MEMORANDUM

To: U.S. Fish and Wildlife Service
Carlsbad Field Office
(Ms. Stacy Love, Recovery Permit Coordinator)

From: Psomas (Irena Mendez, PhD)

Date: October 1, 2015

Subject: Results of 2015 Presence/Absence Surveys for El Segundo Blue Butterfly at the Ballona Wetlands Ecological Reserve, Playa Del Rey, Los Angeles County, California

Attachments: 1. Floral and Faunal Compendium
2. Field Notes
3. Site Photographs
4. Video Clip of Site (Provided in Electronic Format Only In lieu of 35 mm Slides)

Executive Summary

This memorandum is being transmitted to the U.S. Fish and Wildlife Service (USFWS) in compliance with survey and associated reporting requirements specified in USFWS Recovery Permit TE218630 (Recovery Permit) issued to Irena Mendez. The El Segundo Blue butterfly (ESB; *Euphilotes battoides allyni*) was determined to be present at the Ballona Wetlands Ecological Preserve as a result of presence/absence surveys conducted on June 27, 2013. Surveys were conducted during the 2015 flight season for the purposes of collecting long-term distributional data to enhance its survival in the wild. Recommendations are proposed in support of on-going habitat restoration efforts.

- Surveys were conducted between June 19 and August 21, 2015 on a weekly basis pursuant to the survey method described in Section 5 (b) of the Recovery Permit.
- Assuming that the butterfly emerged the week of June 14, the 2015 adult flight season at the Ballona dunes had a duration of approximately ten (10) weeks with a peak in numbers of adult butterflies around week four and a ratio of male to female butterflies of roughly 2:1. A total of 504 butterflies were observed in 2015 compared to 199 butterflies observed in 2013.
- Adults were estimated to emerge the week of June 14 and peak the week of July 6.
- Coast buckwheat (*Eriogonum parvifolium*) plants have significantly increased in numbers since 2013 based on estimates collected during 2015 surveys.
- The bee box observed in 2013 has been removed from the site.
- The dumpster was moved away from core habitat.
- No incidental take is authorized by the recovery permit; no incidental take occurred during 2015 surveys.
- No larval surveys are authorized by the permit and no larval surveys were conducted.

Introduction

Psomas Biologist Irena Mendez, Ph. D., conducted presence/absence surveys for the El Segundo Blue butterfly (*Euphilotes battoides allyni*) at the request of the Friends of Ballona Wetlands Board Member, Dr. Edith Read. The Friends of Ballona Wetlands is a non-profit organization whose mission is to champion the restoration and protection of the Ballona Wetlands, involving and educating the public as advocates and stewards. [1] The organization has been actively restoring the Ballona Wetlands for over 35 years including the dune fragment at the western terminus of the larger Ballona Wetlands. The Ballona Wetlands Ecological Reserve (Reserve) was so designated upon its purchase by the State of California in 2003.

Discussions with Friends of Ballona Wetlands Board Member, Dr. Edith Read revealed that in 2011, El Segundo Blue butterfly individuals had been observed within dune habitat at the Ballona Wetlands Ecological Preserve in the community of Playa del Rey, Los Angeles, California. Presence/absence surveys were conducted during the 2013 flight season pursuant to the special terms and agreements of U.S. Fish and Wildlife Service (USFWS) Recovery Permit (TE-218630) issued to Irena Mendez, Senior Project Manager and Habitat Restoration Specialist with Psomas (Psomas 2013).

This report documents the results of El Segundo Blue butterfly presence/absence surveys at the Ballona dune fragment for the 2015 flight season and fulfills the reporting requirements specified in Section 5g of the Recovery Permit.

Project Location

The project is located in the community of Playa del Rey, City of Los Angeles, in Los Angeles County, California. The site lies in an area bounded by Ballona Creek to the north; the Ballona Wetlands to the east; commercial property and Culver Boulevard to the south; and residential property and Vista del Mar Boulevard to the west. Towards the north is the Marina Del Rey Channel and its associated marina, and towards the south is Los Angeles International Airport (LAX). (Figure 1, *Project Location*). The Project site is depicted on the U.S. Geological Survey (USGS) 7.5 minute series Venice Topographic Quadrangle (Sausal Redondo Land Grant, Township 2S, Range 15West). The project site is accessed via Culver Place through a locked security gate at the end of the parking lot for the commercial property.

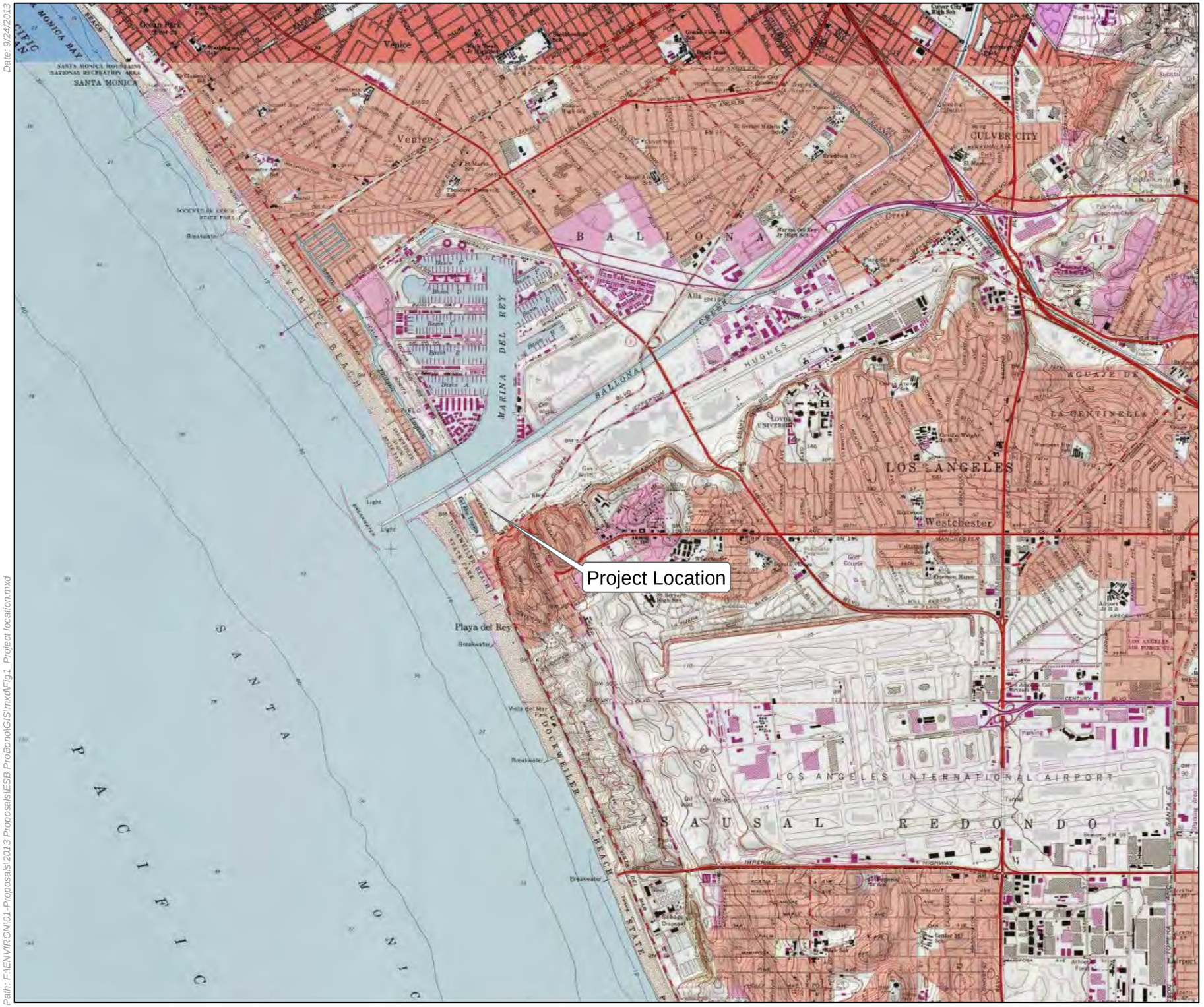
Methods

This section describes the methods employed in support of plant community mapping, establishment of the survey route, and presence/absence surveys.

Plant Community Mapping/Survey Route: Reconnaissance surveys of the Ballona dune site were conducted in 2013 to identify areas containing coast buckwheat, the food plant for the El Segundo Blue butterfly. As a result of reconnaissance surveys, a plant community map was

[1] Available at: http://www.ballonafriends.org/about.html

Date: 9/24/2013



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El Segundo Blue Butterfly Survey
Ballona Wetlands Ecological Reserve
Playa del Rey, CA

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United States Geological Survey 7.5 minute
Venice Topographic Quadrangle

Project Location

PSOMAS

Figure 1

developed (Figure 2, *Plant Community* Map), and based on the location of coast buckwheat, a survey route was established (Figure 3, *Survey Route*) (Psomas 2013).

The results of the field mapping for both vegetation polygons and coast buckwheat polygons were incorporated into the plant community map and the survey route map using a geographic information system (GIS). The total area of each plant community in acres was calculated using GIS and the relative distribution or percentage of the total site.

The description of plant communities follows the classification system provided in *A Manual of California Vegetation* [2] and cross-referenced to vegetation series described in *Preliminary Descriptions of the Terrestrial Natural Communities of California.*[3] Scientific names and common names are according to *The Jepson Manual*.[4] Common names not available from *The Jepson Manual* are taken from *A Flora of Southern California*[5]

ESB Surveys: Coordination with the USFWS was undertaken on June 2, 2015 notifying of the intent to conduct surveys for the ESB during the 2015 flight season. Notification took place at least 15 days prior to conducting surveys pursuant to USFWS Recovery Permit TE218630 (Recovery Permit) issued to Irena Mendez.

Surveys were conducted on a weekly basis during the 2015 flight season. Ten (10) surveys were conducted between June 19 and August 21, 2015. Surveys were conducted consistent with the survey method described in the Recovery Permit. Specifically, once the survey route was established, the surveyor covered the entire route at a relatively slow pace with special care taken to avoid harassment of butterflies present. Areas containing coast buckwheat plants along the survey route were closely examined for the presence/absence of ESB. Surveys were conducted between 9:00 AM and 4:00 PM local time. Weather conditions, including air temperatures, wind speed and direction and cloud cover were recorded. No surveys were conducted when conditions included rain or drizzle, when air temperatures were below 65 degrees Fahrenheit, or during winds of more than 5 miles per hour (Beaufort Scale = 2, Light Breeze).[6] All plants and animals observed, although not exhaustive, were identified to taxa level and compiled taxonomically in a floral compendium (Attachment 1, *Floral and Faunal Compendium*).

Results

As a result of reconnaissance surveys and plant community mapping it was determined that the 12.63-acre site supports eight (8) plant communities as well as developed trails and access roads

[2] Sawyer, J.O., and T. Keeler-Wolf. 2008. *A Manual of California Vegetation.* Sacramento, CA: California Native Plant Society.

[3] Holland, Robert F. 1986. *Preliminary Descriptions of the Terrestrial Natural Communities of California.* Sacramento, CA: California Department of Fish and Game.

[4] Hickman, J.C. (Ed.). 1993. *The Jepson Manual: Higher Plants of California.* Berkeley, CA: University of California Press.

[5] Munz, P. 1974. *A Flora of Southern California*. Berkeley, CA: University of California Press.

[6] Available at: http://en.wikipedia.org/wiki/Beaufort_scale

Date: 11/13/2013

El Segundo Blue Butterfly Survey
Ballona Wetlands Ecological Reserve
Playa del Rey, CA

Legend

Plant Community

- Silver dune lupine-mock heather scrub (5.73 ac)
- Arroyo willow thickets (2.17 ac)
- Salt grass flats (1.02 ac)
- Semi-natural woodland stands (0.96 ac)
- Developed (0.79 ac)
- Wild oats grassland (0.71 ac)
- Landscaped (0.67 ac)
- Ice plant mats (0.35 ac)
- Semi-natural woodland stands* (Acacia sp.) (0.23 ac)

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0 50 100 200 300 400

Feet

Plant Community Map

PSOMAS

Figure 2

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Date: 10/5/2015

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El Segundo Butterfly Surveys
Ballona Wetlands Ecological Reserve
Playa Vista, CA

Legend

Survey route

Buckwheat survey locations

1 Buckwheat area

Buckwheat satellite

N

0 50 100 200 300

Feet

Survey Route

PSOMAS

Figure 3

devoid of vegetation (Figure 2) (Table 1, *Plant Communities of the Ballona Dunes and Vicinity*). In keeping with the scope of the project to conduct presence/absence surveys for the ESB, plant community mapping efforts focused on mapping the vegetation assemblages comprised of dune scrub and areas within the vicinity of dune scrub vegetation. Plant communities observed during 2015 survey efforts were consistent with plant communities mapped in 2013:

Table 1
Plant Communities of the Ballona Dunes and Vicinity

Plant Community	Acres
Silver Dune Lupine-Mock Heather Shrubland Alliance	**5.73**
Arroyo Willow Thickets Shrubland Alliance	**2.17**
Salt Grass Flats Herbaceous Alliance	**1.02**
Semi-Natural Woodland Stand (Pepper Tree or Myoporum Groves)	**0.96**
Developed	**0.79**
Wild Oats Grasslands Semi-Natural Herbaceous Stands	**0.71**
Landscaped	**0.67**
Ice Plant Mats Semi-Natural Herbaceous Stands	**0.35**
Semi-Natural Woodland Stand (Acacia Groves)	**0.23**
TOTAL	**12.63**

Description of Plant Communities: A description of plant communities at the Ballona dune site and vicinity is provided below together with a video clip that captures typical occupied habitat.

> **Silver Lupine-Mock Heather Shrubland Alliance:** In this shrubland alliance, silver dune lupine (*Lupinus chamissonis*) and mock heather (*Ericameria ericoides*) characteristically occur together or alone in the shrub canopy with California sagebrush (*Artemisia californica*), beach sagebrush (*A. pycnocephala*), California ephedra (*Ephedra californica*), Menzies' goldenbush (*Isocoma menziesii*), Bush lupine (*Lupinus arboreus*), beavertail cactus (*Opuntia littoralis*), and poison oak (*Toxicodendron californica*). Emergent tall shrubs of lemonadeberry (*Rhus integrifolia*) may be present at low cover. Shrubs are generally below one meter in height with a canopy is open to continuous and an herbaceous layer that is open to intermittent.[7] This plant community can be cross-referenced to the Southern Dune Scrub community as described by Holland (Element Code: 21330).[8]
>
> At the Ballona dune site, this plant community is located between the residential bluff-top to the west of the site and the marsh and occupies 5.73 acres. It is represented primarily by

[7] Sawyer, J.O., and T. Keeler-Wolf. 2008. *A Manual of California Vegetation.* Sacramento, CA: California Native Plant Society.

[8] Holland, Robert F. 1986. *Preliminary Descriptions of the Terrestrial Natural Communities of California.* Sacramento, CA: California Department of Fish and Game.

silver dune lupine, its bluish-green leaf coloration clearly visible on the aerial photograph base layer of the plant community map (Figure 2). The mock heather component that is sometimes present together with silver dune lupine, as reported by Sawyer and Keeler-Wolf, is absent; however, many other dune scrub associated species are present resulting from a mix of extant dune species and out-planted species as a result of on-going restoration efforts. These include California sagebrush, wild tarragon (*A. druncunculus*), coast buckwheat, California sunflower (*Encelia californica*), bladderpod (*Isomeris arborea*), goldenbush (*Isocoma menziesii*), lessingia (*Lessingia filanginifolia*), branching phacelia (*Phacelia ramossisima*)**,** deerweed (*Lotus scoparius*), croton (*Croton californica*), sand verbena (*Abronia umbellata*), dune primrose (*Camissonia chieranthifolia*), beach bur (*Ambrosia chamissonis*), two-toned everlasting (*Gnaphalium bicolor*) and everlasting (*G. microcephallum*). Several emergent lemonadeberry shrubs are also present. Adjacent to the residential bluff-top this plant community is heavily disturbed by landscape vegetation that has overgrown property boundaries, but in some instances extends very close to the residents' backyards. Open areas along the back dune and dune flats contain a significant cover of non-native annual grasses that over the years has formed a persistent mat of duff. The eastern-most extension of this plant community contains large areas of non-natives trees (see Semi-Natural Woodland Stands description below) and is adjacent to a highly disturbed area comprised of non-native grasses and weedy species such as filaree (*Erodium* sp.) (see Wild Oats Grassland description below). It is not known what portion(s) of this plant community is a result of years of on-going restoration efforts that continue today. Currently weedy areas within this community are being cleared for eventual planting with dune species that are grown off-site from site specific seed collected by the Conservation Corps.

Arroyo Willow Thickets Shrubland Alliance: In this shrubland alliance arroyo willow (*Salix lasiolepis*) is dominant or co-dominant in the shrub or tree canopy with bigleaf maple (*Acer macrophyllum*), coyote brush (*Baccharis pilularis*), mulefat (*B. salicifolia*), button willow (*Cephalanthus occidentalis*), dogwood (*Cornus sericea*), wax myrtle (*Morella californica*), sycamore (*Plantanus racemosa*), black cottonwood (*Populus trichocarpa*), Fremont cottonwood (*P. fremontii*), willow species (*Salix* spp.), elderberry (*Sambucus mexicana*). As a shrubland, emergent trees may be present at low cover. Plants are generally less than 10 meters high with a canopy that is open to continuous and a variable herb layer. This plant community can be cross-referenced to the Southern Willow Scrub community described by Holland (Element Code: 63320).

At the Ballona dune site, the willow thickets are distributed in rather large groves within the dune scrub community and contain thickets of arroyo willow (*Salix lasiolepis*) and sandbar willow (*S. exigua*), with emergent arboreal arroyo willows and emergent cottonwoods (*Populus fremontii*). It occupies 2.17 acres. Some of the thickets contain non-native myoporum and acacias, especially those thickets in proximity to the channelized Ballona Creek. While most of the vegetation at the dunes did not appear to be affected by the current four-year-long drought, the arroyo willow thicket community had areas with willows that were dead or dying towards the central portion of the dunes. By contrast, along the western portion of the site, several dozen sandbar willow recruits were observed.

Salt Grass Flats Herbaceous Alliance: In this herbaceous alliance, salt grass (*Distichlis spicata*) is dominant or co-dominant in the herbaceous layer with bentgrass (*Agrostis viridis*), beach bur (*Ambrosia chamissonis*), yerba mansa (*Anemopsis californica*), saltbush (*Atriplex prostata*), (*Batis maritima*), ripgut brome(*Bromus diandrus*), brass buttons (*Cotula coronopifolia*), spikerush (*Eleocharis palustris*), alkali heath (*Frankenia salina*), marsh jaumea (*Jaumea carnosa*), pickelweed (*Sarcocornia pacifica*), among multiple other species. This plant community can be cross-referenced to the Southern Coastal Salt Marsh community described by Holland (Element Code: 52120).

At the Ballona dune site, the salt grass flats are located eastward of the dune scrub community transitioning into the marshlands. It occupies 1.02 acres. Salt grass is the dominant species with other species present to a lesser degree including wild heliotrope (*Heliotropium curassavicum*), twiggy wreath plant (*Stephanomeria virgata*), and non-native annual grasses and associated duff. Emergent shrubs include goldenbush, mulefat (*Baccharis salicifolia*) and saltbush (*Atriplex lentiformis*) and emergent herbaceous vegetation includes pickleweed. During 2015 surveys, a large area was observed with creeping wild rye (*Elymus triticoides*) adjacent to survey area #5 that had not been seen before.

Semi-Natural Woodland Stand (Pepper Tree or Myoporum Groves): This plant community is characterized by trees that are less than 18 m tall with an open to continuous canopy. Shrubs are infrequent or common and an herbaceous layer that is simple to complex. The pepper tree component is represented by two species of pepper tree: Brazilian pepper tree (*Schinus terebinthifolia*)[9] and Peruvian pepper tree (*S. molle*). Both are common ornamentals that have escaped from cultivation. The Peruvian pepper tree occurs in riparian sites of southern California. Birds disperse the colored fruits allowing seedlings to establish in wildland vegetation. Myoporum (*Myoporum laetum*) occurs in central and southern California as an escaped exotic and forms dense single-species stands in coastal areas. Its purple fruits are attractive to birds, which disperse them. Invasive palm trees can also be found in these semi-natural woodland stands including the Canary Island date palm (*Phoenix canariensis*) and Mexican fan palm (*Washingtonia robusta*). Holland does not provide a description for this plant community.

At the Ballona Dunes, the semi-natural woodland stands are mostly represented by dense stands of myoporum with little shrub or herbaceous understory development. Invasive palms are also present within these dense stands. Several smaller pepper tree groves are also present. This plant community occupies 0.96 acres is found interspersed within the Siler Dune Lupine-Mock Heather scrub as well as adjacent to marsh habitat.

Developed: Developed areas include all trails and access roads in the vicinity of the Ballona dunes. The Southern California Gas Company operates a well which it routinely monitors via an access road within their easement. This access road is also used to service

[9] Sawyer, J.O., and T. Keeler-Wolf. 2008. *A Manual of California Vegetation.* Sacramento, CA: California Native Plant Society.

the dumpster used by the Friends of Ballona Wetlands for on-going restoration efforts. The remaining trails have been so designated to support educational tours as well as to facilitate habitat restoration efforts. Trails and access roads are comprised of sandy soils.

Wild Oats Grassland: In this semi-natural herbaceous stand, wild oats (*Avena barbata* or *A. fatua*) is dominant or co-dominant in the herbaceous layer. Emergent trees and shrubs may be present at low cover with herbs less than 1.2 m tall and an open to continuous cover. Wild Oats Grasslands can be cross-referenced to Non-Native Grassland as described by Holland (Element Code: 42200).

At the Ballona dune site, this plant community is located adjacent to commercial property along Culver Boulevard and adjoins the ice plant mats and stands of pepper trees in the same area. At the time of the surveys other native and non-native annual species that likely occur within this community could not be identified. However, likely species include filarees, ripgut brome, wild radish, and tocalote (*Centaurea melitensis*) among others. This community occupies 0.71 acres.

Landscaped: The landscaped plant community at the Ballona dune site adjoins the residential properties along the western border of the dune and overflows in many cases onto the back dune remnant of the dune site. It occupies 0.67 acres and has not been delineated to take into account property lines. Prevalent species include bougainvillea, jade plant, century plant, rubber tree, and garden varieties of agaves, cacti and succulents. Also present are non-native weedy species including wild radish (*Raphanus sativa*), wild oats, and ripgut brome among others. Holland does not provide a description for this plant community.

Ice Plant Mats Semi-Natural Herbaceous Stands: In this semi-natural herbaceous stand, ice plant (*Carpobrotus edulis*) or other ice plant are dominant in the herbaceous layer and shrubs may be present at low cover with herbs lower that 50 cm high and a canopy that is intermittent or continuous. This plant community can be cross-referenced to the Southern Dune Scrub community described by Holland (Element Code: 21330).

At the Ballona dune site, this plant community is adjacent to commercial property along Culver Boulevard. It is a continuous canopy of ice plant dotted with acacias, pepper trees and an occasional palm tree. It occupies 0.35 acres and is constrained per the scope of this project but extends further to the northeast.

Semi-Natural Woodland Stand (Acacia Groves): While Sawyer and Keeler-Wolf do not specifically describe semi-natural woodland stands comprised of acacias, it is described herein as two acacia species in particular (*Acacia retinodes* and *A. cyclops*) form significant semi-natural woodland stands along coastal areas in southern California. Both acacia species are common ornamentals that have escaped from cultivation and analogous to the pepper tree and Myoporum, birds ingest the brightly-colored aril and disperse the seeds that are well suited to germinate in sandy coastal areas. Holland does not provide a description for this plant community. The acacia stands at the Ballona dunes site occupy

0.23 acres and is constrained per the scope of this project but extends further to the northeast along the Ballona channel

Description of the Survey Route

Nine survey areas were identified and mapped in 2013 (Psomas 2013). The survey route proceeded along the northward extension of the dune adjacent to the residential properties up to area 7 then headed southward in proximity of the marsh to end at area 9. The survey route extends for 2,798 feet (0.53 mi), and was generally completed within 2-3 hours. A brief summary describing each area is provided below. The numbers of buckwheat plants in each area was updated based on 2015 estimates. In some cases the numbers are provided in a range.

- Area 1 contains approximately 19-21 plants distributed in 2 clusters. It is located within the Silver Dune Lupine-Mock Heather plant community and is adjacent trails and an interpretive area that includes a Native American dwelling. There is quite a bit of native recruitment of coast buckwheat at this site as well as several senescent plants. The numbers of senescent plants is likely responsible for the low numbers of butterflies observed at this site during the survey period. Twenty-eight butterflies were observed in Area 1; 6 percent of the total number of butterflies observed; with an estimated 1.4:1 butterfly-to-plant ratio).

- Area 2 contains approximately 15 plants distributed in 3 clusters. Similar to Area 1, it is located within the Silver Dune Lupine-Mock Heather plant community. There are adjacent trails and an interpretive area that includes a Native American dwelling. Area 2 was observed to support 47 butterflies during this flight season; 9 percent of the total number of butterflies observed; and an estimated 3:1 butterfly to plant ratio.

- Area 3 contains approximately 10-12 plants in a recently restored area with California encelia and bladderpod. The plants are robust with high numbers of flower heads to support the ESB. Area 3 was observed to 33 butterflies during this flight period; 7 percent of the total number of butterflies observed; and an estimated 3:1 butterfly to plant ratio.

- Area 4 contains approximately 70-80 plants. It is the largest and most densely planted coast buckwheat area within the dune site and also supports the largest numbers of butterflies. It is adjacent to a large arroyo willow thicket and also adjoins the Southern California Gas Company access road. Two small satellites of Area 4 contain a few unremarkable plants and are located en route to Area 5. Area 4 was observed to support 161 butterflies during this fight period; 32 percent of the total number of butterflies observed; and an estimated 2.1 butterfly to plant ratio.

- Area 5 contains approximately 51 plants. It is densely planted but is also characterized by dense mats of duff created by the dense non-native grass cover present at this site. This area abuts landscaped vegetation that spills over from the adjoining residences and is physically separated from Area 4 by the large arroyo willow thicket mentioned above. It

was observed to support 111 butterflies during this flight period; 22 percent of the total number of butterflies observed, and an estimated 2:1 butterfly to plant ratio.

- Area 6 contains approximately 20-22 plants. One large California buckwheat individual is also present. This site is notable both for the high numbers of butterflies that were observed during the survey period as well as for the proximity of occupied habitat to the residences directly adjoining Area 6. Some of the food plants showed evidence of senescence and no evidence of native recruitment was observed, likely due to the duff that covers almost all of the open area in between the food plants. One small satellite of Area 6 can be found en route to Area 7. A total of 75 butterflies were observed during this survey period for Area 6 and its satellite; 15 percent of the total number of butterflies, and an estimated 3.6: 1 butterfly to plant ratio.[10] Area 6 continues to be of management concern due to the relatively high numbers of butterflies it supports. Consistent with 2013, the area continues to decline as evidenced by the presence of small, unproductive/unhealthy buckwheat plants and some that display senescence. Proximity to adjacent residences and a dead-end residential street also pose management challenges. In 2015, a large mound of landscape cuttings were observed as having been placed several feet away from buckwheat plants nearest to the street.

- Area 7 contains 16 plants and is the most remote coast buckwheat area at the dune site. It is located at the northern-most extent of the survey route between two large arroyo willow thickets. The large man-made bee box present in 2013 has since been removed. Despite the numbers of buckwheat plants at this site, no significant numbers of butterflies were ever observed here during the survey period: 9 butterflies; 2 percent of the total number of butterflies observed; and an estimated 0.6:1 butterfly to plant ratio.

- Area 8 contains 8 plants within high-quality Silver Dune Lupine-Mock Heather scrub community. This area is also a remote coast buckwheat area that did not harbor any significant numbers of butterflies during the survey period: 14 butterflies; 3 percent of the total number of butterflies; and an estimated butterfly to plant ratio of 1.75.

- Area 9 contains approximately 32 plants within Silver Dune Lupine-Mock Heather scrub abutting two arroyo willow thickets. The plants are distributed in three clusters that adjoin the Southern California Gas Company access road. Area 9 was observed to support 39 butterflies; 8 percent of the total number of butterflies; 1:1 butterfly to plant ratio.

Results of Presence/Absence Surveys: A summary of results of 2015 ESB surveys indicates that the numbers of adult butterflies gradually increased as the flight season progressed with a

[10] Area 6 itself with approximately 20 buckwheat plants supported 57 butterflies during this season; 11 percent of the total number of butterflies observed; and as estimated butterfly to plant ratio of 2.9:1. The satellite with 6 buckwheat plants supported 18 butterflies during this season; 4 percent of the total number of butterflies observed, and an estimated butterfly to plant ratio of 3:1.

peak estimated around the week of July 7 (on or about July 10) (Table 2, *Summary of 2015 El Segundo Blue Butterfly Surveys*). [11]

Table 2
Summary of 2015 El Segundo Blue Butterfly Surveys

Survey Date (2013)	# of El Segundo Blue Butterflies			TOTAL	Notes
	Male	Female	Undetermined		
June 19	10	5	1	**16**	71°F, 100% cloud cover, light breeze
June 26	57	15	2	74	72°F, 95% cloud cover, light breeze
July 03	81	44	4	129	72°F, 100% cloud cover, light breeze
July 10	101	57	1	159	75°F, 0% cloud cover, light breeze
July 17	42	48	0	90	75°F, 0% cloud cover, light breeze
July 24	6	19	0	25	79°F, 0% cloud cover, light breeze
July 31	1	5	0	6	81°F, 0% cloud cover, light breeze
August 07	0	3	0	3	79°F, 0% cloud cover, light breeze
August 14	1	1	0	2	81-82°F, 0% cloud cover, light breeze
August 21	0	0	0	0	81°F, hazy, light breeze
Subtotal	**299**	**197**	**8**	**504**	

Consistent with 2013 findings, 2015 data revealed a positive correlation between the numbers of adult butterflies observed and the numbers of coast buckwheat plants (Table 3, *Results of 2015 El Segundo Blue Butterfly Surveys*) with the highest numbers of butterflies (161 total) observed at Area 4 containing approximately 75 mature plants, followed by Area 5 with 111 butterflies on approximately 50 plants and Area 6 with 74 butterflies on approximately 26 plants. Consistent with 2013 findings, Areas 4-6 constitute high quality core habitat.

[11] The height of the flight season at the Los Angeles International Airport/El Segundo Dunes (LAX Dunes) was reported to be approximately one week earlier, namely, the week of July 7 based on coordination efforts between Dr. Dick Arnold and Friends of Ballona Wetlands.

Table 3
Results of 2015 El Segundo Blue Butterfly Surveys

Survey Area (Number of Plants)																													
2015 ESB Survey Dates	1 (19-21)			2 (15)			3 (10-12)			4 (70-80)			5 (51)			6 (26-28)			7 (16)			8 (8)			9 (32)			TOTAL		
	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U
19-Jun	0	0	1	1	0	0	0	0	0	3	2	0	3	1	0	2	2	0	0	0	0	0	0	0	1	0	0	10	5	1
26-Jun	5	2	0	5	2	0	5	1	0	23	5	2	4	0	0	8	2	0	0	0	0	1	0	0	6	3	0	57	15	2
3-Jul	8	3	1	7	7	0	8	2	0	26	15	2	8	10	0	11	2	1	3	0	0	3	0	0	7	5	0	81	44	4
10-Jul	6	1	0	8	5	0	10	3	0	23	18	1	23	15	0	15	8	0	4	2	0	5	1	0	7	4	0	101	57	1
17-Jul	0	0	0	0	1	0	1	2	0	16	17	0	14	15	0	8	7	0	0	0	0	2	2	0	1	4	0	42	48	0
24-Jul	0	1	0	0	1	0	1	0	0	0	5	0	3	7	0	2	5	0	0	0	0	0	0	0	0	0	0	6	19	0
31-Jul	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	1	0	0	0	0	0	0	0	0	0	1	0	1	5	0
7-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
14-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0
21-Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**19**	**7**	**2**	**21**	**26**	**0**	**25**	**8**	**0**	**91**	**65**	**5**	**52**	**59**	**0**	**48**	**26**	**1**	**7**	**2**	**0**	**11**	**3**	**0**	**22**	**17**	**0**	**298**	**197**	**8**
M=Male; F=Female; U=Unknown																														

Discussion

Areas 2, 3 and 6 presented 3:1 butterfly to plant ratios, followed by Areas 4 and 5 with butterfly to plant ratios of 2:1. Areas 7, 8 and 9 averaged the lowest butterfly to plant ratios (1:1). Site factors such as proximity to core habitat, size of buckwheat clusters, floral diversity, faunal diversity (including invertebrates), presence/absence of open sandy areas in between plants, and proximity of annual herbaceous and/or grass species could play a role in the characterization of optimal habitat for the ESB. More study would be needed in order understand the importance of these and other site factors that may determine conditions for the optimal carrying capacity of the Ballona dunes site.

Recommendations

The following recommendations are provided for consideration by Friends of Ballona Wetlands to guide future restoration efforts and also address potential management issues resulting from the urban setting of the site in consultation with the U.S Fish and Wildlife Service.

Site Access: Areas of occupied habitat are vulnerable to access by the public who may not be aware of the sensitivity of the site, particularly at Area 6, where a dead-end street off of Vista Del Mar Boulevard adjoins the top of the back dune slope a few feet from occupied habitat. Access to Area 6 appeared to be less intense than in 2013, however, a well-trodden path descends from the top-of-slope into the dune site at Area 6 satellite (en route to Area 7).

Potential areas for additional restoration: Areas 4-6 continue to comprise the highest quality habitat and as previously mentioned is designated herein as core habitat. Core habitat areas can be expanded through planting/seeding between Area 3 and Area 4; and between Area 6 and 7 as previously discussed (Psomas 2013).

Should there be any questions regarding the contents of this memorandum, please contact Irena Mendez at irena.mendez@psomas.com or 310.488-5645.

Attachment 1
Floral and Faunal Compendium

Attachment 1
Floral and Faunal Compendium

FLORAL COMPENDIUM

This is not an exhaustive listing of the plant species occurring on site

STATUS
*Non-native
#Non-native to the site

VASCULAR PLANTS

DICOTYLEDONES (comprising seed plants that produce an embryo paired cotyledons and net-veined leaves)

AIZOACEAE - Carpet-Weed Family

hottentot fig *	Carpobrotus edulis
flowery iceplant *	Drosanthemum floribundum

AMARANTHACEAE - Amaranth Family

tumbleweed *	Amaranthus albus

ANACARDIACEAE - Sumac Family

lemonadeberry	Rhus integrifolia
Peruvian pepper tree *	Schinus molle
Brazilian pepper tree *	Schinus terebinthifolius

APOCYNACEAE - Dogbane Family

oleander	Nerium oleander

ASTERACEAE - Sunflower Family

annual bur-sage	Ambrosia acanthicarpa
beach-bur	Ambrosia chamissonis
California sagebrush	Artemisia californica
California tarragon	Artemisia dracunculus
coyote brush	Baccharis pilularis
mule fat	Baccharis salicifolia

tocalote (star-thistle) *	Centaurea melitensis
garland or crown daisy	Chrysanthemum coronarium
flax-leaved horseweed *	Conyza bonariensis
common horseweed *	Conyza canadensis
California encelia	Encelia californica
mock heather	Ericameria menziesii
bicolored cudweed	Gnaphalium bicolor
white everlasting	Gnaphalium canescens var. microcephalum
telegraph weed	Heterotheca grandiflora
California aster	Lessingia filaginifolia
tall wreath plant	Stephanomeria virgata

BRASSICACEAE - Mustard Family

radish *	Raphanus sativus

CACTACEAE - Cactus Family

prickly pear *	Opuntia ficus-indica

CAPPARACEAE - Caper Family

bladderpod	Isomeris arborea

CHENOPODIACEAE - Goosefoot Family

big saltbush	Atriplex lentiformis
Australian saltbush *	Atriplex semibaccata
fat-hen*	Atriplex prostrata
lamb's quarters*	Chenopodium album
Russian thistle*	Salsola australis
prickly Russian thistle/tumbleweed	Salsola tragus
woolly seablite	Suaeda taxifolia

CRASSULACEAE - Stonecrop Family

jade plant *	Crassula argentea

EUPHORBIACEAE - Spurge Family

California croton	Croton californicus
doveweed	Eremocarpus setigerus
chinese caps	Euphorbia crenulata
pencil tree	Euphorbia tirucalli

FABACEAE - Pea Family

acacia *	Acacia cyclops
everblooming acacia *	Acacia retinodes
California broom	Lotus scoparius
lupinus	Lupinus chamissonis

GERANIACEAE - Geranium Family

red-stemmed filaree *	Erodium cicutarium
white-stemmed filaree *	Erodium moschatum

HYDROPHYLLACEAE - Waterleaf Family

branching phacelia	Phacelia ramosissima

LAMIACEAE - Mint Family

White sage	Salvia apiana

MORACEAE - Mulberry Family

rubber plant	Ficus elastica

NYCTAGINACEAE – Four O'Clock Family

beach sand verbena	Abronia umbellata
bougainvillea	Bougainvillea hybrid

ONAGRACEAE – Evening Primrose Family

beach evening primrose	Camissonia cheiranthifolia

POLYGONACEAE - Buckwheat Family

California buckwheat	Eriogonum fasciculatum
bluff buckwheat	Eriogonum parvifolium

PRIMULACEAE - Primrose Family

scarlet pimpernel *	Anagallis arvensis

SALICACEAE - Willow Family

Fremont cottonwood	Populus fremontii
sandbar willow	Salix exigua
arroyo willow	Salix lasiolepis

SCROPHULARIACEAE - Figwort Familiy

myoporum	myoporum laetum

MONOCOTYLEDONES (comprising seed plants that produce an em with a single cotyledon and parallel-veined leaves)

ARECACEAE - Palm Family

Canary Island date palm *	Phoenix canariensis
Mexican fan palm *	Washingtonia robusta

LILIACEAE - Lily Family

century plant *	Agave americana
agave, ornamental *	Agave sp.

POACEAE - Grass Family

slender wild oat *	Avena barbata
wild oat *	Avena fatua
ripgut grass *	Bromus diandrus
soft chess *	Bromus hordeaceus [B. mollis]
foxtail chess *	Bromus madritensis ssp.rubens
coastal salt grass	Distichlis spicata
creeping wild rye	Elymus triticoides
goldentop *	Lamarckia aurea
melic grass	Melica imperfecta
annual beard grass *	Polypogon monspeliensis
foxtail fescue	Vulpia myuros [Festuca megalura]

FAUNAL COMPENDIUM

This is not an exhaustive listing of wildlife species occurring on site.

Invertebrates

Order Aranidae - Spiders

Thomasidae - Crab Spider Family

crab spider	Misumenoides formosipes

Araneidae - Orb Weaver Spider Family

orb weaver	Argiope argentata

Order Neuroptera - Lacewings and Antlions

Myrmeleontidae - Antlion Family

Antlion (adult)	Brachynemurus brunneus

Order Lepidoptera - Butterflies and Moths

Lycaenidae - Blue, Copper and Hairstreak Family

pygmy blue	Brephidium exilis
El Segundo Blue	Euphilotes battoides allyni
marina blue	Leptotes marina
common hairstreak	Strymon melinus

Nymphalidae - Brush-footed Butterfly Family

monarch	Danaus plexippus
west coast lady	Vanessa anabella
painted lady	Vanessa cardui

Pieridae - White and Sulfer Family

cabbage white	Pieris rapae

Hesperiidae - Skipper Family

funeral duskywing	Erynnis funeralis
fiery skipper	Hylephila phyleus
wandering skipper	Panoquina errans
umber skipper	Poanes melane

Order Diptera - Flies

Bombyliidae- Bee Fly Family

Large Bee fly (long-tipped)	Bombylius major
bee fly (all black)	Conophorus fenestratus
bee fly (subtle stripes)	C. cristatus
black-winged bee fly (white-banded	Hemipenthes sinuosa
bee fly (white stripes)	Villa lateralis
bee fly (yellow stripes)	V. molitor

Order Hymenoptera - Wasps, Bees, Ants, and Sawflies

Apidae - True Bee Family

honey bee	Apis mellifera
Sonoran bumble bee	Bombus sonorus

Formicidae - Ant Family

California harvester ant	Pogonomyrmex californicus

Vespidae - Paper Wasp Family

golden polistes	Polistes aurifer
yellow jacket	Vespula pensylvanica

Terrestrial Vertebrates

REPTILES

Colubridae - Snake Family

gopher snake	Pituophis catenifer

Iguanidae - Iguanid Lizard Family

western fence lizard	Sceloporus occidentalis
side-blotched lizard	Uta stansburiana

BIRDS

Accipitridae - Hawk Family

Cooper's hawk	Accipiter cooperii

Columbidae - Pigeon and Dove Family

mourning dove	Zenaida macroura

Tyrannidae - Tyrant Flycatcher Family

black phoebe	Sayornis nigricans

Mimidae - Thrasher Family

northern mockingbird	Mimus polyglottos

Fringillidae - Finch Family

house finch	Carpodacus mexicanus
lesser goldfinch	Carduelis psaltria

Passeridae - Old World Sparrow Family

house sparrow	Passer domesticus

MAMMALS

Didelphidae - New World Opossum Family

opossum	Didelphis virginiana

Leporidae - Rabbit and Hare Family

Audubon's cottontail	Sylvilagus audubonii

Felidae - Cat Family

domestic cat	Felis cattus

Attachment 2
Field Notes

PSOMAS **FIELD NOTES Page 1 of 1**

Observer Name:	Vera Mendez, TE 218638		
Psomas Job Number:	N/A	**Survey Date:**	June 19, 2015 (Week 1)
Project Name:	ESB Survey 2015 at	**Start/End Time:**	1:30pm–3:30pm
Client:	Ballona Dunes/Friends of Ballona Wetlands	**Project Location (include County/ USGS Quad Sheet):**	Ballona Wetlands Ecological Reserve (back dune area) LA County Venice USGS 7.5 min. series topo quad. T2S R15W
Participating Personnel (Name/Affiliation):	N/A		
Survey Purpose:	Presence Absence surveys for ESB during 2015 Flight Season		

Starting Weather Conditions:			**Ending Weather Conditions:**		
Temp (F):	*% Cloud Cover:*	*Wind (Beaufort*):*	*Temp (F):*	*% Cloud Cover*	*Wind (Beaufort*):*
71°F	100%	1-2 (light breeze)	71°F	100%	same

General Observations:

(include habitat types/plant communities, soils, topography, surrounding land uses, GPS points)

survey map (2013) attached.

Species Observed:

(Include approximate number and behavior [if applicable] for wildlife; seen(S)/heard(H) for birds; dominance [e.g. abundant(A), common(C), uncommon(U), scarce(S)] and/or condition for plants)

Polygon# (see map)	♂	♀	u	(estimated) #plants	plants in bloom >50%
1	0	0	1	19-21	4
2	1	0	0	15	2
3	0	0	0	10	0
photo → 4	111	11	0	70-80	3
5	111	1	0	51	0
6	0	0	0	20	2
satellite 6S	11	11	0	26	1
7	0	0	0	16	2
8	0	0	0	8	1
9	1	0	0	12	1

Notes

Marina Blue ~~HHH~~
Cabbage white 111
Fiery skipper 111 (on abronia)
Pygos 4 nests
Large patch of Leymus triticoides observed at Polygon 9 growing with Stephanomeria virgata
add to compendium
Per Lisa ESB emerged week of June 8 at LAX. Here at Ballona they were first observed at the beginning of this week (~June 15)

*Beaufort scale: 0=calm, smoke rises vertically; 1=light air, smoke drift indicates wind direction, leaves and wind vanes are stationary; 2=light breeze, wind felt on exposed skin, leaves rustle, wind vanes begin to move; 3=gentle breeze, leaves and small twigs constantly moving, light flags extended; 4=moderate breeze, dust and loose paper raised, small branches begin to move; 5=fresh breeze, branches of a moderate size move, small trees in leaf begin to sway; 6=strong breeze, large branches in motion, whistling heard in overhead wires, umbrella use becomes difficult, empty plastic bins tip over; 7=high wind, near gale, whole trees in motion, effort needs to walk against the wind; 8=fresh gale, some twigs broken from trees, cars veer on road, progress on foot is seriously impeded.

males = 10 females = 5 undetermined = 1 Total for week 1 = 16

PSOMAS

FIELD NOTES Page 1 of 1

Observer Name:	Irene Mendez TE 218638		
Psomas Job Number:	N/A	**Survey Date:**	June 26, 2015 (Week 2)
Project Name:	2015 ESB Survey at	**Start/End Time:**	2:00 pm - 3:30 pm
Client:	Ballona Wetlands Ecological	**Project Location (include County/ USGS Quad Sheet):**	Venice USGS topo Quad. T2S R15W
Participating Personnel (Name/Affilliation):	Reserve / Dunes area Friends of Ballona Wetlands		
Survey Purpose:	ESB surveys during the 2015 Flight Season		

Starting Weather Conditions:			Ending Weather Conditions:		
Temp (F):	*% Cloud Cover:*	*Wind (Beaufort*):*	*Temp (F):*	*% Cloud Cover*	*Wind (Beaufort*):*
72°F	95%	2-3	72°F	40%	2

General Observations:

(include habitat types/plant communities, soils, topography, surrounding land uses, GPS points)

Species Observed:

(Include approximate number and behavior [if applicable] for wildlife; seen(S)/heard(H) for birds; dominance [e.g. abundant(A), common(C), uncommon(U), scarce(S)] and/or condition for plants)

Polygon	♂	♀	und	Plants in bloom >50%
1	𝍸	II	Ø	6
2	𝍸	II	Ø	4
3	𝍷	I	Ø	1
4	𝍸 𝍸 𝍸 𝍸 III	𝍸	II	14
5	IIII	Ø	Ø	(5)
6	𝍸 II	I	Ø	(5)
65	I	I	Ø	2
7	Ø	Ø	Ø	2
8	I	Ø	Ø	5
9	𝍸 I	III	Ø	7

Notes

Marina blue 1:♂ 1:♀ (west)

Cabbage White II

Monarch II (area 3/4 near willows)

(See photo) ① Gopher snake (dead near polygon 7)

California Hairstreak (II)

① add to Compendium

Week 2 ♂=57 ♀=15 und=2 Total =74 for Week 2

Beaufort scale: 0=calm, smoke rises vertically; 1=light air, smoke drift indicates wind direction, leaves and wind vanes are stationary; 2=light breeze, wind felt on exposed skin, leaves rustle, wind vanes begin to move; 3=gentle breeze, leaves and small twigs constantly moving, light flags extended; 4=moderate breeze, dust and loose paper raised, small branches begin to move; 5=fresh breeze, branches of a moderate size move, small trees in leaf begin to sway; 6=strong breeze, large branches in motion, whistling heard in overhead wires, umbrella use becomes difficult, empty plastic bins tip over; 7=high wind, near gale, whole trees in motion, effort needs to walk against the wind; 8=fresh gale, some twigs broken from trees, cars veer on road, progress on foot is seriously impeded.

PSOMAS **FIELD NOTES Page 1 of ___**

Observer Name:	Irena Mendez TE 218630		
Psomas Job Number:	N/A	**Survey Date:**	July 3, 2015 (Week 3)
Project Name:	ESB Surveys at Ballona	**Start/End Time:**	1:41 pm – 2:46 pm
Client:	Friends of Ballona Wetlands	**Project Location (include County/ USGS Quad Sheet):**	Ballona Wetlands Ecological Reserve (Backdune area) LA County Venice USGS topo Quad.
Participating Personnel (Name/Affiliation):	N/A		
Survey Purpose:	Conduct 2015 Surveys for ESB		T2S R15W

Starting Weather Conditions:			**Ending Weather Conditions:**		
Temp (F):	*% Cloud Cover:*	*Wind (Beaufort*):*	*Temp (F):*	*% Cloud Cover*	*Wind (Beaufort*):*
72	100	1-2	72	95%	2

General Observations:

(include habitat types/plant communities, soils, topography, surrounding land uses, GPS points)

Species Observed:

(Include approximate number and behavior [if applicable] for wildlife; seen(S)/heard(H) for birds; dominance [e.g. abundant(A), common(C), uncommon(U), scarce(S)] and/or condition for plants)

Polygon	♂	♀	und	Plants in bloom (>50%)	
1	𝍸 III	III	I	12	CW
2	𝍸 II	𝍸 II	Ø	5+3=8	
3	𝍸 III	II	Ø	4	FS + CH
photo → 4	𝍸 𝍸 𝍸 𝍸 𝍸 I	𝍸 𝍸 𝍸	II	26	CW 𝍸 MB + FS
5	𝍸 III	𝍸 𝍸	Ø	10	(MB=1) FS + CW
6	𝍸 𝍸	I	Ø	6	CH, PL, CW, darner, FS. CW: III
6b	I	I	I	7	CH, MB 𝍸 Bombyliidae (bee fly all black)
7	III	Ø	Ø	4	↙ Ⓐ Bombus (Sonoran Bumble bee)
8	III	Ø	Ø	8	
9	𝍸 II	𝍸	Ø	13	

Notes:
- Cabbage White (CW) Area 1
- honey bees (all sites)
- Fiery skipper (FS)
- California Hairstreak (CH)
- Marina Blue (MB)
- Ⓐ Painted Lady (PL)

Ⓐ added to faunal compendium

**Beaufort scale: 0=calm, smoke rises vertically; 1=light air, smoke drift indicates wind direction, leaves and wind vanes are stationary; 2=light breeze, wind felt on exposed skin, leaves rustle, wind vanes begin to move; 3=gentle breeze, leaves and small twigs constantly moving, light flags extended; 4=moderate breeze, dust and loose paper raised, small branches begin to move; 5=fresh breeze, branches of a moderate size move, small trees in leaf begin to sway; 6=strong breeze, large branches in motion, whistling heard in overhead wires, umbrella use becomes difficult, empty plastic bins tip over; 7=high wind, near gale, whole trees in motion, effort needs to walk against the wind; 8=fresh gale, some twigs broken from trees, cars veer on road, progress on foot is seriously impeded.*

Week 3 ♂=81 ♀=44 und=4 Total=129 for week 3

PSOMAS

FIELD NOTES Page 1 of 1

Observer Name:	Irene Mendez / TE 218638		
Psomas Job Number:	N/A	**Survey Date:**	July 10, 2015 (Week 4)
Project Name:	2015 ESB Survey	**Start/End Time:**	2:00pm - 3:30pm
Client:	Friends of Ballona Wetlands	**Project Location (include County/ USGS Quad Sheet):**	Ballona Wetlands Ecological Reserve Venice Topo Quad LA County T2S R15W
Participating Personnel (Name/Affilliation):	N/A		
Survey Purpose:	Presence/Absence surveys for ESB during 2015 Flight Season		

Starting Weather Conditions:			Ending Weather Conditions:		
Temp (F):	*% Cloud Cover:*	*Wind (Beaufort*):*	*Temp (F):*	*% Cloud Cover*	*Wind (Beaufort*):*
75°F	0% Sunny	1-2	75°F	0%	1-2

General Observations:

(include habitat types/plant communities, soils, topography, surrounding land uses, GPS points)

Species Observed:

(Include approximate number and behavior [if applicable] for wildlife; seen(S)/heard(H) for birds; dominance [e.g. abundant(A), common(C), uncommon(U), scarce(S)] and/or condition for plants)

Polygon	♂	♀	Und	Plants in bloom >50%	
1	𝍸 I	I	Ø	20	
2	𝍸 III	𝍸	Ø	13	
3	𝍸 𝍸	III	Ø	6	CW: II
4	𝍸 𝍸 𝍸 𝍸 III	𝍸 𝍸 𝍸 III	I	82	
5	𝍸 𝍸 𝍸 𝍸 III	𝍸 𝍸 𝍸	Ø	40	CW: II
6	𝍸 𝍸 III	𝍸	Ø	13	
6S	II	III	Ø	8	
7	IIII	II	Ø	10	CW: I Stephomeria virgata: pure white MB: I
8	𝍸	I	Ø	9	
9	𝍸 II	IIII	Ø	25	

Beaufort scale: 0=calm, smoke rises vertically; 1=light air, smoke drift indicates wind direction, leaves and wind vanes are stationary; 2=light breeze, wind felt on exposed skin, leaves rustle, wind vanes begin to move; 3=gentle breeze, leaves and small twigs constantly moving, light flags extended; 4=moderate breeze, dust and loose paper raised, small branches begin to move; 5=fresh breeze, branches of a moderate size move, small trees in leaf begin to sway; 6=strong breeze, large branches in motion, whistling heard in overhead wires, umbrella use becomes difficult, empty plastic bins tip over; 7=high wind, near gale, whole trees in motion, effort needs to walk against the wind; 8=fresh gale, some twigs broken from trees, cars veer on road, progress on foot is seriously impeded.

Week 4 ♂ = 101 ♀ = 57 und = 1 Total = 159 for week 4

PSOMAS

FIELD NOTES Page 1 of ___

Observer Name:	Irena Mendez TE 218638		
Psomas Job Number:	N/A	**Survey Date:**	July 17, 2015 Week 5
Project Name:	ESB Survey 2015 at Ballona Wetlands/Friends of Ballona Wetlands	**Start/End Time:**	2:30 pm - 3:45 pm
Client:		**Project Location (include County/ USGS Quad Sheet):**	Ballona Wetlands Ecological Reserve (backdune) LA County Venice USGS Topo Quad T2S R15W
Participating Personnel (Name/Affilliation):			
Survey Purpose:	Presence/Absence surveys for ESB during 2015 Flight Season		

Starting Weather Conditions:			Ending Weather Conditions:		
Temp (F):	*% Cloud Cover:*	*Wind (Beaufort*):*	*Temp (F):*	*% Cloud Cover*	*Wind (Beaufort*):*
75°F	0%	1-2	home	→	→

General Observations:

(include habitat types/plant communities, soils, topography, surrounding land uses, GPS points)

Polygon

	♂	♀	und
1	Ø	Ø	Ø
2	Ø	1	Ø
3	1	II	Ø
4	IIII IIII IIII I	IIII IIII IIII II	Ø
5	IIII IIII IIII	IIII IIII IIII	Ø
6	IIII II	IIII	Ø
65	1	III	Ø
7	Ø	Ø	Ø
8	II	II	Ø
9	1	IIII	Ø

Species Observed:

(Include approximate number and behavior [if applicable] for wildlife; seen(S)/heard(H) for birds; dominance [e.g. abundant(A), common(C), uncommon(U), scarce(S)] and/or condition for plants)

# plants senescent blooms >50%	Notes
2	CW: IIII II
2	wasp honeybee yellow jacket Ant lion adults: IIII III
Ø	
4	Bfly: all black w white-tipped wings.
3	females observed 4-5 feet away from buckwheat plants in open sand — Cottontail Monarch
Ø	
Ø	weeds from residence(?) thrown over fence next to buckwheat plants at top of slope
Ø	or caught in web
Ø	lesser sunna pagos (area 5)
Ø	CH: II Bf: striped. MB: III

Beaufort scale: 0=calm, smoke rises vertically; 1=light air, smoke drift indicates wind direction, leaves and wind vanes are stationary; 2=light breeze, wind felt on exposed skin, leaves rustle, wind vanes begin to move; 3=gentle breeze, leaves and small twigs constantly moving, light flags extended; 4=moderate breeze, dust and loose paper raised, small branches begin to move; 5=fresh breeze, branches of a moderate size move, small trees in leaf begin to sway; 6=strong breeze, large branches in motion, whistling heard in overhead wires, umbrella use becomes difficult, empty plastic bins tip over; 7=high wind, near gale, whole trees in motion, effort needs to walk against the wind; 8=fresh gale, some twigs broken from trees, cars veer on road, progress on foot is seriously impeded.

Week 5 ♂ = 42 ♀ 48 und = Ø Total = 90 for week 5

PSOMAS

FIELD NOTES Page 1 of 1

Observer Name:	Irena Mendez TE 218638		
Psomas Job Number:	N/A	**Survey Date:**	July 24, 2015 (Week 6)
Project Name:	ESB Survey: 2015 at Ballona dunes for Friends of Ballona wetlands.	**Start/End Time:**	1:40pm - 3:23 pm
Client:		**Project Location (include County/ USGS Quad Sheet):**	Ballona Wetlands Ecological Reserve (backdune area) LA County Venice USGS topo Quad 7.5 min series
Participating Personnel (Name/Affilliation):	N/A		
Survey Purpose:	Presence/Absence Surveys for ESB during 2015 Flight Season T2S R15W		

Starting Weather Conditions:			Ending Weather Conditions:		
Temp (F):	*% Cloud Cover:*	*Wind (Beaufort*):*	*Temp (F):*	*% Cloud Cover*	*Wind (Beaufort*):*
79°	0%	1-3	79°	0%	1-3

General Observations:

(include habitat types/plant communities, soils, topography, surrounding land uses, GPS points)

Polygon (see map)

	♂	♀	unk
1	Ø	1	Ø
2	Ø	1	Ø
3	1	Ø	Ø
4	Ø	IIII	Ø
5	III	IIII II	Ø
6	II	IIII	Ø
6s	Ø	Ø	Ø
7	Ø	Ø	Ø
8	Ø	Ø	Ø
9	Ø	Ø	Ø

Species Observed:

(Include approximate number and behavior [if applicable] for wildlife; seen(S)/heard(H) for birds; dominance [e.g. abundant(A), common(C), uncommon(U), scarce(S)] and/or condition for plants)

Plants >50% senescence

(4)	
(3)	
(Ø)	
5	
5	
Ø	
1	
1	
1	
3	

(1) Cooper's Hawk
lesser goldfinches
fiery skipper
Monarch
California Hairstreak (11)
umber skipper

(1) Add to compendium

Beaufort scale: 0=calm, smoke rises vertically; 1=light air, smoke drift indicates wind direction, leaves and wind vanes are stationary; 2=light breeze, wind felt on exposed skin, leaves rustle, wind vanes begin to move; 3=gentle breeze, leaves and small twigs constantly moving, light flags extended; 4=moderate breeze, dust and loose paper raised, small branches begin to move; 5=fresh breeze, branches of a moderate size move, small trees in leaf begin to sway; 6=strong breeze, large branches in motion, whistling heard in overhead wires, umbrella use becomes difficult, empty plastic bins tip over; 7=high wind, near gale, whole trees in motion, effort needs to walk against the wind; 8=fresh gale, some twigs broken from trees, cars veer on road, progress on foot is seriously impeded.

♂ = 6 ♀ = 19 unk = Ø Total for week 6 = 25

PSOMAS

FIELD NOTES Page 1 of 1

Observer Name:	Irene Mendez TE 218638		
Psomas Job Number:	N/A	**Survey Date:**	July 31, 2015 (Week 7)
Project Name:	ESB Survey: 2015 at Ballona dunes for Friends of Ballona Wetlands	**Start/End Time:**	3:00pm–4:00pm
Client:		**Project Location (include County/ USGS Quad Sheet):**	Ballona Wetlands Ecological Reserve (backdune area) LA County Venice USGS 7.5 min Series Topo Quad T 2S R 15W
Participating Personnel (Name/Affilliation):	N/A		
Survey Purpose:	Presence/Absence Surveys for ESB during 2015 Flight Season		

Starting Weather Conditions:			Ending Weather Conditions:		
Temp (F):	*% Cloud Cover:*	*Wind (Beaufort*):*	*Temp (F):*	*% Cloud Cover*	*Wind (Beaufort*):*
81°	0%	2	81°	0%	2

General Observations:

(include habitat types/plant communities, soils, topography, surrounding land uses, GPS points)

Species Observed:

(Include approximate number and behavior [if applicable] for wildlife; seen(S)/heard(H) for birds; dominance [e.g. abundant(A), common(C), uncommon(U), scarce(S)] and/or condition for plants)

Polygon (see map)	♂	♀	und
1	Ø	Ø	Ø
2	Ø	Ø	Ø
3	Ø	Ø	Ø
4	Ø	II	Ø
5	Ø	II	Ø
6	I	Ø	Ø
6S	Ø	Ø	Ø
7	Ø	Ø	Ø
8	Ø	Ø	Ø
9	Ø	I	Ø

Plants >50% senescent

(-I) ← this means there is one still with >50% flowers

(-III)

(-IV)

(-20)

(-10)

II

-3

IIII

-I

-IIII II

Notes

Monarch

Cottontail

honey bee

Marina blue II

bee fly 2 white stripes

Cabbage white I

fiery skipper II

*Beaufort scale: 0=calm, smoke rises vertically; 1=light air, smoke drift indicates wind direction, leaves and wind vanes are stationary; 2=light breeze, wind felt on exposed skin, leaves rustle, wind vanes begin to move; 3=gentle breeze, leaves and small twigs constantly moving, light flags extended; 4=moderate breeze, dust and loose paper raised, small branches begin to move; 5=fresh breeze, branches of a moderate size move, small trees in leaf begin to sway; 6=strong breeze, large branches in motion, whistling heard in overhead wires, umbrella use becomes difficult, empty plastic bins tip over; 7=high wind, near gale, whole trees in motion, effort needs to walk against the wind; 8=fresh gale, some twigs broken from trees, cars veer on road, progress on foot is seriously impeded.

♂ = 1 ♀ = 5 und = Ø Total for week 7 = 6

PSOMAS

FIELD NOTES Page 1 of 1

Observer Name:	Ivana Mendez TE 218638		
Psomas Job Number:	N/A	**Survey Date:**	August 27, 2015 (Week 8)
Project Name:	2015 ESB Surveys at Ballona dunes for Friends of Ballona Wetlands	**Start/End Time:**	1:40pm - 3:00pm
Client:		**Project Location (include County/ USGS Quad Sheet):**	Ballona Wetlands Ecological Reserve (backdune area) LA County Venice USGS 7.5 min. Series Topo Quad
Participating Personnel (Name/Affilliation):	N/A		
Survey Purpose:	Presence/Absence Surveys for ESB during 2015 Flight Season T2SR15W		

Starting Weather Conditions:			Ending Weather Conditions:		
Temp (F):	*% Cloud Cover:*	*Wind (Beaufort*):*	*Temp (F):*	*% Cloud Cover*	*Wind (Beaufort*):*
79°	0%	1-2	77°	10%	1-2

General Observations:

(include habitat types/plant communities, soils, topography, surrounding land uses, GPS points)

Polygon (see map)	♂	♀	und
1	Ø	Ø	Ø
2	Ø	Ø	Ø
3	Ø	Ø	Ø
4	Ø	Ø	Ø
5	Ø	III	Ø
6	Ø	Ø	Ø
6s	Ø	Ø	Ø
7	Ø	Ø	Ø
8	Ø	Ø	Ø
9	Ø	Ø	Ø

Species Observed:

(Include approximate number and behavior [if applicable] for wildlife; seen(S)/heard(H) for birds; dominance [e.g. abundant(A), common(C), uncommon(U), scarce(S)] and/or condition for plants)

Plants >50% senescent

all

-III

all

-12

-6

10

all

-III

all

-IIII

Yellow Jacket 1
Cabbage White 1
Morina blue III
5 Melinus II
Fiery Skipper III
Ant lion adult 1
Black bombus
Pigmy blue 1
house sparrows

Beaufort scale: 0=calm, smoke rises vertically; 1=light air, smoke drift indicates wind direction, leaves and wind vanes are stationary; 2=light breeze, wind felt on exposed skin, leaves rustle, wind vanes begin to move; 3=gentle breeze, leaves and small twigs constantly moving, light flags extended; 4=moderate breeze, dust and loose paper raised, small branches begin to move; 5=fresh breeze, branches of a moderate size move, small trees in leaf begin to sway; 6=strong breeze, large branches in motion, whistling heard in overhead wires, umbrella use becomes difficult, empty plastic bins tip over; 7=high wind, near gale, whole trees in motion, effort needs to walk against the wind; 8=fresh gale, some twigs broken from trees, cars veer on road, progress on foot is seriously impeded.

♂ = 0 ♀ = 3 und = Ø Total for Week 8 = 3

PSOMAS

FIELD NOTES Page 1 of 1

Observer Name:	Irene Mendez TE 218638		
Psomas Job Number:	N/A	**Survey Date:**	August 14, 2015 (Week 9)
Project Name:	2015 ESB surveys at Ballona dunes for Friends of Ballona wetlands	**Start/End Time:**	2:00pm-3:00pm
Client:		**Project Location (include County/ USGS Quad Sheet):**	Ballona Wetlands Ecological Reserve (backdune area) LA County Venice USGS 7.5 min Series Top Quad
Participating Personnel (Name/Affilliation):	N/A		
Survey Purpose:	Presence/Absence surveys for ESB during 2015 flight season		T2S R15W

Starting Weather Conditions:			Ending Weather Conditions:		
Temp (F):	*% Cloud Cover:*	*Wind (Beaufort*):*	*Temp (F):*	*% Cloud Cover*	*Wind (Beaufort*):*
81°	0%	3	82°	0%	2

General Observations:

(include habitat types/plant communities, soils, topography, surrounding land uses, GPS points)

Species Observed:

(Include approximate number and behavior [if applicable] for wildlife; seen(S)/heard(H) for birds; dominance [e.g. abundant(A), common(C), uncommon(U), scarce(S)] and/or condition for plants)

Polygons (see map)	♂	♀	und	Plants >50% senescent	Notes
1	Ø	Ø	Ø	all	Sphinx moths III
2	Ø	Ø	Ø	~1	Monarch 1
3	Ø	Ø	Ø	all	Fiery skipper IIII 1
4	Ø	Ø	Ø	~10	Cabbage white II
5	Ø	1	Ø	~4	Bee flies (all black, one white stripe)
6	1	Ø	Ø	all	ant lion 1
6S	Ø	Ø	Ø	all	
7	Ø	Ø	Ø	~1	
8	Ø	Ø	Ø	all	
9	Ø	Ø	Ø	all	

Beaufort scale: 0=calm, smoke rises vertically; 1=light air, smoke drift indicates wind direction, leaves and wind vanes are stationary; 2=light breeze, wind felt on exposed skin, leaves rustle, wind vanes begin to move; 3=gentle breeze, leaves and small twigs constantly moving, light flags extended; 4=moderate breeze, dust and loose paper raised, small branches begin to move; 5=fresh breeze, branches of a moderate size move, small trees in leaf begin to sway; 6=strong breeze, large branches in motion, whistling heard in overhead wires, umbrella use becomes difficult, empty plastic bins tip over; 7=high wind, near gale, whole trees in motion, effort needs to walk against the wind; 8=fresh gale, some twigs broken from trees, cars veer on road, progress on foot is seriously impeded.

♂ = 1 ♀ = 1 und = 0 Total for week 9 = 2

PSOMAS **FIELD NOTES Page 1 of 1**

Observer Name:	Irene Mendez TE-218638		
Psomas Job Number:	N/A	**Survey Date:**	August 21, 2015 Week 10
Project Name:	2015 ESB Surveys at Ballona dunes for Friends of Ballona wetlands	**Start/End Time:**	2:15 – 3:30 pm
Client:		**Project Location (include County/ USGS Quad Sheet):**	Ballona Wetland, Ecological Reserve (back dune area) LA County Venice USGS 7.5 min Series Topo Quad T2SR15W
Participating Personnel (Name/Affilliation):	N/A		
Survey Purpose:	Presence/Absence Surveys for ESB during 2015 Flight Season.		

Starting Weather Conditions:			Ending Weather Conditions:		
Temp (F):	*% Cloud Cover:*	*Wind (Beaufort*):*	*Temp (F):*	*% Cloud Cover*	*Wind (Beaufort*):*
81	hazy	1-2	81°	hazy	1-2

General Observations:

(include habitat types/plant communities, soils, topography, surrounding land uses, GPS points)

Species Observed:

(Include approximate number and behavior [if applicable] for wildlife; seen(S)/heard(H) for birds; dominance [e.g. abundant(A), common(C), uncommon(U), scarce(S)] and/or condition for plants)

Polygons (see map)	♂	♀	unk	Plants >50% senescent	Notes:
1	0	0	0	(all)	S. melinus 1
2	0	0	0	(all)	Cabbage white 111
3	0	0	0	(all)	fiery skipper 1
4	0	0	0	~~(all)~~ – 5	
5	0	0	0	1	
6	0	0	0	all	
7	0	0	0	all	
8	0	0	0	all	
9	0	0	0	all	

Beaufort scale: 0=calm, smoke rises vertically; 1=light air, smoke drift indicates wind direction, leaves and wind vanes are stationary; 2=light breeze, wind felt on exposed skin, leaves rustle, wind vanes begin to move; 3=gentle breeze, leaves and small twigs constantly moving, light flags extended; 4=moderate breeze, dust and loose paper raised, small branches begin to move; 5=fresh breeze, branches of a moderate size move, small trees in leaf begin to sway; 6=strong breeze, large branches in motion, whistling heard in overhead wires, umbrella use becomes difficult, empty plastic bins tip over; 7=high wind, near gale, whole trees in motion, effort needs to walk against the wind; 8=fresh gale, some twigs broken from trees, cars veer on road, progress on foot is seriously impeded.

Attachment 3
Site Photographs

Photograph 1: Area 4 looking towards the southwest (July 31, 2015)

Photograph 2: Area 4 looking towards the west (July 31, 2015)

Photograph 3: Area 4 on week 1 of survey (June 19, 2015)

Photograph 4: Area 4 on week 3 of survey (July 3, 2015)

Photograph 5: Area 4 on week 5 of survey (July 17, 2015)

Photograph 6: Area 4 on week 7 of survey (July 31, 2015)

Photograph 7: Area 4 on week 10 of survey (August 21, 2015)

Attachment 4
Video Clip of Site (see email transmittal)