45th STREET PROJECT SITE

(APN Numbers 182-190-015, 182-190-016, and 182-190-017)

Focused Survey for the Delhi Sands Flower-loving Fly

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September 24, 2020

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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 an approximately 4.0 -acre site located in the City of Jurupa Valley, San Bernardino County. This property is under consideration for development in the future. The owner asked for focused surveys to be conducted to determine whether this proposed development would impact this federally endangered insect. This survey, the first, conducted by Powell Environmental Consulting, resulted in negative findings.

Site Description

The approximately 4.0-acre site is located in the city of Jurupa Valley, on a portion of the southern area of Section 17, Township 2 South, Range 5 West; San Bernardino Baseline and Meridian; USGS 7.5' Riverside West Quad (See Maps 1 & 2). The site is situated north of 45th Street, and north of Saxon Court, in Rubidoux, CA (APN Numbers 182-190-015, 182-190-016, and 182-190-017). It is rectangular in outline. The site is relatively flat and its elevation is approximately 840 feet above sea level. Immediately to the west and across 45th to the south are residential yards. To the north is a horse and goat paddock. To the east is an open field with primarily non-native, ruderal vegetation growing upon it. The field possesses some native vegetation.

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) (approximately 12.5% in northern area – the rest possess Ramona sandy loam, 0 to 5 percent slopes, severely eroded). 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 concur with the soil map. Most of the site possessed open areas of exposed soil. Across the center of the site (east to west), dividing the site into two, was a row of tamarisk trees. Less than half of the site was covered with vegetation,

Plants such as shortpod mustard **(**Hirschfeldia incana)**,** Russian thistle (*Salsola tragus*), puncture vine (Tribulus terrestris), Common sunflower (*Helianthus annuus*), and non-native grasses were found growing upon the site. One of the four DSFLF "indicator plants": annual bursage (*Ambrosia acanthicarpa*) was observed growing upon the site. California buckwheat (*Eriogonum fasciculatum*), California croton (*Croton californicus*), and telegraph weed (*Heterotheca*

grandiflora) were absent from the site. Disturbances observed on the site included 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. 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 45th Street Avenue Project site is located within the Jurupa Recovery Unit.

Methods

This focused survey was initiated on July 1, 2020 and continued with biweekly site surveys until September 19, 2020. 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 and Jun Powell (both 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. No members of the family Mydidae, to which the Delhi Sands Flower-loving Fly belongs to, were observed. Members of the closely related family Asilidae 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. Only one of the four DSFLF “indicator plants”: annual bursage (*Ambrosia acanthicarpa*) was observed growing upon the site.

Delhi Sands Flower-loving Fly Survey Results

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

Date	Time	Minutes Surveyed	Weather (at start)	Temp (°F)	Wind (mph) aver*/max
7/1/20[3]	10:00-10:25	50	Hazy	70°	1/3
7/4/20[3]	9:50-10:20	60	Clear	85°	2/4
7/8/20[2]	9:50-10:20	30	Clear	82°	1/3
7/11/20[3]	10:00-10:20	50	Clear	91°	2/4
7/15/20[2]	9:50-10:20	30	Clear	75°	0/1
7/18/20[3]	10:00-10:20	40	Clear	80°	1/3
7/22/20[2]	9:45-10:15	30	Clear	73°	0/1
7/25/20[3]	10:10-10:35	50	Clear	72°	0/0
7/29/20[2]	9:50-10:20	30	Clear	85°	0/1
8/1/20[3]	10:00-10:20	40	Clear	96°	1/3
8/5/20[3]	10:10-10:35	25	Clear	74°	0/0
8/8/20[3]	10:10-10:35	50	Clear	77°	1/3
8/12/20[2]	9:50-10:20	30	Clear	85°	0/1
8/15/20[3]	10:15-10:35	40	20% Clouds	98°	0/0
8/19/20[2]	9:45-10:15	30	Clear	90°	0/1
8/22/20[3]	10:05-10:30	50	Clear	91°	2/4
8/26/20[3]	10:00-10:25	50	Clear	85°	2/4
8/29/20[3]	10:15-10:35	40	Clear	81°	1/3
9/2/20[3]	12:55-13:15	40	Clear	91°	3/5
9/5/20[3]	10:00-10:20	40	Clear	100°	0/0
9/9/20[2]	9:50-10:20	30	Clear	82°	2/4
9/12/20[2]	10:00-10:30	30	Hazy	80°	0/1
9/16/20[2]	9:50-10:20	30	Hazy	84°	0/1
9/19/20[2]	9:45-10:15	30	Clear	85°	0/1

[1] Dale Powell
[2] 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 45th Street Project site, Jurupa Valley, have entirely read and reviewed the final report for the project and concur with the statements and conclusions made.

Dale A Powell — 9/24/2020

SIGNATURE **DATE**

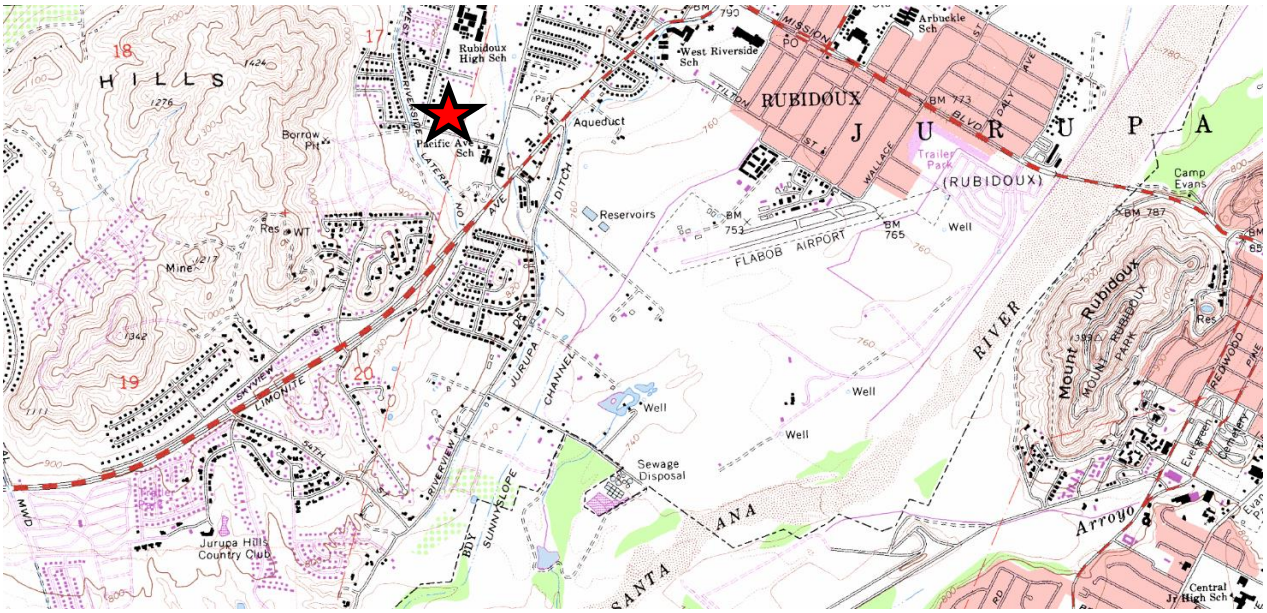
I, Jun Rong Powell, having performed focused surveys for the Delhi Sands Flower-loving Fly for the 45th Street Project site, Jurupa Valley, have entirely read and reviewed the final report for the project and concur with the statements and conclusions made.

Jun R. Powell — 9/24/2020

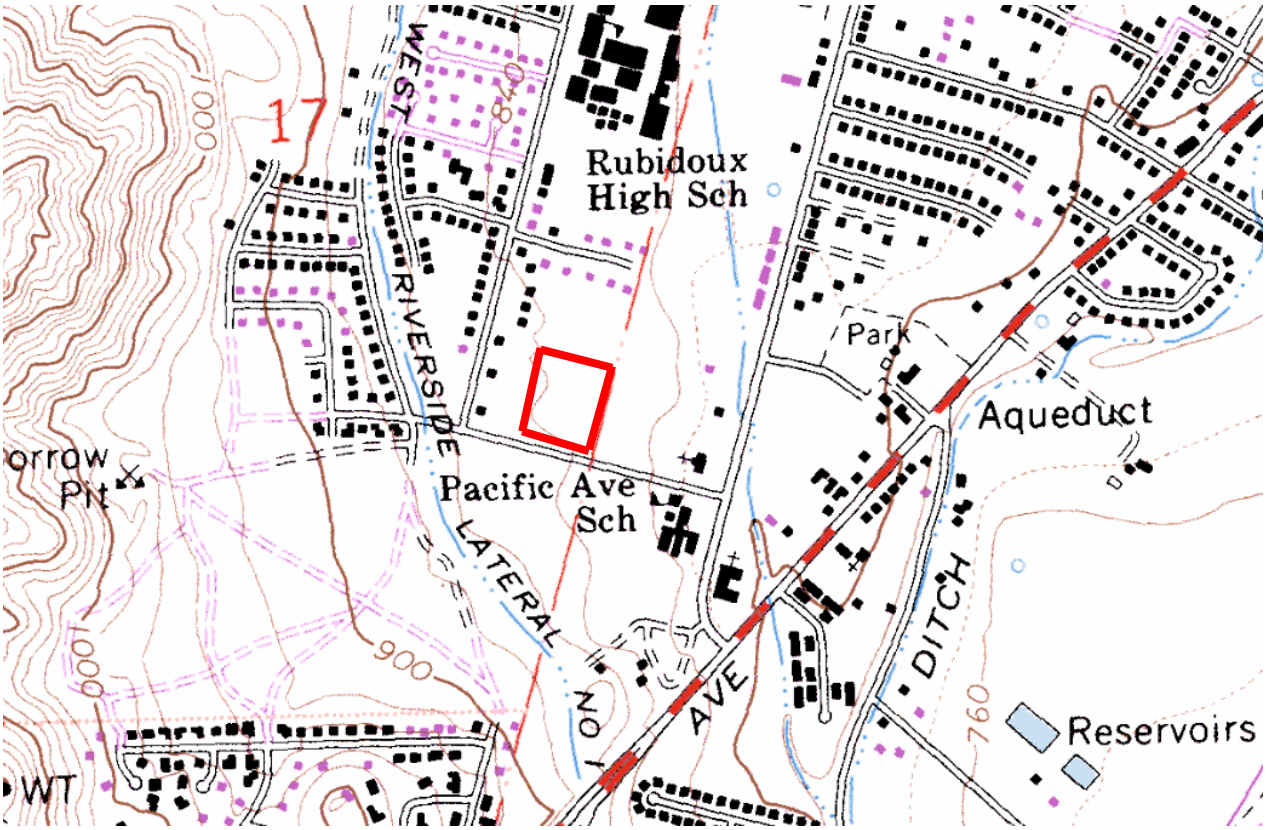
SIGNATURE **DATE**

45th STREET PROJECT SITE

Map 1. General location of the 45th Street Project Site.



Map 2. Location of the 45th Street Project Site.



45th STREET PROJECT SITE

Picture 1. Overview of the site facing south from the northeast corner.

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

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Picture 3. Overview of the site facing west from the northeast corner.

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

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Picture 5. Overview of the site facing northwest from the southeast corner.

Picture 6. Overview of the site facing north from the southeast corner.

FIELD NOTES

Delhi Sands Flower-loving Fly **Dale and Jun Rong Powell**

Site: 45th Street

2020

Date		9:00	10:00	11:00	NOON	1:00	2:00	3:00
7/1/20	Temp		70°					
Week	Wind		1/3					
1	Weath		Overcast					
7/4	Temp		85°					
Week	Wind		2/4					
1	Weath		clear					
7/8	Temp		82°					
Week	Wind		1/3					
2	Weath		clear					
7/11	Temp		91°					
Week	Wind		2/4					
2	Weath		clear					
7/15	Temp		75°					
Week	Wind		0/1					
3	Weath		clear					
7/18	Temp		80°					
Week	Wind		1/3					
3	Weath		clear					
7/22	Temp		73°					
Week	Wind		0/1					
4	Weath		clear					
7/25	Temp		~~72~~°					
Week	Wind		0/0					
4	Weath		clear					
7/29	Temp		85°					
Week	Wind		0/1					
5	Weath		clear					
8/1	Temp		96°					
Week	Wind		1/3					
5	Weath		clear					
8/5	Temp		74°					
Week	Wind		0/0					
6	Weath		clear					
8/8	Temp		77°					
Week	Wind		1/3					
6	Weath		clear					
8/12	Temp		85°					
Week	Wind		0/1					
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: 45th Street

2020

Date		9:00	10:00	11:00	NOON	1:00	2:00	3:00
8/15/2020	Temp		94°					
Week	Wind		0/0					
7	Weath		20% clouds					
8/19/20	Temp		90°					
Week	Wind		0/1					
8	Weath		clear					
8/22	Temp		91°					
Week	Wind		2/4					
8	Weath		clear					
8/26	Temp		85°					
Week	Wind		2/4					
9	Weath		clear					
8/29	Temp		81°					
Week	Wind		1/3					
9	Weath		clear					
9/2	Temp					91°		
Week	Wind					3/5		
10	Weath					clear		
9/5	Temp		100°					
Week	Wind		0/0					
10	Weath		clear					
9/9	Temp		82°					
Week	Wind		2/4					
11	Weath		clear					
9/12	Temp		80°					
Week	Wind		0/1					
11	Weath		Haze					
9/16	Temp		84°					
Week	Wind		0/1					
12	Weath		Haze					
9/19	Temp		85°					
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.

Delhi Sands Flower-loving Fly — **Dale and Jun Rong Powell**

2020

45th	7/1	7/4	7/8	7/11	7/15	7/18	7/22	7/25	7/29	8/1	8/5	8/8	8/12	8/15	8/19	8/22
Coleoptera																
Carabidae																
Chrysomelidae	✓✓	✓✓	✓	✓✓	✓	✓✓	✓	✓✓	✓	✓✓	✓✓	✓	✓	✓	✓	✓✓
Coccinellidae	✓															
Curculionidae																
Rhipiphoridae																
Scarabaeidae				✓	✓								✓			
Tenebrionidae	✓✓					✓				✓	✓	✓				✓
Dermaptera																
Diptera																
Apioceridae																
Asilidae		✓✓			✓	✓	✓	✓		✓	✓	✓		✓✓	✓	
Bombyliidae		✓✓		✓✓		✓✓	✓	✓✓	✓		✓	✓	✓	✓	✓	✓
Calliphoridae																
Chironomidae																
Conopidae																
Muscidae	✓✓	✓✓	✓	✓✓	✓	✓✓	✓	✓✓	✓	✓✓	✓✓	✓✓	✓	✓✓	✓	✓✓
Mydidae																
Sarcophagidae																
Stratiomyidae																
Syrphidae											✓					
Tabanidae																
Tachinidae																
Hemiptera																
Anthocoridae																
Lygaeidae		✓	✓		✓											
Miridae																
Nabidae																
Pentatomidae																
Reduviidae																
Scutelleridae																
Homoptera																
Aphididae																
Cercopidae																
Cicadellidae																
Cicadidae																
Membracidae																

Delhi Sands Flower-loving Fly — **Dale and Jun Rong Powell**

2020

45th

	7/1	7/4	7/8	7/11	7/15	7/18	7/22	7/25	7/29	8/1	8/5	8/8	8/12	8/15	8/19	8/22
Hymenoptera																
Anthophoridae																
Apidae	✓✓	✓✓	✓		✓	✓✓	✓	✓✓	✓	✓✓	✓	✓	✓	✓	✓	✓
Braconidae	✓											✓				
Chrysididae	✓															
Formicidae	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Halicitidae		✓		✓		✓		✓		✓	✓	✓		✓		✓
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																

Delhi Sands Flower-loving Fly 2020 **Dale and Jun Rong Powell**

45th	8/26	8/29	9/2	9/5	9/9	9/12	9/16	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																
Anthocoridae																
Lygaeidae																
Miridae																
Nabidae																
Pentatomidae																
Reduviidae																
Scutelleridae																
Homoptera																
Aphididae																
Cercopidae																
Cicadellidae																
Cicadidae																
Membracidae																

Delhi Sands Flower-loving Fly **Dale and Jun Rong Powell**

2020

45th	8/24	8/28	9/2	9/5	9/9	9/12	9/16	9/19								
Hymenoptera																
Anthophoridae																
Apidae	✓✓	✓✓	✓✓	✓✓	✓	✓	✓	✓								
Braconidae																
Chrysididae																
Formicidae																
Halicitidae	✓	✓	✓	✓	✓	✓	✓	✓								
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																