## ACACIA AND RANDALL AVENUES NORTH PROJECT SITE (APN Numbers 0131-131-13 & 0131-131-14)

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

#### **Prepared for:**

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October 2, 2018

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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 5-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 by Powell Environmental Consultants upon the site in 2004, 2005, 2014, 2015, 2016, and 2017. Those surveys also resulted in negative findings.

#### **Site Description**

The approximately 5-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 east side of Acacia Avenue, a few hundred feet north of Randall Avenue (APN Numbers 0131-131-13 & 0131-131-14). The site is relatively flat and its elevation is approximately 1,165 feet above sea level. Adjacent to the north and to the east of the site are houses. South of the southeastern area of the site is a poultry farm and houses lie south of the southeastern area of the site. Across Acacia Avenue, to the west, are houses.

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.

Most of the site is covered by exposed Delhi sands. There is 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 Bermuda grass (*Cynodon dactylon*). Of the Delhi Sands Flower-loving Fly "indicator" plants only a small number of California crotons (*Croton californicus*) and telegraph weeds (*Heterotheca grandiflora*) were observed growing along the western edge of the site and annual bursages (*Ambrosia*)

*acanthicarpa*) were observed growing in the center of the site. Disturbances observed on the site include disking, 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 June 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 bursage (*Ambrosia acanthicarpa*), and telegraph weed (*Heterotheca grandiflora*), are 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 Acacia and Randall Avenues 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 28, 2018 of Powell Environmental Consultant's intent to perform the survey. This focused survey was initiated on July 2, 2018 and continued with biweekly site surveys until September 19, 2018. 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 entomologist Dale Powell PhD and Jun Powell (authorized under permit TE-006559-7). 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. The closest known observation of the fly in Rialto was approximately 0.1 miles west of this site. No member of the family Mydidae was observed on the project site. Other species of the closely related families Asilidae and Apioceridae, which are associated with Delhi sands, were observed upon the site. 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 2004, 2005, 2014, 2015, 2016, or 2017 survey seasons. 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. A small number of the Delhi Sands Flower-loving Fly "indicator" plants, California croton (*Croton californicus*), telegraph weed (*Heterotheca grandiflora*), and annual bur-ages (*Ambrosia acanthicarpa*) were observed growing upon the site.

Date	Time	Minutes	Weather	Temp	Wind (mph)
		Surveyed	(at start)	(°F)	aver*/max
$7/2/18^2$	12:35-13:00	25	Clear	86°	3/7
7/5/18 <sup>1</sup>	13:00-13:30	30	Clear	98°	4/7
7/9/18 <sup>1</sup>	12:45-13:15	30	Clear	101°	4/8
7/11/18 <sup>2</sup>	13:00-13:25	25	Partly Cloudy	94°	4/8
7/16/18 <sup>1</sup>	14:10-14:35	25	Clear	97°	3/6
7/19/18 <sup>2</sup>	13:45-14:05	20	Clear	101°	3/5
7/23/18 <sup>2</sup>	11:45-12:15	30	Clear	96°	3/5
7/26/18 <sup>2</sup>	11:20-11:50	30	Clear	88°	1/3
7/30/18 <sup>2</sup>	11:45-12:15	30	30% Clouds	95°	3/5
8/1/18 <sup>2</sup>	11:30-12:00	30	Clear	89°	2/4
8/6/18 <sup>2</sup>	12:15-12:45	30	Clear	99°	2/4
8/8/18 <sup>2</sup>	12:25-12:50	25	Haze	95°	2/4
8/13/18 <sup>2</sup>	12:00-12:35	35	Clear	87°	3/5
8/15/18 <sup>2</sup>	11:55-12:30	35	Clear	89°	3/7
8/20/18 <sup>1</sup>	12:20-12:55	35	Clear	89°	3/5
8/22/18 <sup>1</sup>	12:10-12:35	25	Clear	86°	3/5
8/27/18 <sup>2</sup>	11:35-12:35	60	Clear	78°	3/6
8/29/18 <sup>2</sup>	10:15-10:45	30	50% Clouds	79°	0/1
9/3/18 <sup>1</sup>	12:25-12:50	25	Clear	82°	3/5
9/5/18 <sup>1</sup>	12:10-12:35	25	Clear	81°	4/6
9/10/18 <sup>1</sup>	12:15-12:35	20	Clear	88°	2/4
9/12/18 <sup>1</sup>	12:25-12:45	20	Clear	80°	2/4
9/17/18 <sup>1</sup>	12:20-12:45	25	Clear	83°	3/6
9/19/18 <sup>2</sup>	10:15-10:45	30	Clear	72°	0/1

# Delhi Sands Flower-loving Fly Survey Results

<sup>1</sup> Dale Powell
 <sup>2</sup> Jun Powell
 <sup>3</sup> Dale and Jun Powell
 \* Over a 20 second period.

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#### APPENDIX

#### SUBCONTRACTOR CONCURRENCE

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

SIGNATURE DATE

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

10/2/2018 DATE Jun R. Powell SIGNATURE

## APPENDIX



Map 1. General location of the Acacia and Randall Avenues North Project.

Map 2. Location of the Acacia and Randall Avenues North Project site.



## ACACIA AND RANDALL AVENUES NORTH PROJECT SITE

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



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



## ACACIA AND RANDALL AVENUES NORTH PROJECT SITE

Picture 3. Overview of the site facing south from the northwestern corner.



## **FIELD NOTES**

#### **Delhi Sands Flower-loving Fly**

#### **Dale and Jun Rong Powell**

Site: Acaria North

Date		9:00	10:00	11:00	NOON	1:00	2:00	3:00		
7/2/12	Temp					210			1	
Week	Wind					3/7				
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Week	Wind					14/7			1	
1	Weath					Clear			1	
2/9	Temp					1010			1	
Week	Wind					119			1	
2	Weath					clear			1	
7/H	Temp					940			1	
Week	Wind					419			1	
2	Weath					PC			1	
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3	Weath						Mart			
7/19	Temp						10:0		1	
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Wind: First number is average (20 seconds) / second number is maximum.

## Delhi Sands Flower-loving Fly

### Dale and Jun Rong Powell

Site: Asacia North

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Week	Wind				37		1	
7	Weath				CLOON			
8/20	Temp				890			
Week	Wind				3/5			
8	Weath				Clady			
8/27	Temp				760			
Week	Wind				38			
8	Weath				Clear			
827	Temp				7.80			
Week	Wind				3/6			
9	Weath				Cicar			
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Week	Wind		0/1					
9	Weath		5% Cloud					
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Week	Wind				3/5			
10	Weath				Crod			
915	Temp				210			
Week	Wind				416			
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210	Temp				88			
Week	Wind				2/4			
H	Weath				Clear			
9/12	Temp				850			
Week	Wind				2/1			
13	Weath				Clear			
917	Temp				730			
Week	Wind				3/6			
12	Weath				Cleand			
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Wind: First number is average (20 seconds) / second number is maximum.

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Native	-
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Cicadidae	
Membracidae	

# Delhi Sands Flower-loving Fly

### Dale and Jun Rong Powell

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Acade North	1/47/10	8/29	93	915	9/10	9/12	9/17	9/19								
Hymenoptera			112	1997	-			-	1			12.1				
Anthophoridae				1.7				l i i						1		
Apidae	11	14	1	1	1	~	1	1			1					
Braconidae																
Chrysididae									í T							
Formicidae	1	./	1	11	1	10.	J	V								
Halicitidae	-															
Ichneumonidae	-						-			1		1				
Mutillidae			1	-			-	1		1	1	1	1			
Pomnilidae			1									1	0			
Scoliidae	1	-	-	-	-	<u> </u>		1	-	-	1	-	1			
Sphecidae	1	-		17		1.2	12			-			-			
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Noctuidae												1		1	-	
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Uomorphildoa	+	-	+	-	-	+			-	+	+	-	-	<u>+</u>	-	1-
Myrmeleontidae								1								
Odonata	1250	-	-	-	1252	1.1		100	-	1.05			1.5	10.5	112	
Aeshnidae	1/			1		1		1	1							
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Acrididae	W	-		V	V	V	+	11	-		-			-		-
Gryllacrididae	-	-	-	-	-	-	-	-	-	-	-	-	-			-
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OTHER	-	-		-			-				-	-				
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## ACACIA AND RANDALL AVENUES POULTRY PROJECT SITE (APN Number 0131-131-23)

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

#### Prepared for:

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**Prepared by:** 

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Dale A. Powell Ph.D. TE-006559-7

October 2, 2018

## ACACIA AND RANDALL AVENUES POULTRY PROJECT SITE

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

October 2, 2018

#### Introduction

This report presents the results of a focused survey for the Delhi Sands Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 3.89-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 results. The site was also surveyed in 2017 by Powell Environmental Consultants with negative results.

#### Site Description

The 3.89-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 east side of Acacia Avenue, a few hundred feet north of Randall Avenue (APN Number 0131-131-23). The site is relatively flat and its elevation is approximately 1,165 feet above sea level. Adjacent to the north of the site is an open field. To the east of the site are houses. South of the southeastern area of the site is an open field and houses lie south of the southeastern area of the site is a residential house and buildings with a grassy area to the west with trees and ornamentals growing upon it.

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 around the buildings. There is very little native vegetation growing upon the site.

The most abundant plant observed growing upon the site was Bermuda grass (*Cynodon dactylon*) and introduced trees, shrubs, and other ornamentals. Of the Delhi Sands Flower-loving Fly "indicator" plants only a small number of California croton (*Croton californicus*) and telegraph

weeds (*Heterotheca grandiflora*) were observed. Disturbances observed on the site include the invasion of non-native plant and animal species, pedestrian and motor vehicle traffic, 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 ten weeks from late June 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 bursage (*Ambrosia acanthicarpa*), and telegraph weed (*Heterotheca grandiflora*), are 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 Poultry 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 28, 2018 of Powell Environmental Consultant's intent to perform the survey. This focused survey was initiated on July 2, 2018 and continued with biweekly site surveys until September 19, 2018. 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 entomologist 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. The closest known observation of the fly in Rialto was approximately 0.1 miles west of this site. Other species of insect fauna which are relatively closely related to the fly and which are associated with Delhi sands were observed upon the site. Another member of the family Mydidae and other members of the closely related family Asilidae were noted as well. 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. A small number of the Delhi Sands Flower-loving Fly "indicator" plants California croton (*Croton californicus*) and telegraph weed (*Heterotheca grandiflora*) were observed growing upon the site.

Date	Time	Minutes	Weather	Temp	Wind (mph)
		Surveyed	(at start)	(°F)	aver*/max
$7/2/18^2$	13:00-13:25	25	Clear	86°	3/7
7/5/18 <sup>1</sup>	12:30-13:00	30	Clear	99°	4/7
7/9/18 <sup>1</sup>	12:25-13:15	20	Haze	100°	4/8
7/11/18 <sup>2</sup>	12:25-13:00	35	Partly Cloudy	94°	3/6
7/16/18 <sup>1</sup>	13:50-14:10	20	Clear	95°	3/6
7/19/18 <sup>2</sup>	14:05-14:35	30	Clear	101°	3/5
7/23/18 <sup>2</sup>	11:15-11:45	30	Clear	95°	2/4
7/26/18 <sup>2</sup>	11:50-12:20	30	Clear	86°	1/3
7/30/18 <sup>2</sup>	11:15-11:45	30	90% Clouds	94°	2/5
8/1/18 <sup>2</sup>	11:05-11:30	25	Clear	89°	2/4
8/6/18 <sup>2</sup>	11:45-12:15	30	Clear	98°	2/4
8/8/18 <sup>2</sup>	11:50-12:25	35	Haze	91°	2/4
8/13/18 <sup>2</sup>	11:30-12:00	30	Clear	87°	3/5
8/15/18 <sup>2</sup>	11:25-11:55	30	Clear	87°	2/4
8/20/18 <sup>2</sup>	12:55-13:15	20	Clear	91°	2/4
8/22/18 <sup>3</sup>	12:30-12:50	40	Clear	88°	2/4
8/27/18 <sup>2</sup>	12:15-12:40	25	Clear	77°	4/6
8/29/18 <sup>2</sup>	09:45-10:15	30	50% Clouds	77°	0/1
9/3/18 <sup>3</sup>	12:50-13:05	30	Clear	84°	3/6
9/5/18 <sup>3</sup>	12:35-12:50	30	Clear	81°	4/6
9/10/18 <sup>3</sup>	12:35-12:50	30	Clear	84°	2/4
9/12/18 <sup>3</sup>	12:45-13:00	30	Clear	80°	0/0
9/17/18 <sup>3</sup>	12:45-13:05	40	Clear	85°	2/4
9/19/18 <sup>2</sup>	09:45-10:15	30	Clear	71°	0/1

# Delhi Sands Flower-loving Fly Survey Results

<sup>1</sup> Dale Powell
 <sup>2</sup> Jun Powell
 <sup>3</sup> Dale and Jun Powell
 \* Over a 20 second period.

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#### APPENDIX

#### SUBCONTRACTOR CONCURRENCE

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

10/2/2018 DATE Dale A Powell SIGNATURE

á.

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

Jun R. Pouell SIGNATURE

0/2/2018 DATE

## APPENDIX



Map 1. General location of the Acacia and Randall Avenues Poultry Project.

Map 2. Location of the Acacia and Randall Avenues Poultry Project site.



## ACACIA AND RANDALL AVENUES POULTRY PROJECT SITE

Picture 1. Overview of the site facing north from the southwestern corner.



Picture 2. Overview of the site facing northeast from the southwestern corner.



## ACACIA AND RANDALL AVENUES POULTRY PROJECT SITE

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



## **FIELD NOTES**

#### **Delhi Sands Flower-loving Fly**

#### **Dale and Jun Rong Powell**

Site: Poultry Site

Date		9:00	10:00	11:00	NOON	1:00	2:00	3:00	
7/2/18	Temp					860			7
Week	Wind					2/7			1
1	Weath					Clerk			1
3/5	Temp				990				1
Week	Wind				420				1
1	Weath				Clear				
7/9	Temp				1000				-
Week	Wind				4/2				1
2	Weath				Haze				1
711	Temp				140				
Week	Wind				2.10				
2	Weath				61				1
7116	Temp						950		-
Week	Wind						1.16		1
3	Weath						Clow		
7/19	Temp						100		-
Week	Wind		_				315		-
3	Weath						desy		-
7/22	Temp			9.00			12.50		-
Week	Wind			214					-
4	Weath			1000			-		
7/26	Temp		1		36.0				-
Week	Wind				1/2				-
å	Weath				Cheor.		-		-
7/20	Temp				940		-		1
Week	Wind				215				-
5	Weath				459-14				
8/1	Temp		89.0		11				-
Week	Wind		2/4						-
0	Weath		clout						-
36	Temp				0,80				-
Week	Wind				314				-
6	Weath				Charl				1
88	Temp			90			-		-
Week	Wind			2.19					-
6	Weath			Hige					<
9/12	Temp			90					- smill unit
Week	Wind			SIC					-
7	Weath			Clau					-

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

### **Delhi Sands Flower-loving Fly**

### Dale and Jun Rong Powell

Site: Poutty Site

Date		9:00	10:00	11:00	NOON	1:00	2:00	3:00
81518	Temp			870				
Week	Wind			24				
7	Weath			Chay				
120	Temp					910		
Week	Wind					0.14		
8	Weath				1	Chix		
8/22	Temp		T			280 0		
Week	Wind					2/4		
8	Weath					Charl		
827	Temp				770			
Week	Wind				410			
9	Weath				Clevr			
6/29	Тетр		71					
Week	Wind		0/1					
4	Weath		15% alout					
912	Temp				340			
Week	Wind				316			
0	Weath				C. car			
95	Temp				20			
Week	Wind				9/6			
ю	Weath				Char			
9/10	Temp				8.90			
Week	Wind				214			
11	Weath				Chas			
97	Temp		1		30			
Week	Wind				60			
U.	Weath				6 642			
917	Temp					050		-
Week	Wind					214		
12	Weath					Cher		
9/19	Temp		710					
Week	Wind		0/1					
12	Weath		Clear					
	Temp							
Week	Wind							
	Weath							
	Temp							
Week	Wind							
	Weath							

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

	4	Ť	ŧ	4	F	- łp	3	P	P	Ť	Ť	P.	P.	8	IP	Ŧ
Poutty Site	12/12	715	7/9	7/11	7/16	7/19	+22	7/16	2/30	8/1	26	8/2	8/3	8/5	12/20	8/2
Coleoptera		1.23					1			1.54.14						
Carabidae							-		-	-	-				-	-
Chrysomelidae	1	1	1	-	1	1		-					1			1
Coccinellidae	-		1						1		1		-		-	1
Curculionidae		-	-	-	-	-	-	-	12			-	-	-		-
Rhininhoridae		-		-	-				-			-				
Scarabaeidae	+		-		<u> </u>		1	1	-		1.7			- /	-	1
Tenebrionidae	1	-		-		-	~	V	-		×.		1	14		-
1 dicontoinuae		1							-			-		-	-	-
I RISIGN M	-			_										-		
Dermaptera		14.2					1-123	1.1.0			1.43					
Distance	-	-	-			-		-	-	_	-		-			
Diptera		100			1.1			-			Merely.				-	
Aptoceridae	-	-	-	-		-	-	-		-						
Asilidae	-	-	-	1	1				1				1	V		
Bombyliidae											14	1	1	1	10	
Calliphoridae		-		-			-									
Chironomidae																
Conopidae																
Muscidae	1	11	1	1	5	V.	1	V	1	V	1			J.	V	
Mydidae														12		
Sarcophagidae																-
Stratiomyidae																-
Syrphidae											-		-		-	1-
Tabanidae	1					1			<u> </u>				-			1
Tachinidae												1		-	-	-
											-	-	1	-		-
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### Delhi Sands Flower-loving Ely 5 05 15 5 Dale and Jun Rong Powell

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toultry Site	4-7/12	8/29	93	9/5	910	7/12	9 3	9/19								
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Cicadidae	-															
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# Delhi Sands Flower-loving Fly

#### Dale and Jun Rong Powell

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# ACACIA AND RANDALL AVENUES NORTH PROJECT SITE (APN Numbers 0131-131-13 & 0131-131-14)

# Focused Survey for the Delhi Sands Flower-loving Fly

#### **Prepared for:**

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2200 Dale A. Powell Ph.D.

TE-006559-7

September 22, 2019

# ACACIA AND RANDALL AVENUES NORTH PROJECT SITE

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

## September 22, 2019

#### Introduction

This report presents the results of a focused survey for the Delhi Sands Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 5-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 by Powell Environmental Consultants upon the site in 2004, 2005, 2014, 2015, 2016, 2017, 2018. Those surveys also resulted in negative findings.

#### **Site Description**

The approximately 5-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 east side of Acacia Avenue, a few hundred feet north of Randall Avenue (APN Numbers 0131-131-13 & 0131-131-14). The site is relatively flat and its elevation is approximately 1,165 feet above sea level. Adjacent to the north and to the east of the site are houses. South of the southeastern area of the site is a poultry farm and houses lie south of the southeastern area of the site. Across Acacia Avenue, to the west, are houses.

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.

Most of the site is covered by exposed Delhi sands. There is 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 Bermuda grass (*Cynodon dactylon*). Of the Delhi Sands Flower-loving Fly "indicator" plants only a small number of California crotons (*Croton californicus*), annual bursages (*Ambrosia acanthicarpa*), and

telegraph weeds (*Heterotheca grandiflora*) were observed growing upon the site. Disturbances observed on the site include disking, 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 June 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 bursage (*Ambrosia acanthicarpa*), and telegraph weed (*Heterotheca grandiflora*), are 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 Acacia and Randall Avenues 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 27, 2019 of Powell Environmental Consultant's intent to perform the survey. This focused survey was initiated on July 1, 2019 and continued with biweekly site surveys until September 18, 2019. 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 entomologist Dale Powell PhD and Jun Powell (authorized under permit TE-006559-7). 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. The closest known observation of the fly in Rialto was approximately 0.1 miles west of this site. No member of the family Mydidae was observed on the project site. Other species of the closely related families Asilidae and Apioceridae, which are associated with Delhi sands, were observed upon the site. 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 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. A small number of the Delhi Sands Flower-loving Fly "indicator" plants, California croton (*Croton californicus*), telegraph weed (*Heterotheca grandiflora*), and annual bursages (*Ambrosia acanthicarpa*) were observed growing upon the site.

**Table 1.** Dates, survey times, person hours, and weather conditions.

Date	Time	Minutes	Weather	Temp	Wind (mph)
		Surveyed	(at start)	(°F)	aver*/max
7/1/19 <sup>2</sup>	12:30-13:00	30	Clear	92°	1/3
7/3/19 <sup>2</sup>	12:30-13:00	30	40% Clouds	88°	1/3
7/8/19 <sup>2</sup>	11:35-12:05	30	Clear	78°	1/3
7/10/19 <sup>2</sup>	10:40-11:10	30	Clear	80°	0/1
$7/15/19^2$	11:25-11:50	25	Clear	91°	2/4
$7/17/19^2$	09:50-10:20	30	Clear	85°	0/1
$7/22/19^2$	12:00-12:30	30	60% Clouds	89°	1/3
$7/24/19^2$	10:50-11:20	30	20% Clouds	90°	1/3
$7/29/19^2$	11:50-12:20	30	20% Clouds	92°	1/3
$7/31/19^2$	12:40-13:10	30	Clear	95°	2/4
8/5/19 <sup>2</sup>	11:40-12:10	30	Clear	97°	1/3
8/7/19 <sup>2</sup>	12:35-13:05	30	60% Clouds	88°	1/3
8/12/19 <sup>2</sup>	12:30-13:00	30	Clear	87°	1/3
8/14/19 <sup>2</sup>	10:40-11:10	30	Clear	87°	0/1
8/19/19 <sup>2</sup>	12:00-12:30	30	Clear	87°	1/3
8/21/19 <sup>2</sup>	10:40-11:10	30	Clear	85°	0/1
$8/27/19^2$	12:00-12:30	30	Clear	96°	0/1
$8/29/19^2$	10:50-11:20	30	Clear	90°	1/3
9/2/19 <sup>2</sup>	12:20-12:50	30	40% Clouds	96°	1/3
9/4/19 <sup>2</sup>	11:55-12:25	30	30% Clouds	100°	1/3
9/9/19 <sup>2</sup>	10:50-11:20	30	10% Clouds	80°	1/3
9/11/19 <sup>1</sup>	12:30-12:55	25	Clear	78°	4/6
9/16/19 <sup>2</sup>	10:20-10:50	30	40% Clouds	84°	0/1
9/18/19 <sup>2</sup>	11:40-12:10	30	Clear	82°	0/1

**Delhi Sands Flower-loving Fly Survey Results** 

<sup>1</sup> Dale Powell
 <sup>2</sup> Jun Powell

\* Over a 20 second period.

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#### APPENDIX

#### SUBCONTRACTOR CONCURRENCE

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

010 SIG NATURE DATE

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

DUND SIGNATURE

9/22/201

DATE

# APPENDIX



Map 1. General location of the Acacia and Randall Avenues North Project.

Map 2. Location of the Acacia and Randall Avenues North Project site.



# ACACIA AND RANDALL AVENUES NORTH PROJECT SITE

Picture 1. Overview of the site facing north from the southwestern corner.



Picture 2. Overview of the site facing northeast from the southwestern corner.



# ACACIA AND RANDALL AVENUES NORTH PROJECT SITE



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

Picture 4. Overview of the site facing north from the southeastern corner.



# **FIELD NOTES**

### Dale and Jun Rong Powell

Site: Acacia (north)

Date		9:00	10:00	11:00	NOON	1:00	2:00	3:00
7/1/19	Temp				920			
Week	Wind				1/3			
1	Weath				clear			
713	Temp				88°			
Week	Wind				1/3			
1	Weath				4% Clouds			
718	Temp			78°				
Week	Wind			(/3				
2	Weath			clear				
7/10	Temp		80°					
Week	Wind		0./1					
2	Weath		Clear					
7/15	Temp			910				
Week	Wind			2/4				
3	Weath			clear				
7/17	Temp		85 °					
Week	Wind		0/1					
3	Weath		clea.					
7/22	Temp	3			89°			
Week	Wind				1/3.			
4	Weath				6% clouds			
7/24	Temp			90°	· · ·			
Week	Wind			1/3				
4	Weath			20% doud				
7/29	Temp				920			
Week	Wind				1/3			
5	Weath				20% clouds			
7/31	Temp				· /	95		
Week	Wind					2/4		
5	Weath					CLEAN		
815	Temp				970			
Week	Wind				1/3			
b	Weath				Clear			
8/7	Temp				880			
Week	Wind				1/3			
6	Weath				6%cloude			
8/12	Temp				870			
Week	Wind				1/3			
7	Weath				Clear			

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

### **Dale and Jun Rong Powell**

Site: Acacia (North)

Date		9:00	10:00	11:00	NOON	1:00	2:00	3:00
8/14/19	Temp		870					
Week	Wind		0/1					
7	Weath		rload					
8/19	Temp				87°			
Week	Wind				1.13			
8	Weath				dear			
8/2	Temp		850					
Week	Wind		0/1					
8	Weath		clear		· · · · ·			
8/27	Temp				96°			
Week	Wind				0/1			
9	Weath				Clear			
8129	Temp			90°				
Week	Wind			113				
9	Weath			Clear				
912	Temp				960			
Week	Wind				1/3			
10	Weath				40% Cloud			
914	Temp				100°			
Week	Wind				1/3			
(0	Weath				32. clouds	and the second second second second		
919	Temp			80				
Week	Wind			113				
11	Weath			10/2 clouds				
9/11	Temp				780			
Week	Wind				46			
11	Weath				Clear	and a second		
9/16	Temp		84°.					
Week	Wind		0/1					
12	Weath		4% douds					
9/18	Temp			82°				
Week	Wind			0/1				
12	Weath			(PON)				
	Temp							
Week	Wind						1	
	Weath							
	Temp							
Week	Wind							
	Weath							

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

### Dale and Jun Rong Powell

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	JP	JP	26	JP	58	SP	38	JP	26	17	SP	-57	50	SP	JP	J.b.
Acacia North	7/1/19	7/3	718	7/10	7/15	7/17	7/22	7/24	7/29	7/31	8/5	8/2	8/12	8/14	8/19	8/21
Coleoptera									1	1	1		1	T		
Carabidae														1		
Chrysomelidae														1		
Coccinellidae													-	1		
Curculionidae	1							1				1				
Rhipiphoridae	1	1												1		
Scarabaeidae	1		V			V			V		1	V	1	-	./	
Tenebrionidae	1					<u> </u>							- V			
Dermaptera				1998												
Diptera																
Apioceridae			-				/ /			1						
Asilidae	V	V				V	V			V		$\vee$			$\vee$	
Bombyliidae			LV	$\checkmark$	V	1			$\vee$	V	V		V	V		V
Calliphoridae			L				L									
Chironomidae																
Conopidae																
Muscidae	$\bigvee$	V	V	$\checkmark$	$\checkmark$		V	V	$\checkmark$	$\checkmark$	$\vee$	V		1	$\checkmark$	$\checkmark$
Mydidae																
Sarcophagidae																
Stratiomyidae																
Syrphidae																
Tabanidae																
Tachinidae																
Hemiptera Anthocoridae																
Lvgaeidae																
Miridae																
Nabidae																
Pentatomidae																
Reduviidae	$\left  - \right $															
Scutelleridae																
Homoptera Aphididae																
Cerconidae			<u> </u>			-										
Cicadellidaa																
Cicademdae																
Vicadidae																
wiembracidae																
and a state of the	And the second second															

	5P	50	SP	30	SP	58	58	JP	28	SP	256	92	58	58	38	26
Acacia (north	7/1/19	7/3	718	7/10	7/15	7/17	7/22	7/24	7/29	7/31	8/5	8/7	8/12	8/14	8/19	8/21
Hymenoptera						1				1			1			
Anthophoridae		1			/											
Apidae	1	1.1	1	./	1	./	V	1	V	V		1/	8/	./	V	V
Braconidae			1×					0				0	0	V		
Chrysididae																
Formicidae	1.7	V	V	1	V	1	1	V	$\overline{\mathbf{v}}$	1	V	1	./	V	V	
Halicitidae		- V														
Ichneumonidae	1													1		
Mutillidae														1		
Pompilidae		-	-		-											
Scoliidae		<u> </u>				1										
Sphecidae		1.7	V	V	1	./	. /	V	1	V	V	V	1	1	V	V
Vocnidoe	1.7	1.1	1V	1	1	1.7	X		1	./		V	1		V	1
Vespidae																
Lepidoptera																
Danaidae	, · · · ·										ļ					
Hesperiidae	N		1	V	V				~	, ·	L	ļ	,		L	
Lycaenidae						V		ļ	$\vee$	V				11/	1/	1
Noctuidae																
Nymphalidae									1			-		ļ	ļ	
Papilionidae			1V		V.		V		~		V					V
Pieridae	$\sim$	$\checkmark$	$\vee$	$\vee$	$\vee$	V	$\checkmark$	V	$\checkmark$	$\checkmark$	$\vee$		V	V	V	V
Pyralidae																
Sphingidae																
Neuroptera											La se esta					
Ascalaphidae																
Chrysopidae	1															
Hemerobiidae															1	
Myrmeleontidae														V	V	
Odonata																
Aesnnidae										+					+	+
Libellulidae																
Orthoptera											/	1				
Acrididae	1	V	$\vee$	V	V	V	$\vee$	$\vee$	$\vee$	V	V	$\bigvee$	V	V	V	V
Gryllacrididae																
Gryllidae																
Mantidae																
Tettigoniidae																
OTHER																

	SP	90	90	SP	38	144	38	2.t.								
Acacia (Noth)	8/2.7/19	8/29	9/2	9/4	919	9/4	9/16	9/18								
Coleoptera																
Carabidae																
Chrysomelidae																
Coccinellidae																
Curculionidae			1													
Rhipiphoridae																
Scarabaeidae	V	V			V	1./										
Tenebrionidae		1	1													
rencorronnauo		-														
	1	1														
		1														
Dermantera			1. A													
		1														
Dintera																
Anioceridae			1			r										
Asilidae		1	V/			1		$\checkmark$								
Bombyliidae	1	V	V	1	V	./		1/								
Callinhoridae		1			1											
Chironomidae	1	1	1													
Cononidae							1		1							
Muscidae	V		TV/	V	1V	1./		V								
Mydidae						1					1					
Sarconhagidae			1		1		1									
Strationvidae					1				1							
Symbidae	+	-		1	1	1			1	1						
Tabanidae	1				1						1					
Tachinidae			1	-	1					1	1					
Taemindae	1	-		1	1											
		1		1	1				1							
	1	1	-	1	1	1										
	+	+			+		1		1							
		1		1		1										
Hemintera																
Anthocoridae					1											
Lygaeidae	+	+			-						1					
Miridae	-	1		-	1	1	1	1	-			1				
Nabidae		1		1	1	1	1	1		1						
Pentatomidae			-	1	+	1		1	1	1						1
Reduviidae				-					1		1		1			1
Scutelleridae		+			-	-	+			1	1	1				1
Scuteneriuae	+		+	+			1			+		+				
				+				+	1	-				1	-	1
	-	-	-					1	1	1	-	1		<u> </u>		1
Homontoro																
Aphididaa				1				-				1	1	1	1	
Corconidae	+	+		1				1	+	1	+	1	1	1	1	1
Cicodallidao					+				1		1	1	1	1	1	1
Cicadenildae		+			+	+								+	1	1
Manhanidae			+			+								1	1	1
Membracidae	-				+							+		+	+	1
		+		+				1	1		1	1	1	1	1	1
	1	1	1	1	1		1		1	1	4	1	1	1	1	1

	JP	TP	58	58	97	988	26	36			 				
Acacia (Nort	2	8/29	9/2	9/4	9/9	gly	9/16	9/18							
Hymenoptera										-					
Anthophoridae		1					1	1			 				
Apidae	V	V	V	1/	1	V	V	V							
Braconidae		V		V											
Chrysididae															
Formicidae	$\vee$	$\checkmark$		$\checkmark$	$\vee$	~	V	V							
Halicitidae															
Ichneumonidae															
Mutillidae															
Pompilidae															
Scoliidae															
Sphecidae	$\bigvee$	$\vee$	V	V	$\bigvee$	1./	$\square$								
Vespidae	V	V		V	V	1		V							
Lepidoptera															
Danaidae															
Hesperiidae					V	14	$\vee$	V							
Lycaenidae	1/	1	$\bigvee$	V	1	11	1	1V							
Noctuidae	T														
Nymphalidae					1										
Papilionidae	$\vee$	V	$\checkmark$				$\vee$								
Pieridae	V		V	1	V										
Pyralidae															
Sphingidae								1							
	1														
Neuroptera															
Ascalaphidae															
Chrysopidae		1	1												
Hemerobiidae		1								1					
Myrmeleontidae															
Odonata										1000					
Aeshnidae															
Coenagrionidae		$\bigvee$			$\vee$		$\vee$	$\vee$							
Libellulidae			<u> </u>		$\bigvee$	1	-	V							
Orthoptera					1	ļ.,				1.18				-	1.1
Acrididae	V	V	V	V	V	1	V	$\vee$			 				<u> </u>
Gryllacrididae												-	1	-	
Gryllidae											 				
Mantidae															
Tettigoniidae						-			-		 				
OTHER															
			+		1										

# ACACIA AND RANDALL AVENUES POULTRY PROJECT SITE (APN Number 0131-131-23)

# Focused Survey for the Delhi Sands Flower-loving Fly

### **Prepared for:**

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Dale A. Powell

TE-006559-7

September 22, 2019

# ACACIA AND RANDALL AVENUES POULTRY PROJECT SITE

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

## September 22, 2019

### Introduction

This report presents the results of a focused survey for the Delhi Sands Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 3.89-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 results. The site was also surveyed in 2017 and 2018 by Powell Environmental Consultants, with negative results.

#### **Site Description**

The 3.89-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 east side of Acacia Avenue, a few hundred feet north of Randall Avenue (APN Number 0131-131-23). The site is relatively flat and its elevation is approximately 1,165 feet above sea level. Adjacent to the north of the site is an open field. To the east of the site are houses. South of the southeastern area of the site is an open field and houses lie south of the southeastern area of the site is a residential house. In the center of the site is a residential house and buildings with a grassy area to the west with trees and ornamentals growing upon it.

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 around the buildings. There is very little native vegetation growing upon the site.

The most abundant plant observed growing upon the site was Bermuda grass (*Cynodon dactylon*) and introduced trees, shrubs, and other ornamentals. Of the Delhi Sands Flower-loving Fly "indicator" plants only a small number of California croton (*Croton californicus*), annual

bursage (*Ambrosia acanthicarpa*), and telegraph weeds (*Heterotheca grandiflora*) were observed. Disturbances observed on the site include the invasion of non-native plant and animal species, pedestrian and motor vehicle traffic, 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 ten weeks from late June 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 bursage (*Ambrosia acanthicarpa*), and telegraph weed (*Heterotheca grandiflora*), are 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 Poultry 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 27, 2019 of Powell Environmental Consultant's intent to perform the survey. This focused survey was initiated on July 1, 2019 and continued with biweekly site surveys until September 18, 2019. 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 entomologist Dale Powell PhD and Jun Powell (authorized under permit TE-006559-7). 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. The closest known observation of the fly in Rialto was approximately 0.1 miles west of this site. Other species of insect fauna which are relatively closely related to the fly and which are associated with Delhi sands were observed upon the site. No members of the family Mydidae were observed upon the site. Members of the closely related families Asilidae and Apioceridae were noted. 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. A small number of the Delhi Sands Flower-loving Fly "indicator" plants California croton (*Croton californicus*), annual bursage (*Ambrosia acanthicarpa*), and telegraph weed (*Heterotheca grandiflora*) were observed growing upon the site.

**Table 1.** Dates, survey times, person hours, and weather conditions.

Date	Time	Minutes	Weather	Temp	Wind (mph)
		Surveyed	(at start)	(°F)	aver*/max
$7/1/19^2$	13:00-13:30	30	Clear	94°	2/4
7/3/19 <sup>2</sup>	11:40-12:30	50	40% Clouds	88°	1/3
7/8/19 <sup>2</sup>	11:05-11:35	30	Clear	78°	1/3
7/10/19 <sup>2</sup>	11:10-11:40	30	Clear	85°	1/3
$7/15/19^2$	11:00-11:25	25	Clear	91°	2/4
$7/17/19^2$	10:20-10:50	30	Clear	85°	0/1
$7/22/19^2$	12:30-13:00	30	60% Clouds	89°	1/3
$7/24/19^2$	10:20-10:50	30	40% Clouds	85°	1/3
7/29/19 <sup>2</sup>	11:20-11:50	30	20% Clouds	88°	1/3
7/31/19 <sup>2</sup>	12:10-12:40	30	Clear	92°	1/3
8/5/19 <sup>2</sup>	11:10-11:40	20	Clear	89°	1/2
8/7/19 <sup>2</sup>	12:05-12:35	30	60% Clouds	88°	1/2
8/12/19 <sup>2</sup>	12:00-12:30	30	Clear	81°	1/3
8/14/19 <sup>2</sup>	11:10-11:40	30	Clear	96°	1/3
8/19/19 <sup>2</sup>	12:30-13:00	30	Clear	87°	1/3
8/21/19 <sup>2</sup>	11:10-11:40	30	Clear	90°	0/1
8/27/19 <sup>2</sup>	12:30-13:00	30	Clear	96°	0/1
8/29/19 <sup>2</sup>	10:20-10:50	30	Clear	86°	0/1
9/2/19 <sup>2</sup>	11:50-12:20	30	30% Clouds	92°	1/3
9/4/19 <sup>2</sup>	12:25-12:55	30	30% Clouds	100°	1/3
9/9/19 <sup>2</sup>	10:20-10:50	30	Clear	76°	0/1
9/11/19 <sup>1</sup>	12:55-13:25	30	Clear	79°	4/7
9/16/19 <sup>2</sup>	09:50-10:20	30	40% Clouds	84°	0/1
9/18/19 <sup>2</sup>	11:10-11:40	30	Clear	82°	0/1

**Delhi Sands Flower-loving Fly Survey Results** 

<sup>1</sup> Dale Powell
 <sup>2</sup> Jun Powell

\* Over a 20 second period.

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#### APPENDIX

#### SUBCONTRACTOR CONCURRENCE

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

TURE

2019 22 DATE

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

**SIGNATURE** 

DATE

# APPENDIX



Map 1. General location of the Acacia and Randall Avenues Poultry Project.

Map 2. Location of the Acacia and Randall Avenues Poultry Project site.



# ACACIA AND RANDALL AVENUES POULTRY PROJECT SITE



Picture 1. Overview of the site facing north from the southwestern corner.

Picture 2. Overview of the site facing northeast from the southwestern corner.



# ACACIA AND RANDALL AVENUES POULTRY PROJECT SITE



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

# **FIELD NOTES**

### Dale and Jun Rong Powell

Site: chicken form

Date		9:00	10:00	11:00	NOON	1:00	2:00	3:00
7/1/19	Temp					940		
Week	Wind					214		
ł	Weath					CLEON		
7/3/19	Temp				82°		ang	
Week	Wind				1/3			
1	Weath				40% Clouds			
718	Temp			78°				
Week	Wind			1/3				
2	Weath			dear				
7/10	Temp			850				-
Week	Wind			1/3				
2	Weath			Clear				
7/15	Temp			910				
Week	Wind			2/4				
3	Weath			clear				
7/17	Temp		850					
Week	Wind		0/1					
3	Weath		Chear					
7/22	Temp				89°			
Week	Wind		1.1	1	1/3			
4 -	Weath				60% cloud			
7/24	Temp		850					
Week	Wind		1/3					
4	Weath		4% clads					
7/29	Temp		1	880				
Week	Wind			173				
5	Weath			20% cloude				
7/31	Temp				920		City States 1 (2000) - Format Villar (10	
Week	Wind				1/3			
5	Weath				Clear	-		
815	Temp			8.9 °			-	
Week	Wind			1/2				
6	Weath			Clear				
817	Temp				88 .			
Week	Wind				1/2			
6	Weath				6% doule			
8/12	Temp				'87°			
Week	Wind				1/3			
7	Weath				CLERY			

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

## Dale and Jun Rong Powell

Site: chicken Farm

Date		9:00	10:00	11:00	NOON	1:00	2:00	3:00
8/14/19	Temp			96°				
Week	Wind			1/3				
7	Weath			CLECK				
8/19	Temp				87			
Week	Wind				1/3			
8	Weath				Clear			
8/21	Temp			900				
Week	Wind			0/1				
8	Weath			Clear				
8/27	Temp				96			
Week	Wind				0/1			
9	Weath				CLERT			
\$/29	Temp		86°					
Week	Wind		0/1					
9	Weath		Clear					
9/2	Temp			12				
Week	Wind			113				
0	Weath			3% cloude				
9/4	Temp				100			
Week	Wind				113			
10	Weath				30% Cloud			
919	Temp		76°					
Week	Wind		011					
11	Weath		rear					
9/11	Temp				79			
Week	Wind				417			
11	Weath				clea/			
9/16	Temp		84°					
Week	Wind		0/1					
12	Weath		40% C/04 du					
9/18	Temp		1.70 2	82°				
Week	Wind			0/1				
12	Weath			Clear				
	Temp							
Week	Wind							
	Weath							
	Temp							
Week	Wind							
	Weath							

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

### Dale and Jun Rong Powell

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	JP	59	JP	70	20	59	JP	SP	JP	950	30	38	JP	JP	SP	JP
chickens form	7/1/19	7/3	7/8	7/10	7/15	7/17	7/22	7/24	7/29	7/31	8/5	8/7	8/12	8/14	8/19	8/21
Coleoptera	1 1 1				1	1			1	1.1	1.1		1			
Carabidae																
Chrysomelidae																
Coccinellidae			-													
Curculionidae																
Rhipiphoridae		4								1						
Scarabaeidae											.1		N		1	1
Tenebrionidae																
Teneorionaue																
Dermaptera										49.25.2						
Diptera					and a second								1			
Apioceridae				1		T		T			1		1			1
Asilidae	1	V	1	1		1	$\nabla$		$\checkmark$				1			1
Bombyliidae	-	-		./	./	1./			-	1	1	V		1	./	V
Callinhoridae	1			<u>V</u>												
Chironomidae													1			
Cononidae																-
Mussidae	1./	1	1 17	/	1.7	1	1	1	1		1./	./	1./	- /	17	
Mudidae		V	V	V		1V	V	-	~	V.					V	- V
Saraamhaaidaa						+										
Sarcopnagidae						-										
Stratiomyldae																
Syrphidae																
Tabanidae																
Tachinidae																
Hemiptera												Second				
Anthocoridae			1			T										1
Lygaeidae						1					1		1			
Miridae				1	1	1	1				1		1		1	
Nabidae			1			1	1			1			1			
Pentatomidae	1	1		1		1		1		1	1		1			
Reduviidae	1	1	1	1	1	1		1			1		1		1	1
Scutelleridae	<u> </u>															
Homoptera																
Aphididae																
Cercopidae				-									1	L		
Cicadellidae		L									L					
Cicadidae									L							
Membracidae																
															1	1

# Dale and Jun Rong Powell

	JP	JP	59	26	26	9TC	JP	JP	2.6	26	26	SP	Tr	90	JF.	24
chicken form	7/1/A	7/3	718	7/10	7/15	7/17	7/22	7/24	7/59	7/31	8/5	8/7	8/12	8/11/2	8/19	8/21
Hymenoptera			- 1.													
Anthophoridae												1	2	1	11	/
Apidae	V	1/	1	1	1	1	V	1	V	1	1/	V	V	V.	V	1
Braconidae	1	V	1													11
Chrysididae												1	-			
Formicidae	1	1	1	V	1	V	V	$\bigvee$	$\checkmark$		$\checkmark$	$\bigvee$	V		V	
Halicitidae																
Ichneumonidae	1															
Mutillidae			1													
Pompilidae																
Scoliidae																
Sphecidae		V	1	$\checkmark$	V	$\checkmark$	V	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	V	V	V	V	~
Vespidae	$\bigvee$	V	V		V	V	1		1	V		0				
Lepidoptera																
Danaidae																
Hesperiidae										$\checkmark$				-		
Lycaenidae						$\checkmark$		-								
Noctuidae							-									
Nymphalidae				1												
Papilionidae			V		V		$\checkmark$		$\checkmark$		~		1			
Pieridae	V	$\vee$	V	V	V			V	V	V		V	1 V	V		1
Pyralidae								-								
Sphingidae																
Neuroptera				Part and												
Ascalaphidae	1	-	1									1				
Chrysopidae																
Hemerobiidae																
Myrmeleontidae										1						
Odonata																
Aeshnidae															V	-
Coenagrionidae															-	
Libellulidae		1		<u> </u>			-	1			1					1
Orthoptera															1,	
Acrididae	V	$\checkmark$	V	V	V	V	V	V	$\checkmark$	V	V	V			V	V
Gryllacrididae			-				_									
Gryllidae												-				
Mantidae					_											
Tettigoniidae																
OTHER																
	-															

Delhi Sands H	flower-loving Fly										Date and Jun Kong Powell							
	26	JP	26	59	SP	DUK	26	JP	_									
chicken Farm	8/27/19	8/29	9/2	9/4	9/9	9/11	9/16	9/18										
Coleoptera																		
Carabidae																		
Chrysomelidae																		
Coccinellidae																		
Curculionidae				1		1												
Rhipiphoridae		1																
Scarabaeidae	V	11		1		11												
Tenebrionidae																_		
Dermaptera			Aleren.												in the second			
Dintera																Con-spin		
Anioceridae	Personal Contraction		1			1	-											
Apilideo	-		1.7			+	+											
Bamhuliidaa					17													
Callinhanidae			V-	+			+											
Campnoridae							+							+				
Chironomidae	+													+				
Conopidae				+														
Muscidae			V	V		-		V										
Mydidae																		
Sarcophagidae								-										
Stratiomyidae																		
Syrphidae		-	<u> </u>															
Tabanidae										ļ	ļ					<u> </u>		
Tachinidae														L				
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Hemintera								1.5.6.5		1	12200	and the	a second	and the second	100000			
Anthocoridae					Constant of the second									1		-		
Lygaeidae	1	1	1	1	1	1	1	1	1	1				1				
Miridae	1		1	+	1									1				
Nabidae	1	1	1	1	1	1	1		1	1			1	1	1	1		
Pentatomidae	+			1	1	1	1	2/						+		<u> </u>		
Reduviidae	1	1	1	+		1	1 V			1						1		
Scutelleridae	-	1	-	1	1	-		1		1				+				
Scutenendae	+		+		+	+	+							+				
Homontera												Sec.			-			
Anhididae		1	1		-				+	1		-		1		1000000		
Carconidao		+	1		1	+							+	+		+		
Cicadallidaa	-															+		
Cicademdae														+		+		
Mamhaaidaa														-				
wiembracidae									+					+		+		
	+				+		+											
	1	1	1		1	1		1	1	1		1	1		1	1		

Deini Sanus r	TP TP TP TP TP TP PAR TP							52	Date and Juli Kong Fowen								
chicken Farm	8/27/m	3/29	9/2	9/4	919	alu	9/16	9/18									
Hymenoptera				1				100									
Anthophoridae									1								
Anidae	./	1/	V	1./	11/	1	V	V									
Praconidae				1.12		1											
Thrusididae					1	-											
Earmiaidaa	1.7	./	1./	11	1.1		1.7	./		1							
Taliaitidaa		V		V		V	V	V									
Hancindae					+												
Ichneumonidae					+		+										
Mutillidae																	
Pompilidae																	
Scoliidae																	
Sphecidae	V	V	V.	V	V	-	V	$\vee$									
Vespidae	$\vee$	V	V	V	V	1											
Lonidontari			12552				Net Sea										
Lepidoptera			1	-			-					-	1 Constanting			-	
Danaidae					17	1	1./	1.7									
Hesperiidae						V		V			+					-	
Lycaenidae						V	V	V									
Noctuidae									ļ							-	
Nymphalidae	-											ļ				-	
Papilionidae	$\vee$	V					V						ļ			ļ	
Pieridae	$\sim$	V.	V	V	$\checkmark$	1.							ļ		-		
Pyralidae																	
Sphingidae																	
Neuroptera																1000	
Ascalaphidae			1			1	1				-		1			1	
Chrussenides				-		+				+			1			-	
Unrysopidae						+				+						+	
Hemerobildae				+						+						-	
Myrmeleontidae									12							-	
Odonata																	
Aeshnidae					V		$ \vee $										
Coenagrionidae		$\vee$			$\checkmark$		$\bigvee$										
Libellulidae						1		$\bigvee$									
Orthontor			0.000		1.00000							Coloradores de la coloradore					
ortnoptera	1	1./	1.7	10000	1/	-			-			1	0.000000	10015460	1	1	
Acrididae	V		1V	V	V	1				+			+			-	
Gryllacrididae						-		+									
Gryllidae										-						-	
Mantidae			-														
Tettigoniidae																	
OTHER									1		1						
UTHER									+					1	1	-	
			1		-	-	1	-	1		1	1	1	1	1	1	