

Appendix F Delhi Sands Flower-loving Fly Focused Survey

Appendices

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Chaffey College Fontana Campus Site

**(11070 Sierra Ave. Fontana, CA 92337)
(Assessor's Parcel Numbers 0255-101-05 through 09)**

Focused Survey for the Delhi Sands Flower-loving Fly

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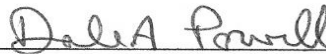
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Surveys Conducted From:

July 2, 2022 to September 19, 2022

Report Date:

September 20, 2022



Dale A. Powell Ph.D.

TE-006559-7

Chaffey College Fontana Campus Site

(11070 Sierra Ave. Fontana, CA 92337)

Habitat Survey for the Delhi Sands Flower-loving Fly

September 20, 2022

Introduction

This report presents the results of a focused survey for the Delhi Sands Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on the proposed Fontana Campus of Chaffey College, City of Fontana, in the County of San Bernardino. This property is under consideration for future development. 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, also resulted in negative findings.

Site Description

The approximately 14.3-acre site is located in the city of Fontana, on a portion of the southeast area of Section 30, Township 1 South, Range 5 West; San Bernardino Baseline and Meridian; USGS 7.5' Fontana Quad (See Maps 1 & 2). It is level and is approximately 1,050 feet above sea level. The site sits on Sierra Avenue and is west of Underwood Drive.

To the north of the site is a Home Depot. The land to the west of the site has been graded and construction activities are taking place. To the south is a water retention basin with vegetation growing upon it. East, across Sierra Avenue and north of Underwood Drive, are homes and to the south of Underwood Drive is a shopping center.

Historically the site was used for agriculture. According to a 1953 USGS topo map, approximately the northern fourth of the site was a vineyard and the remaining area an orchard. Years ago there were small buildings located upon the site that were probably associated with agricultural activities. The northeastern corner of the site had residences and associated buildings located upon it until 2020. They have been removed.

Disturbances observed on the site include the invasion of non-native plant and animal species, an old concrete foundation in the southern area of the site, and minor trash dumping.

The principal vegetative type located upon the site is ruderal mixed with native vegetation typically found on sandy and loamy soils of the area (See the partial plant list below).

One hundred percent of the site consists of Delhi fine sand (Db). (According to the Web Soil Survey (USDA, NRCS)). The Delhi series consists of very deep, somewhat excessively drained soils. They formed in wind modified material weathered from granitic rock sources. Delhi soils are on floodplains, alluvial fans and terraces. Slopes are 0 to 15 percent. Used for growing grapes, peaches, truck crops, alfalfa and for home sites. Principal native plants are buckwheat and a few shrubs and trees. Typical vegetation is annual grasses and forbs.

Much of the site is covered by unconsolidated exposed Delhi fine sand.

Of the Delhi Sands Flower-loving Fly “indicator” plants annual bursage (*Ambrosia acanthicarpa*) and telegraph weed (*Heterotheca grandiflora*) were observed growing upon the site.

The nearest know Delhi Sands Flower-loving Fly population is located approximately 2 miles southwest of the site at the foot of the Jurupa Mountains.

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 is largely unknown. The larvae develop underground. It not known whether the early stages of the fly are herbivorous, detritivorous, or carnivorous. 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 Chaffey College Fontana Campus site is located within the Jurupa Recovery Unit

Method

Prior to the initiation of the focused survey, the Carlsbad Field Office of the USFWS was notified on June 26, 2022 of Powell Environmental Consultant’s intent to perform the survey. This focused survey was initiated on July 2, 2022 and continued with biweekly site surveys until September 19, 2022. 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. No members of the family Mydidae, to which the Delhi Sands Flower-loving Fly belongs, were 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. Two of the Delhi Sands Flower-loving Fly “indicator” plants,

telegraph weed (*Heterotheca grandiflora*) and annual bursage (*Ambrosia acanthicarpa*) were observed growing upon the site.

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

Delhi Sands Flower-loving Fly Survey Results

Date	Time	Minutes Surveyed	Weather (at start)	Temp (°F)	Wind (mph) aver*/max
7/2/2022 ³	12:30-13:30	120	Clear	92°	4/7
7/4/2022 ³	12:15-13:00	90	Clear	81°	3/5
7/9/2022 ³	12:45-13:45	120	Clear	91°	2/4
7/11/2022 ²	13:05-14:15	70	Clear	91°	3/5
7/16/2022 ³	13:05-14:00	110	Clear	93°	5/8
7/18/2022 ³	13:00-13:45	90	Clear	93°	5/8
7/23/2022 ³	13:05-14:00	110	Clear	90°	4/6
7/25/2022 ³	13:15-14:05	100	Clear	92°	4/7
7/30/2022 ³	13:10-14:00	100	10% Clouds	94°	4/7
8/1/2022 ³	9:55-10:45	100	30% Clouds	86°	0/0
8/6/2022 ³	13:05-13:55	100	Clear	97°	3/5
8/8/2022 ²	13:25-14:35	70	Clear	96°	3/5
8/13/2022 ³	13:00-13:45	90	Clear	102°	5/8
8/15/2022 ¹	13:10-14:00		Clear	99°	2/4
8/15/2022 ²	13:30-14:00	80			
8/20/2022 ³	13:05-13:50	90	Clear	90°	4/6
8/22/2022 ¹	11:30-12:45	75	Clear	84°	4/6
8/27/2022 ³	12:55-13:45	100	Clear	91°	4/6
8/29/2022 ²	13:30-14:40	70	Clear	92°	3/5
9/3/2022 ³	12:40-13:25	90	Clear	105°	3/5
9/5/2022 ³	12:50-13:30	80	Clear	107°	4/6
9/11/2022 ³	10:00-10:45	90	30% Clouds	81°	3/5
9/13/2022 ²	12:10-13:25	75	40% Clouds	85°	2/4
9/17/2022 ³	10:30-11:15	90	Light Overcast	71°	1/3
9/19/2022 ²	13:10-14:20	70	Clear	83°	2/4

¹ Dale Powell

² Jun Powell

³ Dale and Jun Powell

* Over a 20 second period.

REFERENCES

- Emmel, T.C. and J.F. Emmel. 1973. The Butterflies of Southern California. Natural History Museum of Los Angeles. Science Series 26: 1-148.
- Hickman, J.C. (editor). 1993. The Jepson Manual: Higher Plants of California. University of California Press, Berkeley, California. 1400 pp.
- Rogers, R. and M. Mattoni. 1993. Observations on the natural history and conservation biology of the giant flower loving flies, *Rhaphiomidas* (Diptera: Apioceridae). Dipterological Research 4(1-2): 21-34.
- Scott, S. (editor). 1999. Field Guide to the Birds of North America. Third Edition. National Geographic Society, Washington D.C. 480 pp.
- U.S. Department of Agriculture, Soil Conservation Service, 1971. Soil Survey of Western Riverside Area, California. U.S. Gov. Printing Office, Washington D.C. 188 pp.
- 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 Chaffey College Fontana Campus site, have entirely read and reviewed the final report for the project and concur with the statements and conclusions made.

Dale A Powell

September 20, 2022

SIGNATURE

DATE

I, Jun Rong Powell, having performed focused surveys for the Delhi Sands Flower-loving Fly for the Chaffey College Fontana Campus site, have entirely read and reviewed the final report for the project and concur with the statements and conclusions made.

Jun R. Powell

September 20, 2022

SIGNATURE

DATE

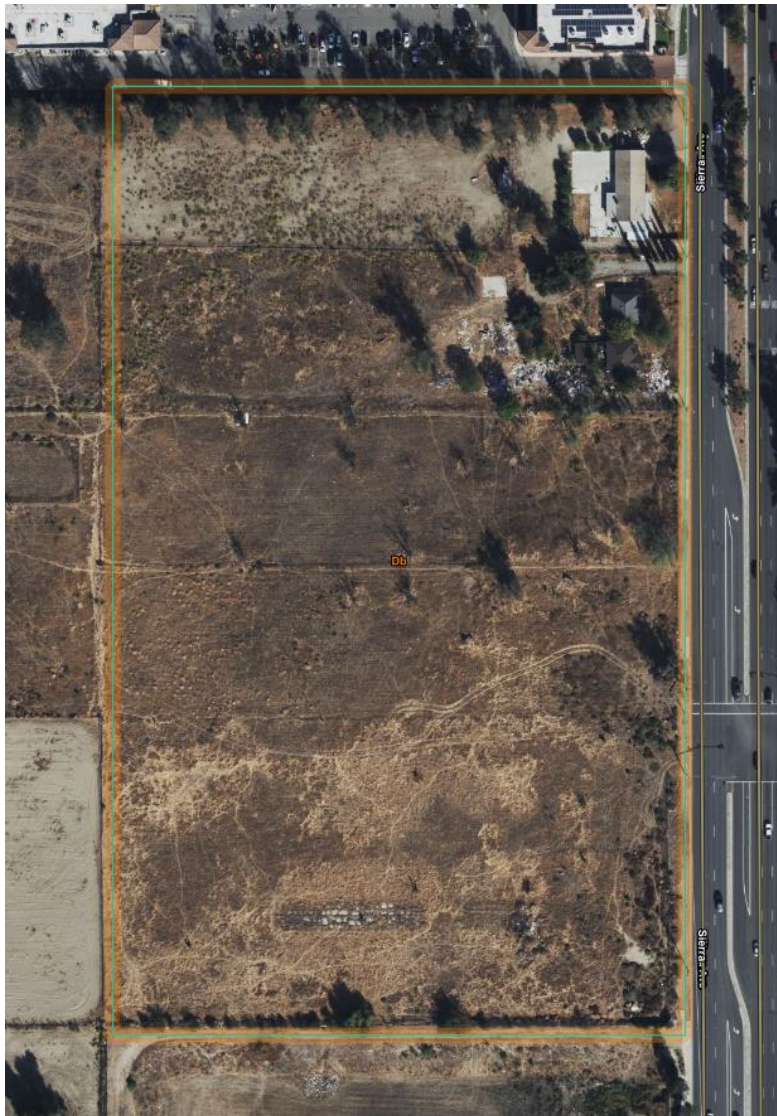
MAP 1. General Location of the Site.



MAP 2. Location of the Site.



MAP 3. Map of Soils.



San Bernardino County Southwestern Part, California (CA677)			
San Bernardino County Southwestern Part, California (CA677)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Db	Delhi fine sand	14.5	100.0%
Totals for Area of Interest		14.5	100.0%

Proposed Chaffey College Fontana Campus Site

Picture 1. Overview facing south from the northeastern corner.



Picture 2. Overview facing southwest from the northeastern corner.



Proposed Chaffey College Fontana Campus Site

Picture 3. Overview facing west from the northeastern corner.



Picture 4. Overview facing east from the northwestern corner.



Proposed Chaffey College Fontana Campus Site

Picture 5. Overview facing southeast from the northwestern corner.



Picture 6. Overview facing south from the northwestern corner.



Proposed Chaffey College Fontana Campus Site

Picture 7. Overview facing north from the southwestern corner.



Picture 8. Overview facing northeast from the southwestern corner.



Proposed Chaffey College Fontana Campus Site

Picture 9. Overview facing east from the southwestern corner.



Picture 10. Overview facing west from the southeastern corner.



Proposed Chaffey College Fontana Campus Site

Picture 11. Overview facing northwest from the southeastern corner.



Picture 12. Overview facing north from the southeastern corner.



FIELD NOTES

Delhi Sands Flower-loving Fly

Dale and Jun Rong Powell

Site: *Sierra Ave*

Date		9:00	10:00	11:00	NOON	1:00	2:00	3:00
7/2/22	Temp				92°			
Week	Wind				4/7			
1	Weather				SUN			
7/4	Temp				81°			
Week	Wind				3/5			
1	Weather				SUN			
7/7	Temp				91°			
Week	Wind				2/4			
2	Weather				SUN			
7/11	Temp					91°		
Week	Wind					3/5		
2	Weather					Clear		
7/16	Temp					97°		
Week	Wind					5/8		
3	Weather					SUN		
7/18	Temp					96°		
Week	Wind					5/8		
3	Weather					SUN		
7/22	Temp					90°		
Week	Wind					4/6		
4	Weather					SUN		
7/25	Temp					92°		
Week	Wind					4/7		
4	Weather					SUN		
7/30	Temp					94°		
Week	Wind					4/7		
5	Weather					100% cloud		
8/1	Temp					86°		
Week	Wind					0/0		
5	Weather					35% cloud		
8/6	Temp					97°		
Week	Wind					2/5		
6	Weather					SUN		
8/8/22	Temp					96°		
Week	Wind					3/5		
6	Weath					SUN		
8/13	Temp					102°		
Week	Wind					5/8		
7	Weather					SUN		

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

Delhi Sands Flower-loving Fly

Dale and Jun Rong Powell

Site: Sierra Ave

Date		9:00	10:00	11:00	NOON	1:00	2:00	3:00
2/15/22	Temp					99°		
Week	Wind					2/4		
7	Weather					Sun		
8/26	Temp					90°		
Week	Wind					4/6		
7	Weather					Sun		
8/22	Temp			84°				
Week	Wind			4/6				
8	Weather			Sun				
8/27	Temp					91°		
Week	Wind					4/6		
7	Weather					Sun		
8/29	Temp					92°		
Week	Wind					3/5		
9	Weather					Sun		
9/3	Temp				105°			
Week	Wind				2/5			
10	Weather				Sun			
9/5	Temp				107°			
Week	Wind				4/6			
10	Weather				Sun			
9/11	Temp		81°					
Week	Wind		3/5					
11	Weather		30% clouds					
9/13	Temp				85°			
Week	Wind				2/4			
11	Weather				40% clouds			
9/17	Temp		71°					
Week	Wind		1/3					
12	Weather		light overcast					
9/19	Temp					83°		
Week	Wind					2/4		
12	Weather					clear		
	Temp							
Week	Wind							
	Weath							
	Temp							
Week	Wind							
	Weather							

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

Delhi Sands Flower-loving Fly

Dale and Jun Rong Powell

Sierra Ave	7/2	7/4	7/9	7/11	7/16	7/17	7/20	7/25	7/30	8/1	8/6	8/8	8/12	8/15	7/20	8/22
Coleoptera																
Carabidae												✓				✓
Chrysomelidae			✓	✓								✓				✓
Coccinellidae																
Curculionidae	✓	✓					✓	✓	✓		✓	✓	✓	✓		
Rhipiphoridae																
Scarabaeidae		✓								✓						✓
Tenebrionidae																✓
Dermoptera																
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

Sierra Ave	7/22	7/4	7/9	7/11	7/16	7/17	7/23	7/25	7/26	8/1	8/6	8/8	8/12	8/15	8/20	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

Dale and Jun Rong Powell

PP P PP PP PP PP PP PP

Siwa	8/29/28	9/2	9/5	9/11	9/13	9/17	9/19											
Coleoptera																		
Carabidae																		
Chrysomelidae	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					
Coccinellidae																		
Curculionidae																		
Rhipiphoridae																		
Scarabaeidae	✓	✓																
Tenebrionidae																		
Dermoptera																		
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

9/9 9/10 9/11 9/12 9/13 9/14 9/15 9/16 9/17 9/18 9/19

Sierra	9/9	9/10	9/11	9/12	9/13	9/14	9/15	9/16	9/17	9/18	9/19								
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																			