Wandering Skipper Survey at Famosa Slough, San Diego, California

27 August 2010

Observers: Keith Greer, Betsy Miller, and Kim Roeland

Introduction

The wandering skipper (*Panoquina errans*) is a small butterfly of the family Hesperiidae. It is identifiable by its rich dark brown color and cream-colored spots on the dorsal forewing. The wandering skipper is found only along the coast in southern California, Baja California and northwestern mainland Mexico. Populations have been recorded from Huntington Beach, Upper Newport Bay, and Capistrano Beach (Orsak, 1977). In San Diego, the wandering skipper has been documented in the Tijuana Estuary, San Dieguito Lagoon, and Agua Hedionda lagoon (SanGIS, 2010), but it appears that no extensive survey data have been published.

The wandering skipper is on the IUCN Red List of Threatened Species (World Conservation Monitoring Centre, 1996) and is under consideration for possible listing on the endangered species list as a threatened species because of the reduction of salt marsh habitat.

The larval host plant for this species, salt grass (*Distichlis spicata*), is found in transitional habitats along the edge of the high marsh. Nectar sources include *Heliotropium* spp., *Haplopappus* spp., and *Frankenia salina* (Orsak 1977). Potential habitat for the wandering skipper was considered to be areas containing the larval host plant in close proximity to nectar plants.

Surveys were completed to determine presence of the wandering skipper in potential habitat areas within Famosa Slough, San Diego, California, both north and south of West Point Loma Blvd.

Methods

The surveys were conducted on August 27, 2010. The first survey, in high marsh habitat south of W. Point Loma Blvd and along the eastern edge of the wetlands, was conducted between 1:25 p.m. and 2:05 p.m. A second survey, 2:14 p.m. to 2:40 p.m., was conducted north of W. Point Loma Blvd.

Butterflies were detected using a Pollard walk (Pollard, 1977) with 2-3 observers moving along a line through potential habitat. Binoculars were used to aid visual identification. A handheld GPS unit (Garmin GPSMAP 60, WAAS enabled) was used to record the location of each individual detected; photos were taken when possible to confirm identification. Significant salt grass patches (typically > 5 m^2) were also recorded using the handheld GPS device. The observers were conscientious about not counting the same individual twice; they noted the direction of flight of the individual and one observer tracked any individuals that moved in the same direction of the observers. The observers felt that no individuals were double counted.

Temperature and wind speed remained fairly constant for both surveys (73.6°F to 70.5°F and 2.05 – 3.23 mi/hr). Both wind and temperature were ideal for the identification of the wandering skipper. Cloud cover was low during the first survey (15%) and cleared to 0% cover for the second survey.

Results

Fifty-eight individuals of wandering skipper were detected at Famosa Slough (Table 1). Thirty were detected on the south side of W. Point Loma Blvd (Figure 1) and 29 were detected on the north side (Figure 2). Individuals were detected mainly on salt grass and *Frankenia*, though some were also detected on pickleweed (*Sarcocornia pacifica)* and salty susan *(Jaumea carnosa).* Habitat quality was excellent with significant salt grass patches

(Table 2) found in close proximity to flowering *Frankenia* on both the south and north sides of W. Point Loma Blvd (Figures 3-4).

This survey is not intended to be a comprehensive survey of the entire reserve, but can be added to surveys by others.

References

Orsak, L.J. 1977. The Butterflies of Orange County. Center for Pathobiology Miscellaneous Publication #3. University of California Press, New York. 349 pp.

Pollard, E. 1977. A method for assessing changes in the abundance of butterflies. Biological Conservation., 12:115-134.

SanGIS Digital sources: Natural Diversity Database and Sensitive Sighting Database. 2010.

World Conservation Monitoring Centre 1996. Panoquina errans. 2006 IUCN Red List of Threatened Species. Downloaded on 13 Aug 2010.

Table 1. Wandering Skipper Locations, Famosa Slough

Observers: Keith Greer, Betsy Miller, and Kim Roeland

Observation Point	Date	Time	N (degrees)	W (degrees)
1	8/27/2010	1:35	32.7519	-117.2271
2	8/27/2010	1:36	32.7518	-117.2271
3	8/27/2010	1:37	32.7517	-117.2271
4	8/27/2010	1:38	32.7517	-117.2271
5	8/27/2010	1:39	32.7516	-117.2271
6	8/27/2010	1:40	32.7515	-117.2271
7	8/27/2010	1:41	32.7514	-117.2271
8	8/27/2010	1:41	32.7514	-117.2271
9	8/27/2010	1:41	32.7514	-117.2271
10	8/27/2010	1:42	32.7514	-117.2271
11	8/27/2010	1:42	32.7514	-117.2270
12	8/27/2010	1:42	32.7513	-117.2271
13	8/27/2010	1:42	32.7512	-117.2270
14	8/27/2010	1:43	32.7512	-117.2220
15	8/27/2010	1:43	32.7512	-117.2270
16	8/27/2010	1:46	32.7510	-117.2271
17	8/27/2010	1:46	32.7509	-117.2271
18	8/27/2010	1:46	32.7509	-117.2271
19	8/27/2010	1:46	32.7509	-117.2271
20	8/27/2010	1:47	32.7508	-117.2269
21	8/27/2010	1:47	32.7508	-117.2270
22	8/27/2010	1:49	32.7508	-117.2270
23	8/27/2010	1:49	32.7508	-117.2270
24	8/27/2010	1:49	32.7508	-117.2270

25	8/27/2010	1:50	32.7506	-117.2271
26	8/27/2010	1:50	32.7506	-117.2271
27	8/27/2010	1:50	32.7506	-117.2272
28	8/27/2010	1:51	32.7505	-117.2273
29	8/27/2010	1:52	32.7504	-117.2274
30	8/27/2010	1:53	32.7504	-117.2274
31	8/27/2010	2:18	32.7547	-117.2289
32	8/27/2010	2:18	32.7547	-117.2289
33	8/27/2010	2:20	32.7546	-117.2290
34	8/27/2010	2:20	32.7546	-117.2290
35	8/27/2010	2:20	32.7546	-117.2291
36	8/27/2010	2:20	32.7545	-117.2291
37	8/27/2010	2:20	32.7546	-117.2291
38	8/27/2010	2:21	32.7545	-117.2291
39	8/27/2010	2:22	32.7546	-117.2291
40	8/27/2010	2:22	32.7546	-117.2292
41	8/27/2010	2:22	32.7546	-117.2292
42	8/27/2010	2:22	32.7545	-117.2292
43	8/27/2010	2:23	32.7545	-117.2292
44	8/27/2010	2:23	32.7545	-117.2293
45	8/27/2010	2:23	32.7545	-117.2293
46	8/27/2010	2:23	32.7545	-117.2294
47	8/27/2010	2:24	32.7544	-117.2294
48	8/27/2010	2:26	32.7542	-117.2292
49	8/27/2010	2:27	32.7541	-117.2293
50	8/27/2010	2:28	32.7540	-117.2294
51	8/27/2010	2:31	32.7534	-117.2294
52	8/27/2010	2:31	32.7533	-117.2294
53	8/27/2010	2:31	32.7533	-117.2294
54	8/27/2010	2:31	32.7534	-117.2295
55	8/27/2010	2:32	32.7534	-117.2295
56	8/27/2010	2:32	32.7533	-117.2295
57	8/27/2010	2:33	32.7533	-117.2295
58	8/27/2010	2:36	32.7530	-117.2293
58	8/27/2010	2:38	32.7529	-117.2294

Table 2. Significant Salt Grass Patches, Famosa Slough

Observers: Keith Greer, Betsy Miller and Kim Roeland

Observation Point	Date	Time	N (degrees)	W (degrees)
1	8/27/2010	2:17	32.7548	-117.2291
2	8/27/2010	2:19	32.7546	-117.2289
3	8/27/2010	2:27	32.7541	-117.2293
4	8/27/2010	2:21	32.7545	-117.2292
5	8/27/2010	2:32	32.7533	-117.2295

Figure 1. Famosa Slough Wandering Skipper Survey South Side

Figure 2. Famosa Slough Wandering Skipper Survey North Side

Figure 3. Keith Greer recording location of wandering skipper with GPS, South Side, Famosa Slough, San Diego

Figure 4. Betsy Miller observing wandering skippers in high quality habitat, North Side, Famosa Slough, San Diego

Wandering Skipper Survey at the Kendall-Frost Mission Bay Marsh Reserve, San Diego, California

27 August 2010

Observers: Keith Greer, Isabelle Kay, Betsy Miller, and Kim Roeland

Introduction

The wandering skipper (*Panoquina errans*) is a small butterfly of the family Hesperiidae. It is identifiable by its rich dark brown color and cream-colored spots on the dorsal forewing. The wandering skipper is found only along the coast in southern California, Baja California and northwestern mainland Mexico. Populations have been recorded from Huntington Beach, Upper Newport Bay, and Capistrano Beach (Orsak, 1977). In San Diego, the wandering skipper has been documented in the Tijuana Estuary, San Dieguito Lagoon, and Agua Hedionda lagoon (SanGIS, 2010), but it appears that no extensive survey data have been published.

The wandering skipper is on the IUCN Red List of Threatened Species (World Conservation Monitoring Centre, 1996) and is under consideration for possible listing on the endangered species list as a threatened species because of the reduction of salt marsh habitat.

The larval host plant for this species, salt grass (*Distichlis spicata*), is found in transitional habitats along the edge of the high marsh. Nectar sources include *Heliotropium* spp., *Haplopappus* spp., and *Frankenia salina* (Orsak 1977). Potential habitat for the wandering skipper was considered to be areas containing the larval host plant in close proximity to nectar plants.

Surveys were completed to determine presence of the wandering skipper in potential habitat areas within the Kendall-Frost Mission Bay Marsh Reserve, San Diego, California, in high salt marsh habitat near the field station, just north of Rose Creek, and at the Crown Point Restoration site.

Methods

The surveys were conducted on August 27, 2010. The first survey focused on areas near the field station and north of Rose Creek in high marsh habitat between 10:27 a.m. and 11:30 a.m. A second survey, 11:55 a.m. to 12:13 p.m., was conducted in the Crown Point Restoration site.

Butterflies were detected using a Pollard walk (Pollard, 1977) with 2-4 observers moving along a line through potential habitat. Binoculars were used to aid visual identification. A handheld GPS unit (Garmin GPSMAP 60, WAAS enabled) was used to record the location of each individual detected; photos were taken when possible to confirm identification. Significant salt grass patches (typically > 5 m^2) were also recorded using the handheld GPS device.

Temperature and wind speed remained fairly constant for both surveys (72.3°F to 71.7°F and 0.68 – 2.0 mi/hr). Both wind and temperature were ideal for the identification of the wandering skipper. Initially cloud cover was 100%, and by the second survey, some clearing was occurring. Cloudy weather is typically not ideal for the wandering skipper survey; however, since many other species of skippers and other butterflies were observed, we determined that our detection of the wandering skipper was not impacted by the cloud cover.

Results

Two individuals of wandering skipper were detected at the Kendall-Frost Mission Bay Marsh on a berm near the field station (Figures 1-2 and Table 1). The two individuals were observed copulating. Salt grass was not observed in any significant patches greater than 5

m^2, though small amounts of salt grass were found near the sighting locations for the wandering skippers.

No wandering skippers were detected near Rose Creek or at the second survey location at the Crown Point Restoration site. No salt grass was found at either location, though *Frankenia* and other nectaring plants were detected. The results indicate that salt grass is a critical element for the presence of the wandering skipper. Though flowering nectaring plants were available throughout the high marsh, the only location with wandering skipper was near salt grass.

This survey is not intended to be a comprehensive survey of the entire reserve, but can be added to surveys by others.

References

Orsak, L.J. 1977. The Butterflies of Orange County. Center for Pathobiology Miscellaneous Publication #3. University of California Press, New York. 349 pp.

Pollard, E. 1977. A method for assessing changes in the abundance of butterflies. Biological Conservation., 12:115-134.

SanGIS Digital sources: Natural Diversity Database and Sensitive Sighting Database. 2010.

World Conservation Monitoring Centre 1996. Panoquina errans. 2006 IUCN Red List of Threatened Species. Downloaded on 13 Aug 2010.

Table 1. Wandering Skipper Locations, Kendall-Frost Marsh

Observers: Keith Greer, Betsy Miller, Isabelle Kay, and Kim Roeland

Observation Point	Date	Time	N (degrees)	W (degrees)
1	8/27/2010	10:48	-117.2301	32.7951
2	8/27/2010	10:51	-117.2301	32.7952

Figure 1. Kendall-Frost Wandering Skipper Survey Field Station and Rose Creek

Figure 2. Kendall-Frost Wandering Skipper Survey
Crown Point Restoration Site

Figure 2. Habitat on berm where two wandering skippers were observed mating, Kendall-Frost Mission Bay Marsh Reserve, San Diego.

Wandering Skipper Survey at the Los Peñasqitos Lagoon, San Diego, California

19 August 2010

Observers: Keith Greer and Kim Roeland

Introduction

The wandering skipper (*Panoquina errans*) is a small butterfly of the family Hesperiidae. It is identifiable by its rich dark brown color and cream-colored spots on the dorsal forewing. The wandering skipper is found only along the coast in southern California, Baja California and northwestern mainland Mexico. Populations have been recorded from Huntington Beach, Upper Newport Bay, and Capistrano Beach (Orsak, 1977). In San Diego, the wandering skipper has been documented in the Tijuana Estuary, San Dieguito Lagoon, and Agua Hedionda lagoon (SanGIS, 2010), but it appears that no extensive survey data have been published.

The wandering skipper is on the IUCN Red List of Threatened Species (World Conservation Monitoring Centre, 1996) and is under consideration for possible listing on the endangered species list as a threatened species because of the reduction of salt marsh habitat.

The larval host plant for this species, salt grass (*Distichlis spicata*), is found in transitional habitats along the edge of the high marsh. Nectar sources include *Heliotropium* spp., *Haplopappus* spp., and *Frankenia salina* (Orsak 1977). *Frankenia* can be found in the high marsh zone between uplands and pickleweed saltmarsh habitat. Potential habitat for the wandering skipper was considered to be areas containing the larval host plant in close proximity to nectar plants.

Surveys were completed to determine presence of the wandering skipper in potential habitat areas within the Los Peñasquitos Lagoon, San Diego, California, in the east end of the lagoon east of the railroad line (east end survey), and in salt marsh habitat east of Torrey Pines State Beach North Parking Lot south of the beach entrance (west end survey) .

Methods

The surveys were conducted on August 19, 2010. The first survey - east end survey - was conducted between 10:12 a.m. and 12:49 p.m. in high marsh habitat. Surveyors started near Interstate 5 at the Carmel Valley Road Bridge and walked west looping around the middle of the marsh and finishing near the City of San Diego's Pump Station 65 (Figure 1). The second survey, 1:50 p.m. to 3:01 p.m., passed through salt marsh habitat located near the railroad right-of-way at the Torrey Pines State Beach North Parking Lot (Figure 2).

Butterflies were detected using a Pollard walk (Pollard, 1977) with two observers moving along a line through potential habitat. Binoculars were used to aid visual identification. A handheld GPS unit (Garmin GPSMAP 60, WAAS enabled) was used to record the location of each individual detected; photos were taken when possible to confirm identification. Significant salt grass patches (typically > 5 m^2) were also recorded using the handheld GPS device. The observers were conscience about not counting the same individual twice, by noting the direction of flight of the individual and having one observer track any individuals that moved in the same direction of the observers. The observers felt that no individuals were double counted.

Temperature and wind speed remained fairly constant for both surveys (75.2°F to 81.7°F and 2.36 – 3.6 mi/hr). Both wind and temperature were ideal for the identification of the wandering skipper.

Results

Thirty-nine individuals of wandering skipper were detected at the Los Peñasquitos Lagoon in the areas surveyed (Table 1). Though salt grass was often found mixed with nectar plants

and other transitional plants, seven significant salt grass patches were counted and recorded (Table 2 and Figures 1-2).

East End Survey

No wandering skippers were found in the east end survey area. In the southeastern portion of the lagoon, there were many patches of *Frankenia*, but there was not much salt grass in close proximity. Also, it was observed that *Frankenia* was past its peak blooming throughout much of the lagoon and heavily parasitized by salt marsh dodder (*Cuscuta salina*) (Figure 3). The *Frankenia* in the east end was also heavily invaded by non-native grasses (*Lolium multiflorum* and *Polypogon* spp.) (Figure 4). One large patch of salt grass co-occurring with *Frankenia* was surveyed north of Pump Station 65; however, no skippers were observed after an exhaustive effort.

West End Survey

Conversely, the survey in the west end yielded 39 individuals. This habitat contains large salt grass patches adjacent to and sometimes intermixed with the *Frankenia*. As in the east end, the *Frankenia* was past its peak bloom, but some flowering still existed (Figure 5). The wandering skippers were observed mainly on *Frankenia*, though some observations were made on salt grass, *Heliotropium* spp., *Juncus acutus*, and *Salicornia virginica (=Sarcocornia pacifica*). Observations on the latter two may have been just opportunistic resting compared to nectaring.

The results indicate that in the right areas, the wandering skipper is abundant in Los Peñasquitos Lagoon. Anecdotal observation leads to the conclusion that salt grass and *Frankenia* in close proximity are key constitute elements of the wandering skipper habitat. Vegetative line transects to determine the composition of the species present would be instrumental to determine the species habitat preference.

This survey is not intended to be a comprehensive survey of the entire lagoon, but can be added to surveys by others. Additional habitat appears to be present to the south of the beach entrance area, but signage indicates that the area is restricted.

References

Orsak, L.J. 1977. The Butterflies of Orange County. Center for Pathobiology Miscellaneous Publication #3. University of California Press, New York. 349 pp.

Pollard, E. 1977. A method for assessing changes in the abundance of butterflies. Biological Conservation., 12:115-134.

SanGIS Digital sources: Natural Diversity Database and Sensitive Sighting Database. 2010.

World Conservation Monitoring Centre 1996. Panoquina errans. 2006 IUCN Red List of Threatened Species. Downloaded on 13 Aug 2010.

Table 1. Wandering Skipper Locations, Los Penasquitos Lagoon Observers: Keith Greer and Kim Roeland				
Observation Point	Date	Time	N (degrees)	W (degrees)
1	8/17/2010	1:56	32.9363	-117.2581
2	8/17/2010	2:06	32.9366	-117.2585
3	8/17/2010	2:08	32.9366	-117.2585
4	8/17/2010	2:11	32.9367	-117.2587
5	8/17/2010	2:14	32.9367	-117.2588
6	8/17/2010	2:17	32.9367	-117.2590
7	8/17/2010	2:18	32.9366	-117.2590
8	8/17/2010	2:19	32.9366	-117.2591
9	8/17/2010	2:20	32.9367	-117.2591
10	8/17/2010	2:21	32.9368	-117.2591
11	8/17/2010	2:24	32.9369	-117.2590
12	8/17/2010	2:25	32.9369	-117.2590
13	8/17/2010	2:26	32.9370	-117.2590
14	8/17/2010	2:28	32.9370	-117.2591
15	8/17/2010	2:29	32.9371	-117.2591
16	8/17/2010	2:35	32.9373	-117.2594
17	8/17/2010	2:36	32.9373	-117.2596
18	8/17/2010	2:37	32.9372	-117.2596
19	8/17/2010	2:38	32.9371	-117.2595
20	8/17/2010	2:39	32.9371	-117.2595
21	8/17/2010	2:42	32.9374	-117.2597
22	8/17/2010	2:43	32.9374	-117.2597
23	8/17/2010	2:43	32.9375	-117.2597
24	8/17/2010	2:44	32.9375	-117.2596
25	8/17/2010	2:45	32.9375	-117.2597
26	8/17/2010	2:45	32.9375	-117.2597
27	8/17/2010	2:46	32.9376	-117.2597
28	8/17/2010	2:47	32.9376	-117.2598
29	8/17/2010	2:47	32.9375	-117.2598
30	8/17/2010	2:48	32.9376	-117.2598
31	8/17/2010	2:49	32.9376	-117.2599
32	8/17/2010	2:49	32.9375	-117.2599
33	8/17/2010	2:51	32.9375	-117.2599
34	8/17/2010	2:51	32.9375	-117.2599
35	8/17/2010	2:51	32.9375	-117.2599
36	8/17/2010	2:53	32.9375	-117.2600
37	8/17/2010	3:00	32.9362	-117.2580
38	8/17/2010	3:00	32.9363	-117.2580
39	8/17/2010	3:00	32.9363	-117.2580

Table 2. Significant Salt Grass Patches, Los Penasquitos Lagoon

Observers: Keith Greer and Kim Roeland

Observation Point	Date	Time	N (degrees)	W (degrees)
1	8/19/2010	11:20	32.9279	-117.2477
2	8/19/2010	12:28	32.9220	-117.2392
3	8/19/2010	1:53	32.9310	-117.2416
4	8/19/2010	2:07	32.9366	-117.2586
5	8/19/2010	2:18	32.9366	-117.2590
6	8/19/2010	2:34	32.9374	-117.2594
7	8/19/2010	2:42	32.9369	-117.2590

Figure 1. Los Penasquitos Lagoon Wandering Skipper Survey East

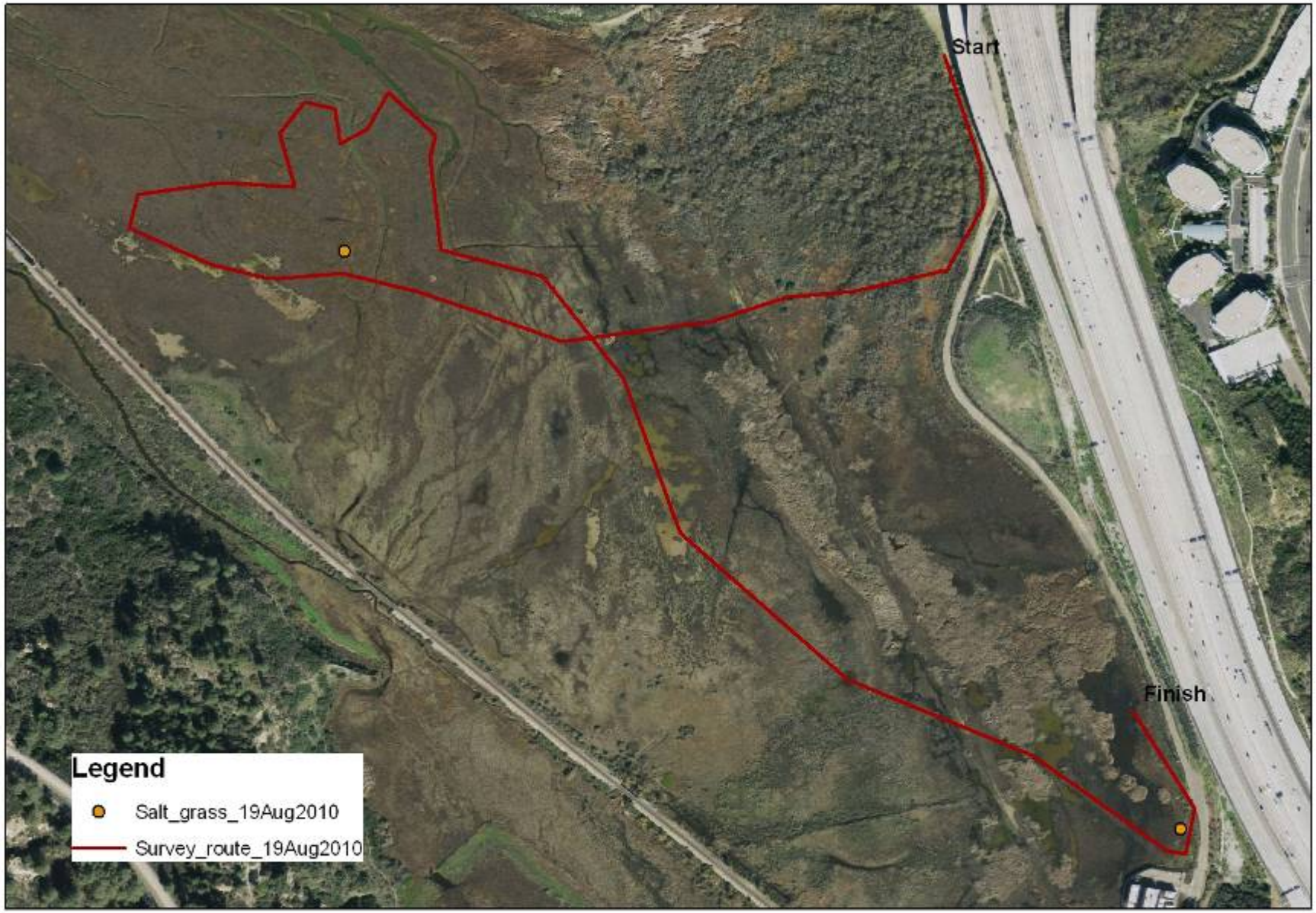

Figure 2. Los Penasquitos Lagoon Wandering Skipper Survey West

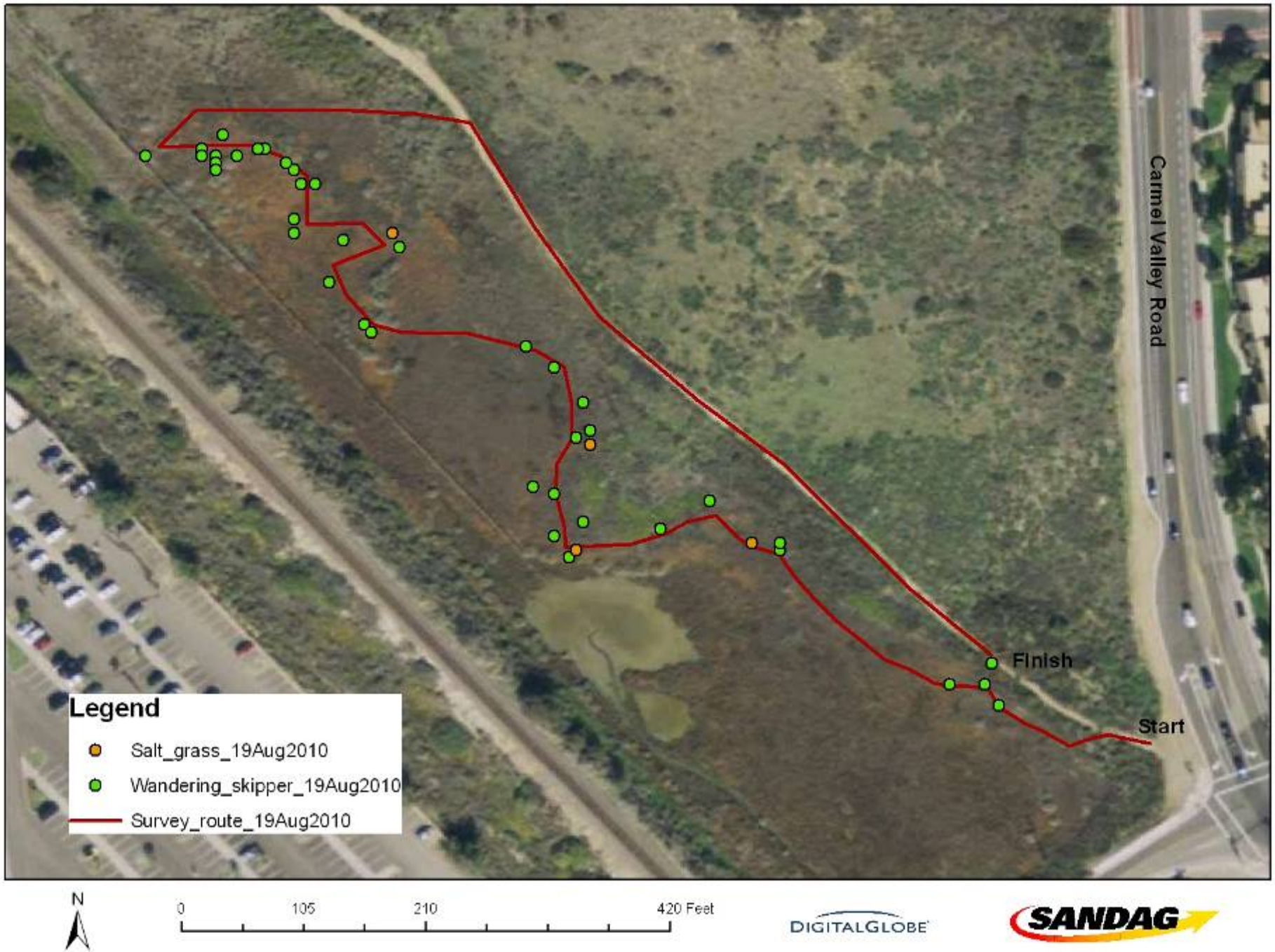

Figure 3. *Frankenia* past peak bloom and heavily parasitized by salt marsh dodder (*Cuscuta salina)*, East End Survey, Los Peñasquitos Lagoon

Figure 4. *Frankenia* heavily invaded by non-native grasses (*Lolium multiflorum* and *Polypogon* spp), East End Survey, Los Peñasquitos Lagoon

Figure 5. Keith Greer recording wandering skipper observation on GPS, West End Survey, Los Peñasquitos Lagoon

Wandering Skipper Survey at Sweetwater Marsh NWR
San Diego, California

3 September 2010

Observers: Keith Greer, Kim Roeland, and Brain Collins

Introduction

The wandering skipper (*Panoquina errans*) is a small butterfly of the family Hesperiidae. It is identifiable by its rich dark brown color and cream-colored spots on the dorsal forewing. The wandering skipper is found only along the coast in southern California, Baja California and northwestern mainland Mexico. Populations have been recorded from Huntington Beach, Upper Newport Bay, and Capistrano Beach (Orsak, 1977). In San Diego, the wandering skipper has been documented in the Tijuana Estuary, San Dieguito Lagoon, and Agua Hedionda lagoon (SanGIS, 2010), but it appears that no extensive survey data have been published.

The wandering skipper is on the IUCN Red List of Threatened Species (World Conservation Monitoring Centre, 1996) and is under consideration for possible listing on the endangered species list as a threatened species because of the reduction of salt marsh habitat.

The larval host plant for this species, salt grass (*Distichlis spicata*), is found in transitional habitats along the edge of the high marsh. Nectar sources include *Heliotropium* spp., *Haplopappus* spp., and *Frankenia salina* (Orsak 1977). Potential habitat for the wandering skipper was considered to be areas containing the larval host plant in close proximity to nectar plants.

Surveys were completed to determine presence of the wandering skipper in potential habitat areas within areas of the Sweetwater Marsh National Wildlife Refuge (Figure 1).

Methods

The surveys were conducted on September 3, 2010. Four different areas of the marsh were surveyed as described below. Butterflies were detected using a Pollard walk (Pollard, 1977) with 2-3 observers moving along a line through potential habitat. Binoculars were used to aid visual identification. A handheld GPS unit (Garmin GPSMAP 60, WAAS enabled) was used to record the location of each individual detected; photos were taken when possible to confirm identification. Significant salt grass patches (typically > 5 m^2) were also recorded using the handheld GPS device. The observers were conscientious about not counting the same individual twice; they noted the direction of flight of the individual and one observer tracked any individuals that moved in the same direction of the observers. The observers felt that no individuals were double counted.

Northeast Marsh Survey

The first survey, in high marsh habitat west of Interstate 5 was conducted between 10:23 am and 11:17 am. The temperature was 23.8° C (74.8° F) with and average wind speed of 3.9 km/hr (2.4 mph). The cloud cover was 0%.

Gunpowder Point Survey

The second survey, located on Gunpowder Point adjacent to San Diego Bay was conducted between 11:35 am and 12:27 pm. The temperature was 20.3° C (68.5 ° F) with and average wind speed of 15.7 km/hr (9.8 mph). The cloud cover was 0%. Brain Collins was not available for this survey.

Nature Center Road
The third survey, along the road leading to the nature center was conducted between 12:47 pm and 1:06 pm. The temperature was 21.7° C (71.0 ° F) with and average wind speed of 10.97 km/hr (6.8 mph). The cloud cover was 0%. Brain Collins was not available for this survey.

D-Street Fill
The fourth and final survey, occurred in an artificial fill area annual maintained to remove vegetation for least terns. The survey was between 1:25 pm and 2:06 pm. The temperature was 24.6° C (76.2 ° F) with and average wind speed of 12.4 km/hr (7.7 mph). The cloud cover was 0%.

Results

Individuals of wandering skipper were detected at each survey area, but the densities were lower than in pervious surveys (e.g., Famosa Slough or San Elijo Lagoon) (Table 1). The habitat areas in the lagoon appear ideal with many locations of salt grass adjacent to large areas of *Frankenia* (see Figures 1 -5). With the except of the D-Street Fill area the habitat looks as good as any other marsh found during past surveys in other lagoons. The lower densities maybe due the surveys occurring past the peak of the adult flight season which also corresponds with the lack of flower nectar sources. Alternatively the higher wind speed may have also affected the active flying and thus detection of adults. Both seem like reasonable hypothesizes for the results at Sweetwater marsh and surveys earlier in the season on less windy days would be recommended.

Special comment must be made regarding the D-Street fill area. This location is groomed for open sand annual for least tern management. Salt grass was prolific (several acres) in these disturbed areas; however, little *Frankenia* was observed adjacent to the salt grass. What was observed was at least two wandering skippers occurring in a very large patch of *Mesembryanthemum spp* (Figure 5). It can not be confirmed that these individuals were nectaring or just resting. This is a plant that has not been mentioned as a nectaring source for wandering skippers, but the observers saw many species of other butterflies utilizing this area. Refuge manager, Brain Collins, netted an individual for pictures to support the identification of wandering skipper in this area (Figure 6). The D-Street Fill appears atypical of other wandering skipper areas and future work is recommended in this area.

This survey is not intended to be a comprehensive survey of the entire reserve, but can be added to surveys by others.

References

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Pollard, E. 1977. A method for assessing changes in the abundance of butterflies. Biological Conservation., 12:115-134.

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Table 1. Wandering Skipper Locations, Sweetwater Marsh				
Observers: Keith Greer, Kim Roeland and Brian Collins				
Observation Point	Date	Time	N (decimal degrees)	W (decimal degrees)
1	9/3/2010	10:33	38.46867	-117.1047
2	9/3/2010	10:44	38.46133	-117.1046
3	9/3/2010	10:59	38.45233	-117.1057
4	9/3/2010	11:02	38.4555	-117.106
5	9/3/2010	11:52	38.4115	-117.1145
6	9/3/2010	11:55	38.41033	-117.1147
7	9/3/2010	12:04	38.41083	-117.0114
8	9/3/2010	12:10	38.40883	-117.1138
9	9/3/2010	12:53	38.39083	-117.1091
10	9/3/2010	1:00	38.3915	-117.1087
11	9/3/2010	1:01	38.39183	-117.1086
12	9/3/2010	1:24	38.392	-117.1084
13	9/3/2010	1:46	38.43367	-117.114
14	9/3/2010	2:05	38.43867	-117.1122

Table 2. Significant Salt Grass Patches, Sweetwater Marsh				
Observers: Keith Greer, Kim Roeland and Brain Collins				
Observation Point	Date	Time	N (decimal degrees)	W (decimal degrees)
1	9/3/2010	1:26	32.64337	-117.114
2	9/3/2010	11:52	32.64112	-117.114
3	9/3/2010	12:06	32.64098	-117.114
4	9/3/2010	12:15	32.64068	-117.114
5	9/3/2010	12:49	32.64002	-117.111
6	9/3/2010	12:54	32.63908	-117.109
7	9/3/2010	11:00	32.64535	-117.106
8	9/3/2010	12:59	32.6392	-117.109
9	9/3/2010	12:59	32.63915	-117.109
10	9/3/2010	1:03	32.63922	-117.108
11	9/3/2010	10:20	32.64678	-117.105
12	9/3/2010	10:45	32.64617	-117.105
13	9/3/2010	10:25	32.64702	-117.105

Figure 1. Sweetwater Marsh Wandering Skipper Survey

Figure 2. Wandering Skipper habitat at Gunpowder Point, Sweetwater National Wildlife Refuge

Figure 3. Typical plants in observed wandering skipper locations include large stands of salt grass adjacent to *Frankenia* in the upper marsh.

Figure 4: Brain Collins in typical wandering skipper habitat – northeastern area of Sweetwater Marsh.

Figure 5: Atypically habitat at D-Street Fill. Large areas of salt grass occur with little to no *Frankenia*. Wandering skippers were observed on the *Mesembryanthemum* spp, but nectaring could not be confirmed.

Figure 6: Wandering skipper netted by Brain Collins in the atypically habitat of the D-Street Fill. Netting was done to confirm species identification and photo documentation for this report. The individual was released after photographs were taken.