

DOCKETED

Docket Number:	07-AFC-05C
Project Title:	Ivanpah Solar Electric Generating System (Compliance)
TN #:	205744
Document Title:	Ivanpah Solar Electric Generating System; Avian & Bat Monitoring Plan: 2014-2015 Winter Report
Description:	N/A
Filer:	Joe Douglas
Organization:	Solar Partners I, II, and VIII
Submitter Role:	Applicant
Submission Date:	8/14/2015 12:56:33 PM
Docketed Date:	8/14/2015



IVANPAH SOLAR ELECTRIC GENERATING SYSTEM AVIAN & BAT MONITORING PLAN

2014 – 2015 WINTER REPORT



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June 2015

Executive Summary

Avian and bat monitoring surveys were conducted from 21 October, 2014 to 15 March 2015 (the winter season) at the Ivanpah Solar Electric Generating System facility (referred to in this report as "Ivanpah" or "Project") in accordance with the Project's Avian & Bat Monitoring and Management Plan (Plan). Specifically, avian point count surveys, raptor/large bird surveys, facility monitoring for avian detections, searcher efficiency trials, and carcass removal trials were conducted. This report represents the first "quarterly" (i.e., seasonal) report for the second year of monitoring (or fifth overall quarterly report). During this winter season, the monitoring team transitioned to Western EcoSystems Technology, Inc. (WEST, Inc.). As a result, H.T. Harvey & Associates conducted 91% of the fatality monitoring including the detection dog monitoring, and WEST, Inc. conducted 9% of the fatality monitoring. WEST, Inc. prepared this report based upon the data collected during the period.

During avian point count surveys, a total of 28 bird species were recorded. Species richness was highest on the upper desert bajada grid (21 species), slightly lower on the lower desert bajada grid (20 species), and lowest in the three heliostat grids (11 species). Avian abundance was highest on the two desert bajada grids, with 351 observations on the upper bajada grids and 455 on the lower bajada grids. Abundance was lower in the three heliostat grids, with 174 observations in Unit 1, 33 observations in Unit 2, and 30 observations in Unit 3.

During raptor and large bird surveys, ten raptor species and three other large bird species, common raven, California gull, and Canada goose, were observed and identifiable. Common ravens comprised 60.3% of all raptor and large bird detections.

Avian and bat fatality monitoring searches were conducted in 1) the "tower area", consisting of the power block and inner high-density (HD) heliostats surrounding each power block on approximately 154 acres, which was surveyed with 100% coverage; 2) the "heliostat area", consisting of the inner and outer heliostat segments outside of the inner HD heliostats on approximately 2,991 acres, which was surveyed with 24.1% coverage (720 acres) in randomly selected arc-shaped plots; 3) the "fenceline", consisting of the perimeter fences, which was 100% surveyed; 4) the "collector line", consisting of the Unit 3 electrical transmission line, which also was 100% surveyed; and 5) offsite transects. Overall, approximately 29.2% of the facility was searched (not including the offsite transects, which are outside the facility). Searches were conducted within the winter season at intervals of approximately 21 days.

All bird and bat fatalities and injuries, referred to as "detections" in this report, including those found incidentally and during standardized facility searches, were documented and categorized as singed, collision, other project causes or unknown based on examination with a binocular microscope and evidence collected from the location of the detection. During the period 21 October 2014 – 15 March 2015, a total of 3 bat fatalities, and 340 avian detections (including 4 injured birds), were found.

According to the specifications of the Plan, the number of avian detections were categorized by facility structure and cause. These avian fatality search results, along with searcher efficiency carcass removal

rates from trials conducted onsite, were input into a fatality estimator model (Huso 2010) to provide an estimate of the fatalities for the facility.

Using the fatality estimator model, during the period 21 October 2014 – 15 March 2015, there were an estimated 686 fatalities (33.3%) from known causes and 1373 fatalities (66.7%) from unknown causes. Of the known causes, 476 fatalities (69.4%) were estimated for the 2,991-acre heliostat area and 208 fatalities (30.3%) were estimated for the 154-acre tower area. Detections of known causes in the other areas were too low to provide separate estimates.

Of the unknown causes, 132 fatalities (9.6%) were estimated for the tower area, 1176 fatalities (85.7%) were estimated for the heliostat area, and 65 fatalities (4.7%) were estimated along the fenceline. Driving this estimate was a large number of feather spots (112) comprising approximately half (52.6%) of all unknown-cause detections, which may lead to an over-estimate of fatalities with unknown cause. Overall, based on the monitoring results and estimates for known causes for the winter season, the effect of the Project on birds will not rise above the “low” category.

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 Avian Use Monitoring	4
2.1.1 Avian Monitoring Surveys	4
2.1.2 Raptor/Large Bird Monitoring Surveys.....	7
2.2 Facility Monitoring.....	9
2.2.1 Standardized Searches.....	9
2.2.1.1 Areas Surveyed.....	9
2.2.1.2 Search Frequency and Timing.....	11
2.2.1.3 Search Methods	11
2.2.2 Carcass Removal Trials.....	14
2.2.3 Searcher Efficiency Trials.....	14
2.2.4 Incidental Reporting	15
2.2.5 Fatality Estimator	15
Section 3.0 Avian Use and Raptor/Large Bird Monitoring Survey Results	19
3.1 Avian Use Monitoring	19
3.1.1 Species Richness	19
3.1.2 Avian Abundance and Density.....	19
3.2 Raptor and Large Bird Use Monitoring.....	24
3.2.1 General Species Composition, Abundance, and Habitat Use.....	24
3.2.2 Raptor and Large Bird Distribution	27
Section 4.0 Monitoring Results.....	37
4.1 Summary of Avian Detections	37
4.1.1 Temporal Patterns of Avian Detections.....	42
4.1.2 Comparison of Avian Use Survey Results to Fatality Detections	44
4.1.3 Summary of Bat Detections.....	45
4.2 Locations of Avian Detections.....	45
4.2.1 Detections by Project Area	45
4.3 Cause of Injury or Fatality.....	46
4.3.1 Singeing Effects	46
4.3.2 Collisions.....	46

4.3.3 Other Known Causes	46
4.3.4 Detections of Unknown Cause	48
4.4 Types of Detections	48
Section 5.0 Fatality Estimation	50
5.1 Estimating Model Parameters.....	50
5.1.1 Carcass persistence Trials.....	50
5.1.2 Model Selection for Carcass Persistence Distribution	52
5.1.3 Searcher Efficiency Trials.....	53
5.2 Fatality Estimates of Known Causes for 2014 – 2015 Winter Monitoring.....	55
5.3.1 Total Fatality Estimates for Known Causes	55
5.3.2 Fatality Estimate for Tower Area	57
5.3.4 Fatality Estimate for Fenceline.....	57
5.3.5 Fatality Estimate for Unit 3 Collector Line.....	57
5.4 Fatality Estimates from Unknown Causes	57
5.4.1 Total Fatality Estimates from Unknown Causes.....	58
5.5 Golden Eagle Data Summary	59
5.6 Regional Awareness Monitoring	59
Section 6.0 Discussion	61
6.1 Temporal Patterns in Detections	61
6.2 Spatial Patterns Detections and Fatality Estimates	61
Section 7.0 Framework for Management and Risk Response	63
Section 8.0 Literature Cited.....	65

Figures

Figure 1. Ivanpah Vicinity Map.	3
Figure 2. Avian Use Monitoring Survey Locations.	5
Figure 3. Raptor and Large Bird Use Monitoring Survey Locations.....	8
Figure 4. Ivanpah Search Areas.	10
Figure 5. Monitoring Search Pattern for Arc Plots.	12
Figure 6. Number of Bird Species Recorded at Avian Survey Points on Five Survey Areas.	19
Figure 7. Mean Use (Birds/Survey) Recorded at Avian Survey Points on Five Survey Areas.....	23
Figure 8. Raptor/Large Bird Survey Observations from Survey Point 1, Winter 2014 - 2015.....	29
Figure 9. Raptor/Large Bird Survey Observations from Survey Point 2, Winter 2014 - 2015.....	30
Figure 10. Raptor/Large Bird Survey Observations from Survey Point 3, Winter 2014 - 2015.....	31

Figure 11. Raptor/Large Bird Survey Observations from Survey Point 4, Winter 2014 - 2015.....	32
Figure 12. Raptor/Large Bird Survey Observations from Survey Point 5, Winter 2014 - 2015.....	33
Figure 13. Raptor/Large Bird Survey Observations from Survey Point 6, Winter 2014 - 2015.....	34
Figure 14. Raptor/Large Bird Survey Observations from Survey Point 7, Winter 2014 - 2015.....	35
Figure 15. Raptor/Large Bird Survey Observations from Survey Point 8, Winter 2014 - 2015.....	36
Figure 16. Ivanpah 1 Detections.	39
Figure 17. Ivanpah 2 Detections.	40
Figure 18. Ivanpah 3 Detections.	41
Figure 19. Number of Detections on Each Survey Date, 21 October 2014 – 15 March.	43
Figure 20. Locations of Singed and Unsinged Detections within Solar Units.....	47
Figure 21. Persistence Durations for Small Carcasses Placed for Carcass Persistence Trials (N = 57).	51
Figure 22. Persistence Durations for Large Carcasses Placed for Carcass Persistence Trials (N = 30).	52

Tables

Table 1. Monitoring Areas, 2014 – 2015 winter season.....	9
Table 2a. Avian Use Survey Results – Number of Observations by Species and Survey Grid.....	21
Table 2b. Avian Use Survey Results – Mean use (Birds/Survey) by Species and Survey Grid.....	22
Table 3. Avian Density Estimates for Heliostat vs. Desert Bajada Survey Area (Derived Using Program DISTANCE).....	23
Table 4. Raptor/Large Bird Point Count Results Summary (Number of Total Observations).....	24
Table 5. Raptor/Large Bird Mean Use (Birds/Survey Hour) within 800 meters.....	26
Table 6. Flight Heights of Raptors and Other Large Birds Over Ivanpah Facilities and Other Habitats/Areas within 800 meters.	27
Table 7a. Raptor/Large Bird Point Count Results By Survey Point within 800 meters.	27
Table 7b. Raptor/Large Bird Mean Use within 800 meters (Birds/survey hour).....	28
Table 8. Number of Individual Bird Detections, by Species, 2014 – 2015 Winter Season.	37
Table 9. Avian Injuries Detected 21 October 2014 – 15 March.	44
Table 10. Comparison of the Most Abundant Bird Species Recorded as Detections and Recorded During Avian Use Surveys for Identified Species Only.	44
Table 11. Locations of Avian Detections, 21 October 2014 – 15 March 2015.....	45
Table 12. Locations of Bird Detections, 21 October 2014 – 15 March 2015.....	48
Table 13a. Percent Composition of Carcass Condition of Unknown Cause Detections.....	49

Table 13b. Percent Composition Feather Spots to Carcasses Relative to Site Locations.....	49
Table 13c. Percent Composition Feather Spots to Carcasses Relative to Cause.....	49
Table 14. AICc Values for Carcass persistence Models.....	53
Table 15. Covariates, AICc Values, and Δ AICc values for Searcher Efficiency Models of Carcasses. Data consist of all human searcher efficiency trials for carcasses from the initiation of trials through November 03, 2014.	54
Table 16. Covariates, AICc Values, and Δ AICc values for Searcher Efficiency Models of Carcasses. Data consist of all detection dog searcher efficiency trials for carcasses from the initiation of dog trials through February 12, 2015.	54
Table 17. Human Searcher Efficiency Values for Size and Project Area Categories.....	55
Table 18. Canine Searcher Efficiency Values for Size Categories.....	55
Table 19a. Number of Bird Detections Based on Known Causes in Each Project Element Included or Excluded from Fatality Estimates, by Cause.	56
Table 19b. Number of Bird Detections Based on Known Causes in Each Project Element Included or Excluded from Fatality Estimates, by Carcass Size.	56
Table 22a Number of Detections from Unknown Causes in Each Project Element, and Number Included in Fatality Estimates, by Cause.....	58
Table 22b. Number of Detections from Unknown Causes in Each Project Element, and Number Included in Fatality Estimates, by Carcass Size.....	58
Table 23. Site-Wide Fatality Estimates from Unknown Causes by Location, 21 October 2014 – 15 March.	58
Table 24. Site-Wide Fatality Estimates from Unknown Causes by Size and Location, 21 October 2014 – 15 March.....	59

Appendices

Appendix A. Avian Observations Reported in the 2014 Fall and 2014 – 2015 Winter Report

Appendix B. Individual Avian Detections.

Appendix C. Additional Detection Data for Fatality Estimates and Documentation of Fatality Estimates in Which Each Detection Was Included.

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 (2013; "Plan") was prepared by the Project proponent 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. Final agency acceptance of the Plan occurred in November 2013. The Plan is also intended to: 1) satisfy the BLM Right-of-Way (ROW) Permit requirement that the 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 (FESA), 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, FESA, and relevant state regulations (USFWS 2012).

The Plan details the onsite and offsite surveys to be conducted and the data analysis and reporting processes that will be implemented by Ivanpah in collaboration with the USFWS, CDFW, CEC, and BLM and supports four main goals and associated objectives. As identified in the Plan, they are:

Goal 1. Identify Collision Risks: Risks will be identified by monitoring and identifying avian mortality and injury associated with facility structure collisions.

Objective 1. Estimate collision-related avian mortality and injury with the following facility structures, using empirical data to calculate facility-wide mortality and injury rates:

- Power towers
- Perimeter fences

- Heliostats
- Project transmission line (Unit 3 collector line)

Goal 2. Identify Solar Flux Risks: Risks from flux will be assessed by monitoring and identifying avian mortality and injury associated with solar flux generated by the facility.

- Objective 2. Estimate flux-related avian mortality and injury using empirical data to calculate facility-wide mortality and injury rates.

Goal 3. Identify Patterns of Avian Use at the Facility: Patterns of avian use will be assessed by conducting onsite and offsite surveys to document avian species composition onsite and offsite, compare abundance in representative habitats onsite and offsite, and document changes in avian use in these areas over time.

- Objective 3: Document patterns of collision- or flux-related mortality/injury associated with species, age/sex, season, weather, and visibility.
- Objective 4: Document spatial patterns associated with collision- or flux-related mortality/injury.
- Objective 7. Document use patterns of various avian species, including migratory birds, raptors, and golden eagles, particularly the seasonal variation of bird communities through breeding, migratory, and overwintering periods.

Goal 4. Provide a Framework for Management of and Response to Risks: The designation and description of the functioning of the Technical Advisory Committee (TAC) provides a management and decision framework for the identification and implementation of potential adaptive management measures.

- Objective 5: Provide quantitative information for developing and implementing adaptive management responses commensurate with identified impacts.
- Objective 6: Provide a framework for the TAC to jointly review, characterize, and recommend responses, based on monitoring results, to the appropriate lead agency representatives.

1.3 Purpose of This Report

This report represents the first “quarterly” (i.e., seasonal) report for the second year of monitoring (or, the fifth quarterly report) summarizing monitoring methods and results for avian and bat fatalities and injuries based on the procedures and requirements specified in the USFWS-accepted Plan and as required by CEC Condition of Certification BIO-21. This report covers the winter 2014 – 2015 season, which includes the period from 21 October, 2014 through 15 March, 2015.

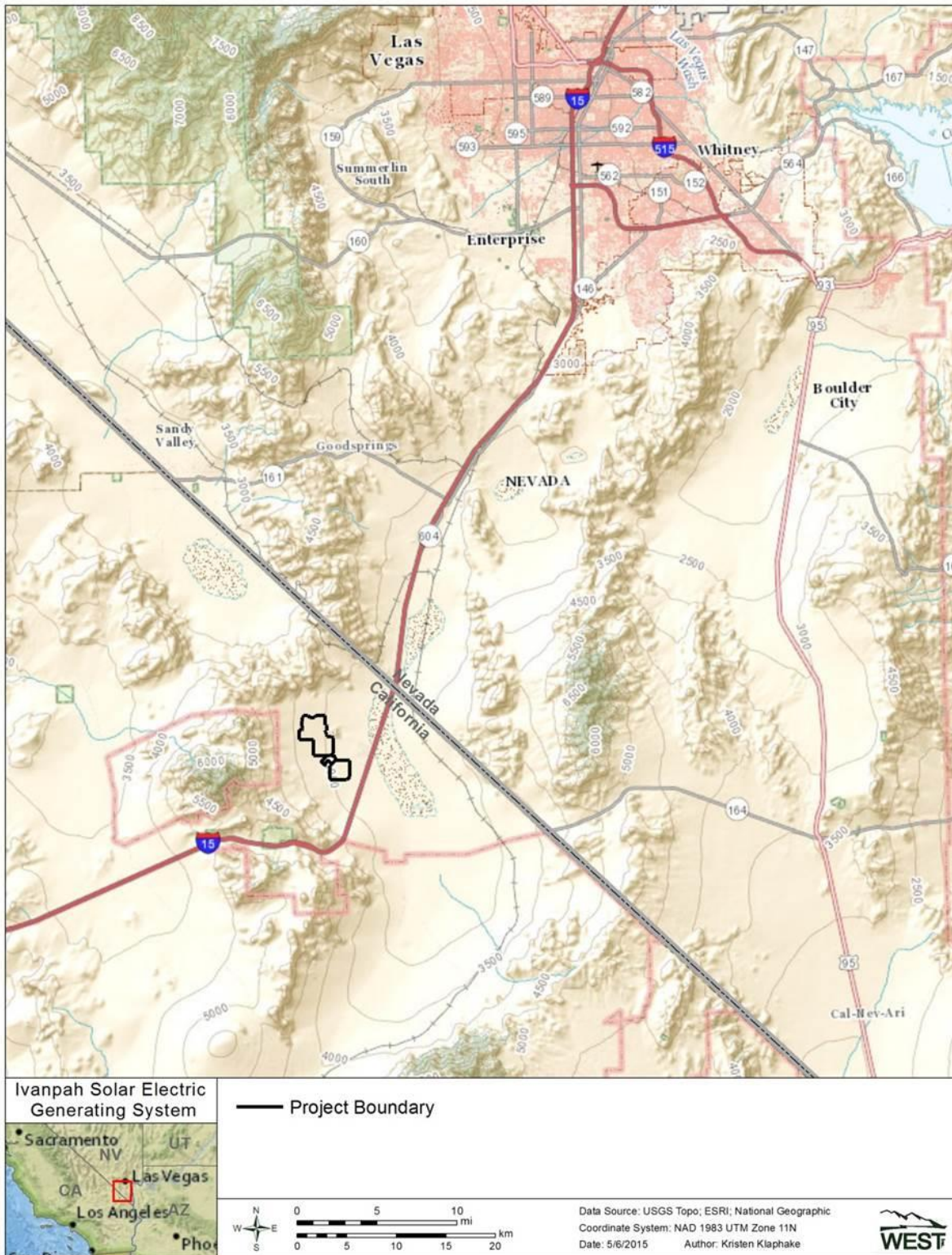


Figure 1. Ivanpah Vicinity Map.

Section 2.0 Methods

The Plan describes the methods by which monitoring and certain analyses, including compilation of the overall fatality estimate, will occur. Below is an abridged description (see Plan for detailed methods), with greater detail provided when methods differ from original Plan.

2.1 Avian Use Monitoring

Methods for monitoring avian use of the Project and nearby desert areas, as well as the methods for monitoring the occurrence of raptors and other large birds on and around the facility are described in this section.

2.1.1 Avian Monitoring Surveys

Avian use surveys were conducted using standard, variable-radius point counts to assess bird use of the vegetated areas within the heliostat fields associated with each unit as well as nearby (offsite) areas of desert habitat. Eighty survey points (Figure 2) were surveyed by CEC- and BLM-approved avian biologists. In accordance with the Plan, these 80 points were randomly selected from within the following five survey areas:

1. 20 points within an approximately 2.59 square-kilometer (1-square-mile) study area located in Unit 1, within the lower bajada environment of the facility.
2. 20 points within an approximately 2.59 square-kilometer offsite study area located in comparable lower bajada environment as far as practicable from (and south of) the Unit 1 fenceline.
3. 10 points within an approximately 1.29 square-kilometer (0.5-square-mile) study area located in Unit 2, within the upper bajada environment.
4. 10 points within an approximately 1.29 square-kilometer located in Unit 3, in the upper bajada portion of the facility.
5. 20 points within an approximately 2.59 square-kilometer offsite study area located in comparable upper bajada environment and as far as practicable from (and southwest of) the Unit 3 fenceline.

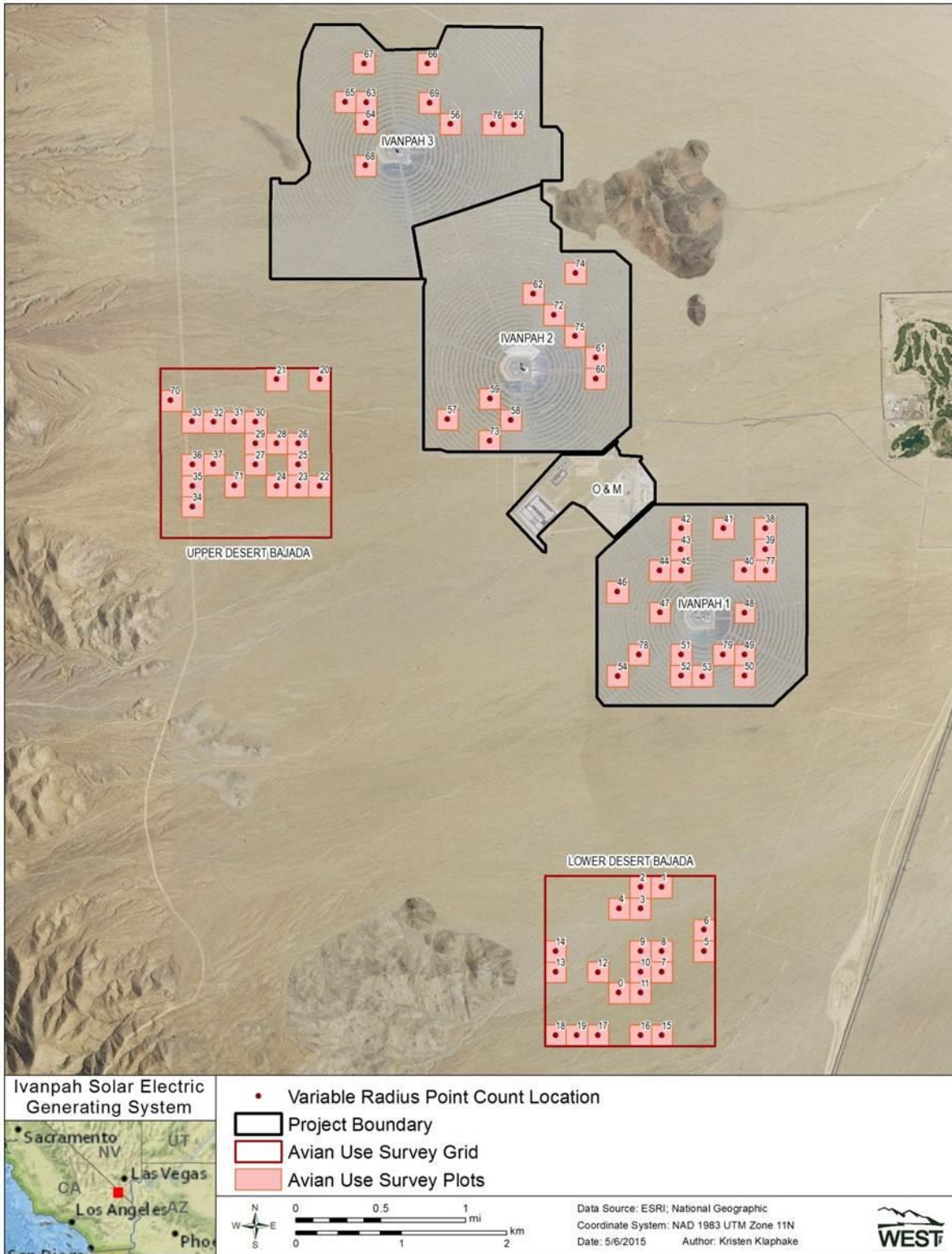


Figure 2. Avian Use Monitoring Survey Locations.

Each survey area described above was divided into 200-m by 200-m square areas to create distinct sample plots. Within each survey area, either 10 or 20 (as indicated above) avian use survey points were randomly selected from the sample plots, resulting in 20 point counts per 2.59 square kilometer for each habitat type in the facility and off-site areas, with each count location affording a minimum, non-overlapping survey radius of 100 m. Points were surveyed for 10 minutes each, and were conducted between first light and three hours after sunrise.

The Plan prescribes that avian use surveys are conducted twice per month during November; once per month during December, January, and February; and twice per month during March. To report avian use results consistent with fatality monitoring results, surveys conducted during the 2014 – 2015 winter reporting period (October 21, 2014 – March, 15, 2015) are included in this report. Although the fall report presented fatality results from August 18, 2014 – October 20, 2014, avian use data were presented through October 31, 2014. Thus, the 2014 – 2015 winter report presents raptor and large bird results from October 21 – 31, 2014 that have been presented in the fall report. The results from the period of overlap are presented in Appendix A.

Data Analysis. According to the Plan, all birds heard or seen at each point up to 100 meters from the observer will be recorded to document species occurrence and estimate abundance. Thus, all birds observed are used to calculate species richness and abundance. Results for species composition (number of species recorded) and avian abundance (number of observations) are presented by survey area. For visualization of results, data from Unit 2 and Unit 3 are combined because these areas had 10 survey points compared to 20 survey points in other areas. Thus, when combined, Unit 2 and Unit 3 have an equivalent number of points to the other areas and results can be compared. In addition to the number of points in each survey area, the ability to compare results among survey areas depends on the number of visits. Mean use (number of birds/survey) are presented to standardize data among survey areas to account for unequal number of visits per survey area.

Avian abundance metrics such as total observations can help describe patterns in bird occurrence, especially when sampling effort is equal among survey areas. However, because survey effort differed among survey areas, and bird detectability varies among species (i.e., some birds are more easily detected than others) and could differ between the heliostat area and desert bajada area, other analytical methods may be more appropriate to examine patterns in bird use among survey areas (Buckland et al. 1993). As a result, program Distance 6.0 (Thomas et al. 2010) was used to evaluate avian densities. Densities were calculated based on birds observed using the plots, only; thus, birds flying over or transitioning through the plot were not included in the density analysis.

The Cornell Lab of Ornithology's BirdCast website (www.birdcast.info) provides a regional migration forecast and a regional migration analysis, and uses two types of data; observations submitted voluntarily by birdwatchers through the eBird website (www.ebird.org) and radar data from over 140 weather stations. Taken together, these data can be used to examine trends in bird migration in spring and fall over broad geographic scales. BirdCast provides two data summaries: 1) a regional summary that uses radar and weather data to interpret bird movements and reports a range of migration amounts (e.g., light through heavy) based on the radar measurements used to compare the reflectivity of a remote object (decibels of Z value or dBZ); and 2) a list of 'species on the move' showing common migrant birds reported by birdwatchers in eBird with arrival and departure dates. Thus, the species on the move data

relies on birdwatchers reporting observations, and birding ‘hotspots’ are likely overrepresented in the dataset compared to rural and less visited areas. The regional summaries provided in BirdCast are broad, and the West region includes Washington, Oregon, California, Idaho, Nevada, Utah, Arizona, Montana, Wyoming, Colorado, and New Mexico. Therefore, the BirdCast West regional migration analysis was examined for every week during the 2014 – 2015 winter season for specific mentions of California or Desert Southwest (what this region encompasses is undefined). Additionally, the BirdCast West regional migration analysis was examined for a distinct migration end dates.

2.1.2 Raptor/Large Bird Monitoring Surveys

Surveys were conducted from each of eight points to assess raptor/large bird use of the facility and offsite project areas (Figure 3). The locations of the points relative to those described in the Plan are discussed in the Fall 2014 report.

Each point was surveyed for 4 hours per survey (except during weather hazards or other circumstances that required suspending the survey) using unlimited-distance point count methodology. CEC and BLM-approved avian biologists performed these surveys using binoculars and spotting scopes, recording detailed location and flight path data for all observed raptors and large birds, including shorebirds, waterfowl, and common raven (*Corvus corax*). The Plan specifies that surveys for raptors and other large birds be conducted twice per month during all months except summer (June – August). To report raptor and large bird results consistent with fatality monitoring results, surveys conducted during the 2014 – 2015 winter reporting period (October 21, 2014 – March, 15, 2015) are included in this report. Although the fall report presented fatality results from August 18, 2014 – October 20, 2014, raptor and large bird data were presented through October 31, 2014. Thus, the 2014 – 2015 winter report presents raptor and large bird results from October 21 – 31, 2014 that have been presented in the fall report. The results from the period of overlap are presented in Appendix A.

Data Analysis. Results for species composition (number of species), abundance (number of observations), and habitat use (location of the observation) are presented in Section 3.2. Although all raptors and large birds are recorded to an unlimited sight distance, according to the Plan, observations within 800 meters will be used for standardized assessments and comparison of mean use (number of observations/survey hour) for raptors and large birds. Based on the location of the bird observation, the habitat was classified as Ivanpah facilities (anywhere perched or flying over a part of the Project), desert, golf course, or mountains. The Clark Mountain Range lies to the North, West, and South of the Project with the foothills being approximately 3.2 km from the closest raptor and large bird survey point. Thus, given the distance to the mountains, raptors and other large birds likely had a lower detectability than those observed within 800 meters. In addition, Section 3.2 provides information on the number of individuals of these species observed perched versus those in flight, as well as the heights at which flying birds were recorded. Due to the long duration of each survey and the mobility of these birds, it was not always possible to track individuals throughout a survey to avoid counting the same individuals multiple times. Consequently, results of large bird use monitoring surveys are reported as the number of observations rather than individuals.

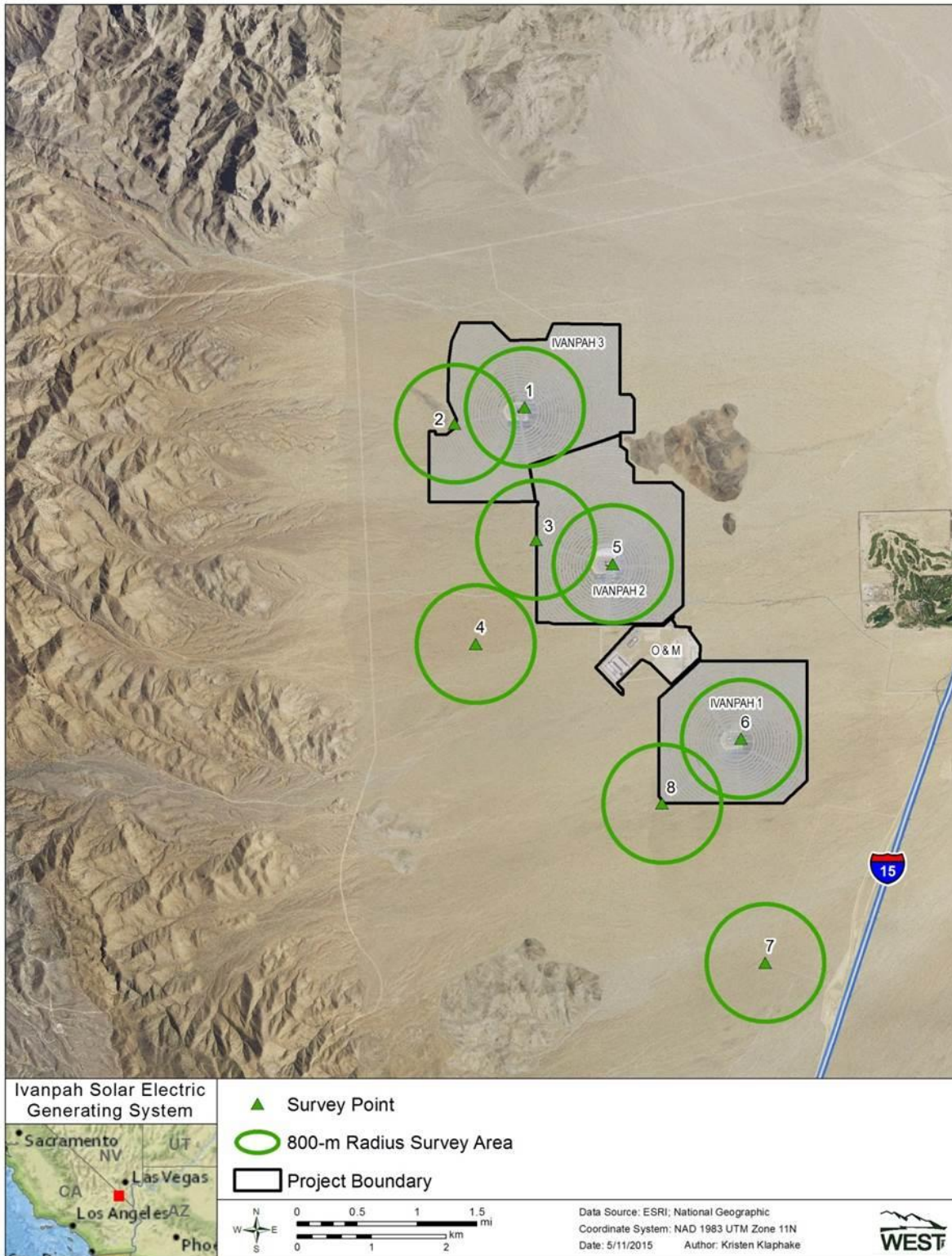


Figure 3. Raptor and Large Bird Use Monitoring Survey Locations.

2.2 Facility Monitoring

This section describes areas surveyed, the timing and frequency 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.

2.2.1 Standardized Searches

2.2.1.1 Areas Surveyed

Per the Plan, 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 (100% survey coverage); the “heliostat area”, defined as the inner and outer heliostat segments outside of the inner HD heliostats (24.1% survey coverage in randomly selected arc-shaped plots); the “fenceline” defined as the unit perimeter fences and common logistics area (CLA) fence (100% survey coverage); the “collector line”, defined as the Unit 3 electrical transmission line (100% survey coverage); and offsite transects. Table 1 provides the acreage searched within each of these areas, as well as the percent of the facility comprised by these search areas. Overall, approximately 29.2% of the Project (not including the offsite transects, which are outside the facility) was searched (Figure 4).

To ensure a balanced distribution of heliostat field survey plots, each unit was divided into inner and outer heliostat fields, and approximately 20% of each sub-area was randomly selected for monitoring. This stratified random sampling design ensures that survey plots will not be clustered or biased in any distance or direction from the towers.

Table 1. Monitoring Areas, 2014 – 2015 winter season.

Area	Acreage Searched	Percent of Facility
Tower Area	154	4.80%
Heliostat Area	720	22.40%
Fenceline	39	1.20%
Collector Line	26	0.80%
Offsite Transects	7	NA*
Total	939	29.20%

*NA = Not applicable as offsite survey areas are located outside of the facility

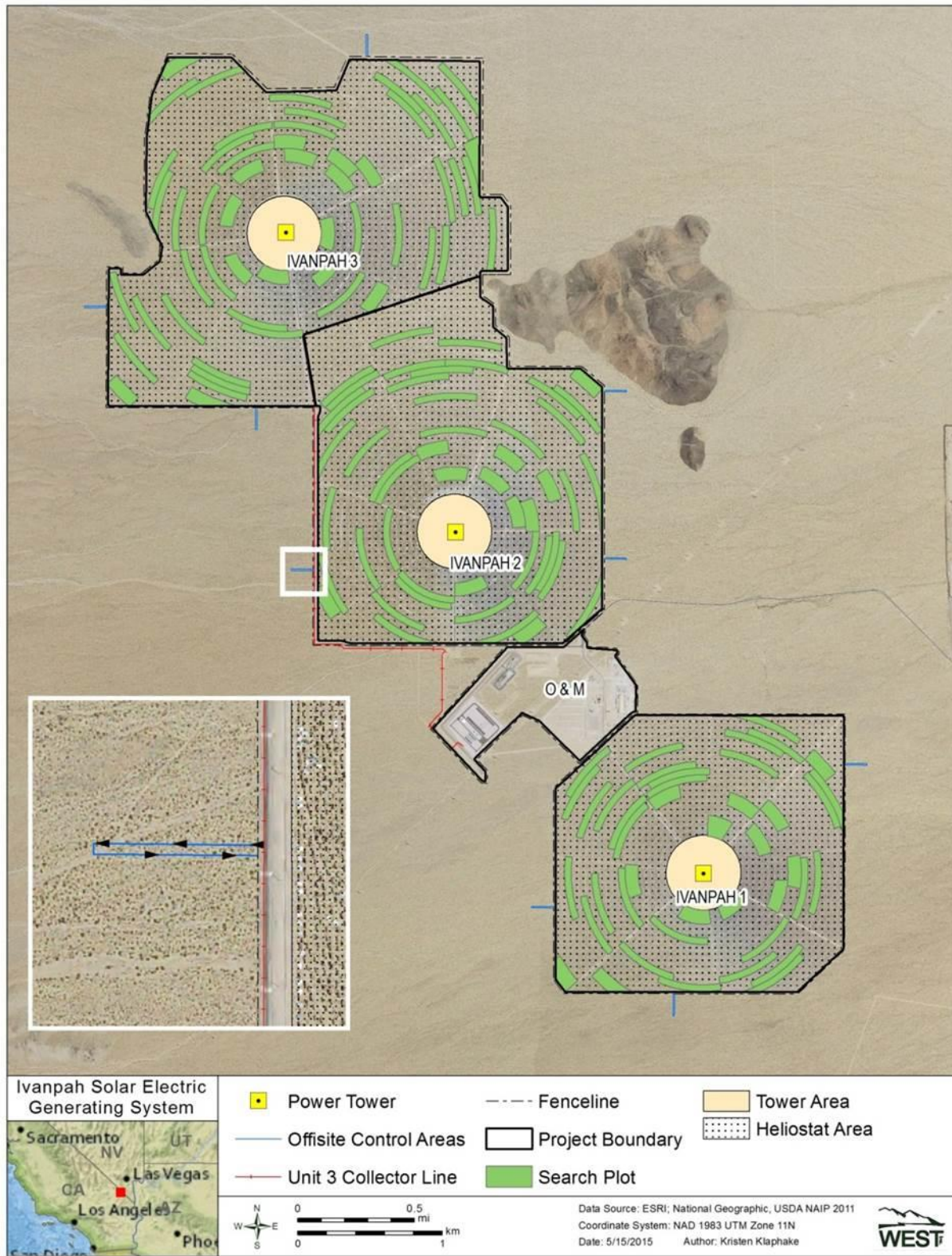


Figure 4. Ivanpah Search Areas.

2.2.1.2 Search Frequency and Timing

Standardized searches occurred at each unit on a 21-day interval through the 2014 – 2015 winter season. A planned personnel change took place towards the end of the 2014 – 2015 winter season, beginning on March 02, 2015. Prior to the staff change, six fatality surveys were completed in Units 1 and 2, and seven fatality surveys in Unit 3. New staff conducted two surveys in Units 1 and 2, each. In total Units 1 and 2 were surveyed eight times; Unit 3 was surveyed seven times. Overall, 91% of the monitoring during winter 2014 – 2015 was conducted by H.T. Harvey & Associates and 9% was conducted by WEST, Inc.

2.2.1.3 Search Methods

Methods Used by Human Searchers. Human searchers performed surveys in the tower area, fenceline, offsite transects, collector line, and plots in the heliostat area that were not surveyed by dogs (as described below). Standardized walking survey searches for fatalities were performed by CEC and BLM-approved biologists, in accordance with the methods outlined in the Plan. In the heliostat area, a pair of biologists walked a total of four transects oriented longitudinally along the complete length of each arc-plot, with the ring roads serving as the outer boundaries of each arc plot (Figure 5). While walking each transect, biologists walked a narrow search section approximately 10 meters (m) wide. Within the power block, biologists walked through and around the power tower and ACC unit looking 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 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. These areas were, to the extent possible, scanned using binoculars. Along the fenceline, a 6-m wide transect was surveyed, centered on the fence itself (i.e., 3 m on either side of the fence). The collector line was surveyed using a 30-m wide transect (i.e., 15 m on either side of the center line). Offsite transects were surveyed along two randomly selected 152-m long transects, separated by approximately 10 m extending outward from, and back to, the unit perimeter fence at nine locations (three per unit), including the north, east, south, and west borders of the facility.



Figure 5. Monitoring Search Pattern for Arc Plots.

Methods Used by Detection Dog Teams. Detection dog surveys were performed using canines extensively trained to detect, and passively alert their handlers to, the presence of feathers (including avian carcasses). Search patterns differed from the visual-only patterns used by qualified human searchers. Handlers used body movements and verbal signals to direct the dog's movements relative to wind speed and direction to ensure full coverage of the survey area. As a result, the dog started its search downwind of the intended survey area at a distance appropriate for the wind speed/direction at the discretion of the handler and worked in an upwind direction. Transect spacing employed depended on wind speed, with closer spacing in light wind and wider spacing in relatively strong wind. Handlers directed detection dogs to increase their search intensity in areas of high habitat complexity (e.g., uneven ground, washes, and thick vegetation) where scents can pool and become "trapped." As each team moved through the survey area, the dog ranged and quartered (i.e., moved ahead and side to side) ahead of the handler, searching for avian detections. Once the target was confirmed, the dog received a reward. Avian fatalities were marked and collected by CEC and BLM-approved biologists.

During the 2014 – 2015 winter season, detection dogs surveyed a subset of the outer segment arc plots of each unit. Once an arc plot had been surveyed by a dog team, that plot continued to be surveyed by detection dogs for the remainder of the season. All detection dog monitoring was conducted by H.T. Harvey & Associates.

Carcass and Feather Spot Examination. Every carcass and feather spot was examined visually by a CEC and BLM-approved biologist 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 were 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-m² 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.

2.2.2 Carcass Removal Trials

Consistent with the Plan, which required one year of trials, new carcass removal trials were not conducted during winter 2014 – 2015 (however, in accordance with TAC approval and recommendation in the Annual Report, additional carcass removal trials are scheduled for spring 2015). Carcass persistence data from 87 trials performed during the first year of monitoring (29 October 2013 – 20 October 2014) were used to model carcass persistence time for this winter report. For a detailed description of carcass removal trial methods, see the fall report (H.T. Harvey & Associates 2015). The facility contains vegetated and unvegetated areas that could affect the ability to detect a carcass or the amount of time a carcass persists until it is scavenged. The tower area (power block and inner high density (HD) heliostat area, where most singed detections occur, are unvegetated. Thus, searcher efficiency and carcass persistence time were examined for vegetated and unvegetated areas and used as covariates in the model.

2.2.3 Searcher Efficiency Trials

Human Searcher Efficiency Trials. A total of 25 searcher efficiency trials (8 small birds, 8 large birds, and 9 feather spots) were conducted during the 2014 – 2015 winter season. Carcasses and feather spots were placed in various vegetation heights and in areas that had different soil and vegetation colors and values to represent the range of conditions under which searches occur. They were placed in all areas where fatality monitoring occurs except the ACC building (i.e., the tower area, fenceline, offsite transects, collector line, and heliostat area). Overall, 12 trial carcasses were placed in the Tower Area and 13 trial carcasses were placed in vegetated areas in the inner/outer segments of the heliostat area or the unit fences. All trial carcasses were available to be found, except one small carcass which disappeared (e.g., scavenged or otherwise moved) before the searcher efficiency trial began.

Detection Dog Searcher Efficiency Trials. During the 2014 – 2015 winter season, 31 small carcasses, 27 large carcasses, and 195 feather spots were placed throughout the heliostat area surveyed by canines to determine the searcher efficiency of detection dog teams. As with the human searcher efficiency trials, only blind searches (i.e., those in which handlers did not know the carcass locations) were used to determine canine searcher efficiency. The carcass and feather spots were placed in locations with various vegetation heights and in areas that had different soil and vegetation colors and values to represent the various conditions under which searches occur. These subjects used for canine searcher efficiency trials

were placed one week prior to the survey to avoid leaving human scent trails that dogs could follow to carcasses and feather spots.

2.2.4 Incidental Reporting

Some detections were outside standardized search areas, or were within search areas but not during standardized searches. Such detections were found by the Project's designated biologists and operational personnel. These detections were reported in accordance with the facility's Wildlife Incident Reporting System (described in Section 3.4 of the Plan) and were considered "incidental" detections. Data on these incidental detections were reported in the SPUT permit database. As described in Section 2.2.5, incidental data were included in the fatality estimates when they were found in areas covered during standardized surveys (e.g., tower area or along the fenceline) during time periods in which those areas were being searched. Incidental detections from outside the survey areas or during time periods in which areas are not being searched are not included in the fatality estimates; however, all detections regardless of the method or source of detection are reported in the SPUT permit database.

2.2.5 Fatality Estimator

Fatality rate estimation is a complex task due to several variables inherent to every fatality monitoring study. Carcasses may persist for variable amounts of time due to local scavenger activity or environmental conditions leading to carcass degradation over time. Carcasses and feather spots are also detected with varying levels of success based on carcass characteristics and ground cover (e.g., vegetated areas underneath heliostats versus cleared areas around towers). For these reasons, it is generally inappropriate to draw conclusions based on the raw number of fatalities alone. The desire to estimate fatalities given these variables has driven the development of several statistical methods for estimating fatalities (e.g., Smallwood 2007, Huso 2010, Korner-Nievergelt 2011). All of these fatality estimation methods share a similar underlying model. Generally, the fatality estimation for a given site may be written as:

$$F=C/rp,$$

where F is the total number of fatalities, C is the number fatalities detected and included in fatality estimation, r is the probability a carcass is unscavenged and available to be found at the end of the search interval, and p is the probability of detecting a carcass (Huso 2010).

The bias correction factors r and p are estimated by covariates that may influence the detectability and persistence of each carcass, such as carcass size, presence of vegetation, and stage of decay or scavenging (i.e., feather spot versus carcass). For this study, the Huso estimator was used to correct for detection and scavenging bias; the estimator was demonstrated to perform well under a variety of conditions (Huso 2010). The Huso model was developed in the context of estimating fatalities for post-construction fatality studies at wind energy facilities; however, the Huso estimator is suitable for other sources of anthropogenic avian mortality, including power lines and utility scale solar facilities (Huso 2010).

All fatality estimates were calculated using the Huso estimator, as well as 90% confidence using bootstrapping (Manly 1997). Bootstrapping is a computer simulation technique that is useful for calculating point estimates, variances, and confidence intervals for complicated test statistics. A total of

1,000 bootstrap replicates were used. The lower 5th and upper 95th percentiles of the 1,000 bootstrap estimates provide estimates of the lower limit and upper limit of an approximate 90% confidence interval on all estimates.

Estimating Carcass Removal Times. Measurements of carcass removal rates are often subject to censoring. In this context, censoring refers to the fact that a value (e.g., days a carcass is present before being removed) may not be known exactly, but within a finite range. For example, suppose a carcass was checked on day 7 and was present, and was checked again on day 10, but was found to be missing. The exact time until removal is unknown; however, it is known that the carcass was available to be found for between 7 and 10 days. This carcass would be considered “interval censored”. Similarly, if a carcass lasts the entire six-week trial period, that carcass is “right censored”—we know the carcass lasted at least six weeks, but it could have persisted longer. Due to the fact that camera traps (e.g., cameras that automatically document activity at the trial carcass) were used for carcass removal trials, the majority of scavenging times were known precisely, and the data were not censored. However, when cameras failed to record the moment of scavenging, interval censoring was applied.

There are four commonly used distributions implemented in the survival models used to estimate the value of r : exponential, Weibull, loglogistic, and lognormal. These four distributions exhibit varying degrees of flexibility in order to model a wide variety of removal time distributions. Akaike’s Information Criterion adjusted for sample size (AICc; Akaike 1973) was used to rank the fit of each survival model fit to carcass removal data. The exact time of death for detected fatalities is usually unknown, so the probability of persistence cannot be calculated exactly for each carcass; however, it can be estimated from the selected survival model and bootstrapped to obtain a range of estimates of r for each carcass.

Estimating Searcher Efficiency. Searcher efficiency, or the proportion of carcasses detected, p , is represented most simply by the following equation:

$$p = \frac{\text{Number of Carcass Observed}}{\text{Number of Carcasses available}}$$

Model Selection for Searcher Efficiency Trials. The Plan states that searcher efficiency trials will be conducted during each season in which vegetation differs from the prior season, because changes in vegetative cover may affect carcass detectability. *A priori* decisions were not made regarding whether vegetative cover would differ between seasons, but rather, searcher efficiency trials were conducted in all season. Following the completion of fall searcher efficiency trials, there was sufficient cumulative data for the year to assess whether searcher efficiency differed significantly by Project area (e.g., unvegetated tower area versus vegetated heliostat fields), season, and/or carcass size. The nearly complete lack of vegetation cover in the tower area suggested that searcher efficiency may be higher in the tower area than in other Project areas. If this hypothesis were true, accounting for this difference in searcher efficiency across Project areas would be important for producing accurate fatality estimates.

To evaluate various hypotheses regarding differences in carcass detectability among Project areas, seasons, and/or carcass size, logistic regression models were fit to searcher efficiency data and corrected Akaike’s Information Criteria (AICc) was used to compare models. The Project area was defined using two categories to reflect the suspected differences in searcher efficiency due to differences in vegetation

cover: the tower area, which consists of the power block and the inner HD heliostats, and other areas, which consists of all other Project areas not included in the tower area. Models were constructed for season, carcass size, Project area, and Project area plus carcass size, and compared to the null model (Table 15). There were too few trials of some carcass sizes in some seasons to consider a model with season and carcass size combined. The data for this analysis included all human searcher efficiency trials of carcasses from the beginning of trials in the winter 2013 – 2014 season through the 2014 – 2015 winter season. Separate models were also compared for detection dog searcher efficiency trials.

Fatality Estimates. Per Section 3.1 of the Plan, estimates for the number of detections in the tower area components (i.e., the power block and inner HD heliostats) are reported separately and combined, because 100% of these areas was searched. Power block and inner HD estimates were calculated separately due to the inclusion of many more incidental observations from the power block. A separate estimate was produced for the heliostat area (the inner and outer heliostat segments combined), in which 24.1% of the total area was searched. Fatality estimates reported in the inner/outer heliostat areas were adjusted to account for the unsearched area in the inner/outer heliostat areas (i.e., divided by 0.241).

The ACC buildings are only marginally accessible to scavengers from the outside; therefore, they act primarily as a closed system with a scavenging rate that approaches zero. Furthermore, carcasses are, generally, visible against the industrial backgrounds. Thus, the fatalities found in the ACC were not adjusted using the Huso estimator; rather, raw counts of ACC detections were added to fatality estimates for the power block. All detections within the ACC buildings were assigned as having a known cause of fatality, whether or not they showed evidence of singeing or collision.

Within the power block, during the 2014 – 2015 winter season, incidental detections accounted for 37.8% of the detections recorded. Thus, as previously modeled, incidentals found within the power block were included in estimates, but treated differently from other fatalities. To reflect the high human activity in the power block—and frequent observation of the areas within the power block—the search interval for these detections was set to one day. Incidental detections found outside of the power block, but within standardized search areas were included in fatality estimates, with one exception; if a detection was made in the heliostat arrays and left in place until the next search but not found, that detection was excluded from analysis. During winter 2014 – 2015, there were four incidentals left in place, of which two were recovered. Beginning in the spring 2015 monitoring season, all incidentals will be collected. For those detections included in analysis, the survey interval was defined as the number of days between the date of detection and the date of the previous standard search.

All fatality estimators have limitations, particularly when fatality counts are low. In particular, when detections are fewer than five, regardless of survey effort, estimates and confidence intervals can be unstable and must be interpreted with caution (Korner-Nievergelt et. al 2011). Rather than report estimates with little inferential value, no estimates were provided for combinations of covariates (e.g. size, location, cause) resulting in fewer than five detections.

The fatality estimator accounts for imperfect detection probability by using bias trials to estimate searcher efficiency. The Huso estimator is constructed under the assumption that searchers have a single opportunity to discover a carcass. Therefore if a carcass is missed on the first search it was available, then found on the next search, it will effectively be over-counted. The method typically used to

overcome multiple-detection-bias is to exclude any detection determined to be significantly older than the search interval. Each detection made during the 2014 – 2015 winter season was evaluated for exclusion from the estimator based on the observed time since death (i.e., the length of time between an animal’s death and when the detection was discovered), and the search interval associated with that detection. For example, if a detection determined to have been on the ground for > 1 month was made in the inner HD of Unit 2, which had been searched 21 days earlier, that carcass would be excluded from analysis.

To correctly account for searcher efficiency in the fatality estimate model, when partial carcasses are initially identified as feather spots by the observer in the field, they are modeled (in the fatality estimates) as a feather spot. In other words, the primary means of identification of the detection (feather spot, small carcass, or large carcass) is the appropriate classification to utilize in the modeled estimates. The primary identification approach is appropriate since different searcher efficiency rates are estimated for feather spots as opposed to carcasses. Because searcher efficiency is an important component of the fatality estimator, what the surveyors detect first (i.e., feather spot versus a complete or partial carcass) influences how that detection should be included in the model. Such detections are noted in Appendix A as “partial carcass + feather spot” in the “Description of Carcass/Injury” column.

Section 3.0 Avian Use and Raptor/Large Bird Monitoring Survey Results

3.1 Avian Use Monitoring

During the 2014 – 2015 winter season, a total of 550 avian use counts were conducted across all survey areas and points. Survey effort among survey areas was as follows: upper bajada = 130 counts, lower bajada = 130 surveys, Unit 1= 140 counts, Unit 2 and Unit 3 combined = 150 counts. Mean use (birds/survey) is presented to account for unequal survey effort among survey areas.

3.1.1 Species Richness

A total of 28 bird species were recorded during avian use surveys during the 2014 – 2015 winter season. Species richness was highest in the upper bajada desert (21 species), followed by the lower bajada desert (20 species). Species richness was lower in the heliostat grids, with 11 species observed in Unit 1, 8 in Unit 2, and 7 in Unit 3 (with 10 unique species in Units 2 and 3 combined; Figure 6).

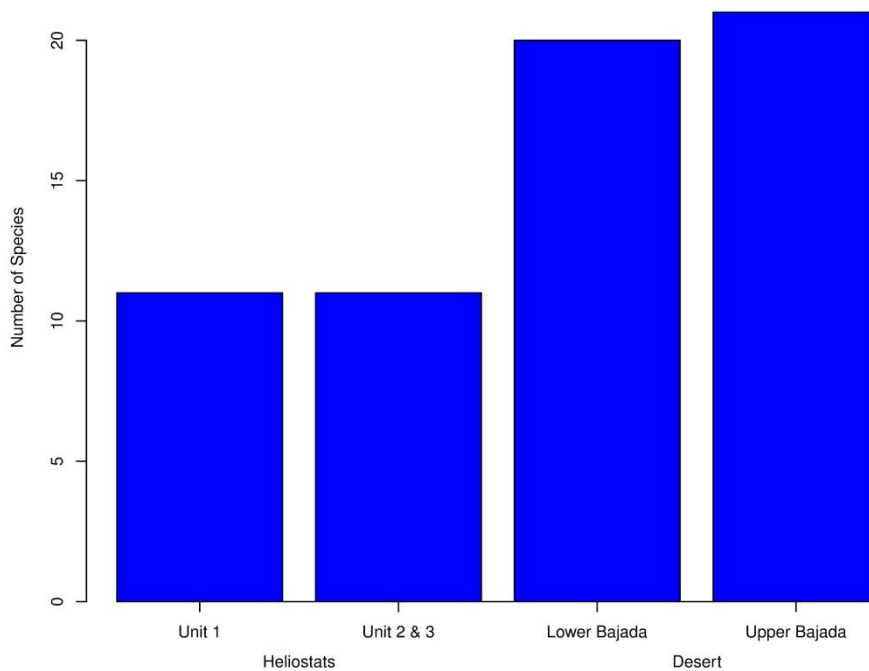


Figure 6. Number of Bird Species Recorded at Avian Survey Points on Five Survey Areas.

3.1.2 Avian Abundance and Density

A total of 1043 observations were recorded during avian use surveys (Table 2a), with 806 observations on the desert bajada survey areas (77.2% of total observations). As with species richness, avian abundance

was highest on the two desert bajada grids (351 observations on the upper bajada and 455 observations on the lower bajada). The three heliostat arrays had lower avian abundance, with 174 observations in Unit 1, and 63 in Unit 2 and Unit 3 combined (33 observations in Unit 2, and 30 observations in Unit 3; Figure 7). The most frequently detected species in the lower and upper desert bajada was the black-throated sparrow (33.7% of observations on the desert bajada survey areas). The yellow-rumped warbler accounted for 52.5% of the observations in the Unit 1 survey area.

Avian mean use (birds/survey) was highest in the desert bajada survey areas, and lowest in Unit 2 and Unit 3 (Table 2b). Mean use at Unit 1 was higher than the other solar units, and mean use at Unit 1 was influenced by yellow-rumped warbler (0.76 birds/survey). Mean use in the desert bajada survey areas was influenced by several species including black-throated sparrow, sagebrush sparrow, cactus wren, Brewer's sparrow, and Bewick's wren (Table 2b). Of the top 5 species detected in the desert bajada survey areas, all had a mean use of 0.01 birds/survey or less at the survey areas in the solar units.

In order to accurately calculate density, a distance sampling analysis requires a fairly large amount of data. Due to the low number of individuals recorded for most species during these surveys (owing to the naturally low abundance of birds in the habitat surveyed), it was not possible to obtain reliable density estimates on a species-by-species basis. Even when data were pooled within a 20-point grid, sample sizes were insufficient to allow for determination of reliable density estimates within a grid (e.g., to allow for comparisons between the two 20-point heliostat grids or the two 20-point desert habitat grids). Under the assumption that the two heliostat grids were more similar to each other (in terms of habitat and winter bird communities) than to either of the desert bajada grids, and making the same assumption with respect to the two desert bajada grids, we pooled data from the 40 heliostat points and compared bird densities to data from the 40 pooled desert bajada points.

The density of birds using desert bajada survey areas (2.02 birds/hectare) was greater than the density of birds using the heliostat survey areas (0.37 birds/hectare). Furthermore, the 95% confidence intervals around density estimates for each habitat type did not overlap, thus providing statistical evidence that bird density in the desert bajada survey areas was significantly higher than bird density in the heliostat survey area (Table 3).

Table 2a. Avian Use Survey Results – Number of Observations by Species and Survey Grid.

Species	Unit 1	Unit 2	Unit 3	Upper Bajada	Lower Bajada	Total
black-throated sparrow	1	0	1	98	174	274
yellow-rumped warbler	107	5	8	2	6	128
Sagebrush sparrow	0	0	0	28	88	116
cactus wren	0	0	0	53	28	81
Bewick's wren	0	0	0	27	42	69
Brewer's sparrow	0	0	0	34	31	65
unidentified sparrow	2	0	1	27	31	61
western meadowlark	18	1	0	20	2	41
horned lark	13	8	13	1	0	35
house finch	6	8	1	2	9	26
verdin	0	0	0	11	12	23
American pipit	3	6	1	5	2	17
loggerhead shrike	0	0	2	10	3	15
Brewer's blackbird	13	0	0	0	0	13
unidentified passerine	3	0	1	5	2	11
white-crowned sparrow	1	0	2	3	5	11
Gambel's quail	0	0	0	9	1	10
black-tailed gnatcatcher	0	0	0	0	8	8
common raven	3	3	0	2	0	8
rock wren	0	1	0	0	5	6
Le Conte's thrasher	0	0	0	4	1	5
greater roadrunner	0	0	0	3	1	4
ruby-crowned kinglet	0	0	0	4	0	4
American kestrel	2	1	0	0	0	3
crissal thrasher	0	0	0	1	1	2
phainopepla	0	0	0	0	2	2
Savannah sparrow	2	0	0	0	0	2
northern harrier	0	0	0	0	1	1
red-tailed hawk	0	0	0	1	0	1
vesper sparrow	0	0	0	1	0	1
Total	174	33	30	351	455	1043

Table 2b. Avian Use Survey Results – Mean use (Birds/Survey) by Species and Survey Grid.

Species	Unit 1	Unit 2	Unit 3	Upper Bajada	Lower Bajada	Total
black-throated sparrow	0.007	0	0.007	0.754	1.338	2.106
yellow-rumped warbler	0.764	0.033	0.053	0.015	0.046	0.911
Sagebrush sparrow	0	0	0	0.215	0.677	0.892
cactus wren	0	0	0	0.408	0.215	0.623
Bewick's wren	0	0	0	0.208	0.323	0.531
Brewer's sparrow	0	0	0	0.262	0.238	0.5
unidentified sparrow	0.014	0	0.007	0.208	0.238	0.467
western meadowlark	0.129	0.007	0	0.154	0.015	0.305
horned lark	0.093	0.053	0.087	0.008	0	0.241
house finch	0.043	0.053	0.007	0.015	0.069	0.187
verdin	0	0	0	0.085	0.092	0.177
American pipit	0.021	0.04	0.007	0.038	0.015	0.121
loggerhead shrike	0	0	0.013	0.077	0.023	0.113
Brewer's blackbird	0.093	0	0	0	0	0.093
unidentified passerine	0.021	0	0.007	0.038	0.015	0.081
white-crowned sparrow	0.007	0	0.013	0.023	0.038	0.081
Gambel's quail	0	0	0	0.069	0.008	0.077
black-tailed gnatcatcher	0	0	0	0	0.062	0.062
common raven	0.021	0.02	0	0.015	0	0.056
rock wren	0	0.007	0	0	0.038	0.045
Le Conte's thrasher	0	0	0	0.031	0.008	0.039
greater roadrunner	0	0	0	0.023	0.008	0.031
ruby-crowned kinglet	0	0	0	0.031	0	0.031
American kestrel	0.014	0.007	0	0	0	0.021
crissal thrasher	0	0	0	0.008	0.008	0.016
phainopepla	0	0	0	0	0.015	0.015
Savannah sparrow	0.014	0	0	0	0	0.014
northern harrier	0	0	0	0	0.008	0.008
red-tailed hawk	0	0	0	0.008	0	0.008
vesper sparrow	0	0	0	0.008	0	0.008
Total	1.241	0.22	0.201	2.701	3.497	7.86

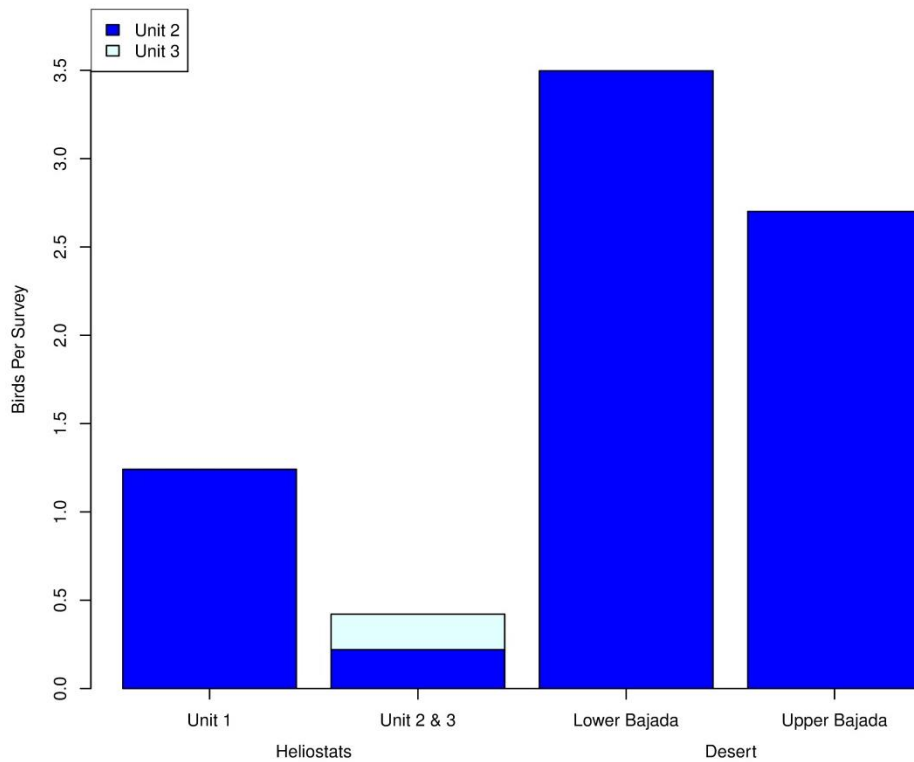


Figure 7. Mean Use (Birds/Survey) Recorded at Avian Survey Points on Five Survey Areas.

Table 3. Avian Density Estimates for Heliostat vs. Desert Bajada Survey Area (Derived Using Program DISTANCE).

Stratum	Estimate (birds/hectare)	%Coefficient of Variation	95% Confidence Interval Low	95% Confidence Interval High
Desert				
Half-normal/Cosine adjustment order 2	2.025	18.73	1.406	2.916
Heliostats				
Half-normal/No Cosine adjustment	0.3693	16.74	0.2659	0.5128

3.2 Raptor and Large Bird Use Monitoring

During the 2014 – 2015 winter season, a total of 81 surveys were conducted at the eight survey points for a total of 320 hours. As the fatality monitoring period did not include the first full or last month of the survey period, the number of surveys per point is as follows: 1 = 11, 2 = 10, 3 = 12, 4 = 9, 5 = 10, 6 = 10, 7 = 9, 8 = 10. Mean use (birds/survey hour) is presented to account for unequal survey effort among points.

3.2.1 General Species Composition, Abundance, and Habitat Use

During the surveys, ten raptor species and three other large bird species were observed and identifiable (Table 4). A total of 380 observations of raptors and large birds were recorded to unlimited distance (Table 4).

Table 4. Raptor/Large Bird Point Count Results Summary (Number of Total Observations).

Species	Ivanpah Facilities	Off site			Total	Species Composition
		Desert	Mountain	Golf Course		
common raven	98	123	0	8	229	60.30%
red-tailed hawk	5	58	0	1	64	16.80%
American kestrel	30	6	0	0	36	9.50%
golden eagle	2	13	2	0	17	4.50%
northern harrier	7	6	0	0	13	3.40%
unidentified raptor	1	5	1	0	7	1.80%
Cooper's hawk	0	5	0	0	5	1.30%
peregrine falcon	1	2	0	0	3	0.80%
unidentified gull	2	0	0	0	2	0.50%
California gull	1	0	0	0	1	0.30%
Canada goose	0	0	0	1	1	0.30%
prairie falcon	0	1	0	0	1	0.30%
unidentified falcon	0	0	0	1	1	0.30%
Total	147	219	3	11	380	100%

Common ravens comprised 60.30% of all large bird observations detected during raptor/large bird surveys. Common ravens were observed more frequently in the nearby desert (53.7% of common raven observations) than at Ivanpah facilities (42.8% of common raven observations); none were observed toward the mountains. The second most frequently observed raptor or large bird was red-tailed hawk (*Buteo jamaicensis*), which accounted for 16.8% of raptor and large bird observations. Most red-tailed hawks were observed over the desert (90.6% of red-tailed hawk observations). American kestrels (*Falco sparverius*) were more often observed at Ivanpah facilities (83.3% of American kestrel observations) compared to the desert (16.7% of American kestrel observations). None were observed in the mountains although this falcon's small size makes very distant observations difficult. Seventeen golden eagle (*Aquila chrysaetos*) observations were made during the winter 2014 – 2015 season, with 13 in the desert (76.4% of

observations, 2 at Ivanpah facilities (11.8% of observations), and 2 observations towards the mountains (11.8% of observations).

During the 2014 – 2015 winter season, there were 30 incidental observations of raptors or large birds over the desert and 19 incidental observations of other raptors or large birds at, or over Ivanpah facilities, for a total of 49 birds. One observation of a flock of 11 common raven accounted for 22.4% of the total incidental observations. Other raptor/large bird species observed incidentally included seven American kestrels, one Cooper's hawk, 21 common ravens, four golden eagles, six northern harriers, one peregrine falcon, eight red-tailed hawks, and one short-eared owl (*Asio flammeus*).

Mean use (birds/survey hour) within 800 meters was highest for common raven among raptors and large birds observed during surveys (Table 5). Common raven mean use was at more than two times higher and five times higher than all other raptors and large birds at the Ivanpah facilities and the desert, respectively.

Table 5. Raptor/Large Bird Mean Use (Birds/Survey Hour) within 800 meters.

Species	Desert	Ivanpah Facilities
common raven	0.947	1.499
red-tailed hawk	0.178	0.091
golden eagle	0.106	0.047
northern harrier	0.075	0.074
American kestrel	0.069	0.617
Cooper's hawk	0.053	0
peregrine falcon	0.026	0.025
prairie falcon	0.021	0
unidentified gull	0	0.025
unidentified raptor	0	0.025
California gull	0	0.024

Per Section 2.3 of the Plan, the height of flight above ground level (agl) was recorded in one of the following categories:

- 0 = < 10 m agl, (within the heliostat collision-risk zone)
- 1 = 10–100 m agl, (between the height of the heliostat collision-risk zone and the height of the elevated solar flux risk zone in areas closer to the power towers)
- 2 = 100–200 m agl (within the elevated solar flux risk zone in areas closer to the power towers (primary boiler area at 120–140 m agl))
- 3 = > 200 m agl (above the elevated solar flux risk zone)

For raptors and large birds observed within 800 meters during surveys, more birds were observed in-flight (89.8% of observations) compared to perched (10.2% of observations; Table 6) at the Ivanpah facilities. Sixty-six percent of all in-flight observations were at or below 100 m agl for all raptors and large birds. Outside of the Ivanpah facilities, a similar pattern was observed with more birds were observed in-flight (70% of observations) compared to perched (30.3% of observations). Fifty-two percent of in-flight observations were at or below 100 m agl. Two golden eagle observations during surveys occurred at Ivanpah facilities and no observation occurred within the tower area (Figures 8 – 15). With the exception of two ravens, no raptors or large birds were observed perched on the power towers.

Table 6. Flight Heights of Raptors and Other Large Birds Over Ivanpah Facilities and Other Habitats/Areas within 800 meters.

Species	Outside Ivanpah Facilities Flight Height Category						At Ivanpah Facilities Flight Height Category					
	0	1	2	3	Perched	Total	0	1	2	3	Perched	Total
American kestrel	0	1	0	0	2	3	2	5	2	0	16	25
California gull	0	0	0	0	0	0	0	0	0	0	1	1
common raven	9	22	3	1	2	37	14	24	5	7	12	62
Cooper's hawk	2	0	0	0	0	2	0	0	0	0	0	0
golden eagle	0	1	2	1	0	4	0	0	2	0	0	2
northern harrier	2	0	0	0	1	3	2	1	0	0	0	3
peregrine falcon	0	1	0	0	0	1	0	1	0	0	0	1
prairie falcon	0	0	0	0	1	1	0	0	0	0	0	0
red-tailed hawk	0	1	1	5	0	7	0	1	0	2	1	4
unidentified gull	0	0	0	0	0	0	0	1	0	0	0	1
unidentified raptor	0	0	0	0	0	0	0	0	0	1	0	1
Total	13	26	6	7	6	58	18	33	9	10	30	100

3.2.2 Raptor and Large Bird Distribution

Common raven was the most numerous raptor or large bird recorded within 800 meters, (Table 7a). The second most abundant raptor or large bird was American kestrel followed by red-tailed hawk. Raptor and large bird mean use was highest at points 6 and 1, and lowest at point 4 (Table 7b). Mean use was similar among all other points. Only 3 common raven observations were recorded at point 4, and point 4 is the only point with one raptor or large bird species recorded.

Table 7a. Raptor/Large Bird Point Count Results By Survey Point within 800 meters.

Species	1	2	3	4	5	6	7	8	Total
American kestrel	6	4	3	0	9	6	0	0	28
California gull	1	0	0	0	0	0	0	0	1
common raven	18	11	16	3	9	18	12	12	99
Cooper's hawk	0	0	0	0	0	0	1	1	2
golden eagle	0	4	1	0	0	0	1	0	6
northern harrier	1	0	0	0	0	2	0	3	6
peregrine falcon	0	1	0	0	0	1	0	0	2
prairie falcon	0	0	1	0	0	0	0	0	1
red-tailed hawk	1	1	3	0	1	0	2	3	11
unidentified gull	0	0	0	0	1	0	0	0	1
unidentified raptor	0	0	0	0	1	0	0	0	1
Total	27	21	24	3	21	27	16	19	158

Table 7b. Raptor/Large Bird Mean Use within 800 meters (Birds/survey hour)

Species	1	2	3	4	5	6	7	8
American kestrel	0.143	0.104	0.064	0	0.225	0.15	0	0
California gull	0.024	0	0	0	0	0	0	0
common raven	0.429	0.284	0.341	0.083	0.225	0.45	0.334	0.3
Cooper's hawk	0	0	0	0	0	0	0.028	0.025
golden eagle	0	0.104	0.021	0	0	0	0.028	0
northern harrier	0.024	0	0	0	0	0.05	0	0.075
peregrine falcon	0	0.026	0	0	0	0.025	0	0
prairie falcon	0	0	0.021	0	0	0	0	0
red-tailed hawk	0.024	0.026	0.063	0	0.025	0	0.056	0.075
unidentified gull	0	0	0	0	0.025	0	0	0
unidentified raptor	0	0	0	0	0.025	0	0	0
Total	0.644	0.544	0.51	0.083	0.525	0.675	0.446	0.475

Figures 8 through 15 depict the results of raptor surveys in terms of the locations of birds observed; number of individuals; whether the birds were flying or perched; and flight direction (for flying birds). All observations for the entire season are shown on a single figure for each of the eight survey points to document locations and concentrations, if any, of raptor and other large bird activity.

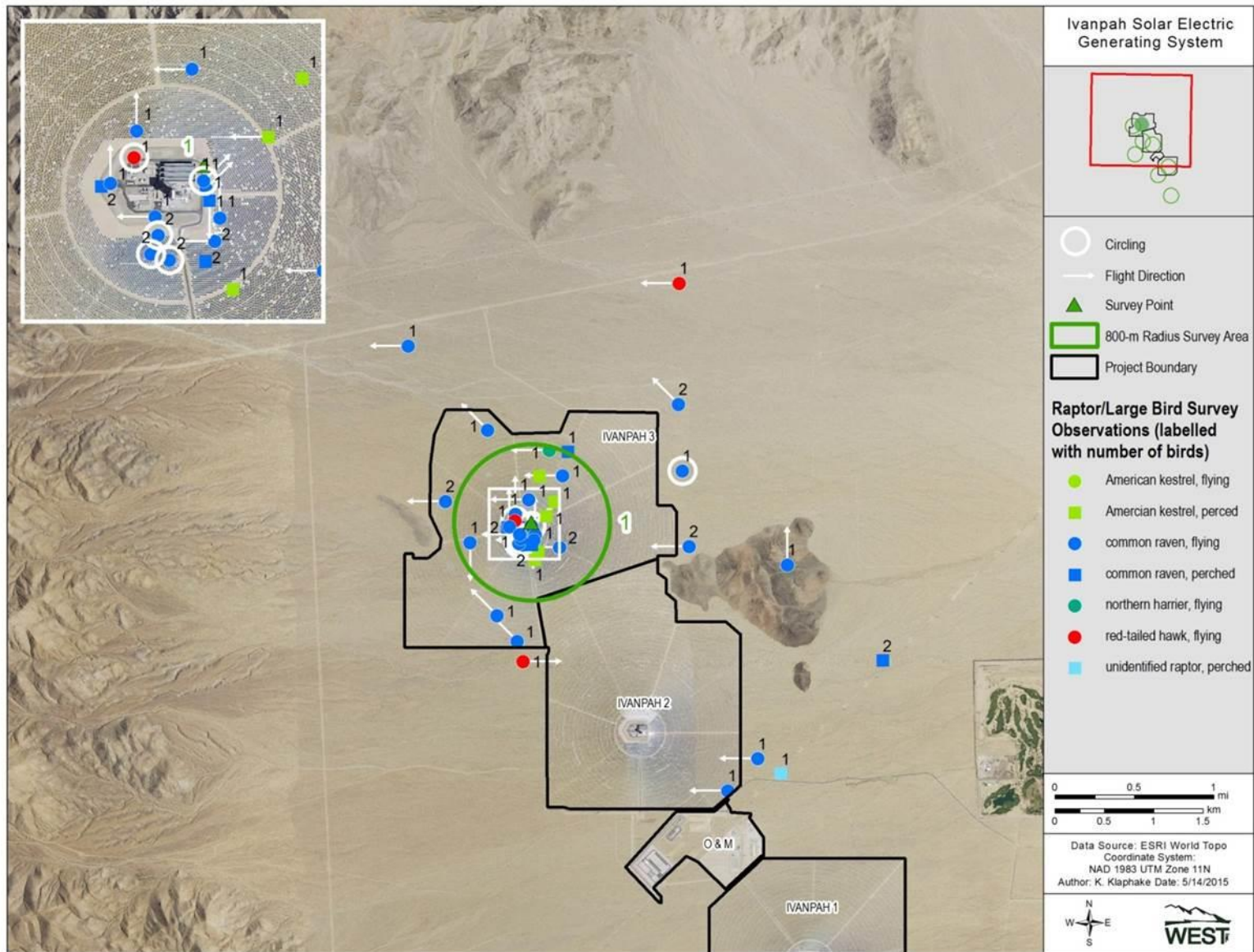


Figure 8. Raptor/Large Bird Survey Observations from Survey Point 1, Winter 2014 - 2015.

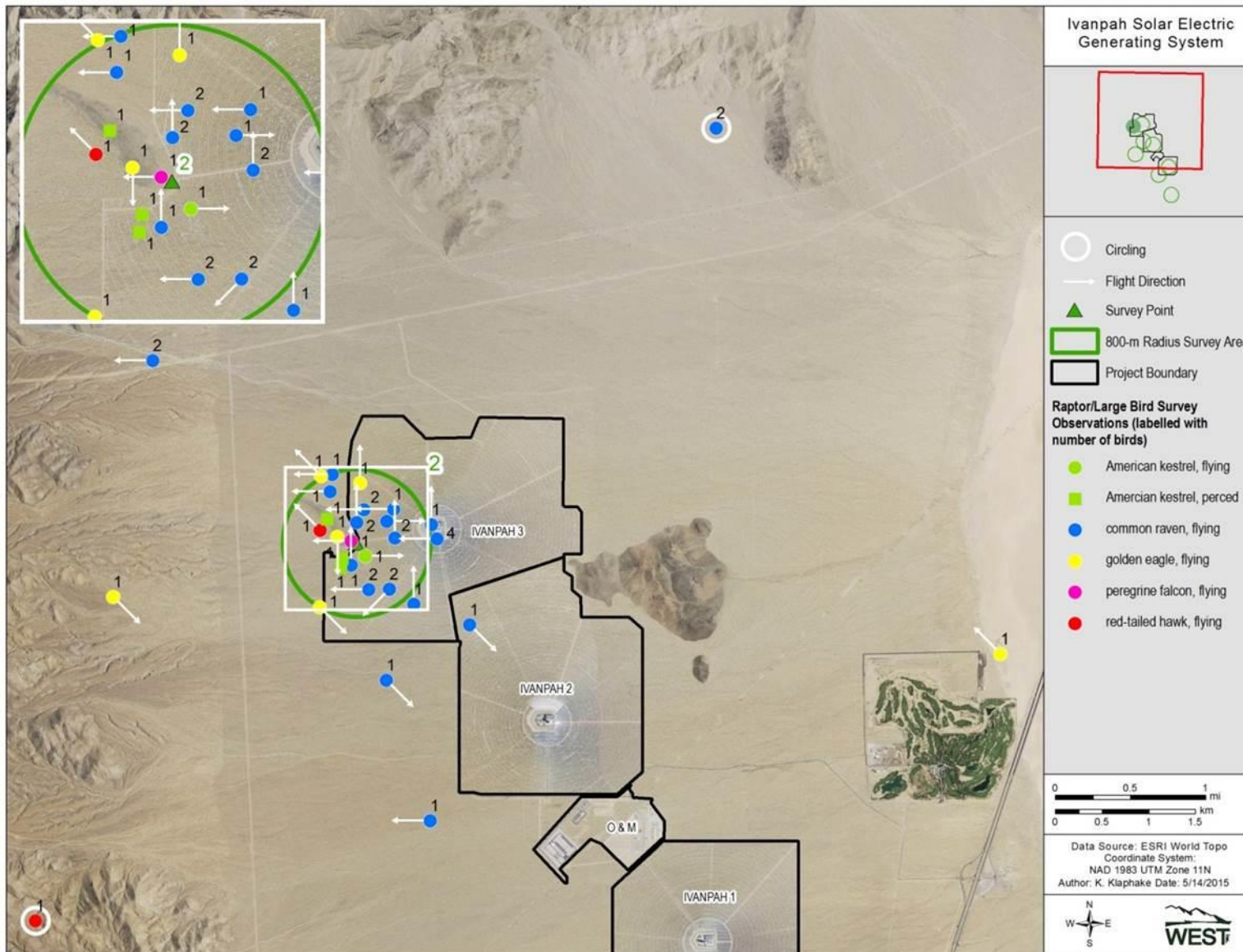


Figure 9. Raptor/Large Bird Survey Observations from Survey Point 2, Winter 2014 - 2015.

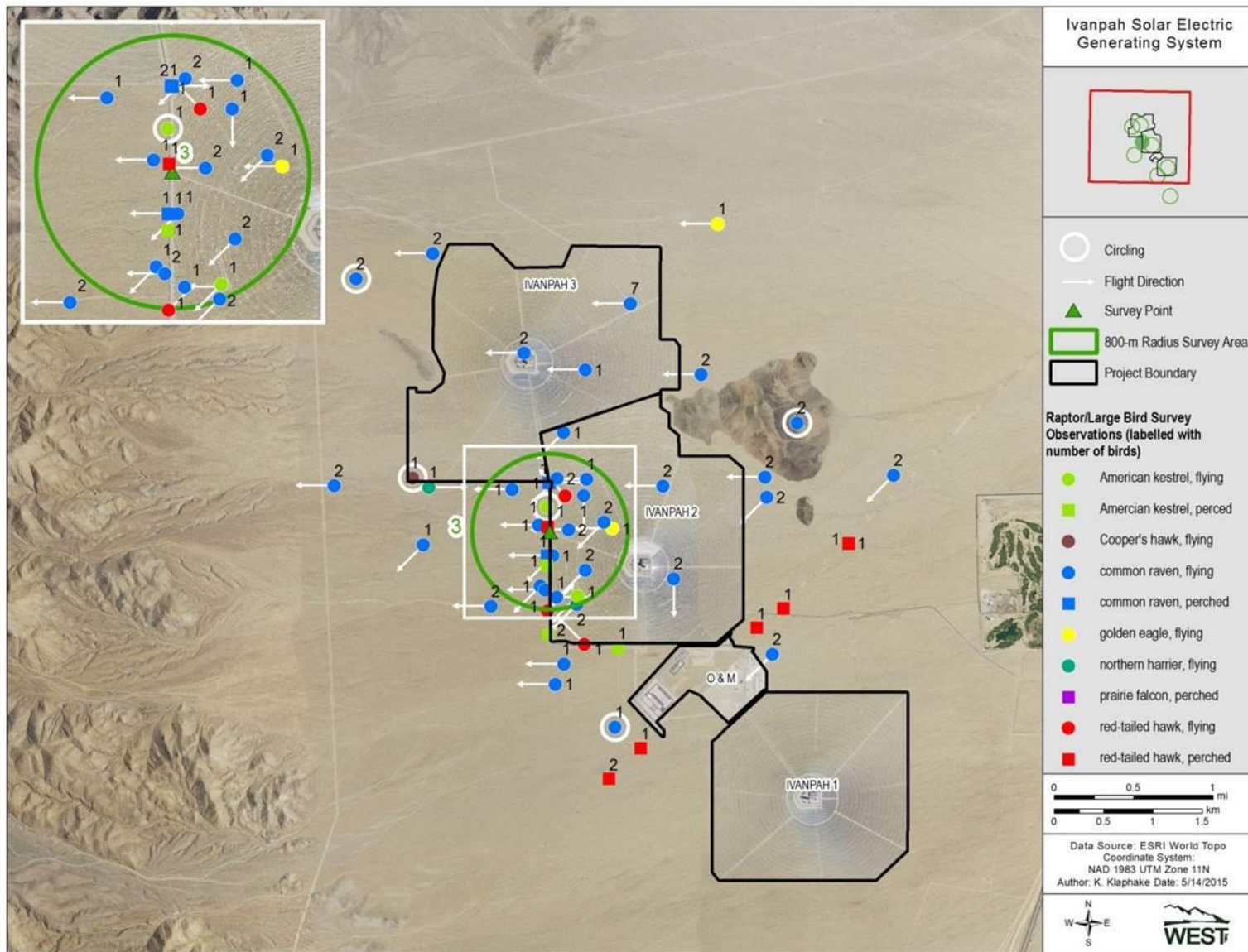


Figure 10. Raptor/Large Bird Survey Observations from Survey Point 3, Winter 2014 - 2015.

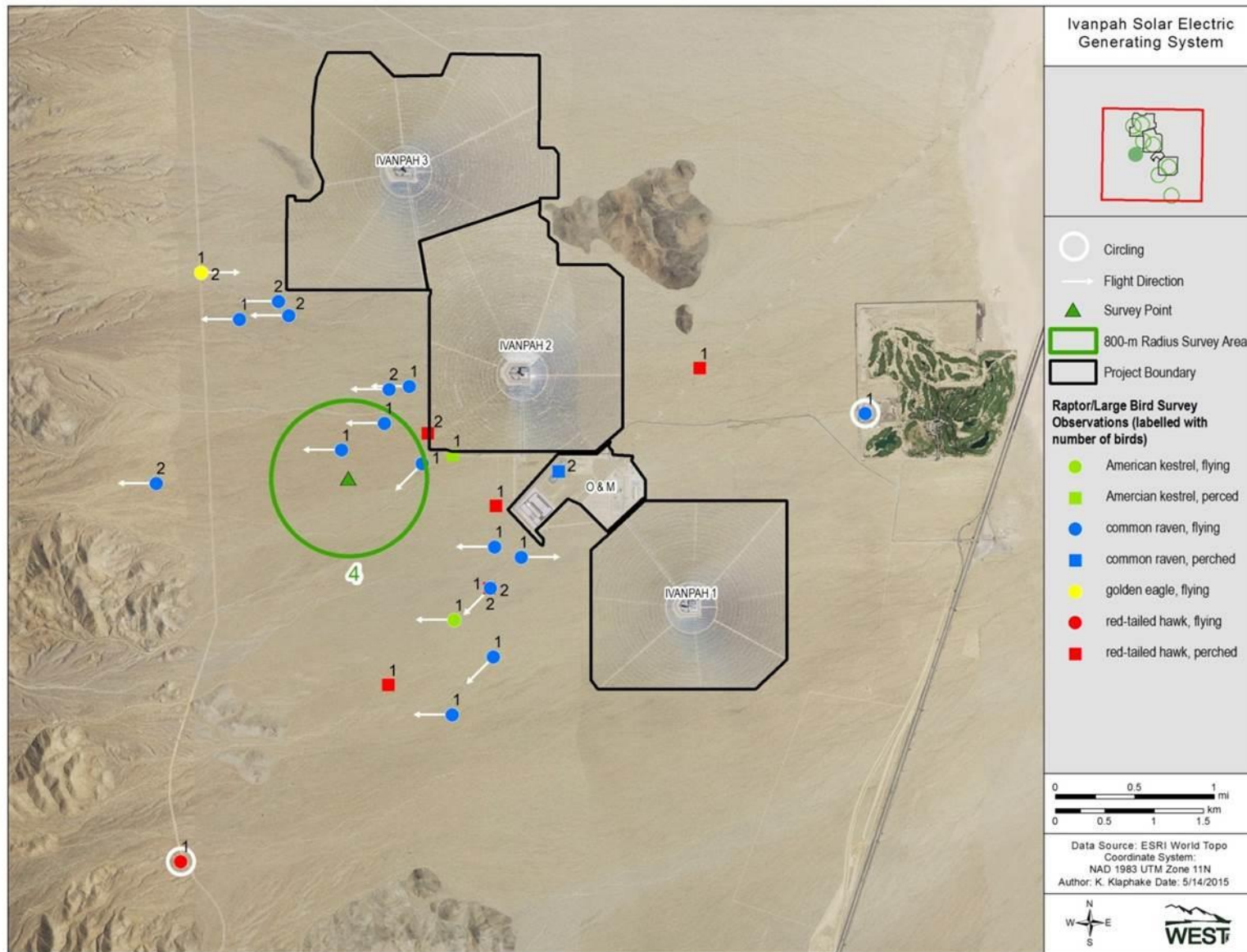


Figure 11. Raptor/Large Bird Survey Observations from Survey Point 4, Winter 2014 - 2015.

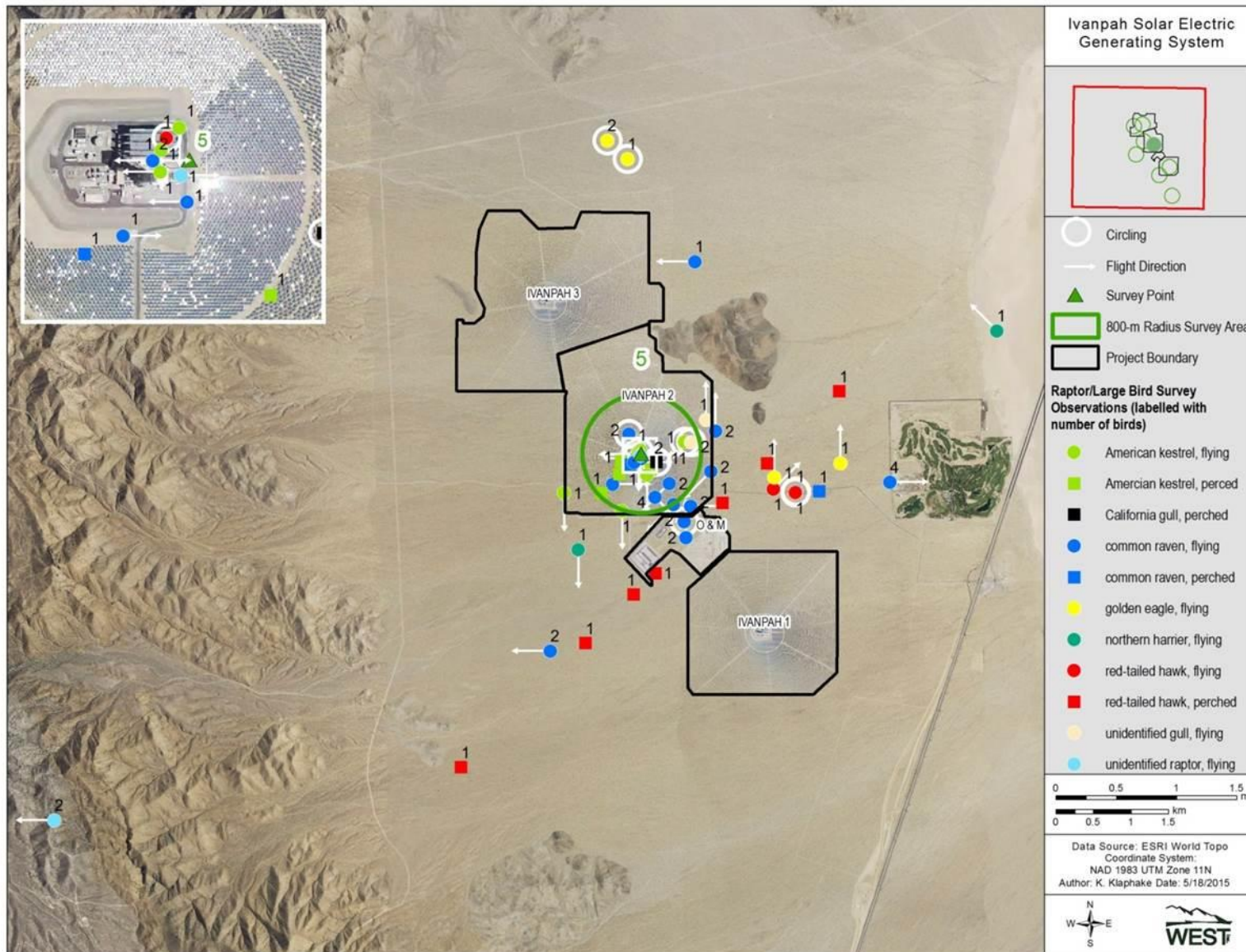


Figure 12. Raptor/Large Bird Survey Observations from Survey Point 5, Winter 2014 - 2015.

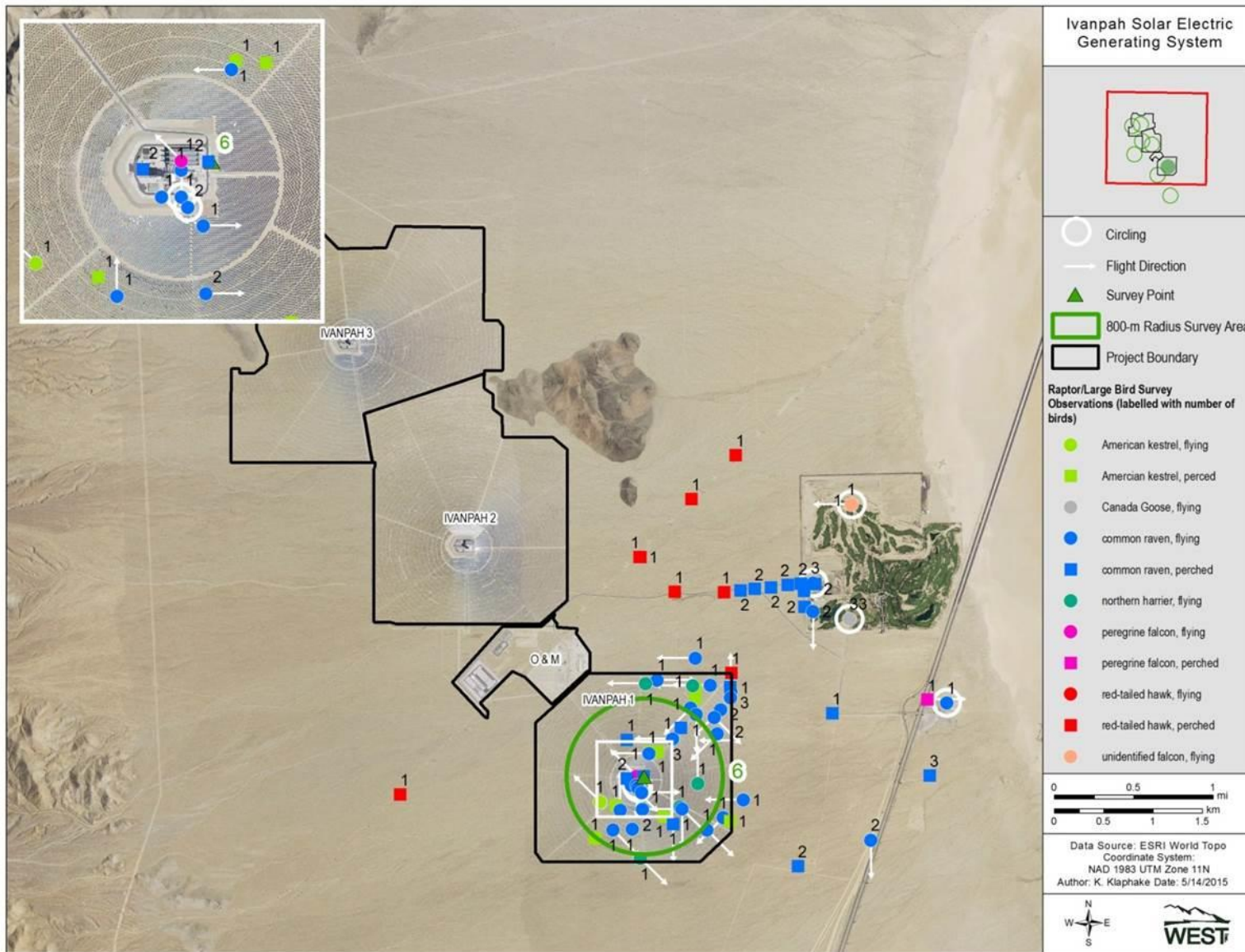


Figure 13. Raptor/Large Bird Survey Observations from Survey Point 6, Winter 2014 - 2015.

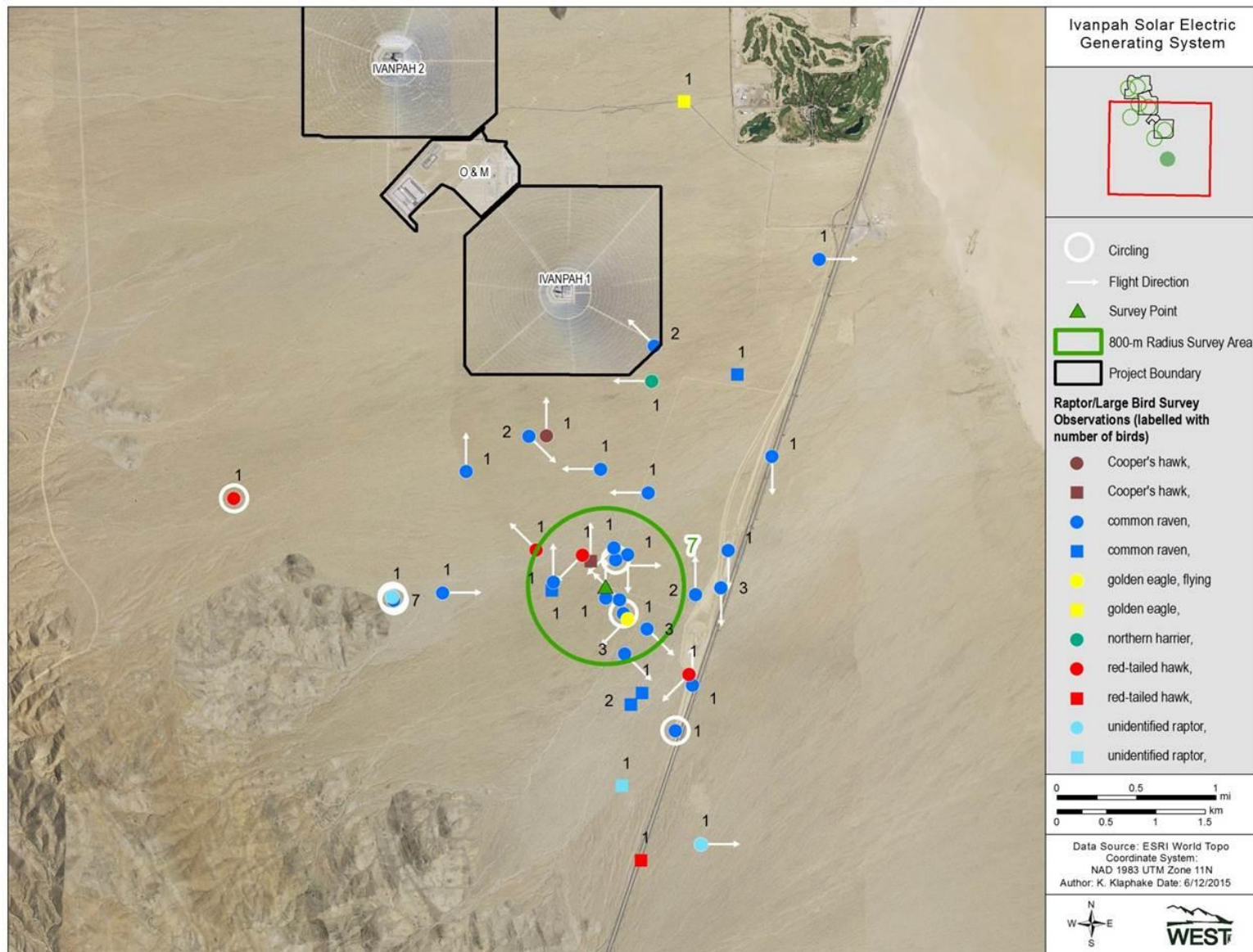


Figure 14. Raptor/Large Bird Survey Observations from Survey Point 7, Winter 2014 - 2015.

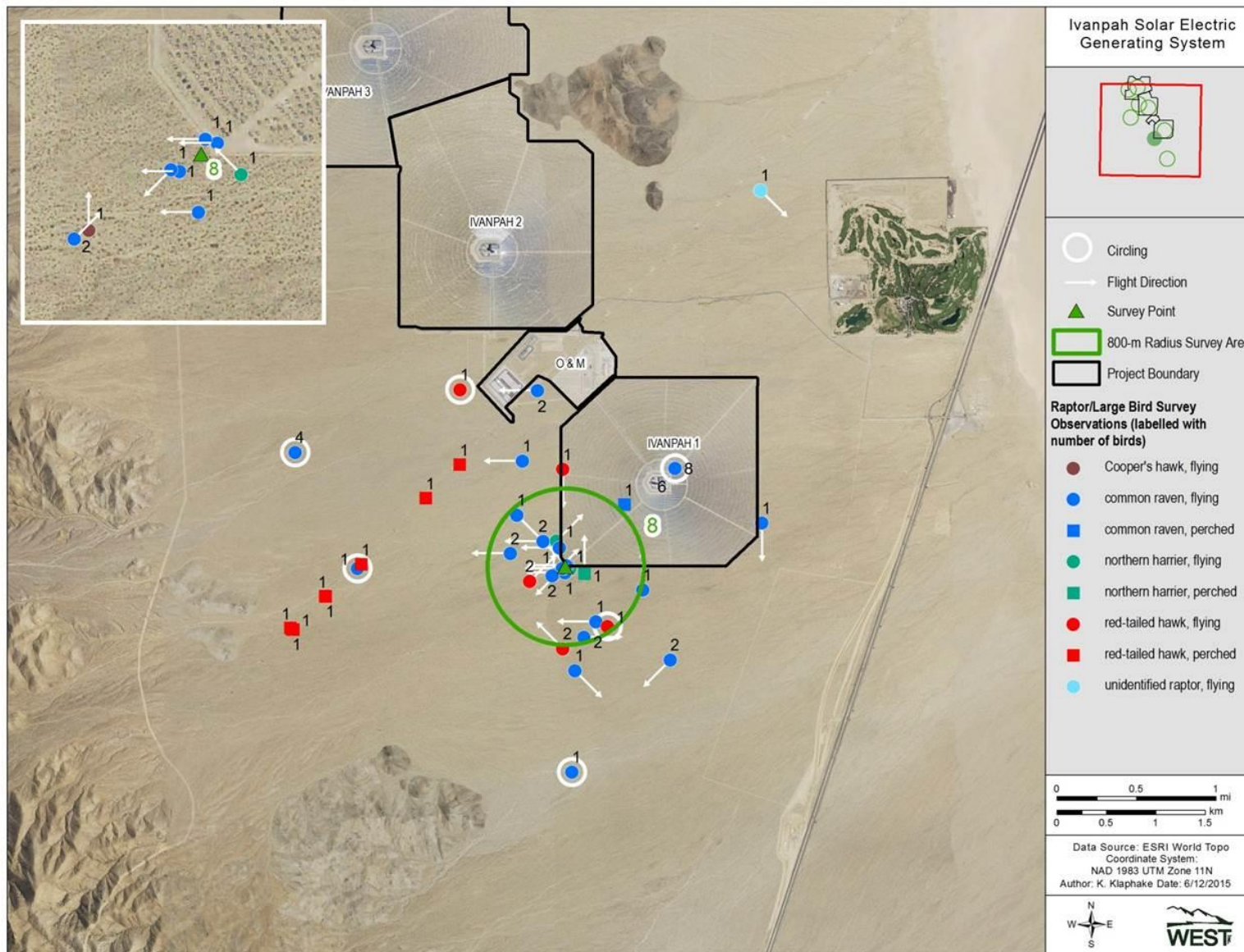


Figure 15. Raptor/Large Bird Survey Observations from Survey Point 8, Winter 2014 - 2015.

Section 4.0 Monitoring Results

4.1 Summary of Avian Detections

The average search interval was 21.27 days (range 14 to 28, median 21 days) during the 2014 – 2015 winter season for the three solar units. Variation in search interval was anticipated to occur due to the alternating 7-day and 21-day search interval associated with seasons of differing length. During the 2014 – 2015 winter season, a total of 340 avian detections (including injured birds and incidentals) of 50 identified species (Table 8) were recorded. Approximately 73% of detections were small passerines, with 25% being other types of bird; 2% could not be identified to an appropriate level. The most numerous detection of an identified species was yellow-rumped warbler followed by American pipit. Most detections occurred in the heliostat area (Figures 16, 17, 18 and 19) where approximately 720 acres were surveyed, representing 24.1% of the total inner/outer heliostat field area.

Table 8. Number of Individual Bird Detections, by Species, 2014 – 2015 Winter Season.

Species	Scientific Name	Injuries	Fatalities	Small Passerine
unidentified passerine		0	41	Yes
yellow-rumped warbler	<i>Setophaga coronata</i>	0	36	Yes
American pipit	<i>Anthus rubescens</i>	0	30	Yes
mourning dove	<i>Zenaida macroura</i>	0	26	No
greater roadrunner	<i>Geococcyx californianus</i>	0	25	No
white-crowned sparrow	<i>Zonotrichia leucophrys</i>	0	25	Yes
unidentified sparrow		0	16	Yes
western meadowlark	<i>Sturnella neglecta</i>	0	15	Yes
house finch	<i>Haemorhous mexicanus</i>	0	10	Yes
Savannah sparrow	<i>Passerculus sandwichensis</i>	0	10	Yes
American coot	<i>Fulica americana</i>	0	5	No
brown-headed cowbird	<i>Molothrus ater</i>	0	5	Yes
lesser goldfinch	<i>Spinus psaltria</i>	0	5	Yes
violet-green swallow	<i>Tachycineta thalassina</i>	0	5	Yes
Gambel's quail	<i>Callipepla gambelii</i>	0	4	No
rock pigeon	<i>Columba livia</i>	1	4	No
Brewer's blackbird	<i>Euphagus cyanocephalus</i>	0	4	Yes
ruby-crowned kinglet	<i>Regulus calendula</i>	0	4	Yes
unidentified swallow		0	3	Yes
unidentified warbler		0	3	Yes
Sagebrush sparrow	<i>Artemisiospiza nevadensis</i>	0	3	Yes
lesser nighthawk	<i>Chordeiles acutipennis</i>	0	3	No
loggerhead shrike	<i>Lanius ludovicianus</i>	0	3	Yes
yellow warbler	<i>Setophaga petechia</i>	0	3	Yes
unidentified bird (small)		0	2	Unknown
unidentified hummingbird		0	2	No

Species	Scientific Name	Injuries	Fatalities	Small Passerine
unidentified large bird		0	2	Unknown
green-winged teal	<i>Anas crecca</i>	0	2	No
cedar waxwing	<i>Bombycilla cedrorum</i>	0	2	Yes
Wilson's snipe	<i>Gallinago delicata</i>	0	2	No
barn swallow	<i>Hirundo rustica</i>	0	2	Yes
varied thrush	<i>Ixoreus naevius</i>	0	2	Yes
dark-eyed junco	<i>Junco hyemalis</i>	0	2	Yes
orange-crowned warbler	<i>Oreothlypis celata</i>	0	2	Yes
eared grebe	<i>Podiceps nigricollis</i>	0	2	No
Brewer's sparrow	<i>Spizella breweri</i>	0	2	Yes
crissal thrasher	<i>Toxostoma crissale</i>	0	2	Yes
American robin	<i>Turdus migratorius</i>	0	2	Yes
unidentified duck		0	1	No
unidentified shorebird		0	1	No
red-winged blackbird	<i>Agelaius phoeniceus</i>	0	1	Yes
Anna's hummingbird	<i>Calypte anna</i>	0	1	No
Costa's hummingbird	<i>Calypte costae</i>	0	1	No
hermit thrush	<i>Catharus guttatus</i>	0	1	Yes
northern harrier	<i>Circus cyaneus</i>	0	1	No
band-tailed pigeon	<i>Columba fasciata</i>	0	1	No
horned lark	<i>Eremophila alpestris</i>	0	1	Yes
American kestrel	<i>Falco sparverius</i>	0	1	No
northern mockingbird	<i>Mimus polyglottos</i>	0	1	Yes
lazuli bunting	<i>Passerina amoena</i>	0	1	Yes
ladder-backed woodpecker	<i>Picoides scalaris</i>	0	1	No
pie-billed grebe	<i>Podilymbus podiceps</i>	0	1	No
blue-gray gnatcatcher	<i>Polioptila caerulea</i>	0	1	Yes
mountain bluebird	<i>Sialia currucoides</i>	0	1	Yes
pine siskin	<i>Spinus pinus</i>	0	1	Yes
European starling	<i>Sturnus vulgaris</i>	0	1	Yes
tree swallow	<i>Tachycineta bicolor</i>	0	1	Yes
unidentified kingbird	<i>Tyrannus spp</i>	0	1	Yes
Ross' goose	<i>Chen rossii</i>	1	0	No
common raven	<i>Corvus corax</i>	2	0	Yes
Total		4	336	NA*

*NA – Not Applicable

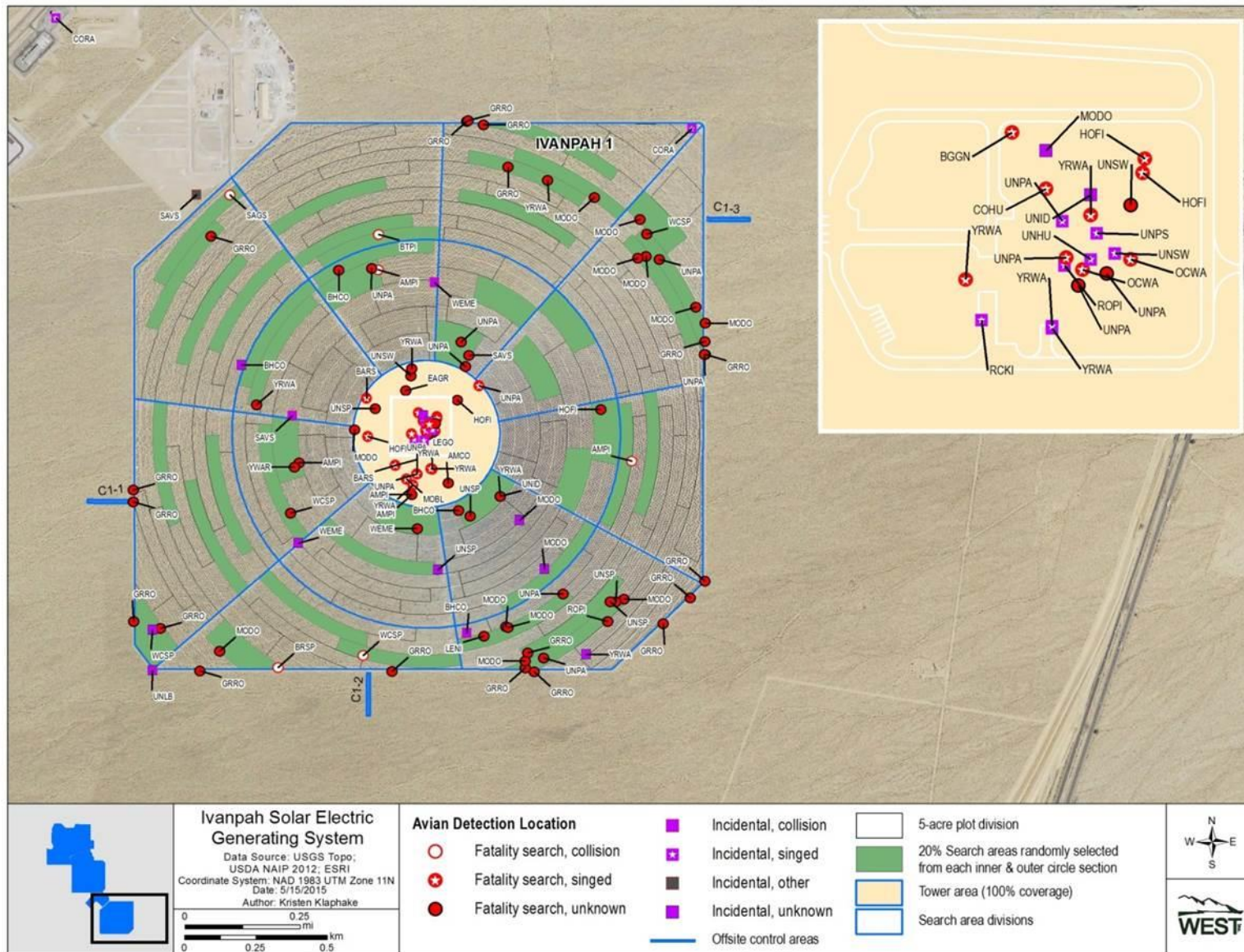


Figure 16. Ivanpah 1 Detections.

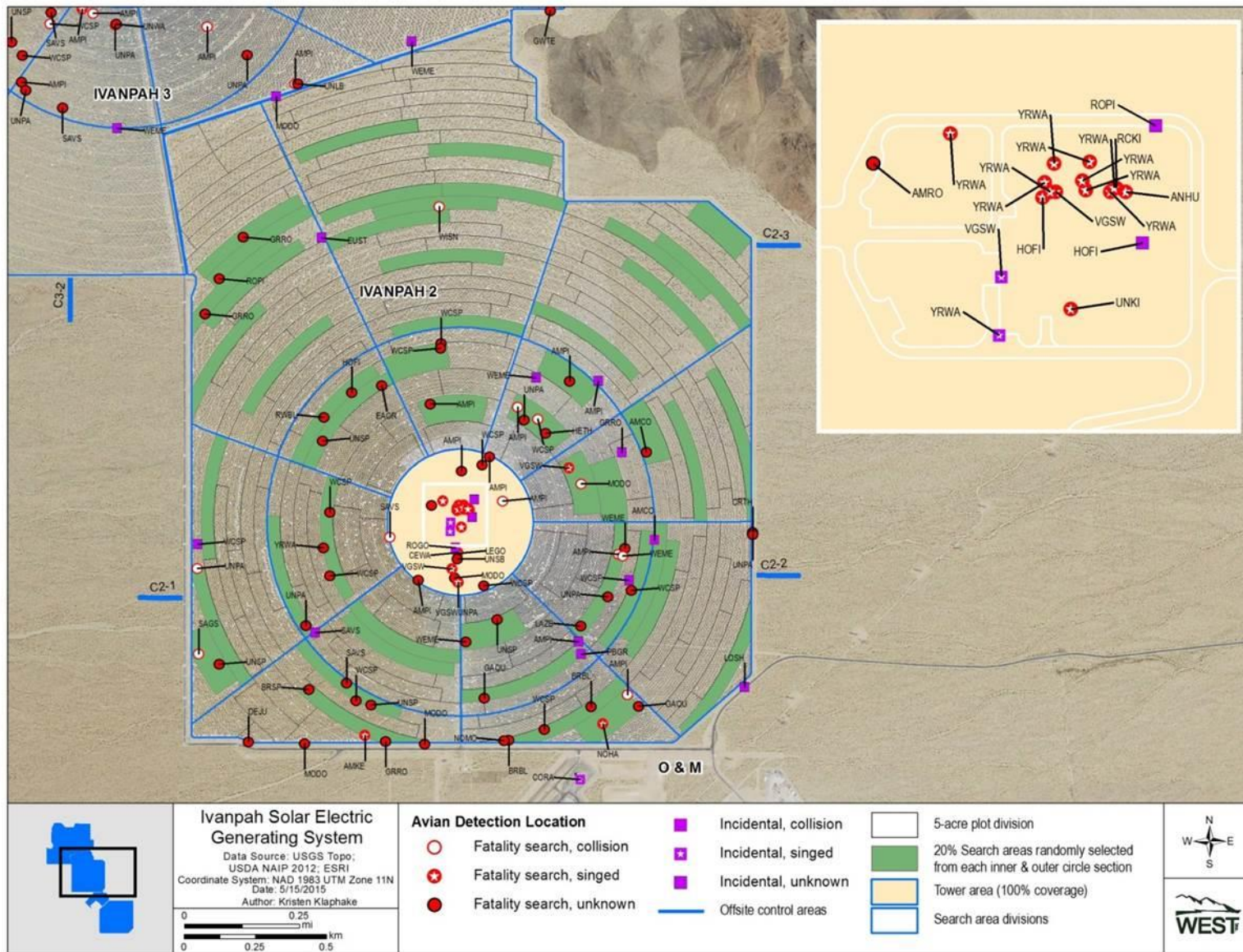
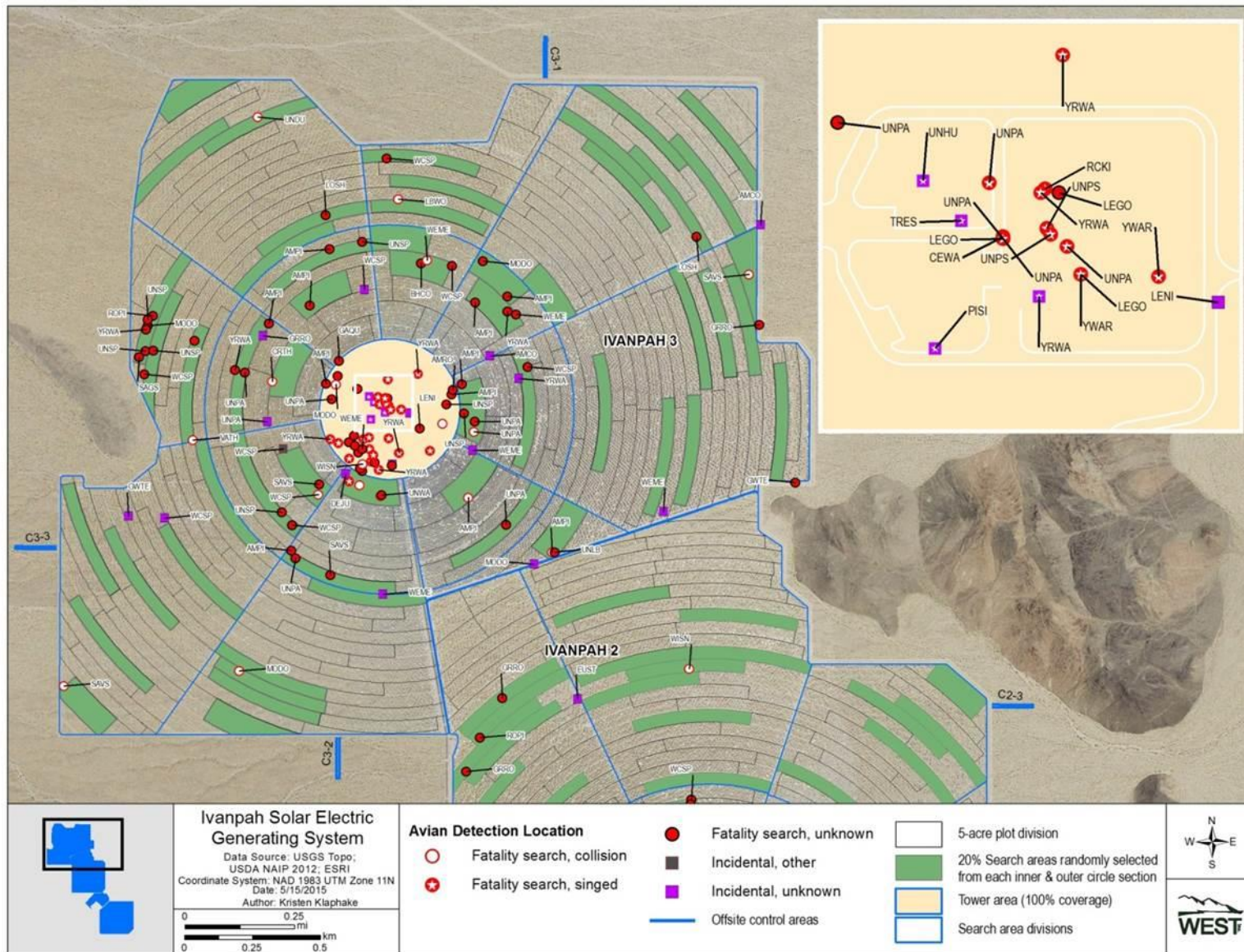


Figure 17. Ivanpah 2 Detections.



4.1.1 Temporal Patterns of Avian Detections

The number of detections reported per day varied during the 2014 – 2015 winter season (Figure 21). The period from 21 October 2014 to 2 December 2014 was characterized by peaks in detections with a high of 23 detections on 2 December 2014. From 3 December 2014 to 15 March 2015 there was less variation in the number of detections per day and the peaks did not approach those observed prior to 2 December 2014. The number of detections per day represents the accumulation of detections over the search interval minus those detected incidentally and removed between searches. Thus, to better understand if search interval or the area that was searched influences the number of detections reported per day, the tower area, heliostat area, and fenceline were examined separately (Figure 19). Peaks in the number of detections per day were associated with tower area searches through December 2, 2014. In other words, peaks in detections through December 2, 2014 depended on the day a tower area was searched. Detections per day in the heliostat area showed variation up to 23 December 2014 after which few detections were reported in this area..

Data from BirdCast suggests that the 2014 – 2015 winter season captured the tail end of migration according to BirdCast. The BirdCast West regional migration summaries were available from 17 October – 14 November 2014. From 17 October – 7 November movements were light to moderate in the Desert Southwest with light movements noted 7 – 14 November. Migration reporting ended on 14 November 2014.

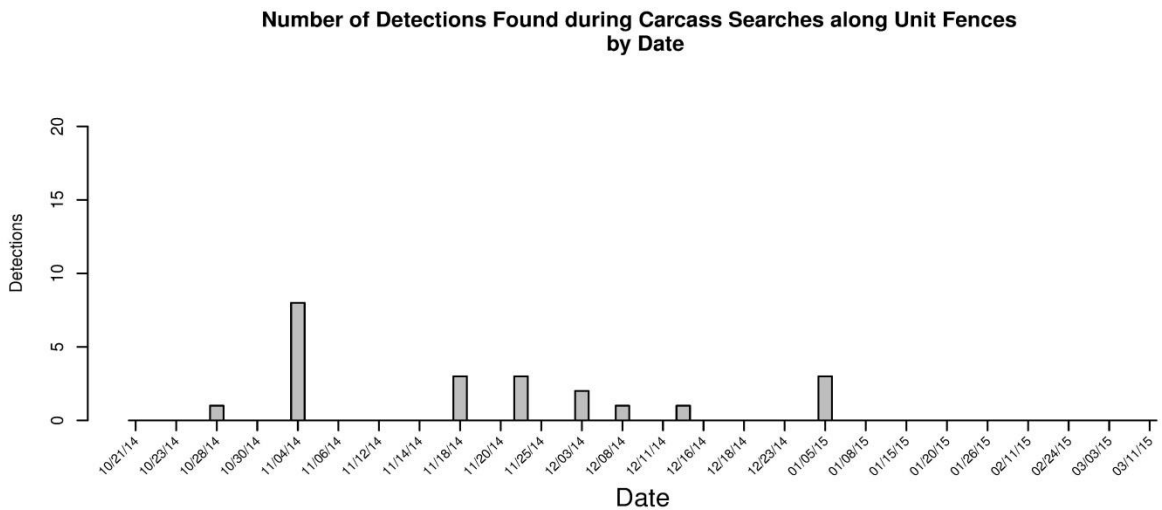
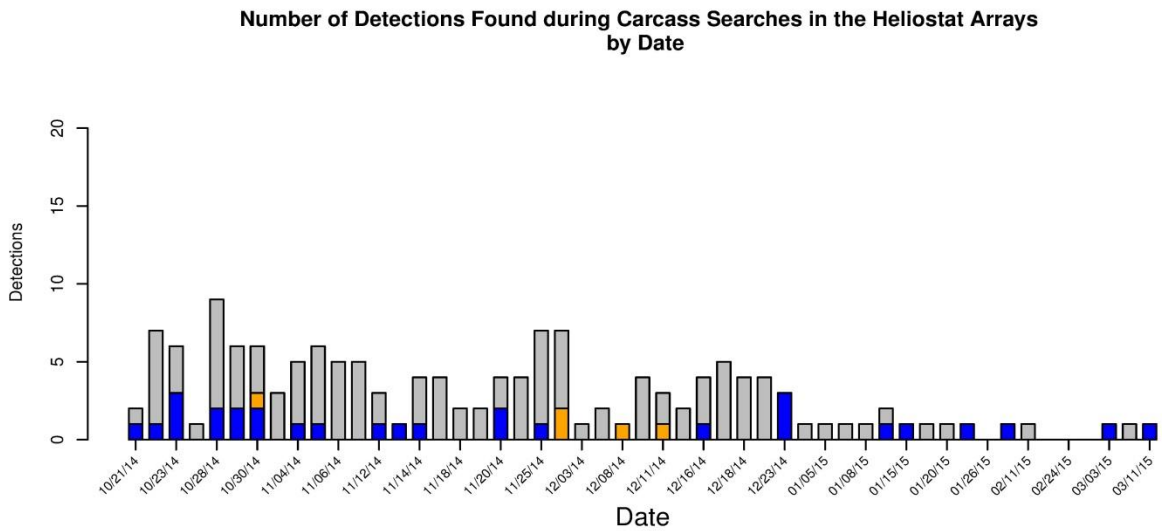
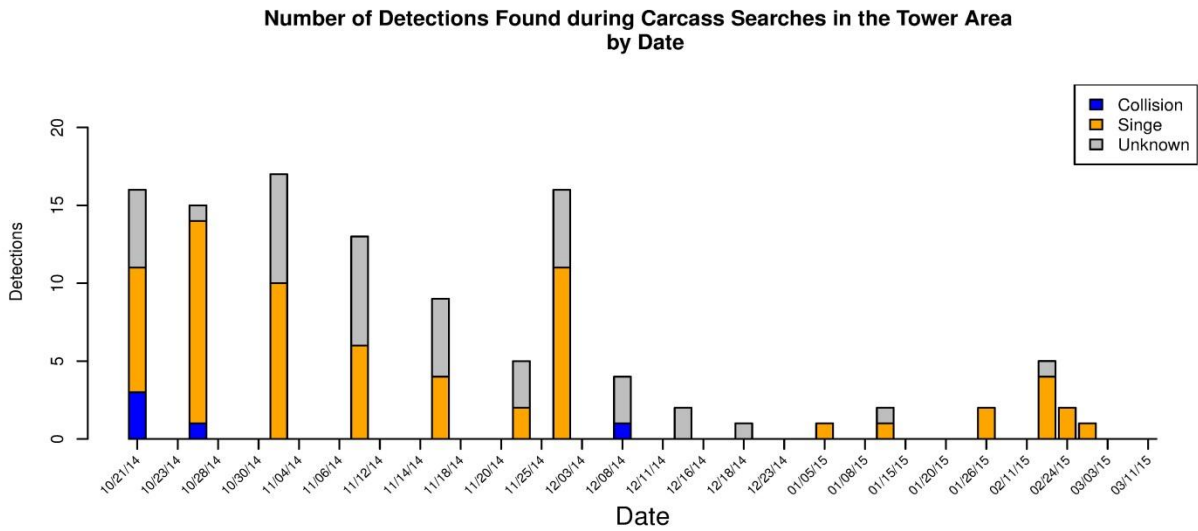


Figure 19. Number of Detections on Each Survey Date, 21 October 2014 – 15 March.

Four injured birds were detected during the 2014 – 2015 winter season (Table 9). A singing common raven was still alive and recovering at the Ojai Raptor Center on April 30, 2015. A rock pigeon was collected, recovered, and released. The other two injured birds succumbed to their injuries. One singing and one injured bird died onsite soon after capture. All of these birds are included in this report as detections.

Table 9. Avian Injuries Detected 21 October 2014 – 15 March.

Date	Species	Age	Sex	Cause of Injury	Flux Grade	Fate
2/26/2015	common raven	Unknown	Unknown	flux	Unknown	Died on site
2/26/2015	common raven	Adult	Unknown	flux	2;3	Alive at rehab facility
11/15/2014	Ross' goose	Juvenile	Unknown	collision	NA	Died after capture
11/25/2014	rock pigeon	Unknown	Unknown	flux	2;3	Released alive

4.1.2 Comparison of Avian Use Survey Results to Fatality Detections

Whereas 26 bird species were recorded during avian use surveys, 50 species were recorded as detections during fatality monitoring. Comparison of the most frequently observed species on the avian use surveys at the heliostats to the species most frequently recorded as detections did not show a clear pattern of association. Of identified species, yellow-rumped warbler was the most frequently observed species during avian use surveys and accounted for the highest percentage of detections (Table 10). The next most frequently observed bird, the horned lark, represented only 0.4% of the total detections. The species most common at the desert bajada survey areas were either not recorded as detections (sagebrush sparrow, cactus wren, Bewick's wren) or accounted for less than 1.5% of detections (black-throated sparrow, Brewer's sparrow).

Table 10. Comparison of the Most Abundant Bird Species Recorded as Detections and Recorded During Avian Use Surveys for Identified Species Only.

Detections		Avian Use Survey - Heliostats		Avian Use Survey - Desert	
Species	Percent of Total	Species	Percent of Total	Species	Percent of Total
yellow-rumped warbler	13.4	yellow-rumped warbler	52.2	black-throated sparrow	36.7
American pipit	11.2	horned lark	14.8	Sagebrush sparrow	15.7
mourning dove	9.7	western meadowlark	8.3	cactus wren	10.9
greater roadrunner	9.3	house finch	6.5	Bewick's wren	9.3
white-crowned sparrow	9.3	Brewer's blackbird	5.7	Brewer's sparrow	8.8
western meadowlark	5.6	American pipit	4.3	verdin	3.1
house finch	3.7	common raven	2.6	western meadowlark	3
Savannah sparrow	3.7	American kestrel	1.3	loggerhead shrike	1.8
American coot	1.9	white-crowned sparrow	1.3	house finch	1.5
brown-headed cowbird	1.9	black-throated sparrow	0.9	Gambel's quail	1.3
lesser goldfinch	1.9	loggerhead shrike	0.9	black-tailed gnatcatcher	1.1
violet-green swallow	1.9	Savannah sparrow	0.9	white-crowned sparrow	1.1
Gambel's quail	1.5	rock wren	0.4	yellow-rumped warbler	1.1

4.1.3 Summary of Bat Detections

Three bats representing two species and one unidentified species were detected during the 2014 – 2015 winter season. A Mexican free-tailed bat was located near the Unit 1 tower, an unidentified bat was located in the Unit 2 ACC, and a canyon bat was located in the Unit 3 ACC. Given the few detections of bats, they are not discussed further.

4.2 Locations of Avian Detections

4.2.1 Detections by Project Area

During winter 2014 – 2015, of the 340 total detections, 132 detections (38.8%) were recorded at the tower area, 180 detections (52.9%) were recorded over the much larger heliostat area, 25 (7.4%) of the detections were located at the perimeter fence, and no detections were noted within the survey areas associated with the Unit 3 collector line or the offsite transects (Table 11). Of the 337 avian detections within the solar units (i.e., excluding two carcasses and one injury on other Project lands), 115 (34.1%) were detected in Unit 1, 98 (29.1%) in Unit 2, and 124 (36.8%) in Unit 3.

Table 11. Locations of Avian Detections, 21 October 2014 – 15 March 2015.

Location	Carcasses	Injuries	Percent of Total
Tower Area	130	2	38.8%
Heliostat Area	180	0	52.9%
Fenceline	24	1	7.4%
Other Project Lands	2	1	0.9%
Total	336	4	100.0%

4.3 Cause of Injury or Fatality

The following section describes the number of detections with evidence of singeing or collision; the number from other known causes; the number for which cause of injury or fatality is unknown; and the spatial distributions of detections with these causes. Figure 20 shows the distribution of detections by cause.

4.3.1 Singeing Effects

Of the 340 avian detections during the 2014 – 2015 winter season, 86 detections (25.2%) showed signs of singed feather damage, and 91.8% of singed detections were recorded in the tower area (Table 12). Detections found outside of the tower area consisted of two common raven, one American kestrel, one northern harrier, one violet-green swallow, one American pipit, and one unknown passerine. Of these singed detections, 5 were either feather spots or partial carcasses and were found in the heliostat area. The two remaining singed detections were common ravens that were found along the fence line and at the common logistics area.

4.3.2 Collisions

Of the 340 avian detections, evidence of collision was observed in the case of 39 (11.1%), and all of these detections were located in the inner HD portion of the tower area and the heliostat area. No collision detections were located in the power block. As described in Section 2.2.1.3, the evidence that was used to classify these detections as collisions was obvious physical trauma, proximity to heliostats that had smudge marks, body imprints, and/or feathers on or near the surface of the mirror (although birds that collide with structures do not always leave visible evidence).

4.3.3 Other Known Causes

Two avian detections (less than 1.0% of all detections) without evidence of singeing or collision effects were determined to have been depredated based on the carcass condition. Pieces of both carcasses were found impaled on Yucca plants in a manner typical of loggerhead shrike predation. Neither carcass showed any evidence of singeing.

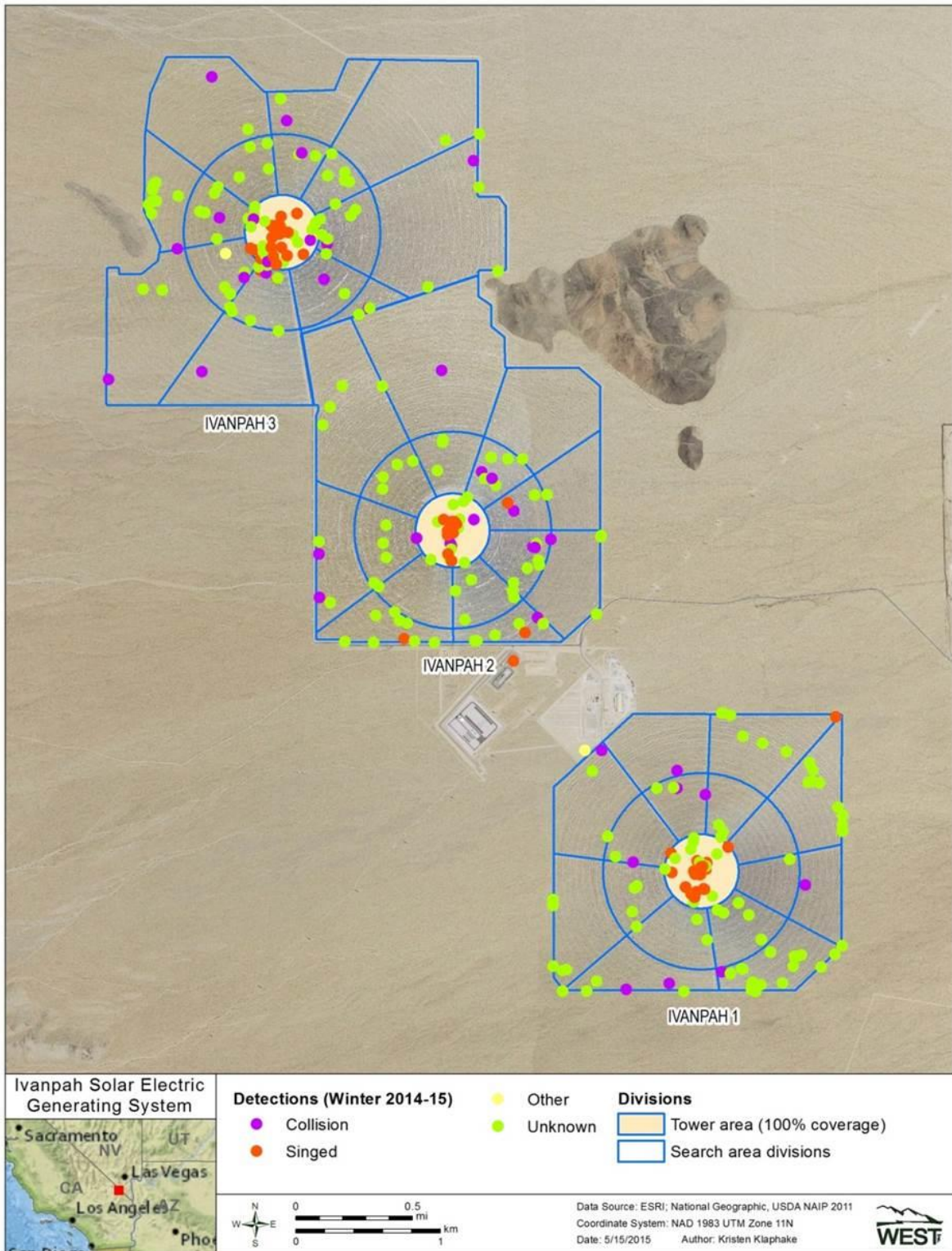


Figure 20. Locations of Singed and Unsinged Detections within Solar Units.

4.3.4 Detections of Unknown Cause

Of the 340 avian detections, evidence of singeing, collision, or other cause could not be assigned for 213 detections (62.6%; Table 12). Per the Plan section 2.1, these detections cannot be presumed or presumed without a reasonable doubt to be caused by the facility; see Section 6.2 of this report for further discussion. Of the unknown cause detections, 141 (66.2%) were recorded in the heliostat area; 47 (22.1%) were recorded in the tower area, and the remaining 25 (11.7%) were found at the fenceline, and other project lands. These detections showed no evidence of collision effects, and microscopic analysis did not indicate signs of singeing. Of these unknown detections, 112 (52.6%) were feather spots, 87 (40.8%) were broken-up carcasses that had been scavenged, and only 14 (6.6%) were of a whole carcass (Table 13a).

None of the bat detections showed evidence of singeing; this result is expected because bats have a low exposure rate to flux due to their crepuscular and nocturnal foraging habits.

Table 12. Locations of Bird Detections, 21 October 2014 – 15 March 2015.

Location	Singeing	Collision	Predation	Unknown	Total
Tower Area	79	6	0	47	132
Heliostat Area	5	33	1	141	180
Fenceline	1	0	0	24	25
Other Project Lands	1	0	1	1	3
Total	86	39	2	213	340

4.4 Types of Detections

One-hundred-fifty (44.1%) of the 340 detections consisted only of feather spots (Table 13b). Over 64% of the detections located at the fenceline and inner HD heliostats were feather spots, and feather spots accounted for over 42% of detections at the inner and outer heliostats. Percent of the detections that were feather spots was lower in the power block (27.7%), and no detections in the ACC or other project lands were feather spots. Evidence of singeing was noted through direct and microscopic examination on 33 of these 150 feather spots; evidence of collision (i.e., an impact imprint on a nearby mirror) was noted in the case of five other feather spots. Otherwise, the causes of the feather spots for the other 112 detections are unknown (Table 13c).

Table 13a. Percent Composition of Carcass Condition of Unknown Cause Detections.

Condition of Carcass	Unknown Cause Detections	Percent Composition
Feather Spot	112	52.6%
Broken Up	87	40.8%
Mummified	9	4.2%
Dead, semi-fresh	4	1.9%
Dead, fresh	1	0.5%
Total	213	100%

Table 13b. Percent Composition Feather Spots to Carcasses Relative to Site Locations.

Location	Carcasses	Feather Spot	Total	Percent Feather Spot*
Tower Area	74	58	132	43.9%
Heliostat Area	104	76	180	42.2%
Unit Fence	9	16	25	64%
Other Project Lands	3	0	3	0%
Total	190	150	340	44.1%

*NA = Not applicable

Table 13c. Percent Composition Feather Spots to Carcasses Relative to Cause.

Cause	Carcasses	Feather Spots	Total Detections	Percent Feather Spot*
Collision	34	5	39	12.8%
Singed	53	33	86	38.4%
Other	2	0	2	0%
Unknown	101	112	213	52.6%
Total	190	150	340	44.1%

*Total percent feather spot is total feather spots divided by total detections.

Section 5.0 Fatality Estimation

This section utilizes the detection data as described in Section 4 to develop an overall fatality estimate in accordance with the Plan. The total estimate for the entire facility is presented separately for fatalities with evidence of singeing or collision effects, or for detections in the ACC buildings, and fatalities of unknown cause. Following presentation of the total fatality estimates, estimates are provided separately for the tower area, heliostat area, and fenceline.

5.1 Estimating Model Parameters

5.1.1 Carcass persistence Trials

As described in Section 2 above, carcass persistence data from 87 trials performed during the first year of monitoring (29 October 2013 – 20 October 2014) were used to model carcass persistence time. These trials included 30 large bird carcasses and 57 small bird carcasses. Carcasses were placed at the power block, in the inner HD heliostats and inner and outer heliostat segments, along the fenceline, under the collector line, and on offsite transects. A camera was placed at each carcass to record the time of scavenging and the scavenging species. Scavenger species included common ravens (N=22), desert kit fox (*Vulpes macrotis*; N=15), white-tailed antelope squirrels (*Ammospermophilus leucurus*; N=11), greater roadrunner (*Geococcyx californianus*; N=1), turkey vulture (N=1), and an unidentified canid (N=1). For the remaining 27 scavenged carcasses (six carcasses were not scavenged), the scavenger species was not captured on camera. Carcass persistence ranged from less than one day, in the case of 15 carcasses (one large and 14 small), to a full six-week trial period in the case of the 32 carcasses (25 large and seven small) whose remains persisted throughout the trial (Figures 21 and 22).

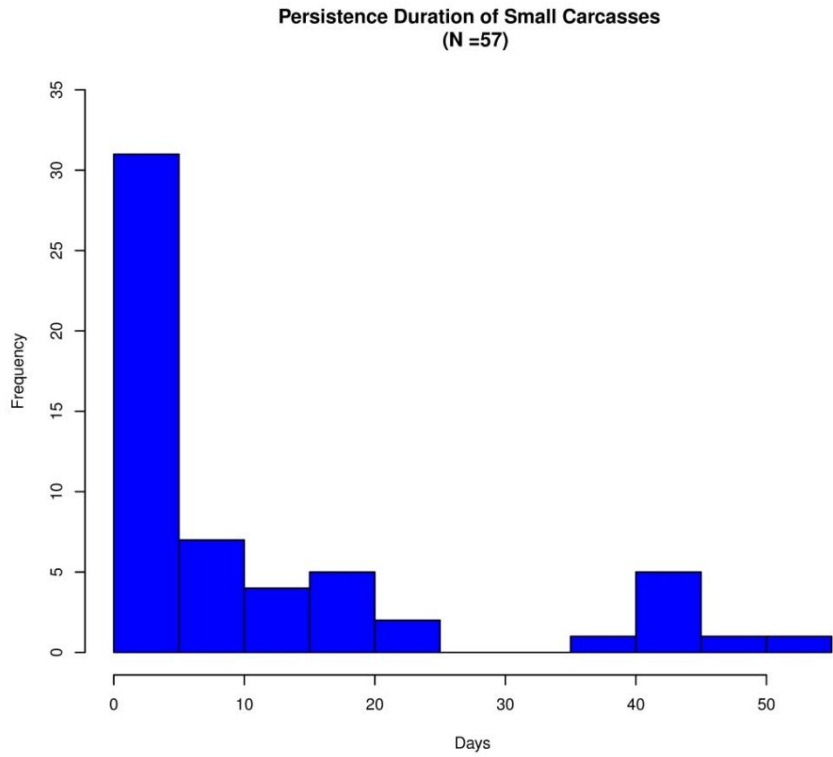


Figure 21. Persistence Durations for Small Carcasses Placed for Carcass Persistence Trials (N = 57).

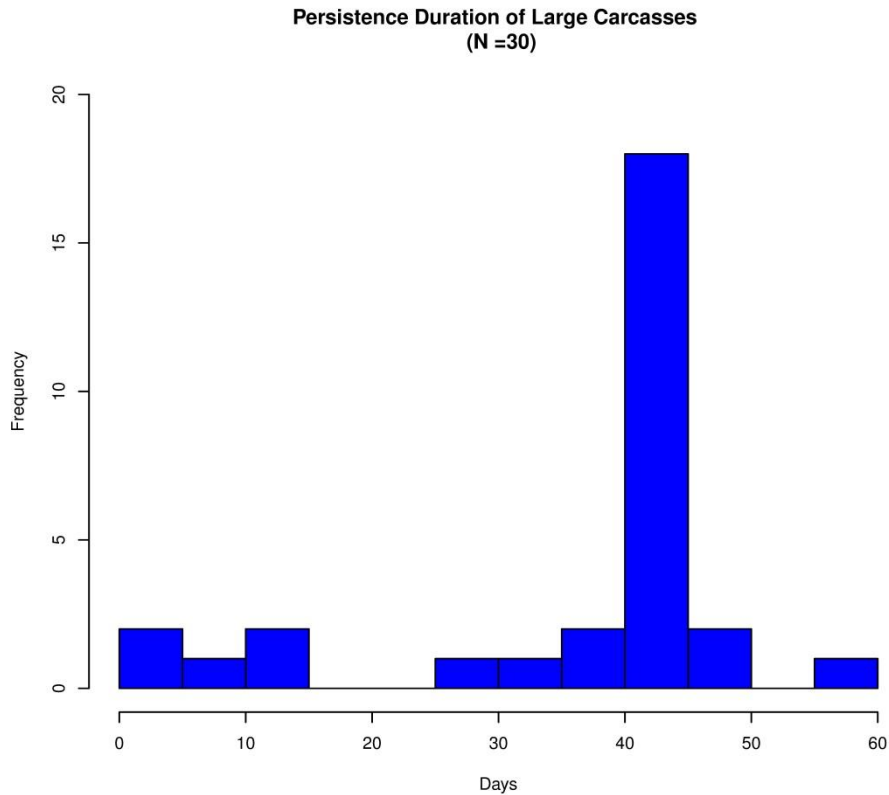


Figure 22. Persistence Durations for Large Carcasses Placed for Carcass Persistence Trials (N = 30).

5.1.2 Model Selection for Carcass Persistence Distribution

Based on the carcass persistence data from the first year of study, 16 survival models were compared for relative quality using the corrected Akaike information criterion (AICc) score (Akaike 1973), as suggested in Huso (2010). AICc provides a relative measure of model fit and parsimony among a selection of candidate models. Carcass size is a potentially important variable, as larger carcasses tend to persist longer and may be more likely to leave feather spots which persist for long durations, whereas smaller carcasses may be more likely to be completely removed. Season was also considered as a possible covariate due to variation in scavenging pressure and environmental conditions over the course of the year.

The model with lowest AICc is typically chosen as the “best” model relative to other models tested; however, any model within two AICc point of the best model is considered strongly supported (Burnham and Anderson 2004). The loglogistic, lognormal, and Weibull models that included size and season had $\Delta AICc$ values ≤ 2 (Table 14). Ultimately, the loglogistic model was chosen. The loglogistic model with size and season for covariates predicted that during the winter, 43.0% of small carcasses persisted for a standard 21 day search interval; the model predicted that 96.2% of large carcasses persisted for a standard 21 day search interval.

Table 14. AICc Values for Carcass persistence Models

Covariates	Distribution	AICc	Δ AICc
Size + Season	loglogistic	384.0	0.0
Size + Season	lognormal	384.5	0.4
Size + Season	weibull	386.0	2.0
Size	loglogistic	387.9	3.9
Size	lognormal	387.9	3.9
Size * Season	loglogistic	390.0	6.0
Size	weibull	391.1	7.1
Size * Season	lognormal	391.2	7.2
Size * Season	weibull	392.2	8.2
Size + Season	exponential	413.5	29.5
Size * Season	exponential	418.9	34.9
Size	exponential	428.1	44.1
Season	lognormal	433.4	49.4
Season	loglogistic	435.6	51.6
Season	weibull	441.5	57.5
Season	exponential	499.9	115.9

5.1.3 Searcher Efficiency Trials

Human Searcher Efficiency Trials. During the 2014 – 2015 winter season, a total of 25 searcher efficiency trials (eight small birds, eight large birds, and nine feather spots) were placed. Trials were placed in locations with various vegetation heights and with a range of contrast between the soil and vegetation to represent the various conditions under which searches occur. Carcasses were placed in most areas where searches occurred (tower area, heliostat area, and fenceline). One of the small carcasses disappeared (e.g., it may have been scavenged) before the searcher efficiency trial, leaving a sample size of seven small carcasses, eight large carcasses, and nine feather spots included in the trials.

An additional 144 searcher efficiency trials from the first year of study were used in the analysis for this report. Supplementary data were used as 1) there were relatively few searcher efficiency trials conducted during the 2014 – 2015 winter season, and 2) season was not found to be an influential covariate in searcher efficiency models based on the first year of data.

It has been recognized that a personnel change occurred beginning with the surveys on 3 March 2015, and new personnel's probability to detect a carcass might not be reflected by prior searcher efficiency trials. Given that there are no data to evaluate the new staff's searcher efficiency in the few days that surveys were conducted in the winter 2014 – 2015 season, searcher efficiency data from original survey staff have been applied to the carcasses found by new field personnel. The bias associated with this choice is likely to be relatively minor given that approximately 93% of the 2014 – 2015 winter season was surveyed by original personnel, and a total of only four detections were made by new personnel on standard fatality searches during the 2014 – 2015 winter season.

Human searcher efficiency rates were generally higher on in the unvegetated areas in the tower area. In unvegetated areas, human searcher efficiency was 72% for small birds, 73% for large birds, and 63% for

feather spots. In the vegetated areas in the heliostat areas, along fenceline, along the collector line, and offsite transects, human searcher efficiency was 41% for small birds, 66% for large birds, and 34% for feather spots.

Canine Searcher Efficiency Trials. During the 2014 – 2015 winter season, 27 large birds, 31 small birds, and 195 feather spots were placed in locations in the heliostat field with various vegetation heights and with a range of contrast between the soil and vegetation to represent the various conditions under which dog searches occur. As with human searcher efficiency trials, detection dog searcher efficiency trials conducted in the summer and fall season were also analyzed given the likelihood that season is not an important predictor of detection probability. A total of 257 trials were added to the data set, including 236 feather spots, 4 large birds, and 17 small birds.

Table 15. Covariates, AICc Values, and Δ AICc values for Searcher Efficiency Models of Carcasses. Data consist of all human searcher efficiency trials for carcasses from the initiation of trials through November 03, 2014.

Covariates	AICc	Δ AICc
Size + Project Area	224.56	0
Size + Project area + Season	225.43	0.86
Project Area	227.83	3.27
Size	231.21	6.65
Size + Season	231.69	7.13
Project area + Season	233.37	8.81
Null	234.5405	9.98
Season	239.4769	14.91

Table 16. Covariates, AICc Values, and Δ AICc values for Searcher Efficiency Models of Carcasses. Data consist of all detection dog searcher efficiency trials for carcasses from the initiation of dog trials through February 12, 2015.

Covariates	AICc	Δ AICc
Null	672.31	0
Size	673.32	1.02
Season	674.04	1.73
Size + Season	675.44	3.13

The best model for human searcher efficiency included Project area and carcass size with an AICc value 0.86 points lower than the second best model that included size, location, and season (Table 15). Thus, the most supported searcher efficiency model includes a combination of Project area (unvegetated tower area and vegetated heliostat area) and carcass size, which further suggests that season is not an important covariate in detection probability modeling. As a result, human searcher efficiency rates were pooled for all seasons (using all carcass and feather spot trials conducted from 10 February 2014 through the end of the winter 2014 – 2015 season) but were separated by Project area (tower area versus heliostat area) and carcass size. Table 17 provides the human searcher efficiency rates.

The best model for detection dog searcher efficiency did not include any covariates; however, given that all other estimates are made using size as a covariate, and the next best model (1.02 AICc points greater) included size alone, the model with size alone as a covariate was chosen (Table 16). Table 18 provides the detection dog searcher efficiency rates used in the winter 2014-2105 fatality estimates.

Table 17. Human Searcher Efficiency Values for Size and Project Area Categories.

Size	Location	Found	Available	Placed	Predicted Searcher Efficiency (90% CI)
Feather spot	Tower area	12	19	19	0.61 (0.47-0.74)
	(Unvegetated)				
Large bird	Tower area	11	15	15	0.82 (0.70-0.91)
	(Unvegetated)				
Small bird	Tower area	13	18	18	0.68 (0.55-0.80)
	(Unvegetated)				
Feather spot	Heliostat area	16	47	47	0.35 (0.25-0.47)
	(Vegetated)				
Large bird	Heliostat area	21	32	37	0.62 (0.48-0.74)
	(Vegetated)				
Small bird	Heliostat area	15	37	43	0.43 (0.30-0.54)

Table 18. Canine Searcher Efficiency Values for Size Categories.

Size	Found	Available	Placed	Predicted Searcher Efficiency (90% CI)
Feather spot	269	431	431	0.62 (0.59-0.66)
Large bird	24	31	31	0.77 (0.65-0.87)
Small bird	30	48	48	0.63 (0.52-0.75)

5.2 Fatality Estimates of Known Causes for 2014 – 2015 Winter Monitoring

Fatality estimates were calculated separately for the tower area (power block and inner HD heliostats), heliostat area, and fenceline (unit perimeter and CLA fences). Note that estimates are not provided for factor combinations with five or fewer detections; thus, marginal totals (e.g. total singed, total known cause in the heliostat area, etc.) for the tables below may not reflect the sum of estimates within a given row or column (and are generally higher).

5.3.1 Total Fatality Estimates for Known Causes

There were 125 bird detections where the cause of death or injury could be determined and were facility related (2 detections due to predation were excluded), of which 102 were included in the fatality estimate model (Tables 19a and 19b); of these 102 detections, 14 were from the ACC that were added unadjusted to the estimator output, to produce the total fatality estimate of known cause (Table 20, 21). There were 22 detections showing evidence of singeing or collision outside the ACC buildings that were not included in the fatality estimates; six were excluded because they were outside the standardized survey area and 17 were excluded because they were determined to be older than the search interval.

Table 19a. Number of Bird Detections Based on Known Causes in Each Project Element Included or Excluded from Fatality Estimates, by Cause.

Location	Included			Excluded			Total
	Collision	Flux	Other (Predation)	Collision	Flux	Other (Predation)	
Tower Area	6	66	0	0	13	0	85
Heliostat Area	25	4	0	8	1	1	39
Fenceline	0	1	0	0	0	0	1
Other Project Lands	0	0	0	0	1	1	2
Total	31	71	0	8	15	2	127

Table 19b. Number of Bird Detections Based on Known Causes in Each Project Element Included or Excluded from Fatality Estimates, by Carcass Size.

Location	Included			Excluded			Total
	Large Birds	Small Birds	Raptors*	Large Birds	Small Birds	Raptors*	
Tower Area	3	69	0	0	13	0	85
Heliostat Area	5	24	1	2	8	1	41
Unit Fence	1	0	0	0	0	0	1
Other Project Lands	0	0	0	1	1	0	2
Total	9	93	0	3	22	0	127

* All raptors are considered "Large Birds"

During the period 21 October 2014 – 15 March 2015 (229 days of monitoring), there were an estimated 686 fatalities (90% confidence interval 512-1016) based on detections from known causes (i.e., singing, collision, or other (predation) (Table 20). Of these, 476 fatalities (69.4%) were estimated for the 2,991-acre heliostat area and 200 fatalities (30.4%) were estimated for the 154-acre tower area; only one injured common raven was detected at a unit fence, and therefore, an estimate is not provided for the fenceline.

Table 20. 2014 – 2015 Winter Season Avian Fatality Estimates by Cause and Project Element (with Lower and Upper 90% Confidence Intervals) Based on Detections of Known Causes Included in the Model.

Location	Collision	Singed	Other (Predation)	Total Known Cause
Tower Area	18 (14-27)	191 (146-293)	0	209 (159-320)
Heliostat Area	422 (268-697)	N ≤ 5	0	476 (302-772)
Fenceline	0	N ≤ 5	0	N ≤ 5
Total	440 (285-712)	246 (174-373)	0	686 (512-1016)

* N ≤ 5 indicates that fewer than 5 detections and no fatality estimate is provided

Table 21. 2014 – 2015 Winter Season Avian Fatality Estimates by Carcass Size and Project Element (with Lower and Upper 90% Confidence Intervals) Based on Detections of Known Causes Included in the Model.

Location	Large Birds	Small Birds	Raptors	Total
Tower Area	N ≤ 5	205 (155-315)	0	209 (159-320)
Heliostat Area	N ≤ 5	438 (269-728)	N ≤ 5	476 (302-772)
Fenceline	N ≤ 5	0	0	N ≤ 5
Total	43 (17-77)	643 (466-964)	N ≤ 5	686 (512-1016)

* N ≤ 5 indicates that fewer than 5 detections and no fatality estimate is provided

5.3.2 Fatality Estimate for Tower Area

Tables 20 and 21 present the fatality estimates for known causes within the tower area, broken down by cause or carcass size, respectively. A subset of the incidental detections in the power block were included within the Tower Area total estimate, due to the assumption of a daily search interval; those incidental detections in the power block which were determined to be older than 24 hours were not included in the fatality estimator. Estimates from the tower area should be interpreted with caution due to the inclusion of numerous incidental discoveries in the power block.

5.3.4 Fatality Estimate for Fenceline

The perimeter fencelines for all units, as well as the CIA fence, were surveyed throughout the full 2014 – 2015 winter period. A single detection was found along fences with direct evidence of singeing, and included in the fatality estimator. As only one detection with known cause was found in this area, an adjusted estimate is not provided.

5.3.5 Fatality Estimate for Unit 3 Collector Line

The Unit 3 collector line was searched for the full fall period. No detections were made underneath the Unit 3 collector line during the 2014 – 2015 winter monitoring period.

5.4 Fatality Estimates from Unknown Causes

Per Section 3.1 of the Plan, fatality estimates are also to be provided based on detections of birds that were injured or that died of unknown causes. Because no observable evidence of known causes (i.e., singeing, collision, entrapment, or predation) was noted in the case of these unknown detections, they cannot be clearly included in an estimate attributed to a specific cause. The methods for determining fatality estimates for these unknown detections are the same as those described in Section 5.2 for detections with direct evidence of the cause of the fatality (i.e., singeing, collision, or other).

There were 213 detections where the cause of death could not be determined, of which 134 were included in the fatality estimator (Tables 22a and 22b). The 80 unknown detections that were excluded from the estimator included 16 detections outside of survey areas, and 60 detections determined to be older than the search interval. Of the four remaining excluded detections, three were discovered incidentally on survey plots and left in place, but never discovered during a scheduled search; one

excluded detection was discovered incidentally on a search plot after a survey of that search plot had been completed.

Table 22a Number of Detections from Unknown Causes in Each Project Element, and Number Included in Fatality Estimates, by Cause.

Location	Included	Excluded	Total
Tower Area	37	10	47
Heliostat Area	77	64	141
Fenceline	19	5	24
Other Project Lands	0	1	1
Total	133	80	213

Table 22b. Number of Detections from Unknown Causes in Each Project Element, and Number Included in Fatality Estimates, by Carcass Size.

Location	Included			Excluded			Total
	Large Birds	Small Birds	Raptors*	Large Birds	Small Birds	Raptors*	
Tower Area	5	32	0	5	5	0	47
Heliostat Area	13	64	0	24	40	0	141
Fenceline	16	3	0	4	1	0	24
Other Project Lands	0	0	0	0	1	0	1
Total	34	99	0	33	47	0	213

* All raptors are considered large birds

5.4.1 Total Fatality Estimates from Unknown Causes

During the period of 21 October 2014 – 15 March 2015, the total estimate of fatalities from unknown cause was 1372 (90% confidence interval 1024-1933; Table 23). A total of 131 (90% confidence interval 96-205) were in the tower area, 1176 (90% confidence interval estimates 829-1718) in the heliostat area, and 65 along the fenceline (90% confidence interval estimates 51-91). Of the estimated unknown cause fatalities, small birds accounted for 88.6% of the estimated fatalities (Table 24).

Table 23. Site-Wide Fatality Estimates from Unknown Causes by Location, 21 October 2014 – 15 March.

Project Area	Estimate (90% CI)
Tower Area	131 (96-205)
Heliostat Area	1176 (829-1718)
Fenceline	65 (51-91)
Total	1372 (1024-1933)

Table 24. Site-Wide Fatality Estimates from Unknown Causes by Size and Location, 21 October 2014 – 15 March.

Location	Large Birds	Small Birds	Raptors	Total
Tower Area	N ≤ 5	123 (89-196)	0	131 (96-205)
Heliostat Area	102 (58-162)	1074 (728-1606)	0	1176 (829-1718)
Unit Fence	46 (36-63)	N ≤ 5	0	65 (51-91)
Total	156 (111-227)	1216 (870-1753)	0	1372 (1024-1933)

* N ≤ 5 indicates that fewer than 5 detections and no fatality estimate is provided

5.5 Golden Eagle Data Summary

According to the Plan, data related to golden eagle territory occupancy and reproductive success is being tracked by other entities, and such data, to the extent obtainable, will be summarized and included in this report.

Data from the Stateline Solar Farm Project located approximately 2.5 miles from Ivanpah in San Bernardino County, California was reviewed and information from the Final Environmental Impact Statement (BLM 2013) is provided below.

Based on a territory radius of 5-miles, one territory located near the Umberci Mine (approximately three miles from Unit 3), and containing two potential nest sites, was found, and ground-based surveys in 2011 found one active, reproductive nest within the southwestern nest site near the Umberci Mine. Other potential nest sites located within the Keany Pass region (approximately four miles west of Ivanpah) were occupied in 2011 by red-tailed hawks, not by golden eagles.

The spring 2011 golden eagle point count surveys revealed a pair of golden eagles. The pair was observed exhibiting breeding aerial displays. An adult golden eagle was observed perched on and foraging in the vicinity of Metamorphic Hill (adjacent to the Unit 2 fence) on several occasions during the winter/spring of 2011. No golden eagles were observed during the summer 2011 golden eagle point count surveys, including the previously active Umberci Mine nest. The lack of observations during late summer may be a result of annual movement into higher elevations of the neighboring mountain ranges.

Additionally, an email request for data related to nearby golden eagle activity was sent to the BLM on May 14, 2015. The BLM has responded and stated that they have requested the data from a private company.

5.6 Regional Awareness Monitoring

According to the Plan, a communication protocol was implemented to monitor local veterinarians, game wardens, and wildlife rehabilitation facilities during facility operations to determine if significant new incidences of avian injury or fatality are reported to occur in the facility vicinity and region.

The Animal Kingdom Veterinary Hospital is located in the Las Vegas area about 35 miles northeast of Ivanpah. This clinic also serves as a wildlife rehabilitation facility, so it was contacted and interviewed as a part of the protocol. Likewise, the local district game warden for the BLM and a field supervisor for CDFW were contacted to determine if they had noticed an increase in avian fatalities in the area or if they had noticed any singed or scorched injured or dead birds. Further, a designated biologist and veterinarian, Dr. Craig Himmelwright, working in the Ivanpah Valley was also interviewed for the same purpose. The following is a summary of results of interviewing these contacts for the purpose of the Regional Awareness Monitoring effort.

Joanne Stefanatos representing Animal Kingdom Veterinary Hospital; Ryan Regnell representing the BLM; Craig Himmelwright, D.V.M. in Ivanpah Valley representing the Designated Biologists for the Project; and Magdalena Rodriguez from CDFW were contacted on 21 November 2014. The contact date occurred when the number of detections reported per day had begun to decline. Each reported that they were not aware of any increase in avian fatalities for the region or any birds, injured or dead, which had been found with singed or scorched feathers since monitoring according to the Plan began at Ivanpah in early winter 2013-2014.

Section 6.0 Discussion

The 2014 – 2015 winter season represented the continuation of standardized monitoring of avian and bat detections and avian use of the Ivanpah site per the Avian & Bat Monitoring and Management Plan..

6.1 Temporal Patterns in Detections

The number of detections reported at the tower area was trending down through November but peaked on 2 December 2014 followed by no singed detections found in the tower area through 5 January 2015. Rain, snow, or fog did not occur during the month of November or early December in the vicinity of the Project area suggesting that any lingering migrant small passerines were not grounded by weather. Thus, the peak in the number of detections on 2 December could not be associated with bird activity at the Project or weather events in the region.

Moderate migration movements in the Desert Southwest were reported by the BirdCast analysis through 7 November 2014. BirdCast did not report migration analysis after 14 November 2014 suggesting fall migration had ended in the West region by this date. Thus, it can be assumed that some migrant birds were passing through the Project area through early to mid-November. The number of detections reported per day varied from 21 October through 2 December 2014 then showed a considerable decline suggesting migration might have been protracted in the Ivanpah region assuming higher detections are the result of higher numbers of migrant birds in the area. However, the 21-day search interval results in an accumulation of carcasses at the tower area, and peaks in detections are associated with tower searches. Thus, a tower area search during the 2014 – 2015 winter season is a look back over approximately 21 days, so it would be expect to see lag effects in detections per day compared to migrant small passerine activity. In other words, it would be expected that singed detections of migrant birds would be found after migration has slowed regionally due to the search schedule of the tower area.

6.2 Spatial Patterns Detections and Fatality Estimates

The distribution of known cause detections varied by facility area. Of collision detections, 84% were located in the heliostat area consistent with the risk of the heliostats to birds. Of singed detections, 92% occurred in the tower area indicating that singed birds rarely transition outside of the tower area. Five of the seven singed detections found outside of the tower area were feather spots or partial carcasses that could have been moved away from the tower by scavengers. The remaining two singed detections were of alive common raven, which were able to move away from the tower area.

Unknown cause detections accounted for approximately 62% of all detections during the 2014 – 2015 winter season, and the distribution of the unknown cause detections varied by facility type with 88% occurring outside of the tower area, suggesting unknown cause detections were not associated with singed birds as feather spots were closely examined for sings of singeing. Of the unknown cause detections, 52.6% were feather spots and 40.8% were partial carcasses that showed signs of scavenging. Determining a cause of mortality from a feather spot or partial carcass is challenging because sources of mortality such as collision or predation would rarely leave visible evidence on the feathers as would flux

effects. Thus, feather spots with an unknown cause of mortality could be encountered anywhere birds occur, and an unknown cause of mortality is not unique to the Project. Further, the large proportion of feather spots among the detections for the Project as a whole may inflate the fatality estimate when unknown cause detections are included based on the potential for multiple feather spots resulting from one fatality, feather spots resulting from predation not associated with the facility, or other causes.

Section 7.0 Framework for Management and Risk Response

According to Section 5.3 of the Plan, 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.”

Only limited conclusions can be drawn from the 2014 – 2015 winter season fatality data owing to the low numbers of detections within “a particular species or group of species”; however, the results indicate that the potential migratory bird mortality by species or groups of species from this project would be categorized as low. A more complete analysis will be conducted for the annual report. Approximately 73% of the detections were small passerines, and in general small passerines are short-lived, have high reproductive output, and their population growth rates are less sensitive to changes in survival rates than to changes in reproductive rates (Stahl and Oli 2006). Therefore, mortality of most small passerine species is expected to have negligible effects on population dynamics.

None of the 16 species represented by more than three detections is particularly rare locally, regionally, or nationally. Rather, all 16 species are relatively abundant and widespread. Thus, the magnitude of detections of these species at Ivanpah during the 2014 fall season does not rise above the “low” category. Special-status species recorded as detections were 3 yellow warblers (California species of special concern) and three loggerhead shrikes (California species of special concern). Loggerhead shrikes breed in the vicinity of the Project, whereas yellow warbler is a transient that breeds elsewhere.

Yellow warblers are one of the most abundant warblers in North America and occur as both migrants and summer residents in California (Shuford and Gardali 2008). Yellow warblers occur in the Mojave Desert as common migrants, but they typically do not breed there. An estimated 600,000 yellow warblers occur within California and an estimated 34,000,000 occur in the United States (Partners in Flight Science Committee 2013). The 3 yellow warblers detected represented a very small proportion of these populations; thus, the estimated yellow warbler fatalities during the 2014 – 2015 winter season not rise above the “low” category, as loss of this magnitude would have a minimal effect on populations at all geographic scales (local, regional, national or global).

The loggerhead shrike is common in desert habitats of California, despite its declines in other regions. The southeastern deserts represent one of the areas of highest abundance in the state (Humble 2008),

and Breeding Bird Survey data indicate no significant population trends, or perhaps even a slight increase, in the Mojave Desert since the mid-1960s (Sauer et al. 2014). The North American population of this species is estimated at 2,900,000 birds (<http://birds.audubon.org/species/logshr>). The three detections recorded on the site, all of unknown cause, indicates a low number of impacted individuals that would not substantially affect local, regional, or national populations of the species; thus the 2-14 – 2015 winter season estimated fatalities do not rise above the “low” category.

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Appendix A. Avian Observations Reported in the 2014 Fall and 2014 – 2015 Winter Report

Birds detected during small bird avian use surveys

Species	Unit 2	Unit 3	Lower Bajada	Total
black-throated sparrow	0	0	37	37
Sagebrush sparrow	0	0	13	13
horned lark	0	10	0	10
Bewick's wren	0	0	8	8
cactus wren	0	0	7	7
house finch	1	0	6	7
yellow-rumped warbler	0	1	4	5
unidentified sparrow	0	1	3	4
verdin	0	0	3	3
black-tailed gnatcatcher	0	0	2	2
phainopepla	0	0	2	2
white-crowned sparrow	0	1	1	2
crissal thrasher	0	0	1	1
northern harrier	0	0	1	1
rock wren	0	0	1	1
unidentified passerine	0	1	0	1
western meadowlark	1	0	0	1
Total	2	14	89	105

Birds Detected During Raptor and Large Bird Surveys

Species	1	2	3	4	5	6	7	8	Total
American kestrel	1	0	0	0	0	0	0	0	1
common raven	4	0	3	0	1	2	1	0	11
red-tailed hawk	1	0	0	0	1	0	0	0	2
Total	6	0	3	0	2	2	1	0	14

Appendix B. 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	UTM Coordinates	Nearest Project Feature	SPUT Revisions
2014_663_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	10/21/2014	10/21/2014	Broken up	2 weeks	partial carcass + feather spot: leg and foot, part of body; articulated leg and lower pelvis with feathers; patch of body feathers with flesh; ~50+ feathers; singed body feathers	Scorched or singed	NA	3	637510, 3937751	heliostat	NA
2014_664_ISEGS	Lesser Nighthawk	LENI	Carcass Survey	10/21/2014	10/21/2014	Broken up	2 weeks	Broken up: partial carcass + feather spot, primaries attached to bone; 1 retrice, 8 remiges	Unknown	NA	3	637586, 3937841	heliostat	NA
2014_665_ISEGS	Horned Lark	HOLA	Carcass Survey	10/21/2014	10/21/2014	Broken up	3-6 days	Feather spot + partial carcass: leg and foot, flight feathers, 2 partial wings held together by small amount of flesh; 11 retrices, ~20 contour feathers	Collision with solar panel/heliostat	NA	1	637670, 3937858	heliostat	NA
2014_666_ISEGS	Unknown Sparrow	UNKN	Carcass Survey	10/21/2014	10/21/2014	Feather spot Dead, semi-fresh (eyes desiccated, rigor mortis)	7 days	10+ contour, 2 tertials, 2 retrices, 1 secondary, 1 primary; no evidence of singeing (checked under scope).	Unknown	NA	3	637684, 3937930	heliostat	NA
2014_667_ISEGS	Crissal Thrasher	CRTN	Carcass Survey	10/21/2014	10/21/2014	Feather spot	3-6 days	Whole carcass: small maggots in carcass; in rigor; eyes sunken but present. No evidence of singeing (checked under scope).	Collision with solar panel/heliostat	NA	3	637044, 3938013	heliostat	NA
2014_668_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	10/21/2014	10/21/2014	Feather spot	7 days	2 retrices; 2 secondaries; 1 primary, 4 contour feathers. Singed primary, light curling on secondaries, slight curling to 1 retrice	Scorched or singed	NA	3	637580, 3938042	heliostat	NA
2014_669_ISEGS	Gambel's Quail	GAQU	Carcass Survey	10/21/2014	10/21/2014	Feather spot	7 days	100+ body, 13 flight feathers; large clump of breast feathers; no evidence of singeing (checked under scope)	Unknown	NA	3	637289, 3938090	heliostat	NA
2014_670_ISEGS	Unkown Passerine	UNKN	Carcass Survey	10/21/2014	10/21/2014	Feather spot	3-6 days	Partial right wing (feathers intact); 7 loose wing feathers, 3 body feathers; no evidence of singeing (checked under scope).	Unknown	NA	3	637357, 3937987	fire hydrant	NA
2014_671_ISEGS	Mourning Dove	MODO	Carcass Survey	10/21/2014	10/21/2014	Mummified	1 month +	Whole carcass minus flesh; desiccated, skin dried onto carcass; missing many body feathers. No evidence of singeing (checked under scope).	Unknown	NA	3	637819, 3938456	heliostat	NA
2014_672_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	10/21/2014	10/21/2014	Feather spot Dead, semi-fresh (eyes desiccated, rigor mortis)	3-6 days	5 retrices, 7 loose remiges; partial right wing with 9 primaries and secondaries connected by tissue; one curled retrice; light singeing on 2-3 other feathers; flux effect grade unknown	Scorched or singed	NA	3	637470, 3938021	ACC bldg	NA
2014_673_ISEGS	Cedar Waxwing	CEDW	Carcass Survey	10/21/2014	10/21/2014	Feather spot	7 days	Whole carcass: head detached; singed on both wings; tail missing; most of dorsal surface singed; chin and black mask singed; flux effect grade 2 and 3.	Scorched or singed	NA	3	637440, 3937930	Project bldg	Corrected Spits code (from CEWA); B. Sousa; 11/12/14
2014_674_ISEGS	Mourning Dove	MODO	Carcass Survey	10/21/2014	10/21/2014	Feather spot	3 weeks	5 flight; 30 + body feathers; no evidence of singeing (checked under scope)	Collision with solar panel/heliostat	NA	3	637278, 3938003	heliostat	NA
2014_675_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	10/21/2014	10/21/2014	Broken up Dead, semi-fresh (eyes desiccated, rigor mortis)	2 days	Feather spot + partial carcass: whole left wing with bones and body feathers, retrices; retrices singed, light singeing on right remiges; singed undertail coverts; flux effect grade unknown	Scorched or singed	NA	3	637257, 3937801	heliostat	NA
2014_676_ISEGS	Unkown passerine or swift	UNKN	Incidental	10/21/2014	10/21/2014	Dead, fresh (eyes moist)	3-6 days	Whole carcass: entire carcass burnt, all flight feathers burned down to pins. Flux effect grade 2 and 3.	Scorched or singed	NA	1	640387, 3933514	ACC power station	NA
2014_677_ISEGS	Unknown hummingbird	UNHU	Incidental	10/21/2014	10/21/2014	Mummified	8-24 hours	Whole carcass burnt. Flux effect grade 2 and 3. Neck pliable, rigor not set in.	Scorched or singed	NA	1	640384, 3933501	chemical skid	NA
2014_678_ISEGS	Unknown Swallow	UNKN	Incidental	10/21/2014	10/21/2014	Mummified	2 weeks	Whole carcass: all flight singed, back, rump, and crown singed; flux effect grade 2 and 3.	Scorched or singed	NA	1	640396, 3933504	ACC support beam	NA
2014_679_ISEGS	Western Meadowlark	WEME	Carcass Survey	10/21/2014	10/21/2014	Broken up	2 days	Feather spot + partial carcass: both wings, 2 legs/feet, seven clumps of skin with feathers attached; 2 tail and ~25 body feathers; no evidence of singeing (checked under scope).	Unknown	NA	3	637345, 3937814	heliostat	NA
2014_680_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	10/21/2014	10/21/2014	Feather spot	3-6 days	20+ flight feathers, 50+ body feathers; feathers singed. Flux effect grade unknown.	Scorched or singed	NA	3	637400, 3937807	heliostat	NA
2014_681_ISEGS	Unknown passerine	UNKN	Carcass Survey	10/21/2014	10/21/2014	Feather spot	3-6 days	19 flight feathers; 30+ body feathers; 4 flight feathers bent/curled; flux effect grade unknown	Scorched or singed	NA	3	637376, 3937708	heliostat	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	UTM Coordinates	Nearest Project Feature	SPUT Revisions
2014_663_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	10/21/2014	10/21/2014	Broken up	2 weeks	partial carcass + feather spot: leg and foot, part of body; articulated leg and lower pelvis with feathers; patch of body feathers with flesh; ~50+ feathers; singed body feathers	Scorched or singed	NA	3	637510, 3937751	heliostat	NA
2014_664_ISEGS	Lesser Nighthawk	LENI	Carcass Survey	10/21/2014	10/21/2014	Broken up	2 weeks	Broken up: partial carcass + feather spot, primaries attached to bone; 1 retrice, 8 remiges	Unknown	NA	3	637586, 3937841	heliostat	NA
2014_665_ISEGS	Horned Lark	HOLA	Carcass Survey	10/21/2014	10/21/2014	Broken up	3-6 days	Feather spot + partial carcass: leg and foot, flight feathers, 2 partial wings held together by small amount of flesh; 11 retrices, ~20 contour feathers	Collision with solar panel/heliostat	NA	1	637670, 3937858	heliostat	NA
2014_666_ISEGS	Unknown Sparrow	UNKN	Carcass Survey	10/21/2014	10/21/2014	Feather spot	7 days	10+ contour, 2 tertials, 2 retrices, 1 secondary, 1 primary; no evidence of singeing (checked under scope).	Unknown	NA	3	637684, 3937930	heliostat	NA
2014_682_ISEGS	House Finch	HOFI	Carcass Survey	10/21/2014	10/21/2014	Feather spot	8-24 hours	20+ flight feathers; partial wing (4 primaries and coverts attached by flesh); 10+ contour feathers; all flight feathers singed, several contour feathers singed; flux effect grade unknown.	Scorched or singed	NA	3	637402, 3937765	heliostat	NA
2014_683_ISEGS	Wilson's Snipe	WISN	Carcass Survey	10/21/2014	10/21/2014	Broken up	3-6 days	Partial carcass + feather spot: wings, retrices, body feathers, bill, foot, part of head; no evidence of singeing (checked under scope).	Collision with solar panel/heliostat	NA	3	637377, 3937709	heliostat	NA
2014_684_ISEGS	Loggerhead Shrike	LOSH	Carcass Survey	10/22/2014	10/22/2014	Broken up	1 month +	Partial R wing with bones, primaries and secondaries. No evidence of singeing (checked under scope).	Unknown	NA	3	637240, 3938625	Heliostat	NA
2014_685_ISEGS	Ladder-backed Woodpecker	LBWO	Carcass Survey	10/22/2014	10/22/2014	Mummified	1 month +	whole carcass; no obvious external injuries; smudge on mirror; no evidence of singeing (checked under scope)	Collision with solar panel/heliostat	NA	3	637507, 3938685	Heliostat	NA
2014_686_ISEGS	Brown-headed cowbird	BHCO	Carcass Survey	10/22/2014	10/22/2014	Broken up	3 weeks	L wing with bones; pelvic girdle with feathers articulated to L leg. No evidence of singeing (checked under scope).	Unknown	NA	3	637591, 3938448	heliostat	NA
2014_687_ISEGS	White-Crowned Sparrow	WCSP	Carcass Survey	10/22/2014	10/22/2014	Broken up	3-6 days	partial carcass + feather spot; partial wing, leg (no foot), 100+ body feathers, ~10 flight feathers	Unknown	NA	3	636573, 3938040	Heliostat	NA
2014_688_ISEGS	Unknown	UNKN	Carcass Survey	10/22/2014	10/22/2014	Feather spot	2 weeks	~50 body and 5 flight feathers; partial L wing - no bones; no evidence of singeing (checked under scope)	Unknown	NA	3	636606, 3938128	heliostat	NA
2014_689_ISEGS	Unknown	UNKN	Incidental	10/22/2014	10/22/2014	Mummified	1 month +	desiccated carcass; feathers matted, all flesh and soft tissue gone, Singed tail feather and flight feathers, rest of carcass too matted and decayed to determine singeing	Scorched or singed	NA	1	640370, 3933520	Other Machinery	NA
2014_690_ISEGS	Unknown Sparrow	UNKN	Carcass Survey	10/22/2014	10/22/2014	Feather spot	7 days	12 primaries, 2 secondaries, 20+ body feathers; no evidence of singeing (checked under scope).	Unknown	NA	3	636577, 3938125	heliostat	NA
2014_691_ISEGS	Unknown Sparrow	UNKN	Carcass Survey	10/22/2014	10/22/2014	Feather spot	2 weeks	30+ body, 2 retrices. No evidence of singeing (checked under scope).	Unknown	NA	3	636585, 3938241	heliostat	NA
2014_692_ISEGS	Savannah Sparrow	SAVS	Carcass Survey	10/23/2014	10/23/2014	Dead, fresh (eyes moist)	0-8 hours	Fresh whole carcass. Bill tip bent with white keratin. A few breast feathers loose. No evidence of singeing (checked under scope).	Collision with solar panel/heliostat	NA	3	636277, 3936893	heliostat	NA
2014_693_ISEGS	American Pipit	AMPI	Carcass Survey	10/23/2014	10/23/2014	Mummified	2 weeks	carcass desiccated, eyes gone, sockets clean, part of body eaten by insects, neck twisted on carcass. No evidence of singeing (checked under scope).	Collision with solar panel/heliostat	NA	3	638074, 3937386	heliostat	NA
2014_694_ISEGS	Unknown passerine	UNKN	Carcass Survey	10/23/2014	10/23/2014	Feather spot	3-6 days	30 + body feathers. No evidence of singeing (checked under scope).	Unknown	NA	3	637789, 3937867	heliostat	NA
2014_695_ISEGS	Mourning Dove	MODO	Carcass Survey	10/23/2014	10/23/2014	Broken up	3 weeks	Carcass with head and neck detached. Loose 10+ flight and 10+ body feathers near carcass. No evidence of singeing (checked under scope).	Collision with solar panel/heliostat	NA	3	636923, 3936948	heliostat	NA
2014_696_ISEGS	Savannah Sparrow	SAVS	Carcass Survey	10/23/2014	10/23/2014	Feather spot	3-6 days	~100 body, 8 flight feathers; leg and foot; partial left wing (0.1 m feather spot diameter). No evidence of singeing (checked under scope).	Unknown	NA	3	637217, 3937635	heliostat	NA
2014_697_ISEGS	White-Crowned Sparrow	WCSP	Carcass Survey	10/23/2014	10/23/2014	Broken up	7 days	Left wing attached to partial torso (desiccated) with 20 + body feathers under partial carcass. No evidence of singeing (checked under scope).	Unknown	NA	3	637117, 3937485	heliostat	NA
2014_698_ISEGS	Ruby-crowned	RCKI	Incidental	10/23/2014	10/23/2014	Dead, fresh (eyes moist)	8-24 hours	Whole carcass: singed on crown, wings and back. Flux effect grade 2 and 3.	Scorched or singed	NA	1	640330, 3933471	Control room bldg	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	UTM Coordinates	Nearest Project Feature	SPUT Revisions
2014_663_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	10/21/2014	10/21/2014	Broken up	2 weeks	partial carcass + feather spot: leg and foot, part of body; articulated leg and lower pelvis with feathers; patch of body feathers with flesh; ~50+ feathers; singed body feathers	Scorched or singed	NA	3	637510, 3937751	heliostat	NA
2014_664_ISEGS	Lesser Nighthawk	LENI	Carcass Survey	10/21/2014	10/21/2014	Broken up	2 weeks	Broken up: partial carcass + feather spot, primaries attached to bone; 1 retrice, 8 remiges	Unknown	NA	3	637586, 3937841	heliostat	NA
2014_665_ISEGS	Horned Lark	HOLA	Carcass Survey	10/21/2014	10/21/2014	Broken up	3-6 days	Feather spot + partial carcass: leg and foot, flight feathers, 2 partial wings held together by small amount of flesh; 11 retrices, ~20 contour feathers	Collision with solar panel/heliostat	NA	1	637670, 3937858	heliostat	NA
2014_666_ISEGS	Unknown Sparrow Kinglet	UNKN	Carcass Survey	10/21/2014	10/21/2014	Feather spot	7 days	10+ contour, 2 tertials, 2 retrices, 1 secondary, 1 primary; no evidence of singeing (checked under scope).	Unknown	NA	3	637684, 3937930	heliostat	NA
2014_699_ISEGS	Brewer's Blackbird	BRBL	Carcass Survey	10/24/2014	10/30/2014	Feather spot	3-6 days	~50 100+ body and 8 flight feathers; (feather spot diameter = 10 m); no evidence of singeing (checked under scope).	Collision with solar panel/heliostat	NA	2	639111, 3935203	heliostat	NA
2014_700_ISEGS	White-Crowned Sparrow	WCSP	Incidental	10/24/2014	10/24/2014	Feather spot	3-6 days	~80 body feathers; 9 tail feathers; (feather spot diameter = 1 m); no evidence of singeing (checked under scope).	Unknown	NA	3	636647, 3937511	heliostat	NA
2014_701_ISEGS	Yellow-rumped Warbler	YRWA	Incidental	10/24/2014	10/25/2014	Dead, semi-fresh (eyes desiccated, rigor mortis)	2 days	whole carcass; entire dorsal surface and all wing and tail feathers singed; flanks and axillaries singed.	Scorched or singed	NA	1	640365, 3933468	Solar Concentrating Tower	NA
2014_702_ISEGS	Yellow-rumped Warbler	YRWA	Incidental	10/24/2014	10/25/2014	Dead, semi-fresh (eyes desiccated, rigor mortis)	2 days	whole carcass; all flight feathers, back, rump, head, R side, breast, throat, and R flank singed.	Scorched or singed	NA	1	640365, 3933467	Other Machinery	NA
2014_703_ISEGS	Pine Siskin	PISI	Incidental	10/24/2014	10/25/2014	Dead, semi-fresh (eyes desiccated, rigor mortis)	3-6 days	whole carcass; nape, overtail coverts, all retrices, and both sides singed	Scorched or singed	NA	3	637406, 3937874	Project Building	NA
2014_704_ISEGS	Unknown	UNKN	Incidental	10/24/2014	10/25/2014	Dead, semi-fresh (eyes desiccated, rigor mortis)	2 days	whole carcass; entire body singed	Scorched or singed	NA	3	637400, 3937958	Project Building	NA
2014_705_ISEGS	Anna's Hummingbird	ANHU	Carcass Survey	10/27/2014	10/27/2014	Dead, semi-fresh (eyes desiccated, rigor mortis)	3-6 days	Whole carcass: singeing on left side of bird; tail singed off; singed crown, throat, belly, sides; both wings singed and curled. Flux effect grade 2 and 3.	Scorched or singed	NA	2	638686, 3935893	ACC Building	NA
2014_706_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	10/27/2014	10/27/2014	Dead, fresh (eyes moist)	2 days	Whole carcass: singed flight feathers (primaries, secondaries, retrices), top of head, nape and upper left side singed. Flux effect grade 2 and 3.	Scorched or singed	NA	2	638665, 3935894	ACC Building	NA
2014_707_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	10/27/2014	10/27/2014	Dead, fresh (eyes moist)	2 days	Whole carcass: singed flight feathers, head and back, let side of breast singed. Flux effect grade 2 and 3.	Scorched or singed	NA	2	638663, 3935899	ACC Building	NA
2014_708_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	10/27/2014	10/27/2014	Dead, fresh (eyes moist)	8-24 hours	Whole carcass: flight feathers singed, top of head and left side of body singed. Flux effect grade 2 and 3.	Scorched or singed	NA	2	638678, 3935893	ACC Building	NA
2014_709_ISEGS	Ruby-crowned Kinglet	RCKI	Carcass Survey	10/27/2014	10/27/2014	Dead, semi-fresh (eyes desiccated, rigor mortis)	2 days	Whole carcass: Entire body singed with the exception of the vent area. Flux effect grade 2 and 3.	Scorched or singed	NA	2	638681, 3935895	ACC Building	NA
2014_710_ISEGS	Violet-green Swallow	VGSW	Carcass Survey	10/27/2014	10/27/2014	Dead, fresh (eyes moist)	2 days	Whole carcass: top of head, breast feathers, flight feathers singed. Flux effect grade 2 and 3.	Scorched or singed	NA	2	638649, 3935893	ACC Building	NA
2014_711_ISEGS	White-Crowned Sparrow	WCSP	Carcass Survey	10/27/2014	10/27/2014	Broken up	2 days	Partial carcass: 6 body and 1 flight feather; left leg and foot, rump with tail, part of left wing. No evidence of singeing (checked under scope).	Unknown	NA	2	638730, 3936050	heliostat	NA
2014_712_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	10/27/2014	10/27/2014	Dead, fresh (eyes moist)	2 days	Whole carcass: curling and singeing to all flight feathers, singed on top of head, left side of face and flank; all wing coverts singed and curled. Flux effect grade 2 and 3.	Scorched or singed	NA	2	638680, 3935895	ACC Building	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	UTM Coordinates	Nearest Project Feature	SPUT Revisions
2014_663_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	10/21/2014	10/21/2014	Broken up	2 weeks	partial carcass + feather spot: leg and foot, part of body; articulated leg and lower pelvis with feathers; patch of body feathers with flesh; ~50+ feathers; singed body feathers	Scorched or singed	NA	3	637510, 3937751	heliostat	NA
2014_664_ISEGS	Lesser Nighthawk	LENI	Carcass Survey	10/21/2014	10/21/2014	Broken up	2 weeks	Broken up: partial carcass + feather spot, primaries attached to bone; 1 retrice, 8 remiges	Unknown	NA	3	637586, 3937841	heliostat	NA
2014_665_ISEGS	Horned Lark	HOLA	Carcass Survey	10/21/2014	10/21/2014	Broken up	3-6 days	Feather spot + partial carcass: leg and foot, flight feathers, 2 partial wings held together by small amount of flesh; 11 retrices, ~20 contour feathers	Collision with solar panel/heliostat	NA	1	637670, 3937858	heliostat	NA
2014_666_ISEGS	Unknown Sparrow	UNKN	Carcass Survey	10/21/2014	10/21/2014	Feather spot Dead, semi-fresh (eyes desiccated, rigor mortis)	7 days	10+ contour, 2 tertials, 2 retrices, 1 secondary, 1 primary; no evidence of singeing (checked under scope).	Unknown	NA	3	637684, 3937930	heliostat	NA
2014_713_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	10/27/2014	10/27/2014	Dead, fresh (eyes moist)	3-6 days	Whole carcass: singeing on flight feathers, head and back, singeing on breast and back and uppertail coverts, singed on face. Flux effect grade 2 and 3.	Scorched or singed	NA	2	638667, 3935909	ACC Building	NA
2014_714_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	10/27/2014	10/27/2014	Dead, fresh (eyes moist)	3-6 days	Whole carcass: flight feathers singed; singed on crown of head, right side of body, breast, undertail coverts, median and greater covers singed. Flux effect grade 2 and 3.	Scorched or singed	NA	2	638648, 3935908	ACC Building	NA
2014_715_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	10/27/2014	10/27/2014	Dead, fresh (eyes moist)	3-6 days	Whole carcass: flight feathers, top of head singed; extending down back, breast and axillaries singed. Flux effect grade 2 and 3.	Scorched or singed	NA	2	638643, 3935898	ACC Building	NA
2014_716_ISEGS	Savannah Sparrow	SAVS	Carcass Survey	10/27/2014	10/27/2014	Dead, semi-fresh (eyes desiccated, rigor mortis)	2 days	Whole carcass: feathers fresh, eyes sunken and dried. No evidence of singeing.	Collision with solar panel/heliostat	NA	2	638407, 3935797	heliostat	NA
2014_717_ISEGS	Violet-green Swallow	VGSW	Carcass Survey	10/27/2014	10/27/2014	Feather spot	7 days	~4 flight feathers, ~15 body feathers; 1 flight feather singed and curled, 4+ body feathers singed. Flux effect grade unknown.	Scorched or singed	NA	2	638624, 3935686	heliostat	NA
2014_718_ISEGS	Unknown kinglet	UNKN	Carcass Survey	10/27/2014	10/27/2014	Feather spot	7 days	~20 body; 7 flight feathers; all flight feathers singed and curled; 75% of body feathers singed. Flux effect grade unknown.	Scorched or singed	NA	2	638657, 3935831	Turbine	NA
2014_719_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	10/27/2014	10/27/2014	Broken up	2 weeks	Both wings attached to partial sternum; primaries and secondaries of both wings singed and curled; wing coverts also singed and curled. Flux effect grade unknown.	Scorched or singed	NA	2	638593, 3935924	aqueduct pipe	NA
2014_720_ISEGS	White-Crowned Sparrow	WCSP	Carcass Survey	10/27/2014	10/27/2014	Feather spot Dead, semi-fresh (eyes desiccated, rigor mortis)	3 weeks	~50 body feathers; 8 flight feathers (feather spot diameter 6 m); no evidence of singeing	Unknown	NA	2	638586, 3936476	heliostat	NA
2014_721_ISEGS	American Coot	AMCO	Carcass Survey	10/28/2014	10/28/2014	Feather spot	2 weeks	Whole carcass: desiccated, decayed; no evidence of singeing (checked under scope)	Unknown	NA	2	639306, 3936095	heliostat	NA
2014_722_ISEGS	Eared Grebe	EAGR	Carcass Survey	10/28/2014	10/28/2014	Broken up	3 weeks	Partial carcass + feather spot: >100 of all feathers; head, full body (feather spot diameter = 8 m); no evidence of singeing (checked under scope)	Unknown	NA	2	638378, 3936328	heliostat	NA
2014_723_ISEGS	Unknown passerine	UNKN	Carcass Survey	10/28/2014	10/28/2014	Feather spot	2 weeks	30 + body feathers. No evidence of singeing (checked under scope).	Unknown	NA	2	638877, 3936207	heliostat	NA
2014_724_ISEGS	American Pipit	AMPI	Carcass Survey	10/28/2014	10/28/2014	Dead, fresh (eyes moist)	3-6 days	Whole carcass: pliable carcass; no evidence of singeing (checked under scope).	Collision with solar panel/heliostat	NA	2	638855, 3936253	heliostat	NA
2014_725_ISEGS	White-Crowned Sparrow	WCSP	Carcass Survey	10/28/2014	10/28/2014	Feather spot	3-6 days	100+ body feathers; 32 flight feathers (feather spot diameter = 2 m); no evidence of singeing (checked under scope).	Collision with solar panel/heliostat	NA	2	638926, 3936210	heliostat	NA
2014_726_ISEGS	Hermit Thrush	HETH	Carcass Survey	10/28/2014	10/28/2014	Feather spot	7 days	3 flight, ~100 body feathers (feather spot diameter = 2 m); no evidence of singeing (checked under scope).	Unknown	NA	2	638952, 3936161	heliostat	NA
2014_727_ISEGS	American Pipit	AMPI	Incidental	10/28/2014	10/28/2014	Broken up	2 weeks	partial carcass + feather spot: ~10 flight feathers, ~25 body feathers; 2 legs (feather spot diameter = 1.25 m); no evidence of singeing (checked under scope).	Unknown	NA	2	639138, 3936343	heliostat	NA

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2014_663_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	10/21/2014	10/21/2014	Broken up	2 weeks	partial carcass + feather spot: leg and foot, part of body; articulated leg and lower pelvis with feathers; patch of body feathers with flesh; ~50+ feathers; singed body feathers	Scorched or singed	NA	3	637510, 3937751	heliostat	NA
2014_664_ISEGS	Lesser Nighthawk	LENI	Carcass Survey	10/21/2014	10/21/2014	Broken up	2 weeks	Broken up: partial carcass + feather spot, primaries attached to bone; 1 retrice, 8 remiges	Unknown	NA	3	637586, 3937841	heliostat	NA
2014_665_ISEGS	Horned Lark	HOLA	Carcass Survey	10/21/2014	10/21/2014	Broken up	3-6 days	Feather spot + partial carcass: leg and foot, flight feathers, 2 partial wings held together by small amount of flesh; 11 retrices, ~20 contour feathers 10+ contour, 2 tertials, 2 retrices, 1 secondary, 1 primary; no evidence of singeing (checked under scope).	Collision with solar panel/heliostat	NA	1	637670, 3937858	heliostat	NA
2014_666_ISEGS	Unknown Sparrow	UNKN	Carcass Survey	10/21/2014	10/21/2014	Feather spot	7 days	partial carcass + feather spot: ~25 flight feathers, ~35 body feathers; 1 foot. (feather spot diameter = 1.5 m). No evidence of singeing (checked under scope).	Unknown	NA	3	637684, 3937930	heliostat	NA
2014_728_ISEGS	Mourning Dove	MODO	Carcass Survey	10/28/2014	10/28/2014	Broken up	2 weeks	2 retrices, 16 primaries/secondaries, 50+ body feathers; (feather spot diameter = 5 m). No evidence of singeing (checked under scope).	Unknown	NA	2	638528, 3935072	Fence	NA
2014_729_ISEGS	House Finch	HOFI	Carcass Survey	10/28/2014	10/28/2014	Feather spot	2 weeks	carcass without head; body desiccated and mummified, feathers weathered; no evidence of singeing (checked under scope)	Unknown	NA	2	638272, 3936304	heliostat	NA
2014_730_ISEGS	Red-winged Blackbird	RWBL	Carcass Survey	10/28/2014	10/28/2014	Mummified	2 weeks	~100 body feathers (feather spot diameter = 9 m). no evidence of singeing (checked under scope)	Unknown	NA	2	638175, 3936217	heliostat	NA
2014_731_ISEGS	Gambel's Quail	GAQU	Carcass Survey	10/28/2014	10/28/2014	Feather spot	2 weeks	feather spot + partial carcass (feather spot diameter = 10 m); 100+ body; 13 flight feathers; partial right wing. No evidence of singeing (checked under scope).	Unknown	NA	2	638738, 3935232	heliostat	NA
2014_732_ISEGS	White-Crowned Sparrow	WCSP	Carcass Survey	10/29/2014	10/29/2014	Broken up	7 days	feather spot + partial carcass (feather spot diameter = 3 m); 100+ body; 4 wing feathers; pieces of bone from wing and skull. No evidence of singeing (checked under scope).	Unknown	NA	2	638195, 3935662	heliostat	NA
2014_733_ISEGS	White-Crowned Sparrow	WCSP	Carcass Survey	10/29/2014	10/29/2014	Broken up	2 weeks	feather spot + partial carcass (feather spot diameter = 1.5 m); ~25 body feathers, 9 tail feathers, 1 cm piece of bone. No evidence of singeing (checked under scope).	Unknown	NA	2	639253, 3935610	heliostat	NA
2014_734_ISEGS	White-Crowned Sparrow	WCSP	Incidental	10/29/2014	10/29/2014	Broken up	2 weeks	feather spot + partial carcass (feather spot diameter = 5 m); 14 flight, 100 + body feathers, leg entailing foot, tarsus, and tibiotarsus, pygostyle bone attached to tail feathers. No evidence of singeing (checked under scope).	Unknown	NA	2	639246, 3935645	heliostat	NA
2014_735_ISEGS	Western Meadowlark	WEME	Carcass Survey	10/29/2014	10/29/2014	Broken up	7 days	Whole carcass: very fresh, pliable carcass; no evidence of singeing (checked under scope).	Collision with solar panel/heliostat	NA	2	639224, 3935730	heliostat	NA
2014_736_ISEGS	American Pipit	AMPI	Carcass Survey	10/29/2014	10/29/2014	Dead, fresh (eyes moist)	3-6 days	Partial carcass: no head. Ribs, 2 legs, Right wing, tail with vertebrae, pelvic girdle present. No evidence of singeing (checked under scope).	Collision with solar panel/heliostat	NA	2	639208, 3935737	heliostat	NA
2014_737_ISEGS	Lazuli Bunting	LABU	Carcass Survey	10/29/2014	10/29/2014	Broken up	1 month +	Single small passerine leg with tufts of feathers. No evidence of singeing (checked under scope).	Unknown	NA	2	639076, 3935486	heliostat	NA
2014_738_ISEGS	Unknown passerine	UNKN	Carcass Survey	10/29/2014	10/29/2014	Broken up	3 weeks	Partial carcass and feather spot; partial right wing and tail with bones, ~100 body feathers and 4 wing feathers; no evidence of singeing (checked under scope).	Unknown	NA	2	639171, 3935588	heliostat	NA
2014_739_ISEGS	Savannah Sparrow	SAVS	Carcass Survey	10/30/2014	10/30/2014	Broken up	7 days	carcass without head; body desiccated and mummified, feathers weathered; no evidence of singeing (checked under scope)	Unknown	NA	2	638255, 3935285	heliostat	NA
2014_740_ISEGS	Gambel's Quail	GAQU	Carcass Survey	10/30/2014	10/30/2014	Mummified	3 weeks	Whole carcass; body desiccated; no evidence of singeing (checked under scope)	Unknown	NA	2	639279, 3935204	heliostat	NA
2014_741_ISEGS	Mourning Dove	MODO	Carcass Survey	10/30/2014	10/30/2014	Mummified	3 weeks	Partial carcass - body missing head, legs, and left wing; singed on 6 of 9 tail feathers singed; rump, primaries, secondaries, and greater coverts singed;	Collision with solar panel/heliostat	NA	2	639077, 3935984	heliostat	NA
2014_742_ISEGS	Violet-green Swallow	VGSW	Carcass Survey	10/30/2014	10/30/2014	Broken up	3 weeks	burn grade unknown	Scorched or singed	NA	2	639036, 3936039	heliostat	NA

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2014_663_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	10/21/2014	10/21/2014	Broken up	2 weeks	partial carcass + feather spot: leg and foot, part of body; articulated leg and lower pelvis with feathers; patch of body feathers with flesh; ~50+ feathers; singed body feathers	Scorched or singed	NA	3	637510, 3937751	heliostat	NA
2014_664_ISEGS	Lesser Nighthawk	LENI	Carcass Survey	10/21/2014	10/21/2014	Broken up	2 weeks	Broken up: partial carcass + feather spot, primaries attached to bone; 1 retrice, 8 remiges	Unknown	NA	3	637586, 3937841	heliostat	NA
2014_665_ISEGS	Horned Lark	HOLA	Carcass Survey	10/21/2014	10/21/2014	Broken up	3-6 days	Feather spot + partial carcass: leg and foot, flight feathers, 2 partial wings held together by small amount of flesh; 11 retrices, ~20 contour feathers 10+ contour, 2 tertials, 2 retrices, 1 secondary, 1 primary; no evidence of singeing (checked under scope).	Collision with solar panel/heliostat	NA	1	637670, 3937858	heliostat	NA
2014_666_ISEGS	Unknown Sparrow	UNKN	Carcass Survey	10/21/2014	10/21/2014	Feather spot	7 days	3 primaries and 2 coverts; no evidence of singeing (checked under scope)	Unknown	NA	3	637684, 3937930	heliostat	NA
2014_743_ISEGS	Northern Mockingbird	NOMO	Carcass Survey	10/30/2014	10/30/2014	Feather spot	2 weeks		Unknown	NA	2	638807, 3935084	heliostat	NA
2014_744_ISEGS	White-Crowned Sparrow	WCSP	Incidental	10/30/2014	10/30/2014	Feather spot	2 weeks	~100 body 6 tail, and 27 wing feathers; no evidence of singeing (checked under cope)	Unknown	NA	2	637732, 3935772	heliostat	NA
2014_745_ISEGS	Mourning Dove	MODO	Incidental	10/30/2014	NA	Broken up	Unknown	Partial carcass and feather spot; 18 feathers and top of skull; no evidence of singeing. 6 flight and ~30 body feathers; all flight feathers found and a few body feathers singed. Flux effect grade unknown.	Unknown	NA	3	637486, 3937708	heliostat	NA Updated species (from UNKN) after review of photos; fatality no longer there on subsequent survey; B. Sousa; 11/12/14
2014_746_ISEGS	Barn Swallow	BARS	Carcass Survey	11/3/2014	11/3/2014	Feather spot	3 weeks	9 flight and ~50 body feathers; no evidence of singeing (checked under scope)	Scorched or singed	NA	1	640164, 3933615	heliostat	NA
2014_747_ISEGS	Unknown	UNKN	Carcass Survey	11/3/2014	11/3/2014	Feather spot	2 weeks		Unknown	NA	1	640194, 3933580	Heliostat	NA
2014_748_ISEGS	House Finch	HOFI	Carcass Survey	11/3/2014	11/3/2014	Dead, semi-fresh (eyes desiccated, rigor mortis)	7 days	whole carcass; flanks, chest, and face singed; flux effect grade 1 and 3.	Scorched or singed	NA	1	640410, 3933544	ACC Building	NA
2014_749_ISEGS	Mourning Dove	MODO	Carcass Survey	11/3/2014	11/3/2014	Dead, semi-fresh (eyes desiccated, rigor mortis)	3 weeks	~30 body feathers; no evidence of singeing (checked under scope)	Unknown	NA	1	640122, 3933505	Heliostat	NA
2014_750_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	11/3/2014	11/3/2014	Dead, semi-fresh (eyes desiccated, rigor mortis)	2 weeks	whole carcass; primaries, secondaries and retrices singed; upper coverts of both wings singed; crown, face and flanks singed; flux effect grades 2 and 3 6 wing feathers and ~100 body feathers; all flight feathers and a few body feathers singed; flux effect grades unknown	Scorched or singed	NA	1	640384, 3933523	ACC Building	NA
2014_751_ISEGS	House Finch	HOFI	Carcass Survey	11/3/2014	11/3/2014	Feather spot	7 days	3 secondaries and 50+ body feathers; no evidence of singeing (checked under scope)	Scorched or singed	NA	1	640168, 3933481	heliostat	NA
2014_752_ISEGS	Mourning Dove	MODO	Incidental	11/3/2014	11/3/2014	Feather spot	2 weeks	10 flight, ~25 body feathers (feather spot diameter = 40 m); 4 singed body feathers; 4 flight feathers singed; flux effect grade unknown.	Unknown	NA	1	640787, 3933018	heliostat	NA
2014_753_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	11/3/2014	11/3/2014	Feather spot	2 weeks	partial right wing, 8 flight, ~60 body feathers; singed primaries, primary coverts, greater coverts, and tail feathers	Scorched or singed	NA	1	640265, 3933380	Heliostat	NA
2014_754_ISEGS	Lesser Goldfinch	LEGO	Carcass Survey	11/3/2014	11/3/2014	Broken up	3-6 days	4-5 flight feathers, 50 + body feathers (feather spot diameter = 10 m); a few body feathers curled; flux effect grade unknown	Scorched or singed	NA	1	640394, 3933367	heliostat	NA
2014_755_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	11/3/2014	11/3/2014	Feather spot	7 days	partial right wing; no evidence of singeing (checked under scope)	Unknown	NA	1	640389, 3933369	heliostat	NA
2014_756_ISEGS	Unknown Swallow	UNKN	Carcass Survey	11/3/2014	11/3/2014	Broken up	3 weeks		Unknown	NA	1	640404, 3933528	power unit bldg	NA
2014_757_ISEGS	Unknown passerine	UNKN	Carcass Survey	11/3/2014	11/3/2014	Broken up	3 weeks	partial carcass + feather spot: ball of singed feathers with spine and ribs; flux effect grade unknown; feather spot diameter = 10 m	Scorched or singed	NA	1	640340, 3933350	heliostat	NA
2014_758_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	11/3/2014	11/3/2014	Feather spot	2 weeks	10 flight and 50+ body feathers; no evidence of singeing (checked under scope)	Unknown	NA	1	639779, 3933593	heliostat	NA
2014_759_ISEGS	American Pipit	AMPI	Carcass Survey	11/3/2014	11/3/2014	Feather spot	7 days	14 retrices, 16 remiges, 30+ body feathers (feather spot diameter = 5 m); no evidence of singeing (checked under scope).	Unknown	NA	1	640321, 3933278	Heliostat	NA
2014_760_ISEGS	Yellow-	YRWA	Carcass	11/3/2014	11/3/2014	Broken up	7 days	partial carcass + feather spot: 23 flight, 20 body	Scorched or singed	NA	1	640326,	heliostat	NA

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2014_663_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	10/21/2014	10/21/2014	Broken up	2 weeks	partial carcass + feather spot: leg and foot, part of body; articulated leg and lower pelvis with feathers; patch of body feathers with flesh; ~50+ feathers; singed body feathers	Scorched or singed	NA	3	637510, 3937751	heliostat	NA
2014_664_ISEGS	Lesser Nighthawk	LENI	Carcass Survey	10/21/2014	10/21/2014	Broken up	2 weeks	Broken up: partial carcass + feather spot, primaries attached to bone; 1 retrice, 8 remiges	Unknown	NA	3	637586, 3937841	heliostat	NA
2014_665_ISEGS	Horned Lark	HOLA	Carcass Survey	10/21/2014	10/21/2014	Broken up	3-6 days	Feather spot + partial carcass: leg and foot, flight feathers, 2 partial wings held together by small amount of flesh; 11 retrices, ~20 contour feathers	Collision with solar panel/heliostat	NA	1	637670, 3937858	heliostat	NA
2014_666_ISEGS	Unknown Sparrow rumped Warbler	UNKN	Carcass Survey	10/21/2014	10/21/2014	Feather spot	7 days	10+ contour, 2 tertials, 2 retrices, 1 secondary, 1 primary; no evidence of singeing (checked under scope).	Unknown	NA	3	637684, 3937930, 3933311	heliostat	NA
2014_761_ISEGS	House Finch	HOFI	Carcass Survey	11/3/2014	11/3/2014	Feather spot	2 weeks	feathers (feather spot diameter = 1 m); 2 partial wings, 1 foot; all flight feathers singed; flux effect grade unknown	Unknown	NA	1	640481, 3933609	heliostat	NA
2014_762_ISEGS	Mourning Dove	MODO	Carcass Survey	11/3/2014	11/3/2014	Feather spot	1 month +	5 flight, 30+ body feathers (feather spot diameter = 6 m); no evidence of singeing (checked under scope)	Unknown	NA	1	641065, 3932912	heliostat	NA
2014_763_ISEGS	Unknown passerine	UNKN	Carcass Survey	11/3/2014	11/3/2014	Feather spot	2 weeks	17 flight, 100+ body feathers (feather spot diameter = 4 m); no evidence of singeing (checked under scope)	Unknown	NA	1	640784, 3932706	heliostat	NA
2014_764_ISEGS	Barn Swallow	BARS	Carcass Survey	11/3/2014	11/3/2014	Feather spot	3 weeks	~100 body feathers (feather spot diameter = 2 m); no evidence of singeing (checked under scope)	Unknown	NA	1	640265, 3933380	heliostat	NA
2014_765_ISEGS	Unknown passerine	UNKN	Carcass Survey	11/3/2014	11/3/2014	Feather spot	3 weeks	2 body, 7 flight feathers (feather spot diameter = 40 m); singed body feather, flight feathers singed; flux effect grade unknown	Scorched or singed	NA	1	640340, 3933350	heliostat	NA
2014_766_ISEGS	American Pipit	AMPI	Carcass Survey	11/3/2014	11/3/2014	Feather spot	7 days	~15 body feathers attached to skin (feather spot diameter = 0.1 m); no evidence of singeing (checked under scope)	Unknown	NA	1	640321, 3933278	heliostat	NA
2014_767_ISEGS	American Pipit	AMPI	Carcass Survey	11/4/2014	11/4/2014	Dead, semi-fresh (eyes desiccated, rigor mortis)	2 days	14 retrices, 16 remiges, 30+ body feathers (feather spot diameter = 5 m); no evidence of singeing (checked under scope).	Unknown	NA	1	641092, 3933395	heliostat	NA
2014_768_ISEGS	Greater Roadrunner	GRRO	Carcass Survey	11/4/2014	11/4/2014	Feather spot	2 weeks	whole carcass; tip of lower mandible broken off; no evidence of singeing (checked under scope)	Collision with solar panel/heliostat	NA	1	639619, 3934183	heliostat	NA
2014_769_ISEGS	Greater Roadrunner	GRRO	Carcass Survey	11/4/2014	11/4/2014	Feather spot	3-6 days	~20 body feathers and 1 secondary; no evidence of singeing (checked under scope)	Unknown	NA	1	640573, 3934572	heliostat	NA
2014_770_ISEGS	Brown-headed cowbird	BHCO	Carcass Survey	11/4/2014	11/4/2014	Broken up	1 month +	8+ retrices, 8+ flight feathers and 250+ body feathers; no evidence of singeing (checked under scope)	Unknown	NA	1	640485, 3933223	heliostat	NA
2014_771_ISEGS	Greater Roadrunner	GRRO	Carcass Survey	11/4/2014	11/4/2014	Broken up	3-6 days	lower half of ody, including partial spinal column, synsacrum, tail, and one leg with some feathers, some primaries; no singeing found (checked under scope)	Unknown	NA	1	639580, 3932661	Fencing	NA
2014_772_ISEGS	American Pipit	AMPI	Carcass Survey	11/4/2014	11/4/2014	Feather spot	1 month +	Partial carcass and feather spot; 350+ body and flight feathers, upper mandible, flesh;	Unknown	NA	1	639928, 3933390	heliostat	NA
2014_773_ISEGS	Greater Roadrunner	GRRO	Carcass Survey	11/4/2014	11/4/2014	Feather spot	3-6 days	3 primaries, 4 retrices, 3+ coverts, 20+ body feathers; no evidence of singeing (checked under scope)	Unknown	NA	1	641202, 3932827	Fencing	NA
2014_774_ISEGS	Greater Roadrunner	GRRO	Carcass Survey	11/4/2014	11/4/2014	Feather spot	1 month +	4 retrices, 1 primary, 4 secondaries, and 5 body feathers; no evidence of singeing (checked under scope)	Unknown	NA	1	641297, 3932917	Fencing	NA
2014_775_ISEGS	Greater Roadrunner	GRRO	Carcass Survey	11/4/2014	11/4/2014	Feather spot	3-6 days	8+ retrices, 200+ body feathers; no evidence of singeing (checked under scope)	Unknown	NA	1	641348, 3932976	Fencing	NA
2014_776_ISEGS	Savannah Sparrow	SAVS	Incidental	11/4/2014	11/4/2014	Dead, semi-fresh (eyes desiccated, rigor mortis)	7 days	whole carcass missing head and most wing feathers; no evidence of singeing (checked under scope); impaled on yucca in manner typical of loggerhead shrike predation	Predated	NA	NA	639568, 3934327	Fencing	NA
2014_777_ISEGS	Greater	GRRO	Carcass	11/4/2014	11/4/2014	Broken up	2 weeks	8+ remiges, 200+ body feathers; no evidence of singeing (checked under scope)	Unknown	NA	1	641349,	Fencing	NA

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2014_663_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	10/21/2014	10/21/2014	Broken up	2 weeks	partial carcass + feather spot: leg and foot, part of body; articulated leg and lower pelvis with feathers; patch of body feathers with flesh; ~50+ feathers; singed body feathers	Scorched or singed	NA	3	637510, 3937751	heliostat	NA
2014_664_ISEGS	Lesser Nighthawk	LENI	Carcass Survey	10/21/2014	10/21/2014	Broken up	2 weeks	Broken up: partial carcass + feather spot, primaries attached to bone; 1 retrice, 8 remiges	Unknown	NA	3	637586, 3937841	heliostat	NA
2014_665_ISEGS	Horned Lark	HOLA	Carcass Survey	10/21/2014	10/21/2014	Broken up	3-6 days	Feather spot + partial carcass: leg and foot, flight feathers, 2 partial wings held together by small amount of flesh; 11 retrices, ~20 contour feathers	Collision with solar panel/heliostat	NA	1	637670, 3937858	heliostat	NA
2014_666_ISEGS	Unknown Sparrow Roadrunner	UNKN	Carcass Survey	10/21/2014	10/21/2014	Feather spot	7 days	10+ contour, 2 tertials, 2 retrices, 1 secondary, 1 primary; no evidence of singeing (checked under scope).	Unknown	NA	3	637684, 3937930, 3933769	heliostat	NA
2014_778_ISEGS	Unknown Greater Roadrunner	UNKN	Carcass Survey	11/4/2014	11/4/2014	Broken up	1 month +	(body, tail, and flight), leg bone, partial top of skull; no evidence of singeing (checked under scope)	Unknown	NA	1	641347, 3933769	Fencing	NA
2014_779_ISEGS	Roadrunner	GRRO	Carcass Survey	11/4/2014	11/4/2014	Feather spot	2 weeks	partial left wing (4 primaries attached to bone) and 1 disarticulated primary; no evidence of singeing (checked under scope)	Unknown	NA	1	641348, 3933814	Fencing	NA
2014_780_ISEGS	Mourning Dove	MODO	Carcass Survey	11/4/2014	11/4/2014	Feather spot	2 weeks	22 flight and ~70 body feathers; no evidence of singeing (checked under scope)	Unknown	NA	1	641349, 3933878	Fencing	NA
2014_781_ISEGS	Unknown passerine	UNKN	Carcass Survey	11/5/2014	11/5/2014	Broken up	7 days	6 primaries, 1 retrix, 7+ secondaries, 5+ coverts, 20+ body feathers; no evidence of singeing (checked under scope)	Unknown	NA	1	641349, 3933878	Fencing	NA
2014_782_ISEGS	Savannah Sparrow	SAVS	Carcass Survey	11/5/2014	11/5/2014	Broken up	1 month +	partial carcass + feather spot: 9 tail feathers; ~40 body feathers; small part of bone attached to tail feather (feather spot size = large); no evidence of singeing (checked under scope).	Unknown	NA	1	640509, 3933727	heliostat	NA
2014_783_ISEGS	Unknown passerine	UNKN	Carcass Survey	11/5/2014	11/5/2014	Broken up	3-6 days	partial carcass + feather spot: ~50 body feathers, flight feathers, 2 wings, skull, detached tail, vertebrae, 2 legs, pelvic girdle; (feather spot size = large); no evidence of singeing (checked under scope)	Unknown	NA	1	640522, 3933766	heliostat	NA
2014_784_ISEGS	Unknown passerine	UNKN	Carcass Survey	11/5/2014	11/5/2014	Broken up	1 month +	partial carcass + feather spot: 1 alula, 2 secondaries, 2 retrices; piece of body unknown (feather spot size = small); no evidence of singeing (checked under scope)	Unknown	NA	1	640494, 3933813	heliostat	NA
2014_785_ISEGS	American Pipit	AMPI	Carcass Survey	11/5/2014	11/5/2014	Dead, fresh (eyes moist)	2 days	partial carcass: lower leg and foot; scales eaten off to the bones; bone stripped of flesh.	Unknown	NA	1	640181, 3934070	heliostat	NA
2014_786_ISEGS	Brown-headed cowbird	BHCO	Carcass Survey	11/5/2014	11/5/2014	Mummified	3 weeks	Whole carcass: no evidence of singeing (checked under scope); fresh carcass.	Collision with solar panel/heliostat	NA	1	640204, 3934065	Heliostat	NA
2014_787_ISEGS	White-Crowned Sparrow	WCSP	Incidental	11/5/2014	11/5/2014	Broken up	0-8 hours	Carcass with no head; very desiccated; no evidence of singeing (checked under scope)	Unknown	NA	1	640066, 3934064	Heliostat	NA
2014_788_ISEGS	Mourning Dove	MODO	Carcass Survey	11/6/2014	11/6/2014	Feather spot	3-6 days	Partial carcass + feather spot: Carcass found impaled on yucca, separated head impaled on yucca; ~100 body feathers, 10 tail feathers, 11 secondaries (feather spot size = small); no evidence of singeing (checked under scope).	Predated	NA	3	637084, 3937765	heliostat	NA
2014_789_ISEGS	Mourning Dove	MODO	Incidental	11/6/2014	11/6/2014	Broken up	1 month +	~200 + body feathers, 8+ retrices, 12 primaries/secondaries (feather spot size = large); no evidence of singeing (checked under scope)	Unknown	NA	1	641142, 3934112	heliostat	NA
2014_790_ISEGS	Brown-headed cowbird	BHCO	Incidental	11/6/2014	11/6/2014	Broken up	1 month +	Partial carcass + feather spot: ~12 retrices, ~50 + body feathers; 2 legs, sternum, lower spinal cord, skull, wing with exposed bones (feather spot size = large); no evidence of singeing (checked under scope).	Unknown	NA	1	640700, 3933188	heliostat	NA
2014_791_ISEGS	Lesser Nighthawk	LENI	Carcass Survey	11/6/2014	11/6/2014	Broken up	1 month +	Whole carcass; head separated from from body; carcass very desiccated; 2 flight feathers loose by carcass; no evidence of singeing (checked under scope)	Collision with solar panel/heliostat	NA	1	640515, 3932794	heliostat	NA
								Partial carcass: right and left wing attached to legs, sternum and head. No tail or rump bones. No	Unknown	NA	1	640575, 3932783	heliostat	NA

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2014_663_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	10/21/2014	10/21/2014	Broken up	2 weeks	partial carcass + feather spot: leg and foot, part of body; articulated leg and lower pelvis with feathers; patch of body feathers with flesh; ~50+ feathers; singed body feathers	Scorched or singed	NA	3	637510, 3937751	heliostat	NA
2014_664_ISEGS	Lesser Nighthawk	LENI	Carcass Survey	10/21/2014	10/21/2014	Broken up	2 weeks	Broken up: partial carcass + feather spot, primaries attached to bone; 1 retrice, 8 remiges	Unknown	NA	3	637586, 3937841	heliostat	NA
2014_665_ISEGS	Horned Lark	HOLA	Carcass Survey	10/21/2014	10/21/2014	Broken up	3-6 days	Feather spot + partial carcass: leg and foot, flight feathers, 2 partial wings held together by small amount of flesh; 11 retrices, ~20 contour feathers	Collision with solar panel/heliostat	NA	1	637670, 3937858	heliostat	NA
2014_666_ISEGS	Unknown Sparrow	UNKN	Carcass Survey	10/21/2014	10/21/2014	Feather spot	7 days	10+ contour, 2 tertials, 2 retrices, 1 secondary, 1 primary; no evidence of singeing (checked under scope).	Unknown	NA	3	637684, 3937930	heliostat	NA
2014_792_ISEGS	Mourning Dove	MODO	Carcass Survey	11/6/2014	11/6/2014	Feather spot	1 month +	evidence of singeing (checked under scope). 3 primaries, 3 secondaries, 3 retrices, ~50+ body feathers (feather spot size = large); No evidence of singeing (checked under scope).	Unknown	NA	1	640651, 3932816	heliostat	NA
2014_793_ISEGS	Unknown passerine	UNKN	Carcass Survey	11/6/2014	11/6/2014	Broken up	1 month +	Partial carcass + feather spot: ~10 body feathers, 1 leg, partial rib cage, 1 wing bone (feather spot size = small); no evidence of singeing (checked under scope).	Unknown	NA	1	641188, 3934102	heliostat	NA
2014_794_ISEGS	Mourning Dove	MODO	Carcass Survey	11/6/2014	11/6/2014	Broken up	1 month +	Leg: femur, tarsometatarsus, tarsus and 2 toe bones; no evidence of singeing (checked under scope)	Unknown	NA	1	641317, 3933935	heliostat	NA
2014_795_ISEGS	Yellow-rumped Warbler	YRWA	Incidental Carcass	11/10/2014	11/10/2014	Dead, fresh (eyes moist)	8-24 hours	whole carcass; R axillaries and side singed; R wing and all retrices singed and curled; tips of L wing flights singed; vert, rump, face, crown, upper breast, and some L coverts singed. Flux effects grade 2, 3.	Scorched or singed	NA	3	637458, 3937900	Solar Concentrating Tower	NA
2014_796_ISEGS	Unknown	UNKN	Carcass Survey	11/11/2014	11/11/2014	Feather spot	2 weeks	8 flight and 8 body feathers; flux effects grade 3, unknown.	Scorched or singed	NA	3	637380, 3937802	heliostat	NA
2014_797_ISEGS	Unknown Western	UNKN	Carcass Survey	11/11/2014	11/11/2014	Broken up	2 weeks	feather spot and partial carcass; partial R and L wings with bones, clump of ~30 feathers attached to skin, 6 flight feathers; singed retrix and end of primaries of wing; flux effects grade unknown	Scorched or singed	NA	3	637288, 3937788	heliostat	NA
2014_798_ISEGS	Meadowlark	WEME	Carcass Survey	11/11/2014	11/11/2014	Feather spot	3-6 days	6 retrices, 2 secondaries, and ~75 body feathers; no evidence of singeing (checked under scope)	Unknown	NA	3	637347, 3937777	heliostat	NA
2014_799_ISEGS	Dark-Eyed Junco	DEJU	Incidental	11/11/2014	11/11/2014	Feather spot	3-6 days	3 retrices, 20+ primaries and secondaries, 40+ body feathers; no evidence of singeing (checked under scope)	Unknown	NA	3	637313, 3937674	heliostat	NA
2014_800_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	11/11/2014	11/11/2014	Dead, semi-fresh (eyes desiccated, rigor mortis)	2 weeks	whole carcass; all flight feathers singed off; all feathers except throat singed; flux effects grade 2, 3.	Scorched or singed	NA	3	637459, 3937952	ACC Building	NA
2014_801_ISEGS	Ruby-crowned Kinglet	RCKI	Carcass Survey	11/11/2014	11/11/2014	Dead, semi-fresh (eyes desiccated, rigor mortis)	3-6 days	whole carcass; all remiges and retrices singed and curled; face, crown and axillaries singed; flux effect grade 2, 3	Scorched or singed	NA	3	637461, 3937954	ACC Building	NA
2014_802_ISEGS	Unknown	UNKN	Carcass Survey	11/11/2014	11/11/2014	Feather spot	3-6 days	partial wing (no bone), ~8 body feathers and 3 additional primaries; primary and body feathers singed; flux effect grade 3, unknown	Scorched or singed	NA	3	637408, 3937719	heliostat	NA
2014_803_ISEGS	Unknown Lesser	UNKN	Carcass Survey	11/11/2014	11/11/2014	Feather spot	7 days	3 flight feathers connected by flesh; all singed and curled; flux effect grade unknown	Scorched or singed	NA	3	637624, 3937758	heliostat	NA
2014_804_ISEGS	Goldfinch	LEGO	Carcass Survey	11/11/2014	11/11/2014	Broken up	3-6 days	partial right wing; no evidence of singeing (checked under scope)	Unknown	NA	3	637468, 3937952	ACC Building	NA
2014_805_ISEGS	American Pipit	AMPI	Carcass Survey	11/11/2014	11/11/2014	Broken up	2 weeks	feather spot and partial carcass; Partial right and left wings, 24 flight, and 50+ body feathers; no evidence of singeing (checked under scope)	Unknown	NA	3	637032, 3938227	heliostat	NA
2014_806_ISEGS	Unknown Brewer's	UNKN	Carcass Survey	11/11/2014	11/11/2014	Feather spot	3-6 days	2 flight and 40+ body feathers; no evidence of singeing (checked under scope)	Unknown	NA	3	637421, 3937716	heliostat	NA
2014_807_ISEGS	Blackbird Greater	BRBL	Carcass Survey	11/11/2014	11/11/2014	Feather spot	3-6 days	1 secondary, 30+ body feathers; no evidence of singeing (checked under scope)	Unknown	NA	3	637366, 3937694	heliostat	NA
2014_808_ISEGS	Roadrunner	GRRO	Incidental	11/11/2014	11/11/2014	Feather spot	3-6 days	20+ body feathers; no evidence of singeing (checked under scope)	Unknown	NA	3	637009, 3938181	heliostat	NA

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2014_663_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	10/21/2014	10/21/2014	Broken up	2 weeks	partial carcass + feather spot: leg and foot, part of body; articulated leg and lower pelvis with feathers; patch of body feathers with flesh; ~50+ feathers; singed body feathers	Scorched or singed	NA	3	637510, 3937751	heliostat	NA
2014_664_ISEGS	Lesser Nighthawk	LENI	Carcass Survey	10/21/2014	10/21/2014	Broken up	2 weeks	Broken up: partial carcass + feather spot, primaries attached to bone; 1 retrice, 8 remiges	Unknown	NA	3	637586, 3937841	heliostat	NA
2014_665_ISEGS	Horned Lark	HOLA	Carcass Survey	10/21/2014	10/21/2014	Broken up	3-6 days	Feather spot + partial carcass: leg and foot, flight feathers, 2 partial wings held together by small amount of flesh; 11 retrices, ~20 contour feathers	Collision with solar panel/heliostat	NA	1	637670, 3937858	heliostat	NA
2014_666_ISEGS	Unknown Sparrow	UNKN	Carcass Survey	10/21/2014	10/21/2014	Feather spot	7 days	10+ contour, 2 tertials, 2 retrices, 1 secondary, 1 primary; no evidence of singeing (checked under scope).	Unknown	NA	3	637684, 3937930	heliostat	NA
2014_809_ISEGS	Savannah Sparrow	SAVS	Carcass Survey	11/11/2014	11/11/2014	Broken up	1 month +	articulated R wing and body with R flank feathers and overtail coverts; no evidence of singeing (checked under scope)	Unknown	NA	3	637258, 3937301	heliostat	NA
2014_810_ISEGS	American Pipit	AMPI	Carcass Survey	11/11/2014	11/11/2014	Broken up	2 weeks	feather spot and partial carcass; both wings, 1 leg, 1 clump of breast feathers, 50+ body feathers; no evidence of singeing (checked under scope)	Unknown	NA	3	637114, 3937392	heliostat	NA
2014_811_ISEGS	Unknown	UNKN	Carcass Survey	11/11/2014	11/11/2014	Feather spot	3-6 days	3 primaries, 9 secondaries, 5 body feathers; no evidence of singeing (checked under scope)	Unknown	NA	3	636942, 3938047	heliostat	NA
2014_812_ISEGS	American Pipit	AMPI	Carcass Survey	11/11/2014	11/11/2014	Broken up	3-6 days	feather spot and partial carcass; head, 6 retrices, 100+ body feathers; no evidence of singeing (checked under scope)	Unknown	NA	3	637241, 3938005	heliostat	NA
2014_813_ISEGS	Gambel's Quail	GAQU	Carcass Survey	11/11/2014	11/11/2014	Feather spot	3-6 days	30+ body feathers; no evidence of singeing (checked under scope)	Unknown	NA	3	637285, 3938034	heliostat	NA
2014_814_ISEGS	Western Meadowlark	WEME	Carcass Survey	11/11/2014	11/11/2014	Broken up	7 days	feather spot and partial carcass; partial L wing, 9 primaries, coverts, and 35+ body feathers; no evidence of singeing (checked under scope)	Unknown	NA	3	637941, 3938261	heliostat	NA
2014_815_ISEGS	American Pipit	AMPI	Carcass Survey	11/11/2014	11/11/2014	Feather spot	3-6 days	4 primaries, 1 retrix, 2 secondaries, 1 tertial, 30+ body feathers; no evidence of singeing (checked under scope)	Unknown	NA	3	637704, 3937966	heliostat	NA
2014_816_ISEGS	Unknown Teal	UNKN	Carcass Survey	11/12/2014	11/12/2014	Broken up	7 days	Left and right wing with bone attached. No evidence of singeing (checked under scope). Left wing was found 14 m from right wing.	Collision with solar panel/heliostat	NA	3	636990, 3938986	heliostat	NA
2014_817_ISEGS	White-Crowned Sparrow	WCSP	Carcass Survey	11/12/2014	11/12/2014	Feather spot	3-6 days	3 retrices, 1 secondary, 4 greater coverts, ~50 body feathers. (feather spot size = large). No evidence of singeing (checked under scope).	Unknown	NA	3	637706, 3938439	heliostat	NA
2014_818_ISEGS	White-Crowned Sparrow	WCSP	Carcass Survey	11/12/2014	11/12/2014	Broken up	7 days	Left wing with bone attached. No evidence of singeing (checked under scope).	Unknown	NA	3	637465, 3938835	heliostat	NA
2014_819_ISEGS	American Coot	AMCO	Incidental	11/12/2014	11/12/2014	Broken up	3-6 days	Partial right wing, tail, and 1 body feather. No evidence of singeing (checked under scope).	Unknown	NA	3	638841, 3938590	Fence	NA
2014_820_ISEGS	Western Meadowlark	WEME	Incidental	11/13/2014	11/13/2014	Feather spot	3-6 days	2 primaries and ~30 body feathers (feather spot size = small); no evidence of singeing (checked under scope)	Unknown	NA	3	638483, 3937534	heliostat	NA
2014_821_ISEGS	White-Crowned Sparrow	WCSP	Carcass Survey	11/13/2014	11/13/2014	Dead, semi-fresh (eyes desiccated, rigor mortis)	3-6 days	whole carcass minus one wing; tip of lower mandible broken off; no evidence of singeing (checked under scope)	Collision with solar panel/heliostat	NA	3	637214, 3937597	heliostat	NA
2014_822_ISEGS	House Finch	HOFI	Incidental	11/13/2014	11/13/2014	Dead, semi-fresh (eyes desiccated, rigor mortis)	3-6 days	whole carcass; no evidence of singeing (checked under scope)	Unknown	NA	2	638695, 3935866	Other Machinery	NA
2014_823_ISEGS	White-Crowned Sparrow	WCSP	Carcass Survey	11/14/2014	11/14/2014	Feather spot	3-6 days	~100 body feathers; 2 flight feathers; partial wing (feather spot size = large). No evidence of singeing (checked under scope).	Unknown	NA	3	637984, 3938068	heliostat	NA
2014_824_ISEGS	American Pipit	AMPI	Carcass Survey	11/14/2014	11/14/2014	Feather spot	3-6 days	1 retrice, 8 primaries, 1 secondary, ~40 body feathers, 1 undertail covert (feather spot size = large). No evidence of singeing (checked under scope).	Unknown	NA	3	636757, 3938164	heliostat	NA
2014_825_ISEGS	American	AMPI	Carcass	11/14/2014	11/14/2014	Dead, semi-fresh	3-6 days	Whole carcass: No evidence of singeing (checked	Collision with solar	NA	3	637766,	heliostat	NA

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2014_663_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	10/21/2014	10/21/2014	Broken up	2 weeks	partial carcass + feather spot: leg and foot, part of body; articulated leg and lower pelvis with feathers; patch of body feathers with flesh; ~50+ feathers; singed body feathers	Scorched or singed	NA	3	637510, 3937751	heliostat	NA
2014_664_ISEGS	Lesser Nighthawk	LENI	Carcass Survey	10/21/2014	10/21/2014	Broken up	2 weeks	Broken up: partial carcass + feather spot, primaries attached to bone; 1 retrice, 8 remiges	Unknown	NA	3	637586, 3937841	heliostat	NA
2014_665_ISEGS	Horned Lark	HOLA	Carcass Survey	10/21/2014	10/21/2014	Broken up	3-6 days	Feather spot + partial carcass: leg and foot, flight feathers, 2 partial wings held together by small amount of flesh; 11 retrices, ~20 contour feathers	Collision with solar panel/heliostat	NA	1	637670, 3937858	heliostat	NA
2014_666_ISEGS	Unknown Sparrow Pipit	UNKN	Carcass Survey	10/21/2014	10/21/2014	Feather spot (eyes desiccated, rigor mortis)	7 days	10+ contour, 2 tertials, 2 retrices, 1 secondary, 1 primary; no evidence of singeing (checked under scope).	Unknown panel/heliostat	NA	3	637684, 3937930, 3937586	heliostat	NA
2014_826_ISEGS	American Pipit	AMPI	Carcass Survey	11/14/2014	11/14/2014	Feather spot	3-6 days	4 primaries, ~50 body feathers (feather spot size = large). No evidence of singeing (checked under scope).	Unknown	NA	3	637741, 3938004	heliostat	NA
2014_827_ISEGS	Ross's Goose	ROGO	Incidental	11/15/2014	11/15/2014	Alive, injured	0-8 hours	No evidence of external trauma, neck palpation has possible cervical spinal injury, left wing slight droop, no fracture immediately evident, possible head trauma. Several episodes of nystagmus noted, but still able to stand. Bird was captured at 0720. At 3 tail, 14 wing, ~60 body feathers (feather spot size = large); 4 wing feathers curled, 2 tail feathers singed and curled, a few body feathers singed. Flux effect grade: unknown.	Collision (other)	NA	2	638637, 3935759	heliostat	NA
2014_828_ISEGS	Cedar Waxwing	CEDW	Carcass Survey	11/17/2014	11/17/2014	Feather spot	7 days	15 flight feathers, 25 body feathers. (feather spot size = small). All flight feathers singed and curled, a few body feathers singed. Flux effect grade unknown.	Scorched or singed	NA	2	638646, 3935742	heliostat	NA
2014_829_ISEGS	Lesser Goldfinch	LEGO	Carcass Survey	11/17/2014	11/17/2014	Feather spot	7 days	partial right and left wing with bone, disarticulated; no evidence of singeing (checked under scope)	Scorched or singed	NA	2	638646, 3935740	heliostat	NA
2014_830_ISEGS	Unknown shorebird	UNKN	Carcass Survey	11/17/2014	11/17/2014	Broken up Dead, semi-fresh (eyes desiccated, rigor mortis)	7 days	Whole carcass: singed wings, tail, singed ventral, dorsal body, head, right flank and belly, undertail coverts singed. Flux effect grade 2 and 3	Unknown	NA	2	638643, 3935720	heliostat	NA
2014_831_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	11/17/2014	11/17/2014	Feather spot	7 days	~20 body feathers (feather spot size = small); no evidence of singeing (checked under scope).	Scorched or singed	NA	2	638646, 3935893	ACC Building	NA
2014_832_ISEGS	Mourning Dove	MODO	Carcass Survey	11/17/2014	11/17/2014	Feather spot	1 month +	11 body feathers (feather spot size = small). No evidence of singeing (checked under scope).	Unknown	NA	2	638633, 3935654	heliostat	NA
2014_833_ISEGS	Unknown passerine	UNKN	Carcass Survey	11/17/2014	11/17/2014	Feather spot	2 weeks	~20 body feathers, 5 flight feathers, partial wing with no bone; no evidence of singeing (checked under scope).	Unknown	NA	2	638646, 3935639	heliostat	NA
2014_834_ISEGS	American Pipit	AMPI	Carcass Survey	11/17/2014	11/17/2014	Feather spot	3 weeks	Desiccated, stiff, eyes gone; whole carcass; found inside of heliostat torque tube; no evidence of singeing (checked under scope).	Unknown	NA	2	638505, 3935646	heliostat	NA
2014_835_ISEGS	Brewer's Sparrow	BRSP	Carcass Survey	11/17/2014	11/17/2014	Mummified	2 weeks	9 flight, 100+ body feathers (feather spot size = large); no evidence of singeing (checked under scope).	Unknown	NA	2	638122, 3935262	heliostat	NA
2014_836_ISEGS	White-Crowned Sparrow	WCSP	Carcass Survey	11/17/2014	11/17/2014	Feather spot	2 weeks	partial carcass + feather spot: 2 partial wings with bone; 3 secondaries, 2 greater coverts, ~25 body feathers (feather spot size = small). No evidence of singeing (checked under scope).	Unknown	NA	2	638736, 3935627	heliostat	NA
2014_837_ISEGS	American Pipit	AMPI	Carcass Survey	11/17/2014	11/17/2014	Broken up	3-6 days	13 flight feathers, ~100 body feathers (feather spot size = large); no evidence of singeing (checked under scope).	Unknown	NA	2	638547, 3936263	heliostat	NA
2014_838_ISEGS	Greater Roadrunner	GRRO	Carcass Survey	11/17/2014	11/17/2014	Feather spot	7 days	feather spot + partial carcass: partial wing with bone, 3 body feathers (feather spot size = small). No evidence of singeing (checked under scope).	Unknown	NA	2	638391, 3935081	heliostat	NA
2014_839_ISEGS	Crowned Sparrow	WCSP	Carcass Survey	11/17/2014	11/17/2014	Broken up	3-6 days	~15 body feathers in a clump (feather spot size =	Unknown	NA	3	638584, 3936459	heliostat	NA
2014_840_ISEGS	Lesser	LENI	Incidental	11/17/2014	11/17/2014	Feather spot	1 month +		Unknown	NA	3	637548,	Other	NA

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2014_663_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	10/21/2014	10/21/2014	Broken up	2 weeks	partial carcass + feather spot: leg and foot, part of body; articulated leg and lower pelvis with feathers; patch of body feathers with flesh; ~50+ feathers; singed body feathers	Scorched or singed	NA	3	637510, 3937751	heliostat	NA
2014_664_ISEGS	Lesser Nighthawk	LENI	Carcass Survey	10/21/2014	10/21/2014	Broken up	2 weeks	Broken up: partial carcass + feather spot, primaries attached to bone; 1 retrice, 8 remiges	Unknown	NA	3	637586, 3937841	heliostat	NA
2014_665_ISEGS	Horned Lark	HOLA	Carcass Survey	10/21/2014	10/21/2014	Broken up	3-6 days	Feather spot + partial carcass: leg and foot, flight feathers, 2 partial wings held together by small amount of flesh; 11 retrices, ~20 contour feathers	Collision with solar panel/heliostat	NA	1	637670, 3937858	heliostat	NA
2014_666_ISEGS	Unknown Sparrow Nighthawk	UNKN	Carcass Survey	10/21/2014	10/21/2014	Feather spot	7 days	10+ contour, 2 tertials, 2 retrices, 1 secondary, 1 primary; no evidence of singeing (checked under scope).	Unknown	NA	3	637684, 3937930	heliostat	NA
2014_841_ISEGS	Violet-green Swallow	VGSW	Carcass Survey	11/17/2014	11/17/2014	Feather spot	2 weeks	small); no evidence of singeing (checked under scope). 2 wing feathers, ~10 body feathers (feather spot size = small); uppertail covert singed and curled. Flux effect grade unknown.	Scorched or singed	NA	2	638646, 3935639	heliostat	NA
2014_842_ISEGS	Unknown Sparrow	UNKN	Carcass Survey	11/18/2014	11/18/2014	Feather spot	7 days	20+ body feathers; 4 flight feathers (feather spot size = small); no evidence of singeing (checked under scope)	Unknown	NA	2	638340, 3935208	heliostat	NA
2014_843_ISEGS	Dark-Eyed Junco	DEJU	Carcass Survey	11/18/2014	11/18/2014	Broken up	3-6 days	Partial wings with bone, plus 3 secondaries loose. No evidence of singeing (checked under scope).	Unknown	NA	2	637910, 3935079	Fencing	NA
2014_844_ISEGS	European Starling	EUST	Incidental	11/18/2014	11/18/2014	Feather spot	3-6 days	~5 flight, ~40 body feathers (feather spot size = small). No evidence of singeing (checked under scope).	Unknown	NA	2	638167, 3936845	heliostat	NA
2014_845_ISEGS	Unknown passerine	UNKN	Carcass Survey	11/18/2014	11/18/2014	Feather spot	3 weeks	5 primaries, some coverts attached, small clump of body feathers (feather spot size = small). No evidence of singeing (checked under scope).	Unknown	NA	2	638111, 3935487	heliostat	NA
2014_846_ISEGS	Mourning Dove	MODO	Carcass Survey	11/18/2014	11/18/2014	Feather spot	2 weeks	50+ body feathers; 10 flight feathers (feather spot size = large). No evidence of singeing (checked under scope).	Unknown	NA	2	638107, 3935073	Fencing	NA
2014_847_ISEGS	Crissal Thrasher	CRTH	Carcass Survey	11/18/2014	11/18/2014	Feather spot	3-6 days	25+ flight feathers, 100+ body feathers (feather spot size = large). No evidence of singeing (checked under scope).	Unknown	NA	2	639680, 3935813	Fencing	NA
2014_848_ISEGS	Mourning Dove	MODO	Incidental	11/18/2014	11/18/2014	Feather spot	1 month +	~50 body feathers, 1 primary, 10 retrices, secondaries (feather spot size = large). No evidence of singeing (checked under scope).	Unknown	NA	2	638008, 3937341	Heliostat	NA
2014_849_ISEGS	Western Meadowlark	WEME	Carcass Survey	11/19/2014	11/19/2014	Feather spot	2 weeks	8 flight, 100+ body feathers (feather spot size = large); no evidence of singeing (checked under scope)	Unknown	NA	2	639231, 3935758	Heliostat	NA
2014_850_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	11/19/2014	11/19/2014	Feather spot	2 weeks	2 tail, ~100 body feathers (feather spot size = large); no evidence of singeing (checked under scope).	Unknown	NA	2	638173, 3935760	Heliostat	NA
2014_851_ISEGS	American Pipit	AMPI	Incidental	11/19/2014	11/19/2014	Broken up	2 weeks	partial carcass + feather spot: ~20 body feathers (feather spot size = small); body with feet, detached wing with bone, part of spine with attached back, head w/skull showing feathers; no evidence of singeing (checked under scope).	Unknown	NA	2	639068, 3935430	heliostat	NA
2014_852_ISEGS	American Coot	AMCO	Incidental	11/19/2014	11/19/2014	Dead, fresh (eyes moist)	8-24 hours	Whole carcass: blood seeping out of bill, eyes present and moist; trauma to keratin on bill; no evidence of singeing (checked under scope).	Collision with solar panel/heliostat	NA	2	639335, 3935786	heliostat	NA
2014_853_ISEGS	White-Crowned Sparrow	WCSP	Carcass Survey	11/20/2014	11/20/2014	Feather spot	8-24 hours	6 flight feathers and ~50 body feathers (small); no evidence of singeing (checked under scope)	Unknown	NA	2	638288, 3935224	heliostat	NA
2014_854_ISEGS	American Pipit	AMPI	Carcass Survey	11/20/2014	11/20/2014	Dead, semi-fresh (eyes desiccated, rigor mortis)	3 weeks	whole carcass; imprint on closest heliostat, no obvious external injuries; no evidence of singeing (checked under scope)	Collision with solar panel/heliostat	NA	2	639240, 3935245	heliostat	NA
2014_855_ISEGS	Unknown passerine	UNKN	Carcass Survey	11/20/2014	11/20/2014	Feather spot	1 month +	8 flight and 100+ body feathers; imprint on nearby heliostat; no evidence of singeing (checked under scope)	Collision with solar panel/heliostat	NA	2	637731, 3935687	heliostat	NA

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2014_663_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	10/21/2014	10/21/2014	Broken up	2 weeks	partial carcass + feather spot: leg and foot, part of body; articulated leg and lower pelvis with feathers; patch of body feathers with flesh; ~50+ feathers; singed body feathers	Scorched or singed	NA	3	637510, 3937751	heliostat	NA
2014_664_ISEGS	Lesser Nighthawk	LENI	Carcass Survey	10/21/2014	10/21/2014	Broken up	2 weeks	Broken up: partial carcass + feather spot, primaries attached to bone; 1 retrice, 8 remiges	Unknown	NA	3	637586, 3937841	heliostat	NA
2014_665_ISEGS	Horned Lark	HOLA	Carcass Survey	10/21/2014	10/21/2014	Broken up	3-6 days	Feather spot + partial carcass: leg and foot, flight feathers, 2 partial wings held together by small amount of flesh; 11 retrices, ~20 contour feathers	Collision with solar panel/heliostat	NA	1	637670, 3937858	heliostat	NA
2014_666_ISEGS	Unknown Sparrow	UNKN	Carcass Survey	10/21/2014	10/21/2014	Feather spot	7 days	10+ contour, 2 tertials, 2 retrices, 1 secondary, 1 primary; no evidence of singeing (checked under scope).	Unknown	NA	3	637684, 3937930	heliostat	NA
2014_856_ISEGS	Unknown Sparrow	UNKN	Carcass Survey	11/20/2014	11/20/2014	Broken up	1 month +	partial carcass and feather spot (small); partial wing, 10 flight and ~12 body feathers; no evidence of singeing (checked under scope)	Unknown	NA	2	637807, 3935351	heliostat	NA
2014_857_ISEGS	Loggerhead Shrike	LOSH	Incidental	11/20/2014	11/20/2014	Dead, fresh (eyes moist)	0-8 hours	Whole carcass: fresh pliable carcass; no evidence of singeing (checked under scope)	Unknown	NA	NA	639650, 3935270	fencing	NA
2014_858_ISEGS	Yellow-rumped Warbler	YRWA	Incidental	11/21/2014	11/21/2014	Dead, fresh (eyes moist)	0-8 hours	whole carcass; all remiges and retrices singed and curled; face, crown, entire back, breast, flanks and axillaries singed; flux effect grade 2, 3	Scorched or singed	NA	2	638619, 3935817	Project Building	NA
2014_859_ISEGS	Mountain Bluebird	MOBL	Carcass Survey	11/24/2014	11/24/2014	Broken up	2 weeks	partial carcass + feather spot: head, body, tail detached; 2 clumps of body feathers, 5 primaries attached (feather spot size = large); singed right side of face, singed primaries and tail feathers, singed right flank, right wing all coverts singed; part o	Scorched or singed	NA	1	640303, 3933333	heliostat	NA
2014_860_ISEGS	American Coot	AMCO	Carcass Survey	11/24/2014	11/24/2014	Broken up	3-6 days	partial carcass + feather spot: partial wing, 2 body feathers, 3 greater coverts, 6 medium coverts (feather spot size = small); no evidence of singeing (checked under scope)	Unknown	NA	1	640449, 3933319	Heliostat	NA
2014_861_ISEGS	Unknown Sparrow	UNKN	Carcass Survey	11/24/2014	11/24/2014	Feather spot	3-6 days	4 retrices, ~50 body feathers (feather spot size = large); no evidence of singeing (checked under scope)	Unknown	NA	1	641017, 3932903	heliostat	NA
2014_862_ISEGS	Unknown passerine	UNKN	Carcass Survey	11/24/2014	11/24/2014	Broken up	2 weeks	partial left wing; no evidence of singeing (checked under scope)	Unknown	NA	1	640392, 3933494	Other	NA
2014_863_ISEGS	Mourning Dove	MODO	Carcass Survey	11/24/2014	11/24/2014	Mummified	1 month +	Torso with right leg, left and right wing, very weathered and desiccated; no evidence of singeing (checked under scope)	Unknown	NA	1	640719, 3932696	heliostat	NA
2014_864_ISEGS	Unknown passerine	UNKN	Carcass Survey	11/24/2014	11/24/2014	Feather spot	7 days	~15 body feathers in clump; all body feathers singed at tips (feather spot size = small); flux effect grade unknown	Scorched or singed	NA	1	640558, 3933659	heliostat	NA
2014_865_ISEGS	Rock Pigeon	ROPI	Carcass Survey	11/24/2014	11/24/2014	Feather spot	1 month +	4 wing, 80+ body feathers (feather spot size = large); no evidence of singeing (checked under scope)	Unknown	NA	1	641008, 3932834	heliostat	NA
2014_866_ISEGS	Unknown Sparrow	UNKN	Carcass Survey	11/24/2014	11/24/2014	Feather spot	7 days	4 secondaries, 50+ body feathers (feather spot size = large); no evidence of singeing (checked under scope)	Unknown	NA	1	641037, 3932904	heliostat	NA
2014_867_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	11/24/2014	11/24/2014	Feather spot	2 weeks	2 flight, ~30 body feathers (feather spot size = small); no evidence of singeing (checked under scope)	Unknown	NA	1	640322, 3933719	heliostat	NA
2014_868_ISEGS	Greater Roadrunner	GRRO	Carcass Survey	11/24/2014	11/24/2014	Feather spot	2 weeks	18 wing feathers, ~25 body feathers (feather spot size = small); no evidence of singeing (checked under scope)	Unknown	NA	1	639347, 3933252	Fencing	NA
2014_869_ISEGS	Greater Roadrunner	GRRO	Carcass Survey	11/24/2014	11/24/2014	Feather spot	2 weeks	3 retrices, 3 large body feathers, ~10 body feathers (feather spot size = small); no evidence of singeing (checked under scope)	Unknown	NA	1	640750, 3932658	Fencing	NA
2014_870_ISEGS	Greater Roadrunner	GRRO	Carcass Survey	11/24/2014	11/24/2014	Feather spot	2 days	200+ body, 4 tail, ~25 flight feathers (feather spot size = large); no evidence of singeing (checked under scope)	Unknown	NA	1	640515, 3934585	Fencing	NA
2014_871_ISEGS	Band-tailed Pigeon	BTPI	Carcass Survey	11/25/2014	11/25/2014	Broken up	2 weeks	partial carcass + feather spot: 8 tail feathers, 5 secondary feathers, 200+ body feathers; piece of keel bone (feather spot size = large); no evidence of singeing (checked under scope)	Collision with solar panel/heliostat	NA	1	640206, 3934188	heliostat	NA

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2014_663_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	10/21/2014	10/21/2014	Broken up	2 weeks	partial carcass + feather spot: leg and foot, part of body; articulated leg and lower pelvis with feathers; patch of body feathers with flesh; ~50+ feathers; singed body feathers	Scorched or singed	NA	3	637510, 3937751	heliostat	NA
2014_664_ISEGS	Lesser Nighthawk	LENI	Carcass Survey	10/21/2014	10/21/2014	Broken up	2 weeks	Broken up: partial carcass + feather spot, primaries attached to bone; 1 retrice, 8 remiges	Unknown	NA	3	637586, 3937841	heliostat	NA
2014_665_ISEGS	Horned Lark	HOLA	Carcass Survey	10/21/2014	10/21/2014	Broken up	3-6 days	Feather spot + partial carcass: leg and foot, flight feathers, 2 partial wings held together by small amount of flesh; 11 retrices, ~20 contour feathers	Collision with solar panel/heliostat	NA	1	637670, 3937858	heliostat	NA
2014_666_ISEGS	Unknown Sparrow	UNKN	Carcass Survey	10/21/2014	10/21/2014	Feather spot	7 days	10+ contour, 2 tertials, 2 retrices, 1 secondary, 1 primary; no evidence of singeing (checked under scope).	Unknown	NA	3	637684, 3937930	heliostat	NA
2014_872_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	11/25/2014	11/25/2014	Feather spot	3-6 days	10 retrices, 8 primaries, ~20 body feathers (feather spot size = small); no evidence of singeing (checked under scope).	Unknown	NA	1	640631, 3933272	heliostat	NA
2014_873_ISEGS	Unknown Sparrow	UNKN	Carcass Survey	11/25/2014	11/25/2014	Broken up	1 month +	Partial carcass: partial wing with bone, rib bones, skull and beak, leg, part of spine; 1 covert, 3 flight feathers; No evidence of singeing (checked under scope).	Unknown	NA	1	640526, 3933203	heliostat	NA
2014_874_ISEGS	Rock Pigeon	ROPI	Incidental	11/25/2014	11/25/2014	Alive, injured	8-24 hours	Singed right flank and belly, undertail coverts, all retrices, primaries, secondaries; head, face and neck singed. Flux effect grade 2 and 3. Largely unable to fly. No obvious trauma to eyes. Has pink band with #7 on left leg.	Scorched or singed	NA	1	640371, 3933498	Solar Concentrating Tower	NA
2014_875_ISEGS	Yellow Warbler	YEWA	Carcass Survey	11/25/2014	11/25/2014	Broken up	3-6 days	partial carcass + feather spot: ~10 flight, ~35 body feathers, 1 leg (feather spot size = small); no evidence of singeing (checked under scope)	Unknown	NA	1	639911, 3933374	heliostat	NA
2014_876_ISEGS	Savannah Sparrow	SAVS	Incidental	11/25/2014	11/25/2014	Dead, fresh (eyes moist)	8-24 hours	Whole carcass: stiff body, eyes sunken, no insects, feathers fluffy. No evidence of singeing (checked under scope).	Collision with solar panel/heliostat	NA	1	639903, 3933553	heliostat	NA
2014_877_ISEGS	Greater Roadrunner	GRRO	Carcass Survey	11/25/2014	11/25/2014	Feather spot	3-6 days	6 retrices, ~100 body feathers (feather spot size = large); no evidence of singeing (checked under scope)	Unknown	NA	1	640659, 3934425	heliostat	NA
2014_878_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	11/25/2014	11/25/2014	Feather spot	3-6 days	6 retrices, 1 uppertail covert, 5 body feathers (feather spot size = small); no evidence of singeing (checked under scope)	Unknown	NA	1	640797, 3934378	heliostat	NA
2014_879_ISEGS	Unknown Brewer's Blackbird	UNKN	Carcass Survey	11/25/2014	11/25/2014	Broken up	1 month +	Partial carcass: Piece of flesh with body feathers attached. No evidence of singeing (checked under scope).	Unknown	NA	1	640631, 3933272	heliostat	NA
2014_880_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	12/2/2014	12/2/2014	Feather spot	2 weeks	3 flight, 40 body feathers (feather spot size = small); no evidence of singeing (checked under scope)	Unknown	NA	3	637375, 3937685	heliostat	NA
2014_881_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	12/2/2014	12/2/2014	Feather spot	2 weeks	5 flight, 10 body feathers; clump of flight feathers (feather spot size = small); singed flight feathers; flux effect grade unknown.	Scorched or singed	NA	3	637436, 3937689	heliostat	NA
2014_882_ISEGS	Mourning Dove	MODO	Carcass Survey	12/2/2014	12/2/2014	Broken up	1 month +	10 flight, ~50 body feathers, piece of skull (feather spot size = large); no evidence of singeing (checked under scope)	Unknown	NA	3	637484, 3937705	heliostat	NA
2014_883_ISEGS	American Pipit	AMPI	Carcass Survey	12/2/2014	12/2/2014	Feather spot	2 days	~20 flight, ~150 body feathers (feather spot size = large); singed feathers; flux effect grade unknown.	Scorched or singed	NA	3	637328, 3937647	heliostat	NA
2014_884_ISEGS	Unknown passerine	UNKN	Carcass Survey	12/2/2014	12/2/2014	Feather spot	2 weeks	4 primaries (feather spot size = small); all feather singed; flux effect grade unknown	Scorched or singed	NA	3	637440, 3937929	Steam Pipe	NA
2014_885_ISEGS	American Pipit	AMPI	Carcass Survey	12/2/2014	12/2/2014	Feather spot	2 weeks	12 flight, 30 body feathers (feather spot size = small); no evidence of singeing (checked under scope)	Unknown	NA	3	637181, 3938293	heliostat	NA
2014_886_ISEGS	Lesser Goldfinch	LEGO	Carcass Survey	12/2/2014	12/2/2014	Feather spot	2 weeks	14 flight, 50 body feathers (feather spot size = large); all feathers singed; flux effect grade unknown	Scorched or singed	NA	3	637440, 3937929	Steam Pipe	NA
2014_887_ISEGS	Ruby-crowned Kinglet	RCKI	Carcass Survey	12/2/2014	12/2/2014	Feather spot	3-6 days	24 flight, 18 body feathers (feather spot size = small); 2 secondaries singed; flux effect grade unknown	Scorched or singed	NA	3	637328, 3937730	heliostat	NA
2014_888_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	12/2/2014	12/2/2014	Feather spot	2 weeks	2 flight, ~10 body feathers (feather spot size = small); no evidence of singeing (checked under	Unknown	NA	3	636906, 3938056	heliostat	NA

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2014_663_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	10/21/2014	10/21/2014	Broken up	2 weeks	partial carcass + feather spot: leg and foot, part of body; articulated leg and lower pelvis with feathers; patch of body feathers with flesh; ~50+ feathers; singed body feathers	Scorched or singed	NA	3	637510, 3937751	heliostat	NA
2014_664_ISEGS	Lesser Nighthawk	LENI	Carcass Survey	10/21/2014	10/21/2014	Broken up	2 weeks	Broken up: partial carcass + feather spot, primaries attached to bone; 1 rectrice, 8 remiges	Unknown	NA	3	637586, 3937841	heliostat	NA
2014_665_ISEGS	Horned Lark	HOLA	Carcass Survey	10/21/2014	10/21/2014	Broken up	3-6 days	Feather spot + partial carcass: leg and foot, flight feathers, 2 partial wings held together by small amount of flesh; 11 retrices, ~20 contour feathers	Collision with solar panel/heliostat	NA	1	637670, 3937858	heliostat	NA
2014_666_ISEGS	Unknown Sparrow Warbler	UNKN	Carcass Survey	10/21/2014	10/21/2014	Feather spot	7 days	10+ contour, 2 tertials, 2 retrices, 1 secondary, 1 primary; no evidence of singeing (checked under scope).	Unknown	NA	3	637684, 3937930	heliostat	NA
2014_889_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	12/2/2014	12/2/2014	Feather spot	7 days	5 flight, ~40 body feathers (feather spot size = small); rectrice singed, half of unknown flight feathers singed; body feathers singed; flux effect grade unknown	Scorched or singed	NA	3	637416, 3937743	heliostat	NA
2014_890_ISEGS	Unknown passerine	UNKN	Carcass Survey	12/2/2014	12/2/2014	Feather spot	3 weeks	~15 body, 1 flight feathers (feather spot size = small); 3 body feathers singed	Scorched or singed	NA	3	637443, 3937592	heliostat	NA
2014_891_ISEGS	Lesser Goldfinch	LEGO	Carcass Survey	12/2/2014	12/2/2014	Feather spot	2 weeks	16 flight feathers (feather spot size = small); all feathers singed.	Scorched or singed	NA	3	637479, 3937911	Other Machinery	NA
2014_892_ISEGS	Western Meadowlark	WEME	Carcass Survey	12/2/2014	12/2/2014	Broken up	7 days	3 flight, 5 body feathers, clump of feathers with and bone attached (feather spot size = small); no evidence of singeing (checked under scope)	Unknown	NA	3	637374, 3937765	heliostat	NA
2014_893_ISEGS	Unknown passerine	UNKN	Carcass Survey	12/2/2014	12/2/2014	Broken up	2 weeks	partial carcass + feather spot: ~10 body feathers, partial wing with bone (feather spot size = small); no evidence of singeing (checked under scope)	Unknown	NA	3	637326, 3937791	heliostat	NA
2014_894_ISEGS	Unknown passerine	UNKN	Carcass Survey	12/2/2014	12/2/2014	Feather spot	2 weeks	3 flight, 4 body feathers; 1 primary singed, all body feathers singed (feather spot size = small); flux effect grade unknown	Scorched or singed	NA	3	637440, 3937929	Steam Pipe	NA
2014_895_ISEGS	Unknown passerine	UNKN	Carcass Survey	12/2/2014	12/2/2014	Feather spot	2 weeks	25+ body feathers (feather spot size = small); most feathers found singed; flux effect grade unknown	Scorched or singed	NA	3	637472, 3937925	Other Machinery	NA
2014_896_ISEGS	House Finch	HOFI	Carcass Survey	12/2/2014	12/2/2014	Broken up	3-6 days	Partial carcass: partial left wing with bone, 1 secondary, 2 alula underneath; primary covert singed, 2 primaries singed at tips; flux effect grade unknown	Scorched or singed	NA	3	637473, 3937805	heliostat	NA
2014_897_ISEGS	American Pipit	AMPI	Carcass Survey	12/2/2014	12/2/2014	Feather spot	2 weeks	3 flight, ~50 body feathers (feather spot size = large); no evidence of singeing (checked under scope)	Unknown	NA	3	637791, 3938304	heliostat	NA
2014_898_ISEGS	Unknown passerine	UNKN	Carcass Survey	12/2/2014	12/2/2014	Feather spot	2 weeks	25 body feathers (feather spot size = small); no evidence of singeing (checked under scope)	Unknown	NA	3	637129, 3937363	heliostat	NA
2014_899_ISEGS	Yellow Warbler	YEWA	Carcass Survey	12/2/2014	12/2/2014	Broken up	7 days	partial carcass + feather spot: 3 flight, 30 body feathers, section of skull with singed head feathers (feather spot size = small); flux effect grade unknown	Scorched or singed	NA	3	637479, 3937911	Other Machinery	NA
2014_900_ISEGS	Unknown passerine	UNKN	Carcass Survey	12/2/2014	12/2/2014	Feather spot	7 days	3 flight, ~25 body feathers (feather spot size = small); no evidence of singeing (checked under scope)	Unknown	NA	3	637262, 3937949	heliostat	NA
2014_901_ISEGS	Yellow Warbler	YEWA	Carcass Survey	12/2/2014	12/2/2014	Broken up	2 weeks	partial carcass + feather spot: 3 flight, 20 body feathers, piece of skeleton with attached feathers (feather spot size = small); flight feathers singed and curled; flux effect grade unknown	Scorched or singed	NA	3	637518, 3937910	Other Machinery	NA
2014_902_ISEGS	Western Meadowlark	WEME	Incidental	12/2/2014	12/4/2014	Broken up	3-6 days	partial carcass + feather spot: partial carcass missing, breast eaten, lower torso, legs, and back attached; tail feathers partially intact, ~20 body feathers (feather spot size = small); no evidence of singeing	Unknown	NA	3	637450, 3937230	heliostat	NA
2014_903_ISEGS	Unknown passerine	UNKN	Carcass Survey	12/2/2014	12/2/2014	Broken up	3-6 days	partial carcass + feather spot: 14 flight, ~30 body feathers, primary has small wing bone attached (feather spot size = small); no evidence of singeing (checked under scope)	Unknown	NA	3	637905, 3937487	heliostat	NA
2014_904_ISEGS	Green-winged Teal	GWTE	Carcass Survey	12/3/2014	12/3/2014	Feather spot	2 weeks	12 flight, 17 body feathers (feather spot size = small); no evidence of singeing (checked under	Unknown	NA	3	638969, 3937642	Fencing	NA

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2014_663_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	10/21/2014	10/21/2014	Broken up	2 weeks	partial carcass + feather spot: leg and foot, part of body; articulated leg and lower pelvis with feathers; patch of body feathers with flesh; ~50+ feathers; singed body feathers	Scorched or singed	NA	3	637510, 3937751	heliostat	NA
2014_664_ISEGS	Lesser Nighthawk	LENI	Carcass Survey	10/21/2014	10/21/2014	Broken up	2 weeks	Broken up: partial carcass + feather spot, primaries attached to bone; 1 retrice, 8 remiges	Unknown	NA	3	637586, 3937841	heliostat	NA
2014_665_ISEGS	Horned Lark	HOLA	Carcass Survey	10/21/2014	10/21/2014	Broken up	3-6 days	Feather spot + partial carcass: leg and foot, flight feathers, 2 partial wings held together by small amount of flesh; 11 retrices, ~20 contour feathers	Collision with solar panel/heliostat	NA	1	637670, 3937858	heliostat	NA
2014_666_ISEGS	Unknown Sparrow	UNKN	Carcass Survey	10/21/2014	10/21/2014	Feather spot	7 days	10+ contour, 2 tertials, 2 retrices, 1 secondary, 1 primary; no evidence of singeing (checked under scope).	Unknown	NA	3	637684, 3937930	heliostat	NA
2014_905_ISEGS	Greater Roadrunner	GRRO	Carcass Survey	12/3/2014	12/3/2014	Broken up	2 weeks	partial carcass + feather spot: ~150 body, 14+ retrices, leg bone, upper half of bill (feather spot size = large); no evidence of singeing (checked under scope)	Unknown	NA	3	638837, 3938222	Fencing	NA
2014_906_ISEGS	Mourning Dove	MODO	Carcass Survey	12/3/2014	12/3/2014	Feather spot	3 weeks	12 flight feathers (feather spot size = small); no evidence of singeing (checked under scope)	Unknown	NA	1	641121, 3934241	heliostat	NA
2014_907_ISEGS	Unknown Sparrow	UNKN	Carcass Survey	12/5/2014	12/5/2014	Broken up	2 days	partial carcass: foot and leg with ~5 body feathers attached; no evidence of singeing (checked under scope)	Unknown	NA	3	637375, 3938527	heliostat	NA
2014_908_ISEGS	Western Meadowlark	WEME	Incidental	12/5/2014	12/5/2014	Broken up	2 weeks	partial carcass + feather spot: 6 flight, 30+ body feathers, partial left and right wing with bone (feather spot size = small); no evidence of singeing (checked under scope)	Unknown	NA	3	637782, 3937761	heliostat	NA
2014_909_ISEGS	Unknown Sparrow	UNKN	Carcass Survey	12/5/2014	12/5/2014	Broken up	3 weeks	partial carcass + feather spot: 7 flight, 5 body feathers, partial wing with bone (feather spot size = small); no evidence of singeing (checked under scope)	Unknown	NA	3	637749, 3937897	heliostat	NA
2014_910_ISEGS	American Coot	AMCO	Incidental	12/5/2014	12/5/2014	Broken up	3-6 days	partial carcass + feather spot: 100+ body feathers in clumps attached by skin (feather spot size = large); no evidence of singeing (checked under scope).	Unknown	NA	3	637844, 3938106	heliostat	NA
2014_911_ISEGS	American Pipit	AMPI	Carcass Survey	12/8/2014	12/8/2014	Feather spot	3-6 days	12 flight, 30 body feathers (feather spot size = small); no evidence of singeing (checked under scope)	Unknown	NA	2	638658, 3936029	heliostat	NA
2014_912_ISEGS	American Robin	AMRO	Carcass Survey	12/8/2014	12/8/2014	Broken up	7 days	partial left wing with bone, partial tail with feathers joined; 2 loose flight feathers (1 tail, 1 wing); no evidence of singeing (checked under scope)	Unknown	NA	2	638552, 3935908	Other	NA
2014_913_ISEGS	American Pipit	AMPI	Carcass Survey	12/8/2014	12/8/2014	Feather spot	3 weeks	8 flight, ~100 body feathers (feather spot size = large); no evidence of singeing (checked under scope)	Unknown	NA	2	638756, 3936078	heliostat	NA
2014_914_ISEGS	American Pipit	AMPI	Carcass Survey	12/8/2014	12/8/2014	Dead, semi-fresh (eyes desiccated, rigor mortis)	3-6 days	Whole carcass: eyes gone, but plumage does not look weathered; no evidence of singeing (checked under scope)	Collision with solar panel/heliostat	NA	2	638802, 3935924	heliostat	NA
2014_915_ISEGS	Unknown passerine	UNKN	Carcass Survey	12/8/2014	12/8/2014	Feather spot	2 days	10+ body feathers (feather spot size = small); no evidence of singeing (checked under scope)	Unknown	NA	2	639679, 3935806	Fencing	NA
2014_916_ISEGS	American Kestrel	AMKE	Carcass Survey	12/8/2014	12/8/2014	Broken up	1 month +	partial carcass + feather spot: 4 body feathers, part of right wing with bone, part of right scapulars, secondaries (feather spot size = small); all primaries in dark barred areas and secondaries, plus tail feathers singed.	Scorched or singed	NA	2	638319, 3935101	heliostat	NA
2014_917_ISEGS	Greater Roadrunner	GRRO	Carcass Survey	12/9/2014	12/9/2014	Broken up	1 month +	partial carcass + feather spot: ~100 body feathers, 2 complete wings, head to neck vertebrae, pieces of skin and bits of bone (feather spot size = large); no evidence of singeing (checked under scope)	Unknown	NA	2	637757, 3936579	heliostat	NA
2014_918_ISEGS	Unknown Sparrow	UNSP	Carcass Survey	12/9/2014	12/9/2014	Feather spot	7 days	10 tail and ~100 body feathers, 2 partial wings (no bone) (feather spot size = large); no evidence of singeing (checked under scope)	Unknown	NA	2	638170, 3936134	heliostat	NA
2014_919_ISEGS	Western	WEME	Carcass	12/9/2014	12/9/2014	Broken up	7 days	partial carcass: partial wing with some skin and	Unknown	NA	2	638673,	heliostat	NA

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2014_663_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	10/21/2014	10/21/2014	Broken up	2 weeks	partial carcass + feather spot: leg and foot, part of body; articulated leg and lower pelvis with feathers; patch of body feathers with flesh; ~50+ feathers; singed body feathers	Scorched or singed	NA	3	637510, 3937751	heliostat	NA
2014_664_ISEGS	Lesser Nighthawk	LENI	Carcass Survey	10/21/2014	10/21/2014	Broken up	2 weeks	Broken up: partial carcass + feather spot, primaries attached to bone; 1 retrice, 8 remiges	Unknown	NA	3	637586, 3937841	heliostat	NA
2014_665_ISEGS	Horned Lark	HOLA	Carcass Survey	10/21/2014	10/21/2014	Broken up	3-6 days	Feather spot + partial carcass: leg and foot, flight feathers, 2 partial wings held together by small amount of flesh; 11 retrices, ~20 contour feathers 10+ contour, 2 tertials, 2 retrices, 1 secondary, 1 primary; no evidence of singeing (checked under scope).	Collision with solar panel/heliostat	NA	1	637670, 3937858	heliostat	NA
2014_666_ISEGS	Unknown Sparrow Meadowlark	UNKN	Carcass Survey	10/21/2014	10/21/2014	Feather spot	7 days	connective tissue, 1 flight, 1 body feather; no evidence of singeing (checked under scope)	Unknown	NA	3	637684, 3937930, 3935430	heliostat	NA
2014_920_ISEGS	Unknown Sparrow	UNKN	Carcass Survey	12/9/2014	12/9/2014	Broken up Dead, semi-fresh (eyes desiccated, rigor mortis)	7 days	partial carcass + feather spot: ~30 body feathers, bone with feathers (feather spot size = small); no evidence of singeing (checked under scope)	Unknown	NA	2	638783, 3935508	heliostat	NA
2014_921_ISEGS	Northern Harrier	NOHA	Carcass Survey	12/11/2014	12/11/2014	Dead, semi-fresh (eyes desiccated, rigor mortis)	3 weeks	Whole carcass: eyes gone, ant scavenged; all tail feathers and 90% of wing feathers singed. ~90% of head and body feathers singed; flux effect grade 2 and 3.	Scorched or singed	NA	2	639154, 3935143	heliostat	NA
2014_922_ISEGS	Brewer's Blackbird	BRBL	Carcass Survey	12/11/2014	12/11/2014	Feather spot	3-6 days	~25 body, ~3 flight feathers (feather spot size = small); no evidence of singeing (checked under scope).	Unknown	NA	2	638823, 3935085	heliostat	NA
2014_923_ISEGS	White-Crowned Sparrow	WCSP	Carcass Survey	12/11/2014	12/11/2014	Feather spot	3-6 days	~25 flight, ~100 body feathers (feather spot size = large); no evidence of singeing (checked under scope).	Unknown	NA	2	638948, 3935123	heliostat	NA
2014_924_ISEGS	Greater Roadrunner	GRRO	Carcass Survey	12/15/2014	12/15/2014	Feather spot	7 days	300+ body feathers, 10 retrices and 35 remiges (feather spot = large). No evidence of singeing (checked under scope).	Unknown	NA	1	640719, 3932672	heliostat	NA
2014_925_ISEGS	Eared Grebe	EAGR	Carcass Survey	12/15/2014	12/15/2014	Broken up	3-6 days	partial carcass missing head and with wing bones exposed; no evidence of singeing (checked under scope).	Unknown	NA	1	640301, 3933642	heliostat	NA
2014_926_ISEGS	Unknown Swallow	UNKN	Carcass Survey	12/15/2014	12/15/2014	Feather spot	2 weeks	2 secondaries, 2 greater coverts connected by small amount of flesh (feather spot size = small); no evidence of singeing (checked under scope).	Unknown	NA	1	640318, 3933693	heliostat	NA
2014_927_ISEGS	Greater Roadrunner	GRRO	Carcass Survey	12/15/2014	12/15/2014	Feather spot	2 weeks	2 retrices, 2 remiges, 100+ body feathers (feather spot = large); no evidence of singeing (checked under scope)	Unknown	NA	1	639348, 3932835	Fencing	NA
2014_928_ISEGS	Greater Roadrunner	GRRO	Carcass Survey	12/15/2014	12/15/2014	Broken up	2 weeks	feather spot and partial carcass; 2 retrices, undertail coverst, 20+ body and flight feathers, lower piece of bill (feather spot size = small); no evidence of singeing (checked under scope)	Unknown	NA	1	640728, 3932724	heliostat	NA
2014_929_ISEGS	Sagebrush Sparrow	SAGS	Carcass Survey	12/16/2014	12/16/2014	Dead, fresh (eyes moist)	8-24 hours	Whole carcass: fresh plumage; eyes present but sunken, not in rigor; no evidence of singeing (checked under scope)	Collision with solar panel/heliostat	NA	1	639685, 3934327	heliostat	NA
2014_930_ISEGS	White-Crowned Sparrow	WCSP	Carcass Survey	12/16/2014	12/16/2014	Broken up	2 weeks	Partial carcass: body missing head, most body feathers missing, all flight feathers missing; no evidence of singeing (checked under scope).	Unknown	NA	1	639897, 3933213	heliostat	NA
2014_931_ISEGS	Mourning Dove	MODO	Carcass Survey	12/16/2014	12/16/2014	Feather spot	1 month +	~15 flight; ~15 body feathers (feather spot size = small); no evidence of singeing (checked under scope)	Unknown	NA	1	640961, 3934318	heliostat	NA
2014_932_ISEGS	American Pipit	AMPI	Carcass Survey	12/16/2014	12/16/2014	Feather spot Dead, semi-fresh (eyes desiccated, rigor mortis)	2 weeks	23 flight, 10 body feathers (feather spot size = small); no evidence of singeing (checked under scope)	Unknown	NA	3	637910, 3938327	heliostat	NA
2014_933_ISEGS	Sagebrush Sparrow	SAGS	Carcass Survey	12/17/2014	12/17/2014	Dead, semi-fresh (eyes desiccated, rigor mortis)	7 days	Whole carcass: eyes sunken, maggots in torso, right side of head scavenged, missing right leg, 1/2 of left leg; no evidence of singeing (checked under scope)	Unknown	NA	3	636553, 3938103	heliostat	NA
2014_934_ISEGS	Yellow-rumped	YRWA	Carcass Survey	12/17/2014	12/17/2014	Broken up	2 weeks	partial carcass; right wing, head with neck bones, 2 body feathers; no evidence of singeing (checked	Unknown	NA	3	636579, 3938205	heliostat	NA

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2014_663_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	10/21/2014	10/21/2014	Broken up	2 weeks	partial carcass + feather spot: leg and foot, part of body; articulated leg and lower pelvis with feathers; patch of body feathers with flesh; ~50+ feathers; singed body feathers	Scorched or singed	NA	3	637510, 3937751	heliostat	NA
2014_664_ISEGS	Lesser Nighthawk	LENI	Carcass Survey	10/21/2014	10/21/2014	Broken up	2 weeks	Broken up: partial carcass + feather spot, primaries attached to bone; 1 rectrice, 8 remiges	Unknown	NA	3	637586, 3937841	heliostat	NA
2014_665_ISEGS	Horned Lark	HOLA	Carcass Survey	10/21/2014	10/21/2014	Broken up	3-6 days	Feather spot + partial carcass: leg and foot, flight feathers, 2 partial wings held together by small amount of flesh; 11 retrices, ~20 contour feathers	Collision with solar panel/heliostat	NA	1	637670, 3937858	heliostat	NA
2014_666_ISEGS	Unknown Sparrow Warbler	UNKN	Carcass Survey	10/21/2014	10/21/2014	Feather spot	7 days	10+ contour, 2 tertials, 2 retrices, 1 secondary, 1 primary; no evidence of singeing (checked under scope).	Unknown	NA	3	637684, 3937930	heliostat	NA
2014_935_ISEGS	Mourning Dove	MODO	Carcass Survey	12/17/2014	12/17/2014	Broken up	1 month +	under scope)	Unknown	NA	3	636586, 3938219	heliostat	NA
2014_936_ISEGS	Rock Pigeon	ROPI	Carcass Survey	12/17/2014	12/17/2014	Broken up	1 month +	partial carcass + feather spot: torso, skull and ~20 body, 6 flight feathers (feather spot size = small); no evidence of singeing (checked under scope)	Unknown	NA	3	636604, 3938256	heliostat	NA
2014_937_ISEGS	Greater Roadrunner	GRRO	Carcass Survey	12/17/2014	12/17/2014	Feather spot	3 weeks	Partial carcass + feather spot: both wings with bone and connective tissue; partial keel and back; 11 body and 9 tail feathers (feather spot size = small); no evidence of singeing (checked under scope)	Unknown	NA	1	639441, 3932810	heliostat	NA
2014_938_ISEGS	White-Crowned Sparrow	WCSP	Incidental	12/17/2014	12/17/2014	Feather spot	2 weeks	7 flight, ~50 body feathers (feather spot size = large); no evidence of singeing (checked under scope)	Unknown	NA	1	639415, 3932805	heliostat	NA
2014_939_ISEGS	Varied Thrush	VATH	Carcass Survey	12/17/2014	12/17/2014	Feather spot	2 weeks	100+ body, 46 flight feathers (feather spot size = large); no evidence of singeing (checked under scope)	Unknown	NA	1	639415, 3932805	heliostat	NA
2014_940_ISEGS	Western Meadowlark	WEME	Carcass Survey	12/18/2014	12/18/2014	Broken up	2 weeks	partial carcass + feather spot: 50 body feathers, 18 flight feathers; internal viscera, and partial right and left wings with bone (feather spot size = large); no evidence of singeing (checked under scope)	Unknown	NA	3	637361, 3937752	heliostat	NA
2014_941_ISEGS	Mourning Dove	MODO	Carcass Survey	12/18/2014	12/18/2014	Broken up	3 weeks	partial carcass + feather spot: 9 flight, 200+ body feathers, partial wings attached by bone; neck, back, rib, keel, and all leg bones (feather spot size = large); no evidence of singeing (checked under scope)	Unknown	NA	1	640341, 3933159	heliostat	NA
2014_942_ISEGS	Unknown passerine	UNKN	Carcass Survey	12/18/2014	12/18/2014	Broken up	7 days	partial carcass: torso with back and keel and both legs; no evidence of singeing (checked under scope)	Unknown	NA	1	640659, 3932813	heliostat	NA
2014_943_ISEGS	White-Crowned Sparrow	WCSP	Carcass Survey	12/18/2014	12/18/2014	Feather spot	7 days	partial carcass: right wing bones, right leg, right side of carcass; no evidence of singeing (checked under scope)	Unknown	NA	1	640851, 3932931	heliostat	NA
2014_944_ISEGS	Unknown Sparrow	UNKN	Incidental	12/18/2014	12/18/2014	Broken up	3-6 days	36 flight, ~100 body feathers (feather spot size = large); no evidence of singeing (checked under scope)	Unknown	NA	1	641144, 3934190	heliostat	NA
2014_945_ISEGS	Unknown	UNKN	Carcass Survey	12/18/2014	12/18/2014	Broken up	3-6 days	partial carcass + feather spot: 50+ body feathers (feather spot size = large), partial left wing; no evidence of singeing (checked under scope)	Unknown	NA	1	640414, 3933015	heliostat	NA
2014_946_ISEGS	Loggerhead Shrike	LOSH	Carcass Survey	12/22/2014	12/22/2014	Broken up	2 days	connected bones only: part of pelvic girdle, part of spine and neck, left femur, part of left tarsus; no evidence of singeing.	Unknown	NA	3	638083, 3937386	heliostat	NA
2014_947_ISEGS	Unknown Warbler	UNKN	Carcass Survey	12/22/2014	12/22/2014	Feather spot	2 weeks	partial carcass + feather spot: 4 rectrices, 6 primaries, secondaries, 300+ body feathers; both mandibles, with piece of skull, partial right and left wing (feather spot size = large); no evidence of singeing (checked under scope)	Unknown	NA	3	638606, 3938547	heliostat	NA
2014_948_ISEGS	Unknown passerine	UNKN	Incidental	12/22/2014	12/22/2014	Feather spot	3-6 days	9 flight feathers, 14 body feathers (feather spot size = small); no evidence of singeing (checked under scope)	Unknown	NA	3	637446, 3937595	Heliostat	NA
2014_949_ISEGS	Unknown Sparrow	UNKN	Carcass Survey	12/22/2014	12/22/2014	Feather spot	3 weeks	7 tail feathers stuck in clump with skin only, 4 body feathers (feather spot size = small); evidence of singeing (checked under scope)	Unknown	NA	3	637025, 3937865	Heliostat	NA
								3 flight, 50 body feathers (feather spot size = large); no evidence of singeing (checked under scope)	Unknown	NA	3	637079, 3937532	Heliostat	NA

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2014_663_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	10/21/2014	10/21/2014	Broken up	2 weeks	partial carcass + feather spot: leg and foot, part of body; articulated leg and lower pelvis with feathers; patch of body feathers with flesh; ~50+ feathers; singed body feathers	Scorched or singed	NA	3	637510, 3937751	heliostat	NA
2014_664_ISEGS	Lesser Nighthawk	LENI	Carcass Survey	10/21/2014	10/21/2014	Broken up	2 weeks	Broken up: partial carcass + feather spot, primaries attached to bone; 1 rectrice, 8 remiges	Unknown	NA	3	637586, 3937841	heliostat	NA
2014_665_ISEGS	Horned Lark	HOLA	Carcass Survey	10/21/2014	10/21/2014	Broken up	3-6 days	Feather spot + partial carcass: leg and foot, flight feathers, 2 partial wings held together by small amount of flesh; 11 retrices, ~20 contour feathers	Collision with solar panel/heliostat	NA	1	637670, 3937858	heliostat	NA
2014_666_ISEGS	Unknown Sparrow	UNKN	Carcass Survey	10/21/2014	10/21/2014	Feather spot	7 days	10+ contour, 2 tertials, 2 retrices, 1 secondary, 1 primary; no evidence of singeing (checked under scope).	Unknown	NA	3	637684, 3937930	heliostat	NA
2014_950_ISEGS	Savannah Sparrow	SAVS	Carcass Survey	12/23/2014	12/23/2014	Dead, fresh (eyes moist)	0-8 hours	Whole carcass: fresh, in partial rigor, bill tips has signs of trauma evidence of collision; no evidence of singeing (checked under scope).	Collision with solar panel/heliostat	NA	3	638799, 3938407	Heliostat	NA
2014_951_ISEGS	Varied Thrush	VATH	Carcass Survey	12/23/2014	12/23/2014	Broken up	2 weeks	partial carcass + feather spot: 10 body, 5 flight feathers, carcass missing left leg, head and neck, parts of right wing (feather spot size = small); no evidence of singeing (checked under scope)	Collision with solar panel/heliostat	NA	3	636752, 3937798	Heliostat	NA
2014_952_ISEGS	Yellow-rumped Warbler	YRWA	Incidental	12/23/2014	12/23/2014	Feather spot	2 weeks	40 body, 24 flight feathers (feather spot size = large); no evidence of singeing (checked under scope)	Unknown	NA	3	637951, 3938025	heliostat	NA
2014_953_ISEGS	Western Meadowlark	WEME	Carcass Survey	12/23/2014	12/23/2014	Broken up	2 weeks	partial carcass + feather spot: 2 partial wings with bone, 2 wing feathers, 2 body feathers (feather spot size = small); no evidence of singeing (checked under scope)	Collision with solar panel/heliostat	NA	3	637613, 3938460	heliostat	NA
2014_954_ISEGS	Violet-green Swallow	VGSW	Incidental	12/29/2014	12/29/2014	Mummified	1 month +	Whole carcass: singed on wings; flux effect grade 1	Scorched or singed	NA	2	638620, 3935848	Auxiliary Solar Concentrating Tower	NA
2014_955_ISEGS	White-Crowned Sparrow	WCSP	Carcass Survey	12/31/2014	12/31/2014	Broken up	7 days	partial carcass + feather spot: 3 flight, ~100 body feathers (feather spot size = large), small pieces of skull; no evidence of singeing (checked under scope)	Unknown	NA	2	638196, 3935884	heliostat	NA
2014_956_ISEGS	Pied-billed Grebe	PBGR	Incidental	12/31/2014	12/31/2014	Broken up	3 weeks	partial carcass + feather spot: 35 flight, 80 body feathers (feather spot size = large), left wing bones, partial ribcage, corticoid, clavicle and part of sternum; no evidence of singeing (checked under scope)	Unknown	NA	2	639077, 3935386	heliostat	NA
2015_001_ISEGS	Orange-crowned Warbler	OCWA	Carcass Survey	1/5/2015	1/5/2015	Dead, semi-fresh (eyes desiccated, rigor mortis)	3 weeks	partial carcass: carcass missing head; singeing evident on outermost primaries of left wing; no other feathers singed; flux effect grade 1	Scorched or singed	NA	1	640404, 3933501	Auxiliary Boiler	NA
2015_002_ISEGS	Brown-headed cowbird	BHCO	Incidental	1/5/2015	1/5/2015	Broken up	1 month +	Partial carcass: most of wing including primaries, secondaries, greater coverts; no evidence of singeing (checked under scope)	Unknown	NA	1	639726, 3933731	heliostat	NA
2015_003_ISEGS	Greater Roadrunner	GRRO	Incidental	1/5/2015	1/5/2015	Feather spot	7 days	10+ rectrices, 120 primaries, undertail coverts, 150+ body feathers (feather spot size = large); no evidence of singeing	Unknown	NA	2	639221, 3936094	heliostat	NA
2015_004_ISEGS	House Finch	HOFI	Carcass Survey	1/5/2015	1/5/2015	Broken up	3 weeks	partial carcass + feather spot: 20 body, 9 flight feathers, part of wings, part of tail; no evidence of singeing (checked under scope)	Unknown	NA	1	640983, 3933576	heliostat	NA
2015_005_ISEGS	Greater Roadrunner	GRRO	Carcass Survey	1/5/2015	1/5/2015	Feather spot	7 days	1 secondary, 1 wing covert, 20 body feathers (feather spot size = small); no evidence of singeing (checked under scope)	Unknown	NA	1	639347, 3933295	Fencing	NA
2015_006_ISEGS	Greater Roadrunner	GRRO	Carcass Survey	1/5/2015	1/5/2015	Broken up	3-6 days	partial carcass + feather spot: 120 rectrices, 20+ primaries, secondaries, undertail coverts, ~250 body feathers; piece of skull and bill (feather spot size = large); no evidence of singeing (checked under scope)	Unknown	NA	1	640253, 3932660	Fencing	NA
2015_007_ISEGS	Greater Roadrunner	GRRO	Carcass Survey	1/5/2015	1/5/2015	Feather spot	2 weeks	2 rectrices, 2 primaries, 10 body feathers (feather spot size = small); no evidence of singeing (checked under scope)	Unknown	NA	1	640519, 3934587	Fencing	NA

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2014_663_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	10/21/2014	10/21/2014	Broken up	2 weeks	partial carcass + feather spot: leg and foot, part of body; articulated leg and lower pelvis with feathers; patch of body feathers with flesh; ~50+ feathers; singed body feathers	Scorched or singed	NA	3	637510, 3937751	heliostat	NA
2014_664_ISEGS	Lesser Nighthawk	LENI	Carcass Survey	10/21/2014	10/21/2014	Broken up	2 weeks	Broken up: partial carcass + feather spot, primaries attached to bone; 1 rectrice, 8 remiges	Unknown	NA	3	637586, 3937841	heliostat	NA
2014_665_ISEGS	Horned Lark	HOLA	Carcass Survey	10/21/2014	10/21/2014	Broken up	3-6 days	Feather spot + partial carcass: leg and foot, flight feathers, 2 partial wings held together by small amount of flesh; 11 retrices, ~20 contour feathers 10+ contour, 2 tertials, 2 retrices, 1 secondary, 1 primary; no evidence of singeing (checked under scope).	Collision with solar panel/heliostat	NA	1	637670, 3937858	heliostat	NA
2014_666_ISEGS	Unknown Sparrow	UNKN	Carcass Survey	10/21/2014	10/21/2014	Feather spot	7 days		Unknown	NA	3	637684, 3937930	heliostat	NA
2015_008_ISEGS	Mourning Dove	MODO	Carcass Survey	1/7/2015	1/7/2015	Mummified	1 month +	whole carcass minus head, desiccated and hollow; no evidence of singeing (checked under scope)	Unknown	NA	1	639649, 3932730	heliostat	NA
2015_009_ISEGS	Mourning Dove	MODO	Carcass Survey	1/8/2015	1/8/2015	Feather spot	1 month +	1 retri, 2 secondaries, and 15+ body feathers (feather spot size = small); no evidence of singeing (checked under scope)	Unknown	NA	1	641113, 3934106	heliostat	NA
2015_010_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	1/13/2015	1/13/2015	Feather spot	3-6 days	12 rectrices, 20+ primaries/secondaries, 50 body feathers (feather spot size = small); no evidence of singeing (checked under scope)	Unknown	NA	3	637909, 3938271	heliostat	NA
2015_011_ISEGS	American Robin	AMRO	Carcass Survey	1/13/2015	1/13/2015	Feather spot Dead, semi-fresh (eyes desiccated, rigor mortis)	2 weeks	5 rectrices, 1 wing flight feather, 5 undertail coverts (feather spot size = small); no evidence of singeing (checked under scope)	Unknown	NA	3	637709, 3937983	heliostat	NA
2015_012_ISEGS	American Pipit	AMPI	Carcass Survey	1/13/2015	1/13/2015	Feather spot	3-6 days	Whole carcass: eyes present, fluid leaking, maggots present; no evidence of singeing (checked under scope)	Collision with solar panel/heliostat	NA	3	637365, 3937632	heliostat	NA
2015_013_ISEGS	Unknown passerine	UNKN	Carcass Survey	1/13/2015	1/13/2015	Feather spot	3 weeks	15 body feathers (feather spot size = small); no evidence of singeing (checked under scope)	Scorched or singed	NA	3	637433, 3937957	Project Building	NA
2015_014_ISEGS	Unknown passerine	UNKN	Carcass Survey	1/15/2015	1/15/2015	Feather spot	3-6 days	65 body feathers, 6 secondaries, and 2 primaries (feather spot size = large); no evidence of singeing (checked under scope)	Collision with solar panel/heliostat	NA	3	637786, 3937829	heliostat	NA
2015_015_ISEGS	American Pipit	AMPI	Carcass Survey	1/16/2015	1/16/2015	Broken up	7 days	right wing attached to keel; no evidence of singeing (checked under scope)	Unknown	NA	3	637254, 3938501	heliostat	NA
2015_016_ISEGS	American Pipit	AMPI	Carcass Survey	1/20/2015	1/20/2015	Feather spot Dead, semi-fresh (eyes desiccated, rigor mortis)	3 weeks	23 body, 8 primary/secondary, 2 clumps of body feathers; no evidence of singeing (checked under scope).	Unknown	NA	2	639037, 3936343	heliostat	NA
2015_017_ISEGS	Sagebrush Sparrow	SAGS	Carcass Survey	1/22/2015	1/22/2015	Feather spot	3-6 days	Whole carcass: keratin of bill damaged; no evidence of singeing (checked under scope)	Collision with solar panel/heliostat	NA	2	637735, 3935387	heliostat	NA
2015_018_ISEGS	Blue-Gray Gnatcatcher	BGGN	Carcass Survey	1/26/2015	1/26/2015	Mummified	1 month +	Whole carcass; singed retrices and singed on top of head	Scorched or singed	NA	1	640345, 3933564	ACC Building	NA
2015_019_ISEGS	Unknown passerine	UNKN	Carcass Survey	1/26/2015	1/26/2015	Broken up Dead, semi-fresh (eyes desiccated, rigor mortis)	3 weeks	~15 body feathers in 2 clumps with piece of bone and guts (feather spot size = small); several body feathers singed	Scorched or singed	NA	1	640372, 3933502	Other Machinery	NA
2015_020_ISEGS	Yellow-rumped Warbler	YRWA	Incidental	1/26/2015	1/26/2015	Dead, fresh (eyes moist)	2 weeks	Whole carcass; desiccated; carcass covered in ants; no evidence of singeing (checked under scope)	Unknown	NA	1	640933, 3932719	heliostat	NA
2015_021_ISEGS	Brewer's Sparrow	BRSP	Carcass Survey	1/28/2015	1/28/2015	Feather spot	8-24 hours	whole carcass; damaged keratin on lower mandible bones of left wing; bones are separated; ~5 body and several flight feathers (feather spot size = small)	Collision with solar panel/heliostat	NA	1	639853, 3932673	heliostat	NA
2015_022_ISEGS	Unknown	UNKN	Incidental	1/28/2015	NA	Feather spot	1 month +	6 retrices, 2 uppertail coverts, 2 undertail coverts, ~25 body feathers (feather spot size = small); no evidence of singeing (checked upder dissecting scope).	Unknown	NA	1	639414, 3932663	fencing	NA
2015_023_ISEGS	White-Crowned Sparrow	WCSP	Incidental	2/4/2015	2/5/2015	Feather spot	2 weeks	80 body feathers, 5 flight feathers (feather spot size = large); no evidence of singeing (checked under scope).	Unknown	NA	3	637383, 3938351	heliostat	NA
2015_024_ISEGS	Western Meadowlark	WEME	Incidental	2/10/2015	2/10/2015	Feather spot	7 days		Unknown	NA	2	638920, 3936355	heliostat	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	UTM Coordinates	Nearest Project Feature	SPUT Revisions
2014_663_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	10/21/2014	10/21/2014	Broken up	2 weeks	partial carcass + feather spot: leg and foot, part of body; articulated leg and lower pelvis with feathers; patch of body feathers with flesh; ~50+ feathers; singed body feathers	Scorched or singed	NA	3	637510, 3937751	heliostat	NA
2014_664_ISEGS	Lesser Nighthawk	LENI	Carcass Survey	10/21/2014	10/21/2014	Broken up	2 weeks	Broken up: partial carcass + feather spot, primaries attached to bone; 1 rectrice, 8 remiges	Unknown	NA	3	637586, 3937841	heliostat	NA
2014_665_ISEGS	Horned Lark	HOLA	Carcass Survey	10/21/2014	10/21/2014	Broken up	3-6 days	Feather spot + partial carcass: leg and foot, flight feathers, 2 partial wings held together by small amount of flesh; 11 retrices, ~20 countour feathers 10+ contour, 2 tertials, 2 retrices, 1 secondary, 1 primary; no evidence of singeing (checked under scope).	Collision with solar panel/heliostat	NA	1	637670, 3937858	heliostat	NA
2014_666_ISEGS	Unknown Sparrow	UNKN	Carcass Survey	10/21/2014	10/21/2014	Feather spot	7 days	partial torso including R leg and partial R wing; no evidence of singeing (checked under scope).	Unknown	NA	3	637684, 3937930	heliostat	NA
2015_025_ISEGS	Savannah Sparrow	SAVS	Incidental	2/10/2015	2/10/2015	Broken up	1 month +	partial carcass + feather spot: 6 flight, ~40 body feathers; partial left wing with ulna & radius, dried skin and feathers; no evidence of singeing (checked under scope).	Unknown	NA	2	638144, 3935461	heliostat	NA
2015_026_ISEGS	Rock Pigeon	ROPI	Carcass Survey	2/11/2015	2/11/2015	Broken up	1 month +	partial carcass: part of right wing (primaries with coverts); no evidence of singeing (checked under scope)	Unknown	NA	2	637808, 3936703	heliostat	NA
2015_027_ISEGS	Western Meadowlark	WEME	Incidental	2/16/2015	2/16/2015	Broken up Dead, semi-fresh (eyes desiccated, rigor mortis)	1 month +	Whole carcass: all primaries, secondaries, and retrices singed and curled; flux effect grade 2, 3	Unknown	NA	1	639924, 3933108	heliostat	NA
2015_028_ISEGS	House Finch	HOFI	Carcass Survey	2/17/2015	2/17/2015	Dead, semi-fresh (eyes desiccated, rigor mortis)	3-6 days	Whole carcass: tail singed off, flight feathers, top of head, axillaries and breast singed; flux effect grade 2, 3	Scorched or singed	NA	1	640411, 3933551	ACC Building	NA
2015_029_ISEGS	Costa's Hummingbird	COHU	Carcass Survey	2/17/2015	2/17/2015	Dead, semi-fresh (eyes desiccated, rigor mortis)	3-6 days	partial left wing with primaries; no evidence of singeing (checked under scope)	Scorched or singed	NA	1	640362, 3933536	ACC Building	NA
2015_030_ISEGS	Unknown passerine	UNKN	Carcass Survey	2/17/2015	2/17/2015	Broken up	1 month +	partial carcass + feather spot: 12 retrices, 1uppertail covert; humerus and part of tibiotarsus, 5 undertail coverts, ~50 body feathers; singed on retrices; flux effect grade unknown	Unknown	NA	1	640378, 3933488	Project Building	NA
2015_031_ISEGS	Orange-crowned Warbler	OCWA	Carcass Survey	2/17/2015	2/17/2015	Broken up	2 weeks	whole carcass: most bones, most body and flight feathers present, but all flesh and skin gone; 2 greater coverts and 3 retrices singed; flux effect grade unknown	Scorched or singed	NA	1	640380, 3933496	Project Building	NA
2015_032_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	2/17/2015	2/17/2015	Mummified	1 month +	4 flight feathers; some body feathers; most body feathers and all flight feathers singed; flux effect grade unknown	Scorched or singed	NA	1	640322, 3933491	Project Building	NA
2015_033_ISEGS	Unknown	UNKN	Carcass Survey	2/24/2015	2/24/2015	Feather spot	1 month +	15 body feathers; 10 body feathers singed; flux effect grade unknown	Scorched or singed	NA	3	637462, 3937934	EDT / IDT pit	NA
2015_034_ISEGS	Unknown	UNKN	Carcass Survey	2/24/2015	2/24/2015	Feather spot	1 month +	all flight feathers, wing and tail singed, left face singed; eye half closed; left breast feathers singed down to skin; back singed	Scorched or singed	NA	3	637464, 3937931	EDT / IDT pit	NA
2015_035_ISEGS	Common Raven	CORA	Incidental	2/26/2015	2/26/2015	Alive, injured	8-24 hours	severe singeing on head and body.	Scorched or singed	3	1	639075, 3934946	Admin bldg water tank	NA
2015_036_ISEGS	Common Raven	CORA	Incidental	2/26/2015	2/26/2015	Alive, injured	8-24 hours	100+ body feathers; no evidence of singeing (checked under scope)	Scorched or singed	3	1	641303, 3934559	Other	NA
2015_037_ISEGS	Green-winged Teal	GWTE	Incidental	2/27/2015	2/27/2015	Feather spot Dead, semi-fresh (eyes desiccated, rigor mortis)	3 weeks		Unknown	NA	3	636514, 3937518	Heliostat	NA
2015_038_ISEGS	House Finch	HOFI	Carcass Survey	3/2/2015	3/2/2015	Broken up	2 days	All flight feathers, head, back, breast singed. All flight feathers including retrices curled.	Scorched or singed	3	2	638642, 3935890	ACC Building	NA
2015_039_ISEGS	Rock Pigeon	ROPI	Incidental	3/2/2015	3/2/2015	Broken up	1 month +	Remains are parts of right wing: 6 primaries, 5 coverts, 1 underwing covert. No singeing observed. Torso with attached wing and leg, pin feathers apparent throughout, evident juvenile. No singeing observed. Overall size, and size of intact foot show evidence that bird is passerine. Carcass dried.	Unknown	NA	2	638702, 3935928	Project Building	NA
2015_040_ISEGS	Unknown passerine	UNKN	Incidental	3/2/2015	3/2/2015	Mummified	1 month +		Unknown	NA	1	640384, 3933533	Solar Concentrating Tower	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	UTM Coordinates	Nearest Project Feature	SPUT Revisions
2014_663_ISEGS	Yellow-rumped Warbler	YRWA	Carcass Survey	10/21/2014	10/21/2014	Broken up	2 weeks	partial carcass + feather spot: leg and foot, part of body; articulated leg and lower pelvis with feathers; patch of body feathers with flesh; ~50+ feathers; singed body feathers	Scorched or singed	NA	3	637510, 3937751	heliostat	NA
2014_664_ISEGS	Lesser Nighthawk	LENI	Carcass Survey	10/21/2014	10/21/2014	Broken up	2 weeks	Broken up: partial carcass + feather spot, primaries attached to bone; 1 retrice, 8 remiges	Unknown	NA	3	637586, 3937841	heliostat	NA
2014_665_ISEGS	Horned Lark	HOLA	Carcass Survey	10/21/2014	10/21/2014	Broken up	3-6 days	Feather spot + partial carcass: leg and foot, flight feathers, 2 partial wings held together by small amount of flesh; 11 retrices, ~20 contour feathers	Collision with solar panel/heliostat	NA	1	637670, 3937858	heliostat	NA
2014_666_ISEGS	Unknown Sparrow	UNKN	Carcass Survey	10/21/2014	10/21/2014	Feather spot Dead, semi-fresh (eyes desiccated, rigor mortis)	7 days	10+ contour, 2 tertials, 2 retrices, 1 secondary, 1 primary; no evidence of singeing (checked under scope).	Unknown	NA	3	637684, 3937930	heliostat	NA
2015_041_ISEGS	Wilson's Snipe	WISN	Carcass Survey	3/3/2015	3/3/2015	Feather spot	2 days	Whole carcass found, 4 feet from heliostat. No singeing observed. Impact marks present on nearest heliostat matching size and shape of bird. Photo documentation of these marks recorded.	Collision with solar panel/heliostat	NA	2	638579, 3936956	heliostat	NA
2015_042_ISEGS	Greater Roadrunner	GRRO	Carcass Survey	3/5/2015	3/5/2015	Feather spot	3 weeks	3 tail feathers, 20+ body feathers. No singeing observed.	Unknown	NA	2	637891, 3936849	heliostat	NA
2015_043_ISEGS	Mourning Dove	MODO	Incidental	3/6/2015	3/6/2015	Mummified	1 month +	Whole body, some tail feathers missing. Completely dessicated, no eyes, 4 maggots present. No singe. 20+ feathers consisting of primaries, secondaries, and body feathers. Individual was observed being singed in real time and fell to ground. At this point it was relocated and collected. Feathers were curled and singed.	Unknown	NA	1	640362, 3933555	ACC Building	NA
2015_044_ISEGS	Tree Swallow	TRES	Incidental	3/10/2015	3/10/2015	Feather spot	0-8 hours	Whole carcass, semi-fresh. Eyes not present, active maggots present. No obvious external injury, collision suggested by proximity to heliostat, but no imprint mark observed on heliostat. No singe present.	Scorched or singed	NA	2	637419, 3937938	Light Pole	NA
2015_045_ISEGS	White-Crowned Sparrow	WCSP	Carcass Survey	3/11/2015	3/11/2015	Dead, semi-fresh (eyes desiccated, rigor mortis)	3-6 days	Carcass intact excepting lower bill broken off, lower foot missing on both legs. All of these missing parts show clean breaks at point of separation. Carcass pliable, with no discernable smell at time of collection, no sign of rigor mortis, eyes present b	Collision with solar panel/heliostat	NA	1	640151, 3932715	heliostat	NA
2015_046_ISEGS	Western Meadowlark	WEME	Incidental	3/12/2015	3/12/2015	Broken up	8-24 hours		Collision with solar panel/heliostat	NA	1	640402, 3934020	heliostat	NA

Appendix C. Additional Detection Data for Fatality Estimates and Documentation of Fatality Estimates in Which Each Detection Was Included.

USFWS #	Species Code	Location	Distance from Tower (m)	Bird Size	Model Size	Cause of Death	How Found	Time Since Last Survey (days)	Used in Estimator	Tower Area	Power Block	Inner HD	Heliostat Area	Unit Fence	Estimator Notes
2014_663_ISEGS	YRWA	Inner HD	160	Small	Feather Spot	singeing	Fatality Search	22	Yes	X		X			
2014_664_ISEGS	LENI	Inner HD	130	Small	Small Carcass	unknown	Fatality Search	22	Yes	X		X			
2014_665_ISEGS	HOLA	Inner HD	200	Small	Feather Spot	collision	Fatality Search	22	Yes	X		X			
2014_666_ISEGS	UNSP	Inner HD	220	Small	Feather Spot	unknown	Fatality Search	22	Yes	X		X			
2014_667_ISEGS	CRTH	Inner Segment	440	Small	Small Carcass	collision	Fatality Search	22	Yes				X		
2014_668_ISEGS	YRWA	Inner HD	180	Small	Feather Spot	singeing	Fatality Search	22	Yes	X		X			
2014_669_ISEGS	GAQU	Inner HD	260	Large	Feather Spot	unknown	Fatality Search	22	Yes	X		X			
2014_670_ISEGS	UNPA	Power Block	140	Small	Small Carcass	unknown	Fatality Search	22	Yes	X	X				
2014_671_ISEGS	MODO	Inner Segment	660	Large	Large Carcass	unknown	Fatality Search	22	No				X		Older than Search Interval
2014_672_ISEGS	YRWA	Power Block	120	Small	Feather Spot	singeing	Fatality Search	22	Yes	X	X				
2014_673_ISEGS	CEWA	Power Block	40	Small	Small Carcass	singeing	Fatality Search	22	Yes	X	X				
2014_674_ISEGS	MODO	Inner HD	220	Large	Feather Spot	collision	Fatality Search	22	Yes	X		X			
2014_675_ISEGS	YRWA	Inner HD	240	Small	Feather Spot	singeing	Fatality Search	22	Yes	X		X			
2014_676_ISEGS	UNPA	Power Block	40	Small	Small Carcass	singeing	Incidental	1(1)	No	X	X				Older than Search Interval
2014_677_ISEGS	UNHU	Power Block	40	Small	Small Carcass	singeing	Incidental	1(1)	Yes	X	X				
2014_678_ISEGS	UNSW	Power Block	45	Small	Small Carcass	singeing	Incidental	1(1)	No	X	X				Older than Search Interval
2014_679_ISEGS	WEME	Inner HD	160	Small	Feather Spot	unknown	Fatality Search	22	Yes	X		X			
2014_680_ISEGS	YRWA	Inner HD	120	Small	Feather Spot	singeing	Fatality Search	22	Yes	X		X			
2014_681_ISEGS	UNPA	Inner HD	205	Small	Feather Spot	singeing	Fatality Search	22	Yes	X		X			
2014_682_ISEGS	HOFI	Inner HD	140	Small	Feather Spot	singeing	Fatality Search	22	Yes	X		X			
2014_683_ISEGS	WISN	Inner HD	200	Small	Feather Spot	collision	Fatality Search	22	Yes	X		X			
2014_684_ISEGS	LOSH	Outer Segment	760	Small	Small Carcass	unknown	Fatality Search	22	No				X		Older than Search Interval
2014_685_ISEGS	LBWO	Outer Segment	780	Small	Small Carcass	collision	Fatality Search	21	No				X		Older than Search Interval
2014_686_ISEGS	BHCO	Inner Segment	545	Small	Small Carcass	unknown	Fatality Search	23	Yes				X		
2014_687_ISEGS	WCSP	Outer Segment	907	Small	Feather Spot	unknown	Fatality Search	22	Yes				X		
2014_688_ISEGS	UNSP	Outer Segment	890	Small	Feather Spot	unknown	Fatality Search	22	Yes				X		
2014_689_ISEGS	UNPA	Power Block	30	Small	Small Carcass	singeing	Incidental	1(1)	No	X	X				Older than Search Interval
2014_690_ISEGS	UNSP	Outer Segment	920	Small	Feather Spot	unknown	Fatality Search	22	Yes				X		
2014_691_ISEGS	UNSP	Outer Segment	950	Small	Feather Spot	unknown	Fatality Search	22	Yes				X		
2014_692_ISEGS	SAVS	Outer Segment	1560	Small	Small Carcass	collision	Fatality Search	23	Yes				X		
2014_693_ISEGS	AMPI	Outer Segment	800	Small	Small Carcass	collision	Fatality Search	24	Yes				X		
2014_694_ISEGS	UNPA	Inner Segment	320	Small	Feather Spot	unknown	Fatality Search	24	Yes				X		
2014_695_ISEGS	MODO	Outer Segment	1100	Large	Large Carcass	collision	Fatality Search	23	Yes				X		
2014_696_ISEGS	SAVS	Inner Segment	360	Small	Feather Spot	unknown	Fatality Search	24	Yes				X		
2014_697_ISEGS	WCSP	Inner Segment	540	Small	Small Carcass	unknown	Fatality Search	24	Yes				X		
2014_698_ISEGS	RCKI	Power Block	47	Small	Small Carcass	singeing	Incidental	2(1)	Yes	X	X				
2014_699_ISEGS	BRBL	Outer Segment	800	Small	Feather Spot	collision	Fatality Search	21	Yes				X		
2014_700_ISEGS	WCSP	Outer Segment	898	Small	Feather Spot	unknown	Incidental	NA	No				X		Outside Standard Search Area
2014_701_ISEGS	YRWA	Power Block	12	Small	Small Carcass	singeing	Incidental	9(1)	No	X	X				Older than Search Interval
2014_702_ISEGS	YRWA	Power Block	12	Small	Small Carcass	singeing	Incidental	9(1)	No	X	X				Older than Search Interval
2014_703_ISEGS	PISI	Power Block	72	Small	Small Carcass	singeing	Incidental	16(1)	No	X	X				Older than Search Interval
2014_704_ISEGS	UNHU	Power Block	88	Small	Small Carcass	singeing	Incidental	16(1)	No	X	X				Older than Search Interval
2014_705_ISEGS	ANHU	ACC	58	Small	Small Carcass	singeing	Fatality Search	21	Yes	X	X				
2014_706_ISEGS	YRWA	ACC	50	Small	Small Carcass	singeing	Fatality Search	21	Yes	X	X				
2014_707_ISEGS	YRWA	ACC	55	Small	Small Carcass	singeing	Fatality Search	21	Yes	X	X				
2014_708_ISEGS	YRWA	ACC	64	Small	Small Carcass	singeing	Fatality Search	21	Yes	X	X				

USFWS #	Species Code	Location	Distance from Tower (m)	Bird Size	Model Size	Cause of Death	How Found	Time Since Last Survey (days)	Used in Estimator	Tower Area	Power Block	Inner HD	Heliostat Area	Unit Fence	Estimator Notes
2014_709_ISEGS	RCKI	ACC	62	Small	Small Carcass	singeing	Fatality Search	21	Yes	X	X				
2014_710_ISEGS	VGSW	ACC	45	Small	Small Carcass	singeing	Fatality Search	21	Yes	X	X				
2014_711_ISEGS	WCSP	Inner HD	240	Small	Small Carcass	unknown	Fatality Search	21	Yes	X		X			
2014_712_ISEGS	YRWA	ACC	60	Small	Small Carcass	singeing	Fatality Search	21	Yes	X	X				
2014_713_ISEGS	YRWA	ACC	67	Small	Small Carcass	singeing	Fatality Search	21	Yes	X	X				
2014_714_ISEGS	YRWA	ACC	60	Small	Small Carcass	singeing	Fatality Search	21	Yes	X	X				
2014_715_ISEGS	YRWA	ACC	58	Small	Small Carcass	singeing	Fatality Search	21	Yes	X	X				
2014_716_ISEGS	SAVS	Inner HD	250	Small	Small Carcass	collision	Fatality Search	21	Yes	X		X			
2014_717_ISEGS	VGSW	Inner HD	140	Small	Feather Spot	singeing	Fatality Search	21	Yes	X		X			
2014_718_ISEGS	UNKI	Power Block	12	Small	Feather Spot	singeing	Fatality Search	21	Yes	X	X				
2014_719_ISEGS	YRWA	Power Block	110	Small	Small Carcass	singeing	Fatality Search	21	Yes	X	X				
2014_720_ISEGS	WCSP	Inner Segment	650	Small	Feather Spot	unknown	Fatality Search	20	No				X		Older than Search Interval
2014_721_ISEGS	AMCO	Outer Segment	710	Large	Large Carcass	unknown	Fatality Search	26	Yes				X		
2014_722_ISEGS	EAGR	Inner Segment	570	Large	Large Carcass	unknown	Fatality Search	28	Yes				X		
2014_723_ISEGS	UNPA	Inner Segment	440	Small	Feather Spot	unknown	Fatality Search	28	Yes				X		
2014_724_ISEGS	AMPI	Inner Segment	470	Small	Small Carcass	collision	Fatality Search	28	Yes				X		
2014_725_ISEGS	WCSP	Inner Segment	480	Small	Feather Spot	collision	Fatality Search	28	Yes				X		
2014_726_ISEGS	HETH	Inner Segment	450	Small	Feather Spot	unknown	Fatality Search	28	Yes				X		
2014_727_ISEGS	AMPI	Inner Segment	710	Small	Feather Spot	unknown	Incidental	NA	No				X		Outside Standard Search Area
2014_728_ISEGS	MODO	Unit Fence	770	Large	Feather Spot	unknown	Fatality Search	22	Yes					X	
2014_729_ISEGS	HOFI	Inner Segment	570	Small	Feather Spot	unknown	Fatality Search	28	Yes				X		
2014_730_ISEGS	RWBL	Inner Segment	590	Small	Small Carcass	unknown	Fatality Search	28	Yes				X		
2014_731_ISEGS	GAQU	Inner Segment	610	Large	Feather Spot	unknown	Fatality Search	28	Yes				X		
2014_732_ISEGS	WCSP	Inner Segment	470	Small	Feather Spot	unknown	Fatality Search	22	Yes				X		
2014_733_ISEGS	WCSP	Inner Segment	650	Small	Feather Spot	unknown	Fatality Search	22	Yes				X		
2014_734_ISEGS	WCSP	Inner Segment	630	Small	Feather Spot	unknown	Incidental	NA	No				X		Outside Standard Search Area
2014_735_ISEGS	WEME	Inner Segment	590	Small	Small Carcass	collision	Fatality Search	22	Yes				X		
2014_736_ISEGS	AMPI	Inner Segment	575	Small	Small Carcass	collision	Fatality Search	22	Yes				X		
2014_737_ISEGS	LAZB	Inner Segment	560	Small	Small Carcass	unknown	Fatality Search	22	No				X		Older than Search Interval
2014_738_ISEGS	UNPA	Inner Segment	580	Small	Small Carcass	unknown	Fatality Search	22	Yes				X		
2014_739_ISEGS	SAVS	Outer Segment	670	Small	Feather Spot	unknown	Fatality Search	21	Yes				X		
2014_740_ISEGS	GAQU	Outer Segment	910	Large	Large Carcass	unknown	Fatality Search	21	Yes				X		
2014_741_ISEGS	MODO	Inner Segment	450	Large	Large Carcass	collision	Fatality Search	23	Yes				X		
2014_742_ISEGS	VGSW	Inner Segment	430	Small	Small Carcass	singeing	Fatality Search	23	Yes				X		
2014_743_ISEGS	NOMO	Outer Segment	780	Small	Feather Spot	unknown	Fatality Search	21	Yes				X		
2014_744_ISEGS	WCSP	Outer Segment	910	Small	Feather Spot	unknown	Incidental	NA	No				X		Outside Standard Search Area
2014_745_ISEGS	MODO	Inner HD	100	Large	Feather Spot	unknown	Incidental	3	No	X		X			Left in Place-Not Discovered on Next Search
2014_746_ISEGS	BARS	Inner HD	230	Small	Feather Spot	singeing	Fatality Search	21	Yes	X		X			
2014_747_ISEGS	UNSP	Inner HD	192	Small	Feather Spot	unknown	Fatality Search	21	Yes	X		X			
2014_748_ISEGS	HOFI	ACC	70	Small	Small Carcass	singeing	Fatality Search	21	Yes	X	X				
2014_749_ISEGS	MODO	Inner HD	242	Large	Feather Spot	unknown	Fatality Search	21	Yes	X		X			
2014_750_ISEGS	YRWA	ACC	36	Small	Small Carcass	singeing	Fatality Search	21	Yes	X	X				
2014_751_ISEGS	HOFI	Inner HD	210	Small	Feather Spot	singeing	Fatality Search	21	Yes	X		X			
2014_752_ISEGS	MODO	Inner Segment	610	Large	Feather Spot	unknown	Incidental	NA	No				X		Outside Standard Search Area
2014_753_ISEGS	YRWA	Inner HD	130	Small	Feather Spot	singeing	Fatality Search	21	Yes	X		X			
2014_754_ISEGS	LEGO	Inner HD	125	Small	Feather Spot	singeing	Fatality Search	21	Yes	X		X			
2014_755_ISEGS	YRWA	Inner HD	120	Small	Feather Spot	singeing	Fatality Search	21	Yes	X		X			
2014_756_ISEGS	UNSW	Power Block	50	Small	Small Carcass	unknown	Fatality Search	21	Yes	X	X				

USFWS #	Species Code	Location	Distance from Tower (m)	Bird Size	Model Size	Cause of Death	How Found	Time Since Last Survey (days)	Used in Estimator	Tower Area	Power Block	Inner HD	Heliostat Area	Unit Fence	Estimator Notes
2014_757_ISEGS	UNPA	Inner HD	140	Small	Small Carcass	singeing	Fatality Search	21	Yes	X		X			
2014_758_ISEGS	YRWA	Inner Segment	590	Small	Feather Spot	unknown	Fatality Search	20	No				X		Older than Search Interval
2014_759_ISEGS	AMPI	Inner HD	206	Small	Feather Spot	unknown	Fatality Search	21	Yes	X		X			
2014_760_ISEGS	YRWA	Inner HD	140	Small	Feather Spot	singeing	Fatality Search	21	Yes	X		X			
2014_761_ISEGS	HOFI	Inner HD	175	Small	Feather Spot	unknown	Fatality Search	21	Yes	X		X			
2014_762_ISEGS	MODO	Outer Segment	880	Large	Feather Spot	unknown	Fatality Search	21	No				X		Older than Search Interval
2014_763_ISEGS	UNPA	Outer Segment	860	Small	Feather Spot	unknown	Fatality Search	20	No				X		Older than Search Interval
2014_764_ISEGS	BARS	Inner HD	130	Small	Feather Spot	singeing	Fatality Search	21	Yes	X		X			
2014_765_ISEGS	UNPA	Inner HD	140	Small	Feather Spot	unknown	Fatality Search	21	Yes	X		X			
2014_766_ISEGS	AMPI	Inner HD	206	Small	Feather Spot	unknown	Fatality Search	21	Yes	X		X			
2014_767_ISEGS	AMPI	Outer Segment	720	Small	Small Carcass	collision	Fatality Search	19	Yes				X		
2014_768_ISEGS	GRRO	Outer Segment	1040	Large	Feather Spot	unknown	Fatality Search	20	No				X		Older than Search Interval
2014_769_ISEGS	GRRO	Outer Segment	1130	Large	Feather Spot	unknown	Fatality Search	20	Yes				X		
2014_770_ISEGS	BHCO	Inner Segment	260	Small	Small Carcass	unknown	Fatality Search	21	No				X		Older than Search Interval
2014_771_ISEGS	GRRO	Unit Fence	1130	Large	Feather Spot	unknown	Fatality Search	21	Yes					X	
2014_772_ISEGS	AMPI	Inner Segment	450	Small	Feather Spot	unknown	Fatality Search	21	No				X		Older than Search Interval
2014_773_ISEGS	GRRO	Unit Fence	1040	Large	Feather Spot	unknown	Fatality Search	21	Yes					X	
2014_774_ISEGS	GRRO	Unit Fence	1070	Large	Feather Spot	unknown	Fatality Search	21	No					X	Older than Search Interval
2014_775_ISEGS	GRRO	Unit Fence	1090	Large	Feather Spot	unknown	Fatality Search	21	Yes					X	
2014_776_ISEGS	SAVS	Offsite	NA	Small	Small Carcass	predated	Incidental	NA	No						Outside Standard Search Area
2014_777_ISEGS	GRRO	Unit Fence	1020	Large	Feather Spot	unknown	Fatality Search	21	Yes					X	
2014_778_ISEGS	UNPA	Unit Fence	1020	Small	Small Carcass	unknown	Fatality Search	21	No					X	Older than Search Interval
2014_779_ISEGS	GRRO	Unit Fence	1030	Large	Feather Spot	unknown	Fatality Search	21	Yes					X	
2014_780_ISEGS	MODO	Unit Fence	1060	Large	Feather Spot	unknown	Fatality Search	21	Yes					X	
2014_781_ISEGS	UNPA	Inner Segment	310	Small	Small Carcass	unknown	Fatality Search	22	Yes				X		
2014_782_ISEGS	SAVS	Inner Segment	350	Small	Feather Spot	unknown	Fatality Search	22	No				X		Older than Search Interval
2014_783_ISEGS	UNPA	Inner Segment	370	Small	Feather Spot	unknown	Fatality Search	22	Yes				X		
2014_784_ISEGS	UNPA	Inner Segment	640	Small	Small Carcass	unknown	Fatality Search	22	No				X		Older than Search Interval
2014_785_ISEGS	AMPI	Inner Segment	620	Small	Small Carcass	collision	Fatality Search	22	Yes				X		
2014_786_ISEGS	BHCO	Inner Segment	680	Small	Small Carcass	unknown	Fatality Search	22	Yes				X		
2014_787_ISEGS	WCSP	Inner Segment	400	Small	Small Carcass	predated	Incidental	NA	No				X		Outside Standard Search Area
2014_788_ISEGS	MODO	Outer Segment	1000	Large	Feather Spot	unknown	Fatality Search	21	Yes				X		
2014_789_ISEGS	MODO	Inner Segment	420	Large	Feather Spot	unknown	Incidental	NA	No				X		Outside Standard Search Area
2014_790_ISEGS	BHCO	Outer Segment	680	Small	Small Carcass	collision	Incidental	NA	No				X		Outside Standard Search Area
2014_791_ISEGS	LENI	Outer Segment	710	Small	Small Carcass	unknown	Fatality Search	21	No				X		Older than Search Interval
2014_792_ISEGS	MODO	Outer Segment	715	Large	Feather Spot	unknown	Fatality Search	21	No				X		Older than Search Interval
2014_793_ISEGS	UNPA	Outer Segment	1025	Small	Small Carcass	unknown	Fatality Search	21	No				X		Older than Search Interval
2014_794_ISEGS	MODO	Outer Segment	1050	Large	Large Carcass	unknown	Fatality Search	21	No				X		Older than Search Interval
2014_795_ISEGS	YRWA	Power Block	0	Small	Small Carcass	singeing	Incidental	NA	No	X	X				Outside Standard Search Area
2014_796_ISEGS	UNWA	Inner HD	148	Small	Feather Spot	singeing	Fatality Search	21	Yes	X		X			
2014_797_ISEGS	UNWA	Inner HD	230	Small	Feather Spot	singeing	Fatality Search	21	Yes	X		X			
2014_798_ISEGS	WEME	Inner HD	198	Small	Feather Spot	unknown	Fatality Search	21	Yes	X		X			
2014_799_ISEGS	DEJU	Inner Segment	270	Small	Feather Spot	unknown	Incidental	NA	No				X		Outside Standard Search Area
2014_800_ISEGS	YRWA	Power Block	49	Small	Small Carcass	singeing	Fatality Search	21	Yes	X	X				
2014_801_ISEGS	RCKI	Power Block	49	Small	Small Carcass	singeing	Fatality Search	21	Yes	X	X				
2014_802_ISEGS	UNPA	Inner HD	220	Small	Feather Spot	singeing	Fatality Search	21	Yes	X		X			
2014_803_ISEGS	UNPA	Inner HD	206	Small	Feather Spot	singeing	Fatality Search	21	Yes	X		X			
2014_804_ISEGS	LEGO	Power Block	45	Small	Small Carcass	unknown	Fatality Search	21	Yes	X	X				

USFWS #	Species Code	Location	Distance from Tower (m)	Bird Size	Model Size	Cause of Death	How Found	Time Since Last Survey (days)	Used in Estimator	Tower Area	Power Block	Inner HD	Heliostat Area	Unit Fence	Estimator Notes
2014_805_ISEGS	AMPI	Inner Segment	550	Small	Feather Spot	unknown	Fatality Search	21	Yes				X		
2014_806_ISEGS	UNPA	Inner HD	200	Small	Feather Spot	unknown	Fatality Search	21	Yes	X		X			
2014_807_ISEGS	BRBL	Inner HD	260	Small	Feather Spot	unknown	Fatality Search	21	Yes	X		X			
2014_808_ISEGS	GRRO	Inner Segment	550	Large	Feather Spot	unknown	Incidental	NA	No				X		Outside Standard Search Area
2014_809_ISEGS	SAVS	Inner Segment	640	Small	Small Carcass	unknown	Fatality Search	21	No				X		Older than Search Interval
2014_810_ISEGS	AMPI	Inner Segment	630	Small	Feather Spot	unknown	Fatality Search	21	Yes				X		
2014_811_ISEGS	UNPA	Inner Segment	550	Small	Feather Spot	unknown	Fatality Search	21	Yes				X		
2014_812_ISEGS	AMPI	Inner HD	244	Small	Feather Spot	unknown	Fatality Search	21	Yes	X		X			
2014_813_ISEGS	GAQU	Inner HD	220	Large	Feather Spot	unknown	Fatality Search	21	Yes	X		X			
2014_814_ISEGS	WEME	Inner Segment	600	Small	Feather Spot	unknown	Fatality Search	21	Yes				X		
2014_815_ISEGS	AMPI	Inner HD	250	Small	Feather Spot	unknown	Fatality Search	21	Yes	X		X			
2014_816_ISEGS	UNDU	Outer Segment	1190	Large	Large Carcass	collision	Fatality Search	21	Yes				X		
2014_817_ISEGS	WCSP	Inner Segment	570	Small	Feather Spot	unknown	Fatality Search	21	Yes				X		
2014_818_ISEGS	WCSP	Outer Segment	930	Small	Small Carcass	unknown	Fatality Search	21	Yes				X		
2014_819_ISEGS	AMCO	Unit Fence	1540	Large	Large Carcass	unknown	Incidental	21	Yes					X	
2014_820_ISEGS	WEME	Outer Segment	1080	Small	Feather Spot	unknown	Incidental	NA	No				X		Outside Standard Search Area
2014_821_ISEGS	WCSP	Inner Segment	400	Small	Small Carcass	collision	Fatality Search	21	Yes				X		
2014_822_ISEGS	HOFI	Power Block	31	Small	Small Carcass	unknown	Incidental	4(1)	No	X	X				Older than Search Interval
2014_823_ISEGS	WCSP	Inner Segment	530	Small	Feather Spot	unknown	Fatality Search	21	Yes				X		
2014_824_ISEGS	AMPI	Outer Segment	760	Small	Feather Spot	unknown	Fatality Search	21	Yes				X		
2014_825_ISEGS	AMPI	Inner Segment	420	Small	Small Carcass	collision	Fatality Search	21	Yes				X		
2014_826_ISEGS	AMPI	Inner Segment	280	Small	Feather Spot	unknown	Fatality Search	22	Yes				X		
2014_827_ISEGS	ROGO	Inner HD	80	Large	Large Carcass	collision	Incidental	19	Yes	X		X			
2014_828_ISEGS	CEWA	Inner HD	105	Small	Feather Spot	singeing	Fatality Search	21	Yes	X		X			
2014_829_ISEGS	LEGO	Inner HD	105	Small	Feather Spot	singeing	Fatality Search	21	Yes	X		X			
2014_830_ISEGS	UNSB	Inner HD	130	Small	Small Carcass	unknown	Fatality Search	21	Yes	X		X			
2014_831_ISEGS	YRWA	ACC	40	Small	Small Carcass	singeing	Fatality Search	21	Yes	X	X				
2014_832_ISEGS	MODO	Inner HD	180	Large	Feather Spot	unknown	Fatality Search	21	No	X		X			Older than Search Interval
2014_833_ISEGS	UNPA	Inner HD	210	Small	Feather Spot	unknown	Fatality Search	21	Yes	X		X			
2014_834_ISEGS	AMPI	Inner HD	230	Small	Feather Spot	unknown	Fatality Search	21	Yes	X		X			
2014_835_ISEGS	BRSP	Outer Segment	770	Small	Small Carcass	unknown	Fatality Search	21	Yes				X		
2014_836_ISEGS	WCSP	Inner HD	230	Small	Feather Spot	unknown	Fatality Search	21	Yes	X		X			
2014_837_ISEGS	AMPI	Inner Segment	450	Small	Small Carcass	unknown	Fatality Search	21	Yes				X		
2014_838_ISEGS	GRRO	Outer Segment	800	Large	Feather Spot	unknown	Fatality Search	21	Yes				X		
2014_839_ISEGS	WCSP	Inner Segment	650	Small	Feather Spot	unknown	Fatality Search	21	Yes				X		
2014_840_ISEGS	LENI	Power Block	82	Small	Feather Spot	unknown	Incidental	15(1)	No	X	X				Older than Search Interval
2014_841_ISEGS	VGSW	Inner HD	210	Small	Feather Spot	singeing	Fatality Search	21	Yes	X		X			
2014_842_ISEGS	UNSP	Outer Segment	690	Small	Feather Spot	unknown	Fatality Search	19	Yes				X		
2014_843_ISEGS	DEJU	Unit Fence	1050	Small	Small Carcass	unknown	Fatality Search	21	Yes					X	
2014_844_ISEGS	EUST	Outer Segment	1105	Small	Feather Spot	unknown	Incidental	NA	No				X		Outside Standard Search Area
2014_845_ISEGS	UNPA	Inner Segment	630	Small	Feather Spot	unknown	Fatality Search	21	Yes				X		
2014_846_ISEGS	MODO	Unit Fence	920	Large	Feather Spot	unknown	Fatality Search	21	Yes					X	
2014_847_ISEGS	CRTH	Unit Fence	1030	Small	Feather Spot	unknown	Fatality Search	21	Yes					X	
2014_848_ISEGS	MODO	Outer Segment	1640	Large	Feather Spot	unknown	Incidental	NA	No				X		Outside Standard Search Area
2014_849_ISEGS	WEME	Inner Segment	590	Small	Feather Spot	unknown	Fatality Search	21	Yes				X		
2014_850_ISEGS	YRWA	Inner Segment	480	Small	Feather Spot	unknown	Fatality Search	21	Yes				X		
2014_851_ISEGS	AMPI	Inner Segment	580	Small	Small Carcass	unknown	Incidental	NA	No				X		Outside Standard Search Area
2014_852_ISEGS	AMCO	Outer Segment	700	Large	Large Carcass	collision	Incidental	NA	No				X		Outside Standard Search Area

USFWS #	Species Code	Location	Distance from Tower (m)	Bird Size	Model Size	Cause of Death	How Found	Time Since Last Survey (days)	Used in Estimator	Tower Area	Power Block	Inner HD	Heliostat Area	Unit Fence	Estimator Notes
2014_853_ISEGS	WCSP	Outer Segment	700	Small	Feather Spot	unknown	Fatality Search	21	Yes				X		
2014_854_ISEGS	AMPI	Outer Segment	840	Small	Small Carcass	collision	Fatality Search	21	Yes				X		
2014_855_ISEGS	UNPA	Outer Segment	920	Small	Feather Spot	collision	Fatality Search	21	No				X		Older than Search Interval
2014_856_ISEGS	UNSP	Outer Segment	960	Small	Small Carcass	unknown	Fatality Search	21	No				X		Older than Search Interval
2014_857_ISEGS	LOSH	Offsite	1160	Small	Small Carcass	unknown	Incidental	NA	No						Outside Standard Search Area
2014_858_ISEGS	YRWA	Power Block	27	Small	Small Carcass	singeing	Incidental	17(1)	Yes	X	X				
2014_859_ISEGS	MOBL	Inner HD	140	Small	Small Carcass	singeing	Fatality Search	21	Yes	X		X			
2014_860_ISEGS	AMCO	Inner HD	160	Large	Feather Spot	unknown	Fatality Search	21	Yes	X		X			
2014_861_ISEGS	UNSP	Outer Segment	850	Small	Feather Spot	unknown	Fatality Search	21	Yes				X		
2014_862_ISEGS	UNPA	Power Block	0	Small	Small Carcass	unknown	Fatality Search	21	Yes	X	X				
2014_863_ISEGS	MODO	Outer Segment	840	Large	Large Carcass	unknown	Fatality Search	21	No				X		Older than Search Interval
2014_864_ISEGS	UNPA	Inner HD	270	Small	Feather Spot	singeing	Fatality Search	21	Yes	X		X			
2014_865_ISEGS	ROPI	Outer Segment	890	Large	Feather Spot	unknown	Fatality Search	21	No				X		Older than Search Interval
2014_866_ISEGS	UNSP	Outer Segment	870	Small	Feather Spot	unknown	Fatality Search	21	Yes				X		
2014_867_ISEGS	YRWA	Inner HD	280	Small	Feather Spot	unknown	Fatality Search	21	Yes	X		X			
2014_868_ISEGS	GRRO	Unit Fence	1050	Large	Feather Spot	unknown	Fatality Search	20	No					X	Older than Search Interval
2014_869_ISEGS	GRRO	Unit Fence	890	Large	Feather Spot	unknown	Fatality Search	20	No					X	Older than Search Interval
2014_870_ISEGS	GRRO	Unit Fence	1105	Large	Feather Spot	unknown	Fatality Search	20	Yes					X	
2014_871_ISEGS	BTPI	Outer Segment	750	Large	Feather Spot	collision	Fatality Search	21	Yes				X		
2014_872_ISEGS	YRWA	Inner Segment	320	Small	Feather Spot	unknown	Fatality Search	21	Yes				X		
2014_873_ISEGS	UNSP	Inner Segment	300	Small	Small Carcass	unknown	Fatality Search	21	No				X		Older than Search Interval
2014_874_ISEGS	ROPI	Power Block	0	Large	Large Carcass	singeing	Incidental	20(1)	Yes	X	X				
2014_875_ISEGS	YWAR	Inner Segment	470	Small	Feather Spot	unknown	Fatality Search	21	Yes				X		
2014_876_ISEGS	SAVS	Inner Segment	480	Small	Small Carcass	collision	Incidental	NA	No				X		Outside Standard Search Area
2014_877_ISEGS	GRRO	Outer Segment	980	Large	Feather Spot	unknown	Fatality Search	21	Yes				X		
2014_878_ISEGS	YRWA	Outer Segment	990	Small	Feather Spot	unknown	Fatality Search	21	Yes				X		
2014_879_ISEGS	UNID	Inner Segment	320	Small	Small Carcass	unknown	Fatality Search	21	No				X		Older than Search Interval
2014_880_ISEGS	BRBL	Inner HD	240	Small	Feather Spot	unknown	Fatality Search	21	Yes	X		X			
2014_881_ISEGS	YRWA	Inner HD	220	Small	Feather Spot	singeing	Fatality Search	21	Yes	X		X			
2014_882_ISEGS	MODO	Inner HD	210	Large	Feather Spot	unknown	Fatality Search	21	No	X		X			Older than Search Interval
2014_883_ISEGS	AMPI	Inner Segment	300	Small	Feather Spot	singeing	Fatality Search	21	Yes				X		
2014_884_ISEGS	UNPA	Power Block	40	Small	Feather Spot	singeing	Fatality Search	21	Yes	X	X				
2014_885_ISEGS	AMPI	Inner Segment	490	Small	Feather Spot	unknown	Fatality Search	21	Yes				X		
2014_886_ISEGS	LEGO	Power Block	40	Small	Feather Spot	singeing	Fatality Search	21	Yes	X	X				
2014_887_ISEGS	RCKI	Inner HD	230	Small	Feather Spot	singeing	Fatality Search	21	Yes	X		X			
2014_888_ISEGS	YRWA	Inner Segment	580	Small	Feather Spot	unknown	Fatality Search	21	Yes				X		
2014_889_ISEGS	YRWA	Inner HD	170	Small	Feather Spot	singeing	Fatality Search	21	Yes	X		X			
2014_890_ISEGS	UNPA	Inner Segment	310	Small	Feather Spot	singeing	Fatality Search	21	Yes				X		
2014_891_ISEGS	LEGO	Power Block	10	Small	Feather Spot	singeing	Fatality Search	21	Yes	X	X				
2014_892_ISEGS	WEME	Inner HD	170	Small	Feather Spot	unknown	Fatality Search	21	Yes	X		X			
2014_893_ISEGS	UNPA	Inner HD	180	Small	Feather Spot	unknown	Fatality Search	21	Yes	X		X			
2014_894_ISEGS	UNPA	Power Block	40	Small	Feather Spot	singeing	Fatality Search	21	Yes	X	X				
2014_895_ISEGS	UNPA	Power Block	20	Small	Feather Spot	singeing	Fatality Search	21	Yes	X	X				
2014_896_ISEGS	HOFI	Inner HD	98	Small	Small Carcass	singeing	Fatality Search	21	Yes	X		X			
2014_897_ISEGS	AMPI	Inner Segment	510	Small	Feather Spot	unknown	Fatality Search	21	Yes				X		
2014_898_ISEGS	UNPA	Inner Segment	640	Small	Feather Spot	unknown	Fatality Search	21	Yes				X		
2014_899_ISEGS	YWAR	Power Block	10	Small	Feather Spot	singeing	Fatality Search	21	Yes	X	X				
2014_900_ISEGS	UNPA	Inner HD	210	Small	Feather Spot	unknown	Fatality Search	21	Yes	X		X			

USFWS #	Species Code	Location	Distance from Tower (m)	Bird Size	Model Size	Cause of Death	How Found	Time Since Last Survey (days)	Used in Estimator	Tower Area	Power Block	Inner HD	Heliostat Area	Unit Fence	Estimator Notes
2014_901_ISEGS	YWAR	Power Block	45	Small	Feather Spot	singeing	Fatality Search	21	Yes	X	X				
2014_902_ISEGS	WEME	Outer Segment	670	Small	Small Carcass	unknown	Incidental	2	No				X		Left in Place-Not Discovered on Next Search
2014_903_ISEGS	UNPA	Inner Segment	598	Small	Feather Spot	unknown	Fatality Search	21	Yes				X		
2014_904_ISEGS	GWTE	Unit Fence	1520	Large	Feather Spot	unknown	Fatality Search	21	Yes					X	
2014_905_ISEGS	GRRO	Unit Fence	1400	Large	Feather Spot	unknown	Fatality Search	21	Yes					X	
2014_906_ISEGS	MODO	Outer Segment	1080	Large	Feather Spot	unknown	Fatality Search	28	Yes				X		
2014_907_ISEGS	UNSP	Inner Segment	630	Small	Small Carcass	unknown	Fatality Search	21	Yes				X		
2014_908_ISEGS	WEME	Inner Segment	340	Small	Feather Spot	unknown	Incidental	NA	No				X		Outside Standard Search Area
2014_909_ISEGS	UNSP	Inner Segment	280	Small	Feather Spot	unknown	Fatality Search	21	Yes				X		
2014_910_ISEGS	AMCO	Inner Segment	420	Large	Feather Spot	unknown	Incidental	NA	No				X		Outside Standard Search Area
2014_911_ISEGS	AMPI	Inner HD	200	Small	Feather Spot	unknown	Fatality Search	21	Yes	X		X			
2014_912_ISEGS	AMRO	Power Block	110	Small	Small Carcass	unknown	Fatality Search	21	Yes	X	X				
2014_913_ISEGS	AMPI	Inner HD	270	Small	Feather Spot	unknown	Fatality Search	21	Yes	X		X			
2014_914_ISEGS	AMPI	Inner HD	180	Small	Small Carcass	collision	Fatality Search	21	Yes	X		X			
2014_915_ISEGS	UNPA	Unit Fence	1030	Small	Feather Spot	unknown	Fatality Search	20	Yes					X	
2014_916_ISEGS	AMKE	Outer Segment	800	Large	Large Carcass	singeing	Fatality Search	21	No				X		Older than Search Interval
2014_917_ISEGS	GRRO	Outer Segment	1160	Large	Large Carcass	unknown	Fatality Search	21	No				X		Older than Search Interval
2014_918_ISEGS	UNSP	Inner Segment	560	Small	Feather Spot	unknown	Fatality Search	21	Yes				X		
2014_919_ISEGS	WEME	Inner Segment	425	Small	Small Carcass	unknown	Fatality Search	21	Yes				X		
2014_920_ISEGS	UNSP	Inner Segment	364	Small	Small Carcass	unknown	Fatality Search	21	Yes				X		
2014_921_ISEGS	NOHA	Outer Segment	850	Large	Large Carcass	singeing	Fatality Search	21	Yes				X		
2014_922_ISEGS	BRBL	Outer Segment	770	Small	Feather Spot	unknown	Fatality Search	21	Yes				X		
2014_923_ISEGS	WCSP	Outer Segment	770	Small	Feather Spot	unknown	Fatality Search	21	Yes				X		
2014_924_ISEGS	GRRO	Outer Segment	860	Large	Feather Spot	unknown	Fatality Search	21	Yes				X		
2014_925_ISEGS	EAGR	Inner HD	200	Large	Large Carcass	unknown	Fatality Search	21	Yes	X		X			
2014_926_ISEGS	UNSW	Inner HD	240	Small	Feather Spot	unknown	Fatality Search	21	Yes	X		X			
2014_927_ISEGS	GRRO	Unit Fence	1200	Large	Feather Spot	unknown	Fatality Search	21	Yes					X	
2014_928_ISEGS	GRRO	Outer Segment	815	Large	Feather Spot	unknown	Fatality Search	21	Yes				X		
2014_929_ISEGS	SAGS	Outer Segment	1110	Small	Small Carcass	collision	Fatality Search	21	Yes				X		
2014_930_ISEGS	WCSP	Inner Segment	540	Small	Small Carcass	unknown	Fatality Search	21	Yes				X		
2014_931_ISEGS	MODO	Outer Segment	1040	Large	Feather Spot	unknown	Fatality Search	21	No				X		Older than Search Interval
2014_932_ISEGS	AMPI	Inner Segment	620	Small	Feather Spot	unknown	Fatality Search	14	No				X		Older than Search Interval
2014_933_ISEGS	SAGS	Outer Segment	940	Small	Small Carcass	unknown	Fatality Search	14	Yes				X		
2014_934_ISEGS	YRWA	Outer Segment	940	Small	Small Carcass	unknown	Fatality Search	14	No				X		Older than Search Interval
2014_935_ISEGS	MODO	Outer Segment	943	Large	Large Carcass	unknown	Fatality Search	14	No				X		Older than Search Interval
2014_936_ISEGS	ROPI	Outer Segment	938	Large	Large Carcass	unknown	Fatality Search	14	No				X		Older than Search Interval
2014_937_ISEGS	GRRO	Outer Segment	1140	Large	Feather Spot	unknown	Fatality Search	14	No				X		Older than Search Interval Discovered after Plot had Been Searched Earlier
2014_938_ISEGS	WCSP	Outer Segment	1160	Small	Feather Spot	unknown	Incidental	22	No				X		
2014_939_ISEGS	VATH	Inner HD	180	Small	Small Carcass	unknown	Fatality Search	16	No	X		X			Older than Search Interval
2014_940_ISEGS	WEME	Inner Segment	330	Small	Small Carcass	unknown	Fatality Search	16	No				X		Older than Search Interval
2014_941_ISEGS	MODO	Outer Segment	738	Large	Large Carcass	unknown	Fatality Search	23	Yes				X		
2014_942_ISEGS	UNPA	Outer Segment	740	Small	Small Carcass	unknown	Fatality Search	23	Yes				X		
2014_943_ISEGS	WCSP	Outer Segment	1060	Small	Feather Spot	unknown	Fatality Search	23	Yes				X		
2014_944_ISEGS	UNSP	Inner Segment	478	Small	Small Carcass	unknown	Incidental	NA	No				X		Outside Standard Search Area
2014_945_ISEGS	UNLB	Outer Segment	800	Large	Large Carcass	unknown	Fatality Search	18	No				X		Older than Search Interval
2014_946_ISEGS	LOSH	Outer Segment	1300	Small	Feather Spot	unknown	Fatality Search	19	Yes				X		
2014_947_ISEGS	UNWA	Inner Segment	310	Small	Feather Spot	unknown	Fatality Search	20	No				X		Older than Search Interval

USFWS #	Species Code	Location	Distance from Tower (m)	Bird Size	Model Size	Cause of Death	How Found	Time Since Last Survey (days)	Used in Estimator	Tower Area	Power Block	Inner HD	Heliostat Area	Unit Fence	Estimator Notes
2014_948_ISEGS	UNPA	Inner Segment	440	Small	Feather Spot	unknown	Incidental	NA	No				X		Outside Standard Search Area
2014_949_ISEGS	UNSP	Inner Segment	540	Small	Feather Spot	unknown	Fatality Search	18	No				X		Older than Search Interval
2014_950_ISEGS	SAVS	Outer Segment	1420	Small	Small Carcass	collision	Fatality Search	19	Yes				X		
2014_951_ISEGS	VATH	Outer Segment	730	Small	Small Carcass	collision	Fatality Search	18	No				X		Older than Search Interval
2014_952_ISEGS	YRWA	Inner Segment	490	Small	Feather Spot	unknown	Incidental	NA	No				X		Outside Standard Search Area
2014_953_ISEGS	WEME	Inner Segment	560	Small	Feather Spot	collision	Fatality Search	20	No				X		Older than Search Interval
2014_954_ISEGS	VGSW	Power Block	0	Small	Small Carcass	singeing	Incidental	NA	No	X	X				Outside Standard Search Area
2014_955_ISEGS	WCSP	Inner Segment	450	Small	Feather Spot	unknown	Fatality Search	21	Yes				X		
2014_956_ISEGS	PBGR	Inner Segment	620	Large	Large Carcass	unknown	Incidental	NA	No				X		Outside Standard Search Area
2015_001_ISEGS	OCWA	Power Block	32	Small	Small Carcass	singeing	Fatality Search	21	Yes	X	X				
2015_002_ISEGS	BHCO	Inner Segment	700	Small	Small Carcass	unknown	Incidental	NA	No				X		Outside Standard Search Area
2015_003_ISEGS	GRRO	Inner Segment	630	Large	Feather Spot	unknown	Incidental	NA	No				X		Outside Standard Search Area
2015_004_ISEGS	HOFI	Inner Segment	620	Small	Feather Spot	unknown	Fatality Search	21	Yes				X		
2015_005_ISEGS	GRRO	Unit Fence	1040	Large	Feather Spot	unknown	Fatality Search	21	Yes					X	
2015_006_ISEGS	GRRO	Unit Fence	810	Large	Feather Spot	unknown	Fatality Search	21	Yes					X	
2015_007_ISEGS	GRRO	Unit Fence	1100	Large	Feather Spot	unknown	Fatality Search	21	Yes					X	
2015_008_ISEGS	MODO	Outer Segment	1130	Large	Large Carcass	unknown	Fatality Search	21	No				X		Older than Search Interval
2015_009_ISEGS	MODO	Outer Segment	980	Large	Feather Spot	unknown	Fatality Search	21	No				X		Older than Search Interval
2015_010_ISEGS	YRWA	Inner Segment	570	Small	Feather Spot	unknown	Fatality Search	28	Yes				X		
2015_011_ISEGS	AMRO	Inner HD	260	Small	Feather Spot	unknown	Fatality Search	26	Yes	X		X			
2015_012_ISEGS	AMPI	Inner Segment	290	Small	Small Carcass	collision	Fatality Search	22	Yes				X		
2015_013_ISEGS	UNPA	Power Block	65	Small	Feather Spot	singeing	Fatality Search	26	Yes	X	X				
2015_014_ISEGS	UNPA	Inner Segment	320	Small	Feather Spot	collision	Fatality Search	23	Yes				X		
2015_015_ISEGS	AMPI	Inner Segment	640	Small	Small Carcass	unknown	Fatality Search	25	Yes				X		
2015_016_ISEGS	AMPI	Inner Segment	625	Small	Feather Spot	unknown	Fatality Search	22	Yes				X		
2015_017_ISEGS	SAGS	Outer Segment	1010	Small	Small Carcass	collision	Fatality Search	22	Yes				X		
2015_018_ISEGS	BGGN	ACC	75	Small	Small Carcass	singeing	Fatality Search	21	No	X	X				Older than Search Interval
2015_019_ISEGS	UNPA	Power Block	10	Small	Feather Spot	singeing	Fatality Search	21	Yes	X	X				
2015_020_ISEGS	YRWA	Outer Segment	930	Small	Small Carcass	unknown	Incidental	NA	No				X		Outside Standard Search Area
2015_021_ISEGS	BRSP	Outer Segment	950	Small	Small Carcass	collision	Fatality Search	21	Yes				X		
2015_022_ISEGS	UNLB	Unit Fence	1250	Large	Feather Spot	unknown	Incidental	2	No					X	Left in Place-Not Discovered on Next Search
2015_023_ISEGS	WCSP	Inner Segment	457	Small	Feather Spot	unknown	Incidental	NA	No				X		Outside Standard Search Area
2015_024_ISEGS	WEME	Inner Segment	575	Small	Feather Spot	unknown	Incidental	NA	No				X		Outside Standard Search Area
2015_025_ISEGS	SAVS	Inner Segment	620	Small	Small Carcass	unknown	Incidental	NA	No				X		Outside Standard Search Area
2015_026_ISEGS	ROPI	Outer Segment	1165	Large	Large Carcass	unknown	Fatality Search	21	No				X		Older than Search Interval
2015_027_ISEGS	WEME	Inner Segment	575	Small	Small Carcass	unknown	Incidental	NA	No				X		Outside Standard Search Area
2015_028_ISEGS	HOFI	Power Block	74	Small	Small Carcass	singeing	Fatality Search	22	Yes	X	X				
2015_029_ISEGS	COHU	Power Block	58	Small	Small Carcass	singeing	Fatality Search	22	Yes	X	X				
2015_030_ISEGS	UNPA	Power Block	0	Small	Feather Spot	unknown	Fatality Search	22	No	X	X				Older than Search Interval
2015_031_ISEGS	OCWA	Power Block	35	Small	Feather Spot	singeing	Fatality Search	22	Yes	X	X				
2015_032_ISEGS	YRWA	Power Block	58	Small	Small Carcass	singeing	Fatality Search	22	No	X	X				Older than Search Interval
2015_033_ISEGS	UNPA	Power Block	20	Small	Feather Spot	singeing	Fatality Search	21	No	X	X				Older than Search Interval
2015_034_ISEGS	UNPA	Power Block	17	Small	Feather Spot	singeing	Fatality Search	21	No	X	X				Older than Search Interval
2015_035_ISEGS	CORA	Offsite	NA	Large	Large Carcass	singeing	Incidental	NA	No						Outside Standard Search Area
2015_036_ISEGS	CORA	Unit Fence	1380	Large	Large Carcass	singeing	Incidental	9	Yes					X	
2015_037_ISEGS	GWTE	Outer Segment	1030	Large	Feather Spot	unknown	Incidental	NA	No				X		Outside Standard Search Area
2015_038_ISEGS	HOFI	ACC	44	Small	Small Carcass	singeing	Fatality Search	21	Yes	X	X				
2015_039_ISEGS	ROPI	Power Block	100	Large	Large Carcass	unknown	Incidental	14(1)	No	X	X				Older than Search Interval

USFWS #	Species Code	Location	Distance from Tower (m)	Bird Size	Model Size	Cause of Death	How Found	Time Since Last Survey (days)	Used in Estimator	Tower Area	Power Block	Inner HD	Heliostat Area	Unit Fence	Estimator Notes
2015_040_ISEGS	UNID	Power Block	NA	Small	Small Carcass	unknown	Incidental	7(1)	No	X	X				Older than Search Interval
2015_041_ISEGS	WISN	Outer Segment	1113	Small	Small Carcass	collision	Fatality Search	21	Yes				X		
2015_042_ISEGS	GRRO	Outer Segment	1270	Large	Feather Spot	unknown	Fatality Search	22	Yes				X		
2015_043_ISEGS	MODO	Power Block	70	Large	Large Carcass	unknown	Incidental	3(1)	No	X	X				Older than Search Interval
2015_044_ISEGS	TRES	Power Block	40	Small	Small Carcass	singeing	Incidental	6(1)	Yes	X	X				
2015_045_ISEGS	WCSP	Outer Segment	795	Small	Small Carcass	collision	Fatality Search	20	Yes				X		
2015_046_ISEGS	WEME	Inner Segment	531	Small	Small Carcass	collision	Incidental	NA	No				X		Outside Standard Search Area