

# Task 14: 2025 Harbison's Dun Skipper Larval and Adult Surveys

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Hermes Copper Butterfly Surveys and Translocation Efforts  
SANDAG Contract #: 5005783

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Photo by D Marschalek



Photo by D Marschalek

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## **Executive Summary**

This report summarizes Harbison's dun skipper (*Euphyes vestris harbisoni*) larval surveys during the winter of 2024/2025 and adult surveys during the summer of 2025.

The Harbison's dun skipper has a very restricted distribution in southern California and northern Mexico and entomologists have expressed concern that threats will lead to the extirpation of populations. The larvae of this skipper feed only on San Diego sedge (*Carex spissa*) and are generally associated with riparian oak woodlands.

During the winter of 2024 – 2025, surveys for Harbison's dun skipper larvae were conducted to assess the annual larval population size. Transects were established in the drainages/canyons as a first attempt to standardize these surveys, with one larval survey conducted per site. Adult surveys occurred during the summer of 2025, starting in a relatively small geographic area where skippers were observed in past years, but expanded to surrounding areas if skippers were not detected. Due to the relatively consistent numbers of adults through the month of June, each site was surveyed two times. A total of 91 larvae and 37 adults (21 males, 16 females) were observed. The number of adults in 2025 was similar to 2024 and higher than 2023. In addition to these efforts, there were Harbison's dun skipper observations at two locations near Potrero, an area that had not been surveyed for the skipper in 44 years.

Adult local populations remain relatively small, but larger than in recent years with extreme drought. The known distribution has remained relatively unchanged, but occupancy was confirmed in the Tecate Peak/Potrero area. One possible change in occupancy is on the western side of Otay Mountain due to the Border 2 Fire, which likely impacted habitat with recent observations. Since we have only one year of larval data, comparisons across time are not possible yet. To facilitate a shift to using larval surveys to monitor annual population sizes, larval surveys will be conducted during the winter of 2025 – 2026 and adult surveys will be conducted during the summer of 2026. This will provide two years of data to compare adult and larval counts.

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## Introduction

The Harbison's dun skipper (*Euphyes vestris harbisoni*) is restricted to southern Orange County, extreme western Riverside County, and San Diego County (Brown and McGuire 1983, Marschalek et al. 2019), with one record from Mexico (Marschalek et al. 2019). Entomologists have expressed concern that the skipper is rare and may be negatively impacted by habitat loss and degradation (Brown 1991, Glassberg 2001). In 1989, the United States Fish and Wildlife Service (USFWS) issued a notice of review, on which Harbison's dun skipper was listed as a Category 2 species (USFWS 1989).

Prior to our initial efforts in 2013, nearly all of the known information about this skipper was restricted to descriptions in two published papers (Brown 1982, Brown and McGuire 1983). These papers identified this subspecies as morphologically different from the other subspecies, and described its biology (life history and nectaring sources) and distribution. The larvae of this skipper feed only on San Diego sedge (*Carex spissa*) and are generally associated with oak woodlands. The known distribution of the skipper at that time included southern Orange County and San Diego County, with the skipper present in nearly all areas containing considerable numbers of the sedge. Brown and McGuire (1983) also mentioned that the skipper appears to be facing several threats related to urbanization and development. They recorded a local extirpation at Adobe Falls in San Diego due to development, pollution, and subsequent invasion of the riparian area by non-native plants.

Further information about the skipper was obtained by conducting surveys as part of a project funded by a CDFW Local Assistance Grant (Marschalek and Deutschman 2015) and a previous SANDAG contract (Marschalek and Deutschman 2016, 2017a,b). Based on these surveys for larvae and adults in 2013 – 2017, the current Harbison's dun skipper distribution includes the foothills in the northern and southern parts of San Diego County, extreme western Riverside County, and southern Orange County (Marschalek et al. 2019). In San Diego County, there appears to be a substantial gap near Poway due to local extirpations likely resulting from wildfires. It is unclear whether the skipper currently occupies Silverado Canyon, its northernmost location, following the 1987 Silverado Fire. Extirpation from Silverado Canyon would represent a substantial range contraction based on historic localities. To the south, the Harbison's dun skipper has been documented in northern Baja California, Mexico. There are several threats to the Harbison's dun skipper, including recent extirpations further reducing its distribution, habitat alteration/loss, wildfires, drought, climate change, grazing, and habitat degradation associated with the spread of the goldspotted oak borer (*Agrilus auroguttatus*).

Following surveys in 2021, the status of local populations in San Diego County was updated. Although the previous year (2020 – 2021 winter) had been relatively dry, there were two

winters (2018 – 2019, 2019 – 2020) that experienced greater precipitation compared to the extreme drought in 2015 – 2017 (Williams et al. 2020). The increased precipitation could have provided the opportunity for the skipper to increase population sizes and expand to new areas since the 2017 surveys. Adult Harbison's dun skippers were detected at 6 of 12 sites as well as the north side of Otay Mountain. Substantial changes to the specific locations of San Diego sedge at some sites was unexpected and provided challenges with locating skippers, and recent fires likely caused extirpations at other sites. In 2022, a marking study demonstrated relatively small local population while a habitat preference analysis using GIS environmental variables found that warm but wetter areas were preferred over cooler (lowest and highest elevations in San Diego County) (Lyons and Marschalek 2022, Lyons 2023, Lyons et al. 2024). In 2023, only 9 males and 3 females were counted, with adults detected at 5 of 16 sites. In 2024 at the same sites, counts were higher with adults detected at 8 of the 16 sites (Marschalek and Faulkner 2024).

The objective of surveys in 2025 was to update the status of populations in San Diego County as well as compare larvae and adult counts to past adult counts, especially those of 2024. By conducting both types of surveys, a link can be established to maintain some continuity in the long-term dataset (Magurran et al. 2010).

## **Methods**

We conducted surveys for Harbison's dun skipper larvae and adults at 18 sites where we had previously detected adults or San Diego sedge (Marschalek et al. 2019, Lyons et al. 2024, Marschalek and Faulkner 2024). For larvae, visual surveys consisted of searching San Diego sedge plants for signs of feeding and/or hibernacula. When hibernacula were found, presence of a larva was determined by looking into the open end of the hibernacula for the distinctive head of a Harbison's dun skipper larva (Marschalek and Deutschman 2015). This is the first attempt to standardize survey larva abundance surveys so we recorded both ends of the survey to create a transect following the drainage. Since larvae are nocturnal feeders and present for several months, specific weather conditions or dates are less restrictive compared to adult monitoring. Larval surveys were conducted 18 December 2024 to 13 May 2025.

For adults, visual surveys consisted of systematic searches around San Diego sedge patches conducted during periods of appropriate weather (sunny or partly sunny, 24° to 35°C, and modest wind speeds). If skippers were not detected in the immediate area of past observations, a wider area was searched. Since adult numbers remain relatively consistent through the month of June, we planned only two surveys per site to include more sites. These surveys provide an index of population size and describe the adult flight season phenology, behavior, and nectar sources. Adult surveys were conducted 5 June to 7 July 2025.

## Results

A total of 91 Harbison’s dun skipper larvae were counted during the winter of 2024-2025, ranging from a single individual at three sites to 17 larvae at the Barrett Lake North site (Table 1, Appendix A and B). Of the 23 different sites, larvae were detected at 14 (61%) sites. It is possible that San Diego sedge and larvae are present at Montecito Ranch; however, the late date of the survey meant that the riparian was dense and obstructed views of the drainage. Outside the scope of this project, a single larva was observed on 16 April 2025 along Highway 94 on the north slopes of Tecate Peak (D Faulkner). This is the location of the type specimen, collected on 14 June 1981, used to describe the subspecies (Brown and McGuire 1983).

**Table 1.** Sites and dates for Harbison’s dun skipper larval surveys in the winter of 2024 – 2025.

Site	HDS Larval	
	Count	Survey Dates
Barrett Lake	8	4-Feb-2025
Barrett Lake North	17	4-Feb-2025
Blue Sky Ecological Reserve	0	21-Jan-2025
Canada San de Vicente Ecological Reserve	2	4-Mar-2025
Crestridge Ecological Reserve	15	18-Dec-2024
Daley Ranch (Cougar Pass Road)	3	21-Feb-2025
Hellhole Canyon County Park	7	11-Feb-2025
Elfin Forest (Visitor Center)	0	28-Jan-2025
Hellhole Canyon County Park (Fureigh Site)	1	4-Mar-2025
Hollenbeck Canyon Wildlife Area (NE)	2	19-Feb-2025
Hollenbeck Canyon Wildlife Area (main drainage)	15	19-Feb-2025
Lake Hodges	7	16-Jan-2025
Montecito Ranch*	0	13-May-2025
Old Ironside County Park	0	18-Dec-2024
Otay Mountain	0	15-Apr-2025
Pamo Valley (Cleveland National Forest)	4	21-Feb-2025
Red Mountain	0	22-Jan-2025
Santa Margarita River Trail	0	22-Jan-2025
SDNWR - Beaver Hollow	8	3-Feb-2025
SDNWR - Las Montanas South	1	17-Jan-2025
Skye Valley Road (Cleveland National Forest)	1	23-Jan-2025
Sycamore Canyon/Goodan Ranch County Park	0	17-Feb-2025
Sycuan Peak Ecological Reserve	0	24-Mar-2025

\*riparian vegetation was dense and possibly prevented detection of San Diego sedge

A total of 37 Harbison’s dun skipper adults (21 males and 16 females) were observed across 17 sites (Table 2, Appendix C). While local populations appear to remain small, as roughly the same number of Harbison’s dun skipper adults were observed in 2025 compared to 2024. The majority of adults were observed in the Barrett Lake area (two Barrett Lake sites and Skye Valley Road). Outside the scope of this project, about 20 Harbison’s dun skipper adults were observed on 24 June 2025 at the private Stony Property which is 2.5 miles west of Potrero (J Martin).

**Table 2.** Sites and dates for Harbison’s dun skipper adult surveys in 2025, including the highest daily count (Max Count).

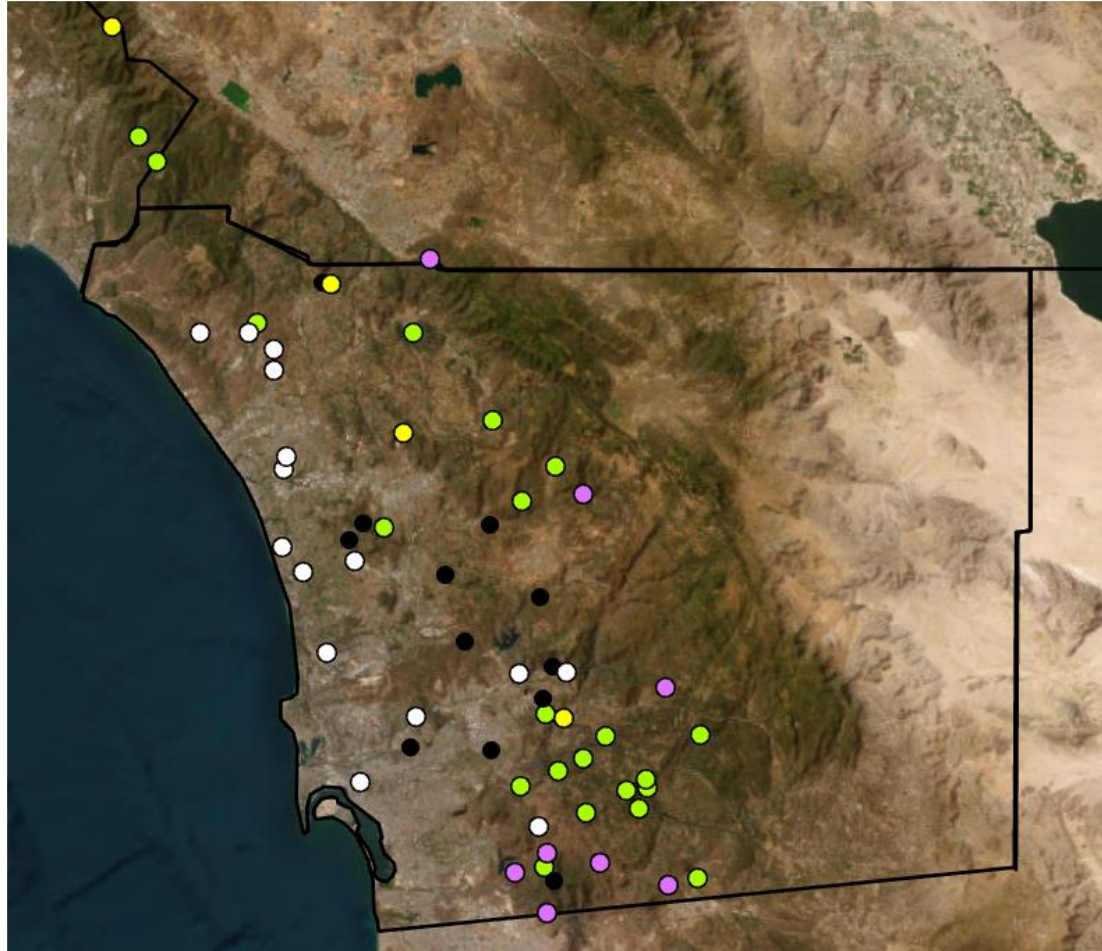
Site	HDS Maximum	
	Count	Survey Dates
Barrett Lake	1	13-Jun-25 5-Jul-25
Barrett Lake North	8	13-Jun-25 5-Jul-25
Blue Sky Ecological Reserve	0	10-Jun-25 27-Jun-25
Crestridge Ecological Reserve	3	16-Jun-25 4-Jul-25
Elfin Forest (Visitor's Center)	0	20-Jun-25 1-Jul-25
Hellhole Canyon County Park	2	5-Jun-25 25-Jun-25
Hollenbeck Canyon Wildlife Area (NE)	1	19-Jun-25 7-Jul-25
Lake Hodges	1	5-Jun-25 25-Jun-25
Old Ironside County Park	0	16-Jun-25 4-Jul-25
Pamo Valley (Cleveland National Forest)	2	20-Jun-25 1-Jul-25
Red Mountain	0	6-Jun-25 26-Jun-25
Santa Margarita River Trail	0	6-Jun-25 26-Jun-25
SDNWR - Beaver Hollow	2	21-Jun-25 3-Jul-25
SDNWR - Las Montanas South	0	19-Jun-25 7-Jul-25
Skye Valley Road (Cleveland National Forest)	7	13-Jun-25 5-Jul-25
Sycamore Canyon/Goodan Ranch County Park	0	10-Jun-25 27-Jun-25
Sycuan Peak Ecological Reserve	2	21-Jun-25 3-Jul-25

With larval surveys during the winter of 2024 – 2025, we can start to make the link between adult and larval counts (Table 3). Of the 18 sites, larval counts were higher than both years of adult counts at 9 sites and lower at 2 sites. In general, we were able to find both larvae and adults at the same site but only one larva (no adults) were observed at SDNWR – Las Montanas South and no larvae (at least three adults) were detected at Sycuan Peak Ecological Reserve in the last two years. These two types of surveys also provide a more thorough assessment of occupancy of habitat patches which is useful for updating the current distribution (Figure 1). The observations near Potrero (north slopes of Tecate Peak and Stony Property, about 2 miles

apart), were able to confirm the presence of this skipper after the initial record 44 years earlier. Considering the Border 2 Fire in January 2025, the status of Harbison’s dun skipper on the western side of Otay Mountain is unknown.

**Table 3.** Comparison of the daily high count of adults for each year (Maximum Count) in 2024 and 2025, and larval counts in 2024 – 2025. Only sites with data for all three survey periods are included.

Site	2024 Adult Maximum Count	2024 – 2025 Larval Count	2025 Adult Maximum Count
Barrett Lake	0	8	1
Barrett Lake North	2	17	8
Blue Sky Ecological Reserve	0	0	0
Crestridge Ecological Reserve	7	15	3
Elfin Forest (Visitor's Center)	0	0	0
Hellhole Canyon County Park	4	7	2
Hollenbeck Canyon Wildlife Area (NE)	1	2	1
Keithley Preserve (Elfin Forest)	0	0	N/A
Lake Hodges	1 - 2	7	1
Old Ironside County Park	0	0	0
Pamo Valley (Cleveland National Forest)	2	4	2
Red Mountain	0	0	0
Santa Margarita River Trail	0	0	0
SDNWR - Beaver Hollow	0	8	2
SDNWR - Las Montanas South	0	1	0
Skye Valley Road (Cleveland National Forest)	2	1	7
Sycamore Canyon/Goodan Ranch County Park	0	0	0
Sycuan Peak Ecological Reserve	1	0	2



**Figure 1.** Harbison's dun skipper known distribution as of August 2025 (green = extant, yellow = probably extant but uncertainty exists, black = extirpated, purple = not surveyed, white = San Diego sedge without Harbison's dun skipper observation). For some sites, uncertain might exist due to hibernacula observed without a larva/adult or it has been several years have passed since the last survey. Some historical locations are on private property or have vague locality data so that the exact location cannot be determined.

## **Discussion**

While local populations remain relatively small, the number of adults skipper observations in 2025 was similar to 2024, both higher than 2023. In general, both adult and larval Harbison's dun skippers were observed at sites we know they are present. The known distribution of the skipper has remained relatively unchanged, but occupancy was confirmed at two locations near Tecate Peak/Potrero, and the Border 2 Fire impacted locations on Otay Mountain with recent skipper observations so their status is uncertain.

The observations in the Potrero area suggest that the skipper is likely to be present on private property in other areas of the county. It is common to find Harbison's dun skipper using small habitat patches, making a detailed description of their distribution challenging. These areas and local populations offer the potential for a steppingstone between conserved lands, facilitating gene flow and recolonization following an extirpation. They also assist with providing more resources to support a larger regional population (Fahrig 2013).

The status of the Harbison's dun skipper on the western side of Otay Mountain should be assessed considering the Border 2 Fire likely burned recently occupied habitat. Harbison's dun skipper has shown the ability to either survive or quickly recolonize following fire in the past (e.g., Crestridge Ecological Reserve, Hollenbeck Canyon Wildlife Area) but has also experienced decades long extirpations (Sycamore Canyon/Goodan Ranch County Park). Considering the terrain and fire footprint, we suspect that the area on the western side of Otay Mountain will be recolonized relatively quickly, excluding additional fires or extreme drought.

In this report, we described a first attempt at standardizing larval surveys. Like adult surveys, the topography and vegetation often pose challenges for larval surveys. While some drainages/canyons are relatively easy to walk, some have very rocky and steep sections that would require climbing gear to traverse. For this reason, some sites are more completely surveyed than others (i.e., percent of drainages covered). We also expect that the distribution of San Diego sedge within each woodland will change over just a few years. This presents a challenge to long-term monitoring of sites that are difficult to completely survey, as skippers and sedges might be found in the sections of the drainages/canyons not surveyed during certain years and not others. During the winter of 2025-2026, we will look to replicate the efforts described in this report and possibly look to expand some transects.

## **Acknowledgement**

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Wildlife, City of San Diego, Cleveland National Forest, County of San Diego, Endangered Habitats Conservancy, Sweetwater Authority, and Escondido Creek Conservancy, United States Fish and Wildlife Service.

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## Appendix A: 2024-2025 Harbison's dun skipper larval observations

Date	Site	Latitude	Longitude	Total	LifeStage
4-Feb-25	Barrett Lake North	32.71305	-116.70256	1	Larva
4-Feb-25	Barrett Lake North	32.71271	-116.70235	1	Larva
4-Feb-25	Barrett Lake North	32.71381	-116.70266	2	Larva
4-Feb-25	Barrett Lake North	32.71392	-116.70264	2	Larva
4-Feb-25	Barrett Lake North	32.71412	-116.70280	2	Larva
4-Feb-25	Barrett Lake North	32.71224	-116.70223	2	Larva
4-Feb-25	Barrett Lake North	32.71231	-116.70233	2	Larva
4-Feb-25	Barrett Lake North	32.71335	-116.70258	3	Larva
4-Feb-25	Barrett Lake North	32.71388	-116.70262	3	Larva
4-Feb-25	Barrett Lake North	32.71270	-116.70234	3	Larva
4-Feb-25	Barrett Lake North	32.71339	-116.70256	4	Larva
4-Feb-25	Barrett Lake North	32.71270	-116.70231	4	Larva
4-Feb-25	Barrett Lake North	32.71310	-116.70255	5	Larva
4-Feb-25	Barrett Lake North	32.71220	-116.70227	6	Larva
4-Feb-25	Barrett Lake North	32.71262	-116.70229	8	Larva
4-Feb-25	Barrett Lake North	32.71256	-116.70224	8	Larva
4-Feb-25	Barrett Lake North	32.71420	-116.70282	16	Larva
4-Feb-25	Barrett Lake Road	32.69688	-116.70378	2	Larva
4-Feb-25	Barrett Lake Road	32.69660	-116.70317	2	Larva
4-Feb-25	Barrett Lake Road	32.69657	-116.70307	2	Larva
4-Feb-25	Barrett Lake Road	32.69647	-116.70287	2	Larva
4-Feb-25	Barrett Lake Road	32.69673	-116.70359	3	Larva
4-Feb-25	Barrett Lake Road	32.69675	-116.70346	3	Larva
4-Feb-25	Barrett Lake Road	32.69642	-116.70301	3	Larva
4-Feb-25	Barrett Lake Road	32.69651	-116.70291	3	Larva

Appendix A: 2024-2025 Harbison's dun skipper larval observations continued.

Date	Site	Latitude	Longitude	Total
4-Mar-25	Canada San de Vicente Ecological Reserve	32.97919	-116.87193	1
4-Mar-25	Canada San de Vicente Ecological Reserve	32.97921	-116.87180	3
18-Dec-24	Crestridge Ecological Reserve	32.82650	-116.86036	1
18-Dec-24	Crestridge Ecological Reserve	32.82885	-116.85891	1
18-Dec-24	Crestridge Ecological Reserve	32.82894	-116.85840	1
18-Dec-24	Crestridge Ecological Reserve	32.82618	-116.86060	2
18-Dec-24	Crestridge Ecological Reserve	32.82653	-116.86032	2
18-Dec-24	Crestridge Ecological Reserve	32.82891	-116.85830	2
18-Dec-24	Crestridge Ecological Reserve	32.82858	-116.85742	2
18-Dec-24	Crestridge Ecological Reserve	32.82624	-116.86053	3
18-Dec-24	Crestridge Ecological Reserve	32.82888	-116.85870	3
18-Dec-24	Crestridge Ecological Reserve	32.82872	-116.85807	3
18-Dec-24	Crestridge Ecological Reserve	32.82621	-116.86056	4
18-Dec-24	Crestridge Ecological Reserve	32.82899	-116.85854	4
18-Dec-24	Crestridge Ecological Reserve	32.82637	-116.86053	5
18-Dec-24	Crestridge Ecological Reserve	32.82641	-116.86044	5
21-Feb-25	Daley Ranch	33.20746	-117.08496	1
21-Feb-25	Daley Ranch	33.20736	-117.08469	2
21-Feb-25	Daley Ranch	33.20740	-117.08464	3
11-Feb-25	Hellhole Canyon County Park	33.21721	-116.93714	2
11-Feb-25	Hellhole Canyon County Park	33.21731	-116.93713	2
11-Feb-25	Hellhole Canyon County Park	33.22137	-116.93314	2
11-Feb-25	Hellhole Canyon County Park	33.21698	-116.93692	4
11-Feb-25	Hellhole Canyon County Park	33.21735	-116.93708	4
11-Feb-25	Hellhole Canyon County Park	33.21716	-116.93705	7

Appendix A: 2024-2025 Harbison's dun skipper larval observations continued.

Date	Site	Latitude	Longitude	Total
11-Feb-25	Hellhole Canyon County Park	33.22115	-116.93262	8
4-Mar-25	Hellhole Canyon County Park - Fureigh Site	33.20938	-116.91537	4
19-Feb-25	Hollenbeck Canyon Wildlife Area (NE)	32.69450	-116.79322	5
19-Feb-25	Hollenbeck Canyon Wildlife Area (NE)	32.69447	-116.79307	6
19-Feb-25	Hollenbeck Canyon Wildlife Area (main)	32.69550	-116.81148	1
19-Feb-25	Hollenbeck Canyon Wildlife Area (main)	32.69539	-116.81126	1
19-Feb-25	Hollenbeck Canyon Wildlife Area (main)	32.69545	-116.81109	1
19-Feb-25	Hollenbeck Canyon Wildlife Area (main)	32.69624	-116.81092	1
19-Feb-25	Hollenbeck Canyon Wildlife Area (main)	32.69648	-116.81071	1
19-Feb-25	Hollenbeck Canyon Wildlife Area (main)	32.69532	-116.81138	2
19-Feb-25	Hollenbeck Canyon Wildlife Area (main)	32.69547	-116.81121	2
19-Feb-25	Hollenbeck Canyon Wildlife Area (main)	32.69583	-116.81123	2
19-Feb-25	Hollenbeck Canyon Wildlife Area (main)	32.69594	-116.81120	2
19-Feb-25	Hollenbeck Canyon Wildlife Area (main)	32.69643	-116.81081	2
19-Feb-25	Hollenbeck Canyon Wildlife Area (main)	32.69500	-116.81128	3
19-Feb-25	Hollenbeck Canyon Wildlife Area (main)	32.69606	-116.81109	3
19-Feb-25	Hollenbeck Canyon Wildlife Area (main)	32.69518	-116.81128	6
19-Feb-25	Hollenbeck Canyon Wildlife Area (main)	32.69634	-116.81087	6
19-Feb-25	Hollenbeck Canyon Wildlife Area (main)	32.69506	-116.81125	7
16-Jan-25	Lake Hodges	33.08293	-117.11402	1
16-Jan-25	Lake Hodges	33.08212	-117.11475	1
16-Jan-25	Lake Hodges	33.08310	-117.11432	2
16-Jan-25	Lake Hodges	33.08145	-117.11456	2
16-Jan-25	Lake Hodges	33.08282	-117.11395	3
16-Jan-25	Lake Hodges	33.08313	-117.11366	4

Appendix A: 2024-2025 Harbison’s dun skipper larval observations continued.

Date	Site	Latitude	Longitude	Total
16-Jan-25	Lake Hodges	33.08287	-117.11385	5
21-Feb-25	Pamo Valley	33.15764	-116.84055	1
21-Feb-25	Pamo Valley	33.15747	-116.84078	3
21-Feb-25	Pamo Valley	33.15760	-116.84068	3
21-Feb-25	Pamo Valley	33.15788	-116.84058	4
3-Feb-25	SDNWR - Beaver Hollow	32.75078	-116.83894	1
3-Feb-25	SDNWR - Beaver Hollow	32.75142	-116.84003	1
3-Feb-25	SDNWR - Beaver Hollow	32.75001	-116.83630	1
3-Feb-25	SDNWR - Beaver Hollow	32.74998	-116.83716	2
3-Feb-25	SDNWR - Beaver Hollow	32.75069	-116.83902	3
3-Feb-25	SDNWR - Beaver Hollow	32.75008	-116.83656	3
3-Feb-25	SDNWR - Beaver Hollow	32.75146	-116.83921	4
3-Feb-25	SDNWR - Beaver Hollow	32.75017	-116.83624	14
17-Jan-25	SDNWR - Las Montanas	32.72918	-116.89752	1
23-Jan-25	Skye Valley Road	32.72876	-116.69371	4

Other Harbison’s dun skipper larval observations in the winter of 2024-2025.

Date	Site	Latitude	Longitude	Total
16-Apr-25	Tecate Peak (north slopes)	32.59685	-116.68080	1

## Appendix B: 2024-2025 Harbison's dun skipper larval survey transect end points

Site/Transect	Latitude	Longitude
Barrett Lake North	32.7121	-116.7024
Barrett Lake North	32.7142	-116.7028
Barrett Lake Road	32.6965	-116.7029
Barrett Lake Road	32.6971	-116.7037
Blue Sky Ecological Reserve 1	33.0157	-117.0223
Blue Sky Ecological Reserve 1/2	33.0166	-117.0101
Blue Sky Ecological Reserve 2	33.0120	-117.0095
Canada San de Vicente Ecological Reserve	32.9788	-116.8739
Canada San de Vicente Ecological Reserve	32.9853	-116.8661
Crestridge Ecological Reserve	32.8262	-116.8606
Crestridge Ecological Reserve	32.8285	-116.8568
Daley Ranch	33.2075	-117.0847
Daley Ranch	33.2075	-117.0853
Elfin Forest County Park	33.0869	-117.1432
Hellhole Canyon County Park - Fureigh Site	33.2089	-116.9150
Hellhole Canyon County Park 1	33.2212	-116.9326
Hellhole Canyon County Park 1	33.2223	-116.9347
Hellhole Canyon County Park 2	33.2164	-116.9361
Hellhole Canyon County Park 2	33.2190	-116.9376
Hollenbeck Canyon Wildlife Area (main)	32.6946	-116.8115
Hollenbeck Canyon Wildlife Area (main)	32.6965	-116.8107
Hollenbeck Canyon Wildlife Area (NE)	32.6945	-116.7932
Hollenbeck Canyon Wildlife Area (NE)	32.6954	-116.7968
Keithley Preserve	33.0751	-117.1613
Keithley Preserve	33.0765	-117.1580

Appendix B: 2024-2025 Harbison’s dun skipper larval survey transect end points continued.

Site/Transect	Latitude	Longitude
Lake Hodges	33.0801	-117.1148
Lake Hodges	33.0832	-117.1136
Old Ironsides County Park	32.8231	-116.8275
Old Ironsides County Park	32.8233	-116.8272
Pamo Valley	33.1533	-116.8479
Pamo Valley	33.1615	-116.8395
Red Mountain	33.4072	-117.2000
Red Mountain	33.4079	-117.1986
Santa Margarita	33.4080	-117.2134
Santa Margarita	33.4104	-117.2149
SDNWR - Beaver Hollow Road	32.7502	-116.8360
SDNWR - Beaver Hollow Road	32.7515	-116.8400
SDNWR - Las Montanas	32.7253	-116.8934
SDNWR - Las Montanas	32.7285	-116.8985
Skye Valley Road	32.7299	-116.6933
Skye Valley Road	32.7299	-116.6933
Sycamore Canyon/Goodan Ranch County Park	32.9241	-116.9866
Sycamore Canyon/Goodan Ranch County Park	32.9278	-116.9848
Sycuan Peak Ecological Reserve	32.7717	-116.8078
Sycuan Peak Ecological Reserve	32.7722	-116.8095

If only one point is listed for a site/transect, there was one small location with San Diego sedge to survey.

## Appendix C: 2025 Harbison's dun skipper adult observations

Date	Site	Latitude	Longitude	Female	Male	Total
13-Jun-25	Barrett Lake North	32.71254	-116.70227	0	1	1
13-Jun-25	Barrett Lake North	32.71283	-116.70234	0	1	1
13-Jun-25	Barrett Lake North	32.7131	-116.70257	1	0	1
13-Jun-25	Barrett Lake North	32.71268	-116.70238	2	0	2
13-Jun-25	Barrett Lake North	32.71239	-116.70227	1	2	3
5-Jul-25	Barrett Lake North	32.71262	-116.70226	1	0	1
5-Jul-25	Barrett Lake North	32.71265	-116.70226	1	0	1
5-Jul-25	Barrett Lake North	32.71308	-116.70257	1	0	1
5-Jul-25	Barrett Lake Road	32.69678	-116.70363	1	0	1
16-Jun-25	Crestridge Ecological Reserve	32.82618	-116.8606	1	0	1
16-Jun-25	Crestridge Ecological Reserve	32.82637	-116.8605	1	1	2
4-Jul-25	Crestridge Ecological Reserve	32.82619	-116.86036	0	1	1
25-Jun-25	Hellhole Canyon County Park	33.22107	-116.93269	0	1	1
25-Jun-25	Hellhole Canyon County Park	33.2171	-116.93706	0	1	1
19-Jun-25	Hollenbeck Canyon Wildlife Area (NE)	32.69502	-116.79247	1	0	1
19-Jun-25	Hollenbeck Canyon Wildlife Area (main)	32.69506	-116.81183	0	1	1
19-Jun-25	Hollenbeck Canyon Wildlife Area (main)	32.69519	-116.81198	0	1	1
19-Jun-25	Hollenbeck Canyon Wildlife Area (main)	32.69504	-116.81346	1	0	1
25-Jun-25	Lake Hodges	33.08279	-117.11393	0	1	1
20-Jun-25	Pamo Valley	33.15734	-116.8418	0	1	1
1-Jul-25	Pamo Valley	33.15793	-116.84063	1	0	1
1-Jul-25	Pamo Valley	33.15808	-116.84035	0	1	1
21-Jun-25	SDNWR - Beaver Hollow	32.74977	-116.83849	0	2	2
13-Jun-25	Skye Valley Road	32.72686	-116.69428	0	2	2
13-Jun-25	Skye Valley Road	32.72809	-116.6941	0	2	2
13-Jun-25	Skye Valley Road	32.72663	-116.69421	2	1	3
21-Jun-25	Sycuan Peak Ecological Reserve	32.77203	-116.80967	1	1	2

Other Harbison's dun skipper adult observations in 2025.

Date	Site	Latitude	Longitude	Total
24-Jun-25	Stony Property (private)	32.617968	-116.657142	20