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**HERMES COPPER BUTTERFLY  
(*Hermelycaena [Lycaena] hermes*)  
FOCUSED SURVEY REPORT  
FOR THE SAN DIEGO GAS & ELECTRIC  
CLEVELAND NATIONAL FOREST PROJECT  
SAN DIEGO COUNTY, CALIFORNIA**

*Prepared for:*

**SAN DIEGO GAS & ELECTRIC**  
8315 Century Park Court, CP21G  
San Diego, California 92123-1548  
(858) 637-3708

*Prepared by:*

**CHAMBERS GROUP, INC.**  
9909 Huennekens Street  
San Diego, California 92121  
(858) 541-2800

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**TABLE OF CONTENTS**

	<u>Page</u>
<b>SECTION 1.0 – INTRODUCTION .....</b>	<b>1</b>
1.1. PROJECT DESCRIPTION .....	1
1.2. SURVEY AREA.....	1
1.3. HERMES COPPER BUTTERFLY NATURAL HISTORY .....	1
<b>SECTION 2.0 – METHODOLOGY.....</b>	<b>3</b>
2.1. HABITAT ASSESSMENT .....	3
2.2. FOCUSED SURVEYS .....	3
<b>SECTION 3.0 – RESULTS .....</b>	<b>5</b>
3.1. QUANTITIES, LOCATIONS, AND HABITAT DESCRIPTIONS FOR HERMES COPPER BUTTERFLIES OBSERVED.....	5
3.1.1 Boulder Creek Road.....	6
3.1.2 Japatul Valley Road Area .....	7
3.1.3 Lyons Valley Road.....	7
3.1.4 Lyons Valley Road, Barrett Lake Area.....	7
3.1.5 Cottonwood Creek Area .....	8
3.1.6 Round Potrero Area .....	8
<b>SECTION 4.0 – CONCLUSIONS .....</b>	<b>9</b>
<b>SECTION 5.0 – SELECTED REFERENCES.....</b>	<b>10</b>
 <b>APPENDIX A: HERMES COPPER BUTTERFLY LOCATION MAPS</b>	
<b>APPENDIX B: BUTTERFLY SPECIES OBSERVED DURING HERMES COPPER BUTTERFLY FOCUSED SURVEYS</b>	
<b>APPENDIX C: HERMES COPPER BUTTERFLY FOCUSED SURVEY DATA</b>	

**LIST OF TABLES**

	<u>Page</u>
Table 1: Quantity and Locations of Hermes Copper Butterflies Observed.....	5

## **SECTION 1.0 – INTRODUCTION**

### **1.1. PROJECT DESCRIPTION**

The Cleveland National Forest (CNF) is requesting an Environmental Impact Statement (EIS) be prepared for the issuance of a Master Special Use Permit to the San Diego Gas & Electric Company (SDG&E). The Master Special Use Permit would cover the operations and maintenance of the existing electric distribution and transmission lines, appropriate access roads, and facilities within the Trabuco, Palomar, and Descanso Ranger Districts of the CNF. The existing facilities are needed to supply power to local communities, residents, and government-owned facilities located within and adjacent to the CNF. The CNF is also analyzing operational and equipment upgrades and improvements to the existing lines. The Master Special Use Permit would also include conditions necessary for resource protection. Chambers Group, Inc (Chambers Group) has conducted biological surveys including focused sensitive wildlife species surveys and focused surveys for rare plants along the distribution and transmission line Rights of Way (ROW) within the CNF (Project Area<sup>1</sup>). The survey results will be submitted by SDG&E to the CNF in support of the EIS to help analyze potential impacts to sensitive species within the Project Area. The Project Area includes approximately 167 linear miles of 12 transmission and distribution lines and includes the associated access roads and work areas. In addition to the data gathered from the Chambers Group surveys, the United States Forest Service (USFS) Biological Assessment/Biological Evaluation (BA/BE) for the CNF will be used to support this effort and report analysis.

The objective of this study was to determine the presence or absence of Hermes copper butterfly (*Hermelycaena [Lycaena] hermes*) and suitable Hermes habitat within the proposed Project Area.

### **1.2. SURVEY AREA**

Chambers Group conducted focused Hermes copper butterfly surveys within the Project Area. Chambers Group biologists conducted a helicopter survey of the Project Area to determine where species specific surveys (Survey Area) should be conducted (see Section 2.1 for Habitat Assessment).

The Survey Area is a 150-foot buffer around transmission/distribution pole centerlines and was extended to a 250-foot radius around each pole where the overhead line makes an angle greater than 2 degrees. The additional buffer is to include potential additional work space that is typically required during operation and maintenance work at angle points within the overhead lines.

Survey Areas were identified first by geographical locations within the county and were also referenced by the associated transmission/distribution line. These areas were then further refined to species specific suitable habitat areas that were surveyed and were graphically depicted on an accompanying aerial mapbook. One master mapbook was created for the entire Project Area; however, due to its size only the relevant mapbook pages are included in this report.

### **1.3. HERMES COPPER BUTTERFLY NATURAL HISTORY**

The Hermes copper butterfly, of the Family Lycaenidae, is a copper colored butterfly with a wingspan of approximately 1-1 ¼ inches. It is known to occur in San Diego County and adjacent Baja California in Mexico, within 100 miles of San Diego County. They are typically found in close proximity to their host

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<sup>1</sup> A complete Mapbook and description of the entire Project Area can be submitted upon request.

plant, spiny redberry (*Rhamnus crocea*) (Emmel and Emmel 1973), in association with nectar sources including California buckwheat (*Eriogonum fasciculatum*), chamise (*Adenostoma fasciculatum*), slender sunflower (*Helianthus gracilentus*), golden yarrow (*Eriophyllum confertiflorum*), poison-oak (*Toxicodendron diversilobum*), and short-podded mustard (*Hirschfeldia incana*) within coastal sage scrub and chaparral habitat (Faulkner, Klein, and Osborne 2008). Hermes copper butterflies lay single eggs on their host plant. Two-thirds of their life is spent in the egg stage; they may spend several years in that stage before emerging as a draught adaptation. Their flight season is generally mid-May to early-July, depending on elevation and weather, during which they do not stray far from their host plant (USFWS 2010). Males typically emerge before females, and perch on plants on the edges of trails to defend their territory and watch for females to emerge (Thorne 1963, Opler et. al. 2010). Threats include wildfires and urban expansion (Marschalek and Klein 2010, Shiraiwa 2010). A proposal to list the Hermes copper as federally threatened or endangered, dated May 4, 2010, is currently under a 12-month review by the United States Fish and Wildlife Service (USFWS 2010).

## **SECTION 2.0 – METHODOLOGY**

### **2.1. HABITAT ASSESSMENT**

Chambers Group biologists Michael Klein and Kris Alberts and Geographic Information System (GIS) specialist Billy Deane conducted an initial habitat assessment, by helicopter on March 12, 2010, of the Project Area to determine where species specific surveys should be conducted. The helicopter survey was determined by USFWS to be a suitable method of conducting a protocol habitat assessment, except within Peninsular bighorn sheep habitat (Anderson and Sirchia 2009). The helicopter flew low enough over the Project Area to allow for visual determination of the ground cover type and vegetation density to assess for Hermes copper butterfly habitat suitability. The focus of the habitat assessment was on finding patches of the host plant, spiny redberry, within 100 meters of the Project Area and access roads, and in close proximity to nectar sources. Areas that were developed, contained closed-canopy, agricultural, or non-native vegetation, or were unsafe to access, were mapped and excluded from focused surveys. In order to minimize disturbance to Peninsular bighorn sheep, the habitat assessment was conducted entirely on foot within habitat for this species.

In addition to the helicopter habitat assessment, spiny redberry locations were mapped and recorded during the 2010 Chambers Group focused plant surveys conducted within the entire Project Area. Handheld Global Positioning System (GPS) units were used to record spiny redberry locations and outline portions of the Project Area that would be surveyed (Survey Areas) during the 2010 Hermes copper butterfly focused surveys. Finally, the areas delineated for focused surveys based on the habitat assessment were refined during the first round of Hermes copper butterfly surveys by the Hermes copper butterfly biologists. Section 2.2 describes methods used for conducting the focused surveys.

### **2.2. FOCUSED SURVEYS**

Focused surveys for Hermes copper butterfly were conducted within the Project Area that were determined to be suitable for the butterfly based on the habitat assessment. The focused surveys were conducted in the Survey Areas considered suitable, which were refined by each biologist. Surveys were conducted from May 27-July 14, 2010 by qualified biologists Natalie Brodie, Melissa Busby, Michael Couffer, John Dicus, Melanie Dicus, Frank Dittmer, Sarah Farmer, Erin Harold, Martha Heath, Jane Higginson, Nicole Kimball, David King, Michael Klein, Andrew Pignolo, and Michael Wilcox.

Prior to beginning the Hermes copper butterfly focused surveys, literature related to existing Hermes copper butterfly populations and habitat preferences was reviewed. The Hermes copper butterfly is not yet listed, and neither the USFWS nor California Department of Fish and Game (CDFG) have released survey protocol for the species. For this project, surveyors followed draft protocol written for the SDG&E Sunrise Powerlink Project by entomologists Dave Faulkner, Michael Klein, and Ken Osborne (Faulkner, Klein, and Osborne 2008). The draft protocol includes the following recommendations:

- Surveys should be conducted by a qualified biologist familiar with spiny redberry and general butterfly biology. Hermes copper butterfly surveys should not be conducted concurrently with any other focused survey. Recommended equipment includes: binoculars, wind meter, thermometer, GPS, and a camera with a close focus or macro lens.
- Surveys should be conducted a minimum of 10 days apart and a maximum of 15 days apart (weather permitting, see below) for a total of 4 surveys throughout the adult flight period. Surveys should be conducted between 0900 hours and 1600 hours. If adult Hermes copper butterflies are found during one of the 4 surveys, the surveys can be discontinued on the stand

of redberry within which the insects are associated. Adjacent redberry stands should continue to be surveyed.

- An average rate of 10 acres per hour should be surveyed. Surveys will require walking along the edge of the redberry colony and observing for Hermes copper activity. Walking any trails or access roads will also flush a territorial butterfly. If no trails or access roads are present, then walking slowly through the vegetation will result in the same response. In addition, vegetation may be lightly tapped with a net stick to flush adults. All nearby nectar sources should be carefully examined.
- Survey only under the following acceptable weather conditions: surveys should be conducted when temperatures range from 70 to 95 degrees Fahrenheit (°F) and when cloud cover is no more than 25 percent. Surveys should stop if wind speeds exceed a steady 15 miles per hour (mph) for more than 5 minutes. If winds are expected to drop below 15 mph later in the day, then surveys should resume. Surveys should not be conducted during periods of marine layer cloud cover and should begin once the marine layer burns off and temperature reaches 70°F and 25 percent cloud cover.
- New growth or recently burned (2 – 3 years) stands of redberry can be excluded from surveys. However, the area should be reviewed thoroughly to identify potentially occurring stands of mature shrubs that may have been unaffected by the fire event.
- If a survey is missed due to unsuitable weather conditions or unforeseen occurrences, they should be conducted on the next day suitable day within the maximum 15-day range.
- The location of all adult Hermes copper and larvae observed should be mapped on an appropriate map. It is recommended that a Global Positioning System (GPS) unit and/or aerial photographs be used if available.
- Sighting information collected at the time of the survey will include the following information:
  - Date and time of field survey.
  - Weather conditions (Air temperature, wind speed, and cloud cover).
  - Location (GPS – coordinates [state coordinate system used]).
  - Number of adults (number of males and females, if detectable).
  - Observed behavior: perching, patrolling, nectaring (identify plant), mating, ovipositing (location on redberry).
  - General surrounding habitat description (coastal sage scrub or mixed chaparral).

Survey Areas targeted for Hermes copper butterfly from the initial helicopter survey included Maps MS-014 through -016, -030 & -031, -034 through -038, -040 through -062, -090 through -100. Surveys were excluded in areas lacking spiny redberry, areas lacking the appropriate hostplant/nectar source mix, and post-fire recovery areas lacking mature redberry. Based on the results of the first survey effort by the biologists, surveys continued on Maps MS-030, -031, -034, -037, -038, -040 through -062, -091, and -092.

**SECTION 3.0 – RESULTS**

A total of 100 GPS locations and 119 individual Hermes copper butterflies were found during the 2010 focused surveys on the CNF project site. **Section 3.1** below includes GPS locations (**Table 1**) and a habitat description for the areas where Hermes copper butterflies were observed.

**Appendix A** contains aerial maps of the Survey Areas with the location of Hermes copper butterfly observations labeled. These aerial maps are referenced in this section of the report by map number. **Appendix B** contains a list of all butterfly species observed on the project route during the focused surveys. Species nomenclature follows that of *Systematics of Western North American Butterflies* (Emmel 1998). A data table of survey locations and results is provided in **Appendix C**.

**3.1. QUANTITIES, LOCATIONS, AND HABITAT DESCRIPTIONS FOR HERMES COPPER BUTTERFLIES OBSERVED**

A total of 100 locations and 119 individual Hermes copper butterflies were found during the 2010 focused surveys on the CNF project site. These observations were identified along TL 625, 626, 6923, and Circuit 79. **Table 1** below displays survey data for Hermes copper butterflies observed during the focused surveys.

**Table 1: Quantity and Locations of Hermes Copper Butterflies Observed**

Date	Biologist	Time (Military)	Survey Location (Map page)	Hermes Observed
4-Jun-10	Michael Klein	0900-1300	057-059	1 (on Map 057)
6-Jun-10	Martha Heath	1100-1500	044	2
8-Jun-10	John Dicus, Melanie Dicus	0855-1555	054	2
8-Jun-10	Mike Couffer	0800-1500	049 & 050	15 (4 on Map 049, 11 on Map 050)
9-Jun-10	John Dicus, Melanie Dicus	0900-1600	051	9
9-Jun-10	Mike Couffer	0800-1500	050	2
10-Jun-10	Michael Klein	1000-1145	058 & 059	2 (1 same on Map 058, one new on Map 059)
15-Jun-10	Martha Heath	0900-1600	042	1
16-Jun-10	Martha Heath	0940-1600	042 & 043	5 (3 on Map 042, 2 on Map 043)
17-Jun-10	Martha Heath	0930-1600	043 & 044	11 (9 on Map 043, 2 on Map 044)
18-Jun-10	Michael Klein	0915-1045	058 & 059	1 (same on Map 058 from 1 <sup>st</sup> week)
18-Jun-10	Nicole Kimball, Nathan Moorhatch, David King	0944-1527	030	6
18-Jun-10	John Dicus, Melanie Dicus	0900-1445	054	2
18-Jun-10	Mike Couffer	0800-1600	050	7

*Hermes Copper Butterfly (Hermelycaena [Lycaena] hermes) Focused Survey Report  
for the San Diego Gas & Electric Cleveland National Forest Project  
San Diego County, California*

Date	Biologist	Time (Military)	Survey Location (Map page)	Hermes Observed
19-Jun-10	Mike Couffer	0800-1500	049 & 050	16 (8 on Map 049, 8 on Map 050)
25-Jun-10	Michael Klein	0900-1030	058 & 059	2 (same from the second week, one on Map 058, one on Map 059)
25-Jun-10	John Dicus, Melanie Dicus	0900-1400	054	2
25-Jun-10	Martha Heath	0900-1600	042 & 043	10
26-Jun-10	Andrew Pigniolo	1300-1530	057	2
26-Jun-10	Martha Heath	0930-1600	043 & 044	3 (1 on Map 043, 2 on Map 044)
28-Jun-10	Nathan Moorhatch, Nicole Kimball	0900-1505	030	2
28-Jun-10	Mike Couffer	0830-1600	050	5
29-Jun-10	Nathan Moorhatch, Nicole Kimball	0930-1408	030	4
30-Jun-10	Michael Wilcox, Nicole Kimball	0930-1452	030	4
5-Jul-10	Martha Heath	0930-1530	042	1
6-Jul-10	Martha Heath	1000-1545	042	2
7-Jul-10	Martha Heath	1000-1600	043	3
8-Jul-10	Mellissa Busby, Nicole Kimball	0953-1540	030	1
<b>Total Observations</b>				<b>119</b>

The following paragraphs describe the habitat corresponding to each project map number (see Appendix A) where Hermes copper butterflies were found during the focused surveys.

**3.1.1 Boulder Creek Road**

Surveys were conducted along TL 626 and Circuit 79 adjacent to Boulder Creek Road, north of King Creek (Map MS-030) on CNF lands. A total of 17 Hermes copper butterflies in 9 separate locations were observed within the Survey Area throughout the survey effort. Habitat consisted of post-fire recovering chamise chaparral with scattered scrub oak and California buckwheat. Much of the Survey Area along TL 626 consisted of mostly scattered redberry with buckwheat and other nectar sources in close proximity. More dense stands of redberry were found along the alternative TL 626 directly along Boulder Creek Road and near the western end of Circuit 79. Other nectar sources in the area consisted of chamise, short-podded mustard, slender sunflower, and golden yarrow.



### **3.1.2 Japatul Valley Road Area**

Surveys were conducted along TL 625, adjacent to Japatul Valley Road within three main Survey Areas. The first Survey Area was located just south of the intersection of Japatul Valley Road and Ave De Los Arboles (Map MS-042). A total of 17 Hermes copper butterflies were observed within this Survey Area. The butterflies were observed in 8 separate locations located within two of three major stands of redberry (upwards of 200 plants in one of the general locations), on private lands. Habitat consisted of mature, dense chamise chaparral with manzanita (*Arctostaphylos* sp.), sugarbush (*Rhus ovata*) and ceonothus (*Ceonothus* sp.) and developed areas. Dense patches of spiny redberry were in the area, and nectar sources included deerweed, California buckwheat, chamise, short-podded mustard, and golden yarrow.

The second Survey Area was located south of Survey Area one to just south of Vista Esperanza Lane along TL 625 and access roads, adjacent to Japatul Valley Road (Map MS-043). A total of 15 Hermes copper butterflies in 12 separate locations were observed within the Survey Area on private lands. Spiny redberry stands were identified throughout the survey area. Habitat consisted of coast live oak woodland, developed areas, and chamise chaparral with manzanita, sugarbush, and ceonothus.

The third Survey Area was located south of Survey Area two near the intersection of Japatul Valley Road and Juergens Vista (Map MS -044) along TL 625. A total of 6 Hermes copper butterflies in 4 separate locations were observed within the Survey Area. Two Hermes copper butterflies were observed within CNF lands, and four were observed on private lands. Habitat consisted of southern mixed chaparral with spiny redberry patches in four major stands separated by grazing areas.

### **3.1.3 Lyons Valley Road**

Surveys were conducted in two main areas along TL 625 and the service road west of Lyons Valley Road. The first Survey Area was located approximately 3.2 miles north of Barrett Lake Road (Map MS-049). A total of 12 Hermes copper butterflies were observed within the Survey Area, on CNF lands. Hermes copper butterflies were observed in the southern portion of this Survey Area, primarily along the edges of the access road near the centerline of the survey area where spiny redberry colonies were present. Habitat consisted of low density chamise chaparral with California buckwheat and golden yarrow intermixed, both serve as nectar sources.

The Second Survey Area was conducted along TL 625 and the service road west of Lyons Valley Road, south of Survey Area one and approximately 2 miles north of Barrett Lake Road (Map MS-050). A total of 33 Hermes copper butterflies were observed in 20 locations within this Survey Area, on CNF lands. Habitat consisted of low density chamise chaparral with California buckwheat and golden yarrow intermixed, both serving as nectar sources. Hermes copper butterflies and spiny redberry colonies were identified along the edges of the service road. This area had the highest number of Hermes copper butterflies observed. A San Diego coast horned lizard (*Phrynosoma coronatum blainvillii*) was also observed in the Survey Area.

### **3.1.4 Lyons Valley Road, Barrett Lake Area**

Surveys were conducted within two main areas off of Lyons Valley Road near Barrett Lake. The first Survey Area was along TL 625 and Barrett Lake Road near Wilson Creek, where Lyon's Valley Road heads east away from Barrett Lake (Map MS-051). A total of 9 Hermes copper butterflies were observed within the Survey Area, one on CNF lands. The Survey Area was located within coastal sage scrub, southern

mixed chaparral, southern coast live oak, red willow and sycamore riparian forest with a dense canopy and non-native grassy fields with scattered stands of poison oak. California buckwheat and golden yarrow were available as nectar sources.

The second Survey Area was located to the south of Survey Area one along TL 625, north of Spice Way and crossing Forest Route 17S10, approximately 1.8 miles to the west of Barrett Lake (Map MS-054). A total of 6 Hermes copper butterflies in 4 locations were observed within the Survey Area, on CNF lands. Hermes copper butterflies were observed in the central and southern portions of the Survey Area in four general locations. Habitat included buckwheat scrub, coastal sage scrub, southern mixed chaparral and non-native grassy fields with scattered stands of poison oak. California buckwheat and golden yarrow were available as nectar sources.

### **3.1.5 Cottonwood Creek Area**

Surveys were conducted along TL 6923 in the Cottonwood Creek area, approximately 1.8 miles south of Barrett Lake and 0.7 mile east of Cottonwood Creek (Map MS-057). A total of 2 Hermes copper butterflies were observed within a small cluster of spiny redberry within the Survey Area, on San Diego County owned land. The habitat of this Survey Area was fire-recovering and consisted of coastal sage scrub on south-facing slopes and southern mixed chaparral on north-facing slopes. The remaining spiny redberry in the Survey Area was sparse and low-growing. California buckwheat and golden yarrow were available as nectar sources.

### **3.1.6 Round Potrero Area**

Surveys were conducted along TL 6923 in the Round Potrero Area, east of the Cottonwood Creek Survey Area and approximately 2.5 miles south of Barrett Lake (Maps MS-058 & -059). A total of 2 Hermes copper butterflies were observed within the Survey Area on the eastern edge of Map MS-058 and western edge of Map MS-059, approximately 60 feet from one another on privately owned land. The habitat of this area was fire-recovering and consisted of coastal sage scrub on south-facing slopes and southern mixed chaparral on north-facing slopes. The majority of spiny redberry was sparse and low-growing. California buckwheat and golden yarrow were available as nectar sources.

## **SECTION 4.0 – CONCLUSIONS**

A total of 100 locations and 119 individual Hermes copper butterflies were found during the 2010 focused surveys on the CNF project site. These observations were identified along TL 625, 626, 6923, and Circuit 79. The Survey Area off Boulder Creek Road yielded 17 Hermes copper butterflies; the Japatul Valley Road Survey Areas yielded 38; the Lyon’s Valley Road Survey Areas yielded 45; the Lyon’s Valley Road Barrett Lake Survey Areas yielded 15; the Cottonwood Creek Survey Area yielded 2; and the Round Potrero Survey Area yielded 2 Hermes copper butterflies. Although this species is not listed, a proposal to list the Hermes copper butterfly as federally threatened or endangered, dated May 4, 2010, is currently under a 12-month review by the United States Fish and Wildlife Service (USFWS 2010).

**SECTION 5.0 – SELECTED REFERENCES**

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2006 *Endangered and Threatened Wildlife and Plants; 90-Day Finding on a Petition to List Hermes Copper Butterfly as Threatened or Endangered*. Federal Register, Vol. 71, No. 152, Proposed Rules, August 8, 2006.







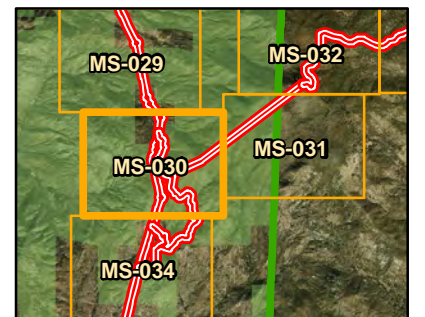
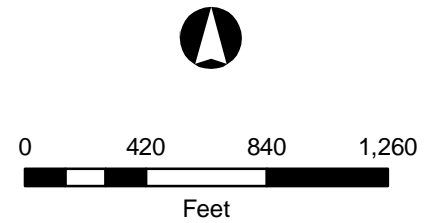
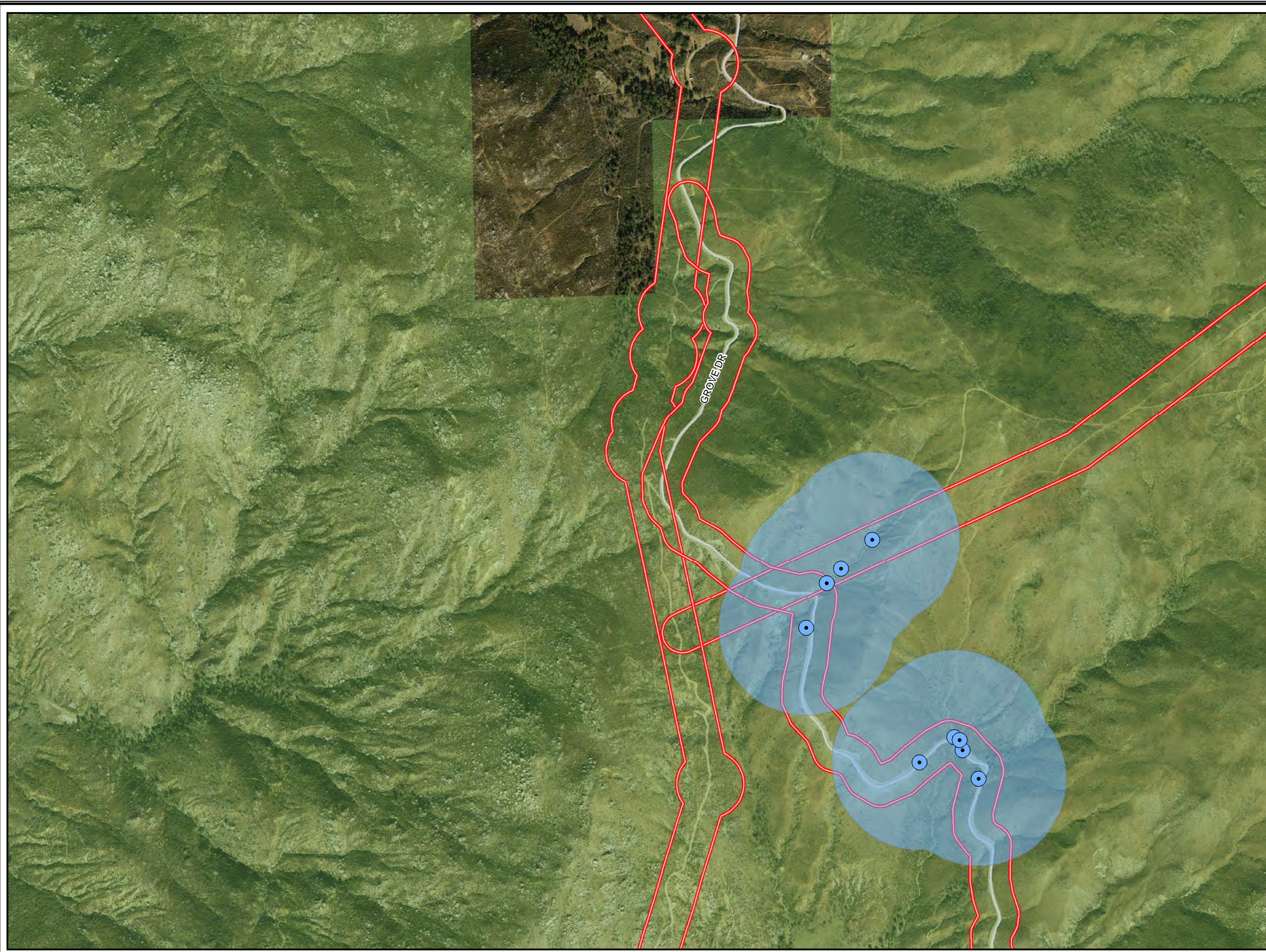
# APPENDIX A – HERMES COPPER BUTTERFLY LOCATION MAPS



# Appendix A Hermes Copper Butterfly Location Maps





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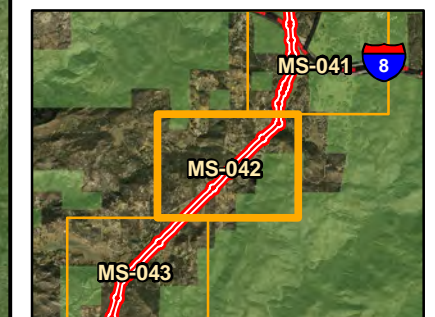
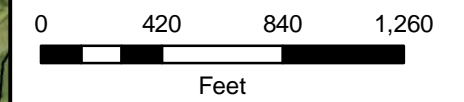
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-  Hermes Copper Locations
-  CNF Managed Lands
-  Cleveland National Forest  
Congressional District Boundary



# Appendix A Hermes Copper Butterfly Location Maps





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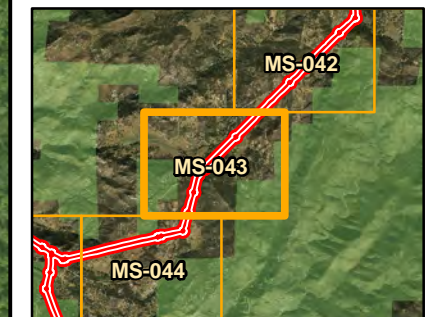
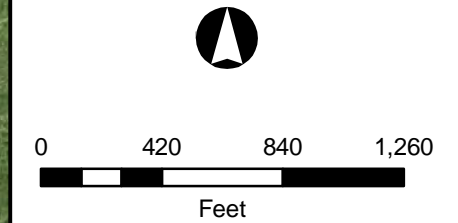
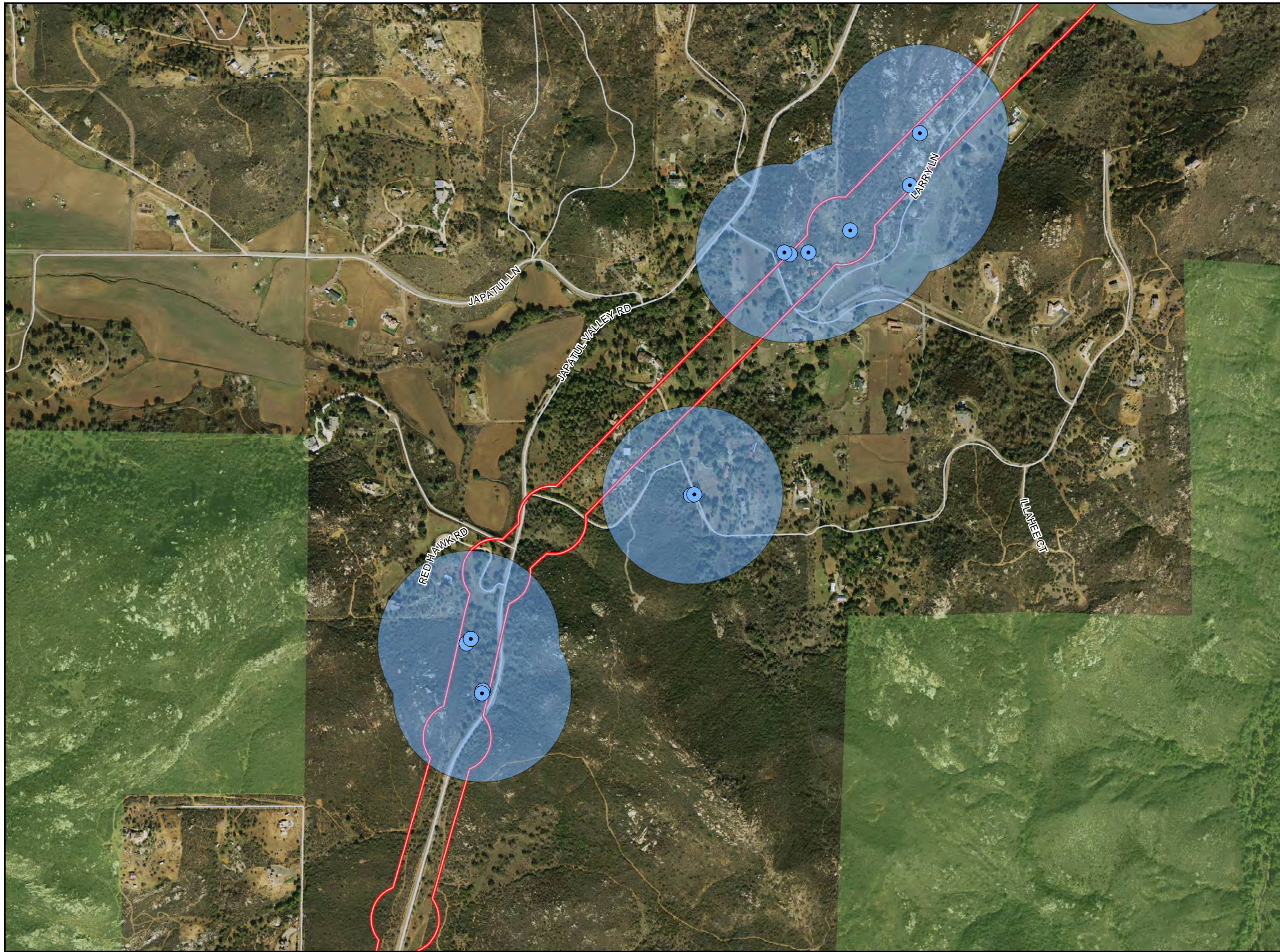
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-  Hermes Copper Locations
-  CNF Managed Lands
-  Cleveland National Forest  
Congressional District Boundary



# Appendix A Hermes Copper Butterfly Location Maps

## Legend





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Congressional District Boundary

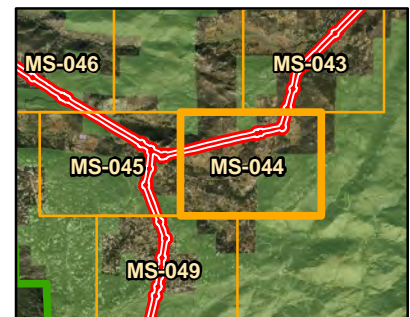
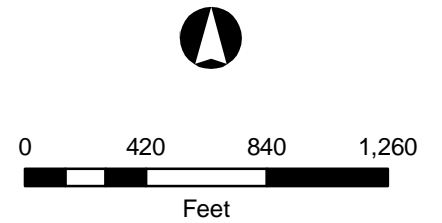




# Appendix A Hermes Copper Butterfly Location Maps

## Legend





-  Survey Area
-  Hermes Copper Locations
-  CNF Managed Lands
-  Cleveland National Forest  
Congressional District Boundary

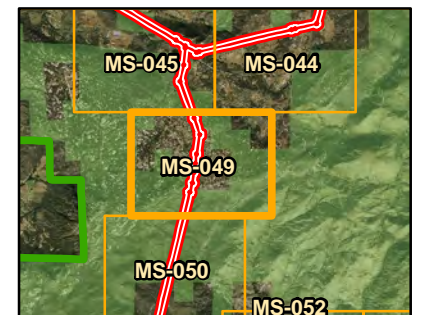
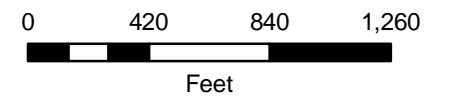


FOR ROUTE 16S04

# Appendix A Hermes Copper Butterfly Location Maps





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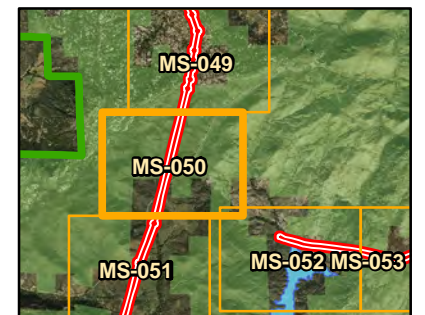
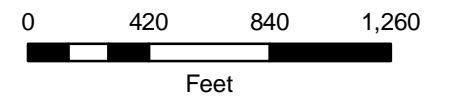
-  Survey Area
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Congressional District Boundary



# Appendix A Hermes Copper Butterfly Location Maps





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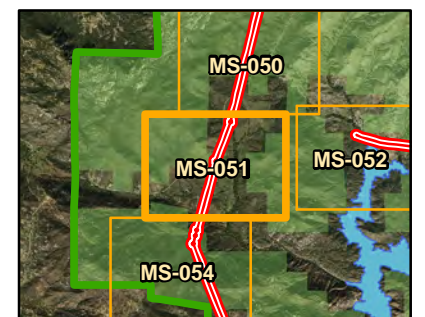
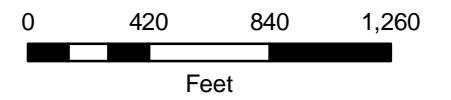
-  Survey Area
-  Hermes Copper Locations
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Congressional District Boundary



# Appendix A Hermes Copper Butterfly Location Maps





## Legend

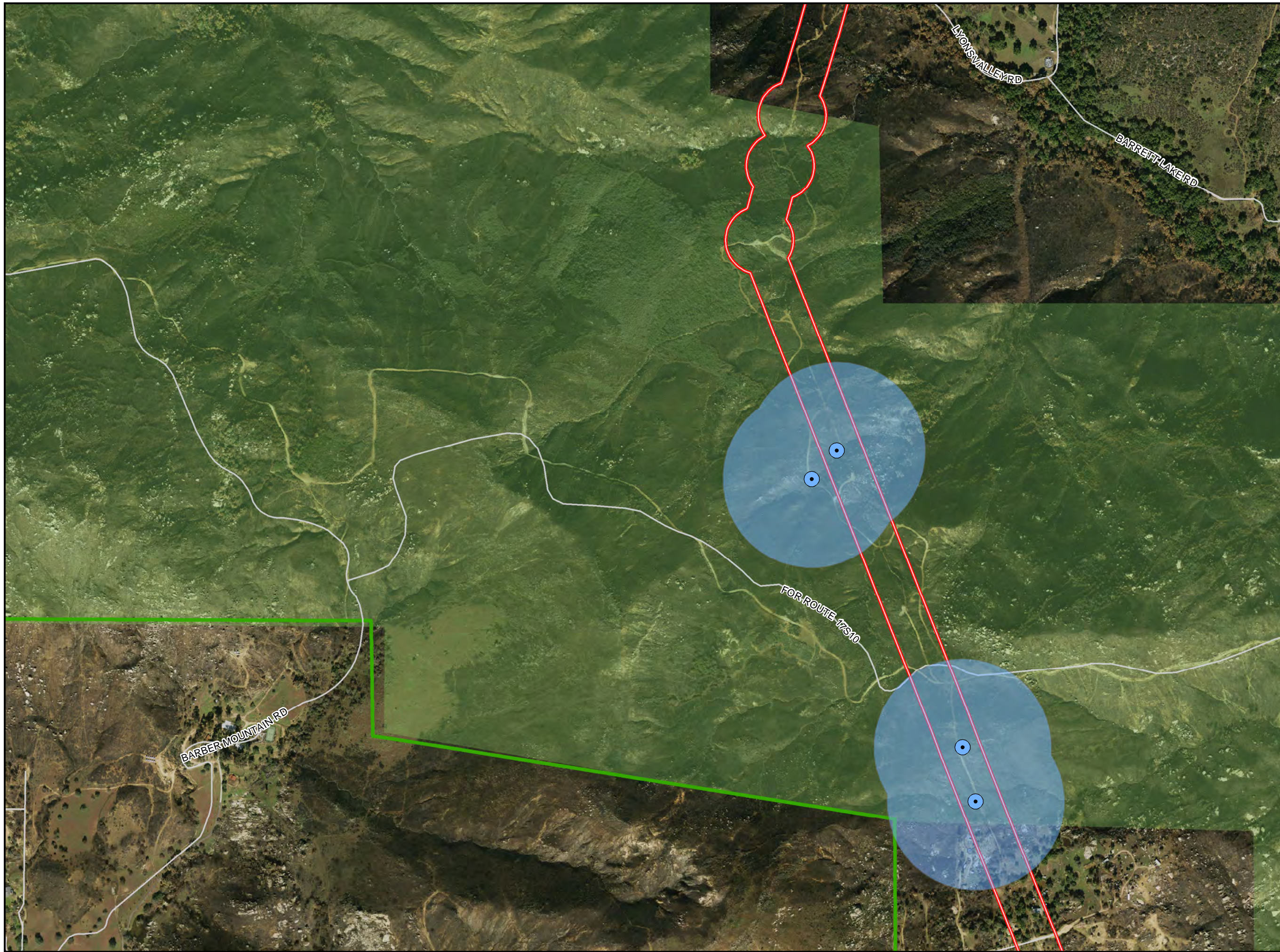
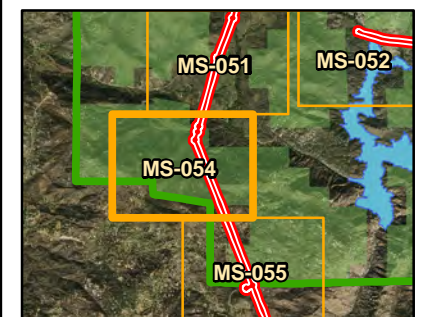
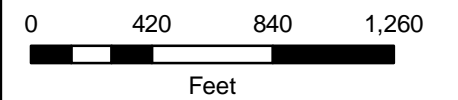
-  Survey Area
-  Hermes Copper Locations
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Congressional District Boundary



# Appendix A Hermes Copper Butterfly Location Maps





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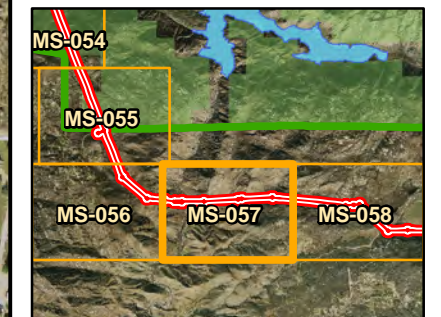
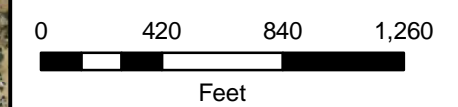
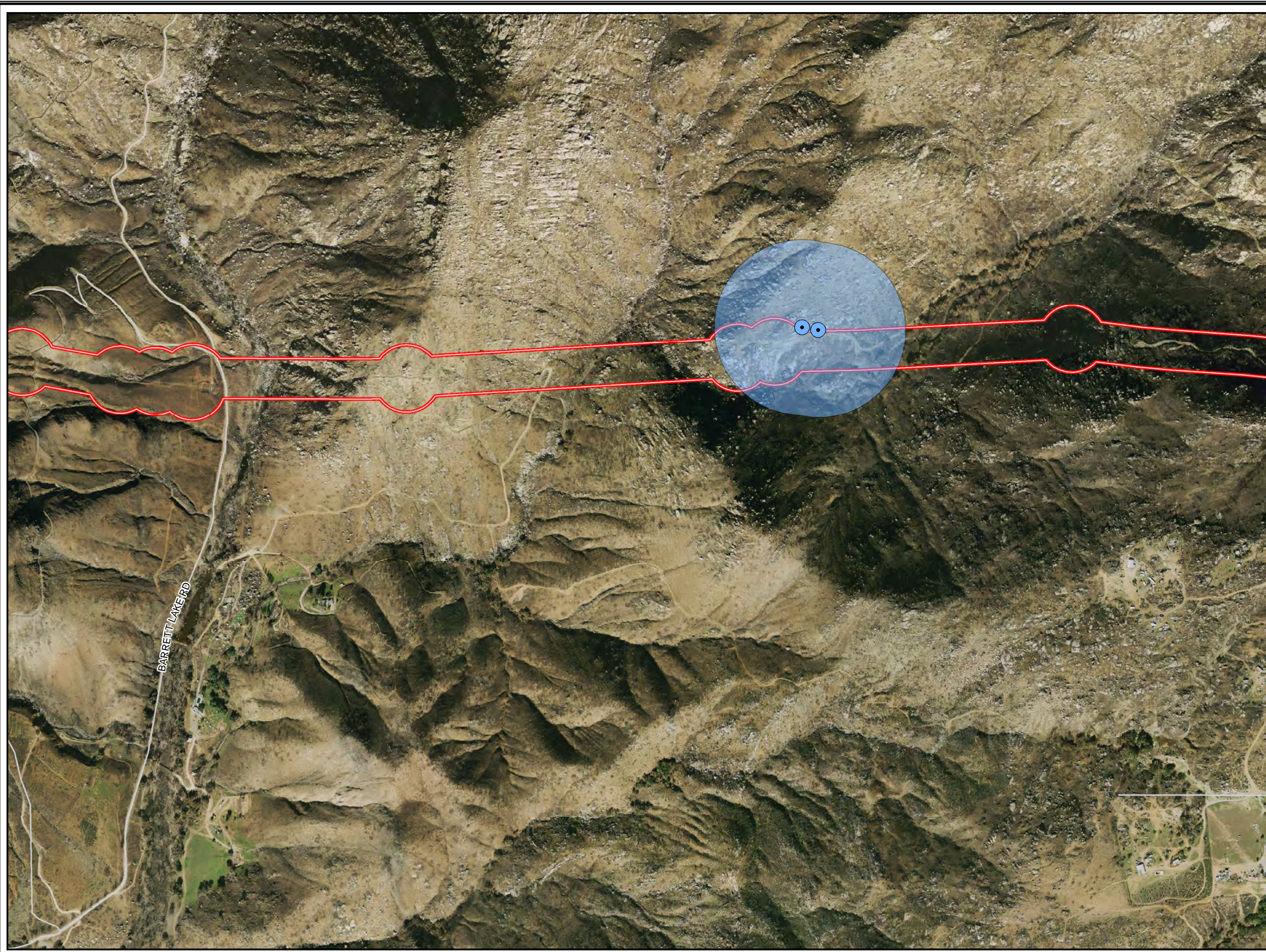
-  Survey Area
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-  Cleveland National Forest  
Congressional District Boundary



# Appendix A Hermes Copper Butterfly Location Maps





## Legend

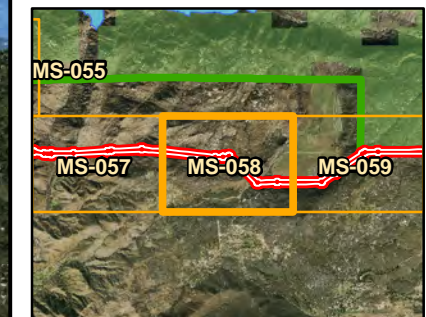
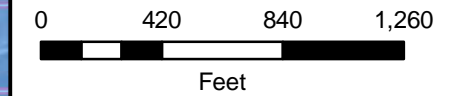
-  Survey Area
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# Appendix A Hermes Copper Butterfly Location Maps





## Legend

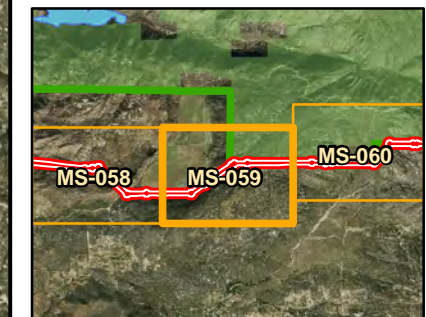
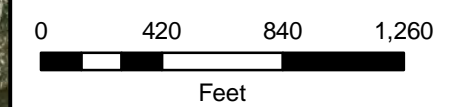
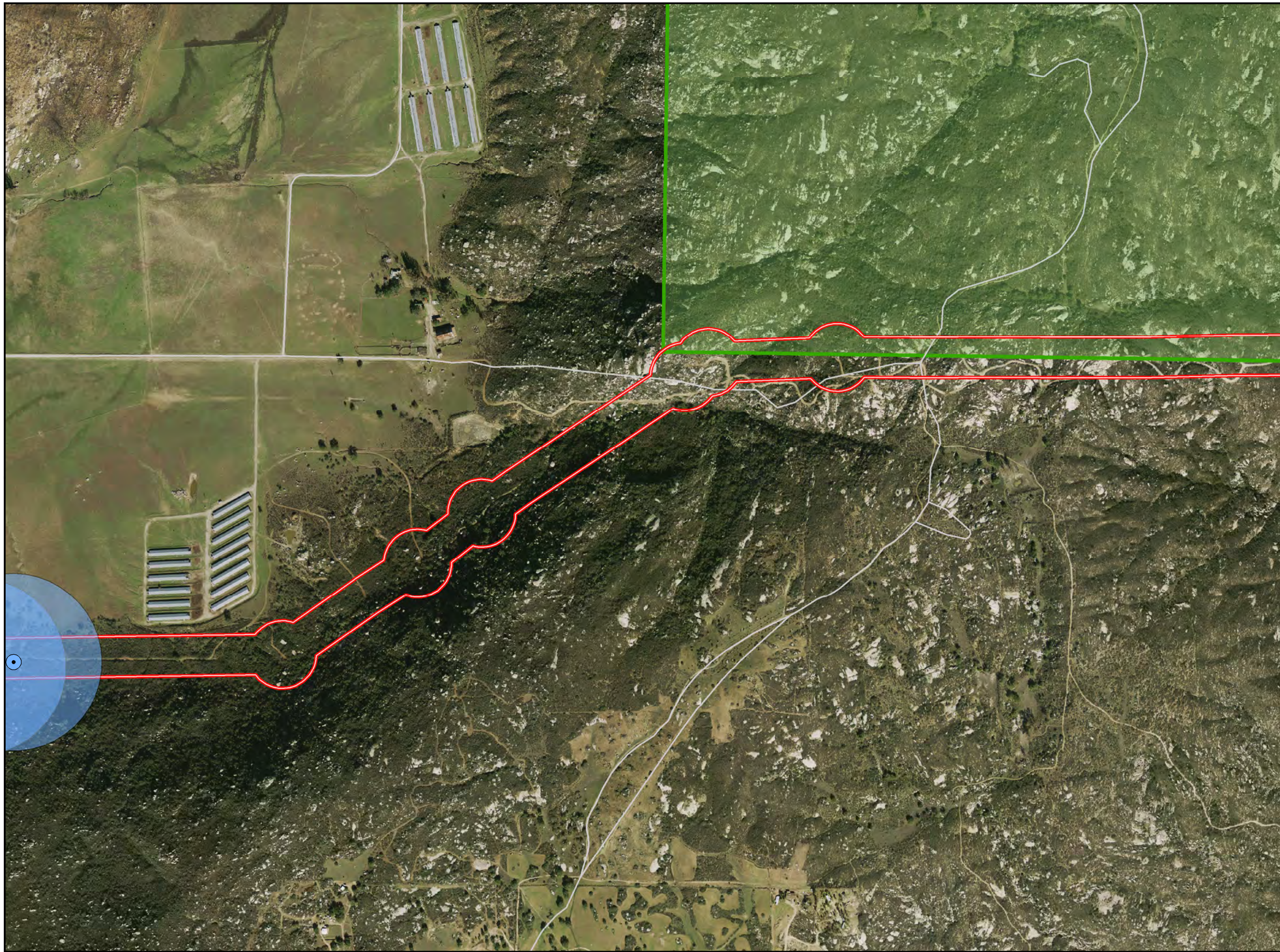
-  Survey Area
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Congressional District Boundary



# Appendix A Hermes Copper Butterfly Location Maps

## Legend

-  Survey Area
-  Hermes Copper Locations
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Congressional District Boundary







**APPENDIX B – BUTTERFLY SPECIES OBSERVED DURING HERMES COPPER  
BUTTERFLY FOCUSED SURVEYS**



**APPENDIX B – BUTTERFLY SPECIES OBSERVED DURING  
HERMES COPPER BUTTERFLY FOCUSED SURVEYS**

Scientific Name	Common Name
<b>Nymphalidae</b>	<b>Brush Footed Butterflies</b>
<i>Chlosyne gabbii</i>	Gabb’s checkerspot
<i>Adelpha bredowii</i>	California sister
<i>Agraulis vanillae</i>	Gulf fritillary
<i>Speyeria coronis</i>	Coronis fritillary
<i>Speyeria callippe comstocki</i>	Comstock’s fritillary
<i>Junonia coenia</i>	Common buckeye
<i>Nymphalis antiopa</i>	Mourning cloak
<i>Nymphalis californica</i>	California tortoiseshell
<i>Phyciodes mylitta</i>	Mylitta crescent
<i>Vanessa annabella</i>	West coast lady
<i>Vanessa atalanta</i>	Red admiral
<i>Vanessa cardui</i>	Painted lady
<b>Danaidae</b>	<b>Milkweed Butterflies</b>
<i>Danaus gilippus</i>	Queen
<i>Danaus plexippus</i>	Monarch
<b>Papilionidae</b>	<b>Swallowtails</b>
<i>Papilio zelicaon</i>	Anise swallowtail
<i>Papilio rutulus</i>	Western tiger swallowtail
<i>Papilio eurymedon</i>	Pale swallowtail
Unidentified swallowtail sp.	Unidentified swallowtail sp.
<b>Pieridae</b>	<b>Whites and Orangetips</b>
<i>Pontia protodice</i>	Checkered white
<i>Pontia beckerii</i>	Becker’s white
<i>Pontia sisymbrii</i>	California white/Spring white
<i>Pieris rapae</i>	Cabbage white
<i>Anthocharis sara</i>	Sara’s orangetip
<i>Colias eurytheme</i>	Orange sulfur
<i>Colias harfordii</i>	Harford’s sulfur
<i>Zerene eurydice</i>	California dogface
<i>Phoebis sennae</i>	Cloudless sulfur
<i>Eurema nicippe</i>	Sleepy orange
<i>Nathalis iole</i>	Dwarf Yellow / Dainty Sulfur
Unidentified Sulphur sp.	Unidentified Sulphur sp.
Unidentified White sp.	Unidentified White sp.
<b>Satyridae</b>	<b>Satyrids</b>
<i>Cercyonis sthenele</i>	Great Basin wood-nymph
<b>Riodinidae</b>	<b>Metalmarks</b>
<i>Apodemia mormo</i>	Mormon metalmark
<b>Lycaenidae</b>	<b>Hairstreaks</b>
<i>Incisalia augustinus</i>	Western brown elfin

*Hermes Copper Butterfly (Hermelycaena [Lycaena] hermes) Focused Survey Report  
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San Diego County, California*

<b>Scientific Name</b>	<b>Common Name</b>
<i>Strymon melinus</i>	Gray hairstreak
<i>Lycaena hermes</i>	Hermes copper
<i>Lycaena gorgon</i>	Gorgon copper
<i>Lycaena xanthoides</i>	Great copper
<i>Satyrrium saepium</i>	Hedgerow hairstreak
<i>Satyrrium auretorum spadix</i>	Goldhunter's hairstreak
<i>Satyrrium tetra</i>	Mountain mohogany hairstreak
<i>Leptotes marina</i>	Marine blue
<i>Brephidium exilis</i>	Western pygmy-blue
<i>Everes amyntula</i>	Western tailed-blue
<i>Celastrina ladon</i>	Echo blue
<i>Glaucopsyche lygdamus</i>	Southern blue
<i>Euphilotes (battoides) bernardino</i>	Bernardino dotted-blue
<i>Plebejus melissa</i>	Melissa blue
<i>Icaricia (Plebejus) acmon</i>	Acmon blue
<i>Icaricia (Plebejus) icarioides</i>	Boisduval's blue
<i>Icaricia (Plebejus) lupini</i>	Lupine blue
<i>Hemiargus ceraunus</i>	Ceraunus blue
Unidentified Blue sp.	Unidentified Blue sp.
<b>Hesperiidae</b>	<b>Skippers</b>
<i>Erynnis funeralis</i>	Funereal duskywing
<i>Erynnis tristis</i>	Mournful duskywing
<i>Erynnis</i> sp.	Duskywing sp.
<i>Ochlodes sylvanoides</i>	Woodland skipper
<i>Ochlodes Agricola</i>	Rural skipper
<i>Pyrgus albescens</i>	White checkered-skipper
<i>Heliopetes ericetorum</i>	Northern white-skipper
<i>Copaeodes aurantiacus</i>	Orange skipperling
Unidentified Skipper sp.	Unidentified Skipper sp.



## APPENDIX C – HERMES COPPER BUTTERFLY FOCUSED SURVEY DATA



*Hermes Copper Butterfly (Hermelycaena [Lycaena] hermes) Focused Survey Report  
for the San Diego Gas & Electric Cleveland National Forest Project  
San Diego County, California*

**APPENDIX C – HERMES COPPER BUTTERFLY FOCUSED SURVEY DATA**

Date	Biologist	Time (Military)	Temperature	Wind	Cloud Cover	Survey Location	Hermes Observed
27-May-10	Mike Couffer	0900-1600	72-80 °F	0-6 mph	80-0%	Map 48	0
28-May-10	Mike Couffer	0900-1530	70-75°F	0-5 mph	5-0%	Map 47	0
29-May-10	Mike Couffer	0800-1700	61-89°F	0-2 mph	0%	Maps 52, 50 & 49	0
30-May-10	Jane Higginson Erin Harold	1500-1620	87-83°F	1-3 mph	0%	Map 37	0
30-May-10	Jane Higginson Erin Harold	1045-1500	82-87°F	1-4 mph	0%	Map 38	0
30-May-10	John Dicus Melanie Dicus	0900-1545	71-82°F	0-9 mph	0%	Maps 51 & 54	0
30-May-10	Mike Couffer	0800-1300	66-90°F	0-2 mph	0%	Maps 52 & 53	0
31-May-10	John Dicus Melanie Dicus	0920-1500	71-80°F	0-5 mph	0%	Map 54	0
31-May-10	Mike Couffer	0800-1500	69-85°F	0-2 mph	0%	Maps 92 & 93	0
1-Jun-10	Nicole Kimball Melissa Busby	1115-1553	72-80°F	0-6 mph	0%	Maps 35 & 36	0
2-Jun-10	Martha Heath	0900-1600	67.5-75°F	0-7mph	0-60%	Maps 40 & 41	0
2-Jun-10	Mike Couffer	0730-1300	68- 81°F	0-1 mph	0%	Maps 92 & 91	0
3-Jun-10	Martha Heath	0900-1600	75-80°F	0-3 mph	0%	Maps 41 & N. 42	0
4-Jun-10	Michael Klein	0900-1300	75-85°F	0-6 mph	0%	Map 57 - 59	1
4-Jun-10	Nicole Kimball David King	0952-1507	75-86°F	0-6 mph	0%	Map 34	0
4-Jun-10	Martha Heath	0900-1600	72-79°F	0-4 mph	0%	Maps 40 & 42	0

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San Diego County, California*

Date	Biologist	Time (Military)	Temperature	Wind	Cloud Cover	Survey Location	Hermes Observed
5-Jun-10	Jane Higginson Erin Harold	0940-1555	82-88°F	2-9 mph	0%	Map 55	0
5-Jun-10	Martha Heath	0900-1600	78- 85°F	0-4 mph	0%	Maps 42, 43 & 44	0
6-Jun-10	Jane Higginson	0900-1115	85- 95°F	0-3 mph	0%	Map 56	0
6-Jun-10	Jane Higginson	1120-1135	95-95°F	1-4 mph	0%	Map 57	0
6-Jun-10	Jane Higginson	1530-1600	90-85°F	2-7 mph	0%	Map 60	0
6-Jun-10	Martha Heath	0930-1500	84-89°F	0-7 mph	0%	Map 44	2
7-Jun-10	Nicole Kimball Melissa Busby	1010-1308	76-83°F	0-6 mph	0%	Map 30	0
7-Jun-10	Martha Heath	0900-1600	83-90°F	0-7 mph	0%	Maps 45 & 46	0
7-Jun-10	Mike Couffer	0800-1500	70-91°F	0-3 mph	0%	Maps 47 & 48	0
8-Jun-10	Nicole Kimball Melissa Busby	0918-1449	76-83°F	0-6 mph	0%	Maps 30 & 31	0
8-Jun-10	John Dicus Melanie Dicus	0855-1555	70-91°F	0-5 mph	0%	Map 54	2
8-Jun-10	Martha Heath	0900-1100	67-72 °F	0-4mph	0%	Map 46	0
8-Jun-10	Mike Couffer	0800-1500	70- 89°F	0-4 mph	0%	Maps 49 & 50	15
9-Jun-10	Nicole Kimball Melissa Busby	0935-1156	75-84°F	0-3 mph	0%	Map 30	0
9-Jun-10	John Dicus Melanie Dicus	0900-1600	73-86°F	1-9 mph	0%	Map 51	9
9-Jun-10	Mike Couffer	0800-1500	65-86°F	0-7 mph	0%	Map 50	2
10-June-10	Michael Klein	1000-1145	73-75°F	0-5 mph	0%	Map 58 & 59	1 (same), 1 new

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Date	Biologist	Time (Military)	Temperature	Wind	Cloud Cover	Survey Location	Hermes Observed
10-Jun-10	Mike Couffer	0843-1400	68-86 °F	0-5 mph	0%	Maps 52 & 53	0
11-Jun-10	Mike Couffer	0900-1300	65-68°F	0-6 mph	0-100%	Maps 91 & 92	0
13-Jun-10	Andrew Pigniolo	0900-1530	72-82 °F	0-2mph	0%	Maps 37 & 38	0
13-Jun-10	Jane Higginson Erin Harold	0900-1155	76-86°F	0-5 mph	0%	Map 60	0
13-Jun-10	Jane Higginson	1545-1605	90-89 °F	1-4 mph	0%	Map 61	0
13-Jun-10	Jane Higginson Erin Harold	1500-1545	89-89°F	1-5 mph	0%	Map 62	0
13-Jun-10	Martha Heath	1000-1540	70.1-80.3 °F	0-5mph	0%	Map 40	0
14-Jun-10	Nicole Kimball David King	0921-1242	80-89°F	1-6 mph	0%	Map 34	0
14-Jun-10	Martha Heath	0900-1530	77-84°F	0-8 mph	0%	Maps 40 & 41	0
15-Jun-10	Jane Higginson	0900-1430	86-89°F	1-8 mph	0%	Map 55	0
15-Jun-10	Martha Heath	0900-1600	75-83°F	0-10mph	0%	Maps 41 & 42	1
16-Jun-10	Martha Heath	0940-1600	70-84.2°F	1-8mph	0%	Maps 42 & 43	5
17-Jun-10	Frank Dittmer	1330-1430	90-90°F	5-7 mph	0%	Map 57	0
17-Jun-10	Nicole Kimball Nathan Moorhatch	1008-1414	74-85°F	5-7 mph	0%	Map 30	0
17-Jun-10	Frank Dittmer	1330-1430	90-90°F	5-7 mph	0%	Map 57	0
17-Jun-10	Martha Heath	0930-1600	74-90°F	1-6mph	0%	Map 43 & 44	11
17-Jun-10	Mike Couffer	0800-1500	62- 83°F	0-6 mph	0%	Maps 47 & 48	0
17-Jun-10	Frank Dittmer	1030-1330	82-89°F	0-6 mph	0%	Map 56	0

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San Diego County, California*

Date	Biologist	Time (Military)	Temperature	Wind	Cloud Cover	Survey Location	Hermes Observed
18-June-10	Michael Klein	0915-1045	75-76°F	0-5 mph	0%	Map 58 & 59	1 (same as first week)
18-Jun-10	Nicole Kimball Nathan Moorhatch David King	0944-1527	72-83°F	0-3 mph	0%	Maps 30 & 31	6
18-Jun-10	John Dicus Melanie Dicus	0900-1445	75-83°F	0-8 mph	0%	Map 54, S. half 51	2
18-Jun-10	Martha Heath	1000-1545	74-81°F	1-6 mph	0%	Maps 44 & 45	0
18-Jun-10	Mike Couffer	0800-1600	64- 86 °F	0-5mph	0%	Map 50	7
19-Jun-10	Martha Heath	0900-1400	73-79°F	0-7 mph	0%	Map 46	0
19-Jun-10	Mike Couffer	0800-1500	66-80°F	0-4 mph	0%	Maps 49 & 50	16
20-Jun-10	Mike Couffer	0800-1500	67- 91 °F	0-4 mph	0%	Maps 52 & 53	0
21-Jun-10	Mike Couffer	0800-1400	66- 75°F	0-6mph	0%	Maps 91 & 92	0
22-Jun-10	Andrew Pigniolo	1000-1430	70-77°F	0-2 mph	0%	Map 38	0
22-Jun-10	Andrew Pigniolo	1430-1530	77-79 °F	0-2 mph	0%	Map 37	0
23-Jun-10	Natalie Brodie	1145-1230	86-86°F	0-6 mph	0%	Map 60	0
23-Jun-10	Natalie Brodie	1400-1445	90-93°F	0-6 mph	0%	Map 62	0
23-Jun-10	Natalie Brodie	1500-1540	93-95°F	0-6	0%	Map 61	0
23-Jun-10	Martha Heath	0900-1600	73-77°F	2-5 mph	0%	Map 40	0
24-Jun-10	Martha Heath	0900-1600	79-84°F	1-5 mph	0%	Maps 40 & 41	0



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Date	Biologist	Time (Military)	Temperature	Wind	Cloud Cover	Survey Location	Hermes Observed
25-June-10	Michael Klein	0900-1030	75-79°F	0-3 mph	0%	Map 58 & 59	1 (same as first week), 1 (same as second week)
25-Jun-10	Natalie Brodie	1030-1345	82-84°F	0-6 mph	0-50%	Map 055	0
25-Jun-10	John Dicus Melanie Dicus	0900-1400	77-91°F	0-8 mph	0%	Map Page 54, S. half 51	2
25-Jun-10	Martha Heath	0900-1600	71-82°F	1-8 mph	0%	Map 42 & 43	10
26-Jun-10	Andrew Pigniolo	1030-1145	76-79°F	0-2 mph	0%	Map 56	0
26-Jun-10	Andrew Pigniolo	1300-1530	83-86°F	0-2 mph	0%	Map 57	2
26-Jun-10	Martha Heath	0930-1600	71-79°F	1-9 mph	0%	Maps 43 & 44	3
27-Jun-10	Martha Heath	0900-1545	70-77°F	0-7 mph	0%	Maps 45 & 46	0
27-Jun-10	Mike Couffer	0830-1500	67- 87°F	0-5mph	0%	Maps 47 & 48	0
28-Jun-10	Nathan Moorhatch Nicole Kimball	0900-1505	79-84°F	0-9 mph	0%	Maps 30 & 34	2
28-Jun-10	Mike Couffer	0830-1600	64- 88°F	0-3 mph	0%	Map 50	5
29-Jun-10	Nathan Moorhatch Nicole Kimball	0930-1408	75-88°F	0-3 mph	0%	Maps 30	4
29-Jun-10	Mike Couffer	0830-1500	66- 87°F	0-3mph	0%	Maps 52 & 53	0
30-Jun-10	Michael Wilcox Nicole Kimball	0930-1452	78-86 °F	0-7mph	0%	Maps 30 & 31	4
30-Jun-10	Mike Couffer	0900-1500	71-87°F	0-5 mph	0%	Maps 91 & 92	0

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Date	Biologist	Time (Military)	Temperature	Wind	Cloud Cover	Survey Location	Hermes Observed
2-Jul-10	Natalie Brodie	1100-1145	83-84°F	0-5 mph	0%	Map 60	0
2-Jul-10	Natalie Brodie	1300-1330	95-96°F	0-8 mph	0%	Map 62	0
2-Jul-10	Natalie Brodie	1345-1415	94-95°F	0-6 mph	0%	Map 61	0
3-Jul-10	Martha Heath	0900-1530	72-80 °F	0-4 mph	0%	Maps 40 & 41	0
4-Jul-10	Martha Heath	0930-1330	70-77°F	1-5 mph	0%	Map 41	0
5-Jul-10	Martha Heath	0930-1530	70-79°F	1-6 mph	0%	Maps 42 & 43	1
6-Jul-10	Natalie Brodie Sarah Farmer	1000-1330	71-77°F	0-4 mph	0%	Map 55	0
6-Jul-10	Andrew Pigniolo	1000-1330	70-74 °F	0-2 mph	0%	Map 38	0
6-Jul-10	Andrew Pigniolo	1330-1500	74-73 °F	0-2 mph	0%	Map 37	0
6-Jul-10	Martha Heath	1000-1545	67- 78 °F	2-5 mph	0%	Maps 40, 42 & 43	2
7-Jul-10	Natalie Brodie	1115-1145	83-86°F	0-4 mph	0%	Map 57	0
7-Jul-10	Natalie Brodie	1245-1315	83-83°F	0-4 mph	0%	Map 056	0
7-Jul-10	Martha Heath	1000-1600	67- 74 °F	1-5 mph	0%	Maps 43 & 44	3
8-Jul-10	Mellissa Busby Nicole Kimball	0953-1540	74-84°F	1-5 mph	0%	Maps 30 & 34	1
9-Jul-10	David King Nicole Kimball	0913-1358	81-92°F	0-6 mph	0%	Map 030	0
9-Jul-10	Martha Heath	0900-1400	72.5-79.1°F	2-9 mph gusts:10-12	0%	Map 47	0
11-Jul-10	Andrew Pigniolo	1115-1145	81-83°F	0-4 mph	5-20% (sunny)	Map 60	0
11-Jul-10	Andrew Pigniolo	1300-1330	81°F	0-4 mph	0%	Map 62	0

*Hermes Copper Butterfly (Hermelycaena [Lycaena] hermes) Focused Survey Report  
for the San Diego Gas & Electric Cleveland National Forest Project  
San Diego County, California*

Date	Biologist	Time (Military)	Temperature	Wind	Cloud Cover	Survey Location	Hermes Observed
11-Jul-10	Andrew Pignolo	1400-1430	81-82°F	0-4 mph	0%	Map 61	0
14-Jul-10	David King Nicole Kimball	0858-1300	80-96°F	2-9 mph gusts:10-12	0%	Maps 030 & 31	0