## FEDERAL COMMUNICATIONS COMMISSION

### 47 CFR Part 73

**[DA 11–224; MB Docket No. 11–20; RM–11619]**

### Television Broadcasting Services; Kalispell, MT

**AGENCY:** Federal Communications Commission.

**ACTION:** Proposed rule.

**SUMMARY:** The Commission has before it a petition for rulemaking filed by Montana State University, requesting that we add channel *46, Kalispell, Montana, which is already allotted to the Pre-Transition DTV table of Allotments, to the Post-Transition Table of DTV Allotments.

**DATES:** Comments must be filed on or before March 25, 2011, and reply comments on or before April 11, 2011.

**ADDRESSES:** Federal Communications Commission, Office of the Secretary, 445 12th Street, SW., Washington, DC 20554. In addition to filing comments with the FCC, interested parties should serve counsel for petitioner as follows: Margaret L. Miller, Esq., Dow Lohnes PLLC, 1200 New Hampshire Avenue, NW., Suite 800, Washington, DC 20036–6802.

**FOR FURTHER INFORMATION CONTACT:** Adrienne Y. Denysyk, *adrienne.denysyk@fcc.gov,* Media Bureau, (202) 418–1600.

**SUPPLEMENTARY INFORMATION:** This is a synopsis of the Commission's Notice of Proposed Rule Making, MB Docket No. 11–20, adopted February 7, 2011, and released February 9, 2011. The full text of this document is available for public inspection and copying during normal business hours in the FCC's Reference Information Center at Portals II, CY–A257, 445 12th Street, SW., Washington, DC 20554. This document will also be available via ECFS (*http://www.fcc.gov/cgb/ecfs/*). (Documents will be available electronically in ASCII, Word 97, and/or Adobe Acrobat.) This document may be purchased from the Commission's duplicating contractor, Best Copy and Printing, Inc., 445 12th Street, SW., Room CY–B402, Washington, DC 20554, telephone 1–800–478–3160 or via e-mail *http://www.BCPIWEB.com.* To request this document in accessible formats (computer diskettes, large print, audio recording, and Braille), send an e-mail to *fcc504@fcc.gov* or call the Commission's Consumer and Governmental Affairs Bureau at (202) 418–0530 (voice), (202) 418–0432 (TTY). This document does not contain proposed information collection requirements subject to the Paperwork Reduction Act of 1995, Public Law 104–13. In addition, therefore, it does not contain any proposed information collection burden "for small business concerns with fewer than 25 employees," pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107–198, *see* 44 U.S.C. 3506(c)(4).

Provisions of the Regulatory Flexibility Act of 1980 do not apply to this proceeding. Members of the public should note that from the time a Notice of Proposed Rule Making is issued until the matter is no longer subject to Commission consideration or court review, all *ex parte* contacts (other than *ex parte* presentations exempt under 47 CFR 1.1204(a)) are prohibited in Commission proceedings, such as this one, which involve channel allotments. See 47 CFR 1.1208 for rules governing restricted proceedings.

For information regarding proper filing procedures for comments, see 47 CFR 1.415 and 1.420.

**List of Subjects in 47 CFR Part 73**

Television, Television broadcasting.

For the reasons discussed in the preamble, the Federal Communications Commission proposes to amend 47 CFR part 73 as follows:

## PART 73—RADIO BROADCAST SERVICES

1. The authority citation for part 73 continues to read as follows:

**Authority:** 47 U.S.C. 154, 303, 334, 336, and 339.

**§ 73.622 [Amended]**

2. Section 73.622(i), the Post-Transition Table of DTV Allotments under Montana, is amended by adding channel *46 at Kalispell.

Federal Communications Commission.

**Barbara A. Kreisman,**

*Chief, Video Division, Media Bureau.*

[FR Doc. 2011–4008 Filed 2–22–11; 8:45 am]

**BILLING CODE 6712–01–P**

## DEPARTMENT OF THE INTERIOR

### Fish and Wildlife Service

### 50 CFR Part 17

**[Docket No. FWS–R8–ES–2010–0016; MO 92210–0–0008–B2]**

### Endangered and Threatened Wildlife and Plants; 12-Month Finding on a Petition To List Thorne's Hairstreak Butterfly as Endangered

**AGENCY:** Fish and Wildlife Service, Interior.

**ACTION:** Notice of 12-month petition finding.

**SUMMARY:** We, the U.S. Fish and Wildlife Service, announce a 12-month finding on a petition to list Thorne's hairstreak butterfly (*Callophrys [Mitoura] gryneus thornei*) as endangered under the Endangered Species Act of 1973, as amended (Act). After review of all available scientific and commercial information, we find that listing Thorne's hairstreak butterfly is not warranted at this time. However, we ask the public to submit to us any new information that becomes available concerning the threats to Thorne's hairstreak butterfly or its habitat at any time.

**DATES:** The finding announced in this document was made on February 23, 2011.

**ADDRESSES:** This finding is available on the Internet at *http://www.regulations.gov* at Docket Number FWS–R8–ES–2010–0016. Supporting documentation we used in preparing this finding is available for public inspection, by appointment, during normal business hours at the Carlsbad Fish and Wildlife Office, U.S. Fish and Wildlife Service, 6010 Hidden Valley Road, Suite 101, Carlsbad, CA 92011. Please submit any new information, materials, comments, or questions concerning this finding to the above street address.

**FOR FURTHER INFORMATION CONTACT:** Jim Bartel, Field Supervisor, Carlsbad Fish and Wildlife Office, U.S. Fish and Wildlife Service, 6010 Hidden Valley Road, Suite 101, Carlsbad, CA 92011; by telephone at 760–431–9440; or by facsimile to 760–431–9624. Persons who use a telecommunications device for the deaf (TDD) may call the Federal Information Relay Service (FIRS) at 800–877–8339.

**SUPPLEMENTARY INFORMATION:**

**Background**

Section 4(b)(3)(B) of the Endangered Species Act of 1973, as amended (Act)

(16 U.S.C. 1531 *et seq.*) requires that, for any petition to revise the Federal Lists of Endangered and Threatened Wildlife and Plants that contains substantial scientific or commercial information that listing a species may be warranted, we make a finding within 12 months of the date of receipt of the petition. In this finding, we determine whether the petitioned action is: (a) Not warranted; (b) warranted; or (c) warranted, but immediate proposal of a regulation implementing the petitioned action is precluded by other pending proposals to determine whether species are endangered or threatened, and expeditious progress is being made to add or remove qualified species from the Federal Lists of Endangered and Threatened Wildlife and Plants. Section 4(b)(3)(C) of the Act requires that we treat a petition for which the requested action is found to be warranted but precluded as though resubmitted on the date of such finding, that is, requiring a subsequent finding to be made within 12 months. We must publish these 12-month findings in the **Federal Register**.

*Previous Federal Actions*

On August 8, 2006, we published 90-day findings for both the Thorne's hairstreak and the Hermes copper butterflies in the **Federal Register** (71 FR 44980 and 71 FR 44966, respectively). The findings concluded that the petitions and information in our files did not present substantial scientific or commercial information indicating that listing Thorne's hairstreak butterfly or Hermes copper butterfly may be warranted. For a detailed history of Federal actions involving Thorne's hairstreak butterfly prior to the 2006 90-day finding, please see the August 8, 2006, **Federal Register** publication (71 FR 44980).

On March 17, 2009, Center for Biological Diversity (CBD) and David Hogan filed a complaint for declaratory and injunctive relief challenging the Service's decision not to list Thorne's hairstreak butterfly and Hermes copper butterfly as endangered or threatened under the Act. In a settlement agreement dated October 23, 2009 (Case No. 09–0533 S.D. Cal.), the Service agreed to submit a new 90-day petition finding for Thorne's hairstreak butterfly to the **Federal Register** by April 2, 2010. As part of the settlement agreement, we agreed to evaluate the October 25, 2004, petition filed by CBD and David Hogan, supporting information submitted with the petition, and information available in the Service's files, including information that has become available since the publication of the negative 90-day finding in the **Federal Register** on August 8, 2006. If the 90-day finding determined that listing may be warranted, we agreed to submit a 12-month finding for Thorne's hairstreak butterfly to the **Federal Register** by March 4, 2011. On April 5, 2010, we published a 90-day finding that determined listing of Thorne's hairstreak butterfly as endangered may be warranted (75 FR 17062). This notice constitutes the 12-month finding on the petition to determine whether listing the Thorne's hairstreak butterfly as endangered is warranted.

**Subspecies Information**

It is our intent to discuss only those topics directly relevant to the listing of Thorne's hairstreak butterfly under the Act in this 12-month finding. For more information on the taxonomy, biology, and ecology of Thorne's hairstreak butterfly, please refer to the 90-day finding published in the **Federal Register** on April 5, 2010 (75 FR 17062). That document is available on the Internet at *http://www.fws.gov/Carlsbad* and at *http://www.regulations.gov* (under docket number FWS–R8–ES–2010–0016).

*Taxonomy and Nomenclature*

Thorne's hairstreak butterfly was first described as *Mitoura thornei* based on a specimen collected in 1972 near Otay Lake by Fred Thorne (Brown 1983, p. 246). Biologists questioned the classification of Thorne's hairstreak butterfly as a species. Shields (1984, p. 53) relegated it to a brown subspecies of the juniper hairstreak (species or subspecies name *loki*) as *Mitoura loki thornei.* Scott (1986, p. 374) also classified it as a subspecies, but under the name *Callophrys gryneus thornei,* in part because he did not consider any taxa in *Mitoura* as a genus distinct from *Callophrys.* The classification of *Mitoura thornei* was evaluated in 1999 by the Committee on Scientific Names of North American Butterflies (Committee). The Committee reached consensus based on publications and arguments presented, and accepted classification of Thorne's hairstreak butterfly as a subspecies of the species *Callophrys gryneus* (Burns *et al.* 2000, p. 9). Subsequently, the Committee prepared the second edition of the Checklist of English Names of North American Butterflies in which Thorne's hairstreak butterfly was classified as *Callophrys gryneus thornei* (Cassie *et al.* 2001, p. 9). Van Buskirk (2004) reviewed Thorne's hairstreak butterfly classification for the Service; this review concurred with the Committee's decision to classify Thorne's hairstreak butterfly as *Callophrys gryneus thornei.*

The classification of Thorne's hairstreak butterfly continues to be a focus of investigation. Recent work that includes mitochondrial DNA and allozyme analysis indicates that Thorne's hairstreak is closely related to juniper hairstreak (Shiraiwa 2010, p. 1; Pratt 2010, in press), as originally suggested by Shields (1984, p. 53). Pratt's (2010, in press, p. 9) work also appears to support classifying *Mitoura* as a genus or subgenus, which would classify Thorne's hairstreak butterfly as a subspecies of *Mitoura loki* (the juniper hairstreak). Thorne's hairstreak butterfly has always been classified as a separate entity at some level (species or subspecies), and therefore it is a listable entity under the Act. As described above, recent work indicates that it is best classified as a subspecies close to the juniper hairstreak. The monophyletic group *Mitoura* may warrant recognition as a separate genus in the future.

In this 12-month finding, we follow the most recent recommendation from the North American Butterfly Association Names Committee (Cassie *et al.* 2001, p. 9) and treat Thorne's hairstreak butterfly as a subspecies named *Callophrys gryneus thornei.*

*Habitat*

Thorne's hairstreak butterfly habitat is characterized by interior cypress woodland, also recently known as *Callitropsis forbesii* Woodland Alliance (Tecate cypress stands) (Sawyer *et al.* 2009, pp. 101–102) dominated by its host plant, *Hesperocyparis forbesii* (Tecate cypress). This habitat is found on Otay Mountain, intermixed with chaparral between approximately 800 feet (ft) (244 meters (m)) and 3,290 ft (1003 m) in elevation (*i.e.,* the mountain peak). Adult Thorne's hairstreak butterflies are known to feed on the nectar of *Eriogonum fasciculatum* (California buckwheat), *Ceanothus tomentosus* (Ramona lilac), and *Lotus scoparius* (deerweed) in the vicinity of stands of *H. forbesii* (Faulkner and Klein 2005, p. 33). A recent study indicates *Asclepias fascicularis* (narrowleaf milkweed) is also used as an adult nectar source throughout the subspecies' range (Lucas 2009, pers. comm.). It is likely that Thorne's hairstreak butterfly, like most butterflies, uses a variety of plant species as nectar sources, and frequency of use is primarily dependent on availability.

Thorne's hairstreak butterfly deposits eggs and feeds exclusively on its larval host plant, *Hesperocyparis forbesii,* to complete its life cycle (Brown 1983, p. 252). Williams and Congedo (2008)

studied aspects of larval host plant use by Thorne's hairstreak butterfly. They recorded number of eggs per *H. forbesii* tree, placement of eggs within trees, location of feeding damage on trees, and larval food choice, comparing mature (cone-bearing) trees to immature trees (no cones) (Williams and Congedo 2008, pp. 6–13). No significant difference was found between use of young or recent shoots (appressed scale leaves and stems) from mature and immature trees (Williams and Congedo 2008, pp. 15–18). Williams and Congedo (2008, p. 14) also noted that Thorne's hairstreak butterflies occupied stands of trees not more than 5 years old, and that approximately 7 percent of new fire regrowth trees were producing cones. Williams and Congedo (2008, p. 19) concluded larvae could develop by feeding on tissue from immature or mature trees; thus the availability of host plants for egg deposition in an occupied area is not likely limiting. These results confirm the hypothesis drawn from adult presence in new post-fire growth that oviposition is not limited by host plant age, as discussed in the 2006 and 2010 90-day findings (71 FR 44980 and 75 FR 17062, respectively). Therefore, the best available information indicates Thorne's hairstreak butterfly larvae can utilize any available life stage of *H. forbesii* to complete its life cycle.

Nectar source abundance is also a key factor in determining Thorne's hairstreak butterfly habitat suitability. Van Reusel *et al.* (2006, pp. 201, 207) studied a related species of hairstreak butterfly and, using predictive models, found that host plant and nectar source were the primary factors predicting green hairstreak butterfly distribution. Nectar sources are critical to support courtship, mating, and oviposition behaviors of butterflies such as Thorne's hairstreak butterfly (Williams and Congedo 2008, p. 20).

*Biology*

The 90-day finding (75 FR 17062; April 5, 2010) incorrectly characterized the flight seasons as described in Faulkner and Klein (1995). Thorne's hairstreak butterfly has two flight periods per year (bivoltine). The first adult emergence and abundance peak occurs in late February through March and possibly early April, depending on winter rainfall. A second adult abundance peak occurs in late May or early June, with a possible third in September if there are summer monsoon rains (Klein 2010a, p. 1).

*Distribution and Population Status*

We evaluated available information on the current range, historical range, and population status of Thorne's hairstreak butterfly to develop the most current understanding of its distribution and status.

Our knowledge of Thorne's hairstreak butterfly's range has greatly increased over the past 10 years. The known pre-2003 fire distribution of Thorne's hairstreak butterfly approximately encompassed the northeast quadrant of Otay Mountain, including locations just southwest of the peak and a lower-elevation location east of Otay Lakes (Klein 2010a, p. 2). The 2003 Mine Fire (also called the Otay Fire) perimeter encompassed all habitats where butterflies had been observed; however, post-fire surveys revealed a cluster of locations occupied by Thorne's hairstreak butterflies in the southwest quadrant of Otay Mountain outside of the mapped fire perimeter (Klein 2010a, p. 11). The 2007 Harris Fire perimeter encompassed the lower north and east slopes of Otay Mountain, affecting a large portion of cypress forest in the northwest quadrant near Otay Lakes. Post-2007 fire surveys on Otay Mountain conducted by Lucas in 2010 included all areas within the species' range on Otay Mountain except known historical locations at the easternmost edge of the species' range (Lucas 2010), thus we are uncertain about the current status of the species at this easternmost edge of the species range. Only one stand of trees (that was not a known historical location for Thorne's hairstreak butterflies) was surveyed in the eastern area; no butterflies were observed (Lucas 2010; Klein 2010a, pp. 2, 12). Lucas also recorded a new Thorne's hairstreak butterfly occurrence location in an area within the northwest quadrant of Otay Mountain in 2010, thus expanding the pre-2007 fire known range (Lucas 2010). The newly discovered northwestern Otay Mountain observation location is over 1.5 miles (mi) (2 kilometers (km)) from the nearest previous Thorne's hairstreak butterfly observation in the northeast quadrant (Lucas 2010; Klein 2010a, pp. 2, 12).

Surveys by Lucas on Otay Mountain in 2010 revealed the presence of Thorne's hairstreak butterfly throughout the majority of *Hesperocyparis forbesii* that burned in the 2003 fire, the 2007 fire, and in areas burned by both fires (unpublished data 2010).

Additionally, the known distribution of Thorne's hairstreak butterfly on Otay Mountain is greater than was known at the time of the 2004 petition. Therefore, the persistence of the butterfly in previously burned areas and the increase in the known butterfly distribution indicate that Thorne's hairstreak butterfly has either successfully recolonized burned areas or persisted within mapped fire perimeters on Otay Mountain.

A previously unknown Thorne's hairstreak butterfly observation was also documented in 2010 off of Otay Mountain at a lower elevation in approximately 1 ac (0.4 ha) of atypical, created habitat, which suggests that Thorne's hairstreak butterfly either has the ability to recolonize small *Hesperocyparis forbesii* stands at lower elevations or that this observation may represent a new occurrence that was not previously documented. Of note, this new location:

(1) Is in the Otay River Valley, at the mouth of O'Neal Canyon (Busby 2010a, pp. 1–2; Cooper 2010a, p. 1) and is outside the known Thorne's hairstreak butterfly range;

(2) Is over 2.5 mi (4 km) from, and over 1000 ft (305 m) lower in elevation than, the nearest occupied site upslope at the base of Otay Mountain (as described by Lucas 2010, slide 15; Google Earth imagery);

(3) Is approximately 500 ft (152 m) lower in elevation than the lowest previously recorded observation east of Otay Lake (site 5 described by Klein 2010a, p. 2); and

(4) Occurs on land conserved and managed by the City of Chula Vista, which is the only known occupied area located entirely outside of the Bureau of Land Management (BLM) Otay Mountain Wilderness (Klein 2010b, p. 1).

The June 15 (Busby 2010a, pp. 1–2; Cooper 2010a, p. 1) and June 23, 2010, (Anderson 2010, p. 1; Cooper 2010b, pp. 1–2) observations of adult butterflies at the Otay River Valley location are also the latest ever recorded for Thorne's hairstreak butterfly during a flight season (Klein 2010b, p. 1). This late record is likely the result of unusually cool spring weather in 2010, creating prolonged and cooler moist river valley microclimate conditions. A June 1996 satellite image does not show *Hesperocyparis forbesii* stands at this location (Google Earth historical imagery accessed 2010). Although we do not have documentation of how or why the *H. forbesii* was established at this location, analysis of historical satellite imagery from 1996 to 2010 and observations of individuals familiar with the site lead us to believe the trees were planted as seedlings from a nursery to replace native vegetation removed when a gas utility pipeline was installed in 1996 (Anderson 2010, p. 1;

Cooper 2010b, pp. 1 – 2; Busby 2010b, p. 1). Regardless, occupancy of this newly discovered site in created habitat supports the hypothesis that Thorne's hairstreak butterfly is opportunistic and relatively resilient (*i.e.,* able to persist at a new, lower elevation level in more moist microhabitat conditions than previously known to occur).

Results from a previous hairstreak butterfly movement study also support the hypothesis of natural colonization. Specifically, Robbins and Small (1981, p. 308) studied movement of hairstreak butterflies (Lycaenidae: Eumaeini) in Panama and reported:

(1) Observations of 128 species (47 percent of the known Panamanian hairstreak butterfly fauna) blown across the landscape by winds with speeds of 10 to 25 miles per hour (mi/hr) (15 to 40 kilometers per hour (km/hr));

(2) More than 80 percent of these species were blown through habitats where they are not normally found;

(3) Some species normally found in high-elevation habitats were observed 3 mi (5 km) from the nearest upland habitat; and

(4) Seventy percent of the observed specimens were females (whereas typical sex ratios for hairstreak butterfly populations have more males than females), and 74 percent of captured females (a subset of those observed) had been mated.

Robbins and Small (1981, pp. 311–12) concluded hairstreak butterflies are likely to be dispersed by wind and can successfully colonize suitable downwind habitats. In southern California, annual Santa Ana winds often produce westerly winds of 25 to 37 mi/hr (40 to 60 km/hr) from fall through spring (Westerling *et al.* 2004, p. 290), and likely disperse insects. We believe this type of wind-assisted dispersal occurs at Otay Mountain, and is a likely explanation of how Thorne's hairstreak butterfly became established in the Otay River Valley stand of *Hesperocyparis forbesii.*

The 90-day finding (75 FR 17062; April 5, 2010) stated the current distribution of *Hesperocyparis forbesii* in the Otay Mountain area encompasses 454 ac (183 ha) post-2003 fire (Lucas 2009, unpublished data), and compared this to historical Otay Mountain records that indicate *H. forbesii* once covered approximately 7,500 ac (3,035 ha) (California Natural Diversity Database (CNDDB) GIS database 2003). After further evaluation of all available host plant distribution information, we determined the acreage values cannot be compared as described in the 90-day finding because the values are a result of different mapping methodologies. Data from 2007 revealed that *H. forbesii* on Otay Mountain encompasses approximately 7,556 ac (3,058 ha) (CNDDB GIS database 2007). Additionally, the San Diego Association of Governments (SANDAG) produced a vegetation map of Southern Interior Cypress Forest on Otay Mountain equal to 5,693 ac (2,304 ha) (SANDAG GIS database, 1995). The smallest and most recent *H. forbesii* distribution area estimate of 454 ac (183 ha) cited in the 90-day finding (75 FR 17062; April 5, 2010) reflects stand-scale mapping focused on groups of 20 or more trees greater than 3.3 ft (1 m) in height, with smaller stands included when encountered incidentally (Forister and Lucas 2009, p. 1).

Comparison of the CNDDB and SANDAG vegetation databases also indicates differences in mapping methodology. The two vegetation-based mapping methods vary in the areas mapped as occupied by *Hesperocyparis forbesii,* with only approximately half the area mapped in 1995 (SANDAG GIS database, before the 2003 fire) overlapping occupied areas mapped in 2007 (CNDDB GIS database, after the 2003 fire). Field inspection of three *H. forbesii* stands along the Minewawa truck trail that were within the 2003 fire perimeter revealed new growth of immature cypress throughout (Anderson 2010, p. 1). One *H. forbesii* location did not correspond with any location mapped by Lucas (2010 unpublished data), while the other two corresponded with Lucas's mapped areas and observed Thorne's hairstreak butterfly observations (Lucas 2010, unpublished data). Furthermore, approximately one-third of mapped Thorne's hairstreak butterfly observation locations fall outside all three mapped *H. forbesii* distributions discussed above.

Our current analysis of Thorne's hairstreak butterfly habitat distribution indicates most of the habitat is relatively protected. Approximately 88 percent of cypress woodland is within the BLM Otay Mountain Wilderness area, and 11 percent is within the planning area of the San Diego Subarea Plan under the San Diego MSCP (*see* Factor A discussion below). The remaining one percent is privately owned. Occupied habitat within the City of Chula Vista Subarea Plan planning area is approximately 1 ac (0.4 ha; see above discussion).

To summarize, available vegetation mapping of cypress forest can approximate the Thorne's hairstreak butterfly population distribution, while Lucas' data map of cypress forest (which is on a stand (sub-population)-scale) is not yet comprehensive and thus cannot approximate the Thorne's hairstreak butterfly population distribution. It is not clear if either scale of cypress mapping corresponds with Thorne's hairstreak butterfly habitat distribution at either a butterfly population distribution or sub-population level. As a result, we are unable to accurately estimate the change in distribution of Thorne's hairstreak butterfly habitat on Otay Mountain because of the differing mapping techniques and because *Hesperocyparis forbesii* stands are still recovering from the 2003 and 2007 fires.

Finally, Geographic Information System (GIS) analysis of historical fire perimeters indicates the majority of Thorne's hairstreak butterfly habitat has burned only once or twice in the past 100 years (*see* Factor A discussion below). All available data indicate that because cypress forest regrows after fire, and Thorne's hairstreak butterflies recolonize cypress forest regardless of host plant age, the distribution of habitat has not changed significantly following the recent fires.

While individual Thorne's hairstreak butterflies are likely lost when fire burns stands of *Hesperocyparis forbesii* (as discussed in the 90-day finding (75 FR 17062; April 5, 2010)), more recent data (discussed above) support the hypothesis that Thorne's hairstreak butterfly populations are relatively resilient to fire. Discovery of occupied habitat in 2007 and 2010 within the 2003 and 2007 fire perimeters, and the newly colonized created habitat in 2010 in the Otay River Valley (see above discussion) indicates Thorne's hairstreak butterflies can move relatively considerable distances, readily colonize new stands of *H. forbesii,* and increase their numbers to detectable levels over a period of 5 to 10 years. The recently recorded Otay River Valley location represents a confirmed Thorne's hairstreak butterfly range expansion over the past 10 years. Furthermore, we have no evidence supporting a permanent range contraction or curtailment anywhere throughout the subspecies' known distribution.

**Summary of Information Pertaining to the Five Factors**

Section 4 of the Act (16 U.S.C. 1533) and implementing regulations (50 CFR part 424) set forth procedures for adding species to, removing species from, or reclassifying species on the Federal Lists of Endangered and Threatened Wildlife and Plants. Under section 4(a)(1) of the Act, a species may be determined to be endangered or threatened based on any of the following five factors:

(A) The present or threatened destruction, modification, or curtailment of its habitat or range;

(B) Overutilization for commercial, recreational, scientific, or educational purposes;

(C) Disease or predation;

(D) The inadequacy of existing regulatory mechanisms; or

(E) Other natural or manmade factors affecting its continued existence.

In making this 12-month finding, information pertaining to Thorne's hairstreak butterfly in relation to the five factors provided in section 4(a)(1) of the Act is discussed below. In making our 12-month finding on the petition, we considered and evaluated the best available scientific and commercial information.

In considering whether a species warrants listing under any of the five factors, we look beyond the species' exposure to a potential threat or aggregation of threats under any of the factors, and evaluate whether the species responds to those potential threats in a way that causes actual impact to the species. The identification of threats that might impact a species negatively is not sufficient to compel a finding that the species warrants listing. The information must include evidence indicating that the threats are operative and, either singly or in aggregation, affect the status of the species. Threats are significant if they drive, or contribute to, the risk of extinction of the species, such that the species warrants listing as endangered or threatened, as those terms are defined in the Act.

*Factor A. The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range*

The following potential threats that may affect the habitat or range of Thorne's hairstreak butterfly, discussed in this section, include: (1) Wildfire, (2) climate change as it relates to wildfire (climate change is discussed further under Factor E below), (3) habitat fragmentation, and (4) road and firebreak construction required for national security and fire management (U.S. Customs and Border Protection) activities. We also discuss benefits to Thorne's hairstreak butterfly and its habitat in the Habitat Conservation Plans (HCPs) and Natural Community Conservation Plans (NCCPs) section below. In the 90-day finding (75 FR 17062; April 5, 2010), we indicated that based on the petition, recreational traffic, prescribed burns, and grazing were potential threats to Thorne's hairstreak butterfly. In the development of this 12-month finding, we further investigated the possibility that these activities were potential threats and found no evidence that recreational traffic, prescribed burns, or grazing were occurring or affecting the species or its habitat. Therefore, we have determined that these factors are not threats to the subspecies (see discussions below under the Road and Firebreak Construction section, the Factor D discussion, and the Factor E discussion).

Wildfire and Climate Change Related to Wildfire

Fire regimes are based on the temporal and spatial patterns of ignition sources, fuel, weather, and topography (Pyne *et al.* 1996, p. 48). It is also important to understand that fire severity, or the ecological impact of a fire and recovery of an ecosystem (Keeley and Fotheringham 2003, p. 231), can be different from fire intensity, or the energy released per length of fire front (Borchart and Odion 1995, p. 92). Additionally, large fires are not always equivalent to high-intensity fires (Keeley and Fotheringham 2003, p. 231). This is particularly important when assessing effects of fire on chaparral communities. Fire often burns in a mosaic pattern at different intensities, thereby resulting in differing levels of effects on particular species and habitats. Therefore, the inclusion of a specific mapped fire perimeter is not a reliable indicator of the level of mortality or habitat destruction.

According to Keeley and Fotheringham (2003, pp. 242–243), the historical natural fire regimes in southern California were likely characterized by many small lightning-ignited fires in the summer, a few large fires in the fall, and a variable fire intensity. However, the fire frequency (number of fires in a given area, not necessarily overlapping) has increased in North American Mediterranean Shrublands in California since about the 1950s. Southern California has demonstrated the greatest increase in wildfire ignitions, primarily due to an increase in population density beginning in the 1960s, and thus accessibility to new areas (Keeley and Fotheringham 2003, p. 240).

We analyzed the past 40 years of fire patterns at Otay Mountain and found that the spatial and temporal historical fire regime described by Keeley and Fotheringham (2003) is confirmed at this location as illustrated in Table 1.

TABLE 1—SPATIAL AND TEMPORAL HISTORICAL FIRE REGIME AND FIRE IMPACT ON SOUTHERN INTERIOR CYPRESS FOREST FOR OTAY MOUNTAIN, SAN DIEGO COUNTY, CALIFORNIA

| Year | Total fire perimeter (acres) | Number of fires | Cypress forest within fire perimeter (acres) | Cypress forest within fire perimeter (hectares) |
|---|---|---|---|---|
| 1971 | 56.04 | 1 | 18.97 | 7.67 |
| 1976 | 1,656.05 | 1 | 28.68 | 11.6 |
| 1978 | 600.48 | 1 | 22.67 | 9.17 |
| 1979 | 7,557.45 | 3 | 1,062.83 | 430.11 |
| 1980 | 3,313.64 | 1 | 36.97 | 14.96 |
| 1981 | 371.67 | 1 | 60.5 | 24.48 |
| 1982 | 1,076.56 | 4 | 124.42 | 50.35 |
| 1983 | 666.87 | 2 | 106.91 | 43.26 |
| 1985 | 188.37 | 1 | 19.14 | 7.74 |
| 1986 | 965.5 | 1 | 0.34 | 0.13 |
| 1987 | 54.71 | 1 | 3.54 | 1.43 |
| 1989 | 129.8 | 1 | 0.06 | 0.02 |
| 1990 | 63.33 | 1 | 7.4 | 2.99 |
| 1993 | 641.76 | 1 | 24.24 | 9.81 |
| 1994 | 2,983.35 | 1 | 103.09 | 41.71 |
| 1995 | 156.37 | 2 | 14.73 | 5.96 |
| 1996 | 18,460.02 | 5 | 4,186.08 | 1,694.05 |

TABLE 1—SPATIAL AND TEMPORAL HISTORICAL FIRE REGIME AND FIRE IMPACT ON SOUTHERN INTERIOR CYPRESS FOREST FOR OTAY MOUNTAIN, SAN DIEGO COUNTY, CALIFORNIA—Continued

| Year | Total fire perimeter (acres) | Number of fires | Cypress forest within fire perimeter (acres) | Cypress forest within fire perimeter (hectares) |
|---|---|---|---|---|
| 1999 | 118.48 | 1 | 11.14 | 4.51 |
| 2003 | 44,884.10 | 1 | 7,548.9 | 3,054.95 |
| 2005 | 359.15 | 2 | 37.94 | 15.35 |
| 2007 | 90,738.46 | 1 | 1,279.76 | 517.9 |
| 2008 | 124.75 | 2 | 0.67 | 0.27 |

The concern for wildfire effects to Thorne's hairstreak butterfly is primarily associated with loss of *Hesperocyparis forbesii* trees prior to the production of seed cones, which can result in the extirpation of a given stand (see Habitat section above). *Hesperocyparis forbesii* is a small tree generally associated with "chaparral ecosystems in southern California and northern Baja California, Mexico" (de Gouvenain and Ansary 2006, p. 447). Chaparral is considered a crown-fire ecosystem, meaning ecosystems which "have endogenous mechanisms for recovery that include resprouting from basal burrs and long-lived seed banks that are stimulated to germinate by fire" (Keane *et al.* 2008, p. 702). These ecosystems are also resilient to high-intensity burns (Keeley *et al.* 2008, p. 1545). Seed cones of western cypress (*Hesperocyparis*) mature in the second year, generally remain closed at maturity, and open after many years or in response to fire (Adams *et al.* 2009, p. 180). As a result, *H. forbesii,* like most western cypresses, has serotinous or closed-cones that allow the species to withstand fire.

While Zedler (1977, p. 456) indicated that cone production for *Hesperocyparis forbesii* begins around 10 years of age, Dunn (1986, p. 369) reported production "begins at about 5–7 years of age, but is sporadic until the trees reach about 30 years in age." Dispersal and germination of seeds is predominantly a result of fire, which results in death of the parent plant (Zedler 1977, p. 456). However, Zedler (2010a, pp. 1–2) stated that "*H. forbesii* does not require fire to germinate and establish seedlings, although the frequency with which germination without fire occurs in natural stands is low, and the survival of seedlings that do germinate is probably even lower." Moreover, given that *H. forbesii* is a long-lived (more than 100 years) tree (Markovchick-Nicholls 2007, p. 4), with some individual trees on Guatay Mountain estimated to exceed 150 years in age (Dunn 1986, p. 369), the need for reproduction in the absence of fire is low.

*Hesperocyparis forbesii* biology, status, and management needs were recently discussed at a workshop on June 16, 2010 (Burrascano 2010, pp. 1–4). Some attendees indicated that the *H. forbesii* stands on Otay Mountain are declining over the long term and that increased fire frequency poses a threat to the tree (Burrascano 2010, pp. 1–4); however, this assumes a significant correlation between the increased fire frequency in southern California and a decrease in the burn return interval within any given occupied cypress stand. Regarding the likelihood of extirpation, Zedler (2010b, p. 2) stated that "it is very unlikely this species will be [extirpated] in 100 years, almost zero chance in 50." Specifically, Zedler (2010b, p. 1) believes the statistical probability of *H. forbesii* being extirpated from Otay Mountain (assuming relative independence of stands) is very low or insignificant. Zedler (2010b, p. 1) also concluded that as the number of fires in any area of ground per time increases, the average area burned in any given fire decreases; hence, to extirpate *H. forbesii* completely would require almost a saturation of ignitions, which is also unlikely. This information supports the unlikely extirpation of *H. forbesii* in the foreseeable future.

Regarding the likelihood of decline, Markovchick-Nicholls (2007, p. v) used available data and stochastic matrix population models to assess the current risk of decline of *Hesperocyparis forbesii* under a range of southern California fire regime scenarios, and to rank management options and research priorities. Her model results suggest that *H. forbesii* will decline under most fire regime scenarios over the long term, but that this trend may be difficult to detect in the short term (Markovchick-Nicholls 2007, p. 41). Model results indicated that fire breaks could be highly effective for *H. forbesii* conservation, if designed to minimize removal of *H. forbesii* (Markovchick-Nicholls 2007, p. 41). In contrast, collection of seed in older *H. forbesii* stands for distribution in reproductively immature stands poses much less risk to the species, but also has much less dramatic effects on the persistence of the species than fire breaks do, even if successful (Markovchick-Nicholls 2007, p. 41). Current BLM policy (BLM 2010a, pp. 6–7) dictates any future firebreak and road construction projects in Thorne's hairstreak butterfly habitat on Otay Mountain minimize impacts to the butterfly (see also Factor D discussion below), while reducing the threat of fire to the subspecies and its host plant by slowing the spread of fire once ignited.

To address the issue of fire and how it relates to Thorne's hairstreak butterfly habitat loss, we conducted several GIS-based analyses of past fire frequencies and burn patterns on Otay Mountain. As described in the 90-day finding (71 FR 44980; August 8, 2006), we used GIS data in our files to overlay *Hesperocyparis forbesii* distribution on the map provided in the petition illustrating multiple fires that have burned through and near Thorne's hairstreak butterfly locations over the past century, and determined the majority of *H. forbesii* was within one or two fire perimeters during the 93-year period from 1910 to 2003. Furthermore, as discussed above, the areas of overlap between the 2003 and 2007 fire perimeters were relegated to lower elevation areas where host plant density is lowest. This result corresponds with the most conservative fire regime scenario in the Markovchick-Nicholls models discussed above (46 years), which is the scenario where the population appeared the most stable (Markovchick-Nicholls 2007, p. 41). The above information further supports the unlikely decline or extirpation of *H. forbesii* in the foreseeable future.

Using the most recent estimate (based on 2010 data) of 7,549 ac (3,055 ha) (CNDDB GIS Database 2010) of cypress forest on Otay Mountain, we calculated the overlap for the three largest fires in the last 15 years (1996, 2003, and 2007).

In 1996, 55 percent of cypress forest was within a mapped fire perimeter. In 2003, 100 percent of the cypress forest was within the mapped fire perimeter. In 2007, 17 percent of cypress forest was within the mapped fire perimeter. One hundred percent of the cypress forest within the 1996 fire perimeter was also within the 2003 fire perimeter, whereas only 17 percent of the area within the 2003 perimeter was also within the 2007 fire perimeter. Over the last 15 years, only 9 percent of cypress forest was within all three fire perimeters, and one approximately 97-ac (39-ha) stand near the peak within the mapped 2003 fire perimeter is estimated to have not burned in approximately 40 years (Allison 2011, p. 1). The 2007 Harris Fire perimeter encompassed the lower north and east slopes of Otay Mountain, overlapping with the 2003 burn perimeter primarily around the base of the mountain, indicating the pattern observed by Dunn (1984, p. 90) has not changed significantly over the past 27 years (1983–2010). In 1986, Dunn (p. 374) concluded most of the cypress on Otay Mountain were reaching full maturity and a fire would result in little damage to the population, because it would in fact result in maximum seed dispersal and recruitment.

Despite multiple fires over the last four decades on and around Otay Mountain (see Table 1), our analysis confirms Dunn's conclusion that fire does not have a significant impact on the cypress forest on Otay Mountain (Dunn 1986, p. 374). A recent survey documented that not all *Hesperocyparis forbesii* individuals within mapped fire perimeters are burned (Anderson 2010, p. 1). Only 11 of 122 Thorne's hairstreak butterfly observation locations recorded in 2010 by Lucas (unpublished data 2010) and only 17 percent of the associated cypress forest fell within both the 2003 and 2007 mapped fire perimeters (Carlsbad Fish and Wildlife Office GIS database). Throughout the areas that burned again in 2007, cypress regrowth and Thorne's hairstreak butterflies were observed in 2010. Furthermore, recent border fence construction and other enforcement activities in the Otay Mountain Wilderness area have reduced foot traffic by illegal immigrants from Mexico (Ford 2010, p. 1), reducing the likelihood of fire ignition resulting from this source.

As described above, Santa Ana winds and human-caused ignitions are important factors in southern California's shrubland and forest fire regimes. Because the Santa Ana wind events in fall and winter are driven by large-scale patterns of atmospheric circulation, researchers have developed projections for Santa Ana Occurrence (SAO) using global climate models (GCM) (Miller and Schlegel, 2006, p. 1). Results obtained from one GCM do not show an increase in the total number of annual SAOs; however, they did find a temporal shift in SAOs, with a decrease during the months of September and October and an increase in December (Miller and Schlegel, 2006, p. 3). The effects of this shift, coupled with predicted decreased precipitation (*see* Climate Change section in Factor E discussion below) to fire regime are unclear; however, December and January are typically the wettest months on record in Southern California (National Oceanic and Atmospheric Administration 2005). This temporal shift of SAOs from a time following the driest period of the year (May to October) to after the fall and winter rains begin (Scripps Institute of Oceanography 2010) would likely reduce the potential for and impact of wind and human-caused ignitions in southern California.

The output from climate change models predicts a 50-percent contraction in mixed evergreen woodland and shrubland vegetation (general vegetation types that may include *Hesperocyparis forbesii* stands) in California for the time period from 2070 to 2099 (Lenihan *et al.* 2003, p. 1674) (for recent information on future climate predictions, see Factor E discussion). Lenihan *et al.* (2003, p. 1674) found that the most prominent feature of the vegetation class's response to the drier model scenario was the advancement of grassland into the historical range of mixed evergreen woodland and shrubland. Such vegetation changes could reduce host plant and nectar source availability for Thorne's hairstreak butterfly, as woody vegetation declines and grasses replace native flowering forbs. Based on the above discussion, nectar source availability may be a determining factor in Thorne's hairstreak butterfly occupancy; however, the general climate change vegetation effect models (Lenihan *et al.* 2003, p. 1674) found the simulated response to changes in precipitation were complex, involving changes in tree-grass competition mediated by fire.

We are unable to predict the changes in climate, especially on a localized, small scale such as Otay Mountain, as well as what the impacts to Thorne's hairstreak butterfly and its habitat may be because this area is small relative to the resolution of vegetation change prediction models (which used climate models of intermediate scale to predict vegetation responses) and contains a relatively unique community dominated by the rare endemic cypress (see also Factor E discussion). While uncertainty exists regarding the potential effects of climate change on wildfire and habitat loss, and despite the increasing frequency of fires in southern California, the best available information does not indicate the average burn return interval per given area of cypress forest is decreasing, and it does indicate ignition sources on Otay Mountain have been reduced compared to historical levels; therefore, wildfire has not been, and is not likely to be, a significant threat to the Thorne's hairstreak butterfly or its habitat now or in the foreseeable future.

Habitat Fragmentation

We examined the possibility of habitat fragmentation affecting Thorne's hairstreak butterfly. The connectivity of habitat occupied by a butterfly population is not defined by host plant distribution at the scale of host plant stands or patches, but rather by adult butterfly movement that results in interbreeding (*see* Service 2003a, pp. 22, 162–165). Any loss of resource contiguity on the ground that does not affect butterfly movement, such as burned vegetation or road construction through stands of cypress, may degrade habitat but does not fragment a population. Therefore, in order for butterfly habitat to be considered fragmented, movement must be prevented by a barrier, or the distance between remaining host plants where larvae develop must be greater than adult butterflies will move to mate or deposit eggs. If it occurred, habitat fragmentation might create smaller, more vulnerable populations (see Factor E discussion below); however, the best available information indicates that habitat fragmentation has not occurred on Otay Mountain (*see* Distribution and Population Status section above). *Hesperocyparis forbesii* has demonstrated an ability to recolonize after fire events on Otay Mountain, and data obtained since publication of the 2010 90-day finding (75 FR 17062) indicate Thorne's hairstreak butterfly is able disperse through wind events between any temporarily isolated patches of *H. forbesii* (*see* Distribution and Population Status section above). Therefore, we have determined that habitat fragmentation is not a threat to the subspecies now, nor is it likely to become so in the foreseeable future.

Road and Firebreak Construction

Thorne's hairstreak butterfly habitat is relatively protected from most sources of habitat destruction, modification, or

curtailment because approximately 99 percent of its potential habitat (mapped Interior Cypress Forest vegetation; CNDDB GIS database 2007) is within publicly owned areas that are conserved and managed, primarily within the BLM Otay Mountain Wilderness and San Diego Multiple Species Conservation Program (MSCP) subarea plan preserves (see Habitat Conservation Plans (HCPs) and Natural Community Conservation Plans (NCCPs) section and Factor D discussion below).

Although road and firebreak construction has occurred in the past in stands of *Hesperocyparis forbesii* where Thorne's hairstreak butterflies have been observed, these impacts have been relatively limited based on our qualitative comparison of Thorne's hairstreak butterfly and host plant locations with Google Earth satellite imagery of roads and firebreaks. Because U.S. Customs and Border Protection recently completed construction of the border fence and expanded the associated "pack trail" into a wider "truck trail" to accommodate vehicles, the need for further significant Border Patrol-related construction activities is not anticipated (Ford 2010, p. 1). Any future firebreak and road construction projects that do occur in Thorne's hairstreak butterfly habitat on Otay Mountain will be planned so as to minimize impacts to the butterfly (see also Factor D below), while reducing the threat of fire to the subspecies and its host plant by slowing the spread of fire once ignited (BLM 2010a, pp. 6–7). Finally, Williams and Congedo (2008, p. 19) concluded that existing traffic corridors on Otay Mountain did not appear to be detrimental to Thorne's hairstreak butterfly unless increasing human traffic contributes to increasing fire danger.

The status of the Otay Mountain area as predominantly wilderness area and preserve (which are managed) indicates this area is unlikely to receive increased legal human traffic. Furthermore, as noted above, recent border fence construction and other enforcement activities in the Otay Mountain Wilderness area have reduced illegal human traffic (Ford 2010, p. 1), thereby reducing the likelihood of fire ignition by this source. Therefore, road and firebreak construction is not a significant threat to the subspecies now, nor is it likely to become so in the foreseeable future.

Habitat Conservation Plans (HCPs) and Natural Community Conservation Plans (NCCPs)

Habitat conservation plans (HCPs) and natural community conservation plans (NCCPs) benefit Thorne's hairstreak butterfly through conservation, management, and monitoring. Habitat conservation plans are developed under section 10 of the Act to support issuance of permits that authorize the limited incidental take of listed species in return for conservation and management of the species and their habitats. The NCCP program is a cooperative effort involving the State of California and numerous private and public partners to protect regional habitats and species. The primary objective of NCCPs is to conserve natural communities at the ecosystem scale while accommodating compatible land uses. NCCPs help identify, and provide for, the regional or area-wide protection of plants, animals, and their habitats while allowing compatible and appropriate economic activity. Many NCCPs are developed in conjunction with HCPs prepared under the Act.

The San Diego Multiple Species Conservation Program (MSCP) is a subregional HCP and NCCP made up of several subarea plans that has been in place for more than a decade. Under the umbrella of the MSCP, each of the 12 participating jurisdictions is required to prepare a subarea plan that implements the goals of the MSCP within that particular jurisdiction.

Both Thorne's hairstreak butterfly and *Hesperocyparis forbesii* are covered species under the County of San Diego MSCP Subarea Plan, although neither the butterfly nor *H. forbesii* are covered species under the City of Chula Vista MSCP Subarea Plan. The County of San Diego MSCP Subarea Plan encompasses the majority (859 ac (348 ha)) of *H. forbesii* habitat (Interior Cypress Forest; CNDDB GIS database 2007) outside of the Otay Mountain Wilderness. The remainder of the *H. forbesii* habitat outside of the Otay Mountain Wilderness (approximately 60 ac (24 ha)) is privately owned in an Amendment Area for the San Diego MSCP Planning Area (see discussion below). Within the County of San Diego MSCP Subarea Plan, over 99 percent of *H. forbesii* habitat (Tecate Cypress Forest) is planned for conservation and management (County of San Diego 2008a, Part 3, Section 2, p. 7), and the majority has already been acquired for conservation.

As noted above, Thorne's hairstreak butterfly and *Hesperocyparis forbesii* are covered species under the subarea plan (Service 1998, p. 6), which requires protection of Thorne's hairstreak butterfly host plants and local chaparral species used as nectar sources. The Framework Management Plan for the County of San Diego Subarea Plan under the MSCP (County of San Diego 2008b, p. 2; Framework Management Plan) requires the use of specific adaptive management techniques directed at the conservation and recovery of covered species, such as actions that assure wildfires do not occur too frequently in areas where species are sensitive to fire. The Framework Management Plan also provides for biological monitoring and preparation of an annual report, and based upon this review and biological monitoring effort, adjustments in the management goals can be made as necessary (County of San Diego 2008b, p. 2). Because Thorne's hairstreak butterfly is required to be conserved and adaptively managed and monitored under the County of San Diego Subarea Plan, we anticipate land management to protect Thorne's hairstreak butterfly and its habitat will continue to be implemented under the County of San Diego Subarea Plan.

Additionally, the Memorandum of Understanding (MOU) on cooperation in habitat conservation planning and management issued by BLM in 1994, in conjunction with the development of the County of San Diego Subarea Plan under the MSCP (BLM 1994, pp. 1–8), also applies to the Otay Mountain Wilderness because it falls entirely within the boundary of this subarea plan. As outlined in the MOU (BLM 1994, p. 3), BLM is committed to managing their lands (*i.e.,* Otay Mountain Wilderness) to "conform with" the County of San Diego Subarea Plan, which in turn requires protection of Thorne's hairstreak butterfly's larval host plant, *Hesperocyparis forbesii,* and local chaparral species used as nectar sources. Therefore, protections provided by the County of San Diego Subarea Plan under the MSCP to Thorne's hairstreak butterfly and its habitat also apply to the Otay Mountain Wilderness.

The 90-day finding (75 FR 17062; April 5, 2010) states, "Approximately 48 ac (19 ha) of *Hesperocyparis forbesii* habitat fall under the [County of San Diego Subarea Plan], which strives for fire management and prevention to restore the previous 25-year [burn return interval]"; however, we have since determined this statement is not accurate. The statement was based on the 1994 BLM South Coast Resource Management Plan that specifies a minimum planned 25-year burn return interval for controlled burns in *H. forbesii* habitat "east of the Minewawa truck trail on the Otay Mountain [Wilderness]" (BLM 1994, p. 21). The Minewawa Truck Trail runs from the peak at Doghouse Junction, north to Otay Lakes Road, dividing the northern half of Otay Mountain into east and

west quarters. As discussed above, per an MOU, BLM has committed to manage its lands in a manner that complements the County of San Diego Subarea Plan; this management commitment was mistakenly attributed to that HCP in the 90-day finding. The 48-ac (19-ha) estimate was based on the area of *H. forbesii* stands mapped by Lucas (Forister and Lucas 2009, pp. 1–2) and located outside the Otay Mountain Wilderness. Therefore, the 48-ac (19-ha) area estimate is not accurate with regard to the amount of *H. forbesii* habitat (see Distribution and Population Status section above) that is managed by the County of San Diego. Our estimate of the habitat managed by the County of San Diego under their subarea plan is 859 ac (348 ha) (see discussion above). Finally, BLM does not have any plans to conduct controlled burns (see Factor D discussion below) nor is it committed to maintain a 25-year burn return interval for such burns (BLM 1994, p. 21), and the County of San Diego Subarea Plan includes the assurance that wildfires will not occur too frequently in areas where species are sensitive to fire. The BLM draft revised South Coast Resource Management Plan specifically includes a goal of restoring burn return interval to 50 years through fire prevention or suppression and prescribed burns (see Factor D discussion below). Current BLM prescribed burn practices preclude burning of any *H. forbesii* habitat that would not enhance cypress stand viability or that would negatively affect Thorne's hairstreak butterfly (see Factor D discussion below). Therefore, the misrepresented regulatory 25-year burn return interval issue is not a valid concern with regard to Thorne's hairstreak butterfly conservation.

The City of Chula Vista Subarea Plan under the MSCP includes a preserve that encompasses the newly discovered Otay River Valley occupied site (see Distribution and Population Status section above). Thorne's hairstreak butterfly and *Hesperocyparis forbesii* are not covered species under this subarea plan. However, all lands preserved under the Chula Vista Subarea Plan are adaptively managed and maintained to:

(1) Ensure the long-term viability and sustainability of native ecosystem function and natural processes throughout the Preserve;

(2) Protect existing and restored biological resources from the impacts of human activities within the Preserve while accommodating compatible uses;

(3) Enhance and restore, where feasible, appropriate native plant associations and wildlife connections to adjoining habitat to provide viable wildlife and sensitive species habitat;

(4) Facilitate monitoring of selected target species, habitats, and linkages to ensure long-term persistence of viable populations of priority plant and animal species; and

(5) Ensure functional habitats and linkages for those species (Service 2003b, pp.18, 70, FWS–SDG–882.1).

We believe these management prescriptions adequately protect Thorne's hairstreak butterfly and its habitat within the preserve, and the adaptive management measures of the Chula Vista Subarea Plan allow for adjustment of preserve management, as appropriate, to conserve this newly discovered population of Thorne's hairstreak butterfly.

One relatively small area of occupied cypress forest (approximately 60 ac (24 ha) composed of four butterfly observation locations) in the southwest foothills of Otay Mountain east of Otay Mesa is privately owned and not within an approved subarea plan, but falls within the MSCP planning area where a new subarea plan is being developed (i.e., a County of San Diego MSCP "Amendment Area") (CNDDB GIS Database 2010). While these habitats are not currently protected from threats to Thorne's hairstreak butterfly habitat by conservation or management, the majority of this area is also occupied by the endangered Quino checkerspot butterfly (*Euphydryas editha quino*), and Thorne's hairstreak butterfly habitat is therefore already afforded some indirect protection under section 9 of the Act.

Summary of Factor A

We evaluated several factors with the potential to destroy, modify, or curtail Thorne's hairstreak butterfly's habitat or range, including decreasing burn return intervals, climate change related to wildfire, habitat fragmentation, and road and firebreak construction. We also evaluated the benefits to Thorne's hairstreak butterfly and its habitat associated with HCPs and NCCPs. Wildfire can negatively affect the species' habitat and in particular its host plant. However, our analysis does not indicate wildfire events have deviated from historical fire frequency or burn return interval patterns. Despite two recent large fires (2003 and 2007), Thorne's hairstreak butterfly has not only survived or recolonized habitats within mapped recent fire perimeters, it has expanded its range. In addition, while uncertainty exists regarding the potential effects of climate change on wildfire and habitat loss, the best available information regarding decreased burn return interval indicates the indirect effects of climate change on Thorne's hairstreak butterfly habitat are not threats to the subspecies now, nor are they predicted for the future. We have also determined the best available information indicates habitat fragmentation does not occur within the range of Thorne's hairstreak butterfly. We further determined that impacts to Thorne's hairstreak butterfly habitat resulting from road and firebreak construction have been relatively limited and are not anticipated to increase in the future. Additionally, approximately 99 percent of all potential Thorne's hairstreak butterfly habitat (cypress woodland within existing County of San Diego Subarea Plan preserves, the City of Chula Vista Subarea Plan preserve, and Otay Mountain Wilderness Area) is conserved and managed to benefit both the species and its host plant. Therefore, we believe existing HCPs and NCCPs provide protection for Thorne's hairstreak butterfly habitat. Based on our review of the best available scientific and commercial information, we conclude that Thorne's hairstreak butterfly is not threatened by the present or threatened destruction, modification, or curtailment of its habitat or range now or in the foreseeable future.

*Factor B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes*

We have no information to indicate that overutilization for commercial, recreational, scientific, or educational purposes is currently a threat to the Thorne's hairstreak butterfly, nor do we anticipate that it will become a threat in the future. Therefore, based on our review of the best available scientific and commercial information, we conclude that Thorne's hairstreak butterfly is not threatened by overutilization for commercial, recreational, scientific, or educational purposes now or in the foreseeable future.

*Factor C. Disease or Predation*

Disease

Our review of the best available scientific and commercial data found nothing to indicate that disease is a threat to Thorne's hairstreak butterfly now or in the foreseeable future.

Predation

Predation (including parasitism) is a factor that is known to cause mortality in butterflies, and therefore could potentially threaten any butterfly

species. Faulkner and Klein (2005, p. 34) stated that birds may consume Thorne's hairstreak butterfly larvae, although we are not aware of any data that indicate bird predation is a significant threat to Thorne's hairstreak butterflies. Brachonid wasps (parasitoid insects that deposit eggs in their host and kill it when offspring emerge as adults) have been observed near the host plant, but there has been no documentation of predation on Thorne's hairstreak butterflies (Faulkner and Klein 2005, p. 34; Klein 2010a p, 5). One potential larval predator observed during the 2007 season in large numbers at one occupied site is the nonnative seven-spotted ladybird beetle (*Coccinella septempuctata*) (Klein 2010a, pp. 5, 12); however, we are not aware of any data indicating the beetles have negative effects on Thorne's hairstreak butterfly.

Heavy predation and parasitism of adult insects and their progeny is a common ecological phenomenon, and most species have evolved under conditions where high mortality due to natural enemies has shaped their evolution (see Schmid-Hempel 1995, p. 255; Ehrlich *et al.* 1998). Our review did not reveal any specific information regarding predation of Thorne's hairstreak butterflies, nor do we have any indication that predation will become a threat in the foreseeable future. Therefore, based on our review of the best available scientific and commercial information, we conclude Thorne's hairstreak butterfly is not threatened by predation either now or in the foreseeable future.

*Factor D. The Inadequacy of Existing Regulatory Mechanisms*

The Act requires us to examine the adequacy of existing regulatory mechanisms with respect to threats that may place Thorne's hairstreak butterfly in danger of extinction or likely to become so in the future. Existing regulatory mechanisms that may have an effect on potential threats to Thorne's hairstreak butterfly can be placed into two general categories: (1) Federal mechanisms, and (2) State mechanisms.

Federal Mechanisms

The Otay Mountain Wilderness Act (1999) (Pub. L. 106–145) and BLM management policies provide protection for the majority of occupied Thorne's hairstreak butterfly habitat (over 90 percent of all recorded butterfly observation locations). The Otay Mountain Wilderness Act directs that the Otay Mountain designated wilderness area (i.e., Otay Mountain Wilderness; 18,500 ac (7,486 ha)) be managed in accordance with the provisions of the Wilderness Act of 1964 (16 U.S.C. 1131 *et seq.*). The Wilderness Act of 1964 strictly limits use of wilderness areas, imposing restrictions on vehicle use, new developments, chainsaws, mountain bikes, leasing, and mining, in order to protect the natural habitats of the areas, maintain species diversity, and enhance biological values. Lands acquired by BLM within the Otay Mountain Wilderness boundaries become part of the designated wilderness area and are managed in accordance with all provisions of the Wilderness Act and applicable laws (for additional information on applicable laws and management of the Otay Mountain Wilderness, see discussions below).

Thorne's hairstreak butterfly is a BLM-designated sensitive species (BLM 2010b, p. 3). BLM-designated sensitive species are those species requiring special management consideration to promote their conservation and reduce the likelihood and need for future listing under the Act. This status makes Thorne's hairstreak butterfly conservation a management priority in the Otay Mountain Wilderness (see BLM 2008, p. 6).

Fire management activities occur on Otay Mountain as part of the BLM's current (1994) South Coast Resource Management Plan. Available information provided by BLM summarizes these ongoing management actions (Howe 2010, p. 1):

(a) The California Department of Forestry and Fire Protection (CAL FIRE) San Diego Unit is under a contractual agreement to provide fire suppression services to BLM-administered Public Lands in San Diego County;

(b) Planned fire dispatch for the Otay Mountains Wilderness is five engines, two handcrews, two tanker airplanes, two to three water-drop helicopters, and assorted command and support personnel;

(c) BLM Fire Management provides an Initial Attack Dispatch and Agency Representative to ensure appropriate actions are taken on a fire incident;

(d) On large incidents, several Resource Specialists may form a team to evaluate fire and fire suppression effects. If a determination is made to pursue fire restoration and repair, these specialists would work with Burned Area Emergency Response (BAER) Teams to implement appropriate actions;

(e) Fire Prevention and Law Enforcement patrols occur on Otay Mountain, and the Lyons Peak Lookout Tower (north of the Otay Mountain Wilderness) will reopen to facilitate early fire detection as soon as funding allows (Allison 2011, p. 1); and

(f) The International Fuelbreak is under a Right-of-Way Agreement with CAL FIRE.

At some point in the future on an as-needed basis, additional brush clearing and other fuels modifications, including burning, may occur; however, no plans exist to perform prescribed burns in groves of *Hesperocyparis forbesii* at this time. Any prescribed burning in the future within the Otay Mountain Wilderness would be designed to promote conservation of Thorne's hairstreak butterfly and reduce the likelihood and need for future listing of the subspecies under the Act (see above discussion of BLM-designated sensitive species for more information). Specifically, any future prescribed burns in cypress forest would be limited to low-level understory burns designed to minimize impacts to *H. forbesii* and would only occur where mature trees have reached maximum cone production and burning would likely increase stand viability (Allison 2011, p. 1). Currently, all cypress stands on Otay Mountain are within fire perimeters mapped over the past 10 years; however, there is one approximately 97-ac (39-ha) stand near the peak that is approximately 40 years old, where burning could be prescribed if wildfire does not burn it within the next 10 to 15 years (Allison 2011, p. 1).

We believe the current management regime undertaken by BLM under the existing plan is adequate to protect the subspecies and its habitat from threats. However, BLM is collaborating with the Service to revise the South Coast Resource Management Plan, which covers the Otay Mountain Wilderness. In the current draft revised plan, Thorne's hairstreak butterfly and *Hesperocyparis forbesii* are identified as sensitive species (BLM 2009, p. 3–59), and the plan specifically states the management of these species and their habitats are important because of their close association and the importance of fire cycles to their continued existence. Moreover, one of BLM's primary objectives in the draft revised plan is improved fire management and collaboration with local communities and agencies to prevent wildfires. The draft revised plan specifically includes a goal of restoring fire frequency to 50 years through fire prevention or suppression and prescribed burns; once an area has not burned for 50 years the plan allows for annual prescribed burning of up to 500 ac (202 ha) in the Otay Mountain Wilderness (BLM 2009, pp. 4–171 − 4–172). Actions implemented under the revised plan,

when final, will be designed to promote conservation of Thorne's hairstreak butterfly and its habitat.

State Mechanisms

The California Environmental Quality Act (CEQA) requires review of any project that is undertaken, funded, or permitted by the State or a local governmental agency. If significant environmental effects are identified, the lead agency has the option of requiring mitigation through changes in the project or deciding that overriding considerations make mitigation infeasible (CEQA section 21002). Therefore, protection of sensitive native species through CEQA is dependent upon the discretion of the lead agency involved. The implementation of CEQA encourages protection of Thorne's hairstreak butterfly and *Hesperocyparis forbesii* where projects are undertaken, funded, or permitted by the State or a local governmental agency outside of the Otay Mountain Wilderness, and by CAL FIRE within the wilderness area.

Summary of Factor D

We considered the adequacy of existing regulatory mechanisms to protect Thorne's hairstreak butterfly. The majority (approximately 90 percent) of potential Thorne's hairstreak butterfly habitat is within the BLM Otay Mountain Wilderness, and is conserved and managed to benefit both the species and its host plant. With regard to wildfire in the Otay Mountain Wilderness: (1) Prevention activities are already a focus of management and occur regularly; (2) suppression activities are already a focus of management and occur promptly; and (3) if fire is not frequent enough to reduce fuel load, prescribed burns can occur. Therefore, we believe existing regulatory mechanisms already provide ample regulatory protection of Thorne's hairstreak butterfly from the potential threat of wildfire (see Factor A above for a discussion of wildfire). Based on our review of the best available scientific and commercial information, we conclude Thorne's hairstreak butterfly is not threatened by the inadequacy of existing regulatory mechanisms now, nor is it likely to become so in the foreseeable future.

*Factor E. Other Natural or Manmade Factors Affecting The Species' Continued Existence*

Natural and manmade threats to the Thorne's hairstreak butterfly include wildfire, small population size, and climate change. Wildfire is briefly discussed under this factor, and wildfire and climate change related to wildfire are discussed in detail under Factor A discussion above. The 90-day finding (75 FR 17062; April 5, 2010) also indicated that grazing and population fragmentation were potential threats to the subspecies. In the development of this 12-month finding, we further investigated these potential threats and found that grazing does not currently occur on Otay Mountain, nor is it planned for the future (Doran 2010, p. 1; Ford 2010, p. 1; Schlachter 2010, p. 1); therefore, it is not a threat to the subspecies at this time, nor is it likely to become so in the foreseeable future. We also determined that population fragmentation for Thorne's hairstreak butterfly is dependent on habitat fragmentation, which is discussed above under Factor A, and is not a threat to the species at this time or in the foreseeable future.

Wildfire

As discussed under Factor A above, wildfire can be a risk factor for Thorne's hairstreak butterfly and its host plant and nectar sources. However, as discussed above under Factor D, existing fire prevention and suppression activities are already in place to minimize the impacts of fire on this species to the maximum extent practicable, and measures are being taken to improve such activities. Although Thorne's hairstreak butterflies can be killed by wildfire, the best available information indicates Thorne's hairstreak butterfly habitat is relatively resilient and can re-colonize areas after fire events.

Small Population Size

Although we do not have data from which to draw conclusions regarding Thorne's hairstreak butterfly population size, we nonetheless considered whether rarity might pose a potential threat to the species. While small populations are generally at greater risk of extirpation from normal population fluctuations due to predation, disease, changing food supply, and stochastic (random) events such as fire, corroborating information regarding threats beyond rarity is needed to meet the information threshold indicating that the species may warrant listing. In the absence of information identifying threats to the species and linking those threats to the rarity of the species, the Service does not consider rarity alone to be a threat. Further, a species that has always had small population sizes or has always been rare, yet continues to survive, could be well-equipped to continue to exist into the future.

Many naturally rare species have persisted for long periods within small geographic areas, and many naturally rare species exhibit traits that allow them to persist despite their small population sizes. Consequently, the fact that a species is rare or has small populations does not necessarily indicate that it may be in danger of extinction now or in the foreseeable future. We need to consider specific potential threats that might be exacerbated by rarity or small population size. Although low genetic variability and reduced fitness from inbreeding could occur, at this time we have no evidence of genetic problems with the Thorne's hairstreak butterfly. Based on the available information, and the fact that Thorne's hairstreak butterfly has survived for an unknown number of years, we conclude that genetic variability and reduced fitness are not imminent threats now, nor do we believe they will become threats in the foreseeable future. Although we have only known of its existence since 1972 (Brown 1983, p. 246), Thorne's hairstreak butterfly has always been endemic to Otay Mountain (Brown 1983; Beztler *et al.* 2003; Faulkner and Klein 2005) and has historically survived fires, drought, and other stochastic events. Therefore, we have no data to indicate that rarity or small population size, in and of themselves, pose a threat to the subspecies at this time or in the foreseeable future.

Climate Change

Downscaled local climate model predictions for Thorne's hairstreak butterfly range indicate a warmer, drier climate in the vicinity of Otay Mountain (downscaled resolution corresponds to the area of Otay Mountain; The Nature Conservancy Climate Wizard 2010). Climate Wizard (The Nature Conservancy 2010) model calculations and predictions for Otay Mountain indicate that the average annual temperature has increased approximately 0.06 degrees Fahrenheit (°F) (0.03 degrees Celsius (°C)) per year for the past 50 years ($p>.001$), will likely increase another 5 °F (2.8 °C) in the next 40 years (medium and high scenarios), and will increase another 6.5 to 7.5 °F (3.6 to 4.2 °C) within the next 70 years (medium and high scenarios). Otay Mountain average annual precipitation has decreased 0 to 0.1 percent per year over the past 50 years ($p=1$), is predicted to decrease by up to 7 percent over the next 40 years, and is predicted to decrease by up to 12 to 13 percent over the next 70 years (medium and high scenarios; The Nature Conservancy Climate Wizard 2010). These environmental factors are the primary driver of (similar but likely at a greater

scale) models that predict increased fire frequency and scope, and possible *Hesperocyparis forbesii* population decline (see Factor A discussion above). However, the models are general and do not enable us to conclude that host plant populations would decline significantly or to predict a decrease of the specific host plants used by Thorne's hairstreak butterfly. It is not clear how predicted environmental changes would directly affect Thorne's hairstreak butterfly and its habitat (*i.e.,* the *H. forbesii*) due to the uncertainty of the models. We are unable to estimate any direct climate change effects to Thorne's hairstreak butterfly populations because the climate tolerances of Thorne's hairstreak butterfly are unknown, although they seem to do well at all climate extremes within their current range (all elevations). Because we believe the available modeling information on a potential decrease in the *H. forbesii* population (as described above) is too general to be a reliable source to predict changes in the Thorne's hairstreak butterfly population, we are relying on the ecology of the host plant and Zedler (2010) to help us ascertain the likelihood of the loss of the host plant and thus Thorne's hairstreak butterfly. Specifically (and as described in the Wildfire and Climate Change Related to Wildfire section above), Zedler (2010b, p. 2) concluded that it is unlikely the species would be extirpated in 100 years in part because the statistical probability of *H. forbesii* being extirpated from Otay Mountain is very low or insignificant. Therefore, the Thorne's hairstreak butterfly's distribution seems currently, and likely to remain limited by the distribution of its host plant rather than climate. Thus there is no indication that changes in climate would affect the distribution of Thorne's hairstreak butterfly. Unlike models used to predict vegetation changes (such as those described above under Factor A), no niche models or similar analyses have been conducted to determine potential direct (climate suitability) or indirect effects (effects of climate on habitat suitability) to the butterfly. Therefore, available data is not adequate to evaluate the potential direct effects of predicted climate changes on Thorne's hairstreak butterfly or to indicate that the species is currently in danger of extinction now or in the foreseeable future.

Based on a review of the best available scientific and commercial data regarding wildfire, small population size, and climate change, we found no reliable evidence that other natural or manmade factors affecting the continued existence of the Thorne's hairstreak butterfly are a threat to the subspecies either now or in the foreseeable future.

**Summary of the Five Factors**

This status review found no significant threats to Thorne's hairstreak butterfly related to Factors A, B, C, D, or E, as described above.

We find that the best available information for Factor A, including information on the potential effects of wildfire, climate change related to wildfire, habitat fragmentation, and road and firebreak construction, and the beneficial effects of HCPs and NCCPs, indicates that Thorne's hairstreak butterfly is not threatened by the present or threatened destruction, modification, or curtailment of its habitat or range. Analysis of historical fire patterns on Otay Mountain and recolonization of habitat following fire indicate wildfire and road and fire break construction has not fragmented or reduced habitat in occupied areas. While uncertainty exists regarding the potential effects of climate change on wildfire and habitat loss, the best available information regarding decreased burn return interval indicates this is not a significant threat to the subspecies. Furthermore, habitat conservation plans (HCPs) and natural community conservation plans (NCCPs) benefit Thorne's hairstreak butterfly, *Hesperocyparis forbesii,* and their habitat through conservation, management, and preservation.

The available information concerning overutilization (Factor B) and predation (Factor C) does not indicate that the Thorne's hairstreak butterfly is threatened by these factors. We find that the best available information concerning Factor D (Inadequacy of Existing Regulatory Mechanisms) indicates that the Thorne's hairstreak butterfly is not threatened by the inadequacy of existing regulations.

Finally, we find that the best available information concerning Factor E (Other Natural or Manmade Factors Affecting the Species' Continued Existence) indicates that the Thorne's hairstreak butterfly is not threatened individually or cumulatively by the effects of wildfire, small population size, or climate change. Post-fire surveys indicate Thorne's hairstreak butterflies recolonized all habitat affected by large fires in 2003 and 2007 that had previously been documented to be occupied (this excluded the recently discovered stand within the City of Chula Vista Subarea Plan because it was discovered after the fires), indicating that the butterfly is not restricted to isolated patches. Additionally, available data do not suggest that rarity or small population size, in and of themselves, pose a threat to the subspecies at this time or in the foreseeable future.

**Finding**

As required by the Act, we conducted a review of the status of the Thorne's hairstreak butterfly and considered the five factors in assessing whether the Thorne's hairstreak butterfly is in danger of extinction or likely to become so in the foreseeable future throughout all or a significant portion of its range. We examined the best scientific and commercial information available regarding the past, present, and future threats faced by the Thorne's hairstreak butterfly. We reviewed the petition, information available in our files, and other available published and unpublished information, and we consulted with experts knowledgeable about Thorne's hairstreak butterfly, habitat experts, and representatives from the BLM and local jurisdictions.

During our status review for this species, it has become evident that many threat issues are speculative or are associated with predicted future climate changes, with no historical or current documented direct impacts to the species or its habitat relating to these issues. Our review of the best available scientific and commercial information pertaining to the five threat factors does not support a conclusion that there are independent or cumulative threats of sufficient imminence, intensity, or magnitude to indicate that Thorne's hairstreak butterfly is in danger of extinction (endangered), or likely to become endangered within the foreseeable future (threatened), throughout its range. Therefore, we have determined that the Thorne's hairstreak butterfly does not meet the definition of an endangered species or a threatened species under the Act and, as a result, does not warrant listing under the Act at this time.

**Significant Portion of the Range**

Having determined that Thorne's hairstreak butterfly does not meet the definition of an endangered or a threatened species, we must next consider whether there are any significant portions of the range where Thorne's hairstreak butterfly is in danger of extinction or is likely to become endangered in the foreseeable future.

On the basis of our review, we found no geographic concentration of threats either on public or private lands to suggest that Thorne's hairstreak

butterfly may be in danger of extinction in that portion of its range. We found no area within the range of Thorne's hairstreak butterfly where the potential threats are significantly concentrated or substantially greater than in other portions of the range. Therefore, we find factors affecting the subspecies are essentially uniform throughout its range, indicating no portion of the butterfly's range warrants further consideration of possible endangered or threatened status under the Act.

We find that the Thorne's hairstreak butterfly is not in danger of extinction now, nor is it likely to become endangered within the foreseeable future, throughout all or a significant portion of its range. Therefore, listing the Thorne's hairstreak butterfly as endangered or threatened under the Act is not warranted at this time.

We request that you submit any new information concerning the status of, or threats to, the Thorne's hairstreak butterfly to our Carlsbad Fish and Wildlife Office (*see* **ADDRESSES** section) whenever it becomes available. New information will help us monitor the Thorne's hairstreak butterfly and encourage management of this subspecies and its habitat. If an emergency situation develops for the Thorne's hairstreak butterfly or any other species, we will act to provide immediate protection.

## References Cited

A complete list of references cited is available on the Internet at *http://www.regulations.gov* and upon request from the Carlsbad Fish and Wildlife Office (*see* **ADDRESSES** section).

## Authors

The primary authors of this notice are the staff members of the Carlsbad Fish and Wildlife Office.

## Authority

The authority for this section is section 4 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Dated: February 10, 2011.

**Rowan W. Gould,**

*Acting Director, Fish and Wildlife Service.*

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