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DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS–R8–ES–2016–0127; FXES11130900000 167 FF09E42000]

RIN 1018-BB39

Endangered and Threatened Wildlife and Plants; Removing *Trichostema austromontanum* ssp. *compactum* (Hidden Lake Bluecurls) from the Federal List of Endangered and Threatened Plants

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule; availability of a draft post-delisting monitoring plan.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), propose to remove the plant *Trichostema austromontanum* ssp. *compactum* (Hidden Lake bluecurls) from the Federal List of Endangered and Threatened Plants on the basis of recovery. This determination is based on a review of the best available scientific and commercial information, which indicates that the threats to *T. a.* ssp. *compactum* have been eliminated or reduced to the point where it no longer meets the definition of an endangered species or a threatened species under the Endangered Species Act of 1973, as amended (Act). We are seeking information and comments from the public regarding this proposed rule and the draft post-delisting monitoring (PDM) plan for *T. a.* ssp. *compactum.*

DATES: We will accept comments received or postmarked on or before [INSERT DATE 60

DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]. We must receive requests for public hearings, in writing, at the address shown in **FOR FURTHER INFORMATION CONTACT** by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: *Comment submission*: You may submit comments by one of the following methods:

(1) Electronically: Go to the Federal eRulemaking Portal: *http://www.regulations.gov*. In the Search box, enter FWS–R8–ES–2016–0127, which is the docket number for this rulemaking. Then click on the Search button. On the resulting page, in the Search panel on the left side of the screen, under the Document Type heading, click on the Proposed Rules link to locate this document. You may submit a comment by clicking on "Comment Now!"

(2) By hard copy: Submit by U.S. mail or hand-deliver to: Public Comments Processing, Attn: Docket No. FWS–R8–ES–2016–0127, U.S. Fish and Wildlife Service, MS: BPHC; 5275 Leesburg Pike, Falls Church, VA 22041-3803.

We request that you send comments only by the methods described above. We will post all comments on *http://www.regulations.gov*. This generally means that we will post any personal information you provide us (see **Information Requested**, below, for more information).

Document availability: A copy of the draft PDM plan referenced throughout this document can be viewed at *http://ecos.fws.gov/ecp0/profile/speciesProfile?sId=1285*, at

http://www.regulations.gov under Docket No. FWS–R8–ES–2016–0127, or at the Carlsbad Fish and Wildlife Office's website at *http://www.fws.gov/Carlsbad/*.

FOR FURTHER INFORMATION CONTACT: G. Mendel Stewart, Field Supervisor, Carlsbad Fish and Wildlife Office, 2177 Salk Avenue, Suite 250, Carlsbad, CA 92008; telephone 760-431-9440; facsimile (fax) 760-431-5901. If you use a telecommunications device for the deaf (TDD), call the Federal Information Relay Service (FIRS) at 800-877-8339.

SUPPLEMENTARY INFORMATION:

Information Requested

We intend any final action resulting from this proposal will be based on the best scientific and commercial data available and be as accurate and as effective as possible. Therefore, we request comments or information from other governmental agencies, tribes, the scientific community, industry, or other interested parties concerning this proposed rule. We particularly seek comments concerning:

(1) Reasons why we should or should not remove *Trichostema austromontanum* ssp. *compactum* from the List of Endangered and Threatened Plants (*i.e.*, "delist" the subspecies) under the Act;

(2) New biological or other relevant data concerning any threat (or lack thereof) to this subspecies (for example, those associated with climate change);

(3) New information on any efforts by the State or other entities to protect or otherwise conserve the subspecies;

(4) New information concerning the range, distribution, and population size or trends of

this subspecies;

(5) New information on the current or planned activities in the habitat or range that may adversely affect or benefit the subspecies; and

(6) Information pertaining to the requirements for post-delisting monitoring of *Trichostema austromontanum* ssp. *compactum*.

Please include sufficient information with your submission (such as scientific journal articles or other publications) to allow us to verify any scientific or commercial information you include. Please note that submissions merely stating support for or opposition to the action under consideration without providing supporting information, although noted, may not meet the standard of information required by section 4(b)(1)(A) of the Act (16 U.S.C. 1531 et seq.), which directs that determinations as to whether any species is an endangered or threatened species must be made "solely on the basis of the best scientific and commercial data available."

You may submit your comments and materials concerning this proposed rule by one of the methods listed in **ADDRESSES**. We request that you send comments only by the methods described in **ADDRESSES**. If you submit information via *http://www.regulations.gov*, your entire submission—including any personal identifying information—will be posted on the website. If your submission is made via a hardcopy that includes personal identifying information, you may request at the top of your document that we withhold this information from public review. However, we cannot guarantee that we will be able to do so. We will post all hardcopy submissions on *http://www.regulations.gov*.

Comments and materials we receive, as well as supporting documentation we used in

preparing this proposed rule, will be available for public inspection on *http://www.regulations.gov*, or by appointment, during normal business hours, at the U.S. Fish and Wildlife Service, Carlsbad Fish and Wildlife Office (see **FOR FURTHER INFORMATION CONTACT**).

Public Hearings

Section 4(b)(5) of the Act provides for one or more public hearings on this proposal, if requested. We must receive your request by the date specified above in **DATES**. Send your request to the address shown in **FOR FURTHER INFORMATION CONTACT**. We will schedule public hearings on this proposal, if any are requested, and announce the dates, times, and places of those hearings, as well as how to obtain reasonable accommodation, in the **Federal Register** and local newspapers at least 15 days before the hearing.

Previous Federal Actions

On September 14, 1998, we published a final rule (63 FR 49006) to list *Trichostema austromontanum* ssp. *compactum* as a threatened species. At that time, we determined that the designation of critical habitat was not prudent because it would likely increase the number of visitors to the geographic location of the single known occurrence and because it would undermine ongoing efforts by the California Department of Parks and Recreation (CDPR to protect this occurrence. As a consequence of a settlement agreement, we withdrew our previous not-prudent determination, and agreed to reevaluate the prudency of designating critical habitat. However, based on our review and evaluation of the best scientific and commercial information available, we determined that designation of critical habitat continued to be not prudent for *T. a.*

ssp. *compactum* (72 FR 54377; September 25, 2007).

Subspecies Information

It is our intent to discuss only those topics directly related to the delisting in this proposed rule. For more information on the description, biology, ecology, and habitat of *Trichostema austromontanum* ssp. *compactum,* please refer to the listing final rule published in the **Federal Register** on September 14, 1998 (63 FR 49006); the critical habitat prudency determination published in the **Federal Register** on September 25, 2007 (72 FR 54377); the most recent 5-year review for *T. a.* ssp. *compactum* completed on May 6, 2013 (Service 2013, entire); and the Conservation Strategy for *T. a.* ssp. *compactum,* completed in 2009 (Fraga and Kietzer 2009, pp. 1–29). These documents will be available as supporting materials at *http://www.regulations.gov* under Docket No. FWS–R8–ES–2016–0127.

Subspecies Description

Trichostema austromontanum ssp. *compactum,* a member of the Lamiaceae (mint family), was described by F. Harlan Lewis (1945) based on specimens collected in 1941, by M. L. Hilend at Hidden Lake in the San Jacinto Mountains of Riverside County, California. *Trichostema a.* ssp. *compactum* is a compact, soft-villous (with long, shaggy hairs), annual plant, approximately 4 inches (in) (10 centimeters (cm)) tall, with short internodes (stem segments between leaves), elliptic leaves, and blue flowers with a five-lobed corolla (Lewis 1945, pp. 280–281, 284–285; Lewis 1993, p. 732). Its fruit consists of four smooth, basally-joined nutlets. Many taxa of *Trichostema* have volatile secondary plant compounds that produce a strong odor and taste. The common name vinegar weed is attributed to many different species of

Trichostema.

Subspecies Biology

Trichostema austromontanum ssp. *compactum* is only found on the margins of Hidden Lake, a small montane vernal pool, in the San Jacinto Mountains, Riverside County, California. At an elevation of 8,700 feet (ft) (2,650 meters (m)), Hidden Lake is Riverside County's only high-elevation vernal pool (Bauder 1999, pp. 3–4), and is owned and managed by Mount San Jacinto State Park (Park). Hidden Lake is located within a California State Park Natural Preserve (The Hidden Lake Divide Natural Preserve) and is surrounded by the Mount San Jacinto State Wilderness Area (CDPR 2002, pp. 62–63). The single pool that supports the entire range of *T. a.* ssp. *compactum* encompasses an area of approximately 2 acres (ac) (1 hectare (ha)) and is about 4 ft (1.3 m) deep during the period of maximum inundation (November to April) (Bauder 1999, p. 13; CDPR 2002, pp. 62–63). The pool shrinks in size as the seasons progress, sometimes remaining wet in the center and other times drying out completely.

Additionally, a small population (36 individuals) of *Trichostema austromontanum* ssp. *compactum* was once observed less than 300 ft (100 m) outside of the Hidden Lake area of inundation (Fraga and Wall 2007, p. 10). This area is within the vernal pool's watershed, and is within the aforementioned Natural Preserve and State Wilderness.

Several studies have examined the breeding system, habitat parameters, and micro-distribution of *Trichostema austromontanum* ssp. *compactum* and its relatives (Lewis 1945, pp. 276–303; Lewis 1960, pp. 93–97; Spira 1980, pp. 278–284; Bauder 1999, pp. 1–41). Seeds of *T. a.* ssp. *compactum* typically germinate in early July, and plants complete their life cycle as the

temperature begins to drop to freezing (October to November) (Fraga and Wall 2007, pp. 2–5). Plants generally flower between July and September, but flowering has been documented as late as November (Bauder 1999, p. 1; Fraga and Wall 2007, pp. 4–5). Fruits and seeds begin to develop in early August and continue to develop until November (Fraga and Wall 2007, pp. 2–5). *Trichostema austromontanum* ssp. *compactum* has no documented pollinators and is self-compatible (flowers are able to be fertilized by pollen from of the same plant) (89.1 percent seed set with the exclusion of pollinators) (Spira 1980, p. 282). Spira (1980, p. 280) also found that insects visiting the other subspecies of *T. austromontanum* lacked pollen grains on their dorsal surface (which is needed for the transfer of pollen to stigma) and, therefore, were not acting as effective pollinators. This suggests that flowers of both subspecies of this species are not commonly pollinated by insects and are likely self-fertilized (Spira 1980, pp. 280–283).

Trichostema austromontanum ssp. *compactum* produces seeds that exhibit characteristics that relate to its adaptation to variable environmental conditions. In nature, plants occur around the margins of Hidden Lake in open soil that is exposed during the summer after the water recedes (Bauder 1999, p. 37). A germination study of *T. a.* ssp. *compactum* was conducted by Bauder (1999) using controlled light and temperature growing chambers. Results from the study indicated that daily temperature maxima must be in the range of 77 to 86 degrees Fahrenheit (^{o}F) (25 to 30 degrees Celsius (^{o}C)) for germination to occur (Bauder 1999, p. 37). This study also showed that seeds require a period of cold stratification and a cycle of wet and dry conditions to break their dormancy (Bauder 1999, pp. 28–30, 37). A large portion of the seeds produced by *T. a.* ssp. *compactum* did not germinate in this study and a subsequent germination study conducted

by staff at Rancho Santa Ana Botanic Garden (RSABG). The authors of both reports suggested that seeds that do not germinate remain in the soil as a seed bank over multiple seasons until specific environmental and physiological conditions are met (Bauder 1999, p. 37; RSABG 2009, p. 5; see also Baskin and Baskin 1989, pp. 54–66).

The soil seed bank provides a buffering mechanism for this taxon against the variability of its habitat conditions and periodic drought years. For example, there may be a year when Hidden Lake dries atypically fast or is subject to a seasonal inundation (*e.g.*, from a late-summer thunderstorm), which may lead to a catastrophic loss of a standing population prior to seed set. Thus, a soil seed bank offsets the loss of seeds in poor years. This strategy helps *Trichostema austromontanum* ssp. *compactum* to persist in a variable environment, similar to other species adapted to vernal pool habitat or desert environments (Philippi 1993, pp. 481–484; Simovich and Hathaway 1997, pp. 41–43). Due to the complex nature of this strategy to persist through varied conditions, we will recommend as part of the PDM plan to conduct research on seed viability, seed longevity, and reproductive potential of standing plants to better understand the long-term health of this subspecies and the likelihood that the small occurrence can persist.

Range, Distribution, Abundance, and Habitat

Surveys have shown that the population size of *Trichostema austromontanum* ssp. *compactum* differs greatly from year to year. This fluctuation may be due to the amount of precipitation, the extent of suitable habitat along the margins of the lake, or a combination of factors. The population has been documented to be as large as 243,000 individuals in 2012, to as few as 75 individuals in 2000 (Fraga and Wall 2010, p. 6; CNDDB 2011, p. 1; Fraga 2016, pers.

comm.). Despite the annual differences in population size, the population is considered stable because the variation in population size is primarily due to natural factors and because similar variations are seen over a multi-year period.

Trichostema austromontanum ssp. *compactum* seeds germinate around the margin of Hidden Lake as the ponded water evaporates (Bauder 1999, pp. 20–23). Though the highest density of plants has been observed in different portions of the vernal pool margin, observations of *T. a.* ssp. *compactum* were most abundant on the northern margin of the vernal pool (Fraga and Wall 2007, p. 4). This area likely receives more sunlight due to the lack of trees just to the south where the pool is located. A small subpopulation is located in a swale (a low area where runoff collects) approximately 300 ft (91 m) away to the northeast from the vernal pool between the Desert View Overlook and Hidden Lake.

Pre-listing Threats

From the 1920s to the 1980s, Hidden Lake was a popular destination in the Park for hikers and equestrians. In 1964, a tram was constructed that greatly increased the number of visitors to the Park. In the 1970s and 1980s, a movie was shown to tram-riders that included images of people swimming at Hidden Lake (Hamilton 1983, p. 96). The high number of visitors to Hidden Lake, combined with the lack of regulations on the use of Hidden Lake, threatened the rare and unique community of plants and animals found at this high montane vernal pool. There was special concern for the continued existence of *Trichostema austromontanum* ssp. *compactum* because Hidden Lake was the only location where this subspecies occurred. Researchers found that in cases of heavy trampling, the number of *T. a.* ssp. *compactum* plants

that survived to produce flower was greatly reduced (Hamilton 1991, p. 22). The Service and others were concerned that without the protections and implementation of proper management actions, *T. a.* ssp. *compactum* could become endangered and possibly extinct. *Trichostema austromontanum* ssp. *compactum* was subsequently listed as a threatened species due to vulnerabilities associated with trampling and due to its limited numbers (63 FR 49006).

Recovery Implementation

A formal recovery plan for *Trichostema austromontanum* ssp. *compactum* has not been prepared, and, therefore, specific delisting criteria have not been developed for the subspecies. However, the Service reviewed the status of the subspecies in the 2006 and 2013 5-year reviews (Service 2006; 2013). In those reviews, the Service identified remaining threats to the taxon and actions that could be taken to make progress in addressing those threats and ensuring long-term management. These included demonstrating that: (1) Management by CDPR has been effective; (2) stochastic threats are not significant; and (3) sufficient seed is banked for reintroduction after an adverse stochastic event (Service 2013, pp. 14–15). We identified in the 2009 Spotlight Species Action Plan (Service 2009, pp. 2–4, 6) specific actions that would ameliorate threats and ensure long-term management:

(1) Continue work with CDPR as partners to monitor visitor use at Hidden Lake;

(2) Monitor population and habitat of *Trichostema austromontanum* ssp. *compactum*;

(3) Complete collections for seed banking;

(4) Devise long-term protocol for seed banking and use of seeds in recovery; and

(5) Finalize the Conservation Strategy and a long-term management plan for the

subspecies, and a long-term agreement with CDPR that will include established monitoring and the implementation of an adaptive management plan.

Existing conservation efforts for each of these actions are discussed below.

(1) Continue work with CDPR as partners to monitor visitor use at Hidden Lake

Monitoring of visitor use at Hidden Lake was conducted by CDPR from 2007 to 2015 (Kietzer 2011a, pp. 4–5). Although unauthorized access to the area appears to have been minimized (Fraga and Wall 2010, p. 5; Kietzer 2011a, pp. 4–5), CDPR will continue to monitor visitor use as described in the draft PDM plan. This action has been fully implemented, and we expect implementation to continue as part of the PDM plan and Conservation Strategy.

(2) Monitor population and habitat of Trichostema austromontanum *ssp.* compactum

In coordination with the Service, CDPR and RSABG developed a monitoring protocol for *Trichostema austromontanum* ssp. *compactum* resulting from several years of investigation (2006 to 2009), which included mapping the area of occupancy of *T. a.* ssp. *compactum* around Hidden Lake and conducting census counts to estimate population size (Fraga and Wall 2010, pp. 4–6; Fraga and Kietzer 2012, p. X). Additionally, equipment for monitoring Hidden Lake's microclimate and its effects on the lake level was installed by CDPR in 2010 (Kietzer 2011a, pp. 2–3; Kietzer 2011b, p. 4). Over the past few years, CDPR and RSABG have worked together to develop and implement a more robust statistical sampling method. Initial results suggest that plant numbers were previously underestimated in annual surveys (Kietzer 2016, pers. comm.). Monitoring of this taxon and its habitat will continue as described in the draft PDM plan and Conservation Strategy.

(3) Complete collections for seed banking

Collection of *Trichostema austromontanum* ssp. *compactum* seeds and establishment of an *ex situ* (off-site) conservation seed bank at RSABG occurred over 3 years (2006, 2008, and 2009). For security purposes, back-up samples from each year's collections will be stored at the U.S. Department of Agriculture's National Center for Genetic Resource Preservation in Fort Collins, Colorado (Fraga and Wall 2010, p. 7). This provides insurance against the subspecies going extinct if the natural occurrence were extirpated due to an adverse stochastic event or other circumstances (such as disease or prolonged drought).

(4) Devise long-term protocol for seed banking and use of seeds in recovery

Trichostema austromontanum ssp. *compactum* seeds collected at Hidden Lake are being stored at RSABG. Germination trials will be conducted at regular intervals to determine a long-term protocol for seed banking and use of seeds in recovery. This project is ongoing and is discussed in further detail in the draft PDM plan.

(5) Finalize the Conservation Strategy and a long-term management plan for the subspecies, and a long-term agreement with CDPR that will include established monitoring and the implementation of an adaptive management plan

A Conservation Strategy was developed that outlined additional conservation actions for this taxon (Fraga and Kietzer 2009, pp. 1–29), which was used as the foundation for the draft PDM plan. Methods for long-term monitoring of this taxon are discussed further in the draft PDM plan (see **ADDRESSES** for information on viewing the draft PDM plan).

Summary of Factors Affecting *Trichostema austromontanum* ssp. *compactum*

Section 4 of the Act and its implementing regulations (50 CFR part 424) set forth the procedures for listing species on, reclassifying species on, or removing species from the Lists of Endangered and Threatened Wildlife and Plants. "Species" is defined by the Act as including any species or subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature (16 U.S.C. 1532(16)). A species may be determined to be an endangered species or threatened species because of any one or a combination of the five factors described in section 4(a)(1) of the Act: (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. A species may be reclassified on the same basis.

A recovered species is one that no longer meets the Act's definition of endangered species or threatened species. Determining whether a species is recovered requires consideration of whether the species is still an endangered species or threatened species because of any of the five categories of threats specified in section 4(a)(1) of the Act. For species that are already listed as endangered or threatened species, this analysis of threats is an evaluation of both the threats currently facing the species and those that are reasonably likely to affect the species in the foreseeable future following the delisting or downlisting (*i.e.*, reclassifying a species from an endangered species to a threatened species) and the removal or reduction of the Act's protections.

A species is an "endangered species" for purposes of the Act if it is in danger of

extinction throughout all or a significant portion of its range and is a "threatened species" if it is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. The Act does not define the term "foreseeable future." For this proposed delisting rule, our forecast of future impacts is based on a review of the period of available data for each stressor and, when possible, a projection of the situation at least for a similar time period into the future. For example:

- The effect of trampling on *Trichostema austromontanum* ssp. *compactum* can be addressed through management of hikers and equestrians, which CDPR does through implementing regulatory mechanisms. CDPR started addressing the impacts about the time the subspecies was listed, in particular with the Mount San Jacinto State Park general plan update in 2002. This plan serves as a "long-range management tool" by providing "conceptual parameters for future management actions" (CDPR 2002, p. 3). To assess the timeframe of this regulatory mechanism, we note that it does not include an "expiration date" or equivalent. Further, we note that in 2010, CDPR changed its approach to the duration of a given Park's general plan, stating in its Planning Handbook (CDPR 2010, p. 17) that CDPR previously considered general plans to have a 15- to 20-year planning horizon or lifespan. Under the current planning structure of broad, goal-oriented general plans and subordinate, more focused management plans, general plans are no longer thought of as having expiration dates or a finite life span when they would be considered invalid. General plans are reconsidered for amendments or revisions when circumstances and needs dictate, such as additional land acquisitions and/or substantial development considerations that were not addressed in the general plan or evaluated during the

general plan process.

Thus, for trampling, we have about a 15-year record of management actions to benefit *Trichostema austromontanum* ssp. *compactum* that are linked to the general plan's implementation, and because the general plan is a long-term document (more than 15 to 20 years), we expect that management will continue into the future for at least 20 years. At the future point when the general plan is updated, the public—including the Service—will have the opportunity to review and comment on the new general plan under the State's California Environmental Quality Act (CEQA) process (independent of the subspecies' listing status).

- The timeline for the effects of small populations is inherently difficult to assess, and the effects are inherently difficult to address. This is especially true for a population that is naturally small, which is the case for *Trichostema austromontanum* ssp. *compactum*. Population trend data can help with that assessment. As detailed in the draft PDM plan, we have at least rough estimates of population size going back to 1979, though with a gap between 1993 and 2006, when more formalized monitoring began. Thus, we have a general idea about the population's size over a span of about 40 years.

- Although information exists regarding potential impacts from climate change beyond a 50-year timeframe, the projections depend on an increasing number of assumptions, and thus become more uncertain with increasingly large timeframes. Therefore, a timeframe of 50 years is used to provide the best balance of scope of impacts considered, versus certainty of those impacts.

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

No threats to the habitat of *Trichostema austromontanum* ssp. *compactum* were identified in the final listing rule (63 FR 49006). Present or threatened destruction, modification, or curtailment of *T. a.* ssp. *compactum*'s habitat or range is not now a threat, nor do we expect it to be in the future. The land where *T. a.* ssp. *compactum* occurs is owned and managed by the Mount San Jacinto State Park and is located within a California State Park Natural Preserve, which is surrounded by the San Jacinto State Wilderness Area (CDPR 2002, pp. 62–63). Because the only known occurrence of this subspecies is on State-owned land designated as State Wilderness inside a State Park, and the Hidden Lake area has been designated as the Hidden Lake Divide Natural Preserve, the subspecies and its habitat are protected from any development or other modification of habitat. Some habitat disturbance from recreational activities has occurred in the past. As discussed below, surveys have been conducted at Hidden Lake in recent years and observers found that habitat disturbances have been minimized (Fraga and Wall 2010, p. 5). We anticipate that these conditions will remain essentially the same in the future because of the CDPR's implementation of the Park's general plan.

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

In the 1998 final listing rule, no threats to *Trichostema austromontanum* ssp. *compactum* were attributed to Factor B (63 FR 49006). Since listing, we are only aware of the collections of seed and plant material by Service-authorized permittees for the purpose of creating a conservation seed bank for this taxon at RSABG (USFWS permit #TE00918-3). These permitted collections were conducted by trained individuals, following Service guidelines to minimize effect on the population of *T. a.* ssp. *compactum*. If the subspecies is delisted, no Service permit

would be required. However, the Park would continue to manage access and special use permits as required by the Park, and any future collection would be consistent with conservation management for the subspecies, such as for continued monitoring or research. In conclusion, we find that there are no threats now nor are there likely to be any threats in the future to *T. a.* ssp. *compactum*, throughout its range, related to overutilization for commercial, recreational, scientific, or educational purposes.

C. Disease or Predation

No threats to *Trichostema austromontanum* ssp. *compactum* were attributed to Factor C in the 1998 listing rule (63 FR 49006). We have no data to suggest that herbivory or disease are affecting *T. a.* ssp. *compactum*, nor do we have data that suggest impacts will become a threat in the future. Therefore, we find that there are no threats now nor are there likely to be any threats in the future to *T. a.* ssp. *compactum*, throughout its range, related to disease or predation.

D. The Inadequacy of Existing Regulatory Mechanisms

In our discussion under Factors A, B, C, and E, we evaluate the significance of threats as mitigated by any conservation efforts and existing regulatory mechanisms. Where threats exist, we analyze the extent to which conservation measures and existing regulatory mechanisms address the specific threats to the species. Regulatory mechanisms, if they exist, may reduce or eliminate the impacts from one or more identified threats.

Although inadequacy of existing regulatory mechanisms was not specifically identified as a threat to *Trichostema austromontanum* ssp. *compactum* at the time of listing, we did discuss the very limited number of protections that existed for the subspecies (63 FR 49006).

Specifically, we discussed conservation provisions under section 404 of the Federal Clean Water Act (CWA; 33 U.S.C. 1251 et seq.) and land management of CDPR at the Park.

Section 404 of the Federal Clean Water Act (CWA)

Under section 404 of the Federal CWA, the U.S. Army Corps of Engineers (Corps) regulates the discharge of fill material into waters of the United States, which include navigable and isolated waters, headwaters, and adjacent wetlands (33 U.S.C. 1344). Any action with the potential to impact waters of the United States must be reviewed under the Federal CWA, National Environmental Policy Act (42 U.S.C. 4321 et seq.), and (when listed species may also be impacted) the Act. However, because the only known occurrence of this subspecies was on State-owned land designated as a State Wilderness inside a State Park, we believed at the time the subspecies was listed that it was unlikely that fill materials will be discharged and thus protections associated with section 404 of the Federal CWA would not be relevant. Now, Hidden Lake is within an area designated by the State as Natural Preserve, which itself is within State Wilderness. As such, we continue to believe that it is unlikely that an action will occur that would trigger section 404 of the Federal CWA.

California Department of Parks and Recreation (CDPR)

As discussed above, the entire known distribution of *Trichostema austromontanum* ssp. *compactum* occurs at a single vernal pool known as Hidden Lake, owned by the State of California and managed by CDPR. Under existing regulatory mechanisms enacted by the State of California, CDPR manages specifically for the conservation of the subspecies. While discussion of CDPR's management of many aspects of the conservation needs of the subspecies

might also be appropriately discussed under other factors (e.g., eliminating trails to maintain natural drainage could also be discussed under factor A; efforts to reduce and manage impacts from recreational activities could also be discussed under factor E), it is included here for ease of discussion since CDPR's authority to provide for the continued conservation of the species flows from regulatory protections provided by state regulations, designations, and the park's general plan. Such management was being implemented before listing and is being implemented today. Prior to listing, the protections included actions to reduce impacts from visitors by removing references to Hidden Lake from trail maps and signs. Since listing, the CDPR installed barriers in 2000, to exclude equestrian use of the area surrounding Hidden Lake (Guaracha, CDPR, 2006, pers. comm.), thereby reducing the threat of trampling to the subspecies (see Factor E discussion, below).

As a part of the 2002 general plan for Mount San Jacinto State Park, CDPR designated Hidden Lake and its associated watershed area as the Hidden Divide Natural Preserve (Preserve) (CDPR 2002, pp. 62–63). As a Preserve, the 255-acre (103-ha) area is afforded regulatory protection under California Public Resources Code section 5019.71, which states, "[t]he purpose of natural preserves shall be to preserve such features as rare or endangered plant and animal species and their supporting ecosystems." This allows CDPR to manage Hidden Lake specifically for the conservation of *Trichostema austromontanum* ssp. *compactum* and other sensitive resources found in the area, as opposed to pre-designation when recreational use was part of management considerations. We summarize below the management actions CDPR has

taken for the conservation of the subspecies associated with management under the natural preserve designation.

With funding from the Service's Showing Success Grant Program (a Service initiative, discontinued in 2012, that provided funding for final actions needed to bring a species to the point it could be downlisted or delisted), CDPR conducted a survey of the Preserve boundary and erected signs along the official trail informing visitors that off-trail hiking is prohibited in the Preserve. Additionally, these funds were used to install an automated weather station, conduct monitoring of unauthorized visitors, and establish monitoring protocols for *Trichostema austromontanum* ssp. *compactum* in coordination with RSABG and the Service, which will allow for future management of the area and visitors' activity based on the regulatory mechanisms now available.

Additionally, CDPR has recently constructed the Hidden Divide Trail to minimize impacts to *Trichostema austromontanum* ssp. *compactum* from now-unauthorized access, while facilitating future authorized but restricted visits to the Preserve. This process involved eliminating an existing unauthorized trail and moving it approximately 20 to 40 ft (6 to 12 m) upslope and away from the margin of Hidden Lake where the largest portion of *T. a.* ssp. *compactum* occurs. The trail bed is incorporated into the existing slope where it should be easier, compared to the unauthorized trial, to maintain natural drainage patterns in the Hidden Lake's watershed. Inspections of the completed trail will take place by trained CDPR staff during peak seasons, and maintenance will occur as needed to prevent alteration of natural hydrology. The new Hidden Divide Trail will not directly connect to other Park trails and will remain off maps

and unadvertised by Park staff. Once completed, CDPR will allow access to the trail through a limited permit system or guided tour only for those visitors who inquire about the site. Horses will not be allowed. The trail will provide some viewing areas with interpretive signs to educate visitors about the unique ecosystem supporting *Trichostema austromontanum* ssp. *compactum*. Fencing has been erected along the trail to restrict physical access to Hidden Lake; signs will also help minimize off-trail use.

Based on the regulatory mechanisms now available, CDPR will increase visitor monitoring and begin a zero-tolerance program, issuing citations to off-trail visitors within the Preserve (Fraga and Kietzer 2009, pp. 16–17). Finally, adaptive management techniques will be applied. For example, CDPR will monitor *Trichostema austromontanum* ssp. *compactum* populations and visitor use of the Hidden Lake area; the combined information will allow CDPR to control visitation, minimizing impact to the subspecies and its habitat (Fraga and Kietzer 2009, p. 22).

Additionally, Hidden Lake and the Hidden Divide Natural Preserve are within an area designated as State Wilderness. California Public Resources Code section 5019.68 recognizes such areas, "as areas where the earth and its community of life are untrammeled by man and where man himself is a visitor who does not remain." California Public Resources Code sections 5093.30–5093.40, the California Wilderness Act, also states that wilderness areas, including Mount San Jacinto State Wilderness, "shall be administered for the use and enjoyment of the people in such manner as will leave them unimpaired for future use and enjoyment as wilderness, provide for the protection of such areas, [and] preserve their wilderness character." As the

Conservation Strategy for the subspecies notes, “Being within a Natural Preserve and a State Wilderness Area provides [*Trichostema austromontanum*] ssp. *compactum* the highest level of protection for natural resources that the State Park System has to offer” (Fraga and Kietzer 2009, p. 19). Thus, these regulatory mechanisms will help minimize likelihood of future threats to *T. a.* ssp. *compactum* and its habitat at Hidden Lake.

These protections enacted by the CDPR associated with the Preserve are expected to remain should this subspecies be delisted, and we believe these protections are adequate to reduce or eliminate existing or potential future threats to *Trichostema austromontanum* ssp. *compactum* now and in the future.

Summary of Factor D

We believe that, in absence of the protections afforded by the Act, the other existing regulatory mechanisms will continue to provide adequate protections to ensure that threats to *Trichostema austromontanum* ssp. *compactum* are controlled through management and monitoring programs established by CDPR. Listing under the Act provided support for the Service and CDPR to establish management and monitoring programs to provide for the conservation of *T. a.* ssp. *compactum*. If this subspecies is removed from the Federal List of Endangered and Threatened Plants, the primary protections for *T. a.* ssp. *compactum* will be provided by CDPR through conservation actions to benefit the subspecies in the Preserve. These protections are applied in connection with the Park’s existing general plan, and we expect that they will remain unchanged at least until a new plan is adopted, which would not occur until circumstances or needs dictate and, moreover, would not occur without the opportunity of review

and comment by the Service and public. This, in turn, would likely mean that any changes to the protections provided by the new general plan would not result in substantial impacts to *T. a.* ssp. *compactum*. In conclusion, we find that the currently existing regulatory mechanisms described above are adequate, and they will remain adequate to protect *T. a.* ssp. *compactum* and its habitat across its range now and in the future.

E. Other Natural or Manmade Factors Affecting its Continued Existence

In the 1998 final listing rule, we stated that *Trichostema austromontanum* ssp. *compactum* was particularly vulnerable to trampling by recreational visitors and that the subspecies' low numbers and extremely localized range further made it more susceptible to disturbance, which included trampling during the flowering season (63 FR 49006, pp. 49016–49017). In our 2013 5-year review (Service 2013, pp. 13–14), we also identified effects associated with global climate change as potential threats, which were not considered at the time of listing. Trampling, low numbers of individuals, and climate change are discussed below.

Trampling

At the time of listing, the trampling threat to *Trichostema austromontanum* ssp. *compactum* was due to its extremely narrow endemic habitat and easy accessibility to Hidden Lake from the trail, just over a mile from the tramway (63 FR 49006). This site became increasingly popular with the development of the Palm Springs Aerial Tramway in 1964, and the Desert Divide Trail in 1979. Measures such as removing references to Hidden Lake from State Park interpretive materials and eliminating existing trails helped to ameliorate impacts from visitors, but did not prevent all trampling impacts. The 1998 listing rule (63 FR 49006) indicated

the subspecies continued to experience ongoing impacts from trampling by hikers and horses at that time.

Since listing, CDPR, in cooperation with RSABG staff, finalized the Conservation Strategy for *Trichostema austromontanum* ssp. *compactum* (Hidden Lake bluecurls; Lamiaceae) (Fraga and Kietzer 2009, entire), and CDPR has completed several actions to minimize the threat of trampling to the subspecies (Fraga and Kietzer 2009, pp. 25–26). CDPR reduced the likelihood of visitation to the area (by both humans and horses) by removing references to Hidden Lake from trails, maps, and signs in the Park, and physically obscuring trails to the lake (72 FR 54377; see also Fraga and Kietzer 2009, p. 16). Additionally, CDPR installed a wooden barrier fence at historical access points to exclude equestrian use (Fraga and Kietzer 2009, p. 16). CDPR also designated Hidden Lake and its associated watershed area as a Natural Preserve as part of their 2002 general plan revision (CDPR 2002, pp. 62–63), as discussed under Factor D, above. Although a low number of hikers currently access the Hidden Lake area despite efforts to exclude visitors from the area, impacts from trampling appear to have been minimized (Fraga and Wall 2010, p. 5; Kietzer 2011a, pp. 4–5). Furthermore, there is no evidence that horses have had access to the area around Hidden Lake since the exclusionary fences were installed in 2000 (Fraga and Kietzer 2009, p. 13; Fraga and Wall 2010, p. 5).

We expect that most of these measures to benefit *Trichostema austromontanum* ssp. *compactum* will remain in place for at least the next few decades while the 2002 general plan is active. Further, we expect future general plans to continue to prevent impacts to *T. a.* ssp. *compactum* because, compared to the time of listing, CDPR is more aware of how certain

recreational uses of Hidden Lake are incompatible with the conservation of the subspecies and have taken measures to minimize future impacts. This is illustrated by CDPR's formal designation of the Preserve. Thus, trampling of *T. a.* ssp. *compactum* by hikers and horses has largely been eliminated, and there is little likelihood that trampling will be a threat to the subspecies in the future.

Low Numbers of Individuals

In the final listing rule (63 FR 49006), we described the vulnerabilities associated with low numbers, stating that the limited numbers and extremely localized range of *Trichostema austromontanum* ssp. *compactum* make this taxon more susceptible to single disturbance events such as trampling during the flowering season or alteration of the local water table from soil compression. However, the 1998 final rule did not provide details explaining why we concluded that the subspecies was more susceptible to disturbance. We provide additional explanation in our 2013 5-year review (Service 2013, p. 12), in which we note that conservation biology literature (such as Shaffer 1981, pp. 131–134; 1987, pp. 69–86; Primack 1998, pp. 301–308; Leppig and White 2006, pp. 264–274) commonly notes the increased vulnerability of taxa known from only one or very few locations and when only small populations exist. We then explained that the threat associated with low numbers of individuals was based on the idea that in years when there were fewer than 100 individual plants, very little seed was produced, resulting in a species that may not persist on its own.

Based on new information since the time of listing, we now know that it is likely that *Trichostema austromontanum* ssp. *compactum* is able to survive years with poor conditions and

very few flowering plants because of the existing, naturally occurring, on-site seed bank in the soil (Bauder 1999, p. 37). The majority of seeds of *T. a.* ssp. *compactum* produced each year are likely deposited in the soils of the basin of Hidden Lake because there are no known means of seed dispersal. We have also found through germination experiments that only a small percentage of seeds germinate, even when conditions are appropriate (Bauder 1999, p. 28; Fraga and Wall 2009, p. 5). This suggests that some proportion *T. a.* ssp. *compactum* seeds likely remain dormant in the soil and survive through years lacking adequate environmental conditions for plants to reach maturity and reproduce. In the draft PDM plan, we recommend monitoring reproductive success of the taxon, because it may be cause for concern if the reproductive potential decreases. Data collected since 1980 on this taxon show that the standing population size fluctuates from fewer than 100 to greater than 10,000 plants, but the presence of a persistent soil seed bank has allowed the subspecies to persist. The differences in standing population size of *T. a.* ssp. *compactum*, especially absent evidence of trampling, may still be best characterized as natural variation or fluctuation tied to the annual water level of Hidden Lake (Bauder and McMillan 1998, pp. 63–66; Bauder 1999, pp. 13–17). In this manner, we believe that the low numbers of individuals in some years is a temporary phenomenon and does not pose a long-term threat to this plant. Nevertheless, an *ex situ* seed bank (an off-site, artificial collection of seeds held in special climate-controlled conditions for long-term storage) has been established and is discussed further in the draft PDM plan.

As noted in the 2013 5-year review (Service 2013, pp. 12–13), species known from only one or a few populations, or that exist in populations with low numbers of individuals, are more

vulnerable to stochastic (random) events. For example, a fire, flood, or drought is likely to be more devastating to a small, localized population than to a large, widespread population. The effects of small populations experiencing increased vulnerability to stochastic events have not been documented for *Trichostema austromontanum* ssp. *compactum* in the past, nor were specific concerns discussed in detail in the final listing rule (63 FR 49006). While it is possible that stochastic events could impact this subspecies in the future, we have no evidence that any potential catastrophic events have a reasonable likelihood of occurring. In addition, we do not believe that this potential threat alone is significant enough to cause long-term population declines because the natural persistent seed bank in the soil would likely survive such events. However, collection of *Trichostema austromontanum* ssp. *compactum* seeds and establishment of an *ex situ* (off-site) conservation seed bank at RSABG occurred over 3 years (2006, 2008, and 2009). This provides insurance against the subspecies going extinct if the natural occurrence were extirpated due to an adverse stochastic event or other circumstances (such as disease or prolonged drought).

Climate Change

Here, we consider observed or likely environmental changes resulting from ongoing and projected changes in climate. The 1998 listing rule did not discuss the potential impacts of climate change on *Trichostema austromontanum* ssp. *compactum* or its habitat (63 FR 49006). As defined by the Intergovernmental Panel on Climate Change (IPCC), the term "climate" refers to the mean and variability of different types of weather conditions over time, with 30 years being a typical period for such measurements, although shorter or longer periods also may be

used (IPCC 2013a, p. 1,450). The term "climate change" thus refers to a change in the mean or the variability of relevant properties, which persists for an extended period, typically decades or longer, due to natural conditions (*e.g.*, solar cycles) or human-caused changes in the composition of atmosphere or in land use (IPCC 2013a, p. 1,450).

Scientific measurements spanning several decades demonstrate that changes in climate are occurring. In particular, warming of the climate system is unequivocal, and many of the observed changes in the last 60 years are unprecedented over decades to millennia (IPCC 2013b, p. 4). The current rate of climate change may be as fast as any extended warming period over the past 65 million years and is projected to accelerate in the next 30 to 80 years (National Research Council 2013, p. 5). Thus, rapid climate change is adding to other sources of extinction pressures, such as land use and invasive species, which will likely place extinction rates in this era among just a handful of the severe biodiversity crises observed in Earth's geological record (AAAS 2014, p. 17).

Examples of various other observed and projected changes in climate and associated effects and risks, and the bases for them, are provided for global and regional scales in recent reports issued by the IPCC (2013c, 2014), and similar types of information for the United States and regions within it can be found in the National Climate Assessment (Melillo *et al.* 2014, entire).

Results of scientific analyses presented by the IPCC show that most of the observed increase in global average temperature since the mid-20th century cannot be explained by natural variability in climate and is "extremely likely" (defined by the IPCC as 95 to 100 percent

likelihood) due to the observed increase in greenhouse gas (GHG) concentrations in the atmosphere as a result of human activities, particularly carbon dioxide emissions from fossil fuel use (IPCC 2013b, p. 17 and related citations).

Scientists use a variety of climate models, which include consideration of natural processes and variability, as well as various scenarios of potential levels and timing of GHG emissions, to evaluate the causes of changes already observed and to project future changes in temperature and other climate conditions. Model results yield very similar projections of average global warming until about 2030, and thereafter the magnitude and rate of warming vary through the end of the century depending on the assumptions about population levels, emissions of GHGs, and other factors that influence climate change. Thus, absent extremely rapid stabilization of GHGs at a global level, there is strong scientific support for projections that warming will continue through the 21st century, and that the magnitude and rate of change will be influenced substantially by human actions regarding GHG emissions (IPCC 2013b, 2014; entire).

Global climate projections are informative, and in some cases, the only or the best scientific information available for us to use. However, projected changes in climate and related impacts can vary substantially across and within different regions of the world (*e.g.*, IPCC 2013c, 2014; entire) and within the United States (Melillo *et al.* 2014, entire). Therefore, we use "downscaled" projections when they are available and have been developed through appropriate scientific procedures, because such projections provide higher resolution information that is more relevant to spatial scales used for analyses of a given species (see Glick *et al.* 2011, pp. 58–

61, for a discussion of downscaling).

Various changes in climate may have direct or indirect effects on species. These may be positive, neutral, or negative, and they may change over time, depending on the species and other relevant considerations, such as interactions of climate with other variables like habitat fragmentation (for examples, see Franco *et al.* 2006; Forister *et al.* 2010; Galbraith *et al.* 2010; Chen *et al.* 2011; Bertelsmeier *et al.* 2013, entire). In addition to considering individual species, scientists are evaluating potential climate change-related impacts to, and responses of, ecological systems, habitat conditions, and groups of species (*e.g.*, Deutsch *et al.* 2008; Berg *et al.* 2010; Euskirchen *et al.* 2009; McKechnie and Wolf 2010; Sinervo *et al.* 2010; Beaumont *et al.* 2011; McKelvey *et al.* 2011; Rogers and Schindler 2011; Bellard *et al.* 2012).

Regional temperature observations are often used as an indicator of how climate is changing. The Western Regional Climate Center (WRCC) has defined 11 climate regions for evaluating various climate trends in California (Abatzoglou *et al.* 2009, p. 1535). The relevant WRCC climate region for the distribution of *Trichostema austromontanum* ssp. *compactum* within the San Jacinto Mountains is the Southern Interior Region.

Two indicators of temperature, the increase in mean temperature and the increase in maximum temperature, are important for evaluating trends in climate change in California. For the Southern Interior climate region, linear trends (evaluated over a 100-year time period) indicate an increase in mean temperatures (January through December) of approximately 1.71 °F (± 0.47 °F per 100 years) (0.95 ± 0.26 °C per 100 years) since 1895, and 3.11 °F (± 1.16 °F per 100 years) (1.73 ± 0.64 °C per 100 years) since 1949 (WRCC 2016). Similarly, the maximum

temperature 100-year trend for the Southern Interior Region shows an increase of about 1.48 °F (± 0.57 °F per 100 years) (0.82 ± 0.32 °C per 100 years) since 1895, and 2.54 °F (± 1.38 °F per 100 years) (1.41 ± 0.77 °C per 100 years) since 1949 (WRCC 2016). It is logical to assume the rate of temperature increase for this region is higher for the second time period (*i.e.*, since 1949) than for the first time period (*i.e.*, since 1895) due to the increased use of fossil fuels in the 20th century.

Climate models provide climate projections into the future, which help inform our evaluations of potential future impacts, but these projections become more uncertain with increasingly large timeframes. Pierce *et al.* (2013, entire) presented both Statewide and regional probabilistic estimates of temperature and precipitation changes for California (by the 2060s) using downscaled data from 16 global circulation models and 3 nested regional climate models. The study looked at a historical (1985–1994) and a future (2060–2069) time period using the IPCC Special Report on Emission Scenarios A2 (Pierce *et al.* 2013, p. 841), which is an IPCC-defined scenario used for the IPCC's Third and Fourth Assessment reports, and is based on a global population growth scenario and economic conditions that result in a relatively high level of atmospheric GHGs by 2100 (IPCC 2000, pp. 4–5; see Stocker *et al.* 2013, pp. 60–68, and Walsh *et al.* 2014, pp. 25–28, for discussions and comparisons of the prior and current IPCC approaches and outcomes). Importantly, the projections by Pierce *et al.* (2013, pp. 852–853) include daily distributions and natural internal climate variability.

Simulations using these downscaling methods project an increase in yearly temperature for the Southern California Mountains region ranging from 3.78 °F to 5.22 °F (2.1 °C to 2.9 °C)

by the 2060s time period, compared to 1985–1994 (Pierce *et al.* 2013, p. 844). Averaging across all models and downscaling techniques, the simulations project a yearly averaged warming of 4.32 °F (2.4 °C) by the 2060s (Pierce *et al.* 2013, p. 842).

While we do not have information to suggest warmer temperatures will directly impact *Trichostema austromontanum* ssp. *compactum*, there can be indirect effects. For example, Williams *et al.* (2015, p. 6826) found, "anthropogenic warming has intensified the recent drought [in California] as part of a chronic drying trend that is becoming increasingly detectable," but they also noted that it was, "small relative to the range of natural climate variability." Shukla *et al.* (2015, p. 4392) also found that temperature was an important factor in exacerbating drought conditions in California in 2014, although they noted that the low level of precipitation was the primary driver. Thus, the anticipated increasing temperatures (driven by global climate change) are likely to contribute to increased severity of droughts when they occur. However, because the natural climate of California is so variable, it is not clear whether increased drought severity will have substantial impact on *T. a.* ssp. *compactum*, which can take advantage of wetter years, when they occur, to replenish its natural seed bank.

Higher temperatures can also be expected to result in increased evaporation, which suggests that Hidden Lake will likely dry more quickly over a season. However, the effects of increased evaporation to habitat occupied by *Trichostema austromontanum* ssp. *compactum* or to the plant's life history are uncertain. For example, faster evaporation of Hidden Lake might provide an increased growing season (more time at the beginning) because more habitat may be available earlier in the season (the plant primarily grows in the dry portions of the lakebed), or it

could result in a shorter growing season (less time at the end) because the area dries out too much and the plants may desiccate before producing seed, or the two processes could happen together and produce a shift in the growing season (same overall amount of growth time, just starting earlier in the year). Observed increases in temperature over the past 100 years do not appear to have currently adversely affected the subspecies. Based on the best available regional data, current and future trends do not lead us to conclude that change in ambient temperature is currently a threat to *T. a.* ssp. *compactum* or likely to become one in the future.

Precipitation patterns can also be used as an indicator of how climate is changing. We obtained yearly precipitation data for the Idyllwild region of the San Jacinto Mountains from the National Oceanic and Atmospheric Administration's National Centers for Environmental Information (*http://www.ncdc.noaa.gov/*). We then conducted a nonparametric correlation test, the Mann-Kendall statistical test (Hipel and McLeod 1994, pp. 63–64, 856–858), which is commonly used for analyzing climatic time series (*e.g.*, Ahmad *et al.* 2015, entire), to evaluate trends in precipitation over time. This analysis was conducted using the R and R Studio software programs (R Development Core Team 2014) with the "Kendall" package, version 2.2 (McLeod 2011). We found no significant trend in precipitation over time (increasing or decreasing) from 1944–2015 (Grizzle 2016, pers. comm.). There is no information currently available that would lead us to conclude that potential changes in the amount of precipitation are a threat now or likely to be in the future. However, changes in the timing and type (rain or snow) of precipitation could alter the unique environment of Hidden Lake and potentially impact habitat where this taxon occurs in the future. To address this concern, we have included monitoring in the draft

PDM plan (see **Post-Delisting Monitoring**, below) to provide baseline data on climatic conditions as well as the duration and depth of ponding that occurs at Hidden Lake. Additionally, the maintenance of the *ex situ* seed bank provides some flexibility to respond to stochastic events including those associated with a changing climate.

Summary of Factor E

Management actions implemented at Hidden Lake by CDPR in recent years have reduced the threat of trampling to a minimal level. At the time of listing, we were concerned that low numbers of individuals in some years threatened the existence of *Trichostema austromontanum* ssp. *compactum*. Since listing, we collected data suggesting this subspecies has a soil seed bank and germination mechanisms that have allowed the taxon to persist over time, even in years when very few plants flower and set seed. Low numbers of individuals in certain years followed by years with high numbers of individuals suggests this is a natural phenomenon for this taxon. We do not consider stochastic events to be a substantial threat to *T. a.* ssp. *compactum* or its habitat at this time because the subspecies' soil seed bank will likely persist, allowing future growth. Climate change was also identified as a potential threat since listing, but we do not consider it to be a substantial threat at this time, and ongoing management and monitoring is designed to detect future changes. In conclusion, we find that other natural or manmade factors do not represent a substantial threat to *T. a.* ssp. *compactum* now or in the future.

Finding

No threats attributable to Factors A, B, or C were identified at the time *Trichostema austromontanum* ssp. *compactum* was listed in 1998. Threats identified at the time of listing

included impacts associated with human and horse trampling (Factor E), the limited numbers and an extremely localized range of *T. a.* ssp. *compactum* (Factor E), and the limited protections afforded by the CDPR to reduce or eliminate those threats (Factor D). Since listing, conditions associated with climate change (Factor E) have been identified as a potential rangewide threat to the subspecies.

We now have sufficient data to show that management enacted by CDPR to benefit *Trichostema austromontanum* ssp. *compactum* and its habitat at Hidden Lake has been effective and will continue to be in the foreseeable future. CDPR, as the operative land manager, has demonstrated a long-term commitment to provide for the conservation of *Trichostema austromontanum* ssp. *compactum*. Their staff, in cooperation with RSABG staff, finalized the Conservation Strategy for *Trichostema austromontanum* ssp. *compactum* (Hidden Lake bluecurls; Lamiaceae) (Fraga and Kietzer 2009, entire), which outlined immediate conservation actions, goals, and conservation measures for the recovery and long-term management of the subspecies. In subsequent years, both entities have continued to monitor the area and have developed an improved survey methodology for *T. a.* ssp. *compactum*. Because *T. a.* ssp. *compactum* is entirely within Mount San Jacinto State Park, is within the Mount San Jacinto State Wilderness Area, and is within the recently established Preserve, CDPR is able to manage Hidden Lake specifically for the conservation of *T. a.* ssp. *compactum* and its habitat, along with other sensitive resources found in the area.

Trampling by humans has been minimized, and no visible impacts to *Trichostema austromontanum* ssp. *compactum* have been observed from trampling by horses since 2000

because of CDPR's management. Therefore, we no longer consider *T. a.* ssp. *compactum* to be threatened by trampling. The low numbers of standing plants in some years appears to be a natural phenomenon for this subspecies with a soil seed bank and, therefore, is not considered a threat at this time. The *ex situ* seed banking program at RSABG also provides insurance for this subspecies by assuring propagation potential should future stochastic events or climate change adversely impact the endemic population. Actions taken by CDPR and RSABG have reduced the threats associated with trampling, small population size, and stochastic events to a manageable level.

Since listing, we have become aware of the potential for anthropogenic climate change to affect all biota, including *Trichostema austromontanum* ssp. *compactum*. While available information indicates that temperatures are increasing, there is no clear signal as to the potential impacts to *T. a.* ssp. *compactum* at this time. Additionally, the lack of a significant declining trend in the amount of precipitation suggests that there is no immediate cause for concern, but potential impacts to *T. a.* ssp. *compactum* from changes in the timing and type of precipitation should be monitored in the future.

Having considered the individual and cumulative impact of threats on this subspecies, we find that *Trichostema austromontanum* ssp. *compactum* is not in danger of extinction throughout all of its range, nor is it likely to become so in the foreseeable future.

Significant Portion of the Range Analysis

Having determined that *Trichostema austromontanum* ssp. *compactum* is not in danger of extinction, or likely to become so, throughout all of its range, we next consider whether there are

any significant portions of its range in which *T. a.* ssp. *compactum* is in danger of extinction or likely to become so. Under the Act and our implementing regulations, a species may warrant listing if it is an endangered species or a threatened species. The Act defines "endangered species" as any species which is "in danger of extinction throughout all or a significant portion of its range," and "threatened species" as any species which is "likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." The term "species" includes "any subspecies of fish or wildlife or plants, and any distinct population segment [DPS] of any species of vertebrate fish or wildlife which interbreeds when mature." On July 1, 2014, we published a final policy interpreting the phrase "significant portion of its range" (SPR) (79 FR 37578). The final policy states that (1) if a species is found to be endangered or threatened throughout a significant portion of its range, the entire species is listed as an endangered species or a threatened species, respectively, and the Act's protections apply to all individuals of the species wherever found; (2) a portion of the range of a species is "significant" if the species is not currently endangered or threatened throughout all of its range, but the portion's contribution to the viability of the species is so important that, without the members in that portion, the species would be in danger of extinction, or likely to become so in the foreseeable future, throughout all of its range; (3) the range of a species is considered to be the general geographical area within which that species can be found at the time the Service or the National Marine Fisheries Service makes any particular status determination; and (4) if a vertebrate species is endangered or threatened throughout an SPR, and the population in that

significant portion is a valid DPS, we will list the DPS rather than the entire taxonomic species or subspecies.

The SPR policy is applied to all status determinations, including analyses for the purposes of making listing, delisting, and reclassification determinations. The procedure for analyzing whether any portion is an SPR is similar, regardless of the type of status determination we are making. The first step in our analysis of the status of a species is to determine its status throughout all of its range. If we determine that the species is in danger of extinction, or likely to become so in the foreseeable future, throughout all of its range, we list the species as an endangered (or threatened) species and no SPR analysis will be required. If the species is neither endangered nor threatened throughout all of its range, we determine whether the species is endangered or threatened throughout a significant portion of its range. If it is, we list the species as an endangered species or a threatened species, respectively; if it is not, we conclude that the species is neither an endangered species nor a threatened species.

When we conduct an SPR analysis, we first identify any portions of the species' range that warrant further consideration. The range of a species can theoretically be divided into portions in an infinite number of ways. However, there is no purpose to analyzing portions of the range that are not reasonably likely to be significant and either endangered or threatened. To identify only those portions that warrant further consideration, we determine whether there is substantial information indicating that (1) the portions may be significant and (2) the species may be in danger of extinction in those portions or likely to become so within the foreseeable future. We emphasize that answering these questions in the affirmative is not a determination that the

species is endangered or threatened throughout a significant portion of its range—rather, it is a step in determining whether a more detailed analysis of the issue is required. In practice, a key part of this analysis is whether the threats are geographically concentrated in some way. If the threats to the species are affecting it uniformly throughout its range, no portion is likely to warrant further consideration. Moreover, if any concentration of threats apply only to portions of the range that clearly do not meet the biologically based definition of "significant" (*i.e.*, the loss of that portion clearly would not be expected to increase the vulnerability to extinction of the entire species), those portions will not warrant further consideration.

If we identify any portions that may be both (1) significant and (2) endangered or threatened, we engage in a more detailed analysis. As discussed above, to determine whether a portion of the range of a species is significant, we consider whether, under a hypothetical scenario, the portion's contribution to the viability of the species is so important that, without the members in that portion, the species would be in danger of extinction or likely to become so in the foreseeable future throughout all of its range. This analysis considers the contribution of that portion to the viability of the species based on the conservation biology principles of redundancy, resiliency, and representation. (These concepts can similarly be expressed in terms of abundance, spatial distribution, productivity, and diversity.) The identification of an SPR does not create a presumption, prejudgment, or other determination as to whether the species in that identified SPR is in danger of extinction or likely to become so. We must go through a separate analysis to determine whether the species is in danger of extinction or likely to become so in the SPR. To determine whether a species is endangered or threatened throughout an SPR, we will

use the same standards and methodology that we use to determine if a species is endangered or threatened throughout its range.

Depending on the biology of the species, its range, and the threats it faces, it may be more efficient to address either the significance question first, or the status question first. Thus, if we determine that a portion of the range is not "significant," we do not need to determine whether the species is endangered or threatened there; if we determine that the species is not endangered or threatened in a portion of its range, we do not need to determine if that portion is "significant."

Trichostema austromontanum ssp. *compactum* is a narrow endemic plant subspecies, found only in and around Hidden Lake in Mount San Jacinto State Park. Its entire range is about 2 ac (1 ha) in size. Additionally, a small population (36 individuals) was once observed outside of the Hidden Lake pool area (Fraga and Wall 2007, p. 10). This location is less than 300 ft (100 m) away from Hidden Lake and is within the lake's watershed. *Trichostema austromontanum* ssp. *compactum* is an annual plant, which means it completes its life cycle in less than 1 year. As previously noted, it has a natural seed bank in the soil, with seeds that persist for extended periods of time. Although the number and distribution of standing (growing) plants varies from year to year, the distribution of the seeds in soil is likely fairly ubiquitous within the lake's perimeter. Within this 2-ac (1-ha) area, there is no natural division that would not arbitrarily separate one portion of the range from another. Even the small population that could potentially be considered geographically separate is probably not biologically separate, given that it is very close to the lake and still within the watershed for the lake. However, if we were to consider that population separate, it is small—small in numbers observed and small in area occupied—

compared to the portion of the range in the area of Hidden Lake proper. As such, this portion of the range, which could potentially be considered separate, is not likely to substantially contribute to the redundancy, resiliency, and representation of the subspecies, and thus we do not consider it "significant" for the purposes of this SPR analysis. Additionally, because of the limited geographic area the subspecies occupies, the entire population experiences similar conditions and management by CDPR such that no portion of the subspecies' range is likely to experience a different or elevated level of threats. We conclude that there are no portions of the subspecies' range that are likely to be both significant and threatened or endangered. Therefore, no portion warrants further consideration to determine whether the subspecies is in danger of extinction or likely to become so in a significant portion of its range.

Therefore, we find that *T. a.* ssp. *compactum* no longer requires the protection of the Act, and we propose to remove the subspecies from the List of Endangered and Threatened Plants.

Effects of This Rule

The Act sets forth a series of general prohibitions and exceptions that apply to all endangered plants. The Act's implementing regulations extend most of the prohibitions provided under section 9(a)(2) of the Act to threatened plants (see 50 CFR 17.61 and 17.71). It is illegal for any person subject to the jurisdiction of the United States to import or export, transport in interstate or foreign commerce in the course of a commercial activity, sell or offer for sale in interstate or foreign commerce, or remove and reduce *Trichostema austromontanum* ssp. *compactum* to possession from areas under Federal jurisdiction. Section 7 of the Act requires that Federal agencies consult with us to ensure that any action authorized, funded, or carried out by

them is not likely to jeopardize the species' continued existence. If this proposed rule is made final, it would revise 50 CFR 17.12 to remove *T. a.* ssp. *compactum* from the Federal List of Endangered and Threatened Plants, and these prohibitions would no longer apply. Because critical habitat has not been designated for this taxon, this rule, if made final, would not affect 50 CFR 17.96.

Peer Review

In accordance with our joint policy on peer review published in the **Federal Register** on July 1, 1994 (50 FR 34270), we will seek the expert opinions of at least three appropriate and independent specialists regarding this proposed rule. The purpose of peer review is to ensure that decisions are based on scientifically sound data, assumptions, and analyses. A peer review panel will conduct an assessment of the proposed rule, and the specific assumptions and conclusions regarding the proposed delisting. This assessment will be completed during the public comment period.

We will consider all comments and information we receive during the comment period on this proposed rule as we prepare the final determination. Accordingly, the final decision may differ from this proposal.

Post-delisting Monitoring

Section 4(g)(1) of the Act requires us, in cooperation with the States, to implement a system to monitor effectively, for not less than 5 years, all species that have been recovered and delisted. The purpose of this post-delisting monitoring is to verify that a species remains secure from risk of extinction after it has been removed from the protections of the Act. The monitoring

is designed to detect the failure of any delisted species to sustain itself without the protective measures provided by the Act. If, at any time during the monitoring period, data indicate that protective status under the Act should be reinstated, we can initiate listing procedures, including, if appropriate, emergency listing under section 4(b)(7) of the Act. Section 4(g) of the Act explicitly requires us to cooperate with the States in development and implementation of post-delisting monitoring programs, but we remain responsible for compliance with section 4(g) of the Act and, therefore, must remain actively engaged in all phases of post-delisting monitoring. We also seek active participation of other entities that are expected to assume responsibilities for the species' conservation post-delisting.

Post-delisting Monitoring Plan Overview

We have prepared a draft PDM plan for *Trichostema austromontanum* ssp. *compactum*. The draft plan discusses the current status of the taxon and describes the methods proposed for monitoring if the taxon is removed from the Federal List of Endangered and Threatened Plants. The draft plan:

(1) Summarizes the status of *Trichostema austromontanum* ssp. *compactum* at the time of proposed delisting;

(2) Describes frequency and duration of monitoring;

(3) Discusses monitoring methods and potential sampling regimes;

(4) Defines what potential triggers will be evaluated for additional monitoring;

(5) Outlines reporting requirements and procedures; and

(6) Proposes a schedule for implementing the PDM plan and defines responsibilities.

It is our intent to work with our partners towards maintaining the recovered status of *Trichostema austromontanum* ssp. *compactum*. We will seek public and peer reviewer comments on the draft PDM plan, including its objectives and procedures (see **Information Requested**, above), with publication of this proposed rule.

Required Determinations

Clarity of the Rule

We are required by Executive Orders 12866 and 12988 and by the Presidential Memorandum of June 1, 1998, to write all rules in plain language. This means that each rule we publish must:

(a) Be logically organized;

(b) Use the active voice to address readers directly;

(c) Use clear language rather than jargon;

(d) Be divided into short sections and sentences; and

(e) Use lists and tables wherever possible.

If you feel that we have not met these requirements, send us comments by one of the methods listed in **ADDRESSES**. To better help us revise the rule, your comments should be as specific as possible. For example, you should tell us the names of the sections or paragraphs that are unclearly written, which sections or sentences are too long, the sections where you feel lists or tables would be useful, etc.

National Environmental Policy Act

We determined that we do not need to prepare an environmental assessment or an

environmental impact statement, as defined under the authority of the National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq.*), in connection with regulations adopted pursuant to section 4(a) of the Act. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244).

References Cited

A complete list of all references cited in this proposed rule is available on the Internet at *http://www.regulations.gov* under Docket No. FWS–R8–ES–2016–0127, or upon request from the Field Supervisor, Carlsbad Fish and Wildlife Office (see **FOR FURTHER INFORMATION CONTACT**).

Author

The primary author of this proposed rule is the Carlsbad Fish and Wildlife Office in Carlsbad, California, in coordination with the Pacific Southwest Regional Office in Sacramento, California.

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

Proposed Regulation Promulgation

Accordingly, we propose to amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

PART 17—ENDANGERED AND THREATENED WILDLIFE AND PLANTS

1. The authority citation for part 17 continues to read as follows:

AUTHORITY: 16 U.S.C. 1361–1407; 1531–1544; 4201–4245, unless otherwise noted.

§ 17.12 [Amended]

2. Amend §17.12(h) by removing the entry for "*Trichostema austromontanum* ssp. *compactum*" under FLOWERING PLANTS from the List of Endangered and Threatened Plants.

Dated: December 13, 2016

Signed: Martin J. Kodis

Acting Director, U.S. Fish and Wildlife Service.

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