

[Attachment B]

County of San Diego Guidelines for Hermes Copper (*Lycaena hermes*)

The Hermes copper (*Lycaena hermes*) is an extremely rare narrow endemic butterfly species. No regional protocols for Hermes copper currently exist, though the U.S. Fish and Wildlife Service (USFWS) may prepare protocols. Several projects are currently being processed by the County that have the potential to impact Hermes copper and its habitat, and other such projects may be proposed. The impacts of these projects on Hermes copper need to be assessed consistently under the California Environmental Quality Act (CEQA).

The County has prepared these Guidelines for Hermes copper to provide guidance for surveying for the butterfly, mapping habitat, assessing impacts, and mitigating for projects within the County's jurisdiction. In preparing these Guidelines the County reviewed available literature published by field surveyors and researchers, in particular, Michael Klein, Daniel Marschalek, and Douglas Deutschman, and notes from personal communications between these researchers and County staff biologists, to gain an understanding of the Hermes copper's life history and habitat requirements. They were revised in 2023 at the request of the USFWS based on information in the species status assessment and listing rule, and their review of 2022 survey reports utilizing the original protocol.

The Guidelines for Hermes Copper shall be used for proposed project sites with the butterfly's larval host plant, spiny redberry (*Rhamnus crocea*). The spiny redberry occurs in coastal sage scrub or southern mixed chaparral.

The County will revise these Guidelines for Hermes Copper as needed and using the best available scientific information. The guidelines will be superseded by USFWS Hermes copper protocols if survey protocols are issued.

Life History

The Hermes copper is an extremely rare narrow endemic species with a range restricted to San Diego County and northern Baja California. Its genus is monotypic (a genus with only one species) and its closest relative is in Asia. The species is dependent on patches of spiny redberry that grow in southern mixed chaparral and coastal sage scrub. The larvae (caterpillars) eat the new growth of mature spiny redberry shrubs. Marschalek and Klein (2010) found that most open areas with spiny redberry plants adjacent to California buckwheat were occupied by Hermes copper. Their marking study indicated that even though Hermes copper is generally a sedentary species that remains close to spiny redberry plants, they are able to travel distances greater than 3,500 feet, but that long movement traversing vegetation communities other than coastal sage scrub are rare. Hermes coppers are more abundant near host plant patch edges than in the interior (Marschalek and Deutschman 2008). They are usually found on the east and south sides of large spiny redberry shrubs often adjacent to openings in dense vegetation (Marschalek and Klein 2010), and on the north and west sides of trails or roads (Marschalek and Deutschman

2008).

Hermes copper butterflies seem to remain close to their host plant, which results in sedentary behavior and the creation of independent colonies (Thorne 1963; Faulkner and Klein 2004; Marschalek and Deutschman 2008). Females lay eggs singularly either at the splitting of a branch or at the base of a leaf. The winter diapause is in this egg stage. Larvae hatch and mature through five instars over approximately 14 days, with larvae feeding on the new growth leaves of its host plant. Pupation occurs over approximately 10 to 14 days. Pupation is very cryptic at the base of the spiny redberry.

The adult flight period is from mid-May through early July, depending on elevation (a few days later at higher elevations) as well as winter and early spring rains. Adults frequently nectar on California buckwheat which commonly occurs near spiny redberry. They have been observed nectaring on chamise (*Adenostoma fasciculatum*), California sunflower (*Encelia californica*), slender sunflower (*Helianthus gracilentus*), poison oak (*Toxicodendron diversilobum*), and short-podded mustard (*Hirshfeldia incana*).

Range

The historical known range of Hermes copper is from near Fallbrook and Pala in the north to about 100 miles south of the U.S.-Mexico border, and from near the coast inland to Pine Valley (Thorne 1963) and Guatay (Marschalek and Klein 2010). Recent observations note sightings from Lopez Canyon and east along the southern section of the County at Potrero (pers. comm. M. Klein; SDG&E 2008). The range of Hermes copper is smaller than that of its larval host plant, which extends into the outer North Coast Ranges of California (Thorne 1963). Though the Hermes copper's range seems not to have changed, the number of Hermes copper colonies has been reduced from historical numbers by the loss of habitat to development and the extirpation of colonies by extensive wildfires in San Diego County during the past decade, particularly in 2003 (Klein and Williams 2003) and 2007.

Habitat Where Surveys Should Be Conducted

No data are available regarding a minimum or optimum size of spiny redberry patches that support Hermes copper. Intuitively, because the species' behavior is relatively sedentary, there must be a variable distribution of spiny redberry patches to maintain its normal flight habitat. Therefore, until research studies have been completed, biologists should consider any woody (mature) spiny redberry shrub patches that comprise at least a small component of coastal sage scrub or southern mixed chaparral habitat, outside of the areas exempt from take, as potential Hermes copper habitat to be surveyed. Please see Figure 3 for areas exempt from take and therefore do not require surveys.

Marschalek and Klein (2010) found that within their study area Hermes copper were never observed in the understory of oak woodlands, even when spiny redberry was present. Spiny redberry grows in discrete patches within coastal sage scrub and chaparral.

For purposes of surveying for Hermes copper habitat on project sites in the County's jurisdiction the vegetation should be considered potential habitat for Hermes copper if it contains mature

spiny redberry shrubs. All areas within 100 feet of spiny redberry shrub patches should be surveyed (see Figure 2). Surveyors should lightly touch or brush spiny redberry shrubs and adjacent vegetation using butterfly nets or other gear to ensure Hermes copper are not overlooked, as they can be

cryptic when still, and often do not leave a perch without a disturbance or physical vibration.

If flight season surveys show that Hermes copper is not present in such habitat, the habitat will be considered potential habitat for Hermes copper.

Occupied Habitat Mapping

Habitat within 150 meters (approximately 500 feet) of a Hermes copper sighting should be mapped as occupied Hermes copper habitat (see Figure 1). Habitat extending out from the mapped Hermes copper population/observation location to spiny redberry that are three meters (approximately 10 feet) or less from each other should be mapped as one polygon and will be considered one population (see Figure 1). Occupied spiny redberry that occur more than three meters away from each other should be mapped as a separate polygon and considered a separate population/colony.

The number of individual spiny redberry of any size or age within each polygon should be counted, or estimated by a subsample count if the number is high. Native and nonnative plant species diversity and cover should be noted for each polygon.

Habitats to be excluded from mapping beyond the 150 meter (approximately 500 feet) radius from the spiny redberry patches include habitats other than coastal sage scrub and chaparral that do not have spiny redberry or habitats that are barriers to dispersal, such as dense tall trees, grasslands, or other habitats without spiny redberry or the habitat beyond these barriers.

Flight Season Surveys

The dates of the flight season vary and can begin between mid-May and early-June, depending on elevation and rainfall, and can last until mid-July. The peak flight time has been reported as around June 10 for males and June 20 for females (Faulkner and Klein 2008); Marschalek and Klein (2010) reported peak abundance of adults ranging from May 25 to June 22 over four years. The flight season at lower elevations begins a few days earlier than the flight season at higher elevations. The elevation range for Hermes copper is from about 200 feet in the western part of the County to about 4,000 feet at Guatay in the eastern portion of the County.

Six weekly surveys, no more than one per week, from mid-May to mid-July should be conducted. If weather conditions make this infeasible, contact the County of San Diego. Any observation of Hermes copper should be considered an existing population or colony rather than a migrant.

Surveys should be conducted when temperatures are between 70 and 95 degrees Fahrenheit, which is the range of temperature during which Hermes coppers generally fly. Surveys should not be conducted during adverse weather conditions, such as fog, drizzle, rain, or cloud cover greater than 25 percent, or during sustained winds greater than 15 miles (24 kilometers) per hour measured 4-6 feet (1.2-1.8 meters) above ground level. Surveys should be conducted at an average walking rate of 10-15 acres per hour.

Flight season surveys should not be conducted concurrently with surveys for other species by the same person. The surveyor's attention must be on searching for the Hermes copper throughout the survey.

Impact Assessment

Lands supporting occupied Hermes copper habitat are sensitive habitat lands under the Resource Protection Ordinance and are regulated by section 86.604(f), which states that development, grading, grubbing, clearing or any other activity or use damaging to sensitive habitat lands shall be prohibited but that the authority considering an application may allow development when all feasible measures necessary to protect and preserve the sensitive habitat lands are required as a condition of permit approval and where mitigation provides an equal or greater benefit to the affected species.

The habitat mapping procedures described above should be used to determine the acreage of impacts to occupied Hermes copper habitat, which includes spiny redberry and any other species within 150 meters (approximately 500 feet) of a Hermes copper sighting. Any impact to occupied or potential Hermes copper habitat is significant and requires mitigation.

Mitigation Measures

Any impact to occupied habitat requires mitigation by preservation of occupied habitat at a ratio of 2:1 or 3:1, depending on the quality of the habitat at the impact site and the mitigation site, and the importance of the habitat. Impacts to potential habitat requires mitigation at a ratio of 1:1, or higher if the impacted habitat is of high quality, was formerly occupied, or has continuity with occupied habitat.

Reporting

The results of the habitat assessment and the Hermes copper surveys shall be incorporated into the biological technical report for the project. The designated biologist will provide the County, USFWS, and California Department of Fish and Wildlife 24-hour notification, should a Hermes copper be observed. Any impacts to the species must be analyzed, and appropriate mitigation proposed. The report must also demonstrate that the surveyor(s) has the knowledge and field skills to conduct the surveys by providing a description of their experience and/or training in surveying for Lepidoptera.

For purposes of assessing impacts of a project, a negative survey will be valid for one year if the site is within one mile of a known Hermes copper location and for three years if the site is more than one mile from a known Hermes copper location.

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- Observation
- ▨ Occupied Habitat
- 🍃 Spiny Redberry

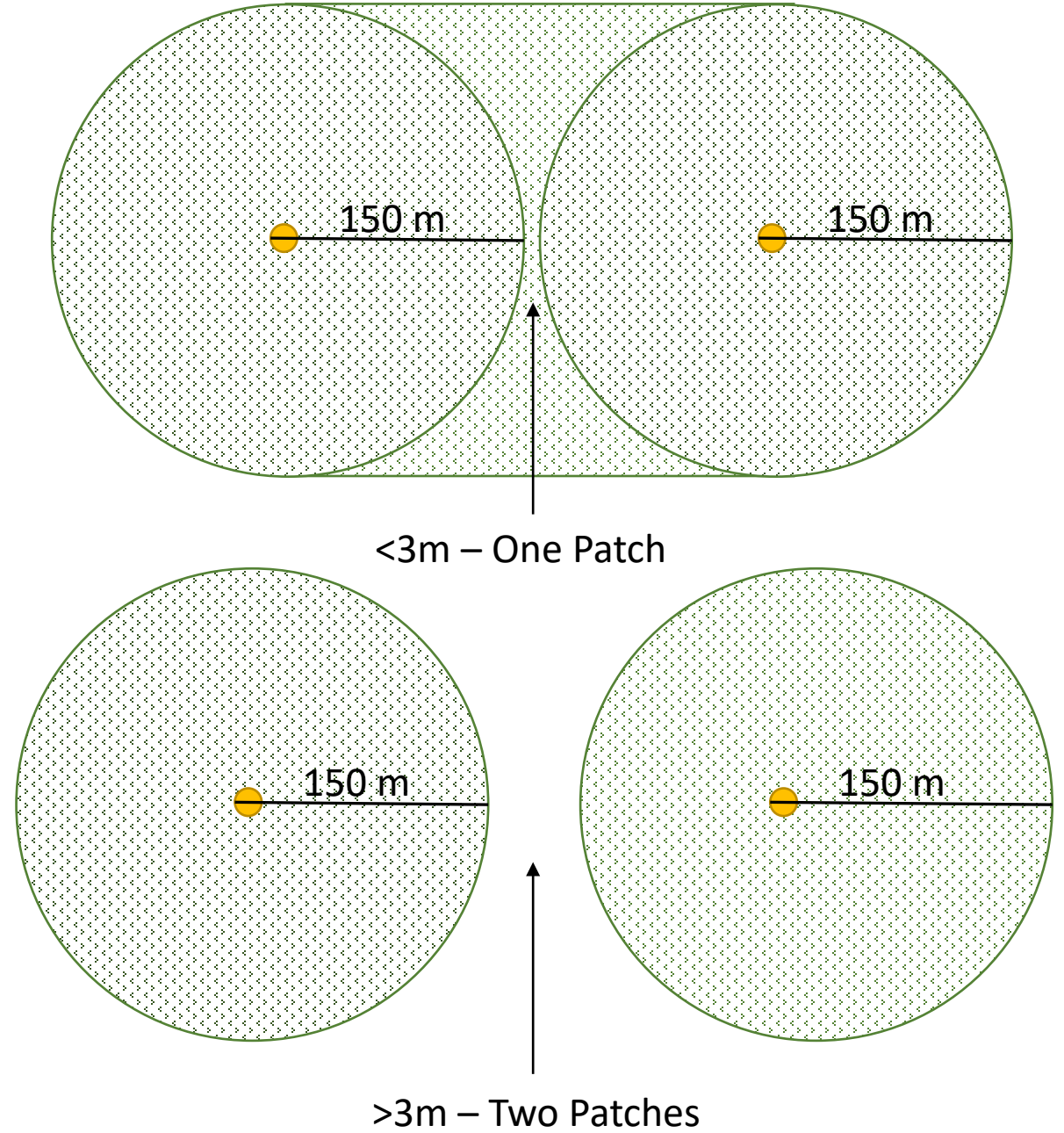
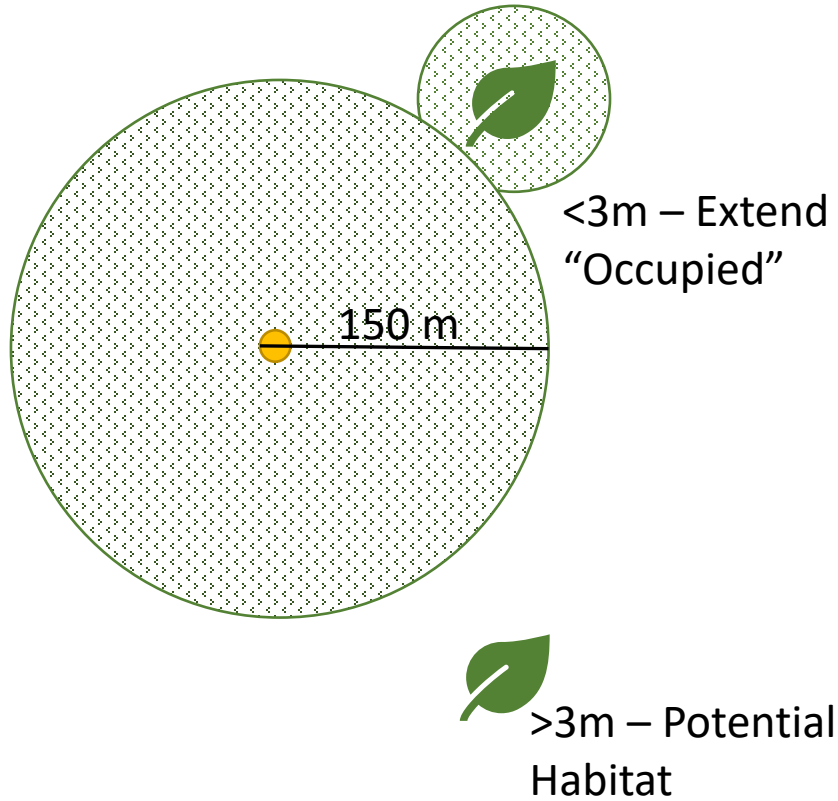
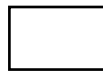




Figure 1

-  Project Site
-  Survey Area
-  Spiny Redberry

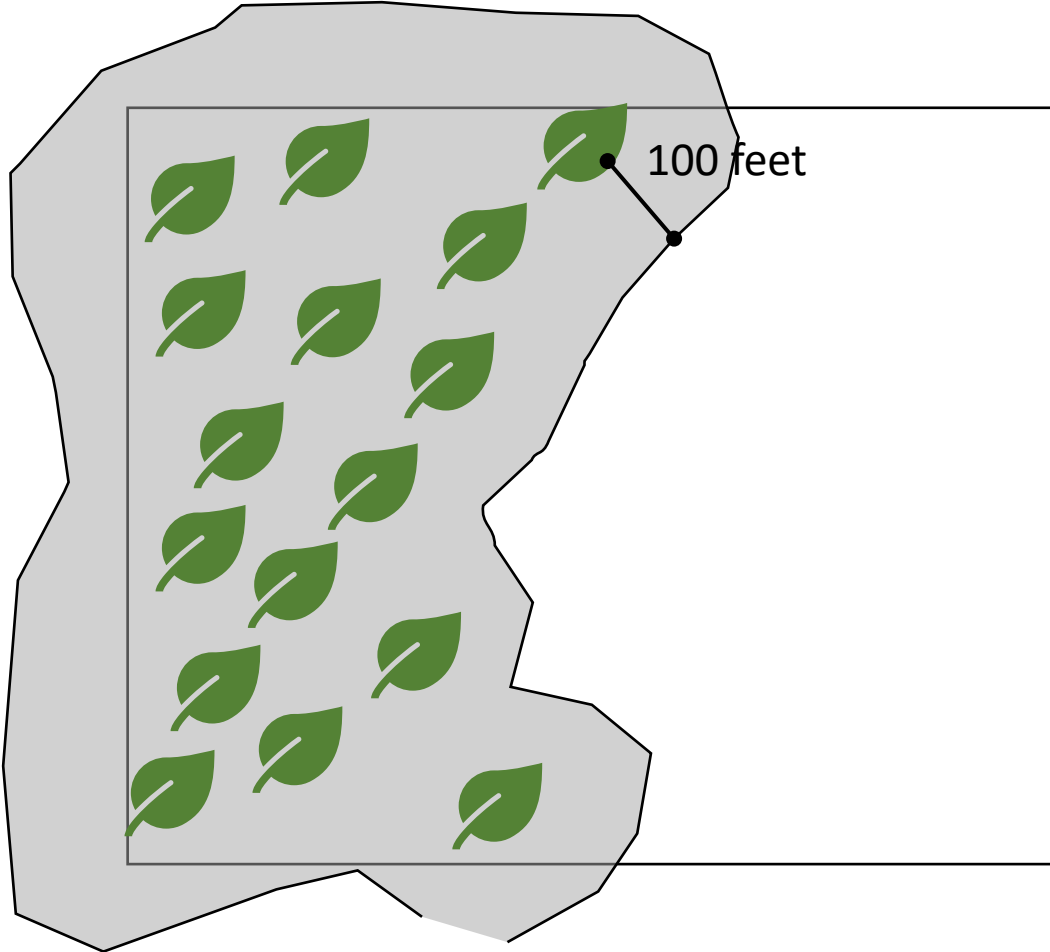


Figure 2

**Portion of Hermes copper butterfly's (*Lycaena hermes*) range exempt from take prohibitions under section 9(a)(1)(B) of the Endangered Species Act
San Diego County, California**

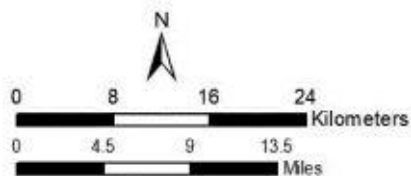
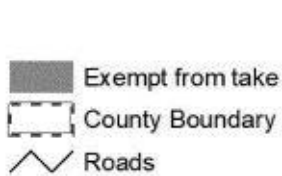
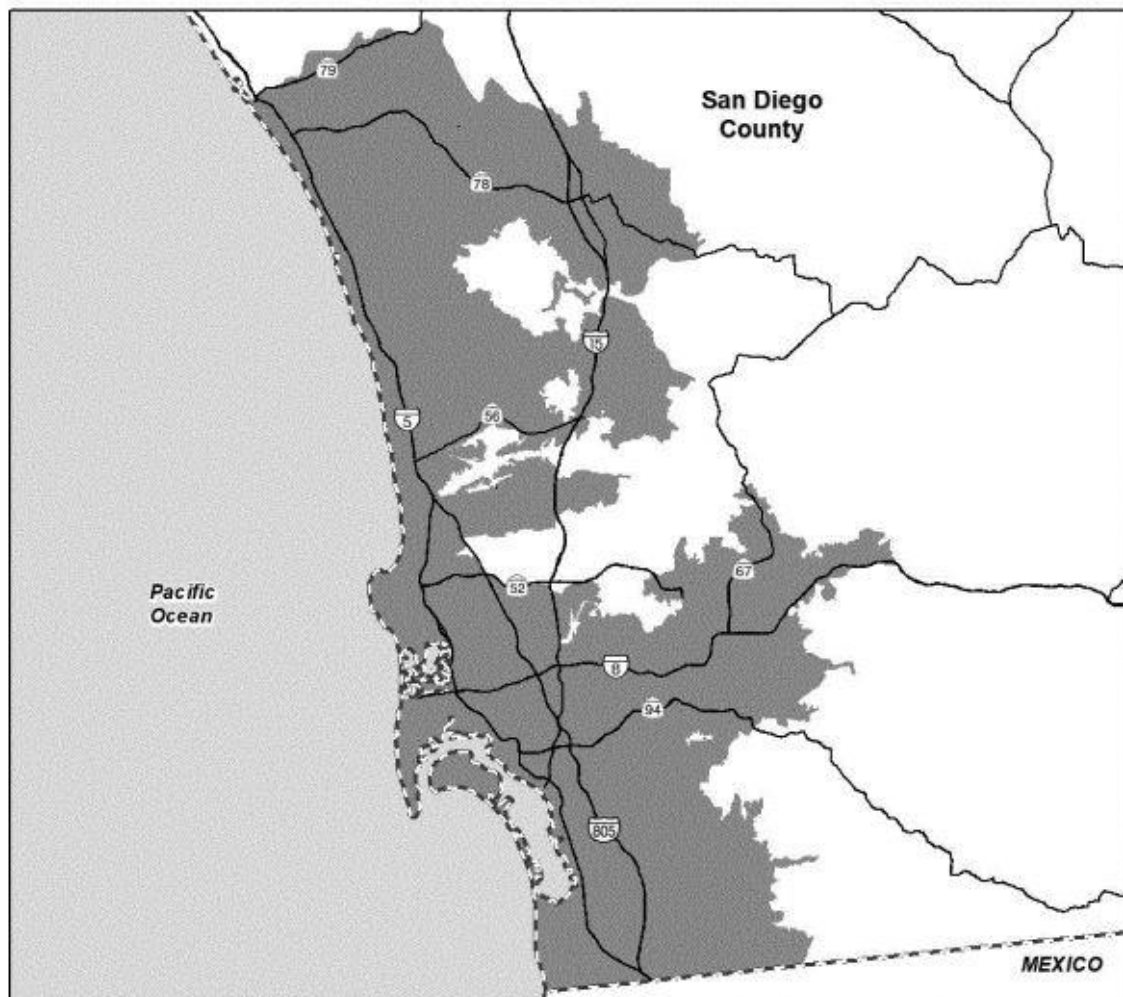


Figure 3