

**SYCAMORE AVENUE
PROJECT SITE**

(APN Numbers 0131-111-05, 0131-111-07, 0131-111-75, & 0131-111-76)

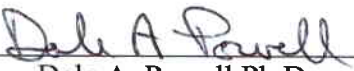
**Focused Survey for the
Delhi Sands Flower-loving Fly**

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TE-006559-6

September 28, 2017

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Introduction

This report presents the results of a focused survey for the Delhi Sands Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 4.7-acre site located in the City of Rialto, San Bernardino County. This property is under consideration for residential development in the future. The County of San Bernardino and the U.S. Fish and Wildlife Service require that focused surveys be conducted to determine whether this proposed development would impact this federally endangered insect. This survey, conducted by Powell Environmental Consulting, resulted in negative findings. Previous surveys were conducted upon the site. In 2003 two male Delhi Sands Flower-loving Flies were observed upon the northeastern area of the site. A survey was conducted by Powell Environmental Consultants upon the site in 2016. That survey resulted in negative findings.

Site Description

The 4.7-acre site is located near the city of Rialto, on a portion of the northwest central area of Section 13, Township 1 South, Range 5 West; San Bernardino Baseline and Meridian; USGS 7.5' San Bernardino South Quad (See Maps 1 & 2). It is rectangular in outline. The site sits on the northeastern corner of Acacia Avenue and Randall Avenue (APN Numbers 0131-111-05, 0131-111-07, 0131-111-75, & 0131-111-76). The site is relatively flat and its elevation is approximately 1,150 feet above sea level. Adjacent to the north and south areas of the site are houses. Across Sycamore Avenue, to the west, are houses. East of the site is an open field.

According to a soil map (U.S. Department of Agriculture, Soil Conservation Service, Soil Survey of San Bernardino County Southwestern Part, California, 1980.), the site possesses Delhi Fine Sand (Db). The Delhi fine sands is a "nearly level to strongly sloping soil on alluvial fans that have been reworked by wind action." (U.S. Department of Agriculture, Soil Conservation Service, Soil Survey of San Bernardino County Southwestern Part, California, 1980.). Based upon my field examination I generally concur with the soil map.

There are large areas of open Delhi sands scattered throughout the project site. There was very little vegetation growing upon the site – under 5% of the soil was covered by vegetation.

The most abundant plant observed growing upon the site was sacred datura (*Datura wrightii*). There were a few trees scattered upon the site. None of the Delhi Sands Flower-loving Fly "indicator" plants were observed growing upon the site. Disturbances observed on the site include the invasion of non-native plant and animal species and minor trash dumping.

Delhi Sands Flower-loving Fly Background Information

The Delhi Sands Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) (family Mydidae) was listed as an endangered species under the Endangered Species Act, as amended on September 23, 1993. The California Natural Diversity Data Base lists the DSFLF rank as being: G1T1S1 - Federally listed as being extremely endangered (G1); found only in California (T1); and as being extremely endangered in California (S1).

The Delhi Sands Flower-loving Fly is considered to be endangered primarily because of the loss of its habitat, mainly due to the habitat's conversion to agricultural, residential, and industrial uses. Its historic range has been reduced by over approximately 97% (USFWS, 1993). The fly is known only to inhabit areas where Delhi series soils are located. These soils consist of fine, sandy soils, often forming wholly or partially consolidated dunes, located in an irregular 40 square mile area, in southwestern San Bernardino and northwestern Riverside Counties (Soil Conservation Service, 1980).

Fine unconsolidated soils are required for oviposition. The female fly inserts the end of her abdomen deep into the soil to lay her eggs (Rogers and Mattoni, 1993). The life history of the larval stages are unknown, however, it is presumed, that the larvae develop underground (Greg Ballmer, D. Hawks, pers. comm.). The Delhi Sands Flower-loving Fly's adult flight period lasts approximately six weeks from late July through mid-September. The adult is approximately 1 inch long, tan to orange-brown in color, with dark brown bands and spots upon its abdomen. Its wings are hyaline. It has large green eyes and a long slender proboscis, which it has been seen to use to feed upon nectar from California buckwheat and telegraph weed. The adults frequent open areas, usually near unconsolidated soil. The adult males patrol open areas looking for females to mate with. The females are more sedentary and perch upon plants or sit upon the ground for long periods. Adults are most often observed from 9 or 10 AM until 3 or 4 PM.

The DSFLF is frequently associated with certain plants: California buckwheat (*Eriogonum fasciculatum*), California croton (*Croton californicus*), Annual Bur-sage (*Ambrosia acanthicarpa*), and telegraph weed (*Heterotheca grandiflora*), sometimes called "indicator plants". Other native plant species also occur in DSFLF habitat: California evening primrose (*Oenothera californica*), deerweed (*Lotus scoparius*), lessinga (*Lessingia glandulifera*), rancher's fiddleneck (*Amsinckia menziesii*), sapphire woolly-star (*Eriastrum sapphirinum*), and Thurber's buckwheat (*Eriogonum thurberi*)

Delhi Sands Flower-loving Fly Recovery Plan

In 1997 the U.S. Fish and Wildlife Service issued the final recovery plan for the Delhi Sands Flower-loving Fly (USFWS, 1997). The plan establishes three recovery units: the Colton, Jurupa, and Ontario Recovery Units. The Colton Recovery Unit contains the most known habitat, followed by the Jurupa Recovery Unit. Of the three recovery units, the Ontario Recovery Unit contains the least suitable habitat. Most of the Ontario Recovery Unit's habitat has been degraded by long-term agricultural use and much of the remainder of "suitable" habitat is highly fragmented and is in very close proximity to residential, commercial, or industrial development.

While the fly is known to occur in the Ontario Recovery Unit, the possibility of using the Ontario Recovery Unit to protect the Delhi Sands Flower-loving Fly is limited because of its prior history and fragmented nature.

The Sycamore Project site is located within the Colton Recovery Unit.

Methods

Prior to the initiation of the focused survey, the Carlsbad Field Office of the USFWS was notified on June 16, 2017 of Powell Environmental Consultant's intent to perform the survey. This focused survey was initiated on July 2, 2016 and continued with biweekly site surveys until September 19, 2016. All field surveys and activities associated with this study were conducted in accordance with the Interim General Guidelines for the Delhi Sands Flower-loving Fly and conditions set forth in the surveyors 10(a)(1)(A) permits. Surveys were conducted by entomologists Dale Powell PhD and Jun Powell (authorized under permit TE-006559-6). Survey dates and times, ambient air temperatures, wind speed, general weather conditions, insect families/species detected, and other pertinent field data were recorded on field survey forms and are included in Table 1 and in the Appendices.

Results and Discussion

No Delhi Sands Flower-loving Flies were observed on the project site during the focused survey. Another species of insect fauna which is relatively closely related to the fly and which is associated with Delhi sands was observed upon the site during the present survey. A member of the family Asilidae was observed. These insects are frequently associated with the Delhi Sands Flower-loving Fly and can be considered indicators that the site may have potential as suitable fly habitat, even though the site has been altered by various disturbances. The total numbers of all insect fauna observed upon the site was lower than during the 2016 survey season. The site had been cleared of vegetation earlier in the year before the survey season began and very few plants were observed growing upon the site. None of the Delhi Sands Flower-loving Fly "indicator" plants were observed growing upon the site.

Delhi Sands Flower-loving Fly Survey Results

Date	Time	Minutes Surveyed	Weather (at start)	Temp (°F)	Wind (mph) aver*/max
7/2/17 ³	12:10-12:40	60	Clear	92°	1/3
7/5/17 ²	12:55-13:25	30	10% Clouds	98°	1/2
7/10/17 ²	12:35-13:05	30	Clear	101°	2/4
7/13/17 ²	13:10-13:40	30	5% Clouds	96°	2/4
7/17/17 ²	13:10-13:35	25	Clear	98°	2/4
7/20/17 ²	10:00-10:25	25	Clear	84°	0/1
7/24/17 ²	11:10-11:40	30	95% Clouds	80°	2/4
7/27/17 ²	12:35-13:05	30	5% Clouds	93°	2/4
7/31/17 ²	11:10-11:40	30	5% Clouds	90°	1/2
8/3/17 ²	11:15-11:45	30	40% Clouds	95°	1/2
8/7/17 ²	13:05-13:35	30	Clear	99°	3/5
8/10/17 ²	12:35-13:05	30	Clear	95°	2/4
8/14/17 ³	11:20-11:50	60	Clear	87°	2/4
8/16/17 ²	9:55-10:25	30	5% Clouds	74°	0/1
8/21/17 ²	11:55-12:35	30	Clear	80°	2/4
8/24/17 ²	10:40-11:10	30	20% Clouds	80°	1/3
8/28/17 ³	11:00-11:25	50	10% Clouds	93°	1/3
8/30/17 ³	11:55-11:20	50	Clear	100°	1/3
9/4/17 ²	10:35-11:05	30	50% Clouds	86°	1/2
9/6/17 ³	10:35-11:00	50	40% Clouds	83°	1/3
9/11/17 ³	11:25-11:50	50	5% Clouds	90°	0/0
9/13/17 ³	11:00-11:20	40	Clear	79°	0/0
9/19/17 ³	12:00-12:25	50	40% Clouds	75°	0/0

¹ Dale Powell

² Jun Powell

³ Dale and Jun Powell

* Over a 20 second period.

REFERENCES

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- U.S. Department of Agriculture, Soil Conservation Service, 1980. Soil Survey of San Bernardino County Southwestern Part, California. U.S. Gov. Printing Office, Washington D.C.
- U.S. Fish and Wildlife Service. 1997. Final Recovery Plan for the Delhi Sands Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*). U.S. Fish and Wildlife Service, Portland, OR. 51 pp.

APPENDIX

SUBCONTRACTOR CONCURRENCE

I, Dale A. Powell, having performed focused surveys for the Delhi Sands Flower-loving Fly for the Sycamore Avenue Project site, Rialto, have entirely read and reviewed the final report for the project and concur with the statements and conclusions made.

Dale A. Powell
SIGNATURE

9/28/2017
DATE

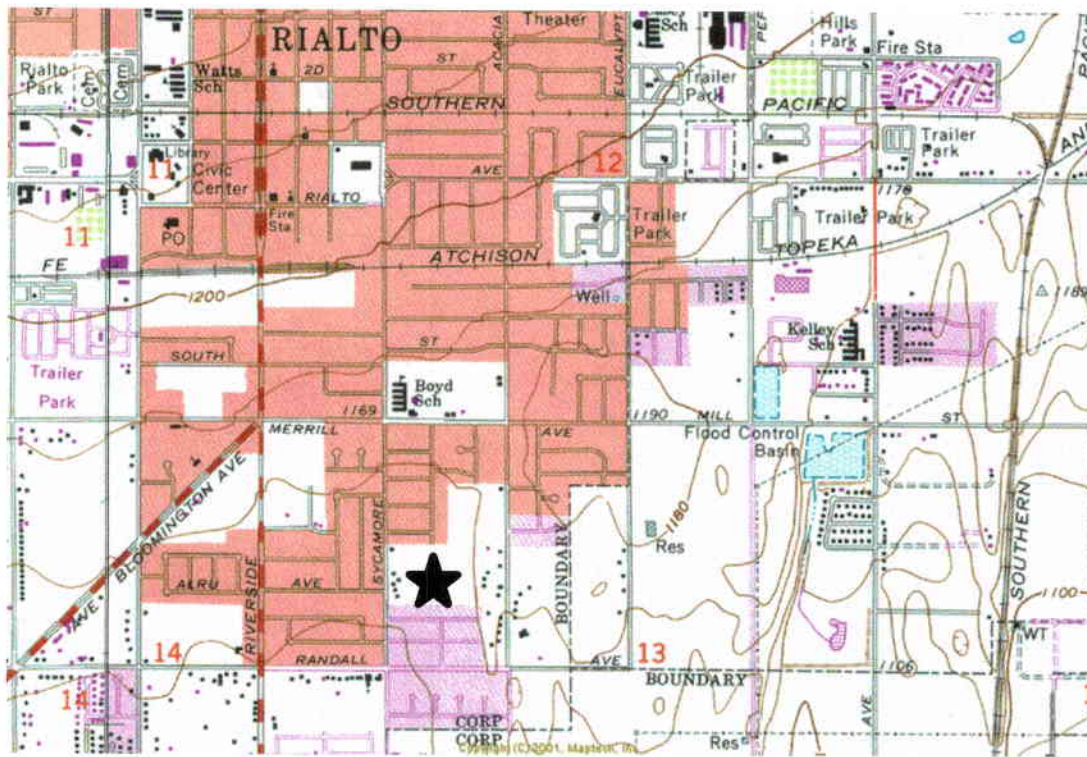
I, Jun R. Powell, having performed focused surveys for the Delhi Sands Flower-loving Fly for the Sycamore Avenue Project Project site, Rialto, have entirely read and reviewed the final report for the project and concur with the statements and conclusions made.

Jun R. Powell
SIGNATURE

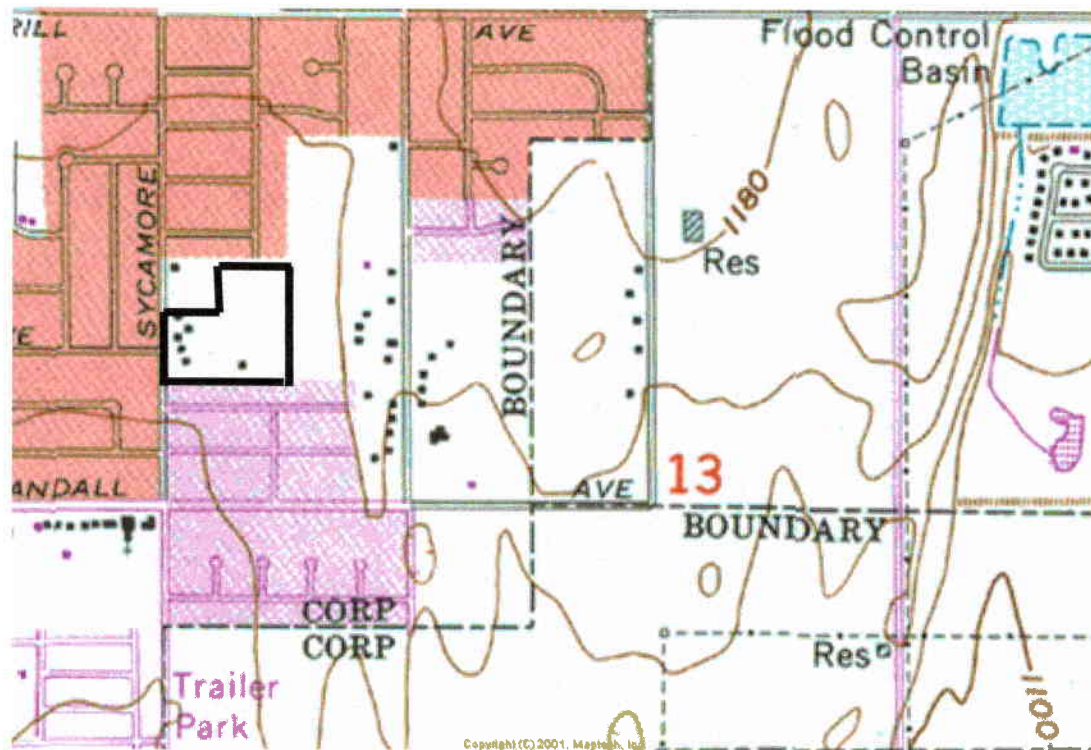
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APPENDIX

Map 1. General location of the Verde Vistas' Sycamore Avenue Project.



Map 2. Location of the Verde Vistas' Sycamore Avenue Project.



SYCAMORE AVENUE PROJECT SITE

Picture 1. Overview of the site facing east from the northwestern corner of the site.



Picture 2. Overview of the site facing south from the northwestern corner of the site.



SYCAMORE AVENUE PROJECT SITE

Picture 3. Overview of the site facing east from the southwestern corner.



Picture 4. Overview of the site facing west from the northeastern corner.



FIELD NOTES

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Delhi Sands Flower-loving Fly

Dale and Jun Rong Powell

Site: Sycamore

Date		9:00	10:00	11:00	NOON	1:00	2:00	3:00
7/2/17	Temp				92°			
Week	Wind				1/3			
1	Weath				clear			
7/5	Temp					98°		
Week	Wind					1/2		
1	Weath					10% cloud		
7/10	Temp				101°			
Week	Wind				2/4			
2	Weath				clear			
7/13	Temp					96°		
Week	Wind					2/4		
2	Weath					5% cloud		
7/17	Temp					98°		
Week	Wind					2/4		
3	Weath					clear		
7/20	Temp		84°					
Week	Wind		0/1					
3	Weath		clear					
7/24	Temp			80°				
Week	Wind			2/4				
4	Weath			95% cloud				
7/27	Temp				93°			
Week	Wind				2/4			
4	Weath				5% cloud			
7/31	Temp			90°				
Week	Wind			1/2				
5	Weath			3% cloud				
8/3	Temp			95°				
Week	Wind			1/2				
5	Weath			4% cloud				
8/7	Temp					99°		
Week	Wind					2/5		
6	Weath					clear		
8/10	Temp				95°			
Week	Wind				2/4			
6	Weath				clear			
8/14	Temp			87°				
Week	Wind			2/4				
7	Weath			clear				

Wind: First number is average (20 seconds) / second number is maximum.

Delhi Sands Flower-loving Fly

Dale and Jun Rong Powell

Site: *Sycamore*

Date		9:00	10:00	11:00	NOON	1:00	2:00	3:00
8/16/17	Temp		74°					
Week	Wind		0/1					
7	Weath		5% clouds					
8/21/17	Temp				80°			
Week	Wind				2/4			
8	Weath				clear			
8/24/17	Temp			80°				
Week	Wind			1/3				
8	Weath			20% clouds				
8/28/17	Temp			93°				
Week	Wind			1/3				
9	Weath			100% clouds				
8/30/17	Temp		100°					
Week	Wind		1/3					
9	Weath		clear					
9/4/17	Temp			86°				
Week	Wind			1/2				
10	Weath			50% clouds				
9/6/17	Temp		83°					
Week	Wind		1/3					
10	Weath		40% clouds					
9/11/17	Temp			90°				
Week	Wind			0/0				
11	Weath			5% clouds				
9/12/17	Temp			79°				
Week	Wind			0/0				
11	Weath			clear				
9/19/17	Temp				75°			
Week	Wind				0/0			
12	Weath				40% clouds			
	Temp							
Week	Wind							
	Weath							
	Temp							
Week	Wind							
	Weath							
	Temp							
Week	Wind							
	Weath							

Wind: First number is average (20 seconds) / second number is maximum.

Delhi Sands Flower-loving Fly

Dale and Jun Rong Powell

[illegible]

Delhi Sands Flower-loving Fly Dale and Jun Rong Powell

Dale and Jun Rong Powell

[illegible]

Flower-loving Fly

Dale and Jun Rong Powell

Sycamore	7/29/17	8/30/17	9/4	9/6	9/10	9/13	9/19
Coleoptera							
Carabidae							
Chrysomelidae	/ / / / /	/	/	/	/	/	/
Coccinellidae							
Curculionidae							
Rhipiphoridae							
Scarabaeidae			//		/		
Tenebrionidae							
Dermaptera							
Diptera							
Apioceridae							
Asilidae							
Bombyliidae	/ / / / /	/	/				
Calliphoridae					/		
Chironomidae							
Conopidae							
Muscidae	/ / / / /	/	/	/	/	/	/
Mydidae							
Sarcophagidae							
Stratiomyidae							
Syrphidae				/			
Tabanidae							
Tachinidae							
Hemiptera							
Anthuridae							
Lygaeidae							
Miridae							
Nabidae							
Pentatomidae							
Reduviidae							
Scutelleridae							
Homoptera							
Aphididae							
Cercopidae							
Cicadellidae							
Cicadidae							
Membracidae							

2000

Dale and Jun Rong Powell

	8/2	8/3	8/30	9/4	9/6	9/11	9/12	9/19
Sycamore								
Hymenoptera								
Anthophoridae								
Apidae	✓	✓			✓	✓	✓	✓
Braconidae								
Chrysididae								
Formicidae	✓	✓	✓	✓	✓	✓	✓	✓
Halictidae								
Ichneumonidae								
Mutillidae								
Pompilidae								
Scoliidae								
Sphecidae			✓			✓		
Vespidae	✓	✓	✓					
Lepidoptera								
Danaidae								
Hesperiidae					✓	✓	✓	✓
Lycaenidae	✓	✓	✓	✓	✓	✓	✓	✓
Noctuidae								
Nymphalidae			✓	✓	✓	✓	✓	✓
Papilionidae					✓	✓	✓	✓
Pieridae					✓	✓	✓	✓
Pyralidae								
Sphingidae								
Neuroptera								
Ascalaphidae								
Chrysopidae								
Hemerobiidae								
Myrmeleontidae								✓
Odonata								
Aeshnidae				✓	✓	✓	✓	✓
Coenagrionidae				✓	✓	✓	✓	✓
Libellulidae			✓	✓	✓	✓	✓	✓
Orthoptera								
Acrididae					✓			
Gryllacrididae								
Gryllidae								
Mantidae								
Tettigoniidae								
OTHER								