

<b>DOCKETED</b>	
<b>Docket Number:</b>	07-AFC-05C
<b>Project Title:</b>	Ivanpah Solar Electric Generating System (Compliance)
<b>TN #:</b>	248302
<b>Document Title:</b>	IVANPAH SOLAR ELECTRIC GENERATING SYSTEM AVIAN & BAT MONITORING PLAN 2020 – 2021 Annual Report Year 8
<b>Description:</b>	IVANPAH SOLAR ELECTRIC GENERATING SYSTEM AVIAN & BAT MONITORING PLAN 2020 – 2021 Annual Report Year 8
<b>Filer:</b>	susan fleming
<b>Organization:</b>	California Energy Commission
<b>Submitter Role:</b>	Commission Staff
<b>Submission Date:</b>	1/3/2023 5:47:38 PM
<b>Docketed Date:</b>	1/4/2023



## IVANPAH SOLAR ELECTRIC GENERATING SYSTEM AVIAN & BAT MONITORING PLAN

2020 – 2021 Annual Report

Year 8



Prepared for:  
**Solar Partners I, II, and VIII**  
100302 Yates Well Road  
Nipton, CA 92364



Prepared by:  
**Western EcoSystems  
Technology, Inc.**



January 2022

# Table of Contents

---

Section 1.0 Introduction .....	1
1.1 Project Background.....	1
1.2 Monitoring Plan Overview and Goals .....	1
1.3 Purpose of This Report .....	2
Section 2.0 Methods .....	4
2.1 Facility Monitoring.....	4
2.1.1 Standardized Searches.....	4
2.1.1.1 Areas Surveyed.....	4
2.1.1.2 Search Frequency and Timing.....	4
2.1.1.3 Search Methods .....	4
2.1.4 Incidental Reporting .....	5
Section 3.0 Monitoring Results.....	7
3.1 Summary of Avian Detections .....	7
3.1.1 Spatial Patterns of Detections .....	11
3.1.2 Temporal Patterns of Detections .....	13
3.1.2 Summary of Bat Detections.....	14
Section 4.0 Comparison to Fatality Index.....	15
4.1 Fatality Index Comparison.....	15
Section 5.0 Framework for Management and Risk Response .....	16
5.1 Comparison to the Fatality Index .....	16
5.2 Assessment of Potential Effects to National and Regional Populations.....	16
5.3 Assessment of Effects to Local Populations .....	17
5.4 Assessment of Effects to Special Status Species .....	18
Section 6.0 Recommendations.....	19
Section 9.0 Literature Cited.....	20

## Figures

Figure 1. Ivanpah Vicinity Map .....	3
Figure 2. Locations of Detections, by Cause, within Solar Units.....	12
Figure 3. Number of Detections on Each Survey Date, 2020 – 2021 Monitoring Year.....	13
Figure 4. Total number of detections in the tower area during the 2020 – 2021 monitoring year relative to the fatality index. ....	15

## Tables

Table 1. Number of Individual Bird Detections, by Species, 2020 – 2021 Monitoring Year.....	8
Table 2. Number of detections, occurrence at the Project, and population estimates for bird species with greater than five detections at the Project.....	17
Table 3. Number of Detections of Locally Breeding Species with >5 detections found during the respective breeding period during the 2020 – 2021 Monitoring Year.....	18

## Appendices

Appendix A. Individual Avian Detections.

# Section 1.0 Introduction

---

## 1.1 Project Background

The Ivanpah Solar Electric Generating System (referred to in this report as "Ivanpah" or "Project") consists of three solar power electrical generating facilities (Units 1, 2, and 3) with a combined net capacity of 377 megawatts. Each unit includes a central power tower with an air-cooled condenser (ACC) and associated electrical generating equipment, surrounded by a heliostat array that reflects sunlight to a boiler at the top of the power tower. Ivanpah is located on approximately 1,457 hectares (3,600 acres) of Bureau of Land Management (BLM) land west of Interstate 15 near the town of Nipton in San Bernardino County, California (Figure 1). Construction was initiated in 2010 and completed in late 2013.

## 1.2 Monitoring Plan Overview and Goals

An Avian & Bat Monitoring and Management Plan (ABMMP or Plan) was prepared by the Project proponents in collaboration with the U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), California Energy Commission (CEC), and Bureau of Land Management (BLM) to guide comprehensive monitoring of impacts to birds and bats associated with the operation of the Project. In December 2017, the TAC approved the field methods described in Revision 14 of the Plan (2020), which provides a framework for comparing detections in the tower area of all three units to baseline levels of mortality observed during the first four years of standardized monitoring.

The reporting, methods and analysis for Revision 14 of the Plan was officially approved by the TAC on October 23, 2020. Specifically, Revision 14 details the surveys, data analysis and reporting processes that will be implemented by Ivanpah in collaboration with the USFWS, CDFW, CEC, and BLM and provides the following goals and objectives as excerpted from the Plan (2020):

### Plan Goals

1. Assess levels of mortality: Detections (i.e., fatalities or injuries) documented and an annual assessment of the level of mortality will be determined and provided consistent with the “high, medium and low” framework as described in Section 5.3.
2. Provide a Framework for Management and Response to Risks: The designation and description of the functioning of the TAC provides a management and decision framework for the identification and implementation of potential adaptive management measures.

### Plan Objectives

The first two years of monitoring documented that the mortality associated with the perimeter fences, transmission lines, and offsite transects was less than five detections per season and is considered low. Additionally, the patterns associated with avian use have been consistent over the seasons and documented in the annual reports. During the third and fourth year of monitoring, consistent patterns of mortality associated with the tower areas and heliostat areas were documented. Therefore, as revised, this Plan has the following objectives:

1. Document patterns of avian and bat mortality and injury at the facility.
2. Provide quantitative and qualitative information for developing and implementing adaptive management responses commensurate with identified impacts.
3. Provide a framework for the TAC to jointly review, characterize, and recommend responses, based on monitoring results, to the appropriate lead agency representatives.

The approved Plan (2020) continues to: 1) satisfy the BLM Right-of-Way (ROW) Permit requirement that the Project proponent develop an avian plan as well as a Migratory Bird Treaty Act (MBTA) Conservation Agreement; 2) satisfy the requirements for the Avian & Bat Monitoring and Management Plan approved by the CEC for Ivanpah per CEC Condition of Certification BIO-21; and 3) achieve the avian and bat protection objectives of the USFWS in relation to the MBTA, Bald and Golden Eagle Protection Act (Eagle Act), and Federal Endangered Species Act (ESA), including preparing written records of the actions that have been taken to avoid, minimize, and compensate for potential adverse impacts to avian and bat species. By developing a proactive management plan in close consultation with the USFWS and other relevant state and federal agencies, Project proponents can effectively comply with the intent of the federal MBTA, Eagle Act, ESA, and relevant state regulations (USFWS 2012).

### **1.3 Purpose of This Report**

This report provides a summary of the detections (by cause and location for known and unknown cause according to the biologically informed seasons (16 December 2020– 15 December 2021) as described in the 2014 – 2015 Annual Report (WEST 2016), and further described in Section 2.1.5. Biologically informed seasons are defined in this report as winter (16 December 2020 – 20 March 2021), spring (21 March – 25 May 2021), summer (26 May – 17 August 2021), and fall (18 August – 15 December 2021), and are collectively referred to as the 2020 – 2021 monitoring year or year 8 throughout this report.

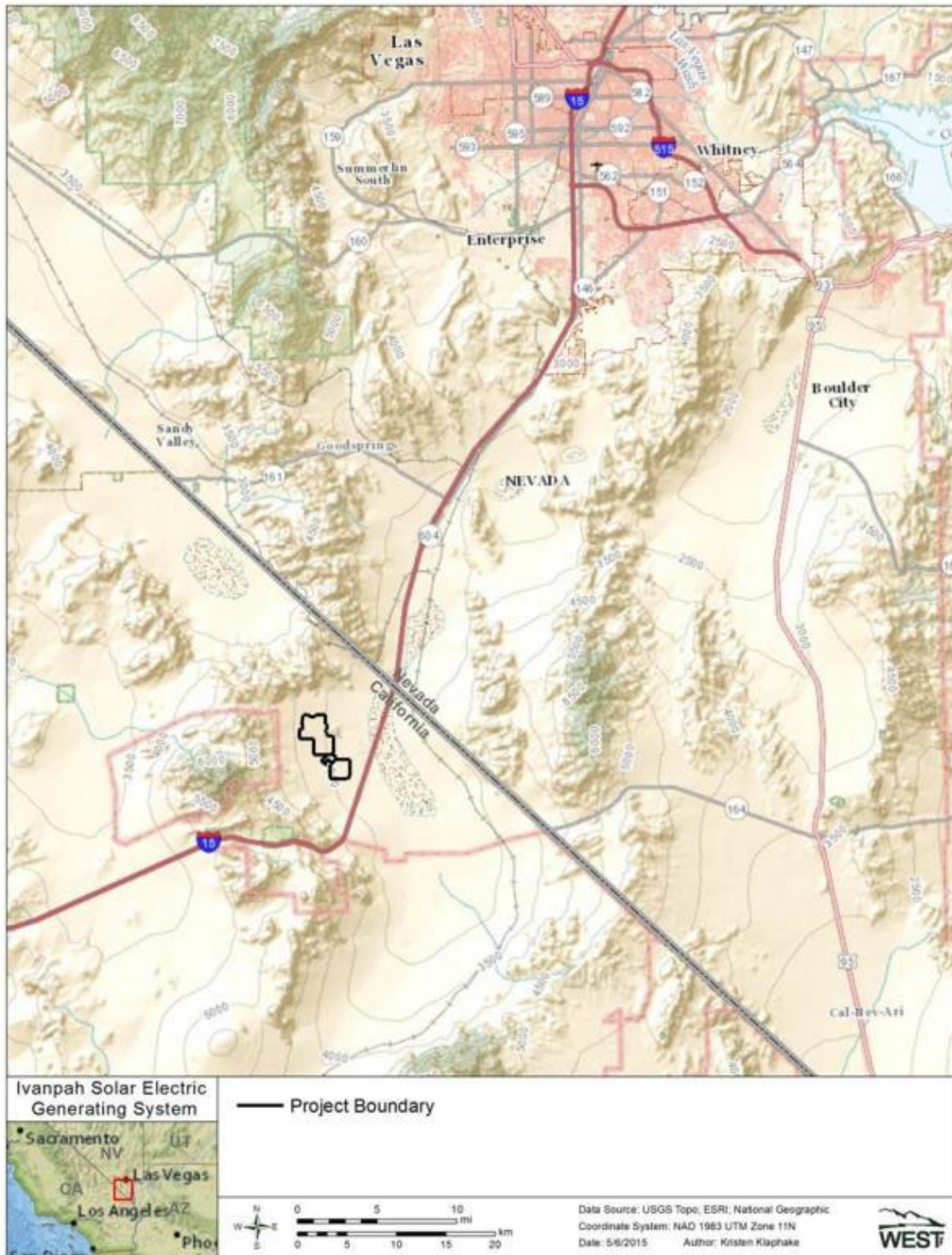


Figure 1. Ivanpah Vicinity Map.

## Section 2.0 Methods

---

The approved Plan (2020) describes the methods by which monitoring and certain analyses, including comparison of detections the fatality index based on the first four years of monitoring, will occur. Below is an abridged description of the 2017 methods and subsequent modifications approved by the TAC.

### 2.1 Facility Monitoring

This section describes areas surveyed, the frequency and timing of the searches, and the methods by which standardized searches were conducted to identify dead/injured birds and bats (hereafter detections) at the Project. This section also describes the methods for conducting carcass removal and searcher efficiency trials; how data were reported and analyzed for incidental detections; and the methods for producing fatality estimates for the Project.

#### 2.1.1 Standardized Searches

##### 2.1.1.1 Areas Surveyed

Per the approved Plan (2020), monitoring was conducted in the “tower area”, defined as the power block (the area consisting of the tower, the ACC unit, the associated control building, and immediately adjacent areas defined by the ring road and berm/slopes surrounding these facilities) and inner high-density (HD) heliostats surrounding each power block.

##### 2.1.1.2 Search Frequency and Timing

Standardized searches occurred at each unit on a 21-day interval in summer and winter seasons, with a 7-day interval in the spring and fall seasons until December 31, 2017. With approval from the TAC on December 21, 2017, standardized search frequency was undertaken at each unit on a 14-day interval beginning January 14, 2018 as per the approved Plan (2020).

##### 2.1.1.3 Search Methods

Biologists performed surveys in the tower area. Standardized walking surveys for fatalities were performed by biologists approved by CEC and BLM, in accordance with the methods outlined in the approved Plan (2020). Surveys were conducted approximately every 14 days, resulting in 24-26 surveys of the power block, ACC, and inner HD heliostats at each of the three units. Variability in search schedule visits was due to operational maintenance and weather conditions. Within the power block, biologists or operations staff walked through and around the power tower and ACC unit searching for dead and injured birds and bats and walked transects through the gravel surrounding the structures to achieve 100% coverage within physically accessible areas. Within the inner HD heliostats surrounding each power block, biologists or operations personnel walked transects to ensure 100% coverage. Thus, the tower area, comprising the area within 260 m of each tower, was completely covered during each survey, excepting any areas that were physically inaccessible or unsafe to survey. Inaccessible areas were, to the extent possible, scanned using binoculars. Detections are processed following methods described in the approved Plan (2020).

**Carcass and Feather Spot Examination.** Every carcass and feather spot were examined visually by a biologist approved by the CEC and BLM for evidence of singeing or collision. Singeing to feathers can



occur when a bird enters the flux around the power tower. When no obvious evidence of singeing or collision was evident to the naked eye, the carcass or feather spot was then examined using an AmScope SE306R-AZ-E2 20X-40X-80X Digital Binocular Stereo Microscope. When singed detections involving carcasses (as opposed to only feather spots) were found, the singeing was assigned a grade based on Kagan et al. (2014), as follows.

- Grade 1 – curling of less than 50% of the flight feathers
- Grade 2 – curling of 50% or more of the flight feathers
- Grade 3 – curling and visible charring of contour feathers

Kagan et al. (2014) originally found no singeing of contour feathers in the absence of curling of 50% or more of the flight feathers. In contrast, we have found singeing of contour feathers with curling of less than 50% of flight feathers, and in the absence of curling or singeing of any flight feathers. We therefore assigned grade 3 independent of grades 1 and 2.

When a carcass was detected, biologists looked for evidence of collision, including obvious physical trauma or detection adjacent to a heliostat with a bird-strike imprint, smudge mark, and/or feathers on or near the surface of the mirror. If there was no evidence of collision or singeing (e.g., charring, curling, or melting of feathers), as confirmed through microscopic examination, the cause of injury or fatality was listed as “unknown”.

For the purpose of these surveys, feather spots were considered detections when they met the following definition:

At least two or more primary flight feathers, 5 or more tail feathers, or 10 or more feathers of any type concentrated together in an area 1-m<sup>2</sup> or smaller (Smallwood 2007), without any bone, beak, or significant amounts of flesh or skin.

In some cases, an individual detection was broken up into aggregations of feathers that would meet the criteria for a feather spot, but with pieces of the carcass that contained bone or significant amounts of flesh or skin also present. In these cases, the detection was categorized as a partial carcass (rather than a feather spot), per the “feather spot” definition above.

#### **2.1.4 Incidental Reporting**

All incidental detections are reported in the Special Purpose Utility (SPUT) permit database as per the requirements of the USFWS. Incidental detections are those discovered outside standardized search areas or are found within search areas but not during standardized searches. Detections at locations not searched under the approved Plan (2020) such as the heliostat area or fenceline are also considered incidental detections for this report. These detections are reported in accordance with the facility's Wildlife Incident Reporting System (described in Section 3.4 of the Plan) and are considered “incidental” detections.

Incidental detections are processed the same as all detections following methods described in the approved Plan (2020).

**Biologically Informed Seasons.** In an effort to address the annual variation in migration seasons for non-resident birds, a stepwise, data-driven process was used to define biologically informed seasons in association with the 2014 – 2015 Annual Report. As described in that report, all bird species found as detections at Ivanpah were categorized as resident or non-resident. Resident species were defined as those that occur year-round, such as a black-throated sparrow. These species would be expected to have a more similar fatality risk profile year-round than non-resident species. Non-resident species were defined as either those that are transient (e.g., passing through the area during migration such as yellow-rumped warbler) or seasonal resident (e.g., those species that migrate into the areas to overwinter or breed on an annual basis such as tree swallow), and therefore would be expected to have periodic risk. Based on the dates of non-resident species observed in the Year 1 data, and supported by observations in subsequent years, a decision was made to use December 15 as the end of fall migration for the purposes of comparing seasonal fatality data among years. This schedule of monitoring and reporting using biologically informed seasons was incorporated into the approved Plan (2020).

## Section 3.0 Monitoring Results

---

### 3.1 Summary of Avian Detections

During the 2020 – 2021 monitoring year, a total of 296 avian detections (including injured birds and incidentals) of 54 identified species and nine unidentifiable species groups (Table 1) were recorded. Two-hundred ninety-one (291) detections occurred in the tower area, and five were detected incidentally outside of the tower area. Of the five detections outside of the tower area, zero showed signs of singeing, one showed signs of collision, and for the remaining four detections, the cause could not be determined (Figure 2).

Of the total 291 detections in the tower area, there were 148 carcasses (50.9%), 136 feather spots/partial carcasses (46.7%), and seven live birds (2.4%). Of the feather spots/partial carcasses detections, evidence of singeing was noted through direct and microscopic examination on 72 of these 136 feather spots/partial carcasses (52.9%); evidence of collision (i.e., an impact imprint on a nearby mirror) was noted in the case of one feather spots/partial carcasses (<1%). Five partial carcasses were associated with an entrapped bird. Otherwise, the causes of mortality for the feather spots/partial carcasses for the other 58 detections (42.6%) are unknown. These values are consistent with ranges found in previous annual assessments.

**Table 1. Number of Individual Bird Detections, by Species, 2020 – 2021 Monitoring Year.**

Identification and Status				Type of Detections			Source and Cause of Detections			
Species	Scientific Name	Potential Local Breeder*	Status**	Total Detections	Injuries	Fatalities	Tower Area	Other Project Lands	Singed/Collision/Other	Unknown
unidentified small bird	unidentified	No		55	0	55	55	0	28/0/3	24
yellow warbler	<i>Setophaga petechia</i>	Yes	SSC	23	0	23	23	0	21/0/1	1
Wilson's warbler	<i>Cardellina pusilla</i>	No		17	0	17	17	0	16/0/1	0
tree swallow	<i>Tachycineta bicolor</i>	No		15	0	15	15	0	14/0/0	1
unidentified swallow	unidentified	Yes		14	0	14	14	0	11/0/0	3
northern rough-winged swallow	<i>Stelgidopteryx serripennis</i>	Yes		13	0	13	13	0	9/0/1	3
yellow-rumped warbler	<i>Setophaga coronata</i>	Yes		13	1	12	13	0	12/0/0	1
unidentified warbler	unidentified	Yes		12	0	12	12	0	9/0/0	3
mourning dove	<i>Zenaida macroura</i>	Yes		9	1	8	8	1	1/0/0	8
unidentified sparrow	unidentified	Yes		9	0	9	8	1	1/0/0	8
American kestrel	<i>Falco sparverius</i>	Yes		8	2	6	8	0	7/0/0	1
violet-green swallow	<i>Tachycineta thalassina</i>	Yes		8	0	8	8	0	6/0/1	1
house finch	<i>Haemorhous mexicanus</i>	Yes		7	1	6	7	0	5/1/0	1
barn swallow	<i>Hirundo rustica</i>	Yes		6	2	4	6	0	6/0/0	0
orange-crowned warbler	<i>Leiothlypis celata</i>	Yes		5	1	4	5	0	4/0/0	1
unidentified hummingbird	unidentified	No		5	0	5	5	0	5/0/0	0
calliope hummingbird	<i>Selasphorus calliope</i>	No		4	0	4	4	0	4/0/0	0
cliff swallow	<i>Petrochelidon pyrrhonota</i>	Yes		4	0	4	4	0	4/0/0	0
lazuli bunting	<i>Passerina amoena</i>	Yes		4	0	4	4	0	4/0/0	0
Townsend's warbler	<i>Setophaga townsendi</i>	No		4	0	4	4	0	4/0/0	0
lesser goldfinch	<i>Spinus psaltria</i>	Yes		3	0	3	3	0	2/0/1	0

Identification and Status				Type of Detections			Source and Cause of Detections			
Species	Scientific Name	Potential Local Breeder*	Status**	Total Detections	Injuries	Fatalities	Tower Area	Other Project Lands	Singed/Collision/Other	Unknown
pine siskin	<i>Spinus pinus</i>	Yes		3	0	3	3	0	2/0/0	1
western kingbird	<i>Tyrannus verticalis</i>	Yes		3	0	3	3	0	3/0/0	0
white-crowned sparrow	<i>Zonotrichia leucophrys</i>	No		3	0	3	2	1	0/2/0	1
Anna's hummingbird	<i>Calypte anna</i>	Yes		2	0	2	2	0	2/0/0	0
black-chinned hummingbird	<i>Archilochus alexandri</i>	Yes		2	0	2	2	0	2/0/0	0
brown-headed cowbird	<i>Molothrus ater</i>	Yes		2	0	2	2	0	2/0/0	0
Costa's hummingbird	<i>Calypte costae</i>	Yes	BCC	2	0	2	2	0	2/0/0	0
lesser nighthawk	<i>Chordeiles acutipennis</i>	Yes		2	0	2	0	2	0/1/0	1
MacGillivray's warbler	<i>Geothlypis tolmiei</i>	Yes		2	0	2	2	0	2/0/0	0
Nashville warbler	<i>Leiostyris ruficapilla</i>	No		2	0	2	2	0	2/0/0	0
ruby-crowned kinglet	<i>Corthylio calendula</i>	Yes		2	0	2	2	0	1/0/0	1
unidentified large bird	<i>unidentified</i>	No		2	0	2	2	0	1/0/0	1
western meadowlark	<i>Sturnella neglecta</i>	Yes		2	0	2	2	0	0/0/0	2
American pipit	<i>Anthus rubescens</i>	No		1	0	1	1	0	1/0/0	0
black-and-white warbler	<i>Mniotilta varia</i>	No		1	0	1	1	0	0/0/0	1
black-headed grosbeak	<i>Pheucticus melanocephalus</i>	Yes		1	0	1	1	0	1/0/0	0
black-throated gray warbler	<i>Setophaga nigrescens</i>	Yes		1	0	1	1	0	1/0/0	0
black-throated sparrow	<i>Amphispiza bilineata</i>	Yes		1	0	1	1	0	1/0/0	0
blue-gray gnatcatcher	<i>Poliophtila caerulea</i>	Yes		1	0	1	1	0	1/0/0	0
broad-tailed hummingbird	<i>Selasphorus platycercus</i>	Yes		1	0	1	1	0	1/0/0	0
cactus wren	<i>Campylorhynchus brunneicapillus</i>	Yes		1	0	1	1	0	0/0/0	1

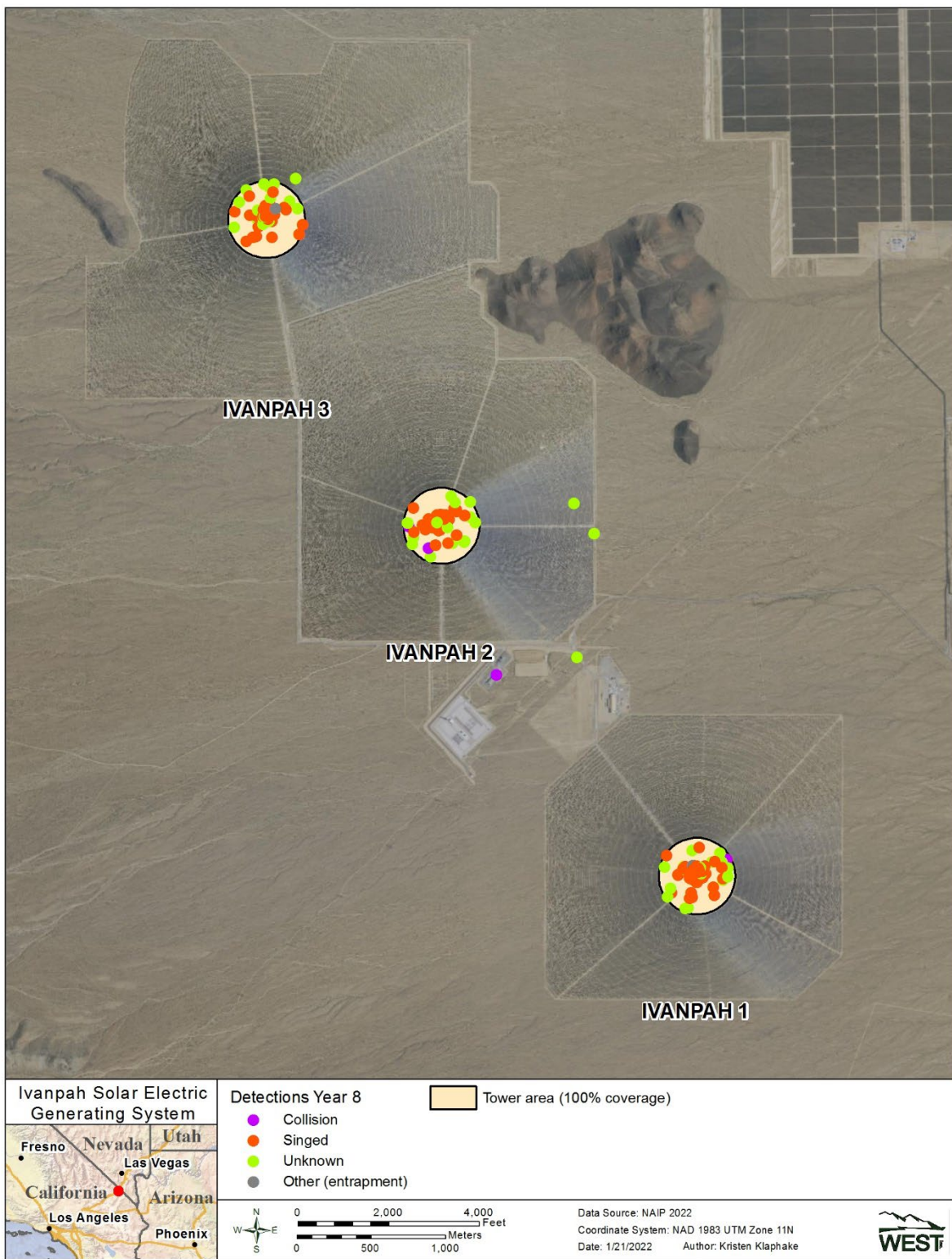
Identification and Status				Type of Detections			Source and Cause of Detections			
Species	Scientific Name	Potential Local Breeder*	Status**	Total Detections	Injuries	Fatalities	Tower Area	Other Project Lands	Singed/Collision/Other	Unknown
chipping sparrow	<i>Spizella passerina</i>	Yes		1	0	1	1	0	1/0/0	0
Cooper's hawk	<i>Accipiter cooperii</i>	Yes		1	0	1	1	0	0/0/0	1
dark-eyed junco	<i>Junco hyemalis</i>	Yes		1	0	1	1	0	1/0/0	0
European starling	<i>Sturnus vulgaris</i>	Yes		1	0	1	1	0	1/0/0	0
greater roadrunner	<i>Geococcyx californianus</i>	Yes		1	0	1	1	0	0/0/0	1
hermit thrush	<i>Catharus guttatus</i>	Yes		1	0	1	1	0	0/1/0	0
house sparrow	<i>Passer domesticus</i>	Yes		1	0	1	1	0	1/0/0	0
lark sparrow	<i>Chondestes grammacus</i>	Yes		1	0	1	1	0	1/0/0	0
least sandpiper	<i>Calidris minutilla</i>	No		1	0	1	1	0	0/0/0	1
loggerhead shrike	<i>Lanius ludovicianus</i>	Yes	SSC	1	0	1	1	0	0/0/0	1
northern flicker	<i>Colaptes auratus</i>	Yes		1	0	1	1	0	0/0/0	1
red-shouldered hawk	<i>Buteo lineatus</i>	Yes		1	0	1	1	0	0/0/0	1
rock pigeon	<i>Columba livia</i>	Yes		1	0	1	1	0	1/0/0	0
rufous hummingbird	<i>Selasphorus rufus</i>	No	BCC	1	0	1	1	0	1/0/0	0
unidentified blackbird	unidentified	Yes		1	0	1	1	0	1/0/0	0
unidentified dove	Columbidae genus	Yes		1	0	1	1	0	1/0/0	0
unidentified empidonax	Empidonax spp	Yes		1	0	1	1	0	1/0/0	0
verdin	<i>Auriparus flaviceps</i>	Yes	BCC	1	0	1	1	0	1/0/0	0
Virginia's warbler	<i>Leiothlypis virginiae</i>	Yes	BCC	1	0	1	1	0	1/0/0	0
western tanager	<i>Piranga ludoviciana</i>	Yes		1	0	1	1	0	0/0/0	1
western wood-pewee	<i>Contopus sordidulus</i>	Yes		1	0	1	1	0	1/0/0	0
Total				296	8	288	291	5	211/5/8	72

\* A species whose breeding range overlaps the Project area. The number of detections could include locally breeding and non-local individuals.

\*\* SSC = CDFW-designated California species of special concern, ST = State threatened, BCC = USFWS bird of conservation concern for BCR 33, FP= California fully protected species.

### 3.1.1 Spatial Patterns of Detections

During the 2020 – 2021 monitoring year, 291 detections were found in the tower area with 110 (37.8%) in Unit 1, 100 (34.4%) in Unit 2, and 81 (27.8%) in Unit 3. Of the tower area detections, 211 (72.5%) showed signs of singed feather damage, four (1.4%) showed signs of collision, eight (2.7%) were attributed to entrapment, and cause could not be determined for 68 (23.4%). Results from the 2020 – 2021 monitoring year are consistent with previous years.



**Figure 2. Locations of Detections, by Cause, within Solar Units.**



### 3.1.2 Temporal Patterns of Detections

The number of detections reported per day varied during the 2020 – 2021 monitoring year. The number of detections per day represents the accumulation of detections over the search interval minus those detected incidentally and removed between searches. Consistent with previous years, detections per day in the tower area showed a strong seasonal pattern with detections highest in the spring and fall (Figure 3).

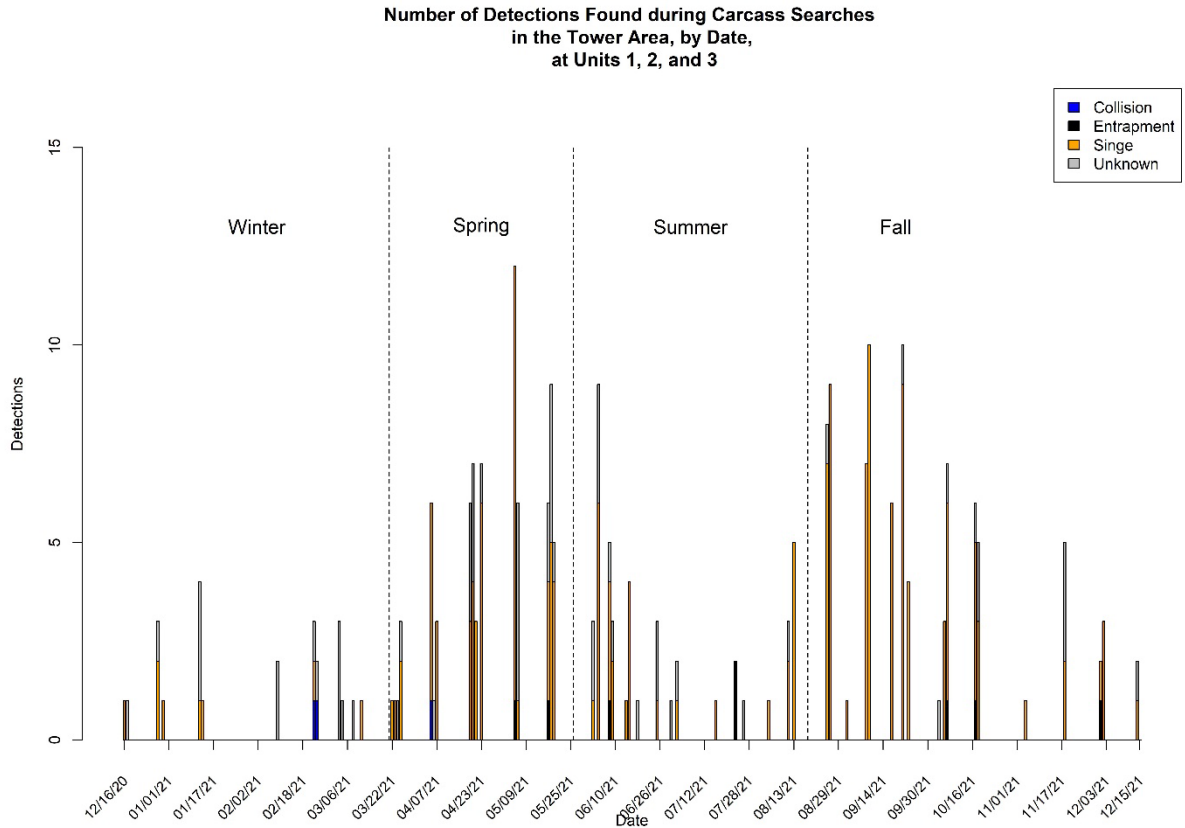


Figure 3. Number of Detections on Each Survey Date, 2020 – 2021 Monitoring Year.

### 3.1.2 Summary of Bat Detections

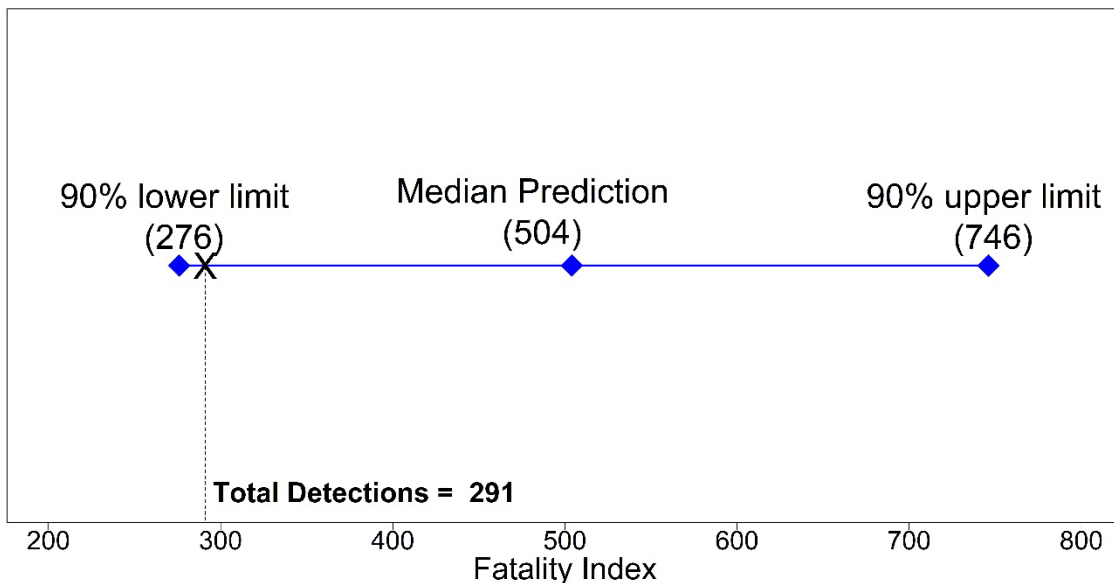
Four bats representing one species and two unidentified bats were detected as fatalities during the 2020 – 2021 monitoring year. The fatalities comprised two Mexican free-tailed bats (*Tadarida brasiliensis*) and two unidentified bats. All bats were found in the power block or ACC with three Mexican free-tailed bats found in unit 1. One unidentified bat was found in unit 3. Given the few detections of bats, they are not discussed further. Bat deterrence units were installed at all three ACC units in 2014 and 2015 and continue to operate.

## Section 4.0 Comparison to Fatality Index

This section utilizes the detection data as described in Section 3 to evaluate the potential for impacts in accordance with the approved Plan (2020). Detection data from the tower area for year 8 are compared to the fatality index model developed in the Plan (2020) to determine if the results of monitoring are consistent with previous years of intensive monitoring in the tower area of all three units.

### 4.1 Fatality Index Comparison

There was a total of 291 detections (resulting from fatality searches or incidental detection) in the tower area during the 2020 – 2021 monitoring year. The fatality index model developed in the approved Plan (2020) predicted that the number of detections resulting from operations monitoring should be, on average, 504, and be between 276 and 746 detections to be 90% confident that the results of fatality monitoring were consistent with the first four years of monitoring. As the total for year 8 is within the 90% prediction interval (276-746), the overall number of fatalities in year 8 is consistent with the first four years of monitoring (Figure 4).



**Figure 4. Total number of detections in the tower area during the 2020 – 2021 monitoring year relative to the fatality index.**

## **Section 5.0 Framework for Management and Risk Response**

---

According to Section 5.3 of the approved Plan (2020), migratory bird mortality at Ivanpah is categorized as high, medium, or low to provide an appropriate biological basis for TAC review and decision making, based on the following definitions:

1. “High: Estimated avian mortality or injury levels are facility-caused and likely to seriously and negatively affect local, regional, or national avian populations within a particular species or group of species.”
2. “Medium: Estimated avian mortality or injury levels are facility-caused and have the potential to negatively affect local, regional, or national populations within a particular avian species or group of species.”
3. “Low: Estimated avian mortality or injury levels that have minimal or no potential to negatively affect local, regional, or national populations within a particular species or group of species.”

### **5.1 Comparison to the Fatality Index**

As presented in the approved Plan (2020) in Appendix D, the number of detections can be used to understand the potential effects of the facility on birds in the context of the first four years of monitoring through the fatality index. Typically, the number of detections provides little insight into potential population level effects because the fatality estimate is not known. However, in monitoring years 1 – 4 when fatality estimates were calculated, it was determined that in each year the facility had a low potential to impact each species or species group at the local, regional, or national scale. Thus, the range of values for the fatality index generated from the first four years of monitoring represents a range of values to have a low potential impact on populations (HTH 2015, WEST 2016, WEST 2017, WEST 2018).

The number of tower area detections in the 2020 – 2021 monitoring year (291) is below the median prediction estimate of the fatality index (504 detections) and within the 90% confidence limits of the fatality index (276 – 746). Total tower detections lower than the median fatality index but within the 90% confidence limits implies the number of detections found during the 2020 – 2021 is consistent with the range of fatalities observed, and variability observed in searcher efficiency and carcass persistence during the intensive monitoring of years 1 – 4. Moreover, the relative number of detections at each tower, relative number of singed detections, and relative number of tower area detections in each unit are consistent with previous years. Thus, the number of detections in the tower area is consistent with the range of detections found during the first four years of monitoring.

### **5.2 Assessment of Potential Effects to National and Regional Populations**

As presented in Appendix D of the approved Plan (2020), species with more than five detections are evaluated for potential effects on the national and regional populations. Factors established for evaluating

potential population effects in Appendix D of the Plan (2020) include: species listing status, population size, and life history strategy. During the 2020 – 2021 monitoring year, one special status species, yellow warbler (California species of special concern) had > five detections. However, when considering the scale of evaluation (national and regional), the 23 total detections represent 0.000000575% and 0.0000418% of the national and regional populations, respectively. Thus, mortality of yellow warblers at the Project has low potential to influence national and regional populations. Consistent with previous assessments, all of the remaining 10 bird species with > five total detections are not special status and have robust populations nationally and regionally (Table 2; PIF 2022). Thus, there is low potential for mortality at the Project to have population level effects at the national and regional scale based on the species detected and the population sizes.

**Table 2. Number of detections, occurrence at the Project, and population estimates for bird species with greater than five detections at the Project.**

Species	Occurrence at Project	Total Detections	Population Estimates from Partners in Flight Database <sup>1</sup>	
			Regional (California)	National
yellow warbler <sup>2</sup>	Uncommon spring migrant, common fall migrant	23	550,000	40,000,000
Wilson's warbler	Spring and fall migrant	17	890,000	39,000,000
tree swallow	Spring and fall migrant	15	400,000	8,700,000
northern rough-winged swallow	Spring and fall migrant	13	1,100,000	19,000,000
yellow-rumped warbler	Spring and fall migrant	13	2,200,000	47,000,000
mourning dove	Fall migrant, year round resident	9	4,400,000	130,000,000
American kestrel	Year round resident	8	200,000	2,000,000
violet-green swallow	Spring and fall migrant	8	440,000	5,400,000
house finch	Year round resident	7	9,600,000	33,000,000
barn swallow	Spring and fall migrant	6	570,000	40,000,000

<sup>1</sup> PIF 2022.

<sup>2</sup> California species of special concern (Shuford and Gardali 2008), CDFW CNDDDB 2021.

### 5.3 Assessment of Effects to Local Populations

As presented in Appendix D of the approved Plan (2020), a decision framework is used to determine if a species is a local breeder near the Project. Following the decision framework, species with > five detections were reviewed to determine, based on range maps, those that could breed locally in the vicinity of the Project. As per previous practice, > five detections is used as a threshold for analysis, consistent with four years of baseline quantitative assessments (HTH 2015, WEST 2016, WEST 2017, WEST 2018).

As per the approved Plan (2020) framework, the timing of the fatalities was reviewed to determine those that occurred during the species breeding season, based on information provided in species accounts at <https://nrm.dfg.ca.gov/taxaquery/Default.aspx>. This framework assumes that if a fatality is found during the breeding season, these detections are locally breeding individuals. Of the three locally breeding species

with > five detections (mourning dove, American kestrel, house finch), one had > five detections during the breeding season: mourning dove (nine detections; Table 3).

**Table 3. Number of Detections of Locally Breeding Species with >5 detections found during the respective breeding period during the 2020 – 2021 Monitoring Year.**

Species	Start of Breeding Season	End of Breeding Season	Total Detections
mourning dove	Late January	Late September	9

Criteria established for evaluating the potential population effects in Appendix D of the approved Plan (2020) include: 1) species status, 2) population size, and 3) survival strategy. First, mourning dove is not designated as special status species nor does it have a special management designation in the Mojave Desert ecoregion. Second, the distribution of the species and overall population in the Mojave Desert in California and Nevada (Bird Conservation Region (BCR) 33) – obtained from the Partners in Flight database – was reviewed to determine the distribution and abundance in BCR 33. The mourning dove population estimate in BCR 33 is 4,700,000. Thus, mourning dove is not special status and has a robust population that is not likely to be affected by local removal of individuals at the Project.

Third, examining the survival strategy of mourning dove also adds support to a low potential for impacts conclusion. Mourning doves reach sexual maturity after one year, are short-lived and highly fecund, and populations of birds with these life history traits are not typically sensitive to adult mortality (Stahl and Oli 2006). In addition, mourning doves have a long breeding season that provides the opportunity for multiple breeding attempts to produce offspring that could be recruited into the local population. When these factors are evaluated together, there is a low potential for impacts from the Project to the locally breeding mourning doves.

## 5.4 Assessment of Effects to Special Status Species

As presented in Appendix D of the approved Plan (2020), all special-status species are always considered for potential population level effects for any number of detections. Special status species recorded as detections included 23 yellow warblers (California species of special concern), two Costa’s hummingbirds (BCR 33 bird of conservation concern), and one loggerhead shrike (California species of special concern). The yellow warbler was discussed earlier (Section 5.2), and the remaining special status species had 3 or fewer detections. Considering the low number of fatalities coupled with the life-history strategy of relatively high fecundity and a short lifespan of the special status species, the potential for population level impacts from these few detections does not rise above a “low” potential effect on a national, regional or local level.

**Table 4. Detections of Sensitive Species during the 2020 – 2021 Monitoring Year.**

Species	Status*	Fatalities	Injuries	Total
Costa’s hummingbird	BCC	2	0	2
Loggerhead shrike	SSC	1	0	1
Rufous hummingbird	BCC	1	0	1
Verdin	BCC	1	0	1
Virginia’s warbler	BCC	1	0	1
Total	SSC, ST, BCC	26	0	26

\*SSC = California species of special concern, BCC = USFWS bird of conservation concern for BCR 33.

## Section 6.0 Recommendations

---

Based on the results on the year 8 monitoring, the following recommendations are provided.

1. **Continue Implementation of the Approved Plan.** The tower area is the location of all known causes – singeing, collision, and entrapment in the ACC. The 2020 approved Plan, which provides ongoing systematic surveys in the tower area, will provide data that will allow for continued annual risk analysis, adaptive management and a comparison in the trends in detections with Years 1 – 7.

## Section 7.0 Literature Cited

---

- Avian & Bat Monitoring and Management Plan (ABMMP) - Ivanpah Solar Electric Generating System. 2020. Revision 14. February 21. Available at: California Energy Commission Docket TN#235408 <https://efiling.energy.ca.gov/GetDocument.aspx?tn=235408&DocumentContentId=68295>
- H.T. Harvey & Associates (HTH). 2015. Ivanpah Solar Electric Generating System Avian & Bat Monitoring Plan. 2013-2014 Annual Report. Prepared for Solar Partners I, II, and VIII, Nipton California. Project 2802-07. April. Available at: California Energy Commission Docket TN#202617 <https://efiling.energy.ca.gov/GetDocument.aspx?tn=204258&DocumentContentId=2191>
- Kagan, R. A., T. C. Viner, P. W. Trail, and E. O. Espinoza. 2014. Avian Mortality at Solar Energy Facilities in Southern California: A Preliminary Analysis. National Fish and Wildlife Forensics Laboratory. Available at: <https://www.ourenergypolicy.org/wp-content/uploads/2014/04/avian-mortality.pdf>
- Manly, B. F. J. 1997. Randomization, Bootstrap, and Monte Carlo Methods in Biology. 2nd Edition. Chapman and Hall, London.
- Partners in Flight. 2020. Population Estimates Database, version 3.1. Available at <https://pif.birdconservancy.org/population-estimates-database/>. Accessed on 18 January 2022.
- Shuford, W. D. and Gardali, T., editors. 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.
- Smallwood, K. S. 2007. Estimating wind turbine-caused bird mortality. *Journal of Wildlife Management* 71, 2781-2791.
- Stahl, J. T., and M. K. Oli. 2006 Relative importance of avian life-history variables to population growth rate. *Ecological Modelling* 198:183-194. Available at: [https://wec.ifas.ufl.edu/pdf/oli/Stahl&Oli\\_2006.pdf](https://wec.ifas.ufl.edu/pdf/oli/Stahl&Oli_2006.pdf)
- U.S. Fish and Wildlife Service (USFWS). 2012. *Final Land-Based Wind Energy Guidelines*. March 23. 82 pp. Available at: <https://fws.gov/media/land-based-wind-energy-guidelines>
- Western EcoSystems Technology, Inc. (WEST). 2016. Ivanpah Solar Electric Generating System Avian & Bat Monitoring Plan. 2014-2015 Annual Report and Two Year Comparison. Prepared for Solar Partners I, II, and VIII, Nipton California. June. Available at: California Energy Commission Docket TN#212042 <https://efiling.energy.ca.gov/GetDocument.aspx?tn=212042&DocumentContentId=2209>
- Western EcoSystems Technology, Inc. (WEST). 2017. Ivanpah Solar Electric Generating System Avian & Bat Monitoring Plan. 2015-2016 Annual Report. Prepared for Solar Partners I, II, and VIII, Nipton California. July. Available at: California Energy Commission Docket TN#220764 <https://efiling.energy.ca.gov/GetDocument.aspx?tn=220764&DocumentContentId=2295>



Western EcoSystems Technology, Inc. (WEST). 2018. Ivanpah Solar Electric Generating System Avian & Bat Monitoring Plan. 2016-2017 Annual Report. Prepared for Solar Partners I, II, and VIII, Nipton California. January. Available at: California Energy Commission Docket TN#224646 <https://efiling.energy.ca.gov/GetDocument.aspx?tn=224646&DocumentContentId=55203>

Western EcoSystems Technology, Inc. (WEST). 2019. Ivanpah Solar Electric Generating System Avian & Bat Monitoring Plan. 2017-2018 Annual Report. Prepared for Solar Partners I, II, and VIII, Nipton California. January. Available at: California Energy Commission Docket TN#235398 <https://efiling.energy.ca.gov/GetDocument.aspx?tn=235398&DocumentContentId=68285>

Western EcoSystems Technology, Inc. (WEST). 2020. Ivanpah Solar Electric Generating System Avian & Bat Monitoring Plan. 2018-2019 Annual Report. Prepared for Solar Partners I, II, and VIII, Nipton California.. Available at: California Energy Commission Docket TN#235407 <https://efiling.energy.ca.gov/GetDocument.aspx?tn=235407&DocumentContentId=68297>

**Appendix A. Individual Avian Detections.**

USFWS #	Common Name	Species Code	How Found	Detection Date	Collection Date	Condition	Time Since Death/Injury	Description of Carcass/Injury	Cause of Death/Injury	Burn Grade	Unit	Nearest Project Feature	Coordinates	SPUT Revisions
2020_734_ISEGS	unidentified small bird	UNID	Fatality Search	12/16/2020	12/16/2020	feather spot	3-7 days	singed flight feathers; Flux Grade: unknown	scorched or singed	Unknown	1	Powerblock	640344, 3933543	NA
2020_738_ISEGS	unidentified warbler	UNWA	Fatality Search	12/17/2020	12/17/2020	feather spot	8-14 days	no evidence of singe or collision; Flux Grade: N/A	unknown	NA	1	Heliostat	640295, 3933273	NA
2020_739_ISEGS	unidentified small bird	UNID	Fatality Search	12/28/2020	12/28/2020	feather spot	8-14 days	curling to 1 flight feather; Flux Grade: 2	scorched or singed	2	3	Powerblock	637473, 3937923	NA
2020_740_ISEGS	unidentified sparrow	UNSP	Fatality Search	12/28/2020	12/28/2020	broken up	3-7 days	no evidence of singe or collision; Flux Grade: Unknown	unknown	NA	3	Heliostat	637632, 3938034	NA
2020_741_ISEGS	American kestrel	AMKE	Fatality Search	12/28/2020	12/28/2020	broken up	3-7 days	singe to several contour feathers.; Flux Grade: 3	scorched or singed	3	3	Heliostat	637595, 3937990	NA
2020_742_ISEGS	unidentified warbler	UNWA	Fatality Search	12/30/2020	12/30/2020	broken up	3-7 days	tips of flight feathers singed; Flux Grade: 1	scorched or singed	1	1	Heliostat	640343, 3933347	NA
2021_001_ISEGS	unidentified swallow	UNSW	Fatality Search	1/12/2021	1/12/2021	broken up	8-14 days	singe to flight feathers.; Flux Grade: Unknown	scorched or singed	Unknown	2	Heliostat	638754, 3935961	NA
2021_002_ISEGS	northern flicker	NOFL	Fatality Search	1/12/2021	1/12/2021	broken up	3-7 days	no evidence of singe or collision; Flux Grade: N/A	unknown	NA	2	Heliostat	638850, 3935909	NA
2021_003_ISEGS	unidentified small bird	UNID	Fatality Search	1/12/2021	1/12/2021	feather spot	3-7 days	no evidence of singe or collision; Flux Grade: N/A	unknown	NA	2	Heliostat	638812, 3935747	NA
2021_004_ISEGS	unidentified small bird	UNID	Fatality Search	1/12/2021	1/12/2021	feather spot	3-7 days	no evidence of singe or collision; Flux Grade: N/A	unknown	NA	2	Heliostat	638810, 3935738	NA
2021_005_ISEGS	yellow-rumped warbler	YRWA	Fatality Search	1/13/2021	1/13/2021	feather spot	3-7 days	curling to a flight feather.; Flux Grade: 1	scorched or singed	1	3	Powerblock	637458, 3937933	NA
2021_006_ISEGS	house finch	HOFI	Incidental	1/20/2021	1/25/2021	dead-semi-fresh	3-7 days	singed flank, neck, and head.; Flux Grade: 3	scorched or singed	3	3	Powerblock	637471, 3937894	NA
2021_007_ISEGS	white-crowned sparrow	WCSP	Incidental	2/1/2021	2/2/2021	dead-fresh	0.33-1 days	no evidence of singe or collision; Flux Grade: N/A	unknown	NA	3	Heliostat	637675, 3938186	NA
2021_008_ISEGS	American kestrel	AMKE	Fatality Search	2/9/2021	2/9/2021	broken up	8-14 days	no evidence of singe or collision; Flux Grade: N/A	unknown	NA	3	Heliostat	637529, 3938152	NA
2021_009_ISEGS	unidentified warbler	UNWA	Fatality Search	2/9/2021	2/9/2021	feather spot	3-7 days	no evidence of singe or collision; Flux Grade: N/A	unknown	NA	3	Heliostat	637343, 3938110	NA
2021_010_ISEGS	lesser goldfinch	LEGO	Fatality Search	2/22/2021	2/22/2021	broken up	0.33-1 days	singeing to covert feathers and right wing.; Flux Grade: 1, 3	scorched or singed	1,3	3	Powerblock	637494, 3937906	NA
2021_011_ISEGS	white-crowned sparrow	WCSP	Fatality Search	2/22/2021	2/22/2021	dead-fresh	0-0.33 days	broken/bent bill, carcass found directly under heliostat mirror.; Flux Grade: N/A	collision-panel	NA	2	Heliostat	638436, 3935845	NA
2021_012_ISEGS	unidentified small bird	UNID	Fatality Search	2/22/2021	2/22/2021	broken up	31-60 days	no evidence of singe or collision; Flux Grade: N/A	unknown	NA	3	Heliostat	637462, 3938151	NA

USFWS #	Common Name	Species Code	How Found	Detection Date	Collection Date	Condition	Time Since Death/Injury	Description of Carcass/Injury	Cause of Death/Injury	Burn Grade	Unit	Nearest Project Feature	Coordinates	SPUT Revisions
2021_013_ISEGS	greater roadrunner	GRRO	Fatality Search	2/23/2021	2/23/2021	broken up	1-3 days	no evidence of singe or collision; Flux Grade: N/A	unknown	NA	1	Heliostat	640315, 3933278	NA
2021_014_ISEGS	hermit thrush	HETH	Fatality Search	2/23/2021	2/23/2021	broken up	3-7 days	located directly under heliostat.; Flux Grade: N/A	collision-panel	NA	1	Heliostat	640576, 3933601	NA
2021_015_ISEGS	brown-headed cowbird	BHCO	Incidental	3/2/2021	3/2/2021	mummified	31-60 days	singe to left side of face and breast.; Flux Grade: 3	scorched or singed	3	1	Powerblock	640373, 3933487	NA
2021_016_ISEGS	ruby-crowned kinglet	RCKI	Incidental	3/2/2021	3/2/2021	dead-semi-fresh	3-7 days	no evidence of singe or collision; Flux Grade: Unknown	unknown	NA	1	Powerblock	640373, 3933487	NA
2021_017_ISEGS	western meadowlark	WEME	Fatality Search	3/3/2021	3/3/2021	broken up	1-3 days	no evidence of singe or collision; Flux Grade: Unknown	unknown	NA	2	Heliostat	638580, 3935640	NA
2021_018_ISEGS	unidentified sparrow	UNSP	Fatality Search	3/3/2021	3/3/2021	feather spot	1-3 days	no evidence of singe or collision; Flux Grade: Unknown	unknown	NA	2	Heliostat	639545, 3936001	NA
2021_019_ISEGS	cactus wren	CACW	Fatality Search	3/3/2021	3/3/2021	feather spot	8-14 days	no evidence of singe or collision; Flux Grade: Unknown	unknown	NA	2	Heliostat	638849, 3936009	NA
2021_020_ISEGS	unidentified small bird	UNID	Fatality Search	3/3/2021	3/3/2021	broken up	31-60 days	no evidence of singe or collision; Flux Grade: Unknown	unknown	NA	2	Heliostat	638730, 3935731	NA
2021_021_ISEGS	unidentified small bird	UNID	Fatality Search	3/4/2021	3/4/2021	broken up	3-7 days	no evidence of singe or collision; Flux Grade: Unknown	unknown	NA	3	Powerblock	637411, 3937921	NA
2021_022_ISEGS	yellow-rumped warbler	YRWA	Fatality Search	3/8/2021	3/8/2021	dead-semi-fresh	8-14 days	no evidence of singe or collision; Flux Grade: Unknown	unknown	NA	2	Powerblock	638662, 3935898	NA
2021_023_ISEGS	unidentified small bird	UNID	Fatality Search	3/11/2021	3/11/2021	feather spot	3-7 days	singe to primaries.; Flux Grade: Unknown	scorched or singed	Unknown	1	Heliostat	640336, 3933378	NA
2021_024_ISEGS	house finch	HOFI	Incidental	3/17/2021	3/17/2021	alive-injured	0-0.33 days	curling to all flight feathers, singe to nape, crown, and mantle.; Flux Grade: 3	scorched or singed	3	3	Powerblock	637504, 3937937	NA
2021_025_ISEGS	black-headed grosbeak	BHGR	Incidental	3/17/2021	3/17/2021	dead-semi-fresh	3-7 days	singe of contour feathers.; Flux Grade: 3	scorched or singed	3	3	Powerblock	637514, 3937900	NA
2021_026_ISEGS	unidentified small bird	UNID	Fatality Search	3/22/2021	3/22/2021	dead-semi-fresh	1-3 days	singeing to 2 flight feathers.; Flux Grade: Unknown	scorched or singed	Unknown	3	Heliostat	637516, 3937790	NA
2021_027_ISEGS	American kestrel	AMKE	Fatality Search	3/23/2021	3/23/2021	broken up	3-7 days	curling and singe to flight feathers.; Flux Grade: Unknown	scorched or singed	Unknown	3	Powerblock	637529, 3937974	NA
2021_028_ISEGS	unidentified small bird	UNID	Fatality Search	3/24/2021	3/24/2021	feather spot	3-7 days	no evidence of singe or collision; Flux Grade: Unknown	unknown	NA	2	Heliostat	638459, 3935724	NA

USFWS #	Common Name	Species Code	How Found	Detection Date	Collection Date	Condition	Time Since Death/Injury	Description of Carcass/Injury	Cause of Death/Injury	Burn Grade	Unit	Nearest Project Feature	Coordinates	SPUT Revisions
2021_029_ISEGS	unidentified sparrow	UNSP	Fatality Search	3/25/2021	3/25/2021	feather spot	0.33-1 days	no evidence of singe or collision; Flux Grade: Unknown	unknown	NA	1	Heliostat	640158, 3933550	NA
2021_030_ISEGS	American pipit	AMPI	Fatality Search	3/25/2021	3/25/2021	broken up	0.33-1 days	slight singeing to leading edge of secondaries.; Flux Grade: Unknown	scorched or singed	Unknown	1	Powerblock	640324, 3933478	NA
2021_031_ISEGS	unidentified small bird	UNID	Fatality Search	3/25/2021	3/25/2021	feather spot	31-60 days	singeing to primary feathers.; Flux Grade: Unknown	scorched or singed	Unknown	1	Powerblock	640410, 3933487	NA
2021_032_ISEGS	violet-green swallow	VGSW	Fatality Search	4/5/2021	4/5/2021	dead-semi-fresh	3-7 days	curling to all flight feathers with most of tail singed off, singe to rump, back, coverts and nape.; Flux Grade: 2, 3	scorched or singed	2,3	3	ACC	637496, 3937971	NA
2021_033_ISEGS	violet-green swallow	VGSW	Fatality Search	4/5/2021	4/5/2021	dead-fresh	0.33-1 days	curling to all flight feathers with most of tail singed off, singe to rump, back, coverts and right side of face.; Flux Grade: 2, 3	scorched or singed	2,3	3	ACC	637508, 3937958	NA
2021_034_ISEGS	calliope hummingbird	CAHU	Fatality Search	4/5/2021	4/5/2021	dead-fresh	0-0.33 days	singe to rump, back, and head.; Flux Grade: 1, 3	scorched or singed	1,3	2	ACC	638679, 3935897	NA
2021_035_ISEGS	Anna's hummingbird	ANHU	Fatality Search	4/5/2021	4/5/2021	dead-fresh	0.33-1 days	curling to rectrices, right side of face singed, nape and rump singed.; Flux Grade: 1, 3	scorched or singed	1,3	2	ACC	638667, 3935909	NA
2021_036_ISEGS	northern rough-winged swallow	NRWS	Fatality Search	4/5/2021	4/5/2021	feather spot	3-7 days	curling to primaries and secondaries, body feathers singed.; Flux Grade: 3	scorched or singed	3	2	Powerblock	638615, 3935866	NA
2021_037_ISEGS	white-crowned sparrow	WCSP	Fatality Search	4/5/2021	4/5/2021	dead-fresh	0-0.33 days	evidence of collision with feathers on mirror matching size and shape and carcass just below mirror.; Flux Grade: N/A	collision-panel	NA	2	Heliostat	638569, 3935697	NA
2021_038_ISEGS	violet-green swallow	VGSW	Fatality Search	4/6/2021	4/6/2021	dead-fresh	0-0.33 days	no evidence of singe or collision.; Flux Grade: Unknown	unknown	NA	2	Powerblock	638673, 3935883	NA
2021_039_ISEGS	violet-green swallow	VGSW	Fatality Search	4/7/2021	4/7/2021	dead-semi-fresh	3-7 days	flight feathers curled or singed off. all upperparts singed.; Flux Grade: 2, 3	scorched or singed	2,3	1	ACC	640371, 3933522	NA
2021_040_ISEGS	violet-green swallow	VGSW	Fatality Search	4/7/2021	4/7/2021	dead-semi-fresh	3-7 days	flight feathers curled or singed off. all upperparts singed.; Flux Grade: 2, 3	scorched or singed	2,3	1	ACC	640398, 3933535	NA
2021_041_ISEGS	unidentified small bird	UNID	Fatality Search	4/7/2021	4/7/2021	broken up	3-7 days	body and flight feathers singed.; Flux Grade: 1, 3	scorched or singed	1,3	1	Powerblock	640432, 3933507	NA
2021_042_ISEGS	unidentified small bird	UNID	Fatality Search	4/19/2021	4/19/2021	feather spot	3-7 days	evidence of singeing.; Flux Grade: Unknown	scorched or singed	Unknown	2	Powerblock	638639, 3935859	NA

USFWS #	Common Name	Species Code	How Found	Detection Date	Collection Date	Condition	Time Since Death/Injury	Description of Carcass/Injury	Cause of Death/Injury	Burn Grade	Unit	Nearest Project Feature	Coordinates	SPUT Revisions
2021_043_ISEGS	barn swallow	BARS	Fatality Search	4/19/2021	4/19/2021	feather spot	0.33-1 days	curling to contour feathers and under tail coverts.; Flux Grade: 3	scorched or singed	3	2	Heliostat	638614, 3935719	NA
2021_044_ISEGS	unidentified warbler	UNWA	Fatality Search	4/19/2021	4/19/2021	feather spot	1-3 days	singe to all flight feathers.; Flux Grade: Unknown	scorched or singed	Unknown	2	Heliostat	638614, 3935719	NA
2021_045_ISEGS	western meadowlark	WEME	Fatality Search	4/19/2021	4/19/2021	broken up	3-7 days	no evidence of singe or collision.; Flux Grade: N/A	unknown	NA	2	Heliostat	638467, 3935771	NA
2021_046_ISEGS	barn swallow	BARS	Incidental	4/19/2021	4/19/2021	alive-injured	0-0.33 days	curling to all major flight feathers, singe to head, back, and rump.; Flux Grade: 3	scorched or singed	3	3	Powerblock	637471, 3938006	NA
2021_047_ISEGS	barn swallow	BARS	Incidental	4/19/2021	4/19/2021	alive-injured	0-0.33 days	curling to all major flight feathers, singe to head, back, and rump.; Flux Grade: 3	scorched or singed	3	3	Powerblock	637503, 3938013	NA
2021_048_ISEGS	tree swallow	TRES	Fatality Search	4/19/2021	4/19/2021	broken up	0.33-1 days	singe to primaries.; Flux Grade: Unknown	scorched or singed	Unknown	2	Heliostat	638470, 3935806	NA
2021_049_ISEGS	unidentified small bird	UNID	Fatality Search	4/19/2021	4/19/2021	broken up	0.33-1 days	no evidence of singe or collision.; Flux Grade: Unknown	unknown	NA	2	Heliostat	638721, 3936047	NA
2021_050_ISEGS	unidentified small bird	UNID	Fatality Search	4/19/2021	4/19/2021	broken up	31-60 days	no evidence of singe or collision.; Flux Grade: Unknown	unknown	NA	2	Heliostat	638883, 3935871	NA
2021_051_ISEGS	yellow-rumped warbler	YRWA	Fatality Search	4/20/2021	4/20/2021	dead-semi-fresh	3-7 days	singe to flight feathers, nape, torso, nape, head, and mantle.; Flux Grade: 3	scorched or singed	3	1	ACC	640362, 3933523	NA
2021_052_ISEGS	unidentified small bird	UNID	Fatality Search	4/20/2021	4/20/2021	broken up	3-7 days	no evidence of singe or collision.; Flux Grade: N/A	unknown	NA	1	Powerblock	640402, 3933493	NA
2021_053_ISEGS	dark-eyed junco	DEJU	Fatality Search	4/20/2021	4/20/2021	feather spot	3-7 days	no evidence of singe or collision.; Flux Grade: 2	scorched or singed	2	1	Powerblock	640247, 3933498	NA
2021_054_ISEGS	unidentified warbler	UNWA	Fatality Search	4/20/2021	4/20/2021	feather spot	3-7 days	curling to outer portion of secondaries.; Flux Grade: 1	scorched or singed	1	1	Heliostat	640202, 3933379	NA
2021_055_ISEGS	unidentified small bird	UNID	Fatality Search	4/20/2021	4/20/2021	broken up	1-3 days	evidence of singe to partial left wing.; Flux Grade: Unknown	scorched or singed	Unknown	1	Heliostat	640492, 3933363	NA
2021_056_ISEGS	unidentified sparrow	UNSP	Fatality Search	4/20/2021	4/20/2021	feather spot	0-0.33 days	None; Flux Grade: N/A	unknown	NA	1	Heliostat	640549, 3933463	NA
2021_057_ISEGS	unidentified small bird	UNID	Fatality Search	4/20/2021	4/20/2021	broken up	3-7 days	no evidence of singe or collision.; Flux Grade: N/A	unknown	NA	1	Heliostat	640527, 3933647	NA
2021_058_ISEGS	black-chinned hummingbird	BCHU	Fatality Search	4/21/2021	4/21/2021	dead-fresh	0.33-1 days	singe to body and flight feathers.; Flux Grade: 3	scorched or singed	3	3	ACC	637489, 3937971	NA
2021_059_ISEGS	unidentified small bird	UNID	Fatality Search	4/21/2021	4/21/2021	broken up	3-7 days	singe to flight feathers.; Flux Grade: Unknown	scorched or singed	Unknown	3	Powerblock	637454, 3937923	NA

USFWS #	Common Name	Species Code	How Found	Detection Date	Collection Date	Condition	Time Since Death/Injury	Description of Carcass/Injury	Cause of Death/Injury	Burn Grade	Unit	Nearest Project Feature	Coordinates	SPUT Revisions
2021_060_ISEGS	unidentified warbler	UNWA	Fatality Search	4/21/2021	4/21/2021	feather spot	0-0.33 days	singeing to primary.; Flux Grade: Unknown	scorched or singed	Unknown	3	Powerblock	637474, 3937902	NA
2021_061_ISEGS	unidentified warbler	UNWA	Fatality Search	4/23/2021	4/23/2021	feather spot	3-7 days	singe to rectrices.; Flux Grade: Unknown	scorched or singed	Unknown	3	Heliostat	637387, 3937790	NA
2021_062_ISEGS	tree swallow	TRES	Fatality Search	4/23/2021	4/23/2021	feather spot	0-0.33 days	singe to primary.; Flux Grade: Unknown	scorched or singed	Unknown	3	Heliostat	637388, 3937790	NA
2021_063_ISEGS	unidentified sparrow	UNSP	Fatality Search	4/23/2021	4/23/2021	feather spot	0-0.33 days	no evidence of singe or collision.; Flux Grade: N/A	unknown	NA	3	Heliostat	637259, 3937859	NA
2021_064_ISEGS	tree swallow	TRES	Fatality Search	4/23/2021	4/23/2021	feather spot	1-3 days	singe to outer edge of flight feathers.; Flux Grade: 2	scorched or singed	2	3	Heliostat	637263, 3937964	NA
2021_065_ISEGS	unidentified hummingbird	UNHU	Fatality Search	4/23/2021	4/23/2021	broken up	8-14 days	singe to outer edge of all feathers.; Flux Grade: 2	scorched or singed	2	3	Heliostat	637608, 3937978	NA
2021_066_ISEGS	unidentified sparrow	UNSP	Fatality Search	4/23/2021	4/23/2021	broken up	8-14 days	curling to all feathers.; Flux Grade: 1	scorched or singed	1	3	Heliostat	637720, 3937875	NA
2021_067_ISEGS	barn swallow	BARS	Fatality Search	4/23/2021	4/23/2021	feather spot	1-3 days	curling to primaries, singe to all other feathers.; Flux Grade: Unknown	scorched or singed	Unknown	3	Heliostat	637698, 3937811	NA
2021_068_ISEGS	violet-green swallow	VGSW	Incidental	4/30/2021	5/3/2021	dead-fresh	0.33-1 days	curling to all flight feathers, singe to nape, back, and rump.; Flux Grade: 2, 3	scorched or singed	2,3	1	Powerblock	640412, 3933482	NA
2021_069_ISEGS	pine siskin	PISI	Incidental	5/1/2021	5/3/2021	dead-fresh	0.33-1 days	curling to all flight feathers, singe to rest of body.; Flux Grade: 2, 3	scorched or singed	2,3	3	Powerblock	637425, 3937926	NA
2021_070_ISEGS	Costa's hummingbird	COHU	Fatality Search	5/5/2021	5/5/2021	dead-semi-fresh	3-7 days	curling to rectrices, singe to nape, rump, and right flank.; Flux Grade: 1, 3	scorched or singed	1,3	3	ACC	637511, 3937946	NA
2021_071_ISEGS	yellow-rumped warbler	YRWA	Fatality Search	5/5/2021	5/5/2021	dead-fresh	0.33-1 days	curling to rectrices and left wing, singe to upper breast, coverts, head, and rump.; Flux Grade: 2, 3	scorched or singed	2,3	3	ACC	637490, 3937946	NA
2021_072_ISEGS	yellow warbler	YWAR	Fatality Search	5/5/2021	5/5/2021	dead-fresh	0-0.33 days	curling to several rectrices and primaries, singe to rump and coverts.; Flux Grade: 1, 3	scorched or singed	1,3	3	ACC	637488, 3937958	NA
2021_073_ISEGS	Wilson's warbler	WTWA	Fatality Search	5/5/2021	5/5/2021	dead-fresh	0.33-1 days	curling to all flight feathers, singe to coverts, rump, and top of head.; Flux Grade: 2, 3	scorched or singed	2,3	3	Powerblock	637422, 3937863	NA
2021_074_ISEGS	cliff swallow	CLSW	Fatality Search	5/5/2021	5/5/2021	dead-semi-fresh	3-7 days	curling to all flight feathers, singe to coverts, left side of face, upper breast.; Flux Grade: 2, 3	scorched or singed	2,3	2	ACC	638625, 3935909	NA
2021_075_ISEGS	tree swallow	TRES	Fatality Search	5/5/2021	5/5/2021	dead-fresh	0-0.33 days	curling to all flight feathers, singe to ~90% of dorsal side.; Flux Grade: 2, 3	scorched or singed	2,3	2	ACC	638653, 3935908	NA

USFWS #	Common Name	Species Code	How Found	Detection Date	Collection Date	Condition	Time Since Death/Injury	Description of Carcass/Injury	Cause of Death/Injury	Burn Grade	Unit	Nearest Project Feature	Coordinates	SPUT Revisions
2021_076_ISEGS	orange-crowned warbler	OCWA	Fatality Search	5/5/2021	5/5/2021	dead-fresh	0.33-1 days	curling to all flight feathers, singe to coverts, head, throat, and upper breast.; Flux Grade: 2, 3	scorched or singed	2,3	2	ACC	638625, 3935883	NA
2021_077_ISEGS	tree swallow	TRES	Fatality Search	5/5/2021	5/5/2021	dead-semi-fresh	1-3 days	curling to all flight feathers, singe to ~90% of dorsal side.; Flux Grade: 2, 3	scorched or singed	2,3	2	ACC	638675, 3935884	NA
2021_078_ISEGS	tree swallow	TRES	Fatality Search	5/5/2021	5/5/2021	dead-semi-fresh	3-7 days	curling to all flight feathers, singe to upper breast.; Flux Grade: 2, 3	scorched or singed	2,3	2	ACC	638690, 3935882	NA
2021_079_ISEGS	violet-green swallow	VGSW	Fatality Search	5/5/2021	5/5/2021	broken up	1-3 days	no evidence of singe or collision.; Flux Grade: Unknown	unknown	NA	2	ACC	638694, 3935883	NA
2021_080_ISEGS	unidentified warbler	UNWA	Fatality Search	5/5/2021	5/5/2021	broken up	3-7 days	curling to several flight feathers, singe to coverts.; Flux Grade: 1, 3	scorched or singed	1,3	2	Powerblock	638681, 3935894	NA
2021_081_ISEGS	blue-gray gnatcatcher	BGGN	Fatality Search	5/5/2021	5/5/2021	dead-fresh	0-0.33 days	singe to coverts and primaries in right wing, top of head, nape.; Flux Grade: 1, 3	scorched or singed	1,3	2	Powerblock	638644, 3935822	NA
2021_082_ISEGS	black-chinned hummingbird	BCHU	Incidental	5/5/2021	5/5/2021	dead-fresh	0-0.33 days	singe to head, flanks, and rump with all of rectrices singed off.; Flux Grade: 1, 3	scorched or singed	1,3	1	Powerblock	640249, 3933500	NA
2021_083_ISEGS	barn swallow	BARS	Fatality Search	5/6/2021	5/6/2021	dead-fresh	0.33-1 days	curling to all flight feathers, singe to coverts.; Flux Grade: 2,3	scorched or singed	2,3	1	ACC	640358, 3933534	NA
2021_084_ISEGS	orange-crowned warbler	OCWA	Fatality Search	5/6/2021	5/6/2021	dead-semi-fresh	3-7 days	no evidence of singe or collision.; Flux Grade: Unknown	unknown	NA	1	Powerblock	640345, 3933512	NA
2021_085_ISEGS	mourning dove	MODO	Fatality Search	5/6/2021	5/6/2021	feather spot	1-3 days	no evidence of singe or collision.; Flux Grade: Unknown	unknown	NA	2	Heliostat	638430, 3935869	NA
2021_086_ISEGS	unidentified small bird	UNID	Fatality Search	5/6/2021	5/6/2021	broken up	3-7 days	no evidence of singe or collision.; Flux Grade: Unknown	unknown	NA	1	Heliostat	640544, 3933585	NA
2021_087_ISEGS	mourning dove	MODO	Fatality Search	5/6/2021	5/6/2021	feather spot	3-7 days	no evidence of singe or collision.; Flux Grade: Unknown	unknown	NA	1	Heliostat	640581, 3933544	NA
2021_088_ISEGS	unidentified small bird	UNID	Fatality Search	5/6/2021	5/6/2021	feather spot	1-3 days	no evidence of singe or collision.; Flux Grade: Unknown	unknown	NA	1	Heliostat	640196, 3933411	NA
2021_089_ISEGS	calliope hummingbird	CAHU	Incidental	5/6/2021	5/6/2021	dead-fresh	0-0.33 days	singe to nape and rump.; Flux Grade: 3	scorched or singed	3	3	Powerblock	637365, 3937940	NA
2021_090_ISEGS	Wilson's warbler	WIWA	Incidental	5/6/2021	5/6/2021	dead-fresh	0-0.33 days	curling to all flight feathers, singe to coverts, right flank, nape.; Flux Grade: 2, 3	scorched or singed	2,3	3	Powerblock	637405, 3937937	NA

USFWS #	Common Name	Species Code	How Found	Detection Date	Collection Date	Condition	Time Since Death/Injury	Description of Carcass/Injury	Cause of Death/Injury	Burn Grade	Unit	Nearest Project Feature	Coordinates	SPUT Revisions
2021_091_ISEGS	lesser nighthawk	LENI	Incidental	5/14/2021	5/14/2021	dead-fresh	0.33-1 days	no evidence of singe or collision.; Flux Grade: Unknown	unknown	NA	0	Powerline	639566, 3934964	NA
2021_092_ISEGS	Wilson's warbler	WTWA	Incidental	5/14/2021	5/14/2021	dead-fresh	0.33-1 days	curling to flight feathers in both wings, singe to coverts, nape, head, and left side of face.; Flux Grade: 2, 3	scorched or singed	2,3	2	Powerblock	638593, 3935876	NA
2021_093_ISEGS	calliope hummingbird	CAHU	Fatality Search	5/17/2021	5/17/2021	dead-semi-fresh	3-7 days	curling to all flight feathers with tail singed off, singe to both dorsal and ventral side of body.; Flux Grade: 2, 3	scorched or singed	2,3	3	ACC	637460, 3937985	NA
2021_094_ISEGS	Townsend's warbler	TOWA	Fatality Search	5/17/2021	5/17/2021	dead-semi-fresh	3-7 days	curling to all flight feathers, singe to throat, back, rump, and coverts.; Flux Grade: 2, 3	scorched or singed	2,3	3	ACC	637502, 3937959	NA
2021_095_ISEGS	Wilson's warbler	WTWA	Fatality Search	5/17/2021	5/17/2021	dead-semi-fresh	1-3 days	no evidence of singe or collision.; Flux Grade: Unknown	unknown	NA	3	ACC	637506, 3937944	NA
2021_096_ISEGS	unidentified warbler	UNWA	Fatality Search	5/17/2021	5/17/2021	dead-semi-fresh	3-7 days	singe to all parts of carcass with all flight feather singed off.; Flux Grade: 2, 3	scorched or singed	2,3	3	Powerblock	637460, 3937918	NA
2021_097_ISEGS	unidentified swallow	UNSW	Fatality Search	5/17/2021	5/17/2021	broken up	3-7 days	no evidence of singe or collision.; Flux Grade: Unknown	unknown	NA	3	Powerblock	637452, 3937926	NA
2021_098_ISEGS	unidentified swallow	UNSW	Fatality Search	5/17/2021	5/17/2021	broken up	3-7 days	no evidence of singe or collision.; Flux Grade: Unknown	unknown	NA	3	Powerblock	637418, 3937973	NA
2021_099_ISEGS	Wilson's warbler	WTWA	Fatality Search	5/18/2021	5/18/2021	dead-semi-fresh	3-7 days	curling to all flight feathers, singe to top of head, coverts, and breast.; Flux Grade: 2, 3	scorched or singed	2,3	2	ACC	638674, 3935883	NA
2021_100_ISEGS	yellow warbler	YWAR	Fatality Search	5/18/2021	5/18/2021	dead-fresh	0-0.33 days	singe to several flight feathers in wings and tail, singe to nape, back, and coverts.; Flux Grade: 2, 3	scorched or singed	2,3	2	ACC	638669, 3935921	NA
2021_101_ISEGS	mourning dove	MODO	Fatality Search	5/18/2021	5/18/2021	feather spot	3-7 days	no evidence of singe or collision.; Flux Grade: Unknown	unknown	NA	2	Powerblock	638624, 3935871	NA
2021_102_ISEGS	barn swallow	BARS	Fatality Search	5/18/2021	5/18/2021	feather spot	3-7 days	curling to several primaries.; Flux Grade: 1	scorched or singed	1	2	Powerblock	638624, 3935871	NA
2021_103_ISEGS	unidentified small bird	UNID	Fatality Search	5/18/2021	5/18/2021	feather spot	3-7 days	no evidence of singe or collision.; Flux Grade: Unknown	unknown	NA	2	Powerblock	638624, 3935871	NA
2021_104_ISEGS	unidentified small bird	UNID	Fatality Search	5/18/2021	5/18/2021	broken up	8-14 days	curling to flight feathers.; Flux Grade: 1	scorched or singed	1	2	Powerblock	638624, 3935878	NA
2021_105_ISEGS	lazuli bunting	LAZB	Fatality Search	5/18/2021	5/18/2021	broken up	1-3 days	curling to 1 flight feather.; Flux Grade: 1	scorched or singed	1	2	Powerblock	638624, 3935871	NA



USFWS #	Common Name	Species Code	How Found	Detection Date	Collection Date	Condition	Time Since Death/Injury	Description of Carcass/Injury	Cause of Death/Injury	Burn Grade	Unit	Nearest Project Feature	Coordinates	SPUT Revisions
2021_106_ISEGS	unidentified small bird	UNID	Fatality Search	5/18/2021	5/18/2021	broken up	3-7 days	no evidence of singe or collision.; Flux Grade: Unknown	unknown	NA	2	Powerblock	638624, 3935871	NA
2021_107_ISEGS	northern rough-winged swallow	NRWS	Fatality Search	5/18/2021	5/18/2021	feather spot	3-7 days	no evidence of singe or collision.; Flux Grade: Unknown	unknown	NA	2	Powerblock	638624, 3935878	NA
2021_108_ISEGS	mourning dove	MODO	Fatality Search	5/19/2021	5/19/2021	feather spot	1-3 days	no evidence of singe or collision.; Flux Grade: N/A	unknown	NA	2	Heliostat	638424, 3935868	NA
2021_109_ISEGS	unidentified small bird	UNID	Fatality Search	5/19/2021	5/19/2021	feather spot	0.33-1 days	singeing to flight feathers.; Flux Grade: Unknown	scorched or singed	Unknown	2	Heliostat	638466, 3935969	NA
2021_110_ISEGS	western kingbird	WEKI	Fatality Search	5/19/2021	5/19/2021	feather spot	0.33-1 days	singeing to all flight feathers.; Flux Grade: Unknown	scorched or singed	Unknown	2	Heliostat	638758, 3935947	NA
2021_111_ISEGS	mourning dove	MODO	Incidental	5/19/2021	5/19/2021	feather spot	0.33-1 days	no evidence of singe or collision.; Flux Grade: Unknown	unknown	NA	2	Powerblock	638624, 3935872	NA
2021_112_ISEGS	unidentified small bird	UNID	Fatality Search	5/19/2021	5/19/2021	feather spot	0.33-1 days	singeing to flight feathers and body feathers.; Flux Grade: Unknown	scorched or singed	Unknown	2	Heliostat	638757, 3935787	NA
2021_113_ISEGS	broad-tailed hummingbird	BTLH	Fatality Search	5/19/2021	5/19/2021	dead-semi-fresh	1-3 days	singe to flight feathers and crown.; Flux Grade: 3	scorched or singed	3	2	Heliostat	638700, 3935733	NA
2021_114_ISEGS	Wilson's warbler	WIWA	Incidental	5/20/2021	5/21/2021	dead-semi-fresh	1-3 days	singe to crown feathers.; Flux Grade: 1	scorched or singed	1	3	Powerblock	637481, 3937907	NA
2021_115_ISEGS	Wilson's warbler	WIWA	Incidental	5/23/2021	5/24/2021	dead-semi-fresh	1-3 days	curling to all flight feathers, singe to rump and right side of neck.; Flux Grade: 2, 3	scorched or singed	2,3	1	Powerblock	640357, 3933513	NA
2021_116_ISEGS	western wood-pewee	WEWP	Incidental	5/25/2021	5/25/2021	dead-fresh	0-0.33 days	singe to right wing and tail, singe to head, nape, upper breast, and rump; Flux Grade: 1, 3	scorched or singed	1,3	1	Powerblock	640337, 3933539	NA
2021_117_ISEGS	Wilson's warbler	WIWA	Incidental	5/29/2021	6/1/2021	dead-fresh	0-0.33 days	singe to tail, coverts, head, nape, back, and rump.; Flux Grade: 1, 3	scorched or singed	1,3	2	ACC	638620, 3935882	NA
2021_118_ISEGS	unidentified warbler	UNWA	Incidental	5/29/2021	6/1/2021	dead-fresh	0.33-1 days	curling to all flight feathers with tail singed off, singe to all parts of body except throat.; Flux Grade: 2, 3	scorched or singed	2,3	2	ACC	638627, 3935882	NA
2021_119_ISEGS	pine siskin	PISI	Incidental	5/29/2021	6/1/2021	dead-semi-fresh	3-7 days	singe to several flight feathers, singe to coverts, left and right flanks.; Flux Grade: 1, 3	scorched or singed	1,3	2	ACC	638634, 3935881	NA
2021_120_ISEGS	tree swallow	TRES	Incidental	5/29/2021	6/1/2021	dead-semi-fresh	3-7 days	curling to all flight feathers, singe to left side of face and nape.; Flux Grade: 2, 3	scorched or singed	2,3	2	Powerblock	638660, 3935845	NA

USFWS #	Common Name	Species Code	How Found	Detection Date	Collection Date	Condition	Time Since Death/Injury	Description of Carcass/Injury	Cause of Death/Injury	Burn Grade	Unit	Nearest Project Feature	Coordinates	SPUT Revisions
2021_121_ISEGS	yellow warbler	YWAR	Fatality Search	6/2/2021	6/2/2021	dead-semi-fresh	1-3 days	curling to all flight feathers, singe to top of head, back, and rump.; Flux Grade: 2, 3	scorched or singed	2,3	3	ACC	637511, 3937944	NA
2021_122_ISEGS	unidentified small bird	UNID	Fatality Search	6/2/2021	6/2/2021	feather spot	3-7 days	no evidence of singe or collision.; Flux Grade: Unknown	unknown	NA	3	Powerblock	637455, 3937878	NA
2021_123_ISEGS	unidentified small bird	UNID	Fatality Search	6/2/2021	6/2/2021	broken up	3-7 days	no evidence of singe or collision.; Flux Grade: Unknown	unknown	NA	3	Powerblock	637495, 3937901	NA
2021_124_ISEGS	Wilson's warbler	WIWA	Fatality Search	6/4/2021	6/4/2021	dead-semi-fresh	3-7 days	singe to entire carcass except throat with all flight feathers singed off.; Flux Grade: 2, 3	scorched or singed	2,3	2	ACC	638651, 3935909	NA
2021_125_ISEGS	calliope hummingbird	CAHU	Fatality Search	6/4/2021	6/4/2021	dead-semi-fresh	1-3 days	singe to several rectrices, left side of face.; Flux Grade: 1, 3	scorched or singed	1,3	2	ACC	638631, 3935895	NA
2021_126_ISEGS	Wilson's warbler	WIWA	Fatality Search	6/4/2021	6/4/2021	dead-semi-fresh	3-7 days	singe to all of dorsal side with flight feathers singed off.; Flux Grade: 2, 3	scorched or singed	2,3	2	ACC	638686, 3935895	NA
2021_127_ISEGS	unidentified small bird	UNID	Fatality Search	6/4/2021	6/4/2021	feather spot	3-7 days	singe to primary and some contour feathers.; Flux Grade: 1, 3	scorched or singed	1,3	2	Powerblock	638637, 3935893	NA
2021_128_ISEGS	unidentified small bird	UNID	Fatality Search	6/4/2021	6/4/2021	feather spot	3-7 days	singe to based of retrix.; Flux Grade: 1	scorched or singed	1	2	Powerblock	638647, 3935845	NA
2021_129_ISEGS	unidentified small bird	UNID	Fatality Search	6/4/2021	6/4/2021	broken up	1-3 days	no evidence of singe or collision.; Flux Grade: Unknown	unknown	NA	2	Powerblock	638628, 3935870	NA
2021_130_ISEGS	unidentified small bird	UNID	Fatality Search	6/4/2021	6/4/2021	broken up	1-3 days	no evidence of singe or collision.; Flux Grade: Unknown	unknown	NA	2	Powerblock	638627, 3935872	NA
2021_131_ISEGS	unidentified small bird	UNID	Fatality Search	6/4/2021	6/4/2021	broken up	3-7 days	singe to several contour feathers.; Flux Grade: 3	scorched or singed	3	2	Powerblock	638627, 3935872	NA
2021_132_ISEGS	western tanager	WETA	Fatality Search	6/4/2021	6/4/2021	broken up	0.33-1 days	no evidence of singe or collision.; Flux Grade: Unknown	unknown	NA	2	Powerblock	638692, 3935906	NA
2021_133_ISEGS	yellow-rumped warbler	YRWA	Incidental	6/4/2021	6/4/2021	dead-fresh	0-0.33 days	curling to all flight feathers, singe to all parts of body except throat.; Flux Grade: 2, 3	scorched or singed	2,3	1	Powerblock	640373, 3933487	NA
2021_134_ISEGS	lesser goldfinch	LEGO	Fatality Search	6/8/2021	6/8/2021	dead-semi-fresh	3-7 days	no evidence of singe or collision.; Flux Grade: N/A	unknown	NA	1	ACC	640353, 3933562	NA
2021_135_ISEGS	house sparrow	HOSP	Fatality Search	6/8/2021	6/8/2021	dead-semi-fresh	3-7 days	curling to all flight feathers in wings and tail, singe to body feathers.; Flux Grade: 3	scorched or singed	3	1	ACC	640406, 3933548	NA

USFWS #	Common Name	Species Code	How Found	Detection Date	Collection Date	Condition	Time Since Death/Injury	Description of Carcass/Injury	Cause of Death/Injury	Burn Grade	Unit	Nearest Project Feature	Coordinates	SPUT Revisions
2021_136_ISEGS	Wilson's warbler	WTWA	Fatality Search	6/8/2021	6/8/2021	dead-semi-fresh	3-7 days	curling to all flight feathers, singe to top of head, back, and rump.; Flux Grade: 3	scorched or singed	3	1	ACC	640410, 3933524	NA
2021_137_ISEGS	yellow warbler	YWAR	Fatality Search	6/8/2021	6/8/2021	dead-semi-fresh	3-7 days	curling to all flight feathers, singe to contour feathers.; Flux Grade: 3	scorched or singed	3	1	ACC	640353, 3933523	NA
2021_138_ISEGS	mourning dove	MODO	Fatality Search	6/8/2021	6/8/2021	feather spot	1-3 days	no evidence of singe or collision.; Flux Grade: N/A	unknown	NA	1	Heliostat	640342, 3933663	NA
2021_139_ISEGS	unidentified large bird	UNLB	Fatality Search	6/9/2021	6/9/2021	broken up	3-7 days	no evidence of singe or collision.; Flux Grade: Unknown	unknown	NA	3	Powerblock	637458, 3937932	NA
2021_140_ISEGS	unidentified small bird	UNID	Fatality Search	6/9/2021	6/9/2021	broken up	3-7 days	singe to several primaries.; Flux Grade: 1	scorched or singed	1	3	Powerblock	637457, 3937933	NA
2021_141_ISEGS	unidentified small bird	UNID	Fatality Search	6/9/2021	6/9/2021	feather spot	8-14 days	singe to end of 1 primary.; Flux Grade: 1	scorched or singed	1	3	Powerblock	637458, 3937935	NA
2021_142_ISEGS	house finch	HOFI	Incidental	6/9/2021	6/9/2021	dead-semi-fresh	3-7 days	deep cut in back suggesting collision with acc fan blade.; Flux Grade: Unknown	collision-panel	NA	1	ACC	640402, 3933529	NA
2021_143_ISEGS	lesser nighthawk	LENI	Incidental	6/11/2021	6/11/2021	dead-fresh	0-0.33 days	collision with vehicle reported.; Flux Grade: N/A	collision-other	NA	0	Admin. Building	639026, 3934843	NA
2021_144_ISEGS	unidentified small bird	UNID	Fatality Search	6/14/2021	6/14/2021	dead-semi-fresh	3-7 days	singe to several flight feathers.; Flux Grade: 1	scorched or singed	1	2	Heliostat	638813, 3935917	NA
2021_145_ISEGS	Wilson's warbler	WTWA	Fatality Search	6/15/2021	6/15/2021	dead-semi-fresh	3-7 days	curling to all flight feathers, singe to all of dorsal side.; Flux Grade: 2, 3	scorched or singed	2,3	1	ACC	640413, 3933548	NA
2021_146_ISEGS	Costa's hummingbird	COHU	Fatality Search	6/15/2021	6/15/2021	dead-semi-fresh	3-7 days	singe to back, nape, and rump.; Flux Grade: 3	scorched or singed	3	1	ACC	640374, 3933535	NA
2021_147_ISEGS	orange-crowned warbler	OCWA	Fatality Search	6/15/2021	6/15/2021	dead-fresh	0-0.33 days	curling to flight feathers in wings, singe to coverts and all of dorsal side.; Flux Grade: 2, 3	scorched or singed	2,3	1	ACC	640410, 3933522	NA
2021_148_ISEGS	unidentified small bird	UNID	Fatality Search	6/15/2021	6/15/2021	broken up	3-7 days	curling to several flight feathers; Flux Grade: 1	scorched or singed	1	1	Powerblock	640355, 3933501	NA
2021_149_ISEGS	black-throated sparrow	BTSP	Incidental	6/17/2021	6/17/2021	dead-semi-fresh	3-7 days	curling to all flight feathers, singe to top of head, breast, flanks, and rump.; Flux Grade: 2, 3	scorched or singed	2,3	1	Powerblock	640373, 3933487	NA
2021_150_ISEGS	Townsend's warbler	TOWA	Incidental	6/17/2021	6/17/2021	dead-semi-fresh	3-7 days	curling to all flight feathers, singe to body feathers.; Flux Grade: 2, 3	scorched or singed	2,3	1	Powerblock	640373, 3933487	NA
2021_151_ISEGS	yellow-rumped warbler	YRWA	Incidental	6/17/2021	6/17/2021	dead-semi-fresh	3-7 days	curling to rectrices, singe to left flank and side of face.; Flux Grade: 1, 3	scorched or singed	1,3	1	Powerblock	640373, 3933487	NA

USFWS #	Common Name	Species Code	How Found	Detection Date	Collection Date	Condition	Time Since Death/Injury	Description of Carcass/Injury	Cause of Death/Injury	Burn Grade	Unit	Nearest Project Feature	Coordinates	SPUT Revisions
2021_152_ISEGS	yellow-rumped warbler	YRWA	Incidental	6/17/2021	6/17/2021	dead-semi-fresh	3-7 days	curling to flight feathers, singe to contour feathers.; Flux Grade: 2, 3	scorched or singed	2,3	1	Powerblock	640373, 3933487	NA
2021_153_ISEGS	northern rough-winged swallow	NRWS	Incidental	6/9/2021	6/17/2021	broken up	31-60 days	no evidence of singe or collision.; Flux Grade: Unknown	unknown	NA	1	Powerblock	640373, 3933487	NA
2021_154_ISEGS	Wilson's warbler	WIWA	Incidental	6/9/2021	6/17/2021	dead-semi-fresh	3-7 days	curling to all flight feathers, singe to contour feathers.; Flux Grade: 2, 3	scorched or singed	2,3	1	Powerblock	640348, 3933485	NA
2021_155_ISEGS	Townsend's warbler	TOWA	Incidental	6/17/2021	6/17/2021	dead-semi-fresh	3-7 days	curling to all flight feathers, singe to contour feathers.; Flux Grade: 2, 3	scorched or singed	2,3	1	Powerblock	640373, 3933487	NA
2021_156_ISEGS	black-and-white warbler	BAWW	Incidental	6/9/2021	6/17/2021	dead-semi-fresh	3-7 days	no evidence of singe or collision.; Flux Grade: Unknown	unknown	NA	1	Powerblock	640288, 3933537	NA
2021_157_ISEGS	western kingbird	WEKI	Incidental	6/9/2021	6/17/2021	dead-semi-fresh	8-14 days	curling to several rectrices.; Flux Grade: 1	scorched or singed	1	1	Powerblock	640373, 3933487	NA
2021_158_ISEGS	loggerhead shrike	LOSH	Fatality Search	6/18/2021	6/18/2021	feather spot	1-3 days	no evidence of singe or collision.; Flux Grade: Unknown	unknown	NA	1	Heliostat	640474, 3933584	NA
2021_159_ISEGS	pine siskin	PISI	Fatality Search	6/25/2021	6/25/2021	feather spot	3-7 days	no evidence of singe or collision.; Flux Grade: Unknown	unknown	NA	3	Heliostat	637687, 3937986	NA
2021_160_ISEGS	unidentified small bird	UNID	Fatality Search	6/25/2021	6/25/2021	broken up	3-7 days	no evidence of singe or collision.; Flux Grade: Unknown	unknown	NA	3	Heliostat	637505, 3938055	NA
2021_161_ISEGS	tree swallow	TRES	Fatality Search	6/25/2021	6/25/2021	feather spot	8-14 days	curling to primaries and singe to contour feathers.; Flux Grade: Unknown	scorched or singed	Unknown	3	Heliostat	637363, 3938068	NA
2021_162_ISEGS	unidentified swallow	UNSW	Fatality Search	6/30/2021	6/30/2021	feather spot	1-3 days	no evidence of singe or collision.; Flux Grade: Unknown	unknown	NA	1	Powerblock	640368, 3933475	NA
2021_163_ISEGS	mourning dove	MODO	Fatality Search	7/2/2021	7/2/2021	feather spot	3-7 days	no evidence of singe or collision.; Flux Grade: Unknown	unknown	NA	2	Powerblock	638586, 3935865	NA
2021_164_ISEGS	unidentified large bird	UNLB	Fatality Search	7/2/2021	7/2/2021	feather spot	8-14 days	singe to several undertail coverts.; Flux Grade: 3	scorched or singed	3	2	Powerblock	638568, 3935896	NA
2021_165_ISEGS	American kestrel	AMKE	Incidental	7/7/2021	7/7/2021	dead-semi-fresh	1-3 days	singe on all flight feathers, singe to some contour feathers.; Flux Grade: 3	scorched or singed	3	1	Powerblock	640353, 3933491	NA
2021_166_ISEGS	least sandpiper	LESA	Incidental	7/12/2021	7/12/2021	dead-fresh	0-0.33 days	no evidence of singe or collision.; Flux Grade: N/A	unknown	NA	2	Powerblock	638630, 3935882	NA

USFWS #	Common Name	Species Code	How Found	Detection Date	Collection Date	Condition	Time Since Death/Injury	Description of Carcass/Injury	Cause of Death/Injury	Burn Grade	Unit	Nearest Project Feature	Coordinates	SPUT Revisions
2021_167_ISEGS	cliff swallow	CLSW	Fatality Search	7/16/2021	7/16/2021	dead-semi-fresh	1-3 days	curling to primaries on right wing, singe to back contour feathers.; Flux Grade: 1	scorched or singed	1	1	Heliostat	640543, 3933549	NA
2021_168_ISEGS	tree swallow	TRES	Incidental	7/16/2021	7/16/2021	dead-semi-fresh	0.33-1 days	no evidence of singe or collision.; Flux Grade: Unknown	unknown	NA	1	Powerblock	640371, 3933534	NA
2021_169_ISEGS	unidentified small bird	UNID	Fatality Search	7/23/2021	7/23/2021	broken up	3-7 days	no evidence of singe or collision.; Flux Grade: Unknown	unknown	NA	3	ACC	637477, 3937951	NA
2021_170_ISEGS	northern rough-winged swallow	NRWS	Fatality Search	7/23/2021	7/23/2021	dead-semi-fresh	3-7 days	no evidence of singe or collision.; Flux Grade: Unknown	unknown	NA	3	ACC	637504, 3937953	NA
2021_171_ISEGS	red-shouldered hawk	RSHA	Fatality Search	7/26/2021	7/26/2021	dead-fresh	0-0.33 days	no evidence of singe or collision.; Flux Grade: Unknown	unknown	NA	2	Powerblock	638633, 3935872	NA
2021_172_ISEGS	verdin	VERD	Incidental	7/30/2021	7/30/2021	dead-fresh	0.33-1 days	singe to coverts, head, and nape.; Flux Grade: 1, 3	scorched or singed	1,3	3	Powerblock	637486, 3937937	NA
2021_173_ISEGS	unidentified small bird	UNID	Fatality Search	8/4/2021	8/4/2021	feather spot	8-14 days	singed flight and body feathers.; Flux Grade: 3	scorched or singed	3	1	Powerblock	640326, 3933491	NA
2021_174_ISEGS	Cooper's hawk	COHA	Incidental	8/5/2021	8/5/2021	dead-fresh	0-0.33 days	no evidence of singe or collision.; Flux Grade: N/A	unknown	NA	1	Powerblock	640286, 3933554	NA
2021_175_ISEGS	American kestrel	AMKE	Incidental	8/9/2021	8/9/2021	alive-injured	0-0.33 days	curling to all flight feathers, singe to coverts, nape, and left side of face with eye closed shut and injured.; Flux Grade: 2, 3	scorched or singed	2,3	2	Powerblock	638660, 3935845	NA
2021_176_ISEGS	chipping sparrow	CHSP	Incidental	8/9/2021	8/9/2021	dead-semi-fresh	3-7 days	curling or singeing to all of flight feathers.; Flux Grade: 2, 3	scorched or singed	2,3	2	Powerblock	638627, 3935897	NA
2021_177_ISEGS	yellow warbler	YWAR	Fatality Search	8/11/2021	8/11/2021	dead-semi-fresh	3-7 days	curling to all flight feathers, singe to nape, back, and head.; Flux Grade: 2, 3	scorched or singed	2,3	3	ACC	637501, 3937944	NA
2021_178_ISEGS	unidentified small bird	UNID	Fatality Search	8/11/2021	8/11/2021	feather spot	8-14 days	singe to primary.; Flux Grade: 1	scorched or singed	1	3	Powerblock	637472, 3937928	NA
2021_179_ISEGS	unidentified small bird	UNID	Fatality Search	8/11/2021	8/11/2021	broken up	3-7 days	no evidence of singe or collision.; Flux Grade: Unknown	unknown	NA	2	Powerblock	638623, 3935869	NA
2021_180_ISEGS	unidentified swallow	UNSW	Fatality Search	8/13/2021	8/13/2021	dead-semi-fresh	3-7 days	curling to all flight feathers with majority singed off, singe to all upperparts, breast, and throat.; Flux Grade: 2, 3	scorched or singed	2,3	1	ACC	640359, 3933525	NA
2021_181_ISEGS	tree swallow	TRES	Fatality Search	8/13/2021	8/13/2021	dead-semi-fresh	1-3 days	singe to head, back, nape and rump with all flight feathers singed off.; Flux Grade: 2, 3	scorched or singed	2,3	1	ACC	640375, 3933537	NA

USFWS #	Common Name	Species Code	How Found	Detection Date	Collection Date	Condition	Time Since Death/Injury	Description of Carcass/Injury	Cause of Death/Injury	Burn Grade	Unit	Nearest Project Feature	Coordinates	SPUT Revisions
2021_182_ISEGS	northern rough-winged swallow	NRWS	Fatality Search	8/13/2021	8/13/2021	dead-semi-fresh	3-7 days	singe to head, back, and nape with all flight feathers singed off.; Flux Grade: 2, 3	scorched or singed	2,3	1	ACC	640392, 3933548	NA
2021_183_ISEGS	unidentified hummingbird	UNHU	Fatality Search	8/13/2021	8/13/2021	dead-semi-fresh	1-3 days	singe to tail, head, outer primaries and contour feathers.; Flux Grade: 1, 3	scorched or singed	1,3	2	Heliostat	638740, 3935967	NA
2021_184_ISEGS	unidentified swallow	UNSW	Fatality Search	8/13/2021	8/13/2021	dead-semi-fresh	3-7 days	singe to leading and trailing edge of primaries.; Flux Grade: 1	scorched or singed	1	1	Heliostat	640389, 3933683	NA
2021_185_ISEGS	yellow warbler	YWAR	Incidental	8/13/2021	8/17/2021	dead-fresh	0-0.33 days	curling to tips of flight feathers.; Flux Grade: 1	scorched or singed	1	2	Powerblock	638644, 3935839	NA
2021_186_ISEGS	MacGillivray's warbler	MGWA	Incidental	8/17/2021	8/17/2021	dead-fresh	0.33-1 days	singe on face, 2 retrix curled; Flux Grade: 1, 3	scorched or singed	1,3	2	Powerblock	638596, 3935840	NA
2021_187_ISEGS	lark sparrow	LASP	Incidental	8/17/2021	8/17/2021	dead-fresh	0-0.33 days	both winds singed, head, tail and contour feathers also; Flux Grade: 2, 3	scorched or singed	2,3	2	Powerblock	638596, 3935836	NA
2021_188_ISEGS	orange-crowned warbler	OCWA	Incidental	8/24/2021	8/24/2021	alive-injured	0-0.33 days	curling to both wings, singe to top of head and left breast.; Flux Grade: 2, 3	scorched or singed	2,3	1	Powerblock	640373, 3933487	NA
2021_189_ISEGS	Nashville warbler	NAWA	Fatality Search	8/25/2021	8/25/2021	dead-semi-fresh	1-3 days	singe to both wings, head, tail, and lower contour feathers.; Flux Grade: 2, 3	scorched or singed	2,3	3	ACC	637479, 3937957	NA
2021_190_ISEGS	northern rough-winged swallow	NRWS	Incidental	8/11/2021	8/25/2021	dead-semi-fresh	8-14 days	singe on face.; Flux Grade: 3	scorched or singed	3	3	Powerblock	637487, 3937914	NA
2021_191_ISEGS	northern rough-winged swallow	NRWS	Fatality Search	8/25/2021	8/25/2021	broken up	3-7 days	singe to wingtips.; Flux Grade: 1	scorched or singed	1	3	Powerblock	637456, 3937977	NA
2021_192_ISEGS	Nashville warbler	NAWA	Incidental	8/25/2021	8/25/2021	dead-semi-fresh	1-3 days	singe to both wings, back, head, and chest.; Flux Grade: 2, 3	scorched or singed	2,3	2	Powerblock	638632, 3935834	NA
2021_193_ISEGS	unidentified sparrow	UNSP	Fatality Search	8/25/2021	8/25/2021	feather spot	0.33-1 days	no evidence of singe or collision.; Flux Grade: Unknown	unknown	NA	3	Heliostat	637493, 3938131	NA
2021_194_ISEGS	northern rough-winged swallow	NRWS	Fatality Search	8/25/2021	8/25/2021	dead-semi-fresh	3-7 days	curling to all flight feathers, singe to face, head, back, and rump.; Flux Grade: 2, 3	scorched or singed	2,3	2	ACC	638626, 3935922	NA
2021_195_ISEGS	yellow warbler	YWAR	Fatality Search	8/25/2021	8/25/2021	dead-semi-fresh	3-7 days	singe to head, nape, back, and rump with flight feathers singed off.; Flux Grade: 2, 3	scorched or singed	2,3	2	ACC	638627, 3935896	NA
2021_196_ISEGS	Wilson's warbler	WIWA	Fatality Search	8/25/2021	8/25/2021	dead-semi-fresh	1-3 days	singe on nape, back, and rump with all flight feathers singed off.; Flux Grade: 2, 3	scorched or singed	2,3	2	ACC	638636, 3935897	NA
2021_197_ISEGS	tree swallow	TRES	Fatality Search	8/25/2021	8/25/2021	dead-semi-fresh	3-7 days	singe to both wings, head, and tail.; Flux Grade: 2, 3	scorched or singed	2,3	2	ACC	638630, 3935896	NA

USFWS #	Common Name	Species Code	How Found	Detection Date	Collection Date	Condition	Time Since Death/Injury	Description of Carcass/Injury	Cause of Death/Injury	Burn Grade	Unit	Nearest Project Feature	Coordinates	SPUT Revisions
2021_198_ISEGS	American kestrel	AMKE	Fatality Search	8/25/2021	8/25/2021	alive-injured	0-0.33 days	single to both wings.; Flux Grade: 2, 3	scorched or singed	2,3	2	Powerblock	638527, 3935854	NA
2021_199_ISEGS	black-throated gray warbler	BTYW	Fatality Search	8/26/2021	8/26/2021	dead-fresh	0.33-1 days	curling to several retrix and coverts, single to head, rump, and throat.; Flux Grade: 1, 3	scorched or singed	1,3	1	ACC	640353, 3933547	NA
2021_200_ISEGS	yellow warbler	YWAR	Fatality Search	8/26/2021	8/26/2021	dead-semi-fresh	1-3 days	curling to primaries and secondaries, single to head, nape, and back.; Flux Grade: 2, 3	scorched or singed	2,3	1	ACC	640345, 3933534	NA
2021_201_ISEGS	yellow warbler	YWAR	Fatality Search	8/26/2021	8/26/2021	dead-fresh	0.33-1 days	curling to all flight feathers, single to body feathers.; Flux Grade: 2, 3	scorched or singed	2,3	1	ACC	640351, 3933533	NA
2021_202_ISEGS	unidentified hummingbird	UNHU	Fatality Search	8/26/2021	8/26/2021	dead-fresh	0.33-1 days	single to entire body with majority of flight feathers singed off or showing evidence of curling.; Flux Grade: 2, 3	scorched or singed	2,3	1	ACC	640362, 3933532	NA
2021_203_ISEGS	Townsend's warbler	TOWA	Fatality Search	8/26/2021	8/26/2021	dead-fresh	0-0.33 days	curling to flight feathers in wings and tail, single to head and body feathers.; Flux Grade: 2, 3	scorched or singed	2,3	1	ACC	640346, 3933524	NA
2021_204_ISEGS	tree swallow	TRES	Fatality Search	8/26/2021	8/26/2021	dead-semi-fresh	8-14 days	curling to contour feathers and head feathers.; Flux Grade: 2, 3	scorched or singed	2,3	1	ACC	640397, 3933522	NA
2021_205_ISEGS	unidentified blackbird	UNBB	Fatality Search	8/26/2021	8/26/2021	broken up	8-14 days	curling to primary flight feathers.; Flux Grade: 1	scorched or singed	1	1	Powerblock	640294, 3933554	NA
2021_206_ISEGS	American kestrel	AMKE	Fatality Search	8/26/2021	8/26/2021	broken up	3-7 days	single to flight feathers.; Flux Grade: 1	scorched or singed	1	1	Heliostat	640548, 3933475	NA
2021_207_ISEGS	rock pigeon	ROPI	Fatality Search	8/26/2021	8/26/2021	feather spot	0.33-1 days	curling to all primaries.; Flux Grade: 1	scorched or singed	1	1	Heliostat	640484, 3933417	NA
2021_208_ISEGS	brown-headed cowbird	BHCO	Incidental	8/28/2021	8/28/2021	dead-fresh	0.33-1 days	curling to majority of flight feathers, single to axillaries and upper breast.; Flux Grade: 2, Unknown	scorched or singed	2	1	Powerblock	640375, 3933449	NA
2021_209_ISEGS	mourning dove	MODO	Incidental	9/1/2021	9/1/2021	alive-injured	0-0.33 days	no evidence of single or collision.; Flux Grade: N/A	unknown	NA	0	Perimeter Fence	639684, 3935798	NA
2021_210_ISEGS	western kingbird	WEKI	Fatality Search	9/1/2021	9/1/2021	dead-fresh	0.33-1 days	curling to rectrices, single to top of head, back, and coverts.; Flux Grade: 1, 3	scorched or singed	1,3	3	ACC	637499, 3937972	NA
2021_211_ISEGS	cliff swallow	CLSW	Fatality Search	9/8/2021	9/8/2021	dead-semi-fresh	1-3 days	single to head, wings, tail, chest and contour feathers.; Flux Grade: 2, 3	scorched or singed	2,3	2	ACC	638706, 3935890	NA
2021_212_ISEGS	unidentified warbler	UNWA	Fatality Search	9/8/2021	9/8/2021	dead-semi-fresh	3-7 days	single to entirety of carcass.; Flux Grade: 2, 3	scorched or singed	2,3	2	ACC	638648, 3935900	NA

USFWS #	Common Name	Species Code	How Found	Detection Date	Collection Date	Condition	Time Since Death/Injury	Description of Carcass/Injury	Cause of Death/Injury	Burn Grade	Unit	Nearest Project Feature	Coordinates	SPUT Revisions
2021_213_ISEGS	Wilson's warbler	WTWA	Fatality Search	9/8/2021	9/8/2021	dead-semi-fresh	3-7 days	singe to head, wings, tail, and chest.; Flux Grade: 2, 3	scorched or singed	2,3	2	ACC	638640, 3935900	NA
2021_214_ISEGS	yellow warbler	YWAR	Fatality Search	9/8/2021	9/8/2021	dead-semi-fresh	1-3 days	singe to head, wings, tail, and contour feathers.; Flux Grade: 2, 3	scorched or singed	2,3	2	ACC	638675, 3935923	NA
2021_215_ISEGS	orange-crowned warbler	OCWA	Fatality Search	9/8/2021	9/8/2021	dead-fresh	0-0.33 days	singe to head, wings, tail, and contour feathers.; Flux Grade: 1	scorched or singed	1	2	ACC	638649, 3935924	NA
2021_216_ISEGS	yellow warbler	YWAR	Fatality Search	9/8/2021	9/8/2021	broken up	3-7 days	singed primaries and wing coverts.; Flux Grade: 2	scorched or singed	2	2	Powerblock	638645, 3935863	NA
2021_217_ISEGS	unidentified small bird	UNID	Fatality Search	9/8/2021	9/8/2021	feather spot	3-7 days	singe to tips of body feathers.; Flux Grade: Unknown	scorched or singed	Unknown	1	ACC	640394, 3933524	NA
2021_218_ISEGS	yellow warbler	YWAR	Fatality Search	9/9/2021	9/9/2021	dead-semi-fresh	3-7 days	curling to rectrices, singe to head, nape, back, and rump with primaries and secondaries singed off.; Flux Grade: 2, 3	scorched or singed	2,3	1	ACC	640379, 3933535	NA
2021_219_ISEGS	Wilson's warbler	WTWA	Fatality Search	9/9/2021	9/9/2021	dead-semi-fresh	3-7 days	curling to all flight feathers, singe to wing coverts and nape.; Flux Grade: 2, 3	scorched or singed	2,3	1	ACC	640360, 3933536	NA
2021_220_ISEGS	unidentified swallow	UNSW	Fatality Search	9/9/2021	9/9/2021	dead-semi-fresh	3-7 days	singe to wings, tail, head, chest, and contour feathers.; Flux Grade: 2, 3	scorched or singed	2,3	1	ACC	640356, 3933548	NA
2021_221_ISEGS	yellow warbler	YWAR	Fatality Search	9/9/2021	9/9/2021	dead-fresh	0-0.33 days	curling to all flight feathers, singe to top of head and side of breast.; Flux Grade: 2, 3	scorched or singed	2,3	1	ACC	640350, 3933549	NA
2021_222_ISEGS	unidentified swallow	UNSW	Fatality Search	9/9/2021	9/9/2021	broken up	3-7 days	singe to tips of flight feathers.; Flux Grade: Unknown	scorched or singed	Unknown	1	Powerblock	640295, 3933547	NA
2021_223_ISEGS	yellow warbler	YWAR	Fatality Search	9/9/2021	9/9/2021	broken up	1-3 days	singe to tail coverts.; Flux Grade: Unknown	scorched or singed	Unknown	1	Powerblock	640376, 3933543	NA
2021_224_ISEGS	unidentified small bird	UNID	Fatality Search	9/9/2021	9/9/2021	feather spot	3-7 days	singe to some primaries.; Flux Grade: 2	scorched or singed	2	1	Powerblock	640353, 3933516	NA
2021_225_ISEGS	northern rough-winged swallow	NRWS	Fatality Search	9/9/2021	9/9/2021	broken up	3-7 days	singe to tips of primaries.; Flux Grade: 1	scorched or singed	1	1	Powerblock	640397, 3933497	NA
2021_226_ISEGS	unidentified dove	UNDV	Fatality Search	9/9/2021	9/9/2021	broken up	3-7 days	singe to tips of neck feathers.; Flux Grade: 3	scorched or singed	3	1	Powerblock	640362, 3933491	NA
2021_227_ISEGS	rufous hummingbird	RUHU	Fatality Search	9/9/2021	9/9/2021	dead-semi-fresh	1-3 days	curling to rectrices, singe to rump and right side of body.; Flux Grade: 3	scorched or singed	3	1	Heliostat	640496, 3933587	NA
2021_228_ISEGS	yellow warbler	YWAR	Incidental	9/14/2021	9/15/2021	dead-semi-fresh	3-7 days	singe to wings, head, neck, contour feathers.; Flux Grade: 1, 3	scorched or singed	1,3	2	Powerblock	638588, 3935884	NA



USFWS #	Common Name	Species Code	How Found	Detection Date	Collection Date	Condition	Time Since Death/Injury	Description of Carcass/Injury	Cause of Death/Injury	Burn Grade	Unit	Nearest Project Feature	Coordinates	SPUT Revisions
2021_229_ISEGS	lesser goldfinch	LEGO	Fatality Search	9/17/2021	9/17/2021	dead-semi-fresh	3-7 days	singe to wings, head, neck, and contour feathers.; Flux Grade: 2, 3	scorched or singed	2,3	3	ACC	637532, 3937945	NA
2021_230_ISEGS	tree swallow	TRES	Fatality Search	9/17/2021	9/17/2021	dead-semi-fresh	3-7 days	singe to wings,tail, head, neck, and contour feathers.; Flux Grade: 2, 3	scorched or singed	2,3	3	ACC	637481, 3937972	NA
2021_231_ISEGS	unidentified empidonax	UNEM	Fatality Search	9/17/2021	9/17/2021	dead-fresh	0.33-1 days	singe to head and neck.; Flux Grade: 3	scorched or singed	3	3	ACC	637473, 3937971	NA
2021_232_ISEGS	lazuli bunting	LAZB	Fatality Search	9/17/2021	9/17/2021	dead-semi-fresh	3-7 days	curling to central rectrices, singe to top of head, coverts, and back.; Flux Grade: 1, 3	scorched or singed	1,3	3	ACC	637485, 3937984	NA
2021_233_ISEGS	yellow warbler	YWAR	Fatality Search	9/17/2021	9/17/2021	feather spot	3-7 days	singe to primaries.; Flux Grade: Unknown	scorched or singed	Unknown	3	Powerblock	637455, 3937932	NA
2021_234_ISEGS	unidentified small bird	UNID	Fatality Search	9/17/2021	9/17/2021	feather spot	3-7 days	singed flight feathers.; Flux Grade: Unknown	scorched or singed	Unknown	3	Heliostat	637522, 3938098	NA
2021_235_ISEGS	mourning dove	MODO	Incidental	9/20/2021	9/20/2021	dead-semi-fresh	8-14 days	singe to tip of tail and contour feathers.; Flux Grade: 3	scorched or singed	3	2	Powerblock	638593, 3935887	NA
2021_236_ISEGS	Wilson's warbler	WTWA	Incidental	9/20/2021	9/20/2021	dead-semi-fresh	3-7 days	singe to head, wings, and neck.; Flux Grade: 1, 3	scorched or singed	1,3	2	Powerblock	638593, 3935887	NA
2021_237_ISEGS	American kestrel	AMKE	Incidental	9/20/2021	9/20/2021	dead-semi-fresh	3-7 days	singe to entire carcass.; Flux Grade: 2, 3	scorched or singed	2,3	3	Powerblock	637487, 3937914	NA
2021_238_ISEGS	northern rough-winged swallow	NRWS	Incidental	9/20/2021	9/20/2021	broken up	3-7 days	singe to both wings, head, neck, and chest.; Flux Grade: 1, 3	scorched or singed	1,3	3	ACC	637515, 3937950	NA
2021_239_ISEGS	cliff swallow	CLSW	Fatality Search	9/21/2021	9/21/2021	dead-semi-fresh	3-7 days	singe to tail, neck, wing and contour feathers.; Flux Grade: 2, 3	scorched or singed	2,3	1	ACC	640398, 3933530	NA
2021_240_ISEGS	tree swallow	TRES	Fatality Search	9/21/2021	9/21/2021	dead-semi-fresh	3-7 days	singe to wings, head, and tail.; Flux Grade: 2, 3	scorched or singed	2,3	1	ACC	640407, 3933548	NA
2021_241_ISEGS	northern rough-winged swallow	NRWS	Fatality Search	9/21/2021	9/21/2021	broken up	3-7 days	no evidence of singe or collision.; Flux Grade: N/A	unknown	NA	1	Powerblock	640421, 3933539	NA
2021_242_ISEGS	unidentified small bird	UNID	Fatality Search	9/21/2021	9/21/2021	broken up	3-7 days	singe to contour feathers.; Flux Grade: Unknown	scorched or singed	Unknown	1	Powerblock	640416, 3933531	NA
2021_243_ISEGS	yellow warbler	YWAR	Fatality Search	9/21/2021	9/21/2021	broken up	3-7 days	singe to tips of primaries.; Flux Grade: Unknown	scorched or singed	Unknown	1	Powerblock	640403, 3933523	NA
2021_244_ISEGS	unidentified small bird	UNID	Fatality Search	9/21/2021	9/21/2021	broken up	3-7 days	singe to contour feathers.; Flux Grade: 3	scorched or singed	3	1	Powerblock	640281, 3933543	NA
2021_245_ISEGS	unidentified swallow	UNSW	Fatality Search	9/21/2021	9/21/2021	broken up	3-7 days	singe to primaries.; Flux Grade: 2	scorched or singed	2	1	Powerblock	640369, 3933506	NA
2021_246_ISEGS	unidentified swallow	UNSW	Fatality Search	9/21/2021	9/21/2021	broken up	3-7 days	singe to tip of contour feathers.; Flux Grade: 3	scorched or singed	3	1	Powerblock	640386, 3933501	NA

USFWS #	Common Name	Species Code	How Found	Detection Date	Collection Date	Condition	Time Since Death/Injury	Description of Carcass/Injury	Cause of Death/Injury	Burn Grade	Unit	Nearest Project Feature	Coordinates	SPUT Revisions
2021_247_ISEGS	Virginia's warbler	VIWA	Fatality Search	9/21/2021	9/21/2021	dead-fresh	0-0.33 days	singe to wings,tail, head, neck, and contour feathers.; Flux Grade: 2, 3	scorched or singed	2,3	1	Heliostat	640324, 3933340	NA
2021_248_ISEGS	yellow warbler	YWAR	Fatality Search	9/21/2021	9/21/2021	dead-fresh	0.33-1 days	singe to head.; Flux Grade: 3	scorched or singed	3	1	Heliostat	640171, 3933628	NA
2021_249_ISEGS	yellow warbler	YWAR	Fatality Search	9/23/2021	9/23/2021	dead-semi-fresh	3-7 days	singe to wings, tail, head, and contour feathers.; Flux Grade: 2, 3	scorched or singed	2,3	2	ACC	638632, 3935909	NA
2021_250_ISEGS	yellow warbler	YWAR	Fatality Search	9/23/2021	9/23/2021	dead-semi-fresh	3-7 days	singe to wings, tail, head, and contour feathers.; Flux Grade: 2, 3	scorched or singed	2,3	2	ACC	638647, 3935910	NA
2021_251_ISEGS	lazuli bunting	LAZB	Fatality Search	9/23/2021	9/23/2021	dead-semi-fresh	3-7 days	singe to wings, tail, head, and chest.; Flux Grade: 2, 3	scorched or singed	2,3	2	ACC	638628, 3935923	NA
2021_252_ISEGS	yellow warbler	YWAR	Fatality Search	9/23/2021	9/23/2021	dead-fresh	0-0.33 days	singe to head, wings, and neck.; Flux Grade: 1, 3	scorched or singed	1,3	2	Powerblock	638619, 3935912	NA
2021_253_ISEGS	unidentified swallow	UNSW	Incidental	9/22/2021	9/23/2021	dead-semi-fresh	1-3 days	singe to wings, tail, head, chest, and contour feathers.; Flux Grade: 2, 3	scorched or singed	2,3	2	Powerblock	638635, 3935817	NA
2021_254_ISEGS	house finch	HOFI	Incidental	10/1/2021	10/1/2021	dead-fresh	0-0.33 days	curling to all flight feathers, singe to head, nape, back, and rump.; Flux Grade: 2, 3	scorched or singed	2,3	1	Powerblock	640368, 3933451	NA
2021_255_ISEGS	unidentified small bird	UNID	Fatality Search	10/4/2021	10/4/2021	feather spot	1-3 days	no evidence of singe or collision.; Flux Grade: N/A	unknown	NA	3	Heliostat	637296, 3938030	NA
2021_256_ISEGS	MacGillivray's warbler	MGWA	Fatality Search	10/6/2021	10/6/2021	dead-fresh	0.33-1 days	singe to head.; Flux Grade: 1, 3	scorched or singed	1,3	3	ACC	637478, 3937958	NA
2021_257_ISEGS	house finch	HOFI	Fatality Search	10/6/2021	10/6/2021	dead-fresh	0-0.33 days	singe to nape and primary coverts.; Flux Grade: 1, 3	scorched or singed	1,3	3	ACC	637473, 3937954	NA
2021_258_ISEGS	northern rough-winged swallow	NRWS	Fatality Search	10/6/2021	10/6/2021	broken up	3-7 days	singe to primary flight feathers.; Flux Grade: 1	scorched or singed	1	2	Powerblock	638547, 3935823	NA
2021_259_ISEGS	unidentified small bird	UNID	Fatality Search	10/7/2021	10/7/2021	broken up	3-7 days	no evidence of singe or collision.; Flux Grade: N/A	unknown	NA	1	ACC	640346, 3933560	NA
2021_260_ISEGS	unidentified hummingbird	UNHU	Fatality Search	10/7/2021	10/7/2021	dead-semi-fresh	3-7 days	singe to entire carcass.; Flux Grade: 2, 3	scorched or singed	2,3	1	ACC	640373, 3933560	NA
2021_261_ISEGS	yellow-rumped warbler	YRWA	Fatality Search	10/7/2021	10/7/2021	dead-semi-fresh	1-3 days	singe to rectrices, face and nape.; Flux Grade: 1, 3	scorched or singed	1,3	1	ACC	640372, 3933549	NA
2021_262_ISEGS	unidentified swallow	UNSW	Fatality Search	10/7/2021	10/7/2021	broken up	3-7 days	singe to tips of primaries and trailing edge of wing.; Flux Grade: 2	scorched or singed	2	1	Powerblock	640427, 3933558	NA
2021_263_ISEGS	unidentified small bird	UNID	Fatality Search	10/7/2021	10/7/2021	feather spot	3-7 days	singe to tips of primaries.; Flux Grade: 1	scorched or singed	1	1	Powerblock	640362, 3933511	NA
2021_264_ISEGS	unidentified sparrow	UNSP	Fatality Search	10/7/2021	10/7/2021	broken up	1-3 days	no evidence of singe or collision.; Flux Grade: N/A	unknown	NA	2	Heliostat	638747, 3936006	NA

USFWS #	Common Name	Species Code	How Found	Detection Date	Collection Date	Condition	Time Since Death/Injury	Description of Carcass/Injury	Cause of Death/Injury	Burn Grade	Unit	Nearest Project Feature	Coordinates	SPUT Revisions
2021_265_ISEGS	tree swallow	TRES	Fatality Search	10/7/2021	10/7/2021	broken up	3-7 days	singe to tips of primaries and trailing edge of wing.; Flux Grade: 2	scorched or singed	2	1	Powerblock	640344, 3933474	NA
2021_266_ISEGS	violet-green swallow	VGSW	Fatality Search	10/17/2021	10/17/2021	dead-semi-fresh	8-14 days	curling to rectrices and right wing, singe to head, nape, and back.; Flux Grade: 2, 3	scorched or singed	2,3	3	ACC	637471, 3937948	NA
2021_267_ISEGS	yellow warbler	YWAR	Fatality Search	10/17/2021	10/17/2021	broken up	3-7 days	no evidence of singe or collision.; Flux Grade: Unknown	unknown	NA	3	ACC	637471, 3937946	NA
2021_268_ISEGS	yellow-rumped warbler	YRWA	Fatality Search	10/17/2021	10/17/2021	dead-fresh	0.33-1 days	curling to all flight feathers, singe to entire body except throat and under tail coverts. ; Flux Grade: 2, 3	scorched or singed	2,3	3	Powerblock	637464, 3937932	NA
2021_269_ISEGS	yellow warbler	YWAR	Fatality Search	10/17/2021	10/17/2021	feather spot	1-3 days	no evidence of singe or collision.; Flux Grade: Unknown	unknown	NA	3	Powerblock	637465, 3937931	NA
2021_270_ISEGS	yellow-rumped warbler	YRWA	Fatality Search	10/17/2021	10/17/2021	dead-fresh	0.33-1 days	curling to tertials in both wings and rectrices, singe to all of dorsal side.; Flux Grade: 2, 3	scorched or singed	2,3	3	Powerblock	637410, 3937800	NA
2021_271_ISEGS	yellow-rumped warbler	YRWA	Fatality Search	10/17/2021	10/17/2021	alive-injured	0-0.33 days	curling to flight feathers in wings, damage to right eye.; Flux Grade: 2, 3	scorched or singed	2,3	3	Heliostat	637342, 3937764	NA
2021_272_ISEGS	house finch	HOFI	Fatality Search	10/18/2021	10/18/2021	dead-fresh	0.33-1 days	curling to rectrices and secondaries, singe to primaries, flanks, face, and nape.; Flux Grade: 1, 3	scorched or singed	1,3	2	ACC	638642, 3935911	NA
2021_273_ISEGS	lazuli bunting	LAZB	Fatality Search	10/18/2021	10/18/2021	dead-semi-fresh	3-7 days	curling to rectrices, singe to throat, nape, and rump.; Flux Grade: 1, 3	scorched or singed	1,3	2	ACC	638682, 3935922	NA
2021_274_ISEGS	northern rough-winged swallow	NRWS	Fatality Search	10/18/2021	10/18/2021	dead-semi-fresh	3-7 days	singe to face and nape.; Flux Grade: 3	scorched or singed	3	2	Powerblock	638617, 3935907	NA
2021_275_ISEGS	unidentified small bird	UNID	Fatality Search	10/18/2021	10/18/2021	broken up	3-7 days	no evidence of singe or collision.; Flux Grade:	unknown	NA	2	Powerblock	638698, 3935837	NA
2021_276_ISEGS	unidentified sparrow	UNSP	Fatality Search	10/18/2021	10/18/2021	feather spot	3-7 days	no evidence of singe or collision.; Flux Grade: Unknown	unknown	NA	1	Powerblock	640403, 3933508	NA
2021_277_ISEGS	yellow-rumped warbler	YRWA	Incidental	11/2/2021	11/2/2021	dead-fresh	0-0.33 days	Whole carcass; Flux Grade: 2, 3	scorched or singed	2,3	1	Powerblock	640338, 3933472	NA
2021_278_ISEGS	ruby-crowned kinglet	RCKI	Fatality Search	11/4/2021	11/4/2021	dead-semi-fresh	1-3 days	curling to all of flight feathers, singe head, nape, and back.; Flux Grade: 2, 3	scorched or singed	2,3	1	ACC	640415, 3933523	NA
2021_279_ISEGS	unidentified hummingbird	UNHU	Fatality Search	11/18/2021	11/18/2021	dead-semi-fresh	3-7 days	singe to entire carcass.; Flux Grade: 2, 3	scorched or singed	2,3	3	ACC	637474, 3937956	NA

USFWS #	Common Name	Species Code	How Found	Detection Date	Collection Date	Condition	Time Since Death/Injury	Description of Carcass/Injury	Cause of Death/Injury	Burn Grade	Unit	Nearest Project Feature	Coordinates	SPUT Revisions
2021_280_ISEGS	unidentified small bird	UNID	Fatality Search	11/18/2021	11/18/2021	broken up	3-7 days	no evidence of singe or collision.; Flux Grade: N/A	unknown	NA	1	Heliostat	640178, 3933353	NA
2021_281_ISEGS	yellow-rumped warbler	YRWA	Fatality Search	11/18/2021	11/18/2021	dead-semi-fresh	1-3 days	singe to head, chest, wings, tail, and contour feathers.; Flux Grade: 2, 3	scorched or singed	2,3	1	ACC	640350, 3933535	NA
2021_282_ISEGS	house finch	HOFI	Fatality Search	11/18/2021	11/18/2021	dead-semi-fresh	3-7 days	no evidence of singe or collision.; Flux Grade: N/A	unknown	NA	1	Powerblock	640397, 3933549	NA
2021_283_ISEGS	unidentified small bird	UNID	Fatality Search	11/18/2021	11/18/2021	broken up	3-7 days	no evidence of singe or collision.; Flux Grade: N/A	unknown	NA	1	Heliostat	640582, 3933485	NA
2021_284_ISEGS	unidentified small bird	UNID	Fatality Search	12/1/2021	12/1/2021	feather spot	3-7 days	no evidence of singe or collision.; Flux Grade: N/A	unknown	NA	3	ACC	637538, 3937983	NA
2021_285_ISEGS	unidentified swallow	UNSW	Fatality Search	12/1/2021	12/1/2021	feather spot	3-7 days	curling and singeing to secondary.; Flux Grade: 1	scorched or singed	1	3	Powerblock	637470, 3937935	NA
2021_286_ISEGS	European starling	EUST	Fatality Search	12/2/2021	12/2/2021	broken up	3-7 days	singe to flight feathers and contour feathers on chest and back.; Flux Grade: 2, 3	scorched or singed	2,3	1	Powerblock	640383, 3933544	NA
2021_287_ISEGS	unidentified small bird	UNID	Fatality Search	12/2/2021	12/2/2021	broken up	3-7 days	singe to primaries.; Flux Grade: 1	scorched or singed	1	1	Powerblock	640382, 3933519	NA
2021_288_ISEGS	unidentified swallow	UNSW	Fatality Search	12/2/2021	12/2/2021	broken up	3-7 days	singe to trailing edge of primaries.; Flux Grade: 1	scorched or singed	1	1	Powerblock	640391, 3933529	NA
2021_289_ISEGS	Anna's hummingbird	ANHU	Fatality Search	12/14/2021	12/14/2021	dead-semi-fresh	3-7 days	singe to entirety of the body with majority of flight feathers singed off.; Flux Grade: 2, 3	scorched or singed	2,3	2	ACC	638673, 3935894	NA
2021_290_ISEGS	unidentified warbler	UNWA	Fatality Search	12/14/2021	12/14/2021	broken up	3-7 days	no evidence of singe or collision.; Flux Grade: N/A	unknown	NA	2	Powerblock	638626, 3935871	NA