



May 20, 2010

DOCKET	
08-AFC-13	
DATE	MAY 20 2010
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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 Results of First Round of 2010 Spring Botany Surveys

Dear Mr. Meyer and Mr. Stobaugh,

Tessera Solar hereby submits the Applicant's Results of the First Round of 2010 Spring Botany Surveys 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

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May 8, 2010

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

Subject: First Round Spring 2010 Botanical Survey of the
Calico Solar Project Site
URS Project No. 27658189.70009

Dear Mr. Otahal:

INTRODUCTION

This memo reports the initial results of the first round of botanical surveys for the Calico Solar Project (Project), a proposed 8,230 acre 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. In response to above average rainfall events that have occurred during 2010 to date, additional botanical surveys were conducted by URS Corporation (URS) 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 the California Department of Fish and Game (CDFG), California Energy Commission (CEC) and BLM (BLM 2010, CDFG 2010, and CEC 2010) prior to the commencement of botanical surveys on the site.

The first round of 2010 spring surveys was conducted on April 5 through April 15, 2010. This survey report supplements previous spring botanical surveys conducted in 2007 and 2008.

PRE-SURVEY RECONNAISSANCE AND VICINITY DATA

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), *Androstephium breviflorum* (small-flowered androstephium; CNPS List 2.2). All 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 List 1B.2), a species with moderate potential to occur within the project vicinity, was also observed in flower before the start of the survey.



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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 in relatively high rainfall years.

Table 1 shows 2009-2010 precipitation and temperature data from the meteorological station at the Daggett-Barstow Airport located approximately 30 miles east of the Project. Although, rainfall can be slightly variable within the region, it is assumed the data is generally 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 (precipitation one inch or greater) indicative of many outstanding spring blooms. Nevertheless, the region did receive significant rainfall events by early winter and regular intervals of sustaining rainfall through early spring, and adequate rainfall occurred to produce favorable conditions for spring blooms.

It is highly probable that temperature is also a limiting factor that may hamper germination and growth of spring annual species in 2010. The region experienced below-average temperatures that likely delayed germination and growth of some ephemeral species and may be the primary factor behind the delayed blooming pattern observed throughout the region. James Andre (J. Andre, pers. comm.) of the Sweeney Desert Mountain Research Center suggested abundant spring blooms can be triggered by late season precipitation and warmer temperatures. This assumption was supported by reference population observations of *Mimulus mohavensis* (Mojave monkey-flower; CNPS List 1B.2) and *Eriastrum harwoodii* (Harwood's eriastrum; CNPS List 1B.2.). Monitoring of reference populations of both species resulted in negative detection during early spring checks of well known populations; however, Mojave monkeyflower and Harwood's eriastrum have subsequently been reported from the region, although population numbers have been lower compared to past years. 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 above-average temperatures, such as in 2005.

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Table 1
2009/2010 Precipitation and Temperatures for Calico Solar Vicinity

Month	May-09	Jun-09	Jul-09	Aug-09	Sep-09	Oct-09	Nov-09	Dec-09	Jan-10	Feb-10	Mar-10	Apr-10
Precipitation (inches)	0.01	0	0.05	0	0	0	0.26	0.45	1.61	1.58	0.23	0.09
Average Temperature (°F)												
Max	96	92	109	103	99	80	70	56	59	62	70	74
Mean	81	78	94	87	83	65	56	45	48	52	56	60
Min	66	64	81	72	68	52	42	34	36	42	44	37

SURVEY METHODS

The 8,230-acre Project site and a 250-foot buffer area around the site perimeter were divided into 86 cells of approximately 95 acre size (Figure 1). The 250-foot buffer area also included areas within the Not-a-Parts (NAPs) where the Applicant had Rights of Entry. These areas are shown on Figures 1 and 2. Space between transects ranged from 15-30 meters. Transect spacing was determined based on topography, and a particular habitat’s potential to support focal rare plant species. For example, 30-meter transects were used to survey desert pavement, which has a very low potential to support sensitive species. Smaller transect spacing (15-20 meters) was employed for the approximately 4,000-acre southern area with high to moderate potential to support white-margined beardtongue.

Suitable white-margined beardtongue habitat is typified by sandy substrates such as sand ramps, stabilized dunes, and sandy creosote scrub and washes. These habitats also represent the preferred habitat for many additional sensitive species that were assessed with a moderate to high potential to occur onsite during the preliminary background research and preliminary site visit (*e.g.*, Harwood’s eriastrum, *Nemacaulis denudate* var. *gracilis* (slender cottenheads) CNPS List 2.2, and *Tripterocalyx micranthus* (small-flowered sand-verbena) CNPS List 2.2. A list of potential sensitive plant species (focal species list) occurring or potential occurring within the project vicinity is provided in Table 2 (attached) and was developed in consultation with CEC and BLM staff.

Once appropriate timing of the survey was selected to coincide with the spring blooming pattern, a crew of 14 botanists was deployed to conduct the first round of surveys of the Project area. Teams

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of botanists conducted transects throughout each cell to cover the entire site. Resumés for all surveyors are provided as Appendix A.

A total of 173 field days of transect surveys were conducted on the project site (Table 3, attached). The level of effort equaled or exceeded the effort level provided by BLM protocol (BLM 1996a, BLM 1996b, BLM 2001, and BLM 2009). The typical rate of coverage was 5 to 12 acres per hour, with the more intensive effort devoted to habitats in the southern half of the site likely to support white-margined beardtongue and small-flowered androstephium.

RESULTS

No new sensitive species taxa were detected within the Project area during the first round of spring 2010 surveys. Additional occurrences of previously detected white-margined beardtongue, *Castela emoryi* (Crucifixion thorn; CNPS List 2.3), and small-flowered androstephium were recorded. Utah vine milkweed (CNPS List 4) was also detected during this first round of surveys. See Figure 2 for the distribution of List 1B and List 2 rare plants detected within the Calico Solar Project site in April 2010.

CNPS LIST 1 AND 2 SPECIES

Five distinct occurrences of white-margined beardtongue (*Penstemon albomarginatus*; CNPS List 1B.1), totaling twenty-five individuals, were detected within the Project area (Figure 2). One 2008 occurrence, representing one individual plant, was not relocated. The season's late and abundant rains can favor perennial species such as penstemons, and all reference populations and occurrences detected onsite were in flower or beginning to bud at the time of the April surveys. 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.

Three individuals of Crucifixion thorn (*Castela emoryi*; CNPS List 2.3) were detected within the Project area during the first round of spring surveys in 2010 (Figure 2). One of these individuals was also detected during the 2008 surveys. This can be a fairly large shrub species that is easily identifiable. Additional Crucifixion thorn individuals may be detected during the second round of spring surveys; however, the potential for a large number of new detections is considered low. With the new recently proposed reduced footprint alternative, all three of these individuals would be avoided.

Small-flower androstephium (*Androstephium breviflorum*; CNPS List 2.2) was found to be ubiquitous throughout the sandy southern portion of the Project area. Over 1,500 individual occurrences were recorded during this first round of spring surveys (Figure 2). In any given year,

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only a proportion 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. A polygon and a few scattered points representing outliers were mapped (see Figure 1) to represent its core distribution within the Project area.

During the 2008 botanical surveys, small-flowered sand-verbena (*Tripterocalyx micranthus*; CNPS List 2.2) was included on the general floral inventory. It is highly unlikely small-flowered sand-verbena exists onsite based on the negative detection of these species after intensive surveys throughout suitable habitat within the Project area. In California, this species is believed to be restricted to the Kelso Dunes. The white flowered form of *Abronia villosa* var. *villosa* (sand verbena) can easily be mistaken as small-flowered sand-verbena, and this common species was detected during the survey. *Senna covesii* (Coves' Cassia; List 2.2) was not detected during this survey.

UNDESCRIBED LUPINE SPECIES

An undescribed lupine species was detected in five locations along the northern boundary of the site (Figure 2). The unnamed species does have some taxonomic precedent. Dr. Jim Andre previously vouchered this unnamed taxon from the eastern Cady Mountains, and its detection on the Calico site is a new locality. Dr. Andre has labeled the voucher specimen as *Lupinus concinnus* J. Agardh var. *agardhianus* (A.A. Heller) C.P. Smith. All of these species will be avoided with the Reduced Footprint Alternative. The varieties of *L. concinnus*, recognized in the past have been found to be indistinct. Dr. Andre believes this form merits taxonomic recognition, either as a new species, or as a new variety under *L. concinnus*.

TIMING OF THE SECOND BOTANY SURVEY

A second round of botanical surveys of the entire project site is being currently conducted with results to be submitted in early June. This series of surveys is being conducted with the goal of developing a comprehensive floral list for the site and a complete seasonal survey for potential sensitive plant species. Subsequent survey results will include a floristic inventory and any additional special status species detected.



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Wildlife Biologist
Bureau of Land Management
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Sincerely,

URS CORPORATION

A handwritten signature in black ink that reads "Pat Mock". The signature is written in a cursive, flowing style.

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 2: 2010 Calico Solar Potential and Occurring Sensitive Plants
Table 3: April Survey Effort by Date
Figure 1: Botany Survey Area
Figure 2: Botany Results Round 1-April 2010
Appendix A Surveyor Resumes



REFERENCES:

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.

J. Andre, pers. comm. Personal communication with James Andre. 2010.

**Table 2
2010 Calico Solar Potential and Occurring Sensitive Plants**

Species		Sensitivity Status			Habitat Association	Blooming Period	Potential to Occur	Status Onsite
Scientific Name	Common Name	Federal	State	CNPS				
<i>Amaranthus watsonii</i>	Watson's amaranth	None	None	4.3	Mojave desert scrub, and Sonoran desert scrub. 20 to 1700m	April - September	Low Potential. Suitable habitat and known to occur within San Bernardino County. Nearest known occurrence approximately 90 miles west along Hwy 58.	Not observed within the proposed project area during 2007, 2008, or 2010 botanical surveys.
<i>Androstephium breviflorum</i>	small-flowered androstephium	None	None	2.2	Mojave desert scrub (bajadas). 220 to 640m.	March – April (May)	Present and ubiquitous.	Observed on 2008 and 2010 but not in 2007.
<i>Astragalus lentiginosus</i> var. <i>borreganus</i>	Borrego milk-vetch	None	None	4.3	Mojave desert scrub, and Sonoran desert scrub. 30 to 270m	February - May	Moderate to high potential. Suitable habitat and known to occur within San Bernardino County. Nearest known occurrences approximately 20 miles northeast at Kelso Dunes. <i>Astragalus lentiginosus</i> var. <i>variabilis</i> is known from project area.	Not observed within the proposed project area during 2007, 2008, or 2010 botanical surveys.

**Table 2
2010 Calico Solar Potential and Occurring Sensitive Plants
(Continued)**

Species		Sensitivity Status			Habitat Association	Blooming Period	Potential to Occur	Status Onsite
Scientific Name	Common Name	Federal	State	CNPS				
<i>Astragalus jaegerianus</i>	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.
<i>Calochortus striatus</i>	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 location 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.
<i>Camissonia boothii</i> ssp. <i>boothii</i>	Booth's evening Primrose	None	None	2.3	Joshua tree woodlands, pinyon and juniper woodlands	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.
<i>Castela emoryi</i>	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.

**Table 2
2010 Calico Solar Potential and Occurring Sensitive Plants
(Continued)**

Species		Sensitivity Status			Habitat Association	Blooming Period	Potential to Occur	Status Onsite
Scientific Name	Common Name	Federal	State	CNPS				
<i>Chamaesyce abramsiana</i>	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 Rd, 45 miles east of site.	Not observed within the proposed project area during 2007, 2008, or 2010 botanical surveys.
<i>Chamaesyce parryi</i>	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.
<i>Chamaesyce revoluta</i>	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
2010 Calico Solar Potential and Occurring Sensitive Plants
(Continued)

Species		Sensitivity Status			Habitat Association	Blooming Period	Potential to Occur	Status Onsite
Scientific Name	Common Name	Federal	State	CNPS				
<i>Chorizanthe xantii</i> var. <i>leucotheca</i>	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 from southwest corner of San Bernardino County.	Not observed within the proposed project area during 2007, 2008, or 2010 botanical surveys.
<i>Coryphantha alversonii</i>	foxtail cactus	None	None	4.3 CA Endemic	Mojave desert scrub, Sonoran desert scrub. 75 to 1525m	April-June	Present	Observed in 2008, but not in 2007 or 2010
<i>Cryptantha clokeyi</i>	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.
<i>Cryptantha costata</i>	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.

**Table 2
2010 Calico Solar Potential and Occurring Sensitive Plants
(Continued)**

Species		Sensitivity Status			Habitat Association	Blooming Period	Potential to Occur	Status Onsite
Scientific Name	Common Name	Federal	State	CNPS				
<i>Cryptantha holoptera</i>	winged cryantha	None	None	4.3	Desert dunes, Mojave desert scrub, and Sonoran desert scrub. 100 to 1690m	March - May	Present. (Unconfirmed report from study area). Nearest confirmed vouchers from hills around Baker, CA.	This species was listed on the general inventory during the 2008 botanical surveys, but has yet to be detected during the 2010 surveys.
<i>Cymopterus deserticola</i>	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.
<i>Cymopterus multinervatus</i>	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.
<i>Cynanchum utahense</i>	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
2010 Calico Solar Potential and Occurring Sensitive Plants
(Continued)**

Species		Sensitivity Status			Habitat Association	Blooming Period	Potential to Occur	Status Onsite
Scientific Name	Common Name	Federal	State	CNPS				
<i>Deinandra mojavensis</i>	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.
<i>Eriastrum hardwoodii</i>	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.
<i>Eriogonum sp.</i>	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, approx 30 miles east of project site	Not observed within the proposed project area during 2007, 2008, or 2010 botanical surveys.
<i>Eriophyllum mohavense</i>	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
2010 Calico Solar Potential and Occurring Sensitive Plants
(Continued)**

Species		Sensitivity Status			Habitat Association	Blooming Period	Potential to Occur	Status Onsite
Scientific Name	Common Name	Federal	State	CNPS				
<i>Galium proliferum</i>	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.
<i>Maurandya antirrhiniflora</i> ssp. <i>antirrhiniflora</i>	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.
<i>Mentzelia tridentata</i>	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, approx 30 miles west.	Not observed within the proposed project area during 2007, 2008, or 2010 botanical surveys.

Table 2
2010 Calico Solar Potential and Occurring Sensitive Plants
(Continued)

Species		Sensitivity Status			Habitat Association	Blooming Period	Potential to Occur	Status Onsite
Scientific Name	Common Name	Federal	State	CNPS				
<i>Mentzelia puberula</i>	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.
<i>Mimulus mohavensis</i>	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.
<i>Monardella boydii</i>	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.
<i>Muilla coronata</i>	crowned muilla	None	None	4.2	Chenopod scrub, Joshua tree woodland, pinyon and juniper woodlands, and Mojave desert scrub. 765 to 1960m.	March - April	Present (Unconfirmed report from study area).	This species was listed on the general inventory during the 2008 botanical surveys. But has yet to be detected during the 2010 botanical surveys

**Table 2
2010 Calico Solar Potential and Occurring Sensitive Plants
(Continued)**

Species		Sensitivity Status			Habitat Association	Blooming Period	Potential to Occur	Status Onsite
Scientific Name	Common Name	Federal	State	CNPS				
<i>Nemacaulis denudata</i> var. <i>gracilis</i>	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 From Kelso Dunes.	Not observed within the proposed project area during 2007, 2008, or 2010 botanical surveys.
<i>Opuntia basilaris</i> var. <i>brachyclada</i>	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.
<i>Penstemon albomarginatus</i>	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
2010 Calico Solar Potential and Occurring Sensitive Plants
(Continued)

Species		Sensitivity Status			Habitat Association	Blooming Period	Potential to Occur	Status Onsite
Scientific Name	Common Name	Federal	State	CNPS				
<i>Penstemon thurberi</i>	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 from Kelso Dunes, 20 mi. to NE and from Joshua Tree National Park (JTNP) southern portion of the park occurring in Joshua Tree woodland habitat.	Not observed within the proposed project area during 2007, 2008, or 2010 botanical surveys.
<i>Phacelia parishii</i>	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.
<i>Physalis lobata</i>	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 from 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.

**Table 2
2010 Calico Solar Potential and Occurring Sensitive Plants
(Continued)**

Species		Sensitivity Status			Habitat Association	Blooming Period	Potential to Occur	Status Onsite
Scientific Name	Common Name	Federal	State	CNPS				
<i>Polygala acanthoclada</i>	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 from New York Mountains, approximately 70 miles east, and from JTNP 60 miles south of project area.	Not observed within the proposed project area during 2007, 2008, or 2010 botanical surveys.
<i>Portulaca halimoides</i>	desert portulaca	None	None	4.2	Joshua tree woodland. 1000 – 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.
<i>Salvia funerea</i>	Death Valley sage	None	None	4.3	Mojave desert scrub (carbonate). Zero to 1865m.	March - May	Low potential. Suitable habitat exist on site; however, nearest known reported occurrence from the Bristol Mountains, 35 miles east of project area.	Not observed within the proposed project area during 2007, 2008, or 2010 botanical surveys.
<i>Sclerocactus polyancistrus</i>	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 from western San Bernardino 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
2010 Calico Solar Potential and Occurring Sensitive Plants
(Continued)**

Species		Sensitivity Status			Habitat Association	Blooming Period	Potential to Occur	Status Onsite
Scientific Name	Common Name	Federal	State	CNPS				
<i>Senna covesii</i>	Coves' cassia	None	None	2.2	Sonoran desert scrub. 305 to 1070m	March - June	Present (not confirmed). A highly suspect report from the project site and an unlikely from the Pisgah region. Only three known occurrences reported for the Mojave Desert from far eastern SB Co. 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.
<i>Tripterocalyx micranthus</i>	small-flowered sand-verbena	None	None	2.3	Desert dunes, and Mojave desert scrub. 550 to 855m	April - May	Present (not confirmed). Possible in sandy area within the project area but needs to be confirmed, Known to be restricted in California from a occurrence at Kelso Dunes.	This species was listed on the general inventory during the 2008, but has yet to be detected during the 2010 botanical surveys.

**Table 3
Calico Solar
April Survey Effort By Date**

Date	Surveyors
April 5, 2010	Shawn Johnston(URS), Dina Roberson (URS), Catherine Caldwell (URS), Johanna Kisner (URS), John Davis (URS), Glenn Rink (CSRC), Kyle Christie(CSRC), Michelle Cloud-Hughes(CSRC), Richard Crawford(CSRC),Mercy Vangh(CSRC), Susan Rhodes (CSRC), Robert Johnson (CSRC), and Marc Baker.
April 6, 2010	Shawn Johnston(URS), Dina Roberson (URS), Catherine Caldwell (URS), Johanna Kisner (URS), John Davis (URS), Glenn Rink (CSRC), Kyle Christie(CSRC), Michelle Cloud-Hughes(CSRC), Richard Crawford(CSRC),Mercy Vangh(CSRC), Susan Rhodes (CSRC), Robert Johnson (CSRC), and Marc Baker.
April 7, 2010	Shawn Johnston(URS), Dina Roberson (URS), Catherine Caldwell (URS), Johanna Kisner (URS), John Davis (URS), Glenn Rink (CSRC), Kyle Christie(CSRC), Michelle Cloud-Hughes(CSRC), Richard Crawford(CSRC),Mercy Vangh (CSRC), Susan Rhodes (CSRC), Robert Johnson (CSRC), and Marc Baker
April 8, 2010	Shawn Johnston(URS), Dina Roberson (URS), Catherine Caldwell (URS), Johanna Kisner (URS), John Davis (URS), Glenn Rink (CSRC), Kyle Christie(CSRC), Michelle Cloud-Hughes(CSRC), Richard Crawford(CSRC),Mercy Vangh(CSRC), Susan Rhodes (CSRC), Robert Johnson (CSRC), and Marc Baker.
April 9, 2010	Shawn Johnston(URS), Dina Roberson (URS), Catherine Caldwell (URS), Johanna Kisner (URS), John Davis (URS), Glenn Rink (CSRC), Kyle Christie(CSRC), Michelle Cloud-Hughes(CSRC), Richard Crawford(CSRC),Mercy Vangh(CSRC), Susan Rhodes (CSRC), Robert Johnson (CSRC), James Andre (CSRC), and Marc Baker
April 10, 2010	Shawn Johnston(URS), Catherine Caldwell (URS), Johanna Kisner (URS), John Davis (URS),Glenn Rink (CSRC), Kyle Christie(CSRC), Michelle Cloud-Hughes(CSRC), Richard Crawford(CSRC),Mercy Vangh(CSRC), Susan Rhodes (CSRC), Bret Blosser (CSRC), Robert Johnson (CSRC), James Andre (CSRC), and Theresa Salvato (CSRC), Marc Baker and John Messina
April 11, 2010	Shawn Johnston(URS), Dina Roberson (URS), Catherine Caldwell (URS), Johanna Kisner (URS), John Davis (URS), Glenn Rink (CSRC), Kyle Christie(CSRC), Michelle Cloud-Hughes(CSRC), Richard Crawford(CSRC),Mercy Vangh(CSRC), Susan Rhodes (CSRC), Bret Blosser (CSRC), Robert Johnson (CSRC), Theresa Salvato (CSRC), Marc Baker, and John Messina
April 12, 2010	Shawn Johnston(URS), Dina Roberson (URS), Catherine Caldwell (URS), Johanna Kisner (URS), John Davis (URS), Glenn Rink (CSRC), Kyle Christie(CSRC), Michelle Cloud-Hughes(CSRC), Richard Crawford(CSRC),Mercy Vangh(CSRC), Susan Rhodes (CSRC), Bret Blosser (CSRC), Robert Johnson (CSRC), Theresa Salvato (CSRC), and Marc Baker.

**Table 3
Calico Solar
April Survey Effort By Date
(Continued)**

Date	Surveyors
April 13, 2010	Shawn Johnston(URS), Dina Roberson (URS), Catherine Caldwell (URS), Johanna Kisner (URS), John Davis (URS), Glenn Rink (CSRC), Kyle Christie(CSRC), Michelle Cloud-Hughes(CSRC), Richard Crawford(CSRC),Mercy Vangh(CSRC), Susan Rhodes (CSRC), Bret Blosser (CSRC), Robert Johnson (CSRC), Theresa Salvato (CSRC), and Marc Baker.
April 13, 2010	Shawn Johnston(URS), Dina Roberson (URS), Catherine Caldwell (URS), Johanna Kisner (URS), John Davis (URS), Glenn Rink (CSRC), Kyle Christie(CSRC), Michelle Cloud-Hughes(CSRC), Richard Crawford(CSRC),Mercy Vangh(CSRC), Susan Rhodes (CSRC), Bret Blosser (CSRC), Robert Johnson (CSRC), Theresa Salvato (CSRC), and Marc Baker.
April 14, 2010	Shawn Johnston(URS), Dina Roberson (URS), Catherine Caldwell (URS), Johanna Kisner (URS), John Davis (URS), Glenn Rink (CSRC), Kyle Christie(CSRC), Michelle Cloud-Hughes(CSRC), Richard Crawford(CSRC),Mercy Vangh(CSRC), Susan Rhodes (CSRC), Bret Blosser (CSRC), Robert Johnson (CSRC), Theresa Salvato (CSRC), and Marc Baker.
April 15, 2010	Shawn Johnston(URS), Dina Roberson (URS), Catherine Caldwell (URS), Johanna Kisner (URS), John Davis (URS), Glenn Rink (CSRC), Kyle Christie(CSRC), Michelle Cloud-Hughes(CSRC), Richard Crawford(CSRC),Mercy Vangh(CSRC), Susan Rhodes (CSRC), Bret Blosser (CSRC), Robert Johnson (CSRC), Theresa Salvato (CSRC), and Marc Baker.

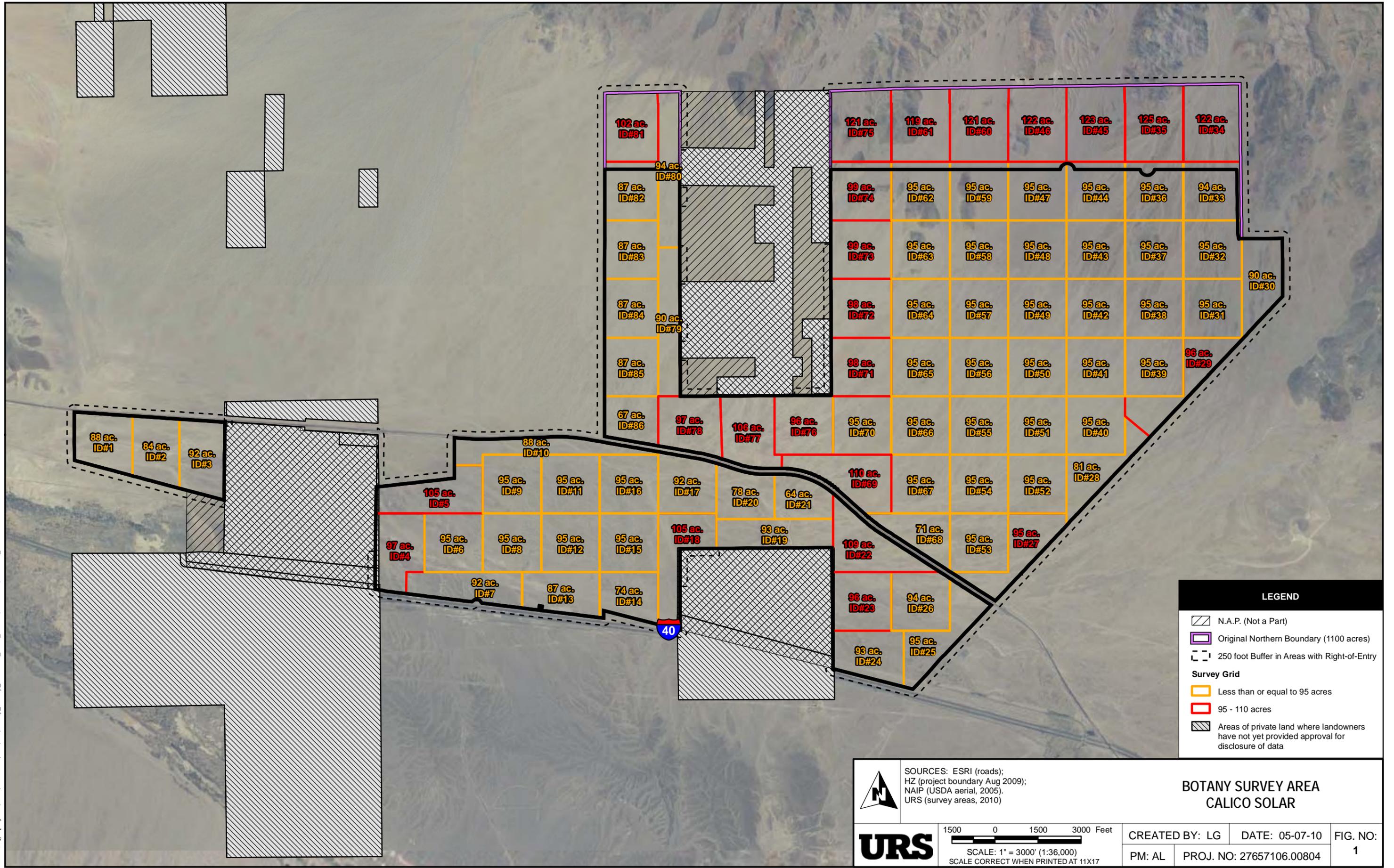
Notes:

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

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FIGURES

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LEGEND

- N.A.P. (Not a Part)
- Original Northern Boundary (1100 acres)
- 250 foot Buffer in Areas with Right-of-Entry
- Survey Grid**
- Less than or equal to 95 acres
- 95 - 110 acres
- Areas of private land where landowners have not yet provided approval for disclosure of data

**BOTANY SURVEY AREA
CALICO SOLAR**

SOURCES: ESRI (roads);
HZ (project boundary Aug 2009);
NAIP (USDA aerial, 2005).
URS (survey areas, 2010)

URS

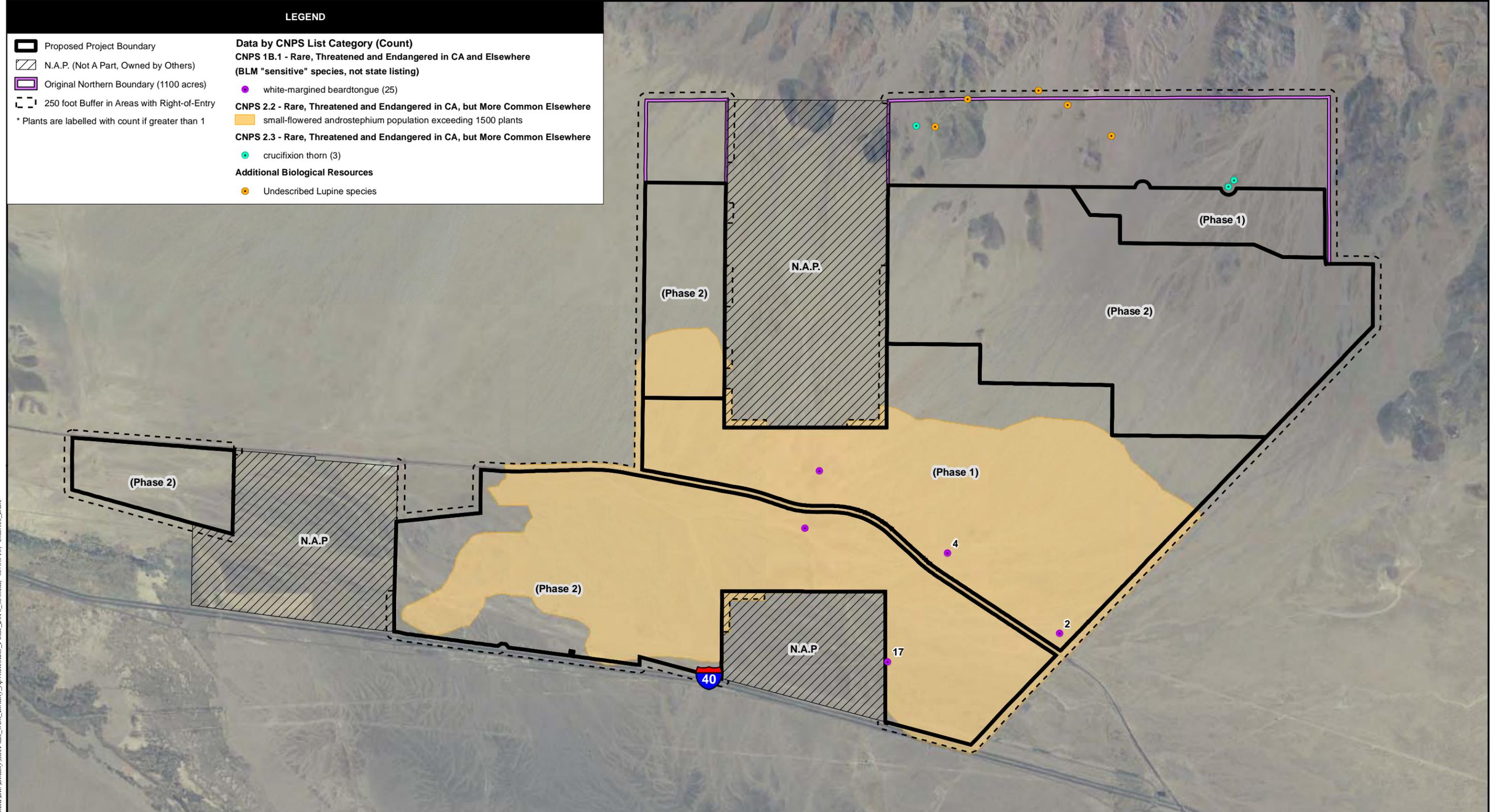
1500 0 1500 3000 Feet
SCALE: 1" = 3000' (1:36,000)
SCALE CORRECT WHEN PRINTED AT 11X17

CREATED BY: LG	DATE: 05-07-10	FIG. NO:
PM: AL	PROJ. NO: 27657106.00804	1

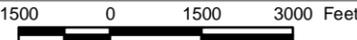
LEGEND

-  Proposed Project Boundary
 -  N.A.P. (Not A Part, Owned by Others)
 -  Original Northern Boundary (1100 acres)
 -  250 foot Buffer in Areas with Right-of-Entry
- * Plants are labelled with count if greater than 1

- Data by CNPS List Category (Count)**
- CNPS 1B.1 - Rare, Threatened and Endangered in CA and Elsewhere (BLM "sensitive" species, not state listing)**
-  white-margined beardtongue (25)
- CNPS 2.2 - Rare, Threatened and Endangered in CA, but More Common Elsewhere**
-  small-flowered androstephium population exceeding 1500 plants
- CNPS 2.3 - Rare, Threatened and Endangered in CA, but More Common Elsewhere**
-  crucifixion thorn (3)
- Additional Biological Resources**
-  Undescribed Lupine species



Path: G:\gsa\projects\157727658\00\msd\Bio\Botany\SitePlan_with_Botany_AprilResults_Final_2010_05.mxd, 05/08/10, Charles_Dore

 	SOURCES: ESRI (roads). HZ (project boundary Aug 2009). NAIP (USDA aerial 2005). URS(sensitive species survey, 2010).	BOTANY RESULTS ROUND 1- APRIL 2010 CALICO SOLAR		
	 SCALE: 1" = 3000' (1:36,000) SCALE CORRECT WHEN PRINTED AT 11X17	CREATED BY: CL DATE: 04-28-10	FIG. NO: 2	
		PM: AL PROJ. NO: 27658189.20001		

APPENDIX A

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CURRICULUM VITAE

JAMES M. ANDRE

Research Center Director/Plant Ecologist

UC Riverside - Sweeney Granite Mountains Desert Research Center

PO Box 101, Kelso CA 92351

Home: (619) 733-9927 Office: (619) 733-4222

Email: granites@telis.org

EDUCATION

M.A. Botany, 1989, Humboldt State University, Arcata, CA.

Thesis: *Population Biology and Conservation of Abronia alpina in the Southern Sierra Nevada, Inyo County.*

B.A. Plant Ecology/Geography of Ecosystems, 1982, University of California, Los Angeles

PROFESSIONAL EXPERIENCE

1993-present	Director, University of California's Sweeney Granite Mountains Desert Research Center
2008-present	Chair, California Native Plant Society Rare Plant Program
1995-present	Curator, GMDRC Herbarium
1985-present	Independent Consultant. Clients include Southern Nevada Water Authority, Native American Land Conservancy, Southern California Edison; Bureau of Land Management; Dept. of Defense; Los Angeles Dept. of Water and Power; US Forest Service, USFWS, BLM, National Park Service; The Nature Conservancy; Counties of San Diego, Inyo, Humboldt and Stanislaus; FAA, California Native Plant Society, East Bay Municipal Water District.
1989-1993	Senior Plant Ecologist, BioSystems Analysis, Inc, Tiburon, CA.
1987-1989	Research Associate - Plant Ecologist, Humboldt State University
1983-1989	Forest Botanist, U.S. Forest Service, Inyo National Forest
1986-1987	Teaching Assistant, Humboldt State University
1982-1983	Research Assistant, San Diego State Univ. (vernal pools studies)
1981-1982	Preserve Manager, The Nature Conservancy, Ewing Oak Preserve, San Diego Co.
1979-1980	Botanist/Ornithologist, National Park Service, Santa Monica Mountains National Recreation Area.

BOTANICAL RESEARCH AND INVENTORY

- awarded more than 60 academic research grants (ex. National Science Foundation) and government agency contracts, managing grant budgets ranging from \$500 to \$3,100,000.
- conducted over 200 floristic inventories in the desert southwest since 1979 (full list available upon request).
- conducted detailed life history and demographic studies of over 100 rare plant species in California and Nevada, including *Abronia alpina*, *Erysimum menziesii*, *Pogogyne abramsii*, *Eriogonum thornei*, *Penstemon albomarginatus*, and *Eriophyllum mohavense*.
- directing ongoing floristic study in the 1,700,000 acre Mojave National Preserve and surrounding 500,000 acres as part of the Flora of the Mojave National Preserve project. Published annotated checklist of plants, compiled database of records submitted to NPSPECIES national database; illustrated technical flora (book) is pending.
- conducted numerous other large-scale floristic inventories including the 2 million-acre Golden Trout Wilderness, 800,000 acre Joshua Tree National Park (NPS), 900,000 acre Owens Valley survey, and 500,000 acre 20 Palms Marine Corps Base (DOD).
- principal investigator on 3 year project develop rare plant status reviews for 8 federally-listed species at Ash Meadows National Wildlife Refuge, Nye Co. Nevada.

- conducted rare plant surveys for 845-mile PG&E-PGT Pipeline from Alberta to Fresno, the 275-mile Tuscarora Pipeline Project from Reno to Malin, Oregon and the 384-mile Mojave Pipeline Project from Needles to Bakersfield. For the later project, developed and implemented rare plant and vegetation restoration, long-term monitoring, and evaluated 10-year post-construction success of restoration measures.
- conducted inventory and mapping of more than 100 seeps and springs (40,000 acres) as part of the Lower Owens River Project, Inyo County, CA. Developed demographic monitoring and impact studies on Inyo County star-tulip (*Calochortus excavatus*) and Owens Valley checkerbloom (*Sidalcea covillei*).
- principal investigator of a 90,000 acre floristic inventory and vegetation analysis of the Old Woman Mountains Preserve, eastern San Bernardino County for the Native American Land Conservancy.
- conducted complete floristic inventories and rare plant surveys along approximately 110 miles of pipeline corridors in the Virgin River area of eastern Clark County, Nevada (Southern Nevada Water Authority).
- 15 yrs experience as Curator of the University of California- Granite Mountains Herbarium.
- principal investigator for botanical surveys for more than 400-miles of proposed water pipeline corridors in White Pine, Lincoln and Clark Counties of Nevada (Southern Nevada Water Authority).
- project manager of the DOD Legacy Program coastal dunes ecological study which included population studies and habitat analyses of four rare plant species on the coastal dunes and bluffs at USMC Camp Pendleton, CA.
- conducted detailed impacts surveys and population analyses for several federal-listed species in Cushenberry Cyn, San Bernardino Co., including Parish's daisy (*Erigeron parishii*), Cushenberry buckwheat (*Eriogonum ovalifolium vineum*), and Cushenberry milkvetch (*Astragalus albens*).
- consulted for numerous interdisciplinary projects on the design and implementation of optimal field sampling protocol, including riparian vegetation/habitat monitoring on the upper Sacramento River as part of a study of the impacts of the Cantara Bridge chemical spill. Provided testimony in federal court on research findings.
- conducted more than 20 riparian vegetation studies employing quantitative vegetation classification using ARCGIS, TWINSPAN, DECORANA, and PCA other multivariate software programs. Examples include:
 - riparian vegetation analysis of tributary streams (Bishop and Mill Creeks) of the Owens River employing multi-stage sampling protocols and vegetation monitoring (using a laser theodolite) to determine the effect of changes in stream flow on riparian systems (SCE);
 - characterization and mapping of vegetation at Tonto Creek, AZ for long-term monitoring of change (BOR);
 - characterization and mapping of riparian and meadow vegetation on the Kern Plateau for purpose of monitoring grazing and erosion impacts (USFS);
 - multi-stage classification and monitoring of riparian forest and woodlands along Sacramento and Stanislaus Rivers to monitor affects of alteration of flow regimes upstream (EBMUD);
 - Twinspan and PCA classification of vegetation along Eel and Mad Rivers of Humboldt Co. (USFS);
 - classification and mapping of vegetation series and associations of vernal pools and swales in central Sacramento Valley, CA.;
 - long-term monitoring and classification of vegetation on desert riparian thicket and tamarisk-invaded streams and seeps in the Mojave Desert.
- designed a classification scheme and reviewed field protocols and data collections for the Mojave Desert Mapping Project (CDFG and DOD, 1998-1999).
- analyzed vernal pool composition in seven counties in the Sacramento Valley using relevé sampling; assessed temporal changes in species composition and hydrology in the Kearny Mesa vernal pools of San Diego

County; developed conservation management for more 8 rare plant taxa, addressing recovery, enhancement, and long-term viability of the species.

NATURAL AREAS MANAGEMENT

- 20 years of experience as a leader in coordinating academia research and regional natural areas management among scientists and agency managers in the Eastern Mojave Desert.
- served as Principal on Inventory and Monitoring Committee to develop protocols for the National Park Service I & M Program - Desert Southwest Region. Provided data and participated in the writing of the National Park Service's Mojave Inventory and Monitoring Network Biological Inventory Study Plan (2001).
- coordinated the writing of a Cooperative Management Agreement between the University of California and the National Park Service for joint management of lands within the Mojave National Preserve.
- served on numerous academic and land management committees including the Desert Advisory Committee (congressional appointment) Science Data Management Interagency Working Group for the Desert Managers Group, Center For Conservation Biology at UC Riverside, Research Advisory Committee - Mojave National Preserve, and the Advisory Council to the California Wild Heritage Campaign, and California Native Plant Society Rare Plant Committee (Chair).
- developed a comprehensive Coastal Dunes Vegetation Management Plan for the 13-mile coastal beach and dune system at Camp Pendleton, California. Study included the development of vegetation monitoring plan, GIS ARC/INFO quantitative habitat mapping, Least Tern and Snowy Plover habitat enhancement, and implementation of rare a plant and dunes recovery and enhancement program (exotic species removal and establishment of native vegetation).
- designed and implemented long-term monitoring for 12 rare plant species in Inyo and eastern San Bernardino Counties to assess the effects of grazing impacts on population dynamics.
- conducted long-term monitoring of special-status plants and vegetation recovery following disturbance in numerous study sites throughout the East Mojave in collaboration with the California and Nevada Native Plant Societies.
- coordinated numerous exotic species control/removal programs including a 7 year study of tamarisk removal along 16 streams in the east Mojave Desert using repeated physical removal and systemic injection of Garlon.
- drafted a Resource Management Plan with the National Park Service for joint management of the federal lands within the Sweeney Granite Mtns Desert Research Center, including removal of exotic burros and plants, erosion control and habitat restoration and enhancement (ongoing).
- developed long-term vegetation and habitat management plans for the Native American Land Conservancy's Old Woman Mountains Preserve.
- developed an illustrated technical manual detailing techniques for high elevation meadow restoration on the Inyo National Forest.
- drafted vegetation management sections of the Inyo National Forest Plan at USDA Forest Service; prepared seven sensitive plant Species Management Guides;
- supervised 10-15-person backcountry crews to evaluate the success of restoration and revegetation of montane meadows in the southern Sierra Nevada degraded by livestock grazing.

- developed a long-term vegetation management plan for Inyo National Forest and coordinated sensitive plant inventory and monitoring.
- conducted a 3-year programmatic botanical assessment for East Bay Municipal Water District's Water Supply Management Program and EIR/EIS, including impact assessment of for 52 proposed reservoir sites and 14 aqueduct corridors in the Central Valley and western Sierra Nevada foothills.
- prepared a comprehensive Hardwoods Management Plan for County of Contra Costa, California.

TEACHING, PRESENTATIONS, CONFERENCE ORGANIZATION

- session chair for more than 20 major workshops and conferences, including the 2009 CNPS Conservation Conference, 2009 Desert Research Symposium, 2004 and 1999 Mojave Desert Science Symposiums.
- co-architect and lead organizer of the Desert Research Symposium and Mojave Desert Science Symposium series.
- developed curricula and taught over 30 university-level field courses or workshops in botany and plant ecology and desert ecology at the Granite Mountains Desert Research Center; taught 9 accredited college courses (including: Humboldt State Univ., UCLA, UC Berkeley, San Diego St. University) in plant ecology and vegetation sampling theory.
- instructor for more than 15 plant taxonomy field courses for the Jepson Herbarium Workshops, Joshua Tree Foundation, and Rancho Santa Ana Botanical Garden; taught numerous field courses in natural history for the Sierra Institute, California Native Plant Society, and Victor Valley College.
- presented over 150 lectures/presentations at university departmental seminars, agency workshops, and scientific conferences, including the opening speaker at the 2009 Southern California Botanists Symposium.
- created a fully-illustrated Ethnobotanical Guide to the Plants of the Old Woman Mountains, an educational guide book for the visitor's center of the Native American Land Conservancy's Old Woman Mountains Preserve.
- developed public education programs which included docent-led field trips and slide presentations for the Ewing Oak, Lanphere-Christensen Dunes Preserves, and Old Woman Mountains Preserves.
- published seven USDA Technical Reports which included field sampling techniques, design and implementation of long-term vegetation monitoring, species status reports and restoration techniques for arid and montane habitats.
- compiled an annotated bibliography of government and published literature on the status, management and restoration of coastal and interior dune systems in California.

SCIENTIFIC REVIEW AND ACADEMIC COMMITTEES

- served three years on UC Natural Reserve System's Mildred E. Mathias grant selection committee to evaluate proposals and award University of California graduate research grants to student researchers.
- initiated the establishment of several university-level student research grants, including the California Desert Research Fund (Riverside Community Foundation) and Joshua Tree National Park Desert Research Grant. Served on selection committees for both grants over the past decade.

- peer-reviewed more than 20 refereed journal submissions and technical papers for *Journal of Arid Environments*, *J. of Ecology*, *J. of Conservation Biology*, *Madrono*, *Novon*, *Fremontia*, and *USDA Forest Service* and *USDI Park Service* publications.
- reviewed numerous academic books including the forthcoming *The Jepson Manual, Higher Plants of California 2nd Ed* and sections of the *Flora of North America*.
- reviewed or prepared technical sections for EIRs/EISs, Biological and Environmental Assessments, FERC Exhibit E's, agency mitigation plans, and numerous endangered species and resource management plans.
- drafted or reviewed more than 20 federal and state and federal listing petitions (for CDFG, USFWS and CNPS) for listing of rare California and Nevada plant species.

PUBLICATIONS AND TECHNICAL REPORTS

Andre, J. 2009. A profile of rarity and rare plant conservation in the California Deserts. Submitted to Proceedings of the CNPS Conservation Conference, Sacramento, CA.

Andre, J. 2008. "California's Desert Flora: Will we know what we lost?" Desert Report, December Issue

Andre, J. 2007. Gateways to California's regional landscapes: The expanding role of the Sweeney Granite Mountains Desert Research Center in the eastern Mojave Desert. Proceedings from the 40th Anniversary of the UC Natural Reserve System.

Andre, J. 2007. Effects of Hackberry Fire on 10 special-status species in the Mojave National Preserve. Dept. of Interior, National Park Service. Technical Report ESR 8.3.6.

Andre, J. 2007. Enriched woody and succulent shrub associations in the Eastern Mojave Desert. Report to the USGS-NPS Vegetation Mapping Program.

Andre, J. 2006. A vascular flora of the Granite Mountains, San Bernardino County, CA. *Crossosoma*, vol 32.

Andre, J. 2006. Inventory of Vascular Plants at Mojave National Preserve & Manzanar Historic Site. 2006. Dept. of Interior, Technical Report P2128020178

Andre, J. 2005. An Ethnobotanical Guide to the Plants of the Old Woman Mountains Preserve. Chemeheuvi Press.

Andre, J. and E. McDonald. 2004. Ecosystem Monitoring: Linking Ecosystem Attributes to Ecological Processes; Summary and Discussion. In proceedings to the 2nd Mojave Desert Science Symposium, Univ. of Redlands, CA.

Andre, J. 2003. Desert Succulent Shrub: A guide to Wildlife Habitats of California, 2nd Ed. California Dept. of Fish and Game.

Andre, J. and J. Goerrissen. 2005. Proceedings from the 25th Anniversary Symposium of the UC Granite Mountains Desert Research Center. UCR Press.

Andre, J. 2002. An annotated checklist of vascular plants of the Owens Valley, California. Technical Report: County of Inyo.

Andre, J. 1999. Key botanical characteristics associated with biological response to disturbance. Technical Report: California Dept. of Fish and Game.

Andre, J. and B. Pitzer. 1999. Biology and Status of Barstow Woolly-sunflower (*Eriophyllum mohavense*). Technical Report: Dept. of Interior, Bureau of Land Management.

Andre, J. and T. Knight. 1999. Status of rare plant conservation and management in the Mojave Desert. In, electronic proceedings to the 1999 Mojave Desert Science Symposium.

Andre, J. 1997. Legacy Program: Coastal dunes ecological study: demographic studies of rare plant species, and habitat characterization. Technical Report: U.S. Dept of Defense, USMC Camp Pendleton..

Andre, J. 1997. Botanical Inventory of the 29 Palms Marine Corps Base. Technical Report: U.S. Dept of Defense.

Andre, J. 1996. Evaluation of vegetation and rare plant recovery along the Mojave Pipeline (5-year report). Technical Report: Bureau of Land Management.

Luke, C.A., J. André and P. Cohen (Eds). 1996. Proceedings of the east Mojave desert symposium, 7-8 November 1992. LA County Museum.

André, J. 1996. Restoration and Recovery of Selected Special Status Plants in the Mojave Desert. Session 9: Sensitive Wildlife and Plant Species. In proceedings of the Desert Lands Rehabilitation Workshop. November 15-16, 1995. Barstow, California.

Sawyer, J.O. and J. André. 1990. An integral approach to enhancing rare plant populations through habitat restoration. I. Population estimates for the Menzies' wallflower. In proceeding of the First Annual Meeting of the Society for Ecological Restoration. Jan 16-20, 1989. Oakland, California.

André, J. 1989. Population biology and status of *Abronia alpina* in the southern Sierra Nevada. Masters Thesis. Humboldt State University, CA.

André, J., R. Hamlin, and B. Miller. 1989. Management guide for *Abronia alpina*. USDA Forest Service Technical Report, Inyo National Forest.

André, J. 1987. Assessment of willow plantings on the South Fork of the Kern River. USDA Forest Service Technical Report, Inyo National Forest.

PROFESSIONAL AFFILIATIONS

American Institute of Biological Sciences (AIBS)
Botanical Society of America (BSA)
Society for Ecological Restoration (SER)
Natural Areas Association (NAA)
Society for Conservation Biology (SCB)
Ecological Society of America (ESA)
California Native Plant Society (Mojave and Bristlecone Chapters)
Nevada Native Plant Society (Las Vegas Chapter)
Southern California Botanists Association
Desert Legume Program, University of Arizona
California Exotic Pest Plant Council
Union of Concerned Scientists

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 horizontalis*. 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 huachuacanus*, 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. (contract 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 erectocentrus* 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 megagametogenesis 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 Tamalipas, 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

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 transmitting.
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, transmitting, and re-transmitting. 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, Olancho/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

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, E²M, 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, February-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, February 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 Pieceance Basin expansion project. The Pieceance 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 identify species 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.



John H. Davis IV

Senior Ecologist, Biology Program Manager

Desert Botany Experience: 5 Seasons

Mr. Davis IV has over 13 years of professional botanical experience, including five survey seasons in the Mohave and Sonoran Deserts. Most recently, he was biological manager for two Mohave Desert projects, which included focused floristic surveys: 1) Antelope Valley Solar One (2,000 acres) and 2) Johnson Valley Solar Thermal Project (9,315 acre site and 10 mile long transmission and gas route). For both projects, Mr. Davis IV conducted floristic surveys with the URS' Central Coast Operation biologists per CDFG, USFWS, BLM, and CNPS protocol guidelines and was responsible for accurate species identification, subcontractors, and correspondence with clients and agencies. Mr. Davis IV appointed Jessica Birnbaum task leader for Antelope Valley and Johanna Kisner for Johnson Valley. Floristic surveys included rare plant identification, botanical inventory, and vegetation mapping.

Additional desert botanical experience included a Red Rock Canyon botanical field trip, where Mr. Davis IV assisted participants in plant identification and administered quizzes; desert annual – mycorrhizal relationship study throughout the Mohave and Sonoran Desert (2 seasons); desert annual seed germination study (1 season, Sonoran Desert); and 2 seasons of desert restoration and monitoring on Fort Irwin, Twentynine Palms Marine Corps Base, and a Caltrans restoration in the Sonoran Desert, Imperial County.

Desert Tortoise Experience: >40 protocol hours, >100 non-protocol

Mr. Davis IV has over 40 hours of experience conducting protocol surveys for desert tortoise, where approximately 20 individuals and abundant sign were documented. From May through July 2008, he conducted protocol desert tortoise surveys for a thermal solar plant project in Johnson Valley, San Bernardino County. All surveys followed USFWS protocol guidelines. Non-protocol surveys included habitat assessments, restoration monitoring, and incidental observations during other focused surveys. Mr. Davis IV also has over 13 years conducting herpetological surveys throughout Central and Southern California.

A summary of desert projects Mr. Davis has been involved in:

Managing Biologist for Nextlight's AV Solar One Project in northern Los Angeles County, CA: Provided oversight to task managers and approximately 6 field biologists on biological efforts for a 2,000 acre site and 3 mile transmission line route in Antelope Valley, Mohave Desert, in the County of Los Angeles. This included winter bird surveys, floristic [botanical], jurisdictional determination, Joshua tree and vegetation mapping, and agency coordination in support of a Biological Constraints Analysis and Biota Report. The Biological Constraints Analysis was submitted to the County in February of 2009 and the Biota Report was submitted in July 2009. Mr. Davis IV is a SEATAC qualified biologist.



Managing Biologist for 550 MW Solar Thermal Site in Johnson Valley, CA:

Supervised field crew of 30 biologists performing USFWS protocol desert tortoise and general wildlife surveys, focused floristic [botanical] surveys, jurisdictional determination, and vegetation mapping on a 9,315 acre site and 10 mile long transmission and gas routes. Prepared the biological survey work plan and coordinated with regulatory agencies on biological resource issues and potential mitigation. Field Surveys were completed in June 2008. Orchestrated and conducted survey efforts, data collection, and agency and client correspondence.

Managing Biologist for SunPower's California Valley Solar Ranch Project in

eastern San Luis Obispo County, CA: Supervised field crew of 51 URS biologists and subconsultants on habitat assessments, jurisdictional determination, and focused floristic [botanical], small mammal, San Joaquin kit fox, giant kangaroo precinct, San Joaquin antelope squirrel, and blunt-nosed leopard lizard surveys on a 5,227 acre site and 3 mile long transmission route. Orchestrated and conducted field surveys, data collection, report preparation, and agency and client coordination. A Biological Resources Assessment Report was submitted to the County on January 14, 2009 and a revised report was submitted October 1, 2009.

Managing Biologist for First Solar Electric, 50 MW PV Solar Site near Blythe, CA:

Supervised desert tortoise survey and technical biological resources reporting for USFWS, CDFG, and County of Riverside. Coordinated with regulatory agencies on biological issues and potential mitigation. Supervised a field crew of 3 biologists of USFWS protocol desert tortoise surveys, focused floristic [botanical] surveys, point bird counts, and habitat assessment for the western burrowing owl.

Managing Biologist for Due Diligence/Key Issues Report Pacific Valley: Supervised and conducted reconnaissance field surveys and biological constraints reporting for several sites in the Mohave Desert. A review of the sites for desert tortoise and Mohave ground squirrel sign was the primary focus of the assessment.

Managing Biologist for Due Diligence/Key Issues Report for Solel Corporation:

Supervised reconnaissance field survey and biological constraints for a site [Desert Lily and Palen] in San Bernardino County. A review of the sites for desert tortoise sign was part of the focus of the assessment.

Managing Biologist for Due Diligence/Key Issues Report for SCE: Supervised reconnaissance field survey and biological constraints for a site in San Bernardino County. A review of the sites for desert tortoise sign was part of the focus of the assessment.

Marine Corps Air Ground Combat Center, Twentynine Palms. Conducted creosote-ambrosia scrub restoration and mesquite mound recreation within tank trail adjacent to native undisturbed habitat. Designed, managed, implemented, and monitored a perennial desert shrub mycorrhizae inoculum experiment. Mr. Davis monitored restoration sites for plant success and wildlife use. Desert tortoises were amongst the species observed.

CURRICULUM VITAE

ROBERT A. JOHNSON

PERSONAL

Marital Status: Single

Address

1926 E. Dunbar Dr.
Tempe, Arizona 85282

Phone

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 and 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 proposed 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 for 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 erectocentrus* 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 (*Pediocactus 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	<p>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</p>
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	<p>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.</p>
Project Experience	<p>Energy Projects</p> <p>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</p> <p>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</p> <p>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).</p> <p>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</p> <p>Biological Survey of the Homestead Wind Energy Project</p>

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 spectaclepod, 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 monardella, 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, salvaging 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 manager 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 an 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 Austra 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

JOHN J. MESSINA

6522 Goodwin Street
San Diego CA. 92111
858.598.5863 (office)
619.756.5032 (cell)
jmessina2@san.rr.com

John J. Messina has 19 years experience as a biological consultant. His entire consulting career has been based in San Diego County and his expertise is the vegetation and flora of southern California. He has conducted over several hundred botanical surveys and prepared as many biological technical reports over his professional career. Most of these technical reports serve as appendices to environmental documents pursuant to the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). In addition, Mr. Messina has worked on many CEQA and NEPA documents, preparing the biological sections to Environmental Impact Reports, Mitigated Negative Declarations, Environmental Impact Statements and Environmental Assessments. He has also prepared Biological Assessments and Biological Evaluations has been involved in both informal and formal consultations with the U.S. Fish and Wildlife Service (USFWS) pursuant to the Federal Endangered Species Act (ESA). Most of Mr. Messina's projects are with the public sector and include: energy and transmission line projects; transportation projects (highway and airport); water storage, reclamation and flood control projects; recreation projects; military projects; and biological resource management projects. He also teaches botany, biology, horticulture, environmental science and geography at local community colleges and universities. He earned his Master's degree from the University of California at Davis in Ecology and his Bachelor's degree from the University of California at Berkeley in Conservation and Resource Studies.

Education:

C. Phil. in Ecology. University of California at Davis. 1990.
M.S. in Ecology. University of California at Davis. 1990.
B.S. in Conservation and Resource Studies. University of California at Berkeley. 1985.
B.A. in Literature. Manhattan College. 1975.

Professional Experience:

Independent Biological Consultant. 2007-present
Senior Botanist. Arcadis Inc. 9095 Rio San Diego Drive. Suite 240, San Diego, CA. 2006-2007.
Senior Botanist. EDAW, Inc. 1420 Kettner Blvd. San Diego, CA. 1997-2006.
Botanist. Lettieri-McIntyre & Associates. San Diego, CA. 1994-1997.
Botanist. Sweetwater Environmental Biologists. San Diego, CA. 1991-1994.

Skills:

Vegetation mapping.
Rare plant and general botanical surveys.
Federal and state waters and wetland determinations and delineations.
Preparation of NEPA and CEQA biological documents.
Section 7 and Section 10 Consultation.
CESA consultations.
Section 404 Permitting and Section 1600 Streambed Alteration Agreements.
Expert witness testimony.

Academic Experience:

Associate Faculty. Horticulture Department. MiraCosta College. Oceanside, CA. 2008-present.
Adjunct Professor. College of Letters and Sciences. National University. La Jolla, CA. 2010
Adjunct Professor. Biology Department. Point Loma Nazarene University, San Diego, CA. Spring 2005.
Adjunct Professor. Biology Department. San Diego City College. San Diego CA. 1991-1992.
Lecturer. Biology Department. University of San Diego. San Diego CA. 1991-1992.
Teaching Assistant. Botany Department. University of California at Davis. Davis CA. 1988-1990.

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

801 West 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 macdougallii* 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 macdougallii* 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, Tetrattech 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, Tetrattech, 1750 SW Harbor Way, Suite 400, Portland, OR 97201, jina.sagar@tetrattech.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 macdougallii* 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 30-16, 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 macdougallii* 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* – Jones' 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 lady'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 maculatus*, *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, marc_baker@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 macdougallii* 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: *Besseyia 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 argophyllus*, *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 argophyllus*, *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 argophyllus*, *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 macdougallii* 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 macdougallii* 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 macdougallii* ssp. *breviradiatus*, *Astragalus coltonii* var. *moabensis*, *Astragalus cronquistii*, *Astragalus naturitensis*, *Astragalus newberryi*, *Astragalus schmolliae*, *Astragalus tortipes*, *Eriogonum clavellatum*, *Eriogonum leptocladon* var. *ramosissimum*, *Hackelia gracilentia*, *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 sonora*, 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 xviridiflora*, *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 and 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 at 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

Rhizoctonia research:

Isolation and identification from nursery stock strawberry

Tissue culture and maintenance of Rhizoctonia 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.

Inyo Co, CA

Coso Junction due diligence survey for Ultrasystems, 2005

Coso Junction rare plant survey for Ultrasystems, 2006

Kern Co., CA

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 Realignment 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

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 <i>Yucca</i> 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 Olancho, 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 5/11/10)

APPLICANT

Felicia Bellows,
Vice President of Development
Tessera Solar
4800 North Scottsdale Road,
Ste. 5500
Scottsdale, AZ 85251
felicia.bellows@tesseractosolar.com

Camille Champion
Project Manager
Tessera Solar
4800 North Scottsdale Road,
Suite 5500
Scottsdale, AZ 85251
camille.champion@tesseractosolar.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

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

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

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 May 21, 2010, I mailed hard copies of the attached Applicant's Submittal of First Round Spring 2010 Botanical Survey of the Calico Solar Project Site, dated May 21, 2010. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at:

[www.energy.ca.gov/sitingcases/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:

sent electronically to all email addresses on the Proof of Service list;

by personal delivery;

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:

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