species response to soil mosaic conditions in peer reviewed article. Mr. Stuart suggested a restoration planting regime that would target appropriate restoration species to different soil mosaic properties to maximize restoration efforts, cost and efficiency.

Publications

Riparian Forest Restoration Along Large Rivers: Initial Results from the Sacramento River Project. Restoration Ecology 1999 Vol 7(4): 360-368.

Perennial pepperweed research findings presented at California Dept. of Fish and Game, Pesticide Applicators Seminar, Fresno, CA - 3/10/99

Perennial pepperweed preliminary research findings presented to US FWS Ecological Service as an infield tutorial of the ecology of perennial pepperweed, Colusa NWR, Colusa, CA - 7-22-99

Perennial pepperweed research findings presented for Ecology and Conservation of Native Plants in California class at Dept. of Biological Sciences, California State University, Chico 10-21-99

Chronology

06/06 - Present: URS Corporation, Chico, CA

08/03 – 08/04: Pacific High School, Port Orford, OR

12/00 – 08/04: Stuart Consulting, Proprietor, Chico, CA

04/96 – 11/00: Jones & Stokes Associates, Inc., Sacramento, CA

06/96 – 11/00: Independent Botanical and Wetlands Consultant, Chico, CA

08/97 – 05/00: Department of Biological Sciences, California State University, Chico, CA

06/98 – 08/99: United States Geological Survey, Dixon, CA

04/98 – 06/98: CSU, Chico Research Foundation, Chico, CA

07/96 – 10/96: The Nature Conservancy (cooperation with CSUC), Chico, CA

07/95 – 06/96: School of Agriculture, CSU, Chico, CA

6/92 – 8/94: United States Forest Service, Gold Beach, OR

Contact Information

URS Corporation
1550 Humboldt Road, Suite 2
Chico, CA 95928
Tel: 530.893.9675
Cell: 530.588.5094
Fax: 530.893.9682
kristiaan_stuart@urscorp.com

MERCY L. VAUGHN **SUNDANCE BIOLOGY, INC.**

179 Niblick Rd. PMB 272, Paso Robles, CA 93446 • (928) 380-5507 • manydogs10@aol.com

Mercy Vaughn is Co-owner and President of Sundance Biology, Inc. and has been conducting biological field studies since 1990.

AREAS OF EXPERTISE

Biological resource inventories for environmental assessments, wildlife and botanical inventories, environmental compliance monitoring, and biological monitoring for Threatened, Endangered, and sensitive species. Supervised field research teams as well as environmental monitoring crews for T & E species protection, erosion control, and habitat restoration pertaining to linear and non-linear construction projects. Experience working in California, Nevada, and Arizona for the private sector, federal, state, and local agencies, and on U.S. military installations. Experience working in Mexico with state and federal agencies.

Experience in all aspects of scientific research including study design, proposal writing, data collection, data analysis, reporting, field crew training and supervision.

Foreign Language: Bilingual Spanish/English

PERSONAL DATA

Birth date: 1 April 1968
Telephone: (928) 380-5507

179 Niblick Rd. PMB 272
Paso Robles, CA 93446

EDUCATION

B.A. Ecology and Evolutionary Biology, 1993. University of Arizona, Tucson, Arizona.
Eight units of graduate level biology course work completed at University of Arizona, Tucson, Arizona-1993 and Northern Arizona University, Flagstaff, Arizona-2000.

Baccalaureate Research: Conducted a two and one-half year study in conjunction with Dr. Charles Lowe (Dept. of Ecology and Evolutionary Biology, University of Arizona), to determine population density, age structure, movement patterns and natural history of the desert tortoise on Desert Peak in Southeastern Arizona. The study was conducted year-round from August 1990 through December 1992 and again in 2003.

SPECIALIZED EXPERIENCE

Twenty years experience as a Biological and Environmental/Compliance monitor, conducting presence / absence surveys, density-estimate transects, and demographic and health studies of the federally listed desert tortoise (*Gopherus agassizii*) in California, Arizona, Nevada and Sonora and Sinaloa, Mexico. Studies involved detailed collection of data on plant communities, geomorphology, assessment of human impacts and other threats to the species, wildlife species lists in addition to intensive data collection of tortoise populations. Have handled desert tortoises in over 3000 encounters since 1990. Authorized to put radio transmitters on desert tortoises by USFWS. Authorization to handle desert tortoises on over 30 projects has been obtained in California from the Ventura and Barstow offices of the US Fish & Wildlife Service, the Barstow and Needles offices of the Bureau of Land Management, and the Palmdale and Fresno offices of the California Dept. of Fish & Game; in Arizona from the Phoenix office of the Arizona Dept. of Game & Fish; in Nevada the Nevada Dept. of Wildlife; and in Sonora, Mexico from the Gobierno Tradicional Coma'ac (Seri Indian Traditional Government) and SEMARNAT (Secretaria del Medio Ambiente de Recursos Naturales).

Authorized Field Investigator for CA threatened Mojave Ground Squirrel since 2005.

SUMMARY OF PROJECTS

Natural Resource Management……..….35+
Environmental Compliance Monitoring……...….50+
Resource Inventory……...…50+
Interpretive…….2
Research…….6

***Bold notation indicates botanical projects**

April-May 2009	**Hyundai Motor America Ann Arbor, MI**	**Lead Biologist for 5 year post construction desert tortoise clearance surveys and rare plant surveys on the Hyundai/Kia Proving Grounds on 4,600 acres in the West Mojave Desert. Supervised 65 biologists.**
April 2009	**Daggett Ridge Wind Farm, LLC San Diego, CA**	**Consulting Biologist conducted Mojave monkeyflower survey on a 150 acre proposed wind energy site near Daggett, CA. Biological crew of 3 people.**
Nov. 2008-present	**URS Corporation, Fresno, CA**	**Developing and overseeing implementation of a revegetation plan for CALTRANS for the Mojave Bypass, Kern County, CA**
March 2008-August	**AES Wind Generation San Diego, CA**	**Consulting Biologist, Conducted Mojave Ground Squirrel Protocol Trapping Surveys and comprehensive sensitive wildlife and botanical species survey for a proposed Wind Energy site, Daggett, CA.**
March 2007-July	**Hillcrest Development, Barstow, CA**	**Consulting Biologist, Conducted Mojave Ground Squirrel Protocol Trapping Surveys and conducted wildlife and botanical sensitive species survey on a 69 acre site, Barstow, CA.**
Jan. and Aug. 2007	**AES Seawest, Inc. San Diego, CA**	**Wildlife Biologist, Conducted desert tortoise presence/absence and rare plant surveys for meteorological stations near Daggett, CA**
Nov. 2006	**Rachel Woodard Ridgecrest, CA**	**Monitored Implementation of Remedial Revegetation along SOCAL Gas Pipeline 6905, Kramer JCT, CA**
May 2004	**Alice Karl & Associates Davis, CA**	**Conducted desert tortoise, rare plant, and Mojave fringe-toed lizard surveys for a power-line from Blythe to Hayward Station, CA**
Sept 2003-present	**Hyundai Motor America Ann Arbor, MI**	**Lead Biologist for construction compliance monitoring, desert Tortoise clearance surveys for construction of vehicle test track on 4,600 acres in the West Mojave Desert and long-term mitigation monitoring, including sensitive plant and bird surveys, MGS trapping and revegetation implementation. Managed biological crew of up to 60 people. Kern County, CA.**
November 2009	San Bernardino, County	Conducted a Mojave ground squirrel site assessment for a road realignment project near Phelan, CA.
August 2009	enXco Development Corp. N. Palm Springs, CA	Consulting Biologist conducted habitat quality assessment for desert tortoise on 100 acres near Borrego Springs, CA
August 2009	CH2MHill Sacramento, CA	Biologist, conducted 5 relative abundance transects for a proposed solar energy facility near Primm, NV.
August 2009 since Nov. 2005	Northwestern Mexico Desert Tortoise Research Project	Research coordinator since 2005 for ongoing desert tortoise ecology, genetics and disease studies in the tropical deciduous forest and desert thornscrub communities of Sonora and Sinaloa Mexico. Extensive research is ongoing annually with the most recent expedition in August 2009.
April-present 2009	CH2MHill Sacramento, CA	Consulting Biologist managed desert tortoise presence/absence survey on a 9,800 acre proposed wind energy site in the West Mojave Desert April-May 2009. Consulting with client and Agencies on mitigation plan. Biological crew of 20 people.
May 2009	CH2MHill Sacramento, CA	Consulting Biologist managed desert tortoise presence/absence survey on a 2,240 acre proposed wind energy site in the West Mojave Desert. Biological crew of 20 people.

April- May 2009	CH2MHill Sacramento, CA	Consulting Biologist co-managed desert tortoise presence/absence survey on a 2,240 acre proposed solar energy site in the East Mojave Desert. Biological crew of 14 people.
April- May 2009	CH2MHill Sacramento, CA	Consulting Biologist managed burrowing owl and desert tortoise presence/absence survey on 940 acres and conducted a habitat assessment on two alternative transmission lines for a proposed solar energy facility near Phelan, CA totaling 1300 acres. Biological crew of 6 people.
April- May 2009	CH2MHill Sacramento, CA	Consulting Biologist managed desert tortoise presence/absence survey on two sites for proposed solar energy facilities near Mojave, and Lucerne, CA totaling 1300 acres. Biological crew of 12 people.
March- July 2009	Sapphos Env. Inc. Pasadena, CA	Consulting Biologist, Conducted three Mojave Ground Squirrel Protocol Trapping Surveys on a site near Mojave, CA.
March- April 2009	Sapphos Env. Inc. Pasadena, CA	Consulting Biologist managed desert tortoise presence/absence survey on a 7,500 acre proposed wind energy site in the West Mojave Desert. Biological crew of 16 people.
Oct. 2008	CH2MHill Sacramento, CA	Consulting Biologist managed desert tortoise presence/absence surveys on a proposed solar energy site in southern Nevada.
August 2008	enXco Development Corp. N. Palm Springs, CA	Consulting Biologist conducted habitat quality assessment for desert tortoise on 640 acres near California City, CA
March- July 2008	Sapphos Env. Inc. Pasadena, CA	Consulting Biologist managed desert tortoise presence/absence Survey on an 11,700 acre proposed wind energy site in the West Mojave Desert. Biological crew of 16 people.
March- July 2008	Sunrise Consulting Big Bear, CA	Consulting Biologist, Managed Six Mojave Ground Squirrel Protocol Trapping Surveys on one site, Adelanto, CA.
March- July 2008	Impact Sciences, Inc. Pasadena,, CA	Consulting Biologist, Conducted Mojave Ground Squirrel Protocol Trapping Survey and managed desert tortoise presence/absence surveys on a 140 acre site, Lenwood, CA.
March- July 2008	CH2MHill Sacramento, CA	Consulting Biologist managed desert tortoise presence/absence Surveys on a proposed solar energy site in Ivanpah Valley, CA.
March- July 2008	CH2MHill Sacramento, CA	Consulting Biologist managed desert tortoise presence/absence Surveys on a proposed solar energy site in southern Nevada.
March- July 2008	CH2MHill Sacramento, CA	Consulting Biologist managed desert tortoise presence/absence Surveys on a proposed casino site in 29Palms, CA.
March- July 2008	Bill Vanherweg San Luis Obispo, CA	Wildlife Biologist, Conducted Mojave Ground Squirrel Protocol Trapping Surveys at three sites for SCE proposed power-line, Rosamond, CA.
Jan. 2008- present	ESA, Inc. Sacramento, CA	On-call construction compliance monitor for the Nacimiento water pipeline installation, San Luis Obispo County, CA
March- July 2007	Bill Vanherweg, San Luis Obispo, CA	Consulting Biologist, Conducted Mojave Ground Squirrel Protocol Trapping Surveys on three sites, Mojave, CA.
March- July 2007	Royal Investors Group, LLC, Santa Monica, CA	Consulting Biologist, Managed Mojave Ground Squirrel Protocol Trapping Surveys on three sites, Palmdale, CA.
March 2007- July	DUDEK, Inc. Sacramento, CA	Consulting Biologist, Conducted Mojave Ground Squirrel Protocol Trapping Surveys and managed desert tortoise, Mojave-fringe-toed lizard, and burrowing owl presence/absence surveys on a 1200 acre site, Barstow, CA.

March 2007-July	Impact Sciences, Inc. Pasadena,, CA	Consulting Biologist, Managed Mojave Ground Squirrel Protocol Trapping Surveys and managed desert tortoise presence/absence surveys at two sites, Palmdale, CA.
Jan. 2007	Asphalt Construction, Inc. Mojave, CA	Wildlife Biologist, Conducted desert tortoise presence/absence surveys for reclamation of a mine site near Ridgecrest, CA.
July 2006	CSU, Bakersfield	Wildlife Biologist, Assisted with long-term monitoring study trapping Tipton kangaroo rats, giant kangaroo rats, San Joaquin Valley antelope ground squirrels, Bakersfield, CA.
Aug.-Nov 2006	Jones and Stokes Associates, Inc. Sacramento, CA	Lead Biologist for desert tortoise biological monitoring for Caltrans projects along I-15, I-40, and SR95, CA.
March – July 2006	Sapphos Env. Inc. Pasadena, CA	Lead Biologist for desert tortoise biological monitoring for Caltrans projects along I-15, I-40, and San Bernardino kangaroo rat monitoring along SR210, CA.
July 2006	Environmental Planning Group, Tucson, AZ	Wildlife Biologist, Conducted desert tortoise relative abundance transects along a proposed power line corridor, NV.
March – July 2006	Sapphos Env. Inc. Pasadena, CA	Wildlife Biologist, Conducted Mojave Ground Squirrel Protocol Trapping Surveys at two sites, Rosamond, CA and one site in Victorville, CA, managed desert tortoise presence/ absence survey at Victorville site.
March – July 2006	Circle Mountain Biological Wrightwood, CA	Wildlife Biologist, Conducted Mojave Ground Squirrel Protocol Trapping Surveys, Ridgecrest, CA
March-June 2006	Morro Group San Luis Obispo, CA	Lead Field Biologist, Coordinated desert tortoise clearance surveys, monitoring of tortoise proof fence installation, burrowing owl relocation and Joshua tree relocation for SR14 expansion for Caltrans.
March – July 2006	Impact Sciences, Inc. Pasadena, CA	Wildlife Biologist, Conducted Mojave Ground Squirrel Protocol Trapping Surveys and managed desert tortoise presence/absence surveys at two sites, Palmdale, CA and Barstow, CA.
Nov. 2005-present	Northwestern Mexico Desert Tortoise Research Project	Research coordinator for ongoing desert tortoise ecology, genetics and disease studies in the tropical deciduous forest and desert thornscrub communities of Sonora and Sinaloa Mexico.
October 2005	Alice Karl & Associates Davis, CA	Wildlife Biologist, Conducted desert tortoise clearance surveys on 2,200 acres in the Colorado Desert near Brawley, CA.
Sept. 2005	University of Arizona	Lead Field Biologist for desert tortoise research conducted at Organ Pipe Natl. Monument, AZ.
April-July 2005	Bill Vanherweg Bakersfield, CA	Wildlife Biologist, Conducted Mojave Ground Squirrel Protocol Trapping Surveys at two sites in Lancaster, CA.
Mar 2005	Phil Leitner	Wildlife Biologist, Assisted with Mojave Ground Squirrel trapping study in Coso Basin on the Naval Air Weapons Station at China Lake, CA. (handled 12 Mojave ground squirrels)
Mar-May 2005	Sapphos Env. Inc. Pasadena, CA	Lead Field Biologist for desert tortoise presence/absence survey on a 5,500 acre proposed wind energy site in the West Mojave Desert. Biological crew of up to 16 people.
Dec. 2002-July 2003	Rincon Consultants, Inc. Ventura, CA	Environmental Consultant/Biological Monitor. Environmental assessments and biological monitoring/environmental compliance for right-of-way maintenance of SCG gas transmission lines. San Bernardino, Riverside, and Los Angeles Co. Monitored for multiple species and sensitive habitats. 20 projects to date.

Dec. 2002	Southern California Gas Co. Victorville, CA	Monitored 2 miles of road grading along SCG gas transmission line 6905 near Kramer Junction, CA. Monitored for sensitive species, Mojave ground squirrel, burrowing owl, and desert tortoise.
Nov. 2002	EnviroPlus Consulting Ridgecrest, CA	Monitored restoration of a 6 mile water line ROW in Victorville, CA. In addition to restoration monitored for sensitive species, Mojave ground squirrel, burrowing owl, and desert tortoise.
Nov. 2002	Chambers Group Irvine, CA	Supervised crew and monitored restoration of a 32 mile gas transmission line ROW between Adelanto and Kramer Junction, CA. In addition to restoration monitored for sensitive species, Mojave ground squirrel, burrowing owl, and desert tortoise.
Oct. 2002	Center for Sustainable Environments Northern Arizona University Flagstaff, AZ	Principle Investigator, Organized and supervised 25 person field crew to train Indigenous Group on Desert Tortoise Resource Management and Handling Techniques, Conducted Tortoise Mortality Survey on two 1km^2 study plots on Seri Indian lands in Sonora, Mexico.
June – Nov. 2002	EnviroPlus Consulting Ridgecrest, CA	Biological Monitor, Species of concern: Desert tortoise, Mojave ground squirrel, Burrowing owl; Installation of 24" natural gas line from Adelanto to Kramer Junction, CA
May 2002	Alice Karl & Associates Davis, CA	Desert tortoise demographic and health study at two 1.5 km^2 study sites located within the proposed expansion area of Fort Irwin NTC. Marked, measured and weighed desert tortoises encountered.
May 2002	EnviroPlus Consulting Ridgecrest, CA	Wildlife Biologist, Conducted presence/absence surveys for desert tortoises on a proposed housing development in the Indio Hills, Riverside, Co.
May 2002	EnviroPlus Consulting Ridgecrest, CA	Wildlife Biologist, Conducted clearance survey for desert tortoise, cacti and *Yucca* sp. along a 5-mile high-power transmission line, Moapa, NV.
April 2002	EnviroPlus Consulting Ridgecrest, CA	Wildlife Biologist, Supervised crew conducting intensive preconstruction surveys along a 32-mile gas line corridor from Adelanto to Kramer Jct., CA, Species of concern: Desert tortoise, Burrowing owl, Mojave ground squirrel, Joshua tree and all cacti species.
Jan. 2002- March 2002	AMEC Earth and Environmental San Diego, CA	Biological Monitor, Species of concern: Desert tortoise, Mojave ground squirrel, Burrowing owl; Installation of 30" natural gas line from Adelanto to Kramer Junction, CA
Oct. 2001	Center for Sustainable Environments Northern Arizona University Flagstaff, AZ	Principle Investigator, Trained Indigenous Group on Desert Tortoise Resource Management and Handling Techniques, Established Six Permanent Study Areas for Ongoing Research on Seri Lands, Conducted Tortoise Mortality Survey on km^2 study area on Tiburon Island, Gulf of California. Sonora, Mexico
Aug. 2001	EnviroPlus Consulting Ridgecrest, CA	Biological Monitor, Species of concern: Desert tortoise, High Desert Power Project, San Bernardino Co., CA
July-Aug. 2001	U.S.D.I. Bureau of Land Management, Barstow, CA	Biologist, conducted 200 of 1500 desert tortoise density estimate transects throughout the West Mojave Desert to establish baseline data for developing a West Mojave Management plan. San Bernardino, Co. CA
June 2001	Endangered Species Recovery Program, California State University, Stanislaus, Stanislaus County, CA	Conducted desert tortoise surveys along proposed expansion of Hwy 395 near Olancha, CA

May-June 2001	Charis Inc., Barstow, CA	Desert tortoise demographic and health study at six 1 km^2 study sites located within the proposed expansion area of Fort Irwin NTC. Marked, measured and weighed desert tortoises encountered.
April 2001	Alice Karl & Associates, Davis, CA	On site designated biologist. Managed environmental monitoring team for installation of a natural gas power plant in Blythe, CA. Authorized to move desert tortoises from project site.
May-Dec. 2000	North State Resources, Redding, CA	Environmental Compliance Monitor. Fiber optic cable installation. Issues of concern included erosion control, protection of coastal dune scrub, wetlands, breeding birds, and the endangered Morro shoulder-banded snail. Coordinated implementation and maintenance of overland restoration, San Luis Obispo Co., CA.
May 2000	North State Resources, Redding, CA	Conducted a clearance/salvage survey for the Morro shoulder-banded snail in San Luis Obispo County, CA
March 2000	Death Valley National Park, Death Valley, CA	Biologist, conducted a desert tortoise survey for a road realignment project and 10 desert tortoise density estimate transects, Death Valley National Park, CA
Jul.-Sept. 1999	U.S.D.I. Bureau of Land Management, Barstow, CA	Biologist, conducted 200 of 1400 desert tortoise density estimate transects throughout the West Mojave Desert to establish baseline data for developing a West Mojave Management plan. San Bernardino, Co. CA
Aug.-Sept. 1998	U.S. Geological Service, Biological Resource Division, Riverside, CA	Biologist, conducted 200 of 1000 desert tortoise density estimate transects throughout the West Mojave Desert to establish baseline data for developing a West Mojave Management plan. San Bernardino, Co. CA
Jan.-March 1998	North State Resources, Redding, CA	Environmental Compliance Monitor, Spread Leader. Training and supervision of monitors on fiber optic line. Species of concern: Desert tortoise, San Bernardino Co., CA
Sept. 1997	BBJ Mining Co., San Juan Capistrano, CA	Biological Consultant, Presence/Absence survey for the desert tortoise, Death Valley National Park, CA
March-July 1997	National Biological Service, Riverside, CA	Lead Biologist, Desert tortoise demographic and health study, Fort Irwin NTC, CA
May 1997	Desert Tortoise Preserve Committee, San Bernardino, CA	Biologist, Desert tortoise demographic and health study, Desert Tortoise Natural Area, CA
Nov. 1996	Death Valley National Park, Death Valley, CA	Biological Consultant, Conducted transects throughout the DVNP to determine locations of local desert tortoise populations
Sept. 1996	University of Arizona, Tucson, AZ	Biologist, Desert tortoise demographic study, Organ Pipe National Monument, AZ
May-Sept. 1996	National Biological Service, Riverside, CA	Biologist, Desert tortoise demographic and health study, Fort Irwin NTC, CA
Sept.-Oct. 1995 May-June 1996	Desert Tortoise Preserve Committee, San Bernardino, CA	Biological Monitor, Species of concern: Desert tortoise, Harper Lake Road, San Bernardino Co., CA
May 1995	National Biological Service, Riverside, CA	Biologist, Desert tortoise demographic and health study, Upper Ward Valley, San Bernardino Co., CA
March-Apr. 1995	Lake Mead National Park, Boulder City, NV	Biologist, Desert tortoise demographic and health studies at three sites within the LMNP

Aug.-Sept. 1994	Arizona Game and Fish Department, Phoenix, AZ	Biologist, Desert tortoise demographic and health study, Little Shipp Wash, Yavapai Co., AZ
Aug. 1994	Dames & Moore, Tucson, AZ	Biologist, Testing method for estimating desert tortoise densities, Luke Air Force Base, AZ
Apr. 1994	Nevada Division of Wildlife, Las Vegas, NV	Technician, Set up three desert tortoise study plots in Southern NV
Apr.-June 1994	National Biological Service, Riverside, CA	Biologist, Desert tortoise demographic and health study, Goffs, Lucerne Valley, Johnson Valley, San Bernardino Co., CA
Feb-.March 1994	LSA Associates, Inc., Pt. Richmond, CA	Environmental Compliance Monitor, natural gas line; Species of concern: desert tortoise, Imperial Co. CA
Oct. 1993	University of Arizona, Tucson, AZ Arizona Game and Fish Heritage Grant Recipient: Elizabeth Wirt	Biologist, Assisted in locating desert tortoises for reproduction study, Maricopa Mountains, Maricopa Co. AZ
Aug.-Oct. 1993	Arizona Game and Fish Department, Phoenix, AZ	Biologist, Desert tortoise demographic and health study, Granite Hills, Pinal Co., AZ
July 1993	Pacific Southwest Biological Survey, San Diego, CA	Biologist, Presence/Absence survey for desert tortoises, Little Morongo Canyon, San Bernardino Co., CA
March-May 1993	Desert Tortoise Preserve Committee, San Bernardino, CA	Naturalist (part time), Provide public education, Desert Tortoise Natural Area, San Bernardino Co., CA
March-May 1993	National Biological Service, Riverside, CA	Biologist, Desert tortoise demographic and health study, Desert Tortoise Natural Area and Fremont Peak, San Bernardino Co., CA
Feb. 1993	LSA Associates, Inc., Pt. Richmond, CA	Biologist, Desert tortoise survey on proposed natural gas line, Chocolate Mountain Gunnery Range, San Bernardino Co., CA
Feb. 1993	Ogden Environmental, San Diego, CA	Biologist, Desert tortoise survey on proposed utility corridor, Marine Corps Air Ground Combat Center, Twenty-nine Palms, CA
Sept. 1992	Arizona Game and Fish Department, Phoenix, AZ	Biologist, Desert tortoise demographic and health studies at three study sites in southern AZ
March-July 1992	Bureau of Land Management, Riverside, CA	Biologist, Sheep grazing effects on desert tortoise habitat, San Bernardino Co., CA
July 1992	City of Twenty-nine Palms, CA	Biologist, Presence/Absence survey for desert tortoises, City of Twenty-nine Palms, San Bernardino Co., CA
Sept.-Oct 1991	Arizona Game and Fish Department, Phoenix, AZ	Biologist, Desert tortoise demographic and health studies at three study sites in southern AZ
June-July 1991	Dames and Moore, Las Vegas, NV	Environmental Compliance Monitor, natural gas line; Species of concern: desert tortoise, San Bernardino Co., CA
May 1991	University of Arizona, Tucson, AZ	Volunteer Research Assistant, Desert tortoise habitat selection study, Buckskin Mountains., Mohave Co., AZ

References and Report and Publication list available upon request.

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814
1-800-822-6228 – WWW.ENERGY.CA.GOV

APPLICATION FOR CERTIFICATION
For the CALICO SOLAR (Formerly SES Solar One)

Docket No. 08-AFC-13

PROOF OF SERVICE
(Revised 6/14/10)

APPLICANT
* Felicia Bellows
Vice President of Development
& Project Manager
Tessera Solar
4800 North Scottsdale Road,
#5500
Scottsdale, AZ 85251
felicia.bellows@tesserasolar.com

CONSULTANT
Angela Leiba
AFC Project Manager
URS Corporation
1615 Murray Canyon Rd., #1000
San Diego, CA 92108
Angela_Leiba@URSCorp.com

APPLICANT'S COUNSEL
Allan J. Thompson
Attorney at Law
21 C Orinda Way #314
Orinda, CA 94563
allanori@comcast.net

Ella Foley Gannon, Partner
Bingham McCutchen, LLP
Three Embarcadero Center
San Francisco, CA 94111
ella.gannon@bingham.com

INTERESTED AGENCIES
California ISO
e-recipient@caiso.com

Jim Stobaugh
BLM – Nevada State Office
P.O. Box 12000
Reno, NV 89520
jim_stobaugh@blm.gov

Rich Rotte, Project Manager
Bureau of Land Management
Barstow Field Office
2601 Barstow Road
Barstow, CA 92311
Richard_Rotte@blm.gov

Becky Jones
California Department of
Fish & Game
36431 41st Street East
Palmdale, CA 93552
dfgpalm@adelphia.net

INTERVENORS
County of San Bernardino
Ruth E. Stringer, County Counsel
Bart W. Brizzee, Deputy County Counsel
385 N. Arrowhead Avenue, 4th Floor
San Bernardino, CA 92415-0140
bbrizzee@cc.sbcounty.gov

California Unions for Reliable Energy
(CURE)
c/o: Loulena A. Miles, Marc D. Joseph
Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Ste. 1000
South San Francisco, CA 94080
lmiles@adamsbroadwell.com

Defenders of Wildlife
Joshua Basofin
1303 J Street, Suite 270
Sacramento, California 95814
e-mail service preferred
jbasofin@defenders.org

Society for the Conservation of
Bighorn Sheep
Bob Burke & Gary Thomas
P.O. Box 1407
Yermo, CA 92398
cameracoordinator@sheepsociety.com

Basin and Range Watch
Laura Cunningham & Kevin Emmerich
P.O. Box 70
Beatty, NV 89003
atomictoadranch@netzero.net

Patrick C. Jackson
600 N. Darwood Avenue
San Dimas, CA 91773
E-mail service preferred
ochsjack@earthlink.net

*Gloria D. Smith, Senior Attorney
Sierra Club
85 Second Street, Second floor
San Francisco, CA 94105
gloria.smith@sierraclub.org

ENERGY COMMISSION
ANTHONY EGGERT
Commissioner and Presiding Member
aeggert@energy.state.ca.us

JEFFREY D. BYRON
Commissioner and Associate Member
jbyron@energy.state.ca.us

Paul Kramer
Hearing Officer
pkramer@energy.state.ca.us

*Lorraine White, Adviser to
Commissioner Eggert
e-mail service preferred
lwhite@energy.state.ca.us

Kristy Chew, Adviser to
Commissioner Byron
e-mail service preferred
kchew@energy.state.ca.us

Caryn Holmes
Staff Counsel
cholmes@energy.state.ca.us

Steve Adams
Co-Staff Counsel
sadams@energy.state.ca.us

Christopher Meyer
Project Manager
cmeyer@energy.state.ca.us

Jennifer Jennings
Public Adviser
publicadviser@energy.state.ca.us

DECLARATION OF SERVICE

I, Jennifer Draper, declare that on June 18, 2010, I served and filed copies of the attached Applicant's submittal of Late Spring Botany Survey Report.. 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/solarone].

The documents have 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, in the following manner:

(*Check all that Apply*)

FOR SERVICE TO ALL OTHER PARTIES:

_X_ sent electronically to all email addresses on the Proof of Service list;

____ by personal delivery;

_X_ by delivering on this date, for mailing with the United States Postal Service with first-class postage thereon fully prepaid, to the name and address of the person served, for mailing that same day in the ordinary course of business; that the envelope was sealed and placed for collection and mailing on that date to those addresses NOT marked "email preferred."

AND

FOR FILING WITH THE ENERGY COMMISSION:

_X_ sending an original paper copy and one electronic copy, mailed and emailed respectively, to the address below (***preferred method***);

OR

____ depositing in the mail an original and 12 paper copies, as follows:

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

I declare under penalty of perjury that the foregoing is true and correct, that I am employed in the county where this mailing occurred, and that I am over the age of 18 years and not a party to the proceeding.

Original signed by
Jennifer Draper

*indicates change